

"A valuable, science-supported guide
to optimizing your child's health."

—MARTHA HERBERT, M.D., Ph.D.,
assistant professor of neurology,
Harvard Medical School

The Vaccine- Friendly Plan

Dr. Paul's Safe and Effective Approach to Immunity and Health—
from Pregnancy Through Your Child's Teen Years



Paul Thomas, M.D., and Jennifer Margulis, Ph.D.

Praise for *The Vaccine-Friendly Plan*

“An impressively researched guide, this important book is essential reading for parents. With clear and practical advice for shielding children from harmful toxins, it will compel us all to think differently about how to protect health.”

—JAY GORDON, M.D., FAAP

“A valuable, science-supported guide to optimizing your child’s health while you navigate through complex choices in a toxic, challenging world.”

—MARTHA HERBERT, M.D., Ph.D., assistant professor of neurology, Harvard Medical School, and author of *The Autism Revolution*

“Personalized health care based on the needs and vulnerabilities of individuals is the way to deliver optimal medical care. In this book you will learn a new way of thinking about vaccines. Rather than a one-size-fits-all vaccine strategy, the authors suggest thoughtful, individualized decisions based on research and collaboration between parents and clinicians—a plan to optimize a child’s immune system and minimize any risks.”

—ELIZABETH MUMPER, M.D., FAAP, IFMCP, CEO of The Rimland Center for Integrative Medicine

“Finally, a book about vaccines that respects parents! If you choose only one book to read on the topic, read *The Vaccine-Friendly Plan*. This impeccably researched, well-balanced book puts you in the driver’s seat and empowers you to make conscientious vaccine decisions for your family.”

—PEGGY O'MARA, editor and publisher, *Mothering Magazine*

“This well-written and thought-provoking book will encourage parents to think through decisions—such as food choices and the timing of vaccines—that affect the well-being of their children. In a world where children’s immune systems are increasingly challenged, this is a timely addition to the literature.”

—HARRIET LERNER, Ph.D., author of *The Dance of Anger* and *The Mother Dance: How Children Change Your Life*

“Impressive and compelling...Whether you’re trying to conceive or already parenting teens, you need to read *The Vaccine-Friendly Plan*. It’s about so much more than just vaccines—this book is a comprehensive guide that gives you everything you need to know to keep your children safe and healthy. I’ll be recommending it far and wide.”

—LYN REDWOOD, R.N., co-founder of the Coalition for SafeMinds

“*The Vaccine-Friendly Plan* is a treasure trove of scientific facts mixed with common sense. Paul Thomas and Jennifer Margulis encourage parents to follow their instincts, to do their own research as it pertains to their family’s health, and to rethink what is true health care. Likewise, they challenge doctors to step it up and look further into the latest research that impacts the health of their youngest patients.”

—MARY ROMANIEC, author of *Victory over Autism: Practical Steps and Wisdom toward Recovery for the Whole Family*

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Dr. Paul's Safe and Effective Approach to
Immunity and Health—From Pregnancy
Through Your Child's Teen Years

**PAUL THOMAS, M.D., AND
JENNIFER MARGULIS, PH.D.**



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Some of the names and personal characteristics of the patients discussed have been changed in order to disguise their identities. Any resulting resemblance to persons living or dead is entirely coincidental and unintentional.

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Introduction

Though I was born in the United States, I grew up in Rhodesia—now called Zimbabwe—in the 1960s. My parents were young missionaries with the United Methodist Church, and my family moved to Africa when I was just five years old, my sister Mary was four, and my mother was pregnant. My little brother Bruce and my little sister Jean were both born in Rhodesia. Our first home, in the village of Arnoldine, was built out of sun-dried bricks. We had no running water, no electricity, no glass windows. It was crowded, loving, and chaotic. I loved it.

My mother, who had studied at Vanderbilt University, was a nurse, and our home quickly became the de facto health center for the village, with parents showing up with sick children in tow, hoping we could help them.

My family spent fifteen years in Africa. By the time I was in my teens, I had seen more deaths than most Americans—perhaps even my fellow doctors—will see in their lifetimes. It was not uncommon for mothers and their babies to die during childbirth in our village. Newborns, especially those with malnourished mothers, succumbed to infectious diseases. Car accidents, malaria, and fulminating infections that did not respond to treatment also claimed too many lives. As my Congolese friend Odette said years later, tsking and shaking her head, “Africans die young.”

But there was one death that hit me harder than any other. My playmate Taurai, who was only three years old. One day, very suddenly, Taurai got a high fever. The whites of his eyes turned red, and he became lethargic and stopped eating. He had a rash all over his body. When his mother took him to the hospital in the capital city, the doctors told her Taurai had measles. When she heard the news, my

mother didn't worry much at first: Measles were so commonplace that in her generation other mothers made sure their children got exposed whenever it was going around. She had had measles herself as a kid and had seen it many times as a nurse.

Taurai died the next day.

I eventually came back to the United States to finish my education and went to the Geisel School of Medicine at Dartmouth College, where we were taught about the history of vaccines, the victory of the eradication of smallpox, and the elimination of polio from the Americas and most of the world. I knew firsthand how important vaccines were—if Taurai had been vaccinated against measles, he might not have died.

After four years of medical school, doctors in America are required to do what's called a residency, three to five additional years in a subspecialty. By then I knew I wanted to become a pediatrician. And every time I gave a child a vaccine or spoke to parents about the recommended vaccines, I was glad. I knew those vaccines would help the families I was caring for stay safe and healthy.

I was still in residency when the Hib vaccine was first introduced. *Haemophilus influenzae* type B is a strain of bacteria that can cause severe infections like meningitis and even death, especially in small children. Meningitis is difficult to diagnose correctly because the symptoms are a lot like the flu, which is caused by a variety of influenza viruses. The only way to know if a child has meningitis is to test the spinal fluid with a spinal tap: You insert a tiny needle into the lower back until you reach the sac with fluid that covers the spinal cord. If the fluid looks clear, like water, the child does not have meningitis. If the fluid looks slightly cloudy, chances are it is meningitis. We would send the sample for testing and know in a few hours when the lab reported the cerebral spinal fluid results.

Back when I was doing my residency, children's hospitals—if mine was any indication—had several cases of meningitis at any given time. That first year the improved Hib vaccine was introduced, in 1987, rates of pediatric meningitis at our hospital dropped by half. Before the Hib vaccine, about twenty thousand children under five came down with

life-threatening infections caused by *Haemophilus influenzae* type B every year and about a thousand died. These days there are fewer than twenty-five cases of Hib a year and no deaths.

Vaccines save children's lives, make families safer, and have helped me be a better doctor. And back then I could not imagine any reason not to give each and every vaccine as directed by the Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP). These two organizations, full of hardworking, highly educated, caring, and smart scientific researchers and doctors, put out childhood vaccination guidelines that saved lives and helped children. And I saw it happening firsthand.

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In the fall of 1988 I began practicing medicine at Emanuel Children's Hospital in Portland, Oregon, armed with knowledge, hope, enthusiasm, and a full head of brown hair. I was a new pediatrician, excited to help my patients stay well and live healthy lives.

But as the years went by, I started to notice something that troubled me.

The children in our practice who followed our advice were not as healthy as they should have been. Instead, they were sick more and more often. Daisy had a severe rash that just kept getting worse. Jorge was struggling in school with attention and learning issues, his mother in tears as she described what a hard time he was having. Luke had such high sugar in his urine that when we got the test results back, I called his mom on her cell phone and told her to go to the closest ER immediately. Luke had type 1 juvenile diabetes and was in danger of dying from hyperglycemia and encephalopathy. He was only four years old. A little girl named Julia developed a peanut allergy so severe she went into anaphylactic shock because of a spot of dried peanut butter on the shelf at her preschool.

By the late 1990s and into the beginning of the twenty-first century, every pediatrician in America was starting to see what I was seeing: an explosion of chronic diseases and other conditions among America's

children, including food allergies, attention deficit disorders, childhood anxiety, childhood asthma, childhood depression, eczema, gastroesophageal reflux, headaches, ear infections, neurological disorders, sinus infections, lung infections like pneumonia, urinary tract infections, and virulent strep throat, to name a few.

Many of these problems have arisen because our children's immune systems are increasingly compromised. The modern American diet, with toaster pastries washed down by sugary drinks for breakfast, shrink-wrapped deli meats and potato chips for lunch, and canned spaghetti or fast food for dinner, is not only devoid of nutrient-rich vegetables, it is full of toxic additives (like mold inhibitors in bread and petroleum-derived colorants in just about every food made specially for children, from sweetened yogurt to pickles).

Combine this unhealthy way we have been duped into feeding our kids with the fact that American children do not get enough exercise or outside time and are often vitamin D deficient, chronically sleep-deprived, and sometimes overly stressed out, and you lay the foundation for a weakened immune system that will succumb much more easily to disease. Add to all this the toxins that abound in the air, soil, and water, as well as in the furniture we sit and sleep on, the cleaning products under our sinks, and the plastic containers that leach chemicals into our food, and you have what amounts to the perfect recipe for compromised health. As if that's not enough, we doctors make this bad situation even worse by overprescribing antibiotics and being quick to recommend drastic interventions and prescription medications without adequately informing ourselves or our parents and patients of the side effects.

And then there is the devastating rise in autism.

Jack was an active child with blond hair, a smattering of freckles, and sky-blue eyes. He came in for his one-year checkup full of energy, squirming off his mother's lap and particularly interested in opening the drawers on the side of the exam table. I could see by his behavior and from talking to his mom that Jack was a healthy, active, normally developing youngster.

The next time I saw Jack he was two. My nurse practitioner had

taken care of his eighteen-month well baby visit and accompanying shots. I flipped through Jack's chart before opening the door: He had been developing normally and meeting all milestones. But when I walked in this time, I could see instantly that something was wrong. Instead of actively exploring the room, two-year-old Jack sat silently in his stroller beside his mother, shaking his head back and forth, looking at nothing. He was completely absorbed in his own world. His mom told me that Jack had even lost interest in food. He would sit for hours lining up his toy trains. She explained that sometime between eighteen months and this visit, Jack had stopped making eye contact. Yes, he banged his head against the side of the crib sometimes, as if he were in pain. And though he could speak a few words at twelve months, she no longer really understood the noises he made.

I could not make a definitive diagnosis—I would have to send the family to one of our evaluation centers for that—but I suspected that the disengaged, unsmiling toddler before me had autism.

How could it be that a completely normal one-year-old in my care had become severely delayed and neurologically challenged by the time he was two?

It wasn't just Jack.

The rise in autism was impossible to ignore. It simply was not there when I was in medical school at Dartmouth in 1981–85. I only saw a couple of mild cases of autism in children in residency in 1985–88. But by the time I was working as a pediatrician at Westside Pediatrics, in the late 1990s and early 2000s, I was sending one child almost every month to a specialist for suspected neurological disorders.

What was going on?

Why were so many children in my practice who were following my advice becoming so sick?

Most conventionally trained doctors like me will tell you that no one knows definitively what causes autism. They will also tell you autism is a disorder for which there is no hope and no cure.

And in the same breath, they may blame you for your child's autism. They may say it is in your genes or that there is an underlying genetic

reason. They may mention the 2014 study published in the American Medical Association's *Psychiatry Journal* that found that children of fathers over forty-five are three and a half times more likely to have autism than children of fathers in their twenties, or the 2014 study published in *Journal of Perinatology* that showed that children of women who were obese during pregnancy have a higher risk of autism.

I debated the rise in autism endlessly with my colleagues. Though I believe they were as worried as I was, it was, sadly, easier for many of them to shrug their shoulders, adjust the stethoscopes around their necks, and deny the evidence in front of them. "We're just better at recognizing these kids today," they would say, clearly trying to convince themselves, when I brought up Jack and my other patients' unusual medical histories.

What became obvious to me was that some environmental factor or combination of factors was negatively affecting the health of the children in my care, triggering the increased incidence of so many vague but nonetheless scary symptoms: migraines, severe anxiety, gastrointestinal upset, unusually early-onset allergies. And what also became increasingly obvious was that some children were being poisoned in some way, or were developing an autoimmune reaction in which their own immune system was attacking their brains, or both.

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Lead is a remarkably useful and versatile metal that was once a key component in everything from face powders to paint. As anyone my age can remember (I was born in 1957), lead was also added to gasoline in the United States. Though this metal was ubiquitous and its use dated back to ancient times, it wasn't until the last three decades of the twentieth century that we really started to understand how harmful it is to human health.

It took decades of research and an explosive albeit ongoing controversy, but Americans finally accepted the uncomfortable and inconvenient scientific findings that too much exposure to lead affected our children's brains, IQs, and development. Indeed, we now

call lead exposure lead poisoning.

A small amount of lead is usually not harmful. But the more lead a child is exposed to, the more likely it is to cause neurological damage. Not every child exposed to high levels of lead will be irrevocably poisoned by it, but the more we have studied lead, the more scientists have come to understand that it has a negative cumulative effect on children's growing brains, and that the amount and the timing of the lead exposure have a lot to do with the severity of the symptoms and how they present.

When I was a pediatric resident, we were told that a child could have up to 20 micrograms per deciliter of lead in the blood. That recommended number went down as the years went by, and by the mid-1990s I instructed parents that a child should have no more than 10 micrograms per deciliter of lead in the bloodstream—half the amount we had previously believed to be safe. Today we have a new standard for lead safety: Doctors now believe that there is no safe dose of lead, and we tell parents today that even 5 micrograms per deciliter is cause for concern. What does this mean? It means that for over twenty years we were telling parents not to worry about something toxic in the environment that could actually damage their children's developing brains.

And then there are antibiotics. Though some bacterial infections can and will get better on their own, antibiotics are one of the miracles of modern medicine. Among the best things my mother was able to bring to Arnoldine were antibiotic ointments and oral antibiotics. Some diseases that once killed thousands of vulnerable people, especially children, are virtually nonexistent these days in large part because of the discovery of antibiotics.

But in recent years the overprescription of antibiotics has led to the development of “super bugs,” antibiotic-resistant bacteria like MRSA (methicillin-resistant staphylococcus aureus) that are devastating to human health. One recent report by the British government predicts that this global problem will lead to as many as eighty thousand deaths and may transform minor surgery and routine operations into high-risk procedures. In my profession we have been talking about the

problem of the overprescription of antibiotics for more than twenty years, but despite being aware of it, doctors continue to prescribe antibiotics unnecessarily as much as 50 percent of the time.

It took me years to realize something I still wish were not true but which you cannot ignore if you want to have a healthy baby in America today: Our government officials and a handful of well-positioned M.D.'s who advise them have ignored some of the most important peer-reviewed studies and most relevant scientific information about immunity and health, both during pregnancy and throughout infancy. Some of the recommendations we make today simply make no sense when you look at the science—or the lack of science. Some of what we are ordering parents to do is doing more harm than good.

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A baby named Jimmy was born with what is called unfolded antihelices (the antihelix is the ridge curving up the middle of the ear that makes it lie back alongside the head), so his ears were dished forward, like Neil Patrick Harris in *Doogie Howser, M.D.* Harris later had his ears surgically corrected, and Jimmy's parents wanted to do the same, to spare Jimmy from being teased in school. Their pediatrician said it would be easier to correct Jimmy's ears when he was still a baby than it would be later, and referred the family to a plastic surgeon. The plastic surgeon sat down with the family to review the risks and benefits of the surgery. Among other things, he explained that any time you put a child under general anesthesia, there is a rare chance of complications, including a serious allergic reaction (which affects about 1 in every 10,000 children) and even death. Doing due diligence, he told them there was a slim possibility—very slim—that Jimmy would not wake up from the operation.

When Jimmy's mother heard that, she changed her mind about the surgery. She looked at her baby and decided to leave his ears the way they were, reasoning that no cosmetic intervention was worth *any* risk of her baby dying. Her in-laws disagreed, urging her to “get something done about those ears” for years afterward.

Like the operation to correct Jimmy's jug ears, every medical intervention involves some risk. And every time we consider a medical intervention, we have to weigh the risk of complications against the risk of doing nothing, and against the benefits of the procedure if it is successful.

If Jimmy had had a serious medical problem for which he needed general anesthesia—like an infected appendix—his parents and doctors would have been much more willing to take the small risk of complications associated with putting him under general anesthesia. In this case, I think Jimmy's parents made the best, safest, and most evidence-based decision. Recent experiments in young primates and other animals confirm that Jimmy's mom made the right call. We know now that anesthesia can kill brain cells, diminish learning and memory, and cause behavioral problems.

At the same time, if the medical intervention is necessary and the chances of the intervention being successful are high, then the risks associated with the intervention are often worth taking.

Whether you are agreeing to surgery, an antibiotic, or a childhood vaccine, it is much easier to go along with what the doctor "orders" than it is to decide for yourself. The appeal of authority is reassuring. The same holds true for the doctor: It is much easier for the doctor to go along with what the CDC recommends and the states mandate than to do his own independent research and weigh the pros and cons himself.

How do I know this? Because I used to be that doctor.

But thirty years in pediatrics have taught me that it is time to change our bias favoring "one-size-fits-all medicine" and, more specifically when it comes to immunity, "all vaccines, all the time" to a more nuanced and skeptical approach. I give vaccines in my office every day. But I also recognize that we need to be vaccine wise: that all vaccines on the CDC's schedule may not be right for all children at all times. My approach puts parents in the driver's seat, allowing them to tailor the best and safest vaccine schedule for their children while at the same time making lifestyle changes that support the immune system, reduce toxic exposures, and lead to the best possible health. We doctors must

remember that vaccines are preventative medicine. They do not cure an illness—they give a boost to an already healthy immune system so the body is less likely to succumb to illness in the future. I would argue that this makes it even more imperative that we have proof that the vaccines we are recommending are both necessary and safe.

Doctors are healers. The vast majority of us would never knowingly do something to put a patient in harm's way. When one of our patients has a vaccine reaction—or a bad outcome of any kind—it is very hard for us to admit it.

It feels personal.

“After I realized that vaccine damage could actually happen, I went into a depression for over a year,” admitted my colleague the late John Hicks, M.D., a pediatrician in private practice in Los Gatos, California, who specialized in children with autism and other autoimmune disorders.

I had the same experience in 2003 when the facts finally overwhelmed me. Listening to multiple presentations at a medical conference about autism, I realized we had poisoned a generation of children with a mercury-derived preservative called thimerosal that was in the majority of childhood vaccines. Since safety is tested vaccine by vaccine, no one from the CDC had ever calculated the cumulative amounts of mercury in the childhood vaccine schedule at the time. In a flurry of emails dated June 29, 1999, and later brought to the attention of Congress and the public through a Freedom of Information Act request, Peter Patriarca, M.D., then director of the Division of Viral Products at the Food and Drug Administration's (FDA) Center for Biologics Evaluation, wrote to his colleagues that it was not “rocket science” to add up the amount of mercury contained in vaccines. “Conversion of the percentage of thimerosal to actual micrograms of mercury involves ninth-grade math,” he pointed out. “What took the FDA so long to do the calculations? Why didn't the CDC and the advisory bodies do these calculations, while rapidly expanding the childhood immunization schedule?”

Thimerosal has mostly been phased out, but it is still present as a preservative in multidose flu shots and one brand of the

meningococcal vaccine, and it is also found in residual quantities due to the manufacturing process of some of the tetanus-diphtheria and DTaP vaccines. I would later discover we have continued to make the same mistake with the high amounts of aluminum currently found in many childhood vaccines. As you'll learn in this book, the current CDC-recommended childhood vaccine schedule exceeds the toxic limits of safe aluminum exposure.

This book is a comprehensive guide to childhood health and well-being, offering parents not only balanced information about vaccines but also everything else you need to know to keep your child safe and healthy. It is organized chronologically as we walk you through the well baby visits, interventions, and inoculations your child is expected to receive from the time she is conceived to the end of her teen years. Giving you balanced information from other credible, experienced, and well-established medical doctors as well as from my own experience, this book will help you make the most educated and evidence-based decisions about which vaccines your child needs and when.

This book also explores how we may be repeating the same mistake with vaccines that we made with antibiotics. We may be overusing a medical intervention so drastically that the cure has, in some cases, become more dangerous than the disease. In 1983 the CDC recommended eleven total shots for children, spaced out between the ages of two months and sixteen years, to protect against seven diseases. In 2015 the CDC recommended *at least fifty shots* starting within the *first hours* of life and continuing to age sixteen, to protect against sixteen diseases. What this means is that today's children get *more than four times* as many vaccines as they did thirty years ago, most of them in the first eighteen months of life. In the meantime, nearly 300 other vaccines are currently under development, 170 for infectious diseases, 102 for different kinds of cancer, and 8 for neurological disorders.

To what extent is overvaccination contributing to the rise in chronic

diseases and other health problems among America's children? To what extent is overvaccination a trigger for autism? Have we taken an unquestionably good practice (childhood vaccination) and turned it into something that is actually causing harm?

Even just asking these questions is controversial for a pro-vaccine doctor like me and a pro-vaccine parent and researcher like my coauthor, Jennifer Margulis. Yet it is urgent that we ask and answer these questions, and that we devise a safer and cleaner vaccine schedule so that we can protect our children against both infectious and chronic disease.

We do not believe in throwing the baby out with the bathwater. We do not think the problem is vaccines with a capital V. If you are looking for an antivaccine book, you should put this one back on the shelf. We believe that vaccines have saved countless lives, and we believe that they have an important place in modern medicine in America today. We are concerned, however, that some vaccines are not safe for some children and that our current CDC schedule may be harming more children today than medical professionals and public health officials are willing to acknowledge.

This book begins with a radical premise: We believe that parents—not public health officials, not the government, and not even doctors—are actually the best people to be making health decisions for their children. We also believe that parents must have all the available information they need to make an informed choice.

In 2008 I opened my own practice, Integrative Pediatrics. A year later I founded a pediatric urgent care clinic so families could have access to good medical care after hours and on weekends. In the past seven years, I have developed a vaccine protocol that has yielded excellent results—keeping children safe from both infectious diseases and the immune disruptions and brain disorders that plague so many American kids today. I have more than eleven thousand children currently in my practice in Portland. More than two thousand of these kids were born into the practice. Those following my protocol are among the healthiest in the world. I refer to my protocol as a “vaccine-friendly plan,” a wellness plan that includes some vaccines and offers

parents scientifically proven and commonsense ways to support their child's immune system. I am a vaccine-friendly doctor, a term first coined by pediatrician Robert Sears, M.D., and now used by parents to identify medical doctors who do not dismiss families that choose to forgo some or even all vaccines, understand the importance of spacing out vaccines, and practice patient-centered medical care.

This book is based both on my extensive experience as a practicing pediatrician treating routine childhood illnesses and urgent pediatric cases and on the information my coauthor and I have gleaned from vaccine-friendly doctors across the country who, like me, have been quietly providing more individualized care with great success.

We give you the most current information about the known risks and the benefits of vaccines, to empower you to make informed decisions for your family. Our goal is to ensure that America's children are vaccinated safely and that we still maintain high enough community immunity to infectious disease that we protect everyone in our society.

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It was too early in the morning for the phone to be ringing. I answered it groggily, thinking it must be a patient emergency. The voice at the other end of the phone was telling me something I couldn't process: Tsitsi, my African sister, had just died of a massive heart attack. Tsitsi was Taurai's sister. After Taurai died, Tsitsi and I grew up together in Rhodesia. Highly educated and with no job options in Zimbabwe, Tsitsi and her husband, Weston, eventually moved to New Hampshire. Weston died from colon cancer when he was only thirty-eight, leaving Tsitsi a single parent of four small children. And now Tsitsi too was dead.

"I'm feeling we have to step up," I said to my wife, Maiya, after I hung up the phone.

"I'm with you," she said without hesitation.

We talked to our two daughters, Natalie and Aja, and our three sons, Noah, Tucker, and Luke, that night. Even though Maiya and I already

felt overwhelmed caring for five children and both working full-time, we knew we couldn't let Tsitsi's children be separated and put into foster care in New Hampshire. We adopted them as our own and have been raising them ever since.

But we couldn't legally adopt the eldest, Rufaro, because of her age. Ever since she was a little girl, Rufaro had wanted to be a doctor. She was scheduled to take medical entrance exams the same week her mother passed away. Rufaro stayed in the United States with us for a while, but when her legal status expired, she had to go to Canada, where she could get refugee status as a Zimbabwean citizen.

Since her mother died, Rufaro has been accepted to medical school twice. But we were barely making ends meet taking care of the other children, and Rufaro never had the money to go. Until this year. She's thirty-one now and has received a scholarship from the Canadian government to attend medical school. The summer before she started, she worked as a medical researcher in my office and lived with us in our home. We drove to work together in the mornings and talked about what it means to be a doctor and how best to care for others. We discussed the first and most important concept every doctor is taught: *Primum non nocere*; first do no harm. Rufaro plans to focus on international women's health and join Doctors Without Borders. She wants to help women and children lead better, healthier lives. Her goal is to make a difference in the world to honor her parents, both the ones living now and the ones who have passed on.

Though this book is primarily aimed at parents, we hope that every aspiring doctor like Rufaro and every practicing M.D., whether a seasoned professional or one just starting a career, will read it. *The Vaccine-Friendly Plan* is not only a guide to good decision making to help you choose which vaccines are necessary for your family's best health, but also a comprehensive look at the factors that affect children's health and well-being.

You need the information in this book more than ever before. The health of all our children is at stake.

Chapter 1

Toxins, Toxins, Toxins: Raising Healthy Children in a Poisoned World

When Brayen Perez was nine years old, he ran into the kitchen, grabbed a bottle of what he thought was Gatorade off the counter, and chugged it. His mouth and throat on fire, Brayen screamed in pain. He had no idea that his father had borrowed Drano from a neighbor to unclog the sink and poured it into the Gatorade bottle. Brayen spent the next thirty-two days in the ICU unable to swallow or talk, fed through a feeding tube. He's better now, but his father still hasn't forgiven himself.

Children in America have also been poisoned by windshield wiper fluid (mistaken for Kool-Aid) and tiki torch fuel (thought to be apple juice). Some recover. Others aren't as lucky. Though immediately rushed to the hospital, Oklahoma toddler Jhonethyn Bumpas died three hours after a mistake like this.

It's not hard for parents to understand that chemicals like Drano are extremely toxic and that they need to do everything they can to keep them away from their children. But it is much harder for parents to understand that even very small amounts of everyday chemicals, though not immediately poisonous, can devastate our children, especially their developing brains.

I tell parents that when it comes to toxins, one plus one does not equal two: It could equal ten, or one hundred. When we mix small amounts of toxic chemicals together, it can create a much larger negative effect than separate exposure to either toxin on its own. Your

child may be able to withstand repeated exposure to something harmful, but the toxin accumulates in his system and may eventually cause harm over an extended period of time (like cigarette smoke or X-rays). The amount, the route of entry, the timing of exposure, the individual sensitivity to the chemical, and the presence of other toxins in the body are all important aspects of toxicity. Developing fetuses and infants are most vulnerable to harm.

I'm Worried Most About Your Baby's Brain

The CDC currently estimates that one in every forty-five American children has an autism spectrum disorder.

In addition to autism, we have seen exponential rises in other brain-related problems among children, including attention deficit disorders, anxiety, and depression.

While genetics are part of the equation, I believe that we are poisoning our children's brains at a time when they are most vulnerable, a time when they are developing rapidly, exposing them both to untested chemicals and to known neurotoxins. Autism is an environmental disorder, an epidemic that we have caused by failing to practice evidence-based medicine. I'm telling you this not to scare you but to empower you. You need to know the environmental toxins that are damaging to neurodevelopment, and hence are likely contributing to the autism epidemic and other developmental and mental health conditions, so that you can do everything you can to avoid them and have a healthy baby.

Families who have children with autism and other neurological disorders often come to me because I have a reputation for helping these children using integrative medicine and approaches that will promote their own natural biochemistry and allow them to best heal and recover. I don't have a special cure for autism; unfortunately no one does. But I am an open-minded doctor who is not afraid to educate myself about remedies that work, to individualize medicine, and to look at the whole child. I listen to parents. The approach I use is also embraced by many functional medicine doctors and naturopaths (doctors who have trained in both Western and alternative medicine), as well as integrative medicine physicians like me. We try to understand the root causes of the conditions we are treating. We test for genetic vulnerabilities. We heal by restoring biochemistry, aiding the body's ability to remove toxins, and using diet and nutrition, along

with medication, to recover damaged health.

How do I know autism is something we doctors are helping to cause? Because in more than a thousand children who were born into my practice since 2008 whose parents follow my vaccine-friendly plan, there have been no new cases of autism.

And I am not alone. My medical colleagues across the country who have adopted similar vaccine-friendly protocols and begun spacing out vaccines for infants, as well as eschewing vaccines in families at risk for autism, are also seeing excellent results.

Number of children diagnosed with autism whose parents presumably followed the advice of mainstream American pediatricians: one in forty-five.

Number of children diagnosed with autism whose parents followed my vaccine-friendly plan: zero.

Toxins That May Be Implicated in ADHD, ADD, Anxiety, Autism, and Other Developmental Delays

Acetaminophen (also called paracetamol), a pain reliever found in more than six hundred over-the-counter and prescription medications, including DayQuil, Robitussin, Sudafed, Tylenol, and Vicks

Aluminum, a metal injected as an adjuvant in vaccines and other pharmaceutical products, also found as a contaminant in intravenous nutritional products

Aspartame (NutraSweet, also called E951), an artificial sweetener used as a sugar substitute in processed foods and beverages

Endocrine disruptors, any chemicals that interfere with the human endocrine (hormone) system, including pesticides, herbicides, chemical softeners in plastic, flame retardants, and chemicals used in agriculture, disease control, manufacturing, and industrial processing. Known endocrine disruptors include BPA, DDT, DEHP, DES, dioxin, PCBs, and PCBEs.

Fluoride, a chemical added to drinking water and found in toothpaste, pesticides, Teflon pans, and processed foods and beverages

Methanol, a chemical found in cigarette smoke, canned and jarred foods, smoked fish and meat, and any food product that contains aspartame

Mercury, an element found in thimerosal (a mercury-based preservative widely used in infant vaccines until 2001 and still used in some flu, DTaP, DT, and meningococcal vaccines), dental amalgams (fillings), fish, shellfish, and animals that eat fish, released into the air from coal-burning factories and aluminum smelters

What We Don't Know Can Hurt Us

A doctor I know watched one of his sons line up toy cars for hours, every day, for years, without admitting something might be wrong with his son's brain. "He's just all boy," this dad would say. His wife agreed. His son couldn't learn his ABCs in kindergarten and had almost no memory or recall. School was especially hard for him. But it wasn't until he came home from third grade and said to his father, "Dad, I'm the dumbest kid in the class," that his parents allowed themselves to admit that something was really wrong.

Tests revealed that this little boy had high levels of heavy metals in his body, as well as an MTHFR defect, a mutation in the genetic code that causes metabolism disruption, often making it difficult to get rid of toxins. (For more on MTHFR defects, see [Chapter 2](#).)

Before they realized the severity of their son's disorder, this family was not worried about staying away from processed foods, eating organic, filtering their water, or avoiding toxins in any other way. A doctor married to a nurse, they certainly never would have thought to question the timing or necessity of any vaccine, ultrasound, or other recommended intervention. But their son seemed to have been gradually poisoned by harmful environmental exposures over time.

And of course this led to my friend beating himself up. "We did this to him," he insisted, holding his fist to his brow. "My wife drank Crystal Light throughout the pregnancy. She took acetaminophen for every ache and pain and agreed to multiple ultrasounds."

Was it their fault? Was it their pediatrician's? Was it the government's? Was it the pharmaceutical companies'? It doesn't matter. What matters is that their son's brain dysfunction and learning challenges could have been avoided. That story could be anyone's.

Our children know we love them, and the harm we do is never intentional. But I'm calling on you to be intentional, educate yourself,

and decide now to make small but vital changes that will improve every aspect of your child's health.

Does Acetaminophen Trigger Autism?

Aspirin was the pain reliever of choice in the United States until the early 1980s, when evidence emerged associating aspirin and Reye's syndrome, an extremely rare but fatal condition that manifests as swelling in the brain and liver. By the mid-1980s, as a result of concern over Reye's syndrome in young children, as well as very successful advertising by Johnson & Johnson, acetaminophen essentially replaced aspirin as the primary treatment for fever and pain in pregnant women and small children. The main ingredient in Tylenol, it's also found in more than six hundred prescription and over-the-counter medications (including NyQuil, Sudafed, and Percocet).

But in 2008 a team of five scientists led by Stephen Schultz at the University of California, San Diego, published an important study that compared eighty-three cases of children with autism with eighty controls. The study found that children who took Tylenol after getting the measles, mumps, and rubella vaccine were significantly more likely to have autism than children who did not. While the study had several weaknesses—it has a relatively small sample size, it relies on parental recall, and it includes no validation of clinical records to confirm either the autism diagnoses or the use of acetaminophen—the findings were significant. Children given acetaminophen between twelve and eighteen months of age were eight to *twenty* times more likely to have autism than children given ibuprofen or no pain-killer. Parents of children who became autistic also reported more side effects following the MMR vaccine, including fever, rash, diarrhea, irritability, and seizures, than parents of children who did not.

Taken alone, this research may not be enough to stop medical professionals and parents from using acetaminophen, which is, after all, an effective pain reliever for many. But considered in the context of other published studies and laboratory research, Schultz's survey associating acetaminophen with autism should have raised a huge red

flag. We know from research conducted in the 1980s on laboratory rats, as well as studies done on other mammals in the 1990s, that acetaminophen—especially in the presence of testosterone—can wreak havoc on living cells, causing mitochondrial disruptions and depletion of glutathione. I tell my patients to think of glutathione as nature's mop—an essential biochemical that your body needs to bind with toxins and escort them out of your system. For whatever reason, children with autism have been found to have lower glutathione levels. Giving already susceptible children Tylenol and other acetaminophen-containing drugs, especially in combination with a known neurotoxin (aluminum, say, injected intramuscularly via a vaccine), may be the last straw for their brains.

A recent study by researchers at the University of Massachusetts revealed that autism is much more prevalent in circumcised males than in those who are not circumcised. The researchers don't suggest that circumcision causes autism but instead point their finger at the pain reliever given to infant boys during the procedure, concluding that a growing body of experimental and clinical evidence links acetaminophen metabolism to autism and related developmental disorders. But perhaps most worrisome is a Danish study of more than 64,000 mothers and children published in April 2014 in the journal *JAMA Pediatrics*, which found that use of acetaminophen (but not ibuprofen) during pregnancy was associated with significantly higher risks of attention deficit disorders in their offspring. The more acetaminophen mothers took during pregnancy, the more likely it was that their children would have severe attention deficit disorders and hyperactivity.

When I was in medical school in the early 1980s, we were told that the risk of Reye's syndrome made giving aspirin to infants and small children too dangerous. I am sorry to say that I was an active part of the acetaminophen revolution. Young, energetic, upbeat sales representatives from Johnson & Johnson visited the hospital, bringing us doughnuts on the late shift, dropping off free samples, and printing out the latest information about the dangers of aspirin and the benefits of Tylenol for us to share with our patients. We unquestioningly gave

Tylenol to children just before administering vaccines and urged parents to use it right after vaccines, especially for the whole-cell pertussis vaccine that was notorious for causing alarmingly high fevers and seizures. (It has since been taken off the market.) Clinically, we saw that administering acetaminophen reduced the frequency of seizures after vaccines, so we pushed it on parents. We had no idea that our recommendations could be contributing to the explosion of neurological damage, developmental delays, and immune issues among children.

The association between aspirin and Reye's syndrome has since been challenged. A comprehensive review published in 2007 concluded, "The suggestion of a defined cause-effect relationship between aspirin intake and Reye syndrome in children is *not supported by sufficient facts*" (my emphasis). Nonetheless prenatal and pediatric use of acetaminophen continues despite the mounting evidence against it.

Acetaminophen has other strikes against it. It is the leading cause of acute liver failure in the United States; at least one meta-analysis and one carefully designed randomized study have found that it is actually not a very effective pain reliever; and it seems to cause liver abnormalities even at proper doses. Because it's found in so many different products, and parents are not in the habit of reading medication ingredient lists, it is all too easy to inadvertently give a child a toxic amount.

Until we have more information, I believe it is irresponsible, even dangerous, for doctors to recommend acetaminophen-containing products to pregnant women or small children. Some researchers, like Duke University Medical School associate professor William Parker, Ph.D., who has been studying immune dysfunction for over a decade, believe that stopping the use of acetaminophen in pregnancy and infancy would lead to a dramatic and immediate decline in autism. In order to better protect our children's brains and bodies, I tell my patients it is best to stop all use of acetaminophen during pregnancy and infancy.

I also recommend that pregnant moms and parents of young

children be cautious about using ibuprofen, the main ingredient in Advil and Motrin. Though this pain reliever is less toxic than acetaminophen, this class of nonsteroidal anti-inflammatory pharmaceutical medication can cause ulcers, bleeding, or holes in the stomach or intestinal lining and may be a contributing cause of leaky gut syndrome and celiac disease. Most doctors won't tell you that nonsteroidal anti-inflammatories like ibuprofen are responsible for more than 100,000 hospitalizations and 16,000 deaths a year.

Luckily there are several effective nontoxic options when you or your child needs pain relief. Headaches and aches and pains during pregnancy (and also in small children) are often caused by dehydration, excessive fatigue, and stress. Treating those underlying symptoms with massage, better sleep habits, effective stress-management techniques, and better hydration can make a big difference. Pregnant women and children also report relief using a few drops of lavender oil on a cool washcloth on the head, a practice that Yale-trained Aviva Romm, M.D., an integrative family physician based in West Stockbridge, Massachusetts, also recommends. Magnesium deficiency is a common cause of headaches, so Epsom salt baths (which contain magnesium that is absorbed through the skin) can also provide relief. Eating magnesium-rich foods (dark leafy vegetables, nuts, seeds, beans, and fish that is low on the food chain) is another safe and effective strategy that gives whole-body benefits with no harmful side effects (unless you hate the smell of fish). Finally, turmeric, a spice derived from a ginger-like root beloved in Indian cuisine, is a powerful anti-inflammatory.

Both adults and children have found quick headache relief from drinking turmeric in water (mix a quarter of a teaspoon in an eight-ounce glass of water for children under five, half a teaspoon for children aged five to ten, and a teaspoon for older children and adults). I recommend keeping a supply of empty gelatin capsules on hand (you can buy them online or at a natural food store) and filling them with ground turmeric. Take these instead of acetaminophen or ibuprofen.

Action Alert: Avoid Aspartame

Aspartame, the artificial sweetener in diet drinks, chewing gum, and NutraSweet, was first introduced in the United States in 1981. It's in a great number of everyday supermarket products, often proudly marketed as a low-calorie alternative to sugar. Aspartame is not good for anyone, to be sure. I especially recommend that pregnant women, nursing mothers, and young children steer clear of it. It is broken down in the human body to methanol and then converted into formaldehyde.

Yes, formaldehyde, the same substance we use to embalm dead people so their bodies won't rot. Formaldehyde is a known carcinogen (a substance that causes cancer). Some researchers further believe that formaldehyde may well be a major factor in causing both multiple sclerosis and autism.

A sticky molecule that can bind tightly to almost any molecule in your body, formaldehyde prompts the immune system to destroy its own tissue.



Here's how it works. After you ingest it, aspartame is broken down into methanol (wood alcohol) and two amino acids, phenylalanine and aspartic acid. Due to the small size of the methanol molecule, it crosses the blood-brain barrier, where it is converted into formaldehyde that then interferes with myelin, the protein that sheathes nerve cells. Myelination allows information to flow through our nervous system.

The lethal dose of methanol for humans is 0.3 to 1.0 grams per kilogram. This means that a one-year-old who weighs 22 pounds (10 kilograms) could die after consuming just 3 grams of methanol. Compare this to the lethal dose from ethanol (the intoxicating agent in alcohol), which is 7 grams per kilogram. That same 20-pound one-year-old would have to drink over 70 grams of ethanol for it to be lethal.

The CDC warns that methanol “may cause birth defects of the central nervous system in humans,” and is a suspected developmental toxin. Multiple animal studies have shown methanol to damage the neurological system of a developing fetus. What this means is that it takes minuscule amounts of formaldehyde to cause severe damage to a developing fetus. Formaldehyde has been found to cause death to developing mice embryos at a concentration a *thousand times* lower than that of methanol. Phenylalanine and aspartic acid, the amino acids that the body converts aspartame into, have also been found to have neurotoxic effects in susceptible people and in everyone at high enough doses. A perfect storm.

If all this isn't enough to convince you to stay away from aspartame, a new survey on aspartame consumption that compared 550 moms who gave birth to nonautistic children with 161 moms who gave birth to children later diagnosed with autism found that moms of children with autism consumed an average of more than twice as much methanol (142 milligrams versus 67 milligrams) as moms of neurotypical kids. Though this research is preliminary, it suggests a strong correlation between higher levels of methanol consumption and subsequent brain abnormalities.

Writing in the peer-reviewed journal *Medical Hypotheses*, the two researchers who conducted the survey, Woodrow Monte, Ph.D., a food

scientist and emeritus professor of nutrition at Arizona State University, and his colleague, Ralph Walton, explain why the toxicity of methanol in humans has been missed in the past fifty years. They argue that toxicity studies have all been conducted on mammals (primates, rabbits, rats, mice, and pigs) that have an enzyme called catalase that easily breaks down formaldehyde to make it nontoxic. Humans, however, lack the form of catalase that all other mammals have. Because of this, the highly reactive formaldehyde can be produced in their brains and bind to proteins, DNA, and RNA, activating the immune system in harmful ways.

The take-away message is actually pretty simple: I caution my patients to avoid any drink sweetened with aspartame, like the Crystal Light my friend's wife liked so much. Since other sources of dietary methanol include canned, jarred, bottled, or pouched fruits and vegetables, you should drink freshly squeezed juices and eat fresh or frozen fruits and vegetables. Easy enough?

We Need More Ado About Mercury

In 2003 I attended a conference in Portland, Oregon, Defeat Autism Now!, hosted by the Autism Research Institute, an experience that changed my life. At the conference a cadre of medical researchers and other experts presented a massive amount of scientific data on the neurotoxicity of mercury. At that time thimerosal, a mercury-containing preservative, was added to multidose childhood vaccines to prevent the growth of bacteria and fungi. Up until that weekend, I knew very little about vaccine ingredients, even though I was injecting vaccines into children every day.

In medical school we learn about the miracle, not the composition, of vaccines. After medical school new doctors are looking for jobs, learning the ins and outs of running a medical business, rushing from one patient to the next, and for many years, repaying massive debt. Though as a young doctor I tried to take the time to read as much current research in peer-reviewed journals as I could, I was usually reading industry-funded research, and I paid the most attention to the government flyers we were asked to give to our patients. It is more

comfortable (and more time and cost effective) to follow what doctors call the “standard of care,” and practice the same way our colleagues are practicing without ever questioning it, than it is to break ranks with your own profession. This is why so many of us ignore—or even dismiss—new evidence that suggests a better, safer way to practice medicine.

Mercury is cytotoxic (damaging to your cells), neurotoxic (damaging to your nervous system), immune-toxic (damaging to your immune system), and nephrotoxic (damaging to your kidneys). Due to its ability to cross the blood-brain barrier, it is especially toxic to brain tissue. Mercury toxicity can result in mood, memory, and concentration problems, as well as headaches, fatigue, and motor coordination issues.

The days when children used to play with the round balls that seemed like a liquid and a solid at the same time as they skittered across the floor from a broken oral thermometer are long gone. These days everyone knows that mercury is poisonous. But despite our collective understanding of the dangers of mercury and the dozens of scientific studies confirming how and why it causes harm, some one hundred over-the-counter and prescription medications, including eye drops and nasal sprays, still contain mercury.

Instead of banning these harmful drugs, the FDA has turned a blind eye.

Perhaps even more disturbing, the American government has done backflips to deny that mercury injected into infants could cause harm and has refused to mandate that all mercury be taken out of all vaccines.

Are you shaking your head in disbelief? You should be.

It takes just a minuscule amount of mercury for it to be toxic. No amount of mercury is a safe amount for a baby or young child.

When I completed my pediatric training in 1988, many vaccines had thimerosal in them. As more childhood vaccines were added to the schedule, the CDC was also unwittingly adding more mercury.

In 2000 the National Research Council (NRC) found that the

maximum safe consumption of mercury was probably 1 microgram per kilogram of body weight. The NRC built in a margin of safety and divided that number by 10 for a recommended maximum daily exposure limit of 0.1 micrograms of methylmercury per kilogram per day.

The CDC allowed more mercury exposure, calculating the safety limit to be 0.3 micrograms per kilogram per day. The FDA was even more generous, setting the limit at 0.4 micrograms per kilogram per day.

As I sat in that conference in 2003 and did the math, I was horrified by my own ignorance. We were injecting 62.5 micrograms of mercury into two-month-old babies who might only weigh 10 pounds or 5 kilograms, *125 times the safe limit per the EPA guidelines; 42 times the safety margin per the CDC; and 31 times per the FDA*. Any way you sliced it, there was too much mercury in this vaccine cake.

To make matters even worse, safety studies looked at *ingested* amounts of mercury. Injecting a chemical is much more toxic than eating it, as injecting chemicals bypasses the normal liver detoxification and the entero-hepatic pathways that shunt toxins from the liver to the gut for excretion.

What were we doing to our children? Had we accidentally poisoned an entire generation?

It took five years before the mercury was removed from childhood vaccines, and *not from any government mandate*. During the same time period, a new recommendation was added for pregnant mothers and infants as young as six months old to receive flu vaccines, which continue to contain mercury.

Vaccine manufacturers decided to voluntarily phase out thimerosal.

But since the government never mandated it, there was no admission of harm.

To this day, the U.S. government and public health officials deny that thimerosal causes harm or that there was too much mercury in pediatric vaccines.

Though your doctor may insist that there is no mercury in vaccines

anymore, that's not actually true. There is still mercury in at least three different multidose flu shots (Fluvirin, Flulaval, Fluzone), one meningococcal vaccine, and three tetanus-diphtheria vaccines.

You will still hear people deny that thimerosal in vaccines could have been responsible for rising cases of autism. The naysayer logic is that mercury has been mostly phased out of vaccines, yet autism rates have continued to rise. This “proves” that vaccines are safe and that thimerosal is too. But while vaccine manufacturers phased out thimerosal, the thimerosal-containing flu vaccine was universally recommended to pregnant women, more vaccines were added to the schedule, and higher doses of aluminum, another known neurotoxin, were injected into infants. Unlike mercury, which is a preservative, aluminum is used in vaccines as an adjuvant—a foreign substance that the body recognizes as toxic. The aluminum in vaccines helps induce the body's immune system to mount a strong antibody response to the viral and bacteria proteins also found in the vaccines.

Currently another vaccine loaded with aluminum is being pushed on pregnant women, the Tdap (tetanus, diphtheria, acellular pertussis). See [Chapter 2](#) for more information about vaccines during pregnancy.

The Mercury in Your Mouth

Another way humans are exposed to mercury is in our mouths. The silver dental fillings still used today—mercury amalgams—are about 50 percent mercury by weight. Mercury amalgam fillings release mercury vapor when chewing or drinking hot liquids, and 80 percent of that inhaled vapor is absorbed, carried all over the body by blood cells.

A 2014 study published in the peer-reviewed journal *Environmental Health* found that people with mercury amalgam dental fillings have double the measured urine mercury excretion of those without mercury fillings. Removal of amalgam fillings was found to decrease the levels of mercury in the body and reduce symptoms, resulting in health improvements for those who had amalgams removed compared to those who did not.

If you can afford it, you should get your mercury amalgams

replaced.

But don't have mercury fillings removed while you are pregnant, as you will inhale a temporary large dose of mercury while they drill out those old fillings, which will expose your baby to too much mercury. Also make sure the dentist removing them knows what she's doing. She should have a strong vacuum to remove the vapor and should carefully protect your mouth with dental dams, so you don't swallow any mercury.

Going forward, if you or your child needs to get a cavity filled, insist on BPA-free white composite fillings.



All About Aluminum

Aluminum is the most common metal on the surface of Earth, present in water, air, and food. Despite its ubiquity, it serves no nutritional or biological function in humans and indeed can wreak havoc on our systems. Our bodies need to be extremely efficient at eliminating the aluminum that enters through food and water. An adult may be

exposed to as much as 10 micrograms of aluminum a day in the diet—aluminum compounds are sometimes added to food, and many foods have been found to be contaminated with aluminum from cookware used in preparing it. Foods high in aluminum include processed cheese, baking soda, bleached flour, nondairy creamer, and even pickles. But very little of that aluminum is absorbed, and the small amount of aluminum that is absorbed is usually excreted via the kidneys. If you test a healthy adult for the presence of aluminum, you will find he or she will have about 5 micrograms per liter in the blood, which is considered a safe amount.

Aluminum is used in some vaccines as an adjuvant, a substance that the body recognizes as foreign (and fights to get rid of), to stimulate an immune response. Vaccines that contain aluminum will not be effective without it.

So how much aluminum is safe to inject into a baby?

This is a question of urgent concern, given the high numbers of aluminum-containing vaccines we currently give to tiny infants.

But researchers who have hypothesized about this, tackling the question only theoretically, have mistakenly assumed that *ingested* aluminum from food is equivalent to *injected* aluminum from vaccines, and that the two pathways of aluminum exposure will have similar effects.

Nothing could be further from the truth.

A healthy gut prevents ingested aluminum from being absorbed into the body. As the digestive process breaks it down, the aluminum that does enter the bloodstream enters gradually over several hours.

When aluminum is injected intramuscularly, the exposure happens all at once. When several aluminum-containing shots are administered at the same time, a baby can be getting as much as an entire milligram (1,000 micrograms) of aluminum.

If the baby is able to shunt this much aluminum out of his body, then the high exposure in the short amount of time should not cause lasting harm to his brain or body.

But if the baby cannot rid his body of the aluminum—for whatever

reason—then the results can be devastating.

In the 1980s, after reports were published of neurotoxicity and bone toxicity from aluminum in children who had kidney problems, the medical community widely accepted that aluminum given intravenously was toxic. And in 1989, scientists studied twenty-five premature babies who needed supplemental nutrition via IVs. These low-birth-weight babies were receiving 14 to 18 micrograms per kilogram of body weight per day of aluminum via the IVs (there because of unavoidable contamination in the IV fluid). Though the infants had higher levels of aluminum in their urine—suggesting their bodies were able to excrete some of the heavy metal—they were also found to have elevated aluminum levels in their blood and bones. One infant who died had especially high levels of aluminum deposits in his bones.

In the 1990s researchers found that infants who received 45 micrograms per kilogram of body weight per day of aluminum in IV solutions had impaired neurological development compared to infants who received less. That study showed that the amount of aluminum was directly related to the severity of the cognitive difficulties.

Because of the growing body of evidence of toxicity from parenteral aluminum (meaning intravenous or intramuscular injections like IV fluids or a shot or vaccine), and the fact that infants, especially those born prematurely, have reduced renal function (compared to adults) and a reduced ability to excrete aluminum effectively, the FDA made the recommendation that for preterm infants, aluminum should never exceed 5 micrograms per kilogram of the baby's weight per day. (See full FDA statement in [Appendix H](#).)

I know this is technical, but bear with me. Fifteen years ago, in January 2001, the FDA issued the following guidelines:

Research indicates that patients with impaired kidney function, including premature neonates, who receive parenteral levels of aluminum at greater than 4–5 micrograms/kg/day accumulate aluminum at levels associated with central nervous system and bone toxicity.

Tissue loading may occur at even lower rates of administration.

Based on these FDA guidelines, the safe amount of aluminum exposure for infants is 4 to 5 micrograms per kilogram per day, which means that the safe amount for a newborn who weighs 4 kilograms (about 8 pounds) at birth would be 16 to 20 micrograms of aluminum, *about fifteen times less* than what is contained in the hepatitis B vaccine given to every newborn in America. There can be no doubt that injecting 250 micrograms of aluminum into a newborn should raise concern.

ALUMINUM CONTENT IN CHILDHOOD VACCINES			
Trade Name	Vaccine	Aluminum*	Aluminum Adjuvant Used
ActHIB	Hib	0	None
Adacel	Tdap	330	Aluminum phosphate
Bexsero	MCV(B)	519	Aluminum hydroxide
Boostrix	Tdap	250	Aluminum hydroxide
Cervarix	HPV	170	Aluminum hydroxide
Comvax	Hib hep B	225	Amorphous aluminum hydroxyphosphate sulfate
Daptacel	DTaP	330	Aluminum phosphate
Engerix-B	Hep B	250	Aluminum hydroxide
Gardasil	HPV	225	Amorphous aluminum hydroxyphosphate sulfate
Havrix	Hep A	250	Aluminum hydroxide
Hiberix	Hib	0	None
Infanrix	DTaP	625	Aluminum hydroxide
IPOL	IPV	0	None
Menactra	MVC	0	None
MenHibrix	Hib MCV	0	None
Menveo	MCV	0	None
MMR II	MMR	0	None
Pediarix	DTaP hep B IPV	850	Aluminum hydroxide and aluminum phosphate
PedvaxHIB	HiB	225	Amorphous aluminum hydroxyphosphate sulfate
Pentacel	DTaP Hib IPV	330	Aluminum phosphate
Pprevnar	PCV	125	Aluminum phosphate
Pprevnar-13	PCV	125	Aluminum phosphate
ProQuad	Varicella MMR	0	None
Recombivax	Hep B	250	Amorphous aluminum hydroxyphosphate sulfate
Rotarix	Rotavirus	0	None
RotaTeg	Rotavirus	0	None
Tripedia	DTaP	170	Aluminum potassium sulfate
Trumbena	MCV(B)	250	Aluminum phosphate
Twinrix	Hep A hep B	450	Aluminum hydroxide and aluminum phosphate
Vaqta	Hep A	225	Amorphous aluminum hydroxyphosphate sulfate
Varivax	Varicella	0	None
* Elemental aluminum content in micrograms per dosage			

How Does Aluminum Cause Toxicity?

In dozens of animal studies, aluminum exposure during pregnancy has been found to cause developmental delays. At least six separate studies on mammals, particularly rats and rabbits, have shown behavioral, learning, developmental, and performance abnormalities in offspring exposed prenatally to aluminum. A study from 2009 demonstrated that injected aluminum caused neurotoxicity in mice, leading researchers at the University of British Columbia in Vancouver to hypothesize that the Gulf War syndrome experienced by veterans was caused by the high amounts of aluminum in anthrax and other vaccines.

But how? The science tells us that aluminum can interfere with cellular metabolism, as well as with information transfer in DNA (meaning it makes your body less able to read your genetic map as well as it should). Aluminum has been found to interfere with enzymes in ways such as the inhibition of hexokinase, which is important in pathways that give our cells energy. Aluminum is known to be neurotoxic through increased lipid peroxidation, making cells more vulnerable to free radical attack. Lipid peroxidation refers to the oxidative breakdown of lipids. This is where free radicals (toxic chemicals) “steal” electrons from the lipids in cell membranes, resulting in cell damage. All cell membranes are made of lipids, and avoiding this kind of damage is vital. All of these factors are more significant in infants during periods of rapid brain development.

Given the state of the science, it is absolutely bewildering to me that the vaccine advisory boards would now be recommending that every pregnant woman in America get the Tdap, which contains either 250 or 330 micrograms of aluminum (depending on the brand) at a time when the developing baby’s brain is so vulnerable. It is equally baffling that the hepatitis B vaccine is still being recommended to newborns, two-month-olds, and six-month-olds. Hepatitis B is a sexually transmitted disease that American newborns have no chance of catching unless born to a mom who is hepatitis B positive (in which case the vaccine is vital). For more on hepatitis B, see [Chapter 3](#).

We need to do everything we can to avoid exposing women trying to conceive, pregnant women, breastfeeding moms, newborns, infants,

and children of all ages to toxic doses of aluminum. This means no aluminum-containing antacids, no aluminum antiperspirants, no Tdap during pregnancy, no soy formula for infants (soy formula contains high levels of aluminum), and spacing out aluminum-containing vaccines.

Many of my colleagues agree. A team of nine Italian researchers who examined this issue in detail conclude that doctors, especially those who specialize in newborn care, “must be more concerned about aluminum content” that infants are exposed to in the first six months of life.

Feminized Frogs: The Destructive Nature of Endocrine Disruptors

Choose your abbreviation: POPs, PCBs, PBDEs. There are dozens more. These chemicals, along with pesticides and herbicides, are endocrine disruptors. Our endocrine system is the powerful system of hormones that directs the development of a baby’s reproductive organs in the womb, the development of the brain, the healthy functioning of the thyroid and other glands (glands are organs that excrete hormones), temperature regulation, our body’s ability to regulate blood sugar, normal growth, and much more. An endocrine disruptor is something that alters the endocrine system, often causing adverse health effects. Close to eight hundred man-made chemicals are known or suspected to interfere with hormone receptors, hormone synthesis, or hormone conversion.

In 2002 a biologist and professor at the University of California at Berkeley, Tyrone Hayes, Ph.D., ignited a controversy with a series of experiments that unexpectedly showed that atrazine, one of the most widely used pesticides in the world, could *feminize* male frogs at concentrations 30 times lower than that legally allowed in American drinking water. One of the largest agribusinesses in the world, Syngenta, originally funded Hayes’s research. But when his laboratory experiments did not produce the results Syngenta was looking for, their relationship became difficult. Unsealed court documents would later prove that Syngenta used a public relations team and then hired an outside PR firm for the sole purpose of discrediting Hayes’s science,

actively hounding him in an attempt to ruin his reputation.

Endocrine disruptors not only negatively affect amphibians like frogs and turtles, they also can affect the quality of a man's semen, reducing his ability to father children; they can cause neurological and behavioral issues in children; and they change the growth patterns of plants and animals as well.

Genital malformations such as nondescending testes (cryptorchidisms) and penile malformations (such as hypospadias) in baby boys have been increasing. This increase is linked to endocrine-disrupting chemicals, as have preterm birth and low birth weight, endocrine-related cancers (breast, endometrial, ovarian, prostate, testicular, and thyroid), and earlier onset breast development in young girls, a major risk factor for breast cancer.

Endocrine-disrupting chemicals have also been implicated in the rise of morbid obesity and adult diabetes.

That weed killer you have in the shed? It's a dangerous endocrine disruptor and is the same stuff being sprayed on crops across the United States that our children then eat. The agriculture company Monsanto sells farmers "Roundup-ready" genetically modified seeds as well as the Roundup that will kill everything but the crop from that seed. But glyphosate (the main ingredient in Roundup) is much more toxic than initially thought. Glyphosate can cause both slow death and acute poisoning. According to U.S. Poison Control data, each year there are some 4,000 calls related to glyphosate poisoning and 800 hospitalizations. One study examining 601 patients who imbibed glyphosate in Sri Lanka found that 19 of them died. Past studies have shown that as little as a cup of this supposedly harmless chemical can kill you. Does it really make sense that we pump at least 128,000 tons of this chemical every year into our environment?

In the best interest of your children's health and safety, you need to limit their exposure to endocrine-disrupting chemicals as much as you can. That means using ladybugs, not pesticides, to kill insects on your lawns (you can buy fifteen hundred ladybugs for less than thirteen dollars online); reducing your child's exposure to plastic (European toys tend to be safe and toxin-free; buying used toys and clothing

safeguards against herbicides and plasticizers because whatever was on them will have been washed away); staying away from packaged beauty products and plastic-wrapped foods; and choosing local and organic produce whenever possible.

The Fuss About Fluoride

In 2013 there was a big fight about fluoridating the water in Portland, where my practice is located. The mayor and health officials pushed hard to add fluoride to the water, claiming that it would reduce tooth decay. We Portlanders pushed back even harder, pointing out that the scientific research showed that while fluoride on the surface of the teeth can prevent tooth decay, drinking it in the water has not been proven to be effective.

The issue went to a ballot measure. I'm glad to say that those fighting for clean drinking water and no fluoride won the day. At the same time, the media was not kind to the Oregonians who resisted fluoridation, portraying us as ridiculous antiscience nutjobs. Two years after this fight, in April 2015, the U.S. government made what was reported as a “startling” announcement: The Department of Health and Human Services was lowering recommended fluoride levels in drinking water for the first time in over fifty years because people, especially children, were getting too much fluoride from the combination of drinking water, mouthwashes, and topical toothpaste, which was causing spotting on their teeth.

A few months later there was another blow to fluoridation: The Cochrane Collaboration—considered the gold standard in unbiased scientific research—reviewed studies on water fluoridation, identifying the best designed and most comprehensive, and concluded that water fluoridation does not reduce the number of cavities in adult teeth. It turns out those “antiscience nutjobs” were right all along.

In very small quantities fluoride is probably not dangerous, but in larger quantities it is a known neurotoxin and endocrine disruptor, increasing the risk of impaired brain function, ADHD in children and adolescents, and thyroid disorders. No child should be intentionally drinking fluoride. If you live in a place where the water is fluoridated,

it's especially important that your children drink filtered water. (I'll talk more about that in [Chapter 2](#).)

If you are a little overwhelmed by all this new knowledge, I know how you feel. I was the guy shrugging off the importance of organic food (way too expensive), guzzling the Kool-Aid (hey, it tastes great! And that red mustache is pretty fetching too), letting my kids teethe on BPA-laden plastic rattles, and dosing them with baby Tylenol.

But once you know better, you do better, and there's actually a lot you can do to keep toxins from negatively affecting your children's development. We'll be talking about effective strategies for optimal health throughout this book.

But let's start now. Even small changes will make a big difference in your family's health and well-being.

Dr. Paul's Plan FOR AVOIDING TOXINS

1. Read the ingredients. You need to know what's in the foods you eat and the medicines you take, and in your vitamins and supplements. Don't eat or drink anything that contains aspartame, chemical dyes, or nonfood additives like mold inhibitors and aluminum. Avoid acetaminophen in all forms.

2. Be plastic free. The chemicals in plastics are endocrine disrupting, especially when heated. Use cloth bags at the grocery store, or put food (apples, bananas, even broccoli) directly into your cart. Store uneaten food in glass containers instead of in plastic. Avoid processed edibles wrapped in plastic. Chew natural gum (conventional chewing gum is loaded with—you guessed it—plastic, as well as aspartame). Never put plastic in the microwave or dishwasher. Skip the plastic garbage bags. (You can put your waste directly into the trashcan and save a lot of money.)

3. Eat whole foods, preferably organic. Avoid GMO- and pesticide-grown crops whenever you can. You'll be reading this advice from me again and again. If there's one lifestyle change you can make that will benefit your whole family's health from now until forever, it is to eat real food. Yes, it's frustratingly more expensive. Grow your own food, sign up for community-supported agriculture, shop at a farmer's market or food

co-op, and make friends with local farmers and others who grow food who would be happy to share their extra.

4. Avoid flame retardants. New furniture and new carpets are the largest source of toxic off-gassing. If you're setting up a new baby's room, the investment in a flame-retardant-free mattress, like an organic futon mattress for the crib, is worth the added expense. Don't buy pajamas or other clothing that has been dosed with flame retardants.

5. Embrace natural insect control. Do everything you can to avoid indoor and outdoor pesticides and herbicides, especially glyphosate. Ladybugs, which you can buy in bulk online, kill insects better than insecticides anyway. Convert your backyard to native plants that thrive where you live.

6. Avoid accumulating toxic exposure. You can expect your doctor or dentist to downplay the harms of toxic exposures, saying that any given toxin—whether it be X-rays, residual pesticide on food, lead in old pipes, or fluoride—is harmless because the exposure is so small. Don't be duped by these false assurances. It doesn't matter how small any given single exposure may be. One plus one does not equal two, it may equal three thousand. If the toxins are interacting in a harmful way that scientists have yet to understand or if your child begins accumulating exposures, it is more than enough to cause harm.

7. Replace harmful cleaning products with safe ones. White vinegar and water make a great cleanser. Baking soda is the perfect abrasive to clean the tub. Buy perfume-free, dye-free laundry detergent and dish soap or make your own with cheap, simple, nontoxic ingredients.

8. Use natural toothpaste. Conventional toothpaste is full of chemical dyes, harmful additives, and artificial sweeteners. Carcinogens, anyone? Buy natural toothpaste or organic tooth powder that contains only recognizable safe ingredients, or make your own with simple ingredients like baking soda, salt, and xylitol.

9. Strive to sweat. Your body rids itself of toxins by exhaling, defecating, urinating, and sweating. The more you and your children exercise, the more you help your body get rid of harmful chemicals.

The Six Questions Parents Ask Me Most ABOUT TOXINS

ABOUT AVOIDING TOXINS

1. Avoiding toxins seems like a good idea, but where do I begin?

A: Start small. Replace plastic containers with glass ones. Buy stainless steel water bottles for the kids. Connect with families that are toxin-free. Even small changes will have big effects on your family's long-term health.

2. Aspartame is approved by the FDA as safe and is recommended by the American Diabetes Association for diabetes. Why should my family avoid it?

A: Aspartame is 11 percent methanol. That methanol gets converted to formaldehyde in our bodies, where it can cause cancer and also provoke our immune system to attack our own tissue, giving rise to autoimmune disorders. No diabetic (or any other human for that matter) should ingest anything containing aspartame.

ABOUT EXAGGERATED CLAIMS

3. I asked my pediatrician about baby Tylenol, and he looked at me like I had two heads. He said I should stop doing research on the Internet and acetaminophen doesn't cause harm. Is he right?

A: New information is just that: new! Doctors are busy people and they often aren't up to date on the latest research, especially if it is not directly related to their area of expertise. It is the rare practicing M.D. who reads toxicology articles. We now have ample data showing that we should not recommend acetaminophen to pregnant women or to infants, but most doctors remain unaware of this research and fail to use the precautionary principle: the idea that if an intervention has any kind of suspected risk of harm, the burden of proof that it is *not* harmful must fall on those who recommend it. You are probably more educated than your doctor on this topic.

I have to laugh when I hear doctors telling patients to stop doing research on the Internet. Where do you think we doctors go to access the latest journals and information? The Internet.

4. Fluoridated water is what everyone drinks. How could it be bad?

A: There was a time when everyone smoked cigarettes too. It takes time to unlearn what we thought to be true. Fluoride competes with iodine for normal thyroid function. We already have so many pressures on our endocrine system and thyroid function. There is no reason to add fluoride

to that list.

5. I read that GMO technology will save the planet from starvation and that GMO fears are overblown. Aren't they?

A: Some GMO technology may be safe. But the majority of GMO products are designed to enable companies like Monsanto to spray glyphosate (Roundup) on crops. We have a growing body of evidence that glyphosate is toxic. In addition, there have been no long-term safety studies on the health effects of GMO crops. GMO crops have been banned throughout Europe and in other countries around the world. Since GMO crops have resulted in a massive increase in the use of toxic herbicides, I recommend avoiding GMOs.

ABOUT BEING PRO-VACCINE

6. How can you be in favor of vaccines, given how toxic aluminum is?

A: Not all vaccines contain aluminum. For those that do, it is important to balance the risks and benefits. When your child is at zero risk of a disease (such as hepatitis B, if a mom does not have hepatitis B), then it makes both scientific and common sense to forgo that aluminum-containing vaccine. When it comes to the DTaP for infants, on the other hand, given that your baby could be exposed to pertussis, the risk of injecting aluminum may be worth it.

I feel like I can't even breathe without exposing my baby to toxins!



I know, right?
— But don't panic!



It's easier than you think.



start small...



store leftovers in glass containers

• clean with vinegar & water



• sweeten with grated apple, pineapple & dates.



• buy fresh whole foods

Happy Healthy Baby Birthday



Chapter 2

Pregnancy Matters: Protecting Your Baby Before Birth

I talk to four or five pregnant women and their partners every week. These twenty-to-forty-minute morning meetings with expectant couples are a free service I offer for parents looking for a pediatrician. To see Sarah and John (or Jane and Sally, or Steven and Brad—all family configurations are welcome at our practice) holding hands and smiling as we talk through their hopes and dreams for their baby is a favorite part of my job.

The first thing I tell expecting parents is that the fact that they are pregnant is a wonder in itself (especially for Steven and Brad!) and a sign that they are both in good health. My enthusiasm sometimes surprises them. Too often we doctors make the mistake of treating pregnancy like an illness when it should be treated as a miracle.

Of course, I'm also interested in how the pregnant partner is feeling. My wife's morning sickness started at ten P.M. each evening, which is when she went to work—she was a nurse in the neonatal ICU in Orange County hospital assigned to the night shift. On her days off, I would bring her salty crackers to nibble before she got out of bed. That eased the horrible nausea that permeated those first three months of each of her pregnancies.

Maiya did not let pregnancy slow her down, but she remembers feeling so exhausted that a catnap in those orange hard-plastic chairs in the ICU (the really uncomfortable ones) seemed “heavenly.” A lot of women experience many more unpleasant side effects than Maiya did.

Your clear skin may turn into pepperoni pizza, and you may be mortified by vaginal farts (if you don't know what that is, my wife says to tell you that you will) and a host of other unpleasant side effects. (One of my franker moms had such copious vaginal discharge she described it as the Mississippi River in her underwear.)

The one universal truth about pregnancy is that every woman experiences it differently. But the most important thing for expectant parents to understand is that pregnancy is not a disease. Despite what your doctor may lead you to believe, pregnancy is *not* a disaster waiting to happen, and most pregnancies need very little—if any—modern medical intervention.

Your Baby's Health Begins in Utero

Doctors, psychologists, immunologists, and other medical researchers are beginning to understand more than ever before that the health of a human baby actually begins long *before* birth. It is important for you to think about that developing fetus during the nine months of gestation, which are a crucial time for your baby.

If you had no idea you were pregnant and have been smoking, drinking Blue Hawaiians, and eating Fritos and Snickers for lunch, my intention is not to worry you. Turn off the panic button and keep reading. What you need to know is that the time to start improving your health is now. And now—no matter when now happens to be—is never too late.

Obstetricians focus on the mom. As a pediatrician, it is my job to focus on the developing baby. But the pregnant woman and the developing baby are a unit, growing together. They share the nutrients and toxins that Mom eats, drinks, and has accumulated over her lifetime.

In my waiting room is a saltwater aquarium, a watery world where clown fish and blue tangs swim. A sea anemone undulates its tentacles in the bottom of the tank. That aquarium is a good analogy for a pregnant woman's womb. Your body *is* your baby's environment. Everything you do and experience—what you eat, the medications you take, and the stress you feel—your growing baby experiences with you.

I remind all my moms that the placenta, that amazing organ that your body grows to support your baby's life in the womb, shunts nutrients to the baby, but it also shunts toxins. Your job during pregnancy is to give the baby the best environment you possibly can and do everything in your power to decrease exposure to substances that might cause harm.

And your partner's job is to help you, to treat you like a queen, and

to do everything in his or her power to help you feel loved, cared for, and calm during your pregnancy, since stress can weaken your immune system and negatively affect the health of your baby.

Eating for Two

The single most important way you can avoid toxins during pregnancy is to pay attention to what you eat.

It's easy to get bogged down in the minutiae of what to eat and what not to eat—it feels like new studies are being published weekly with updated information about nutrition. But my approach is pretty simple and yet totally radical.

Ready for it?

You need to eat food during pregnancy. Food. Real food. Not what my colleague Michael Klaper, M.D., who has been practicing medicine for forty years and who formerly directed the Institute of Nutrition Education and Research in Manhattan Beach, California, likes to call “edible food-like substances.”

Real foods do not come from a factory and are not wrapped in plastic.

They don't contain a long list of unpronounceable ingredients.

Sugar (even “organic dried cane juice”) is not food.

Don't be duped by bogus advertising. Granola bars, sweetened nonfat yogurt, and vitamin water are not health foods. Neither are “fruit” snacks loaded with high-fructose corn syrup and artificial, petroleum-based food dyes.

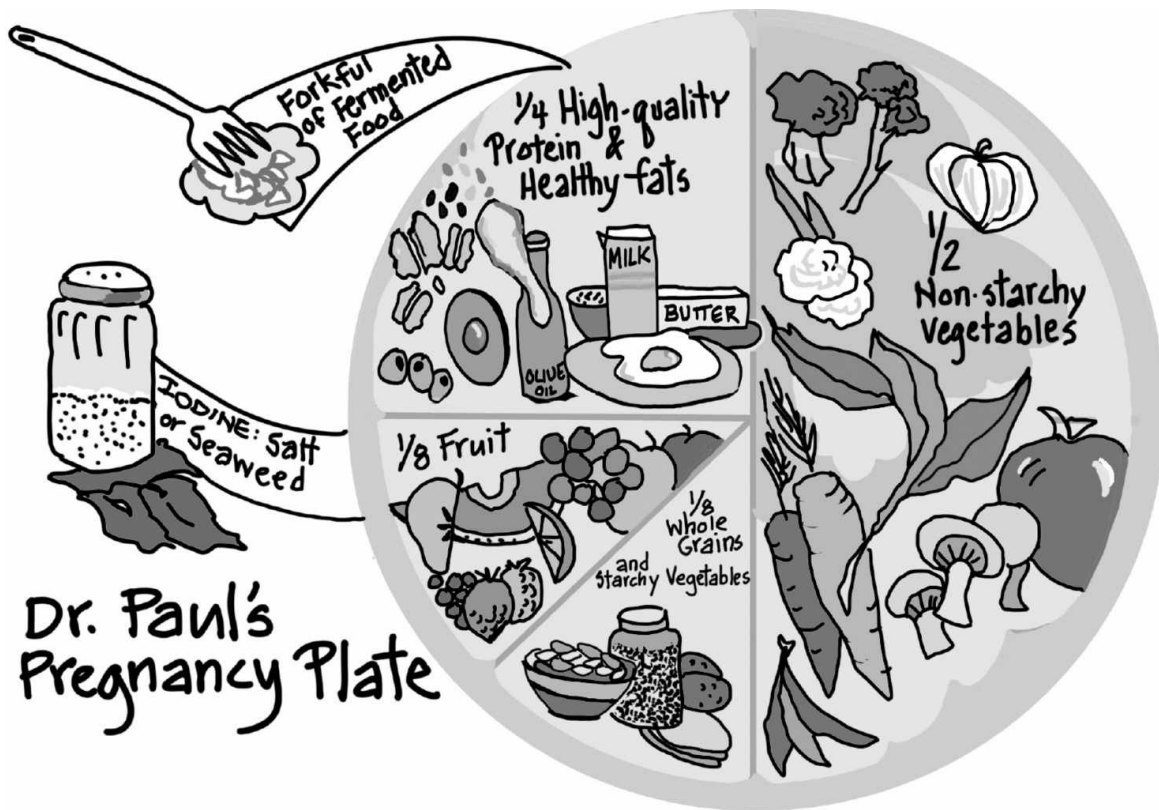
Real food includes fresh vegetables and fruits, eggs, unprocessed meats, nuts, seeds, and whole grains.

To help your immune system cultivate beneficial bacteria, include unsweetened yogurt and other cultured dairy products (like kefir and cultured buttermilk) and fermented foods like sauerkraut and sour pickles. In case you think this is just hippie advice from a doctor who wears Hawaiian shirts, there is a tremendous amount of scientific evidence suggesting that a healthy diet plays an important role in proper immune function. A healthy diet can help prevent heart

disease, high blood pressure, diabetes, gastrointestinal illnesses, certain kinds of cancer, and eye problems, as well as birth defects. The science also shows that the mother's immune system, which is transferred to the fetus at birth via her breast milk, makes a huge difference for the health outcomes of the baby.

William Parker, Ph.D., an associate professor at Duke University School of Medicine who has published more than one hundred scientific papers, many in immunology (I mentioned him in the last chapter), explains that the typical American diet, combined with several other factors including the absence of beneficial microbes and other symbiotic organisms, can have a profoundly negative effect on both a pregnant woman and her developing baby's future health. "Our inflammatory diets cause problems," Parker explains. "Our bodies are biochemical machines: We put food in, which is a fuel source, like putting wood on a fire. But if we eat huge amounts of sugar, fats, and processed foods, it's like dumping gasoline on the fire, on a machine that has evolved to burn sticks. This directly causes oxidative stress, which leads to inflammation, which dysregulates the human immune system."

Eating real food and adding beneficial bacteria to their diet is not a hard sell for most of my families in Portland, Oregon, a city known for its crunchy foodie vibe. But from talking to health care providers across the United States, I know it can be much harder to convince most people how important this is. Most of us have been led to believe that "sterile" food is the best. We want our food to be safe: pasteurized, free of infectious bacteria, and aseptic. That's a good thing in terms of avoiding bad bacteria, but this overly sanitized packaged food has led to an unforeseen consequence: It has robbed us of the live bioactive foods that our bodies have evolved to ingest.



If you have grown up eating a typical American diet of macaroni and cheese, jarred sauces, canned fruit cocktails (with the squishy bright red cherries and peach triangles), and canned vegetables, it's time to change your habits. Stick to the perimeter of the grocery store, where the freshest foods tend to be shelved, and make a beeline for the organic section.

I know that buying organic food can feel overwhelmingly more expensive and that making meals from scratch can be time consuming, especially at first. But does it really take more time to wash an organic carrot and a handful of green beans than to open a bag of chips?

Goodbye, fast food. Hello, real health.

Drinking for Two

Researchers at Vanderbilt University recently analyzed sodas and other beverages purchased across the United States and found, disturbingly, that caramel color often contains 4-methylimidazole, or 4-MeI, which is a by-product of the manufacturing process. These researchers also found that regular consumption of beverages containing this chemical results in an increased risk for cancer. Caramel color is added to many packaged and canned foods, including sodas.

There are a hundred other reasons not to drink soda. For starters, loading yourself up on sugar destabilizes your blood sugar and puts you at risk for pregnancy-induced diabetes. Soda is also full of harmful food dyes and colorants, sodium, and artificial sweeteners. Aspartame, found in many diet drinks, is not fit for human consumption and, I believe, should actually be banned. You may recognize it by one of the many brand names that contain it: NutraSweet, Equal, Equal Spoonful. I am not exaggerating when I say that it is the worst thing you could put in your body while pregnant. It is also added to laxatives, multivitamins, sugar-free gum, and yogurt. As discussed in [Chapter 1](#), our bodies convert the methanol in aspartame to formaldehyde, and we literally pickle ourselves from the inside out. Formaldehyde is a huge trigger for autoimmune disorders. Aspartame is so bad for human health that many believe it should never have been approved.

When I was in college, I worked for a water treatment system in Stockton, California. My job was to lean over the fiberglass deck of a Boston Whaler and collect water samples in test tubes at various spots along the San Joaquin Delta. I delivered these samples for water purity testing. Back then we were not even testing for the full spectrum of chemical substances that we now know pollute our water supply, but even so, the number of toxins we found present in the water was mind-

boggling.

Every community has a different quality of water. Some communities are better than others, especially those whose water source is a mountain spring. But in most of the United States there are toxins in the water, some of which are known to cause harm to children's developing brains.

The pesticides, herbicides, and pharmaceuticals that get into our water system worry me the most.

Drink either filtered water or glass-bottled spring water. (Water in plastic bottles is not the best choice because chemicals from the plastic leach into it.) The best choice is a reverse-osmosis and charcoal filtration system to remove heavy metals, pesticides, and herbicides. These cost a couple hundred dollars, but if you currently drink one soda a day, giving up that habit will pay for your new water filter system in no time.

If it feels too expensive to buy such an elaborate contraption, at the very least use a simple BRITA filter and pitcher to ensure that the water you drink is cleaner than what is coming out of the tap.

It's important to stay hydrated during pregnancy. A lot of pregnant women find their bowels get sluggish, especially if they are not eating a whole-foods diet. (But you will be, after reading this book, so you won't have this problem!) Staying well hydrated is the safest way to avoid constipation. Urinating and defecating are two ways that the body rids itself of toxins, so even though it may be annoying to have to go to the bathroom so often, remind yourself every time you go that you are cleaning out your system in a good way.

Pregnancy practice 1: Put back on the shelf any drink that contains caramel coloring, aspartame, artificial food dyes, or any other ingredient that is not immediately recognizable as food. Don't buy it. Don't drink it.

Pregnancy practice 2: Drink filtered water, lots of it, while pregnant.

And Now Let's Do the Nutrients

In an ideal world, pregnant women would get all the nutrients they need from eating fresh whole foods, high-quality protein, fermented vegetables, healthy fats, and seaweed. Since we do not live in an ideal world, when I talk to couples at their prenatal visit, I tell them the key things they need to know about prenatal supplements, if they choose to take them.

Read the list of ingredients. Do not take a prenatal supplement that contains nonfood additives like red dye no. 40 and aspartame. Instead, find a prenatal vitamin made from whole foods that contains no additives. These are usually more expensive, but the price is worth the benefit.

Take a supplement with methylfolate. You have probably already heard that pregnant women must get enough folate, which promotes healthy neural tube formation in the first trimester as well as the proper development of the heart and face. A Norwegian study on maternal folate intake showed a reduction of autism from 1 in 500 to 1 in 1,000 in women who took folate during pregnancy.

But there's a rub. For moms who have the MTHFR defect, taking regular folate or folic acid during pregnancy may actually do more harm than good.

MTHFR stands for "methylenetetrahydrofolate reductase." The MTHFR gene gives the body instructions for making an enzyme by that name. As many as 40 percent of Americans may have some kind of defect in that gene, which can disrupt the body's biochemistry, making it harder to get rid of toxins and make neurotransmitters. Variations in the MTHFR gene (called polymorphisms) have been associated with an increased risk of some birth defects.

Even if you do not have MTHFR polymorphisms, do not take a

prenatal vitamin that is too high in folic acid. Choose a supplement that has methylfolate, and eat lots of foods high in naturally occurring folates. Good options include broccoli, asparagus, lentils, dark leafy greens (like kale, collards, spinach), and, if you have a taste for it, liver.

Iodine. Iodine is important for the baby's developing thyroid gland. Iodine-rich foods include sea vegetables that are commonly eaten in Japan (nori, kelp, arame, hiziki, kombu, wakame), cranberries, organic yogurt, navy beans, strawberries, and potatoes. If you are not eating an iodine-rich diet, make sure your prenatal vitamin includes it.

Vitamin D. Vitamin D is crucial for a baby's brain development, but most American adults and children are deficient in it, mainly because we do not spend enough time outside in the sunlight, which is how the body best synthesizes vitamin D. It's a very good idea to get your vitamin D levels tested. I recommend pregnant women spend 20 minutes a day in the sunlight (30 minutes if you are African American) and take 5,000 IUs of vitamin D. Your prenatal vitamin won't contain that much so you'll need to take extra.

Fish oil. DHA is an omega-3 fatty acid that a baby needs for brain development. I typically recommend that pregnant women take at least 1,000 milligrams of purified fish oil daily, which is high in DHA. You can get the DHA you need from eating fish (small fish are best; they are low on the food chain), but in this unique case, the supplement may be better than the real food source. Unfortunately, fish sold in the United States are often high in mercury and other toxins.

Vitamin K. Vitamin K is a fat-soluble vitamin that is essential for blood clotting, building strong bones, and preventing heart disease and cancer. Research shows that your vitamin D levels affect your vitamin K levels and that if you are deficient in vitamin D, vitamin K can't properly do its job. Foods high in vitamin K include fresh basil, green leafy vegetables, scallions, brussels sprouts, and asparagus. There is an ongoing debate about whether a mother's vitamin K intake during pregnancy affects the baby's vitamin K levels at birth, but many midwives and holistic-minded health care providers recommend a diet high in vitamin K, especially in the last trimester.

Vaccines During Pregnancy

When my wife was pregnant and for the years after each child was born, I followed every guideline that came out from the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP). I trusted that these guidelines were based on the best information available. Who was I, even as a medical school associate professor and a practicing physician, to question recommendations from the CDC, the ACOG, and the AAP? I knew that the best and brightest minds of those lofty institutions looked carefully at all the scientific literature to make the safest, most evidence-based recommendations possible.

My wife, Maiya, felt the same way.

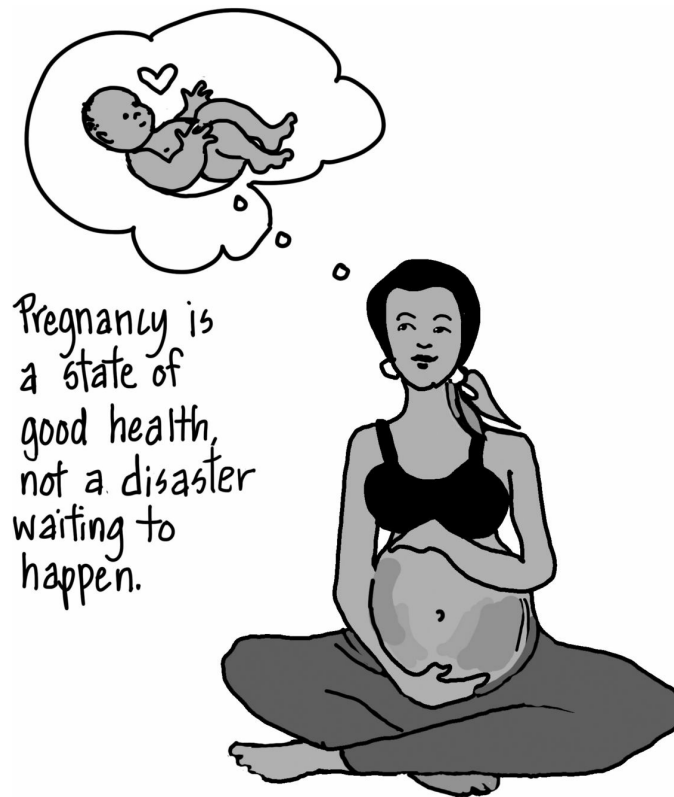
We were both wrong.

This assumption is especially problematic during pregnancy, when a developing fetus is so vulnerable. We know now that things we used to think harmless—like smoking, thalidomide, X-rays, and synthetic hormones like diethylstilbestrol (DES)—cause harm. They may have no obvious consequences during the pregnancy itself, but they have devastating health effects weeks, months, or even *years* later. Previous generations of medical doctors were always taught to avoid giving vaccines during pregnancy and to do pregnancy tests on adult women of childbearing age before giving them any vaccines, if there was any chance they might be pregnant.

As recently as 2008 the CDC's advisory committee on vaccines, which is called the Advisory Committee on Immunization Practices, cautioned against giving the Tdap (tetanus, diphtheria, acellular pertussis) during pregnancy, citing a lack of studies and the concern that giving this vaccine to pregnant moms would make the infant vaccine series less effective. (DTaP is used for infants and children under seven. Tdap is a booster vaccine given to kids over seven,

teenagers, and adults.) Pregnant women were told to wait until their babies were born to get the Tdap for themselves. But since 2013, with no knowledge of the long-term safety ramifications and with only a handful of poorly designed, anecdotal studies to justify their recommendation, the CDC has embarked on what can only be described as a massive experiment on unborn American children.

The CDC now recommends that every pregnant mom in America—nearly four million women—get the Tdap vaccine. What they are not telling pregnant women is that the two brands of Tdap vaccine for adults, Adacel and Boostrix, contain 330 and 250 micrograms of aluminum respectively. Sadly, the CDC is doing very little to gather data on the developmental effects, long-term outcome of unborn fetuses exposed to Tdap, or the effect of pregnancy Tdap on efficacy of Tdap vaccine uptake in infants. In the future, when our children's health declines further and autism rates continue to climb, there will be a thundering silence on this whole issue. I can hear the denials already: "There is no proven link between Tdap in pregnancy and autism or developmental delays." Well, of course, since neither vaccine manufacturers nor the CDC are doing any studies to look for this effect. No vaccine company can get ethics approval to experiment on pregnant women.



Because so much is at stake, I advocate following the risk assessment concept mentioned earlier, the precautionary principle, for everything during pregnancy. It is not enough for obstetricians to say, "We have no evidence that X, Y, or Z intervention during pregnancy causes harm." No evidence of harm is not the same as evidence that it is safe.

"Thanks, but No Thanks, Doc. I'm Skipping the Flu Shot"

Though the flu vaccine has been recommended on and off since the 1970s to pregnant women, most doctors in the 1970s and early 1980s did not encourage it during pregnancy, preferring to find other, more effective ways to boost a pregnant woman's immune system and keep her safe from the flu. That has changed, and today the flu shot is pushed hard on pregnant women. But most obstetricians who are insisting women get this vaccine are not telling them that the flu vaccine is one of our least effective and most controversial vaccines and one that many doctors themselves avoid. Many of my staunchly pro-vaccine colleagues refuse the yearly flu shot.

Contracting the flu during pregnancy, especially in the last trimester, can make a woman very sick. Her lungs are already running out of space, because the growing baby is getting so big. Pregnant women often feel short of breath because the fetus makes it difficult for their diaphragms to expand.

That is what makes the flu worrisome: Pregnant women who catch it are at higher risk of severe illness and hospitalization than women who are not pregnant.

It's a legitimate concern, and we want to do everything we can to keep pregnant women from getting influenza.

But my first concern about the flu vaccine is its efficacy. The flu is caused by one of several highly contagious influenza viruses that can cause a respiratory infection. But these viruses are constantly changing, and in a given year, it is very difficult to predict which virus will cause the most severe symptoms. The vaccine changes from year to year. Sometimes there is a good "fit," when vaccine manufacturers accurately predict the viruses that will most likely cause the flu, and the vaccine has a high efficacy rate. But just as often the efficacy of the flu vaccine is very low because the viral strains that the vaccine protects against are not the viruses causing the flu. At this writing, the most recent flu vaccine (2014–15) was only about 23 percent effective. The FluMist nasal spray, often given to younger children to avoid so many injections, was found to be *only 9 percent* effective among children aged two to seventeen.

What about for pregnant women? A massive study following nearly fifty thousand pregnant women for five flu seasons showed that vaccinated women had the same risk for developing flu-like illness as unvaccinated pregnant women. Imagine if your birth control method had such a low efficacy rate. Would you feel protected taking it? Given how ineffective the flu vaccine has been in the past few years, you can likely get the flu even if you have been vaccinated.

My second concern about the flu vaccine during pregnancy has to do with the side effects. They are very hard to measure accurately because the shot varies from year to year, but our most recent science shows that getting the flu vaccine during pregnancy may actually be causing

harm to women. A study of 86,000 women in Italy—the largest analysis of the flu vaccine in pregnancy that I am aware of—from May 2014 in the *British Medical Journal* found that expecting moms who were given the influenza A/H1N1 vaccine had higher incidence of gestational diabetes and eclampsia.

Gestational diabetes and especially eclampsia are serious complications in pregnancy. Eclampsia is the development of seizures in a woman, with severe rise in blood pressure and protein loss in the urine. Eclampsia can be fatal and result in long-term health problems in those who survive. It also commonly causes complications for the baby, including neurological damage. Does this study by Italian scientists prove that the flu vaccine caused gestational diabetes and eclampsia? Not necessarily. We always have to remember that there is room for error in large epidemiological studies and that correlation (the flu shot with bad pregnancy outcomes) does not mean causation. At the same time, no obstetrician can claim that the science shows that the flu vaccine is safe for pregnant women, since the most recent science suggests the opposite.

This Italian study dovetails with another recent study published in the *Proceedings of the National Academy of Sciences*. A team of researchers at Stanford University found that the flu vaccine results in inflammation in pregnant women. Yet another study from 2011 shows that the seasonal flu vaccine provokes a measurable inflammatory response during pregnancy. Though this vaccine-induced inflammation has been found to be milder than the inflammatory response the women would experience if they got influenza, I am concerned about actively provoking inflammation in *any* pregnant woman because inflammation during pregnancy is known to put women at higher risk of miscarriage, depression, and even death.

Also concerned is Alan Brown, M.D., a professor of psychiatry and epidemiology at Columbia University. Brown and his colleagues found that provoking an inflammatory response in pregnant women puts their babies at risk for neurological damage in childhood. Though they did not specifically study vaccination, they found that the same marker of inflammation that increases in the bloodstream after vaccination

(it's called CRP) is associated with a 43 percent greater risk of having a child with autism. This was not a small study. Brown and his team examined blood samples from over 1.2 million pregnancies.

If that's not enough to convince you to say no thank you to the flu vaccine during pregnancy, there's yet another strike against this vaccine: mercury. Once added to infant teething powders and face makeup, mercury is a fat-soluble heavy metal that can cross the placenta and accumulate in fetal tissue. It is also one of the most toxic environmental threats to human health. Hundreds of well-designed studies have shown that even very small amounts of mercury can cause devastating health outcomes (see [Chapter 1](#)). Yet the vaccine preservative thimerosal, which is 49.6 percent ethylmercury by weight, is still added to the multidose flu vaccine given to pregnant women. I have no other way to say this: It's just wrong.

Even trace amounts of mercury have been shown to make adults sick. But the mercury content of the flu shots being given to pregnant women is actually 250 times higher than the level the EPA classifies as hazardous waste. I wish I were joking. Unused mercury-containing flu vaccines must be disposed of as hazardous waste. Hazardous waste we inject into pregnant women!

What's the best way to protect yourself against the flu during pregnancy? The single most effective, scientifically proven method of keeping yourself safe from the flu is washing your hands with soap and water.

What About the Pertussis Vaccine During Pregnancy?

Pertussis, more colloquially known as whooping cough, is a respiratory infection caused by a bacterium called *Bordetella pertussis*. It usually starts off as a common cold (the catarrhal stage), then progresses to a cough (the paroxysmal stage). The bacteria themselves are not what makes children react with a sometimes violent cough. Rather, the toxins the bacteria release can damage the tiny hairs that line the upper respiratory tract and cause children to accumulate mucus in their airways, which makes it difficult to breathe.

Older children and adults tend to have coughing spells and then

gasp for air when they get whooping cough; the coughing spasms lead to the characteristic “whooping” sound.

Pertussis is a tricky disease. You can be sick with a nagging cough and never know you have it, believing that you just have a lingering cold, because the cough doesn’t get very severe.

Years ago I had a case of a seven-year-old coughing for months. I knew the family well, and her parents kept bringing her back to see me because the troublesome cough wasn’t getting any better. We thought she had asthma, and I prescribed an albuterol inhaler and a steroid, while I also ordered blood tests for allergies.

The next week she was back: The inhaler had not improved the cough, and the blood tests showed no allergies. I sent her to a lung specialist. They diagnosed her with whooping cough. Checking for whooping cough is simple—via a nasal swab—and I learned through that experience to always check for it myself.

If you catch pertussis early, it is easily treatable with antibiotics. In the first twenty-five years that I practiced medicine, I saw fewer than ten cases of pertussis total. Then in 2012 I had about twenty children in my practice with pertussis: Eighteen were school-age kids, and two were infants. Interestingly, fifteen of the twenty were fully immunized for pertussis, and the other five were from the small group of families in my practice who refuse all vaccines. This reflects what the literature has shown: that the vaccine is helpful but not completely effective.

In 2012, among some four million babies born that year, eighteen children died from complications related to whooping cough. The deaths are typically even fewer: In 2013, thirteen children died, and in 2014, eleven. While these deaths are tragic, the vast majority of children reported to have whooping cough recover with no lasting side effects.

Infants often do not have the characteristic whoop, so doctors may not realize they have pertussis. They just have a thick cough that does not go away. (See [Chapter 4](#) for my recommendations for giving the pertussis vaccine to infants.)

As I mentioned above, in 2013 the CDC began recommending a

pertussis-containing vaccine for all pregnant women. The logic behind giving a pregnant woman the Tdap vaccine is that she might pass her vaccine-acquired immunity on to the baby, and the vaccine will then protect him during the most vulnerable period of infancy.

But government officials and the doctors who work with them do not take sufficiently into account that the Tdap vaccine contains an amount of aluminum that is higher than the federal regulations permit for biological products for infants. If you skipped [Chapter 1](#), which gives detailed information about the aluminum in vaccines, what you need to know is pretty simple. Pregnancy is not the time to be injecting any aluminum or other known toxins into your body, as these substances increase inflammation, which has been shown to cause cell damage.

It concerns me that we do not have any data on the long-term effects of giving pregnant women the Tdap vaccine. To recommend Tdap to pregnant women flies in the face of the precautionary principle. The United States is one of the few countries in the world recommending this vaccine during pregnancy.

Cindy Schneider, M.D., the medical director for the Center for Autism Research and Education in Phoenix, Arizona, with expertise in obstetrics, counsels against the Tdap and other vaccines during pregnancy. “There is simply too much evidence of risk,” Schneider insists, “and not enough convincing promise of benefit. I cannot recommend vaccinations of any kind during pregnancy.”

Five months pregnant with her first son, thirty-one-year-old Emilie Ritchie was sitting at the breakfast table across from her mother, eating cereal. Suddenly half her face went slack.

“It looked like my face was melting,” Emilie explains. Milk dripped out the right side of her mouth, and she was unable to chew the food in her mouth. She found her face paralyzed. She and her mother both thought she might be having a stroke. Two days earlier Emilie had received a third pregnancy vaccine. She had had a flu shot in the first month of her pregnancy, then a second flu shot in her fifth month, along with an additional H1N1 flu vaccine at the same prenatal visit.

The paralysis, which the doctors diagnosed as Bell's palsy, was so bad

that she had to tape her eye shut so she could sleep at night. Though the worst of it went away in a month and a half, six years later her right eye still droops, especially when she is tired. Yet her obstetrician insisted it had nothing to do with the vaccines and did not tell Emilie that she should file a Vaccine Adverse Events Report (VAERS). (See [Appendix F](#) for information on how to file a VAERS Report.)

What the doctor also did not tell her (and possibly did not himself know) was that Bell's palsy, which has no known cause, has been documented as a possible side effect of the influenza vaccine and is considered a possible adverse event following vaccination. According to the U.S. Department of Health and Human Services, the flu vaccine is one of the most reactive, spurring the majority of claims to the federal Vaccine Immunization Compensation Program.

Reactions that warranted government compensation included Guillain-Barré syndrome, acute disseminated encephalomyelitis, chronic inflammatory demyelinating polyneuropathy, seizures, brachial plexus neuropathy, rheumatoid arthritis, vestibular neuritis, and—you guessed it—Bell's palsy.

The CDC currently recommends pregnant women get the flu vaccine and the Tdap during pregnancy. If your pregnancy spans two flu seasons, your doctor may actually push for you to get the flu shot twice, as Emilie's did, since the shot itself usually changes every year and is effective for only a few months.

For her two subsequent pregnancies, Emilie decided not to get any vaccines. Though it flies in the face of the CDC and ACOG, the best available scientific evidence shows that she made the safest choice.

A Natural Vaginal Birth Is Best for Your Baby

In the late 1970s, after delivering hundreds of babies while working as a nurse in Rhodesia, my mom returned to the Yale School of Nursing for her master's in midwifery. Then for over a decade she was a pioneer in training lay midwives in the Ohio Valley. I learned from her the value of supporting natural processes and trusting nature. When she delivered babies in Africa, my mom saw firsthand the powerful connections women make through the generations as they support one another in childbirth. In Rhodesia, pregnancy was a beautiful time in a woman's life, when she was honored and uplifted. Family, and the entire village, were committed to doing everything possible to reduce stress in a pregnant woman's life, encourage her to eat well, and make sure the baby was born in a loving, nurturing environment.

That birth is natural and beautiful and exciting does not mean that it is always easy, though, or that vaginal birth is always possible.



My wife, Maiya, had a very difficult first delivery. Five feet tall on a good day, she labored for over thirty hours before having a C-section.

Though I was sorry our son wasn't born vaginally, I was grateful that we were in America and not rural Africa. Our son was born looking pretty smashed up, but modern obstetrics saved his life. (It is interesting that he had a fear of tunnels that persisted into childhood. "Of course," my mom once said to me, "he was stuck in the tunnel.")

With the help of a supportive and experienced obstetrician, Maiya was able to birth our next two boys vaginally. Her second labor was induced at thirty-seven weeks with the idea that the child would be smaller and more easily able to pass through the birth canal. It worked. Tucker was born vaginally with the biggest eyebrows and a full head of black hair.

I am a C-section dad, but I am against unnecessary C-sections. The surgery can be life-saving, but it is so overused in this country that it is almost criminal: Nearly a third of babies are born via C-section in the United States. Compare that to Norway, the country consistently

found to have the healthiest moms and babies in the world: It has a C-section rate under 16 percent.

Studies show that women are two to four times more likely to die from a C-section birth than a vaginal birth. Where women's lives in Africa can be saved by C-section, women's lives in America are sometimes threatened due to complications from the surgery itself. A vaginal, preferably unmedicated birth may be the healthiest choice for both the mom and the baby. Delivering babies in Africa and the United States for several decades, my mother attended hundreds of hospital and home births. She found that natural, unmedicated birth is most apt to unfold successfully for the mother and the baby when the mother has an inherent trust in the process and her body. Cesareans are needed much less frequently than women are led to believe. Birth works best when you have a trusted attendant who is not in a hurry.

A typical hospital birth is characterized by one unnecessary intervention after another. These hospital interventions are not in the best interests of the baby, but they are tremendously lucrative for the American medical establishment's bottom line. The American way of birth is not the safest—we actually have the highest maternal mortality rate of any country in the industrialized world—but it is by far the costliest.

Perhaps it is understandable that hospitals and health care systems want to see costs go down and profits go up. But too often strategies to maximize profitability put mothers and their children at unnecessary risk. In May 2015 the entire labor and delivery staff at a major hospital in a Southern state received an email from the administration. The email described a hospital initiative to increase epidural rates for low-risk women, regardless of whether they wanted or needed them, and gave nurses a pro-epidural script to follow to persuade women to accept this anesthesia during labor. What the script did not say is what the administrators told the staff: The reason the hospital was trying to increase epidural rates was because it would be profitable for them. "Getting our epidural rate up through better education and access is not only the right thing to do, but also stands to get the hospital more financial support from government payers and private insurers," the

email reads. “More resources will be a tide that will lift all our boats.”

Yet epidural anesthesia is not supported by the best scientific evidence. Avoiding epidurals is. In the same way that you need to do everything you can to avoid exposing your growing fetus to toxins throughout your pregnancy, you need to do everything you can to avoid exposing the baby to toxins (including antibiotics, pain medication, fetal imaging, and IV drugs) during labor.

The most scientific birth, as my colleague Alice Dreger, Ph.D., former professor of clinical medical humanities and bioethics at the Feinberg School of Medicine, has so eloquently put it, is the least technological:

According to the best studies available, when it came time to birth at the end of my low-risk pregnancy, I should not have induction, nor an episiotomy, nor continuous monitoring of the baby’s heartbeat during labor, nor pain medications, and definitely not a C-section. I should give birth in the squatting position, and I should have a doula—a professional labor support person to talk to me throughout the birth. (Studies show that doulas are astonishingly effective at lowering risk, so good that one obstetrician has quipped that if doulas were a drug, it would be illegal not to give one to every pregnant woman.)

In other words, if the regular low-tech tests kept indicating I was having a medically uninteresting pregnancy, and if I wanted to *scientifically* maximize safety, I should give birth pretty much like my great-grandmothers would have: with the attention of a couple of experienced women mostly waiting it out, while I did the work. (They called it *labor* for a reason.) The only real notable difference was that my midwife would intermittently use a fetal heart monitor—just every now and then—to make sure the baby was doing okay.

Is Alice Dreger an outlier? Ask Neel Shah, M.D., assistant professor of obstetrics, gynecology, and reproductive biology at Harvard Medical

School. When the *New England Journal of Medicine* invited Shah to write a response to new guidelines from the United Kingdom that encourage low-risk women to birth their children at home or in other nonhospital settings, he searched for flaws in the European data so that he could better defend hospital births in both the UK and the United States. What he found instead was that the risks of over- and unnecessary intervention are more significant and dangerous for patients than the risks of underintervention at home or in birth centers. Shah concluded that obstetricians need to change their wiring and stop performing so many C-sections or else patients should “stay away from obstetricians altogether.” Many of the families in my practice are following this advice, choosing to have their babies in birth centers or at home with experienced midwives.

My third son decided to take matters into his own hands. He induced himself, as it were, and was born spontaneously three weeks before his due date. What a shock I had that day when Maiya called to say, “I think I’m in labor.”

“You can’t be,” I told her, “you’re only thirty-seven weeks.” I hung up and went back to work.

A close friend called a couple hours later. “You’d better get here quick,” she cried. “Maiya’s about to deliver!”

I finished up with my patients and rushed to the hospital. My I-know-better-than-you attitude almost made me miss Luke’s birth.

I learned a valuable lesson that day that, nearly twenty years later, still guides me in my medical practice: Women know their bodies better than their doctors do.

Dr. Paul’s Plan FOR PREGNANCY

1. Decline vaccines. They have not been tested on pregnant women with prospective long-term studies to look at outcomes in those children through school age.

2. Eat a whole-foods diet that is as organic and non-GMO as possible. Your unborn baby is what you eat. He needs real foods

(including healthy fats, high-quality protein, iron-rich vegetables, and probiotic foods, like lacto-fermented sauerkraut and plain cultured yogurt, that are high in beneficial bacteria). He also needs to avoid endocrine-disrupting pesticides and herbicides.

3. Skip the soda. Do not drink regular or diet sodas, and avoid aspartame like the poison that it is.

4. Drink filtered water. Reverse osmosis and charcoal filtration will remove heavy metals, pesticides, herbicides, and medications that leach into our water supply and dangerously increase a baby's body burden of toxic chemicals.

5. Minimize stress. Chronic stress has a negative effect on the body and the brain, even triggering long-term changes in brain structure and function. For the sake of your unborn baby, pregnancy is the time to learn how to mitigate stress. Do you need to stop working? Do you need help at home? Do you need to make difficult life choices to get out of a toxic relationship?

6. Get treatment for addiction. Smoking, drinking, and drug use are all very damaging to your unborn child. Professional help and a good support system to keep you clean and sober will help your child get the best start in life.

7. Join an in-person pregnancy support group. You can find these through La Leche League, Holistic Moms Network, and Attachment Parenting International, among others. Facebook and social media are great for support, but you need to be wary of online pregnancy “due date” clubs run by companies trying to sell you products, like infant formula, that will undermine your child's health. Start a face-to-face pregnancy group if you can't find one in your area.

The Five Questions Parents Ask Me Most **ABOUT PREGNANCY**

ABOUT MEDICATIONS

1. Is it safe for my baby for me to keep taking my medication for _____?

A: It depends on the medication, but the short answer is that it's best to

avoid all over-the-counter *and* prescription medications during pregnancy. Some medications are known to have immediate teratogenic effects on the fetus, meaning that they cause visible and obvious harm. The common antibiotic tetracycline, for example, has been found to slow bone growth in fetuses and also cause liver failure in pregnant mothers. Though other antiseizure drugs are considered safe, the anticonvulsant trimethadione is associated with craniofacial deformations and should always be avoided. It's important to remember that your baby is exposed to everything that you are exposed to. Without adequate safety evidence, obstetricians used to prescribe Zofran, a cancer drug, for antenatal nausea. We know now that Zofran should never be given in pregnancy because it increases the risk of congenital heart malformation and cleft palate in the fetus and can cause confusion, agitation, and even neuromuscular changes in the pregnant mom. Of course, you might need to take some medications while you are pregnant. Discuss their side effects—known and suspected—with a trusted doctor. If it is possible to treat your condition without medication, that is almost always the safer choice.

2. Are antidepressants safe for pregnancy?

A: Women respond differently to pregnancy hormones, and some who struggle with mental health issues find that the high estrogen and progesterone of pregnancy actually improve mood and mental health. After they taper off an antidepressant, these women find, much to their delight, that their mood is not negatively affected. Others find that they cannot safely stop taking antidepressants. You shouldn't feel guilty. If your depression is severe, or you are feeling suicidal after you try going off your medication, it is okay to resume taking an antidepressant, but you may need to change to a safer drug. Avoid fluoxetine (Prozac) and paroxetine hydrochloride (Paxil). Escitalopram (Lexapro) seems safest, and citalopram (Celexa) and sertraline (Zoloft) also seem to be okay.

ABOUT ULTRASOUNDS

3. Are ultrasounds safe for my baby?

A: Pregnant women should avoid ultrasounds if they can. Research led by Yale University's Pasko Rakic, M.D., Ph.D., revealed that prolonged exposure to ultrasound disrupts brain development in mice. Neurologist Manuel Casanova, M.D., Ph.D., at the University of South Carolina School of Medicine, believes ultrasound exposure in utero is one of the main environmental factors contributing to autism in children. Israeli researcher Eitan Kimmel, Ph.D., has found that ultrasound exposure

alters human tissue by creating pockets of air inside cell membranes. Even though there's no clear consensus about how much exposure to ultrasound is too much, all this is enough for me to invoke the precautionary principle. The FDA strongly discourages any non-medical ultrasounds and even the American College of Obstetricians and Gynecologists specifies that ultrasounds should only be used to "answer a relevant clinical question." Despite the popularity of ultrasounds with doctors and expectant couples, there is no medical need for low-risk women to have routine ultrasounds during pregnancy. Too often, expectant couples come to my office anxious about non-specific ultrasound findings that are later found to have no medical significance. I take this opportunity to emphasize the importance of minimizing stress during pregnancy. If you need an ultrasound, ask the doctor and technician to set the machine at the lowest possible exposure and to do the scan for the shortest amount of time.

ABOUT SUPPLEMENTS

4. Do I really need a prenatal vitamin?

A: It's very difficult to get enough methylfolate, iodine, and the host of other vitamins and minerals that are important for your baby's optimal development from your diet alone. Most pregnant women also do not get enough sun to make sufficient vitamin D. Prenatal vitamins make up the difference. Make sure your prenatal vitamin has methylfolate, and take an additional vitamin D supplement to get a total of 5,000 IUs daily. If you are not regularly eating fish and flaxseeds, take an omega-3 fatty acid supplement (purified fish oil or flax). Make sure your vitamin also contains iodine, which is vital for your baby's brain development. You can skip the iodine if you eat iodine-rich seaweed every day. That said, some pregnant women find that prenatal vitamins make them nauseous. It's important to read the ingredients: If your prenatal vitamin includes food dyes, stabilizers, and artificial sweeteners, these additives may be making you sick. If you notice you feel nauseous shortly after taking the prenatal vitamin, try a different brand.

ABOUT GIVING BIRTH

5. Will how I give birth affect my baby's health?

A: Yes. To give your baby the best start in life, you should do everything you can to have a vaginal birth. Labor contractions are actually of benefit to the baby, as the squeezing helps clear fluid from the lungs, preparing

her for those first breaths of air. When the baby passes through the birth canal, she is coated with beneficial bacteria from your vagina that actually help seed a healthy immune system. The more we learn about the importance of beneficial bacteria in and on our bodies, the more we understand that vaginal birth has lasting positive effects on the human immune system. Moreover, the pain medication, antibiotics, and other drugs given during labor pass through the placenta to the baby and can also be excreted in breast milk, so it is healthier for the baby and for you to have as unmedicated a birth as possible. Research has shown that Pitocin, a synthetic hormone used to augment contractions, can have a negative effect on the baby. Prematurely kick-starting labor (induction) and using synthetic hormones during labor to “speed things up” (augmentation), which are standard practices in many hospitals, have been found to increase a baby’s risk of autism. The best way to have the safest, healthiest birth for you and your baby is to educate yourself about natural birth and find health care providers who support unmedicated vaginal birth.

Chapter 3

Welcome to the World, Baby: The First Hours of Life

Your pediatrician will usually see your newborn within twenty-four hours of birth and do a complete physical exam. Those delivering at home usually have the newborn exam done by their midwife. This first introduction to new life is the highlight of my day.

“Knock, knock. Okay if I come in?” I ask as I rap on the hospital door. Some moms are modest and need time to cover up. Others have lost all modesty. Childbirth—especially in the hospital—can do that to you. You have so many people helping get that baby out, you poop on the delivery table in front of strangers (it happens almost every time, and exposure to maternal fecal matter is now thought to be beneficial to your baby’s immune system!), and then other strangers help you use your breasts in a whole different way. “Good morning. Congratulations!” I say with a big smile.

I look to see the baby’s name; it’s usually written on the whiteboard on the wall at the foot of the bed. Parents are happy to see me. (I have the best job in the world.) Being involved right from the beginning of a new baby’s life helps me form a lasting and important bond with the whole family. I want all my new moms and dads to know they are not alone in this journey, and that day or night, weekend or holiday, I am here for them.

I open the blinds to let in natural light. Sometimes I also turn on a light or carry the baby over to the window so I can take a good look at the skin.

“How are you feeling?” I ask the new mom. “How was your delivery?”

Then I examine the baby. I first look at the fingers and toes, just like someone’s grandmother from the old country. Most congenital abnormalities, in fact, show up in the fingers and toes, hands and feet. I let the parents know that I’m seeing perfect hands and feet.

Then I listen to the heart and lungs.

One of the few serious conditions we don’t want to miss is a coarctation of the aorta or some other congenital heart defect. In newborns you check the pulse in the crease at the anterior thigh. A weak femoral pulse may indicate a heart problem, and more testing will be required. This is very rare. After feeling a normal femoral pulse, I reassure the parents that everything is just as it should be.

I then grab my ophthalmoscope (a special flashlight that allows a careful look at the eyes). I’m looking for a good red reflex, which is the normal glow of light off the retina shining through the pupil when you point a light at an eye. In newborns who have congenital cataracts, you will get a white flash instead of the red glow. I’ve examined about ten thousand newborns to date and have yet to find one!

By now I’ve disturbed the baby to the point where she is apt to let out an *ahh* of protest, which I try to anticipate by instructing the little person, “Say ahh now.” (Parents are very impressed by this.) As the newborn gives an openmouthed protest, I look carefully at his palate and mouth, and then use my tried-and-true one-liner: “Very smart baby, already following directions.”

Often you will see a raised white 1-millimeter spot on the roof of a baby’s mouth. This is called an Epstein pearl. It is a cyst that occurs in four out of five newborns. I point it out to the parents and explain it is totally normal and harmless.

A careful look at the skin often reveals dry patches, redness, or the flat, darker-colored patches on the buttocks that some call Mongolian spots. This discoloration is most common in Asian Americans, Latin Americans, and African Americans. It usually fades in childhood and almost always before puberty. I show parents what I see, so they can

learn about their newborn alongside me.

A careful maneuver of the legs rules out congenital dislocation of the hips. We don't want to miss that, as it can result in permanent hip problems if we do.

There's more to the exam—but that covers the major aspects.

"Your baby is perfect," I exclaim.

Someone in the room invariably answers, "We could have told you that."

The Moments After Birth

I was the attending pediatrician. The grandmother, Linda, was also in the delivery room.

“Ten and ten?” Linda asked as I carefully checked over the slippery, beautiful baby who was so pink and new to the world.

“Nine and nine,” I answered.

“¡Por dios!” Linda screamed, thinking her granddaughter had nine fingers and nine toes.

But I was talking about the APGAR test. APGAR is a screening that happens between one and five minutes after birth to evaluate a newborn’s physical condition. We assess the baby’s **A**ppearance, **P**ulse, **G**rimace, **A**ctivity, and **R**espiration. A score of 0 to 2 is given on each of five parameters: heart rate, respiration, muscle tone, reflex, and color, with 10 being a perfect score and 0 being a dead baby without any heart rate or respiration. Since most babies are born with blue hands or feet or both (*acrocyanosis* is the technical term), I consider a 9 to be a perfect score. This baby—who was named Natalie—was perfect! And yes, she did have ten fingers and ten toes.

It was 1986. Though I knew I had found my calling in pediatrics, our hospital, Valley Medical Center in Fresno, California—like most hospitals in America back then—was doing labor, delivery, and newborn care all wrong.

Labor, especially for first-time moms, can take hours, even days. That puts doctors in a hard spot. Doctors are trained in patients, not patience. We have been taught to intervene. “As a doctor, I am far more concerned about doing too little than doing too much,” admits Atul Gawande, M.D., a professor of surgery at Harvard Medical School, a sentiment that most doctors share.

When you are the attending physician at a hospital, you feel a rush of adrenaline when you are paged to a birth room on the intercom. If

you're managing several births, you may literally run into the room, rolling up your sleeves.

But healthy babies do not need anything after they are born except calm, love, cuddle time, and a breast to nurse on, things both obstetricians and pediatricians are not taught in medical school rotations. As much as we doctors mean well, the last thing a healthy baby actually needs is an energetic team of medical professionals manhandling him in his first few moments of life.

Cut the Rush, Not the Cord

We used to think that cutting the cord in the seconds after birth prevented maternal hemorrhage. This has been the standard of care for years, with little evidence to support it and no thought to the effect of immediate cord clamping on the baby. But a wide range of scientific studies have now confirmed that leaving the umbilical cord attached to the placenta after the baby's born allows the infant's blood still in the placenta to flow back to the infant.

A Swedish study randomly assigned 382 healthy full-term infants to delayed cord clamping (of at least three minutes) or immediate cord clamping (just after birth), then followed up with 263 of the children four years after birth. It found that boys, in particular, seemed to benefit from the delay. The Swedish children, especially the boys, had better social and fine motor skills than babies whose cords were cut within ten seconds of being born.

Though many hospitals have yet to catch up, we now know that it is better for the baby—both preemies and full-term infants—if we do not rush to clamp the cord. When we wait to cut the cord until it stops pulsing—anywhere from a few minutes to a few hours—babies are less likely to hemorrhage and more likely to have higher iron stores.

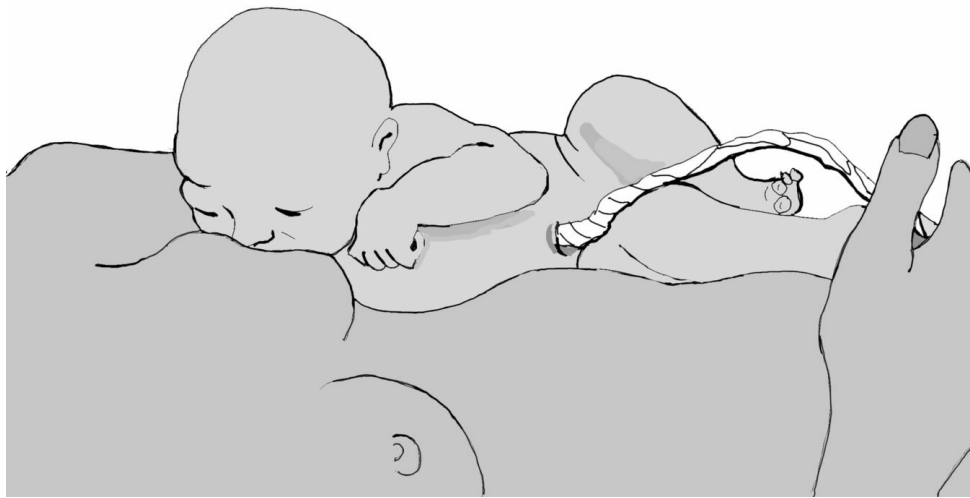
Anemia in infancy is universal. When babies are born, they have many extra red blood cells, which break down, releasing the yellow pigment bilirubin. Jaundice, caused by rapid breakdown of red blood cells, is easily managed. Anemia, caused by inadequate red blood cells, is common by six to nine months and is much harder to manage, sometimes requiring months of iron supplementation. By delaying

cord clamping, the evidence suggests, we can reduce anemia during the first year of life. Anything that increases iron stores—such as delayed cord clamping—is a no-brainer in my book.

Together Time

Your baby has been part of you for nine months and should not be wrenched away. Why? Because skin-to-skin time immediately after birth has been shown to reduce crying, improve bonding, keep the baby warm, and facilitate breastfeeding. I've found it also helps the mom physically recover from the birth. You—not your doctor—have everything your baby needs to protect her and keep her warm. After the baby is born, your body is flooded with a love hormone called oxytocin. This hormone, if it is not interfered with, actually makes your skin hotter, turning your body into the perfect baby warmer. A baby placed skin to skin on her mother actually does a better job regulating body temperature than a baby placed in an incubator! A 2015 study from Harvard shows that low-birth-weight newborns have a significantly increased chance of survival by using skin-to-skin contact.

Cut the rush,
not the cord.



It is so crucial for a mom and a baby to stay together in those precious moments after birth that I now do the APGAR assessment and exam while the baby is on his mama's chest, unless he is in crisis.

As my colleague Raylene Phillips, M.D., a neonatologist in Loma Linda, California, explains, the first hour of life is a special time when a baby and parents meet face-to-face and skin to skin, "a once-in-a-lifetime experience...[that] should not be interrupted unless the baby or mother is unstable and requires medical resuscitation. It is a 'sacred' time that should be honored, cherished, and protected whenever possible."

You should talk to your obstetrician about hospital policy *before* your baby is born. Some hospital employees are on autopilot and feel very uncomfortable doing anything that goes against hospital culture, no matter how beneficial or evidence based.

If your doctor tells you it is impossible to deviate from the hospital policy of separating moms from babies right after birth, and you have an uncomplicated pregnancy, find a more evidence-based doctor who

works at a more enlightened hospital, or consider having a home birth with an experienced midwife!

Don't Put Goop in Baby's Eyes

As fast as you could say “Bob’s your uncle,” babies born in the 1980s and earlier had silver nitrate applied to both eyes. What we doctors were ignoring back then is that silver nitrate is so irritating to the eyes’ sensitive mucous membranes that it is painful to newborns. The use of silver nitrate actually led to chemically induced eye infections, sometimes appearing as long as seventy-two hours after it was administered, leaving doctors to believe the infant had a naturally occurring eye infection.

The tradition of putting silver nitrate in an infant’s eyes dates back to the 1880s, after doctors realized that putting a drop of silver nitrate in a newborn’s eyes could prevent gonorrhea, a sexually transmitted bacterial disease that can be passed from an infected mom to her newborn. Newborn gonorrhea infections lead to damage of the cornea in 20 percent and blindness in 3 percent of those babies affected by it.

Silver nitrate was credited with such dramatic reductions in blindness caused by gonorrhea that many state legislatures passed laws requiring doctors to use it. Remember that this was the preantibiotic era. Without penicillin, gonorrhea infections were untreatable, and silver nitrate was the only available prophylaxis.

Routinely putting silver nitrate in newborns’ eyes has fortunately fallen out of favor among most American doctors. Unfortunately, we now smear erythromycin ointment on babies’ eyes instead. This prophylactic treatment is recommended, regardless of risk, for every newborn in America by the American Academy of Pediatrics, the U.S. Preventive Services Task Force, and several other health organizations. At least thirty-two states actually mandate it by law. The persistence of medical interventions despite ample evidence that they should be abandoned is astonishing.

Parents, your baby does not need this goop smeared into her eyes. Why not? Because we do a good job these days screening pregnant moms for sexually transmitted diseases that could cause infant eye

disease. Those diseases include chlamydia, the most commonly reported sexually transmitted disease in the United States. Gonorrhea causes less than 1 percent of cases. The herpes virus also accounts for less than 1 percent of cases and needs the attention of an ophthalmologist. The vast majority of newborn eye infections (more than 95 percent) are now mostly from causes other than chlamydia, gonorrhea, and herpes.

By itself, the single dose of eye antibiotics is inadequate to treat such an infection, so effectively it is worthless. Worse, it may actually delay our ability to recognize an infant who has a potentially serious bacterial eye infection. In addition, infants born to moms who have had C-section births and no broken membranes during labor could not be infected with an eye disease, so they don't need eye ointment.

If your newborn has gonorrhea, the most common treatment is a shot of ceftriaxone, which cures the eye infection as well as the systemic disease. If the baby has chlamydia, the doctor will most likely prescribe erythromycin for two weeks or azithromycin for three days.

We are now beginning to understand that the diverse bacteria newborns are exposed to are tremendously beneficial to their developing immune system. A growing body of scientific evidence shows that the overuse of antibiotics in humans is leading to the rise of vicious antibiotic-resistant diseases. Unnecessarily giving a newborn a medication that might compromise beneficial bacteria is a bad idea.

Yet using antibiotic eye ointment on newborns remains the recommended standard of care in America. It seems our medical culture is reluctant to stop doing something that has become routine, even when it no longer makes medical sense.

The laws need to be changed, doctors need to educate themselves, and we need to stop giving American infants unnecessary prophylactic antibiotic eye ointment for treatable diseases.

Baby Needs No Bathwater (or Soap)

When our son was born, he was immediately taken over to the hospital sink by the nurse, who scrubbed him with Johnson & Johnson's baby

wash, dried him off, and handed him back to a room full of waiting arms. To this day my wife loves the smell of Johnson & Johnson baby shampoo. I wonder why? At the time of highest joy, endorphins, and oxytocin, she was handed a newborn with that smell.

But forward-thinking pediatricians who look critically at after-birth practices are now realizing that we should not be bathing babies so soon after birth. The baby's skin-protecting vernix (the white coating over much of a newborn's body) contains powerful antifungal and antimicrobial agents. Washing also removes the smell of the amniotic fluid that has surrounded that baby for nine months and that is part of the familiar bond she has with her mom. Studies show that newborns prefer the smell of their own amniotic fluid, which rubs off them from that skin-to-skin time right after birth and promotes breastfeeding. And washing the baby with antibacterial soap removes the beneficial bacteria from a newborn's skin.

A study by an international team of neurologists and psychologists published in *Frontiers in Psychology* suggests another reason to keep the baby out of the bathwater: The scent of a newborn human is literally intoxicating to adults. Researchers at University of Dresden Medical School in Germany submitted fifteen women who had just given birth for the first time and fifteen women who had never had a baby to brain scans as they were exposed to the natural body odor of two-day-old babies. They found that both sets of women responded to the babies' body odor with heightened activity in the pleasure center areas of their brains, especially the new moms. But anyone who has ever been reluctant to relinquish a newborn back to his parents already knows that the smell of an infant is pure pleasure. Certain body odors, the researchers conclude, may "act as a catalyst for bonding mechanisms."

The takeaway: It's best for your baby to smell like a baby, not like a chemical product designed to mimic a baby's smell. Save the bath for next week or even next month; at least delay it for the first twenty-four dreamy hours.

A Viral Cause of Cancer: Hepatitis B

Hepatitis B is a liver infection that can begin as an acute infection and sometimes—though not always—become chronic. *Hepatitis* means “inflammation of the liver.” The disease can be hard to detect, especially in children under five. Though asymptomatic in many who have it, chronic hepatitis B can cause long-term liver damage. Adults and children over five are more likely to develop symptoms from the disease. Acute hepatitis B can cause fever, fatigue, vomiting, nausea, jaundice, abdominal pain, dark urine, and clay-colored bowel movements. The majority of people who develop chronic hepatitis B have no symptoms, living with the virus without complications. However, some 15 to 25 percent of adults with hepatitis B will develop cirrhosis (scarring of the liver) or liver cancer because of the virus, usually twenty to thirty years after they have first been infected.

To identify a virus that can eventually lead to cancer was a remarkable achievement in the history of medicine. Research scientist and medical anthropologist Baruch Blumberg, M.D., Ph.D., made this discovery rather serendipitously in 1967, when he and his team realized that what they initially believed was an in-herited protein isolated in the blood of Aboriginal Australians was actually a viral antigen—the protein of the virus responsible for hepatitis B. In 1976 Blumberg won the Nobel Prize in Medicine for isolating the cause of hepatitis B.

Raymond Dwek, a prominent scientist in his own right and one of Blumberg’s best friends, remembers Barry (as everybody called him) as an eager scientist who carried a notebook and pen wherever he went so he could jot down interesting facts or bits of conversation. Blumberg’s discovery is considered one of the triumphs of modern medicine. As Dwek explained in his memorial speech at Barry’s funeral, “To put this incredible discovery into context, we should understand that at that time, the treatment of microbiological and

viral diseases was considered an impossible task. Cracking the harder of these challenges, viral diseases, provided tremendous impetus for medicine. In particular, Jonas Salk of polio vaccine fame was thrilled that the basic science of Barry's work was also providing validation for his approach. And today everyone who has a blood transfusion has reason to thank Barry for his discovery of hepatitis B. The screening for it (and now for other viruses) in blood has made blood transfusion safe."

"Thanks, but No Thanks, Doc": Saying No to the Newborn Hepatitis B Vaccine

The hepatitis B vaccine was used judiciously in the early 1980s, after the FDA licensed it for approval. It was recommended for people with multiple partners, for refugees who came from countries where hepatitis B is endemic, and for people who had some other risk factor, like IV drug use.

In 1991 the recommendations changed. Suddenly hepatitis B was recommended not for people at risk but for *every* newborn in America. States mandated it for children in day care around 1997, after which widespread use of the newborn/infant series of this vaccine began. Some states, including Massachusetts, Idaho, and Missouri, started using it earlier. The group pediatric practice in Portland where I was employed at the time began routinely recommending it for all children in 2001.

When she heard that hepatitis B would be required for every baby in California, regardless of risk, Tina Kimmel, Ph.D., then a research analyst for the California Department of Public Health, and her colleagues, most of whom were working tirelessly to increase California's immunization rates, were stunned. Kimmel, who kept track of the hepatitis B vaccines given to at-risk newborns, remembers having a conversation in the hallway, her face numb with disbelief. "People were going around in shock," she recalls. "One colleague who worked with refugees said it out loud, 'They can't possibly mean we need to give it to everyone. They're not exposed. It can't be true.'"

I shared her incredulity. Why on earth would the CDC and the AAP

recommend that babies get a vaccine for a disease that you catch from IV drug use and sexual activity? Here's what we were told: Vaccinating every newborn was a way to potentially develop a population that would be immune to hepatitis B. We were also told that universal vaccination would catch all the drug addict and promiscuous hepatitis-B-positive moms who were being missed due to poor prenatal care, inadequate testing, and dishonesty about their risk factors and were thus passing the infection on to their newborns.

But this rationalization didn't then and still does not hold water for me. In my practice, we test universally for hepatitis B. The ob-gyns I know are amazingly thorough in their prenatal testing for sexually transmitted diseases. And they don't rely only on what a mother tells them about her lifestyle; they run blood tests to screen for these things.



If you do not have the surface antigen for hepatitis B, then you do not have hepatitis B.

Your baby is not at risk.

With no possible benefit, this vaccine is not worth *any* risk.

What most doctors do not tell their patients (and doctors are often unaware of this themselves) is that the hepatitis B vaccine contains 250 micrograms of aluminum. As I mentioned in [Chapter 1](#), when premature infants are injected with more than 4 or 5 micrograms per kilogram of body weight per day of aluminum, it accumulates at toxic levels. If your baby weighs 7 pounds at birth (approximately 3 kilograms), the FDA stipulations suggest that the maximum safe dose for that newborn is 15 micrograms, *sixteen times less* than what is given in one hepatitis B vaccine. Since infants may not be able to effectively rid their bodies of aluminum, the truth is that no amount is safe. By giving infants this shot, according to the FDA's own calculations, we are literally poisoning them.

“Research indicates that patients with impaired kidney function, including premature neonates, who receive parenteral [intravenously or intramuscularly injected] levels of aluminum at greater than 4 to 5 [micro]g/kg/day accumulate aluminum at levels associated with central nervous system and bone toxicity. Tissue loading may occur at even lower rates of administration.” —Food and Drug Administration

The late John Hicks, M.D., who came from a family of physicians, was usually a mild-mannered, soft-spoken man. But he got upset when you asked him about the hepatitis B vaccine. Hicks did not recommend this vaccine for any of his patients. “Hepatitis B vaccine was designed for countries where there is a lot of hep B and they don’t do the testing. The hep B vaccine in this country is for IV drug users and prostitutes who are at the greatest risk. I don’t know of a nursery where that kind of behavior is going on. Why are we giving this shot to babies? It’s ludicrous. It makes no sense.”

Without any science to back it up, the CDC recommended (and many states mandated) giving a birth dose and infant series of this shot based on the hypothesis that the vaccine at birth could provide lasting immunity for when a child became sexually active. Now that we have been giving it for almost twenty years, we can test that hypothesis. It turns out to be wrong.

A 2013 study showed that by age sixteen, the majority of children—over 50 percent—who were given the hepatitis B vaccine as infants are no longer protected. A 2014 study published in *Pediatrics* found similarly poor immunity rates among sixteen-to-nineteen-year-olds vaccinated as infants. Only 24 percent of American teens who completed the three-shot series by age one had adequate protection. Giving the hepatitis B series of shots to newborns not only exposes them to toxic doses of aluminum, but also fails to give them lasting protection against hepatitis B.

We now have ample evidence to stop the unnecessary poisoning of newborns and instead give the hepatitis B vaccine to teens who are at risk for behaviors that could lead to exposure, protecting them when they most need it.

So Why Are Pediatricians Giving Infants the Hepatitis B Vaccine?

Adherence to the current vaccine schedule by pediatricians is now routinely looked at as a measure of quality of care. If the newborns in a pediatrician's practice are not getting the hepatitis B vaccine, this will show up on audits, and it will look like that pediatrician is a "bad" doctor. Health insurance companies penalize such doctors, giving them lower reimbursement rates for each patient because they are not following the standard of care. Pediatric practices discharge families who do not want to vaccinate against hepatitis B for this reason: It harms a doctor's bottom line. In 2002, when Dr. Hicks began practicing more evidence-based medicine, he realized he could not in good conscience recommend universal vaccination for hepatitis B. When he opened a private practice in Los Gatos, California, he stopped accepting insurance, because he felt the insurance companies' policies were making it impossible for him to practice safe medicine.

"As pediatricians, we're supposed to stand up for children's rights and take the best care of them we can," Hicks said. "All the big money and all the power that is in the medical community—boards, insurance companies—are pressuring you to do what they want you to do. They don't want you thinking. They will do whatever they have to do to bully you into compliance."

The science is clear: This vaccine should not be given to newborns unless the mom has hepatitis B, but it *should* be given to teenagers so they will have protection when they may need it.

Health plans: Are you listening? Are you looking at the literature? Are you asking the right questions? Are you placing the right physicians in the roles of monitoring “quality of care”?

Parents: While the government and vaccine advisory boards ponder this information, it is up to you to understand the science and make an informed decision. That is what informed consent is all about. I shudder to think of the toxic doses of aluminum being injected into the nearly four million American babies born this year whose parents cannot give informed consent because they will not be told about these studies. They will not be told that the hepatitis B vaccine has 250 micrograms of aluminum and that the maximum for a newborn is 10 to 15 micrograms. They will not be told that aluminum is a neurotoxin and that the vaccination that they are giving their new baby will not even provide protection when it’s needed.

The Vitals on Vitamin K

Vitamin K is a fat-soluble vitamin needed for blood clotting, named after the German word for coagulation (*Koagulation*). There are actually two kinds: vitamin K₁, which comes from green leafy vegetables and other whole foods, and vitamin K₂, which our body synthesizes from the beneficial bacteria that line our intestines.

Newborns are born with very low stores of vitamin K, beginning to synthesize it only after their intestines are populated with beneficial bacteria via their mother's breast milk. The fact that human infants are born without vitamin K leads most doctors to believe that human infants have a "vitamin K deficiency." Low vitamin K at birth makes a small percentage of infants more vulnerable to uncontrollable bleeding, which can lead to brain damage (if the bleeding is in the brain) or intestinal and digestive problems (if the bleeding is in the intestines).

Because of the risk of vitamin-K-deficiency bleeding (VKDB), the majority of babies born in the United States are given a vitamin K injection at birth as a prophylactic measure. This has been the case since 1961. The chance that a baby could have vitamin-K-deficiency-related bleeding concerns me. We usually see it in the first twenty-four hours. Early-onset vitamin-K-deficiency bleeding is rare, often associated with maternal medications that interfere with vitamin K metabolism (like anticoagulants and seizure medications). What is known as "classic" vitamin-K-deficiency bleeding happens in the first two to seven days of life. Interestingly, Jewish custom dictates that baby boys be circumcised on their eighth day of life, a tradition that may have developed to avoid hemorrhaging. "Late" vitamin-K-deficiency bleeding happens when a baby is between three and eight weeks old.

A Tennessee hospital's discharge data from 2007 to 2012 showed that there were about half a million live births in the state with no

cases of VKDB. Then, rather surprisingly, in 2013 several cases of VKDB were reported in Nashville, prompting the CDC to investigate further. It found that none of the babies who had bleeding had received the vitamin K shot. Three were born in hospitals, two at home, and one in a birthing center. All were healthy and then developed dramatic bleeding. Four had diffuse intracranial hemorrhages, and two had gastrointestinal bleeding. All six survived, but three have brain injuries. In all the years I have been practicing medicine, I have never seen a case of vitamin-K-deficiency bleeding. This is probably because nearly all my patients get the shot. But vitamin-K-deficiency bleeding is also relatively rare, and its frequency may be overestimated in the literature.

Some families in my practice choose to do oral supplementation instead of the vitamin K injection, and a small number of parents choose not to supplement with vitamin K in any form. These parents do not want to subject their baby to the pain of an injection so soon after birth. They are also concerned that the high amounts of vitamin K in the shot may be more than a baby needs. Finally, they have concerns about the ingredients in the injection.

Ingredients in Vitamin K Injections

The formulation of a vitamin K injection varies according to the brand being used. Some of the ingredient lists and package inserts can be found online. Aluminum is not an ingredient in the vitamin K injections that we use at our hospital, but it is an ingredient in some brands. I recommend parents ask to see the package insert to be sure they are getting an aluminum-free shot.

Do I think your baby should have the shot? Perhaps, provided it is an aluminum-free brand. A shot of vitamin K can prevent brain damage. It seems a worthwhile step to take.

Commonly Used Vitamin K Injections

The neonatal concentration of vitamin K made by NovaPlus—one of the brands we *do* use in our hospital—contains:

Phytonadione (this is vitamin K itself, 2 mg)

Polyoxyethylated fatty acid derivative (70 mg)

Dextrose (37.5 mg)

Benzyl alcohol (added as a preservative, 9 mg)

Should any of these ingredients cause concern?

Benzyl alcohol has been associated with respiratory distress and death in premature babies, as well as with toxicity in newborns, but these risks are very small. I've recommended vitamin K for thousands of infants, and none of my patients has had an adverse reaction. In my view, the benefit of vitamin K outweighs the risk.

The other vitamin K we use at our hospital, made by Amphastar Pharmaceutical Company, contains:

Phytonadione (1 mg)

Polysorbate 80 (10 mg)

Propylene glycol (10.4 mg)

Sodium acetate (0.17 mg)

Glacial acetic acid (trace amounts)

Should any of these ingredients cause concern?

Polysorbate 80 is used in pharmaceutical products and a wide variety of processed foods. The FDA has tested it and generally considers it safe in small quantities. But recent research in mice suggests that this chemical causes metabolic dysfunction and may be a contributing factor in the increase in chronic inflammatory diseases and metabolic disorders.

Glacial acetic acid is an irritant that can damage tissue, but the trace amount in the vitamin K injection is thought to be safe.

Oral Vitamin K

Another option is to give your newborn oral vitamin K, which is widely done in Europe and what my colleague Robert Sears, M.D., a

pediatrician with a thriving practice in Capistrano Beach, California, recommends. Babies given oral vitamin K in Denmark have had excellent outcomes. In New Zealand parents who do not want the injectable vitamin K are advised to give 2 milligrams soon after birth, then 2 milligrams at three to seven days, and again at six weeks orally. Pediatricians on the West Coast recommend giving 2 milligrams at birth, one week, and one month. Due to other worrisome ingredients, like polysorbate 80, in the injections, I now think it's reasonable to give your newborn oral vitamin K. For more information, go to DrPaulApproved.com.

Beware of Booby Traps

When I asked a young mom named Brenda how breastfeeding was going, she looked frustrated and upset. She had had a long, difficult labor that had ended disappointingly in a C-section. Her newborn, Luke, was acting hungry and fussy. He sucked so hard on her breasts that it was painful for her to nurse. “Especially when he starts, I want to cry,” Brenda confessed. “Nurse Felicity says I should use a nipple shield. Grandma Judy told me to try formula. ‘That’s what we used, and you turned out fine.’ And my friend Daphne says I’m starving the baby. She’s a doctor so she knows what she’s talking about. Nobody told me it would be this hard.” Brenda started to cry.

As a pediatrician, it is my job to do everything I can to encourage moms to breastfeed and to support them when they hit snags. Breastfeeding is unquestionably the best thing you can do for your baby. Human milk provides the perfect combination of amino acids, vitamins, healthy fats optimal for brain development, enzymes, antibodies, and disease-fighting white blood cells. Katherine Wang, M.D., a neonatologist at Avera McKennan Hospital and University Health Center in Sioux Falls, South Dakota, rightly calls it “medicine that no one else can replicate.”

The elements found uniquely in breast milk are literally life-saving, helping to give your baby’s brain and body the very best start in life. We know that breastfed babies do better on every rubric than bottle-fed babies: They have less chance of dying from SIDS (sudden infant death syndrome) and of developing juvenile diabetes, allergies, and other immune disorders, and they are better protected against infectious diseases and common childhood illnesses.

But knowing how important, beneficial, and vital breastfeeding is for your child doesn’t make the early days easy. It may look natural and easy when other mothers do it, but learning how to breastfeed is hard. Even moms with multiple children often struggle during the first

few days with a new baby. (It's a two-person operation. Just because they know how to breastfeed doesn't mean their baby does.) Hospital-born babies universally lose weight, up to 10 percent of birth weight during those first few days, which can lead some nurses and doctors to panic and recommend supplementing. Their fear pushes them to use strong language ("You're starving your baby") and criticism ("You aren't making enough milk") to convince women to use a bottle. But using bottles in the first few days of life interferes with a baby's and a mom's ability to learn to breastfeed and sets women who want to breastfeed up for failure.

I reassure Brenda that Luke's weight is fine, that her nipples will toughen up, and that it will get easier as the days go on. All of which is true.

Still, I realize as I leave the room that in the few minutes I have spent with her before going to see patients at my office, I have failed this mom. I haven't made the time to adequately address this hugely important issue, to sit with her as she tries to nurse the baby, to give her advice about how to heal her aching nipples, to talk to her about her difficult labor experience, or to instruct her on how to make breastfeeding more comfortable.

If I leave the hospital now without doing anything else, my failure to support Brenda could be the indirect cause of many avoidable health problems down the road for both her and her baby. We know that if you get off to a good start with breastfeeding, you are much more likely to stick with it. We also know that the longer you exclusively breastfeed, the more it benefits your baby. So I call my office, tell them I'm running late, and ask them to arrange for another doctor to see my first patient. Then I go back to Brenda's room, knock on the door again, and talk to her about arranging for a lactation consultant. I explain that lactation consultants are like breastfeeding coaches. They are experts on getting a good latch, which will make a world of difference for the pain. Lactation consultants in the community vary greatly in experience and training. It is good to get references and a referral if you must find one who is not affiliated with your hospital.

The sad truth is that it is easier, faster, and even more lucrative for

hospital staff to urge moms to give their newborns bottles than it is to take the time to help them learn to breastfeed.

Breastfeeding is simple once you get the hang of it. But getting the hang of it can take weeks! I applaud hospitals that are taking steps to improve breastfeeding rates and achieve Baby-Friendly Hospital status, which is a global initiative to better support breastfeeding moms.

Your milk may not come in until day three to five after birth, and then you may get engorged. If you have hard areas of your breast that are tender to the touch and swollen, this is breast tissue that is full of new milk that is not yet flowing. Heat (a warm washcloth applied to the breasts or a hot shower), massage, and nursing with a good latch (along with enough rest and eating nutritious foods) will all help that milk start to flow. Sometimes pumping after nursing can also help.

When I was growing up in Rhodesia, Nestlé did a targeted campaign to discourage women from breastfeeding. Paid sales reps would actually dress up in phony nurses' uniforms and go from hut to hut telling women that formula was superior to their own breast milk. This manipulative and unethical marketing worked. Rhodesian women would work hard to find enough money to buy a few cans of formula. They would soon realize that they could not afford to continue buying formula, but by then their own milk had usually dried up. I remember how outraged my parents were by these unethical practices, which resulted in the deaths of thousands of babies. I'm proud to say that my parents participated in the worldwide boycott of Nestlé that was initiated in the wake of the discovery of its scandalous behavior. Sadly, the Gerber Nestlé folks are still at it in Zimbabwe. I was discussing this recently with Shamsu, the mom of a baby named Grateful whom I talk more about in [Chapter 6](#). They came to live with us for six months while Grateful was getting her cleft lip and palate repaired. Shamsu told me that Nestlé continues to train nurses (real ones now) to go around the country telling villagers about the benefits of formula. Most Zimbabweans, as a result, have been mistakenly led to believe that formula is superior. Even though she herself is a high school teacher, Shamsu was surprised to learn that breast milk is the best,

healthiest choice.

These kinds of underhanded tactics may surprise and dismay you, but they are happening right here in America as well. Formula companies befriend doctors, giving them free merchandise, travel to conferences, and catered dinners. They advertise aggressively to pregnant women, and they dupe obstetricians and pediatricians into passing out goodie bags filled with formula samples, pacifiers, and coupons for “free” formula. In one case I heard about, they incentivized nurses to get moms to bottle-feed by running competitions with gift certificates to Victoria’s Secret as the prize for the nurse who submitted the most formula tops. Paid salespeople staff breastfeeding “help” lines. Their sole motivation, no matter how they sugarcoat it, is to get you to stop nursing.

Human Milk for Human Babies

Formula is made from cow’s milk that is dried and has corn syrup added (GMO corn syrup at that) along with a host of other things, including synthetic-algae-derived DHA, synthetic vitamins, and omega-6 fatty acids (RHA) extracted using the toxic chemical hexane. What we are feeding to infants as formula has little resemblance to the living nutrients teeming in breast milk. As Carl Morten Laane, Ph.D., a leading Norwegian microbiologist, puts it, formula is “junk food for babies.” Breast milk is so superior to cow’s milk (which, obviously, is meant for calves, not humans) that you should do all you can to avoid using even one bottle of formula.

If you must supplement while in the hospital, you can use donor breast milk, although at most hospitals you have to make these arrangements yourself and it might be expensive and even require a doctor’s prescription. There are also breast-milk-sharing groups and some public pages for many states and even other countries on Facebook. (Search for “Human Milk 4 Human Babies,” which is a global milk-sharing network.)

Women through the ages have nursed their babies, and older, more experienced moms can be an excellent source of support. If you don’t have family and friends nearby to help you, a lactation consultant can

be indispensable, especially if you're having challenges.

All this said, sometimes an infant's weight loss or jaundice is so severe in the first few days of life that we simply must use formula to supplement breastfeeding if donor milk is not available. If you have to go this route, don't give up on breastfeeding. Many moms find that they are able to exclusively nurse later on even if they have to supplement with formula at the start.

Don't Be Jittery About Jaundice

At birth, babies have almost twice as many red blood cells as they will have even a couple of months after birth. They needed those extra red blood cells to carry oxygen from the umbilical cord since they were not breathing for themselves yet. Breathing is much more efficient, and once we take that first breath, we require far fewer red blood cells. Newborn red blood cells are programmed to break down that first week or two of life. In so doing they release a yellow pigment called bilirubin, which is what accounts for infant jaundice, a yellowing in a newborn's skin and eyes. In the first week of life, jaundice is almost universal.

An infant's bilirubin levels rise each day of life, peaking at about day four or five; it is a rare baby that does not get a little yellow in the face by those days. If bilirubin levels remain extremely high—above 20—for over a week or two, some of the bilirubin can enter the brain, where it can cause permanent brain damage called kernicterus.

I saw a case of kernicterus in a premature infant while I was doing my residency. His skin was disturbingly orange, and he was having almost constant seizures, which damaged his brain. The image of this little boy still makes me sad. The last case of kernicterus that I am aware of in the Portland area was a decade ago, when a full-term infant went home and did not return for follow-up. That baby presented at three weeks of age to the emergency department having a seizure. The good news is that with proper monitoring, this condition is entirely avoidable.

If your baby is darker pigmented, high bilirubin can be harder to see, but one telltale sign is if the whites of your baby's eyes are yellow. Most pediatricians suggest a bilirubin level test before your baby leaves the hospital.

If it is determined that your baby's bilirubin levels are too high, he

will get phototherapy. Your physician will arrange for a special light blanket that you put under or around your baby. In parts of the world where there is plenty of sunlight and where phototherapy is unavailable, put your baby near a window for as much indirect light exposure to the skin as possible. Avoid too much direct sunlight, as you don't want your baby's sensitive skin to burn. Most babies can tolerate fifteen to twenty minutes of direct sunlight and unlimited indirect light. As light hits the skin, it stimulates the breakdown of bilirubin so it can be excreted. Extra nursing will also help lower bilirubin levels. If your milk is not in yet, this would be a time to use donor milk, having your baby drink from a teaspoon or eyedropper after you nurse. Many lactation experts avoid having women use bottles as it may interfere with breastfeeding, but if your baby is getting lethargic and dehydrated, you need to get fluids in however you can.

What If Mom Has Group B Strep?

During pregnancy, your obstetrician or midwife has likely cultured your vaginal area to determine if you are positive for Group B streptococcus (GBS), which is a bacterium sometimes found in the gastrointestinal or urinary tract. It is related to strep throat (caused by Group A strep) mostly by name. Colonization rates during pregnancy range from 20 to 30 percent, which means it's common for pregnant women to test positive for GBS.

Some obstetricians will test you again for GBS while you are in labor as a precaution, in case you have become colonized since the last culture was done. If you have had a prior baby with GBS, if your labor started at thirty-seven weeks or earlier, or if you test positive for Group B strep, your doctor will typically recommend IV antibiotics during labor, usually in the form of penicillin every four hours until you deliver. This is not necessary if you deliver by planned C-section.

I'm often asked, "What should I do? Should I refuse the antibiotics?"

I advise you to talk frankly with your doctor and figure out the best course of treatment together.

When a baby is born vaginally or there has been rupture of membranes (where the amniotic fluid leaks or gushes through the vagina prior to delivery), or if Mom is infected at the time of delivery (with chorioamnionitis, where the amniotic fluid is foul or not clear and the infected mom typically has a fever over 38°C or 100.6°F), the baby can get infected with Group B strep. Group B strep infections can be fatal, resulting in meningitis, brain damage, and a host of other problems involving almost any organ. While thankfully rare, these infections used to cause serious illness in up to four out of a thousand live births. A mom who was Group B strep positive had about a 1 percent chance that her baby would be infected. Treating moms with antibiotics before delivery reduced this rate of infection by 80 percent.

It is better to avoid passing Group B strep to a baby during labor by treating the mom with antibiotics than it is to treat a baby for the illness after birth. Where this gets tricky is that many parents want to avoid antibiotics and are willing to take the one-in-a-hundred risk of their baby being infected. While I agree with the concept of avoiding antibiotics whenever possible, this is one situation where the risks posed by the antibiotics are low in comparison to the risks of a Group B strep infection. A baby who has signs of sepsis, which can include fever or low temperature, rapid heart rate, poor feeding, cold or mottled skin, or floppiness, needs blood work, antibiotics, and very close monitoring, possibly in the NICU (neonatal intensive care unit). Sepsis is where the bacteria are growing in the blood, and often they will also grow in the brain. It can be fatal if untreated.

In cases where Mom clearly has chorioamnionitis, with a foul odor to the amniotic fluid, the baby should definitely be treated with IV antibiotics. The risks of infection are just too great.

But with a strapping, obviously healthy full-term baby born to a mom who has tested positive for Group B strep, it is harder to decide what to do. Doctors are quick to treat both moms and babies with antibiotics if the mom develops a fever, even a low one, during labor. The reason is suspected chorioamnionitis. Often the obstetrician has already started a course of IV antibiotics on the mom. But in the absence of any discernible health problems, the evidence does *not* support giving antibiotics to the baby. It is safer to assume your newborn is healthy and watch him closely for symptoms in the days and weeks to come.

Too often my pediatrician colleagues order a blood test on a baby, called a complete blood count (CBC), then overreact to the results. This test measures several components in the blood, including red blood cells (which carry oxygen), white blood cells (which fight infection), and platelets (which help in clotting). Sometimes the test results indicate a high white-blood-cell count with a lot of “bands” (immature white blood cells, indicating that the baby is producing more infection-fighting cells). The presence of more white blood cells can be due to infection, but it is also common simply due to the stress

of being born, leading pediatricians to mistakenly diagnose an infection when none exists. You can politely decline the complete blood count or, if your doctor insists, ask her to order it after your baby is *at least* six hours old. If your doctor insists on ordering one right after birth, ask that the test be repeated six hours later before agreeing to antibiotics.

The goal is to avoid unnecessary antibiotics, but to treat with antibiotics if the probability of infection is high.

Just a Simple Snip? Why I Don't Recommend Circumcision

When my first son was born in 1987, the American Academy of Pediatrics task force stated there was no medical indication for routine circumcision. I was a new pediatrician, board eligible but not yet board certified. I felt I needed to follow academy guidelines, so my son was not circumcised. That was a hard decision for me: I was circumcised and I had a nagging feeling that it was important for my son to look like me.

By the time my second son was born in 1993, the AAP had revised its position, stating there were potential medical benefits. We chose to leave him intact anyway. Same for son number three, who came along in 1996. My wife and I figured it would be best for our boys to look the same.

In 2012 the AAP came out with yet another statement about circumcision, a contradictory report that does not explicitly recommend routine circumcision but states that the benefits outweigh the harms and implies insurance companies should pay for it.

“After a comprehensive review of the scientific evidence, the American Academy of Pediatrics found the health benefits of newborn male circumcision outweigh the risks, but the benefits are not great enough to recommend universal newborn circumcision.”

How is a parent to make sense of that?

The benefits identified by the AAP task force include the reduction of risk of urinary tract infections as well as of sexually transmitted diseases in circumcised boys. But urinary tract infections in boys are exceedingly rare to begin with, so this benefit is misleading. The most effective way to stop the spread of sexually transmitted diseases is to practice safe sex. Critics of the AAP report also say the studies linking lower STD rates to circumcision, which were conducted in Africa, are

deeply flawed. They point out that European countries with the *lowest* rates of sexually transmitted diseases have the highest numbers of *uncircumcised* men.

Some circumcised men believe their sons should be circumcised simply because they were. Certain Jewish, Christian, and Muslim communities consider it an important religious practice. While I remain respectful of everyone's religion and traditions, I would ask you to think long and hard about this choice. Circumcision is a cosmetic procedure that permanently alters a boy's body, removing an essential and integral part of the penis. The foreskin protects the head of the penis from injury. It is made up of highly erogenous tissue, which makes intercourse more pleasurable for the man and more lubricated for his partner.

If you were an uncircumcised adult, would you choose circumcision for yourself? The answer my five boys give is a resounding "No way!" One of my sons gets so angry when this topic comes up that he will stand up, raise his voice, and rattle off a long diatribe of how insane it is—barbaric, inhumane, and brutal—with the passion of one about to lose his entire manhood! He equates circumcision with child abuse and compares it to the forcible removal of the clitoris or clitoral hood (which would be the equivalent) on a baby girl, a practice done in more than twenty-five countries around the world, mostly in Africa (Egypt, Sudan, and Somalia) and the Middle East. Female circumcision is considered "genital mutilation" by the World Health Organization, even when it involves only a nick to the genitals. Yet infant male circumcision is considered "routine."

The CDC estimates that the circumcision rate in America fell from a high of 65 percent of boys born in hospitals in 1979 to 58 percent in 2010. The rate has dropped more in recent years, but just slightly. These days only a little more than half of newborn boys are circumcised within the first hours or days of their lives. Worldwide, the majority of men are not circumcised. When England changed to universal health coverage after World War II, its circumcision rate declined sharply. Now less than 5 percent of men in the United Kingdom are circumcised for medical reasons, and circumcision rates

are as low as 1 percent in Scandinavia.

Not a single medical association in Europe recommends routine male circumcision. The Royal Dutch Medical Association has urged a ban on the procedure in Holland as it can endanger a baby's health and is ethically questionable. In the words of one law professor writing in *The New York Times*, "All human beings should be able to make their own decisions about whether their genitals are to be injured. All the more so if such a procedure is irreversible and not medically necessary."

Will a baby with an intact penis have problems related to it? Most likely not (and any problems are easily treatable), unless his doctor creates them! American doctors have unwittingly caused and continue to cause damage to uncircumcised penises, one of the most embarrassingly misunderstood topics in American pediatrics. In the past doctors recommended that parents retract the newborn's foreskin and wash under it. This is absolutely the wrong thing to do! How do you care for a newborn's penis? You simply leave it alone! The foreskin naturally retracts by the time a boy has gone through puberty. It may retract before that on its own, and it may not. Baby boys often tug on their penises. This is normal and even helpful and should not be discouraged. But never let any doctor forcibly retract your son's foreskin. Forcible retraction can do untold damage, often causing tears that heal by scarring, which causes adhesions that may need to be surgically corrected.

If you have cared for a recently circumcised boy, you may have seen firsthand how circumcision can cause post-traumatic stress in an infant. If the baby cries every time you change his diaper, it may be because his penis is swollen and raw from the circumcision or from the stress caused by the pain he experienced during the operation. Though doctors are advised to use anesthesia, some prefer not to. Others do not wait long enough for the penile block to take effect. The operation is painful and it is common to hear a baby screaming during it, even when anesthesia is used correctly. So a newborn makes this association: When my diaper is taken off, something bad happens down there.

A recent study of more than 340,000 boys from Denmark showed that those who were circumcised had an 80 percent increase in infantile autism. But how can circumcision lead to autism? you might ask. I wondered the same thing. Perhaps babies who are circumcised are given acetaminophen-containing pain relievers, which can cause cell death in the presence of testosterone. For more on acetaminophen, see [Chapter 1](#). Or perhaps the stress a newborn experiences while being circumcised alters his brain development. Stress is correlated with poor brain development.

I used to be neutral about circumcision. I would talk to families in my practice openly and tell them that I am circumcised but my sons are not, that my boys are grateful to us for leaving them intact. I would tell them that I am glad we did not alter their penises, and that I do not recommend circumcision. But, I would always add, it is ultimately the parent's choice.

I feel I owe these families an apology for not taking a stronger stand against circumcision. Reading the Danish study was the last straw for me. I can no longer remain neutral about an entirely cosmetic procedure when it might be linked to something as devastating as autism. I now discourage parents in my practice from circumcising their sons. Moms and dads, we need to protect our babies from physical pain and stress as much as we can. Whether you have a son or a daughter, circumcision is not a medically indicated procedure. I recommend you keep your newborn intact.

No Smoking, Please

I should have said this on page 1, even though you know it already! Secondhand smoke is dangerous for children, whose lungs are still developing. Children of smoking parents are at greater risk for a variety of health problems, including asthma, ear infections, and pneumonia. For all children at all ages, please don't smoke at home. If at all possible, get help to quit smoking for their sake as much as for your own health.

The NICU

The neonatal intensive care unit (NICU) is not a place you would wish on your worst enemy. I can't sugarcoat it: tiny babies in isolettes fighting to stay alive, some with devastating congenital malformations, nurses running from one crisis to another, monitors beeping, sleep-deprived parents. Sometimes you know in advance that your baby will be in the NICU, like a colleague of mine who had a rough pregnancy that resulted in an induced birth at just twenty-seven weeks. Even if you've visited a NICU once or many times, it's impossible to prepare for the isolation you feel when it is your baby surrounded by the beeping monitors, with an IV in his head and an endotracheal tube giving him oxygen. It is even harder for parents whose baby is rushed to the NICU from the delivery room or from the operating room after a C-section.

As terrifying as the NICU is, you are in good hands. Emergency medicine in America is modern medicine at its best, and one thing our medical teams do right is save lives. Those dealing with neonatal emergencies are the best-trained doctors, nurses, respiratory therapists, and specialists. I've seen them in action and worked with them side by side: When it comes to stabilizing a newborn, NICU nurses are as efficient as a NASCAR pit crew. In mere seconds they are able to check the oxygen status, put on monitors, secure the airway, start IVs, and draw blood for testing. Here's an industry secret: Pediatricians hold NICU nurses in the highest esteem. Their competence and quickness are often the difference between life and death for a struggling baby.

While the experience is not one that anyone would wish for, we are grateful that NICUs are there when we need them. If your baby is in the NICU, I recommend you get a hospital-grade breast pump and start pumping every two to three hours, or whenever your breasts feel full, just as if you were breastfeeding your baby. Don't worry about

pumping at night. Get your rest, as you need your sanity to endure the marathon of caring for a baby in the NICU. Don't feel guilty: It's okay to go home and sleep in your bed. NICU nurses are the best in the world, with skills to detect even the smallest variation that could signal a problem. Sleep with a phone by your side, and know that they will call if you need to be there.

A surprising challenge for parents is being told they can finally take their baby home. On that wonderful day when the monitors are disconnected and you are handed your baby, you may feel awed by and nervous about the responsibility of being in charge. Don't be afraid. You've got this. And your pediatrician has your back.



Dr. Paul's Plan FOR NEWBORNS

1. Decline the hepatitis B vaccine. Routine use of the hepatitis B vaccine in infancy is not supported by either scientific evidence or common sense. Babies born to healthy moms who test negative for

hepatitis B, are not intravenous drug users, and do not work as prostitutes should not get the vaccine. However, if the mom is hepatitis B positive or has other risk factors, her baby should get this vaccine. It may also make sense to give the hepatitis B vaccine if her partner or the baby's other caregivers have hepatitis B.

2. Clamp the cord after two to three minutes (or later). Wait until the cord stops pulsing. This varies from baby to baby and can take anywhere from a few minutes to a few hours.

3. Keep in touch. Immediate skin-to-skin contact for as long as possible is the best postpartum medicine for both the mom and the baby, as long as both are stable. In fact, there is no reason for a mom and a healthy baby to be separated during the first hours of life. If the mom can't have skin-to-skin contact because of complications from the birth, another loving person (the dad, grandma, or friend) should get shirtless and have skin-to-skin with the baby. But beware: It's addictive, and Mom will want the baby back. Thereafter keep your baby by your side. You can't spoil a newborn with too much holding or too much love.

4. Leave the baby's eyes alone. Antibiotic eye ointment is optional and is unnecessary if you have had a C-section. It is truly needed only if you have tested positive for venereal disease.

5. Give oral vitamin K or insist on an aluminum-free vitamin K shot. This prophylactic intervention protects against infant hemorrhaging. The oral vitamin K dose is 2 milligrams on the first day of life, at one week, and at one month. Since aluminum is a neurotoxin that we want to avoid, if your baby has a vitamin K shot instead of oral vitamin K, make sure your doctor uses an aluminum-free brand.

6. Nurse your newborn. Breastfeeding takes a while for both the mom and the baby to get the hang of, but the longer you stay with it, the easier it gets. Don't let a nurse or doctor trick you into thinking your baby needs formula. If you must supplement in the first week of life, use donor milk.

7. Leave your baby's privates whole. Neither boys nor girls should be circumcised. This painful and unnecessary cosmetic procedure carries a 1 in 500 risk of acute side effects and has no real medical benefit.

8. Back to sleep. Babies should be laid on their backs on a firm mattress, preferably free of flame retardants, unless they are sleeping on your chest or in your arms.

The Nine Questions Parents Ask Me Most ABOUT NEWBORNS

ABOUT NURSING

1. Is my baby getting enough milk? He's nursing all the time. And how do I know when he's hungry?

A: Babies are supposed to breastfeed all the time! As much as we want them on a schedule, their tummies are tiny and they need to nurse often in the first days of life. The first milk they drink is called colostrum, which is rich in antibodies, white blood cells, and other immune-enhancing elements. Your job is to rest, eat healthy foods, and hold that baby. If you stay in bed with your baby, skin-to-skin nursing will go more smoothly. Some babies cry out in hunger, while others make little mewling noises like kittens. Your milk will come in in two to five days. The only time you may need to supplement a baby with donor breast milk is if he gets severely dehydrated. Read your baby, not this book. If he seems very sleepy, has no energy, or is not urinating, he may need a little extra. Doctors arbitrarily say that babies who lose 10 percent of their birth weight need supplementation, but some babies can lose 11 or 12 percent and be just fine. If your baby looks vigorous and is latching well, you can be confident that nursing is going well. The baby will get back up to his birth weight sometime in the first fourteen days or so.

2. How often should I nurse my baby?

A: Newborns just came from a continuous feeding program, connected to Mom by the umbilical cord where they got all their nutrition. In the first weeks and months of life, it makes no sense to say to a baby, "Nope, too early to eat. Not time yet, you must wait." Read the baby, not the clock. The baby—and the feeling of fullness in your breasts—will tell you when she's hungry. I recommend on-cue feeding during the first weeks of life for every baby. Expect to be nursing at least every three hours during the day. If your baby is sleepy, not fussing, and not giving you clear hunger cues, wake her up! Kisses on the cheek or even a wet washcloth on the forehead can rouse a tired baby and encourage her to nurse. Some babies are calmer and more patient than others and will happily accept the breast even though they don't give loud hunger cries.

3. When I latch the baby, it hurts, and my nipples are cracking and bleeding. What can I do?

A: Sore nipples are common in the first hours of your baby's life. As you both get the hang of nursing, the soreness will go away. But breastfeeding

should not be painful. A cracked and bleeding nipple is usually related to how the baby is latching. Lactation consultants are the key here as they can work with you to get the best possible latch. Natural oils or a burn gel-pad after nursing can provide relief. Rubbing breast milk and letting it dry on your nipples may help also. Stay shirtless. Nurse in bed so you can both rest. Cracked nipples can easily get infected with yeast or bacteria. It's crucial to avoid sugar and processed foods, which can encourage the overgrowth of yeast. A whole-foods diet not only gives your baby the most nutritious breast milk, it also helps you avoid breast infections and heal faster from the birth. Sometimes the baby has a tongue-tie that makes latching difficult or causes a painful latch. See [Chapter 4](#) for more on tongue-ties.

ABOUT BABY'S SKIN

4. Why does my baby look yellow?

A: Jaundice, the yellow color that most babies get during the first week of life, is normal. Newborns are born with extra red blood cells that they needed in the womb to carry oxygen from the placenta through the umbilical cord. Once they are breathing air, they no longer need so many red blood cells. The extra red blood cells release bilirubin, the yellow pigment that makes babies jaundiced. The bilirubin is then processed and disposed of in the liver. Since a baby's immature liver can't dispose of all the extra bilirubin, some of the yellow pigment settles on the skin. The more breast milk your baby drinks, the faster the bilirubin will be flushed out of his system, and the quicker the jaundice will disappear. Exposing your baby's skin to sunlight for ten to fifteen minutes three or four times a day will also help.

5. Why does my baby have a rash that looks like an infection, with white fluid in raised bumps?

A: Newborn rashes like this are common. While they can look horrible, they usually are not an infection but a reaction, perhaps to the stress of birth and the rapid change from the fluid environment in the womb to the dry-air world. If you were to culture the fluid in the lesion, it would most likely be sterile. In rare cases, the rash is caused by staph (*Staphylococcus aureus*). Antibiotics are only necessary if the baby is sickly or the rash is severe and spreading rapidly.

6. My baby's skin is dry and peeling. What lotion should I use?

A: The transition from warm amniotic fluid to dry air almost always results in a newborn's peeling a layer of skin. You can do nothing, and your baby

will be fine. If you want to use something, I recommend massaging natural oil, something you would be willing to eat, into your baby's sensitive skin. Organic coconut, sesame, and avocado oil are all good choices.

ABOUT SLEEP

7. I've heard babies should sleep only on their backs, but mine will sleep only on her tummy or on me. What can I do?

A: Parents across America have babies who refuse to sleep on their backs and guiltily put them to bed on their tummies. In my experience, these babies turn out just fine. But SIDS (sudden infant death syndrome) decreased dramatically when we started recommending babies sleep on their backs instead of their tummies. There may have been other reasons for the drop, but it is certainly considered safest to place your baby on her back on a firm surface (preferably not a new mattress that is off-gassing chemicals and contains endocrine-disrupting flame retardants). In cultures around the world, babies and mothers co-sleep safely. If you have your baby sleeping on your chest (my favorite), then place her up high near your neck. A co-sleeper beside your bed that allows your baby to be right next to you is a good option for some families.

8. My baby seems to sleep all the time. Is this normal?

A: Yes! Their brains and bodies go through an enormous amount of growth in the first days and weeks of life. It's exhausting. So most newborns sleep most of the time, except for the eight to twelve times they wake up to nurse, and the brief moments several times a day that they are alert and looking at the world (and into your eyes). Some wake at night. Others sleep then too. As long as your baby is nursing vigorously, has moments of calm alertness, and seems generally content when he is awake, there's no reason to worry if he is sleeping too much. But if he is lethargic or does not wake up to nurse, see your doctor.

ABOUT A BABY'S EYES

9. My baby's eyes are always watering and sometimes get a little crusty. What should I do?

A: Blocked tear ducts are very common and the likely reason your baby's eyes water and then get a little goop in them. This is rarely serious and rarely requires antibiotic eye drops. Putting a few drops of breast milk in the eyes a few times a day almost always solves the problem! If the eyes are inflamed and red and there is thick greenish pus, it could be a more

serious infection, and you should see your doctor.

Chapter 4

The First Two Weeks of Life

Most babies are born in hospitals, which can feel like Grand Central Station with all the noise and constant interruptions. But hospitals also provide new parents with a lot of support: nurses, doctors, and lactation specialists, as well as visits from friends and family. Then you bring the baby home, and shazam!—you are magically expected to know what to do with this mewling alien whose poop looks like watery scrambled eggs.

Those first few days at home with a newborn are a blur of interrupted sleep, quiet awe, and frantic worry. You and your partner, if you have one, are both healing from the birth and processing your feelings about that experience, and about becoming parents, while simultaneously learning to feed and care for this new creature who comes with no instruction manual. You are also figuring out how to get along as a threesome.

For you as a new mom, everything is leaking: your eyes, your breasts, your privates, and even your pores. That period you didn't have for nine months gushes out now. You may be waking up in what feels like a bathtub's worth of night sweats as your body rids itself of extra fluid (especially if you had a C-section). You're probably also feeling emotional, crying at sappy television commercials or at the thought of your baby leaving you to go to college.

For new babies, everything is leaking too. Expect to get covered in poop, pee, and spit-up during those first few weeks of life.

Eat, sleep, pee, poop. Repeat.

Newborns will also have a few times a day of quiet alert time when

they look at the world through their nearsighted eyes. You can practically see their neurons firing while they stare into your eyes, trying to make sense of the strange place where they have landed.

The Three-to-Five-Day Exam

I usually see babies and their parents in my office for the first time when the baby is three to five days old, for a well baby visit, then again when the baby is two weeks old. These two doctor's visits are important: Newborns are quite fragile, health problems not caught at birth can often be identified now, and new parents are going through a profound time of transition. I answer all the questions parents have and reassure them, and I almost always address two health issues at the five-day visit: nursing and jaundice.

Almost all newborns lose weight during the first few days of life. A hospital-born baby typically loses 5 to 10 percent of her birth weight, which means $\frac{1}{2}$ to 1 pound for a 10-pound baby. This is not an emergency and is no reason to be concerned. If your doctor recommends formula based on a 10 percent weight loss, but your baby otherwise looks vigorous and healthy, you need to find a new doctor. If your baby has lost more than 10 percent of her birth weight, it may mean that she is too sleepy and weak to suckle effectively, or it may indicate an underlying health problem.

Regardless, don't let your doctor introduce a bottle to a days-old baby. In countries like Norway, where women have the highest breastfeeding initiation rates, if a baby needs nutritional supplementation, it is given from an eyedropper or spoon. Introducing a bottle this early can undermine breastfeeding success. Colostrum, a clear milky substance that is more precious than liquid gold, is chock-full of proteins, carbohydrates, fats, vitamins, minerals, antibodies, and other immune-enhancing cells that kill invasive microorganisms and block inflammation. But it takes several days for colostrum to be replaced by breast milk. Most first-time moms find that their milk comes in in the first three or four days. When your milk comes in, you will probably know it: Your breasts may get so engorged that you will need to buy a bigger bra.

During my examination of your newborn, in addition to looking for any congenital birth defects, which are rare, and listening for heart murmurs, I also look carefully for signs of severe dehydration and any undetected illness. All newborns are floppy, but a sick baby will be even more so and may have markedly low muscle tone, as well as mottled, grayish, or ashen-looking skin, which is indicative of poor blood flow. Sick babies may either have a very weak cry or be very irritable and difficult to console. If a newborn is acting sickly, I treat this very seriously and run the necessary tests to determine the cause; if we cannot determine what is wrong, I will send the baby to the hospital, because babies are so vulnerable in the early weeks of life.

Much of what we do in pediatrics is unnecessary and sometimes even causes problems, but if your newborn is running a fever (with a rectal temperature above 100.6°F or 38.4°C) or is otherwise acting lethargic, take him to the doctor, pediatric urgent care, or the nearest hospital immediately.

The Two-Week Exam

When I ask the parents at the two-week exam how they are doing, it is not uncommon that the mom bursts into tears. The adrenaline and ecstasy of the birth have worn off, the baby is often waking up several times a night, and parents are at the peak of exhaustion.

If you feel a little overwhelmed, you're not alone.

In almost every other country in the world, new parents get paid maternity and paternity leave and can spend several *months* caring for and getting to know their new baby without financial stress. The United States, Papua New Guinea, and Oman are among the only countries that have no guaranteed paid maternity leave for working women. For many of my parents, when the baby is only two weeks old, still floppy and vulnerable, one parent is already back to work. That was true in our family. I know firsthand how hard it was.

Fatigue adds to the stress of having responsibilities twenty-four hours a day.

Our lives are no longer our own.

It is amazing and difficult to be caring so completely for every need of this little new life, so it's my job to remind you how well you are doing. My goal at the two-week visit is to make sure the baby is healthy and gaining weight and also to support the family as much as I can.

If I've examined the baby already in the hospital or at the three-to-five-day visit, it's unlikely I will find any major health problems. I examine the baby's ears, nose, throat, heart, lungs, abdomen, genitals, extremities, and skin, looking them over carefully as I make sure the baby is thriving. I'm looking at weight gain, muscle tone, alertness, and connectedness to the surrounding world.

At two weeks, babies should be back to their birth weight or close to it. Ninety percent of the babies I see are near their birth weight, and some have gained a few ounces or even a pound over birth weight,

especially babies born at home.

Breastfeeding Jump-Starts Your Baby for a Life of Good Health

Breast milk is the baby's perfect food. Babies also thrive at the breast because they are being held and having skin-to-skin contact. It's not just the milk, it is also the closeness and safety the baby feels.

Babies who are not back up to their birth weight need some extra attention, and this is where we pediatricians often fail moms. As I discussed earlier, doctors are often in a rush. They will compare the birth weight of a baby to his weight at the two-week visit, then unintentionally shame the mother by telling her she is “not making enough milk” and immediately recommend supplementing with infant formula instead of taking the time—and it takes time—to figure out what's not going well with breastfeeding and how best to fix it.

Ensuring that a baby is exclusively breastfed in the first few months of life is so vital to that baby's good health—in both the short term and the long term—that it should be every doctor's first priority!

So don't give up! And don't let your doctor's inattention frighten you into thinking you shouldn't be nursing.

As hard as it is at the beginning, it is worth it.

Breastfeeding sets your baby up for a life of good health.

You can do it, but you need help.

In rare cases, especially for a woman who has had a breast reduction or augmentation, the milk supply does not meet her baby's needs. You should not feel bad. This happens. If you've made a heroic effort but need to supplement, you should add donor milk or formula with no shame or regrets.

Dr. Paul's Breastfeeding Cheat Sheet

Nursing requires nutrition...**Eat well**

Nursing requires hydration...**Drink lots**

Optimal Eating for Breastfeeding Success

You've just finished nine months of being "good" during your pregnancy, eating well and avoiding alcohol. For nine months you have been the entire world, the complete environment, for your growing baby. You may think you should have a free pass now—but going forward as you breastfeed that tiny, uncoordinated creature, your good nutrition is still the number-one key to your baby's health.

Drink filtered water. Avoid processed foods. Eat whole foods, and continue to eat organic if you can. If you have no access to organic food, at least avoid the "dirty dozen," the foods identified by the Environmental Working Group as containing the highest pesticide content. These are all healthy foods that your family should eat regularly, but when grown conventionally, they are very high in toxins:

1. Apples
2. Peaches
3. Nectarines
4. Strawberries
5. Grapes
6. Celery
7. Spinach
8. Sweet bell peppers
9. Cucumbers
10. Cherry tomatoes
11. Imported snap peas
12. Potatoes

You may find that you are ravenous. Making milk is a hard job. You actually need more calories to breastfeed than you do to grow a baby!

How often should you be eating? As often as you are hungry. As long as you are eating healthy whole foods and not gorging yourself, pay

attention to your body and eat on cue.

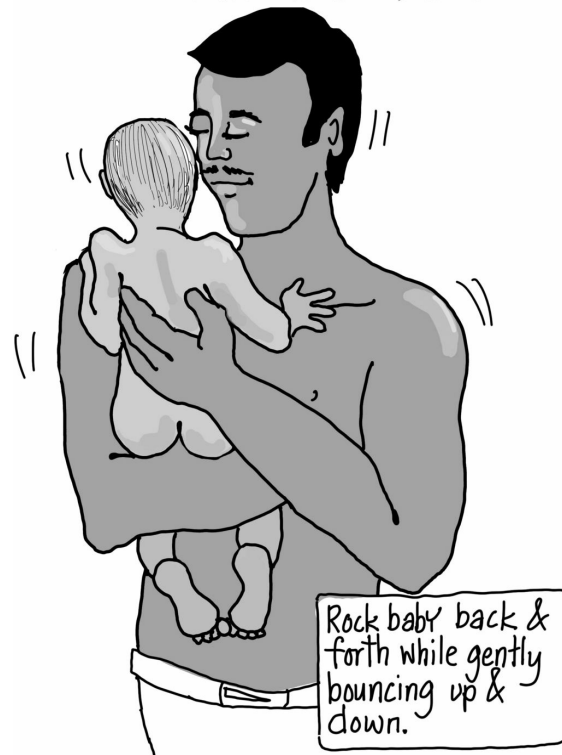
The New Parent Dance

At just two weeks old, Fatma was already 9 ounces above his birth weight.

“He nurses all the time, sometimes for two hours without stopping,” his mom, Rowhia, informed me. She was smiling but looked tired. “I’m worried about all the watery yellow stools, almost ten a day,” she adds. Yasser, Fatma’s father, sat quietly but attentively as he listened with one ear and watched over their three-year-old son, who was enthusiastically taking toys out of the box in the corner. Fatma’s frequent nursing and steady weight gain are common for breastfed babies.

Since Rowhia was feeling overwhelmed by how often Fatma was nursing and he was gaining weight so steadily, I recommended she and Yasser try soothing Fatma with the New Parent Dance. If an infant starts fussing less than two hours since he last nursed, this is a great way to console him without nursing again right away. You are probably doing it already, but you can see my version of this special boogie on YouTube: Rock the baby back and forth while gently bouncing him up and down. Put a clean pinky finger upside down in the baby’s mouth to give him something to suck on. You’ll get so good at this dance that you’ll find yourself doing it even when your baby isn’t in your arms. The rocking and swaying and gentle bouncing mimic that floating sensation in the womb. It works every time. Except when it doesn’t! And then you might need to breastfeed again.

Dr. Paul's New Parent Dance



I only recommend not immediately offering the breast to a baby this young if there has been ample weight gain. For a baby who has had borderline weight gain, that fussy, hungry cry, even an hour after a feeding, should prompt another feeding. I reassured the parents that the watery yellow stools are exactly what we expect with breastfeeding.

Should Your Baby Be Nursing on a Schedule?

Everyone has an opinion about whether you should feed a baby on cue or on a schedule, based on how they themselves were raised, what their cultural assumptions are, and how many books they've read on the topic! During the first week or two of your baby's life, you need to get your milk supply established. Waiting for a sleepy baby to initiate nursing does not always work and may result in poor weight gain and poor milk supply. I recommend nursing your baby every two to three hours the first few days during the day and even more often if she is turning her head, making sucking noises, fussing, or otherwise seems hungry. I also recommend nursing every three to four hours at night or whenever the baby acts hungry.

After your milk is in, you and your baby will work out the schedule that is right for both of you. If your baby is efficient and your milk supply ample, you may need to nurse for only five or ten minutes every four hours. If your baby isn't as good at sucking and takes great comfort at the breast, you may be nursing for forty-five minutes every two hours. (I didn't promise it was easy. It is for some. It's not for others.)

The average duration of breastfeeding after the first couple weeks is ten to fifteen minutes a side every three hours during the day and every four hours at night, feeding on both sides each time, or twenty to thirty minutes total. Some babies need to be encouraged to breastfeed longer to get the hind milk. Others are prone to spitting up, which can be caused by overfeeding. Moms with abundant milk may find that each breast makes so much milk that nursing on both sides is too much for the baby. In this case you may want to offer only one breast at each feeding.

All babies spit up. If your baby is spitting up a lot, we often call this reflux ("gastroesophageal reflux" is the technical term). One way to reduce reflux is to nurse your baby with her head slightly elevated and keep her head elevated for half an hour afterward. Avoid having your baby in a sitting position, as this can put pressure on her stomach and make the reflux worse. More frequent smaller feeds can also help. Some doctors prescribe medication for reflux but I've found that it is rarely indicated. I prefer to use medication only for babies whose reflux is so severe that they are not able to gain weight or are experiencing severe pain during and after feeding.

A two-week-old's tiny tummy can hold only about 4 ounces of liquid. As long as your baby is gaining weight well, let her sleep as much as she wants at night, unless your breasts are uncomfortably full, in which case you can wake the baby up to nurse or pump your breasts.

In general, let your baby guide the process. Babies know when they are hungry, and they'll let you know too.

Troubleshooting Breastfeeding: Tongue-Ties

Reanna and Aaron brought their son Owen in for the two-week well

baby visit. Reanna had an infectious smile, and the mood in the room was uplifting. On the surface I was looking at a confident couple, even though the dad sat slouched against the wall, clearly exhausted but very much in tune with both his wife and their newborn son.

“You look tired,” I commented. “These are the hardest days. It will get easier, I promise.”

“You have no idea, Doc,” Aaron sighed. “I got three hours of sleep last night, and the night before that. We’ve been taking turns feeding Owen. Last night was my turn.”

Reanna had already been to a lactation consultant three times. Her nipples were raw and bleeding.

“It’s so painful to nurse that I cry trying.” Tears welled up in her eyes. “I’ve been pumping only for the past two days.”

When I examined Baby Owen, I saw the reason for Reanna’s pain and frustration. Owen was moderately tongue-tied. Tongue-tie (ankyloglossia) is a congenital shortness of the fold of mucous membrane (the frenulum) that attaches the tongue to the bottom or floor of the mouth. Ankyloglossia, which may affect as many as 10 percent of newborns, can limit the mobility of the tongue and make it hard for some babies to latch on properly and nurse well. Simple tongue-ties I can clip in the office with sterile scissors; with deep or thick posterior tongue-ties, I refer the infant for a laser procedure.

You should know that there is conflicting information about infant tongue-tie and some controversy about how prevalent this condition is and what to do to fix it. In 2005 an English pediatric surgeon named Mervyn Griffiths did a small double-blind randomized study of babies in Southampton who were having feeding problems due to tongue-tie. He found that 95 percent of the babies (that is, 54 of 57 infants) who were treated for tongue-tie by snipping the frenulum benefited from the operation and were able to breastfeed successfully. The control group received no tongue-tie correction. Their breastfeeding outcomes were discouraging: 28 of 29 mothers stopped breastfeeding, despite support from lactation consultants.

The Cochrane Collaboration, a nonprofit group that reviews and

assesses scientific data, is currently looking into tongue-tie to determine whether the science shows that frenotomy (cutting the frenulum) for tongue-tie is helpful. In the meantime, a 2011 review in the *Archives of Diseases in Childhood* concluded that frenotomy seems safe and may facilitate breastfeeding, and a 2015 review in *Pediatrics* found that frenotomy is associated with mother-reported improvements in breastfeeding and a reduction in nipple pain.

When I looked at Owen's mouth, I saw that he had the deep posterior type of tongue-tie that can be released only by laser surgery, an office procedure that does not require general anesthesia. I've referred several babies for the procedure, and most moms reported back that breastfeeding was much more comfortable afterward. For one family, it did not fix the problem.

When I saw Owen for a weight check a couple of weeks after his frenotomy, the family was much happier. Owen was gaining weight, and Reanna no longer felt pain while breastfeeding. The laser treatment made a real difference. Though I am honestly undecided about aggressive treatment of tongue-tie and eager for more studies to be done, in this case it was the right choice. Reanna would not have been able to meet her breastfeeding goals without this procedure.

Dads Can Help with Breastfeeding

Rachel was crying when I walked into the exam room. She was trying to nurse her son Ian.

"He eats all the time but always seems hungry," she told me. "I feed him every hour for almost the entire hour. I can't put him down, or he cries."

Rachel had no help at home. The only way she could get the baby to sleep was to nurse him. "He won't take a pacifier either," she added miserably. Rachel's husband, Michael, looked tired too. This whole family was exhausted.

I washed my hands with soap and water and then held Ian. With my pinky finger upside down in his mouth, I gently walked him around the room. Then I rocked back and forth with a slight bounce up and down (my "famous" New Parent Dance). Within minutes Ian was fast

asleep. He stayed asleep when I carefully put him down on the exam table. Rachel and Michael were astounded—and happy to hear my strategy for feeding the baby and getting rest themselves.

Breastfeeding requires nutrition, hydration, and rest. Without enough of all three, the mom may have trouble producing enough milk, and her stress will be palpable—revving up the baby and making things difficult with her partner too! The sleep part of the equation is often the one most neglected. Michael needed to help Rachel get more of it.

“Michael, I want you to do one bottle feeding with pumped breast milk and let Rachel sleep while you and the baby are in a different room. This will give Rachel a five-to-six-hour stretch of uninterrupted sleep.” Michael agreed.

I instructed Rachel to pump after she nursed the baby so she could refrigerate enough milk for Michael to give Ian a bottle each day.

When they returned a week later for a weight check, they were like different people. Rachel was smiling and rested. Ian had been steadily gaining weight, and this new family was in control and confident in their abilities.

I do not advise a new family to have Dad or Grandma give the baby a bottle of pumped breast milk until after I’m sure breastfeeding is going well, the baby latches on easily (so there’s no danger of nipple confusion), and the mom is feeling confident about nursing.

Goopy Eyes

Goopy eyes are a common problem that I see at the two-week visit, usually caused by a blocked tear duct but sometimes by an eye infection. As I mentioned in [Chapter 3](#), I don’t reach for antibiotics first; I encourage breastfeeding moms to put breast milk in the eyes as the first step, several times a day. That almost always does the trick if there is an infection.

When a mom named Lily came in for her baby Mika’s two-week visit, she told me Mika had been having constant tearing from one eye. She had tried putting breast milk in it a couple of times, but the eye

was not getting better. When I examined Mika, I saw that her palpebral conjunctiva (the inside of the lower eyelids) were a normal pink color, not the bright red you would expect to see with conjunctivitis (infected eyes). There was no pus to suggest an infection. Mika had a blocked tear duct.

I showed Lily how to gently massage Mika's tear duct. I slowly moved my fingertip in a twisting motion against the nose in the corner of the eye, being sure not to put any pressure on the eyeball. In Mika's case, the blocked tear duct improved almost immediately.

You can ask your pediatrician to perform the massage, but parents are perfectly qualified to do this at home too.

It doesn't always work. However, a blocked tear duct will most likely clear up on its own by the time the baby is a year old. If your baby's tear duct is not better by one year, I advise you see a pediatric ophthalmologist, who may need to probe the duct.

Proper Cord Care

Up until twenty years ago pediatricians recommended that new parents apply alcohol around their newborn's cord daily, but now we recommend that they simply leave it alone, to "let it dry on its own." We advise parents not to get the cord wet until it falls off—and not to give a submersion bath until the cord stump falls off. The theory is that if you get the cord wet, you could increase the chance of infection.

The problem with that recommendation is that while it sounds like common sense (and dovetails nicely with my conviction that babies don't need frequent baths), it was never really tested! A study was done with more than a hundred women at a Canadian hospital comparing normal bathing with sponge bathing. Guess what the researchers discovered? The babies' umbilical cords did equally well when they were given full immersion baths (drying the area around the cord afterward) as when they were sponged clean. So the bottom line is, you can give your baby a bath if you feel like it or avoid it if you'd rather!

I often see babies a few days old whose parents bring them in because the stump of umbilical cord, still attached to the belly button, is smelly or bleeding. Usually I just clean it up with a water-soaked sterile Q-tip, and it will heal by itself. You can use regular Q-tips or cotton balls moistened with water to clean around the cord at home.

Parents in my practice also tell me that putting a little powdered goldenseal, a powerful natural antibiotic, on the umbilicus works well to treat a mild infection. I would love to see a double-blind scientific study of using goldenseal on the umbilicus, which is common among Oregon parents (though probably unnecessary. Why medicate something that is normal, even with "natural" medication?).

Occasionally there is so much foul goop or blood that I have to cauterize the base of the remaining cord with a tiny amount of silver

nitrate, a grayish-black material on the end of a stick. This burns the wound shut.

A five-day-old named Bobby had a blood-soaked bandage covering his belly button when his parents brought him to see me. The cord had fallen off a couple days before. I cleaned the area with a water-soaked sterile Q-tip and saw that the 5-millimeter white umbilical granuloma was continuing to ooze blood. An umbilical granuloma is leftover cord tissue in the belly button area, that point of prior attachment for the umbilical cord. A very small application of silver nitrate stopped the bleeding.

Umbilical granulomas are very common. The leftover tissue will be absorbed by the body and will disappear in a few weeks, if you leave it alone. You don't generally need to have a doctor apply silver nitrate unless there is excessive bleeding. Just keep the umbilical stump clean and dry.

“My Baby Sounds Like a Rhinoceros”: Noisy Newborn Breathing

Newborns have narrow nose passages, which can make for noisy breathing in the first days of life. These snuffling sounds often scare first-time parents, but there is usually no reason to be concerned.

If your baby can stay latched on while nursing or drinking from a bottle, she is able to get enough air regardless of the funny noises she makes. Still, mention your concern to your pediatrician at the two-week visit. The pediatrician will listen to make sure the lungs are completely clear. A wheezing or crackling sound might indicate a lung infection, but this is rare.

Two breathing noises may be signs of an illness:

1. An expiratory squeak or wheeze. A baby who is not just snuffling but actually wheezing or having trouble expelling air could have a viral infection caused by respiratory syncytial virus (RSV). RSV is common and usually very mild in healthy children and adults, who often don't even know they have it. It can be serious in infants, especially premature babies. RSV is the most common cause of bronchiolitis (inflammation of the small bronchioles, or airways in the lung) and pneumonia in children under one. There's no treatment for RSV besides managing the symptoms. Rarely, babies with RSV will have to be hospitalized to receive extra oxygen.
2. Inspiratory hoarse voice. This is a sound made by infants who have croup, which can be caused by RSV or by any of several other viruses, most commonly human parainfluenza viruses (HPIVs). Other symptoms may include runny nose, cough, and mild fever. There is no treatment for HPIVs, though breastfeeding may protect babies from them during their first

few months of life because mothers often have protective antibodies in their milk. If your two-week-old has an HPIV and is struggling to latch properly, try suctioning the mucus from the nose. Spray a little saline solution in first, and then suction the mucus out. If the baby still cannot maintain a latch and nurse effectively without pulling off or gasping for air, bring him to your pediatrician.

Baby's First Bath

After those first two or three days of bonding with your newborn, you can give her a bath whenever you are ready and thereafter bathe her when you feel she needs it, which may be every two to three days or every week or even two. (Babies spot clean very well.) Tub baths are preferable to sponge baths as they result in less heat loss and happier babies.

When you do give the baby a bath, be gentle and take your time to talk to her and tell her what you are doing. Clean her skin and hair with just warm water, or use a natural, nontoxic soap and shampoo.

If you want to moisturize the skin after the bath, use something safe enough to eat. A newborn's skin is much more absorbent than an adult's, and it's important to avoid petroleum and other synthetic ingredients. Try organic coconut oil, avocado oil, or olive oil.

Many parents use after-bath time to give a baby massage. It's a wonderful, relaxing experience for babies and an opportunity for healing touch.

Back to Sleep

Babies do best on their backs on a firm surface. The back-to-sleep campaign in the mid-1990s, a government-sponsored program to educate the public about safe sleep, is credited with reducing sudden infant death syndrome (SIDS) rates. Some parents find it difficult to put their babies to sleep on their backs because they seem to sleep best on their tummies, but back to sleep is safest until babies are able to roll over on their own.

It's also fine for your baby to sleep on you! You can hold your baby as much as you want. Some of my happiest memories are of lying on the couch with my newborns sleeping on my chest.

When you want to bring your baby to your bed, I recommend using either a co-sleeper or a bassinet next to the bed. This way you have your baby right next to you, but there is no way of accidentally smothering her.

Fussy, Fussy Babies

People use the term *colic* to refer to a baby who acts fussy most of the time during the first few months of life. Not every baby has colic, but some have it with a vengeance. While debates rage on about the definition and causes of colic, parents just want to know what will quiet and calm their unhappy baby.

In 1985 I was an intern at Valley Medical Center in Fresno, working an extra shift in the emergency room to earn a little extra money. One hot summer night I had already become fairly masterful at calming crying infants when I walked into that tiny ER room. In front of me were two very young parents and a two-month-old who was screaming his head off. They held him out to me, saying “Doctor, he just won’t stop crying.” Their son had been getting more and more fussy the previous few weeks. I could tell from the looks on their faces that they were at their wits’ end.

As I talked to the parents, I picked up their baby, cradled him in my arms, held him firmly but gently, and rocked back and forth with a slight up-and-down bounce. His weight gain was fine. He was being formula fed, not breastfeeding, and I reasoned that the screaming could stem from an upset stomach. But this baby was completely normal by history and on exam: He had not been ill, and his bowel movements were normal. These are the hardest visits in a way, as I not only had to demonstrate to these young parents that their baby was fine, but also had to reassure them that they could calm him themselves. My walking and gentle jostling seemed to soothe him. After more than thirty minutes with a calm and content baby, they asked, “Can you please come home with us?”

Stress and anxiety in parents can trigger what we call colic in a sensitive baby. Babies are more intuitive than we think: Sometimes they get upset because we are upset. We explored together who their support system included. I suggested they get help from friends,

relatives, and neighbors, who would probably all be delighted to spend an hour holding the baby so his parents could rest.

A baby this age can also get fussy because of chronic hunger, though this is very rare. A quick look at weight gain will answer whether that is the source of the crying.

Gas pains can be triggered by a mother's diet: Caffeine, chocolate, dairy, and gas-producing foods are common culprits. They can also be caused by an intolerance to cow's milk or to another ingredient in infant formula. When a baby startles awake from sleep and cries as if in pain, he may be experiencing gas or other tummy troubles. The immature intestinal tract that is learning to move larger and larger volumes of milk sometimes gets a bit distended, and that hurts. If you have ever had a gas pain, you know what I'm talking about when I say it can hurt!

Some parents have found that giving infant probiotics—which are available as drops or powder—helps ease colic, suggesting that an imbalance of bacteria in the gut may be part of the problem. Others have had success with gripe water, which typically contains fennel, ginger, chamomile, and sometimes peppermint, depending on the recipe. I recommend probiotics and encourage parents to try gripe water if nothing else is helping.

Family Matters

As a new doctor trying to pay off student loans and establish a practice, I remember feeling deeply conflicted when my children were born. I couldn't afford to take time off from work, and I also, honestly, did not want to abandon my patients. At the same time, I wanted to spend as much time with my babies as I could and be as helpful as possible at home. It was hard. My mother-in-law, Adela, came and stayed with us for a month after the birth of each of our children. Her presence was invaluable, allowing me to go back to work without worrying about my wife at home with a newborn. A new mom has so much to do: She is recuperating from the birth, caring for a new life, trying to eat well for optimal breastfeeding, making meals for the rest of the family, and keeping the house in order (which feels like a full-time job in itself, to me anyway). Thank you, Grandma Adela.

Many of us live far away from relatives these days, and we sometimes underestimate the importance of family. I encourage you to think about this before you have children: Is it possible to move closer to siblings or parents? Can they arrange for time off to help you?

If you have a strained relationship with your family or your parents have passed away, think about the people in your life you feel closest to. Can a best friend help you make and freeze a batch of meals? Can you ask a co-worker to set up a meal train for your family for the first month after the baby is born, in lieu of gifts? When you have a new baby, you need support: all of you.

Childcare for Newborns

If you need to pay for care for your baby, I recommend you find a loving person who can care for your baby in your home or hers. With Tucker, my middle son, we were blessed to find a mom in our church whose children were mostly grown up. Ami had just one little one left at home, who was starting kindergarten. She was looking to go back to work, and she loved babies and was good with them. Tucker lived in Ami's arms for the first years of his life and was blessed to basically have two families. A loving arrangement like this is a better option than a big day care with lots of children, overworked caregivers, and many shared germs.

Feeling Depressed

Jamie told me at his son's two-week visit that he was feeling depressed and stressed. Jamie's feelings dovetail with the results of a 2015 study from Germany that shows that parents, especially those who are highly educated or wait a long time to have a second child, feel a considerable loss of happiness after the birth of a baby.

Regardless of age or education level, however, both fathers and mothers can experience the baby blues or its more serious cousin, full-blown postpartum depression. If you are really struggling, it is important to get professional help. It won't last forever, but things can seem overwhelming at the time. When you add exhaustion to the huge hormone shift that takes place at birth, it's no wonder that between 12 and 16 percent of new moms have postpartum depression and that one in ten new dads battle negative feelings in those early weeks.

In my experience, getting enough sleep really helps parents who are struggling. Both parents need to be as kind as they can be to themselves and to each other. Remember, this stage is temporary, and things really do get easier. Sleep when the baby is sleeping. If waking up at night is adding to your feelings of despair, a partner or other caregiver can give the baby a bottle of pumped milk. Just make sure breastfeeding is well established and the baby has no latch issues before you start using bottles. Ask for the help you need.

Siblings Need Time to Adjust Too

“We’re having a hard time at home,” a dad named Isaac admitted. “Big brother Kaden [who was four years old and very pleasant throughout the visit] is hitting and kicking. When I put him in time-out, he punches walls and is totally out of control.”

With all the focus on the baby, Kaden was having trouble figuring out his place in the new family configuration. Acting out was his way of saying with behavior what he was not able to say with words: that he needed more attention, and that he was not pleased to have to share his parents with this new creature. The key is to be sympathetic to a child’s feelings (“I understand you’re really angry”) but give him the tools to express his negative emotions without hurting himself or anyone else. (“Can you make me a drawing of how you feel?” “Let’s try screaming into this pillow, instead of punching the wall. That way the wall doesn’t get hurt, and neither does your hand.”) Do not reward violent or destructive behavior. (“As soon as you calm down I would like to spend some time just with you.”)

Siblings need time to adjust
to the new baby too.



Every older child reacts differently to the arrival of a sibling. Children older than six or seven often react to a new baby with love at first sight. Ten-year-old Elizabeth was absolutely delighted when her baby sister was born, wanted to hold her all the time, and took an active role in her care. Toddlers and siblings under five, like Kaden, sometimes have a harder time, exclaiming that they want the baby to go back in Mommy's tummy (I've heard children say this a lot) or asking when Mommy and Daddy are giving the baby back.

Everyone in the family needs preparation for the changes that come with a new baby. It's helpful to read picture books together about growing families. There are dozens; two of our favorites were *Sophie and the New Baby* and *The Berenstain Bears and Baby Makes Five*. Answer any questions your older children may have. Get ready for a talk about baby making, as many a curious brother- or sister-to-be will indignantly want to know how the baby got in there in the first place. Don't promise your child a playmate. It's important to be realistic about how little a baby can do in the beginning ("He'll sleep a lot, and nurse a lot, and also probably cry a lot"), while making positive

statements about your child's importance as the big brother or big sister ("You can teach him how to walk and talk. He'll want to do what you do when he's older").

Support for NEW FAMILIES



Looking Ahead: Thinking About Vaccines and Talking to Your Child's Doctor

At the end of every two-week well visit, I provide the parents with an overview of the vaccine decisions they will need to make at the two-month visit. At your two-month visit, most pediatricians will tell you to give your baby six vaccines against eight diseases. The vaccines you'll be expected to get at the next well baby visit are: the hep B (hepatitis B), IPV (polio), RV (rotavirus), DTaP (diphtheria, tetanus, and acellular pertussis), PCV13 (pneumococcus), and Hib (*Haemophilus influenzae* type B) vaccines. Though you won't need to make vaccine decisions for another month and a half, it's important to think about them now, at two weeks. The National Childhood Vaccine Injury Act requires that health care providers hand you vaccine information statements from the CDC before every vaccination.

I feel that these vaccine information handouts, while important, grossly underestimate the risks of vaccines. In my opinion, these pieces of paper do not constitute adequate informed consent, which is the process we doctors are supposed to follow before doing any medical procedure on you, the patient. If you are about to have surgery, you will be informed about the risks of anesthesia, which include death. Informed consent should outline the risks and the benefits of doing and not doing the procedure and present the alternatives. In the case of vaccines, pediatricians and doctors in general are systematically trained to minimize discussion of possible side effects, and we are never instructed to explain that not giving a vaccine is an option. Instead, we are trained to assume that you will do all the vaccines and to just say "Okay, it's time to do the vaccines." One purpose of this book, of course, is to give you a deeper understanding of your vaccine choices. The current CDC one-size-fits-all vaccine schedule is not appropriate for most babies.

I will go into detail about each of these vaccines—and my recommendations for or against them—in the next chapter. You may want to jump ahead and read about them so that you can form your opinion now. If you decide to vaccinate differently than the CDC schedule, this two-week appointment is a good time to tell your doctor and make sure he or she is comfortable with your decision. Some pediatricians kick children out of their practices when parents refuse to do all the vaccines according to the CDC schedule. It would be good for you to know if this is in the offing for you at the two-week visit, so you have six weeks to find a more evidence-based, scientific, and thoughtful care provider.

Dr. Paul's Plan **FOR TWO-WEEK-OLDS**

- 1. Get help.** When you return home with a new baby, have friends and family bring you healthy home-cooked meals, clean the bathroom, and tidy up the house in lieu of giving traditional baby gifts.
- 2. Pay attention.** What new babies need most is your time, love, and attention.
- 3. Take it one drop at a time.** Breastfeeding can be hard for some new moms. Don't give up. You'll get the hang of it.
- 4. Eat well.** Moms need optimal nutrition to make the most nutritious milk. Dads need optimal nutrition to give them energy and boost their mood.
- 5. Allow yourself time to heal.** Having a baby is a big adjustment.
- 6. Enjoy your baby.** Love her, snuggle her, hold her, talk to her, smell her, and kiss her. When she becomes a teenager, you'll miss this like crazy.

The Eight Questions Parents Ask Me Most **ABOUT TWO-WEEK-OLDS**

ABOUT FEEDING

1. Is my baby gaining enough weight?

A: The first thing I tell parents about this issue is to look at their baby, not at the scale. I shamelessly borrow this advice from Jay Gordon, M.D., a Los Angeles-based pediatrician who is a wonderfully outspoken champion of breastfeeding. True, babies should be back to their birth weight by about two weeks, and for the first couple months they should gain about an ounce (30 grams) a day. But if this hasn't happened, don't panic. What matters most is that the baby looks and acts healthy. If he is moving his legs and arms vigorously, has good skin tone, is urinating and defecating regularly, and is meeting milestones, the slow weight gain may be due to genetics (are you or the baby's other parent a small person?) or individual variation. If the slow weight gain is due to nursing difficulties, we can fix them. The first task is to get the support you need. Supplementing a baby this young with formula is the "easiest" thing to do but the least healthy for you and your baby. But if your baby looks unhealthy or is lethargic, you may need to supplement. My preference is to use donor breast milk. Formula is really not a good option, and you should avoid it if possible.

2. How much milk should my baby drink?

A: If you are nursing, don't worry about how much she is drinking. Feed her every time she lets you know she is hungry, and try to have her nurse on both sides until each breast feels empty. If she looks healthy and is gaining weight well, you're doing everything right. Learn her signals for being full: Some fall asleep, most relax the hand that is pushing against the breast, some pop off the nipple, and others become fussy to indicate they're finished.

If your two-week-old is not gaining weight or if nursing continues to make your breasts sore or to make you miserable beyond the first few days, then you need lactation support. The most common problem is the baby's latch, which can be fixed with some help. Increase your milk supply by nursing more often, pumping between feedings, and staying well hydrated and well rested. Some moms report that herbal teas, especially those that contain fenugreek, help increase milk supply. If your baby has not been gaining weight well, I recommend you feed him on cue, at least every one to three hours during the day and every two to four hours at night.

3. What infant formula do you recommend?

A: I don't recommend any conventional formula! Formula representatives do everything they can to court pediatricians' favor. (They cater lunches for the staff and the doctors, cart in crates of sample formula for the office and stacks of discount coupons to leave at the front desk, and pass out

free branded paraphernalia.) But all this free stuff comes at a cost! This unethical advertising is illegal in countries where women have much better breastfeeding rates, and it should be illegal here. I do not think doctors should recommend formula or give breastfeeding women free samples.

Do everything you can to avoid formula completely. Cow's milk is designed for calves, not humans, and several studies now suggest that cow's milk (which is what most infant formula is derived from) may be the trigger for type 1 diabetes.

The benefits of breast milk go way beyond simple nutrition. Breastfed babies are healthier, smarter, and less likely to have a myriad of illnesses, infections, and developmental issues.

All that said, if you must use formula when donor milk is not available, I don't want you to feel guilty. Look for a formula that:

- Is sweetened with organic brown rice tested for lack of arsenic. Most other formulas use corn syrup solids, which are a by-product of the GMO corn industry and should not be in a baby's first food.
- Does not contain palm oil, which forms soaps in the baby's GI tract. Most brands use palm oil, a food additive you should avoid for both health and environmental reasons. (Orangutan habitat is being decimated in Borneo and Indonesia to grow palm trees.)
- Contains water-extracted DHA and ARA. Most formulas use neurotoxic solvents (hexane) to extract DHA and ARA.
- Does not contain carrageenan. Carrageenan causes inflammation in the gut and is banned from infant formulas in Europe. Manufacturers use it in America so you do not have to shake the formula. Convenience over health rules the roost.
- Does not contain synthetic preservatives (ascorbic palmitate, beta-carotene) or synthetic nutrients.

ABOUT SLEEP (OR LACK THEREOF)

4. My baby sleeps all day and is up all night. Help!

A: It takes a newborn several weeks to learn to be awake during the day and asleep at night. These first few weeks of life are precious, and there is no rush (you'll see—they'll go by much faster than you think), but you can take steps to gently transition a baby toward being awake more during the day and sleeping more at night, a process that may take several months. Open shades in the morning to let the light in, and don't be afraid to talk and make noise around the house. Respond quickly

when she wakes up from naps, offer the breast often during the day, and encourage wakeful alert time by talking to and playing with her. Keep the shades down and the lights off at night, responding promptly to her need to nurse or have a diaper change but not inadvertently stimulating her into wakefulness with too much talking or interaction. Learn to side-nurse lying down, which will help you sleep while the baby is breastfeeding.

ABOUT CRYING

5. How can I get my baby to stop crying?

A: If you have help from experienced friends or relatives (usually women who love babies—but I love doing this too), watch them while they soothe the baby. The New Parent Dance works every time, unless the baby is really hungry and just needs to nurse. Hold him with his face sideways on your chest, firmly but not too tight. Stand up—it usually won't work if you're sitting down. (I know because I've tried when I was tired.) And you gently bounce your entire body up and down at perhaps one to two bounces per second, while swaying back and forth. You might murmur *shhh, shhh, shhh* as you do this or quietly sing to the baby, who loves the familiar sound of your voice. Within a minute or two, even the most frustrated fussy baby will melt into your body and go to sleep. Once he is in a deep sleep, you can slip him onto a warm, firm place, and he may stay asleep (no guarantees). In Zimbabwe and most of Africa, babies are tied to the back and live much of their first year sleeping on their mother's backs when they aren't nursing.

ABOUT THE UMBILICAL CORD

6. The cord just fell off, and it doesn't look right. Is something wrong?

A: The umbilical cord stump generally falls off sometime in the first three weeks. Often it is goopy underneath and may have a foul odor. Clean it with a water-moistened washcloth or cotton ball, and then let it air dry. A lump of white tissue may be left where the cord was. This is called an umbilical granuloma, medical-speak for “normal leftover cord tissue that will go away by itself.”

If the umbilicus continues to bleed or is oozing a lot and you feel concerned, bring your baby to your doctor. I cauterize (chemically dry) it with silver nitrate. But normally the cord or umbilical granuloma will be fine if you simply leave it alone.

ABOUT GOING OUT

7. When can we take the baby out?

A: There are two main issues here. First, we want to avoid exposing a tiny baby to infections from other people. Second, we want to keep the baby's temperature stable.

Some parents feel comfortable bringing a tiny baby to a family function, to school functions, or out to dinner at a crowded restaurant, but I don't recommend this in the first two weeks of life. A two-week-old needs time to grow and establish a robust immune system, and the more you expose her to other people, the more you increase the risk of infection. Wait until the baby is older to take her out on the town.

You can invite people to visit you, if you're feeling lonely and want company, but you shouldn't feel obliged to say yes when people tell you they want to see the baby. The weeks and months after giving birth are a special time, and some families like to keep that time for themselves. When you do welcome visitors, make sure they aren't getting over an illness or feeling sick. Some people, in their eagerness to see a new baby, may fail to mention they have a cold or even the flu! Ask your visitors to wash their hands before holding the baby.

If it's not too hot or too cold outside and it's easy to maintain the baby's temperature, take the baby outside as often as possible. Babies thrive on sunlight and fresh air. Just remember that your baby's skin is less able to regulate temperature and that newborns are more vulnerable to overheating and to excessive heat loss when it is cold. Avoid too much direct sunlight on your baby's sensitive skin, and shield her eyes from direct sunlight.

8. Our relatives live far away and want to see the baby. When is it safe to travel?

A: I recommend avoiding air travel until your baby is at least six weeks old, unless the trip is absolutely necessary. The air in planes gets recirculated, so you are guaranteed exposure to every airborne virus on the plane. This is especially problematic in the winter months, from December to April in the northern hemisphere, when influenza and RSV (respiratory syncytial virus) are circulating.

When a baby under six weeks old gets a fever, we doctors are obligated to do a full septic workup that includes blood work, a spinal tap to look for meningitis, and two days in the hospital for IV antibiotics. All that can be avoided by avoiding exposures to illness during those first six weeks of life.

Chapter 5

The Two-Month Visit: Baby's First Vaccines

“Hi, Hallie,” I say, flashing my biggest smile. “How’ve you been?”

Hallie gives me a toothless grin.

As bald as a billiard ball, wearing a yellow sundress, Hallie has come in with her parents for her two-month well baby visit.

“You’re getting so big.” I talk only to her, ignoring her parents for now.

“Ah-ah-ah,” she answers back.

Babies this age love to interact.

Hallie’s parents, Kayla and Colby, have that new parent glow, full of wonderment and anticipation.

This brief interaction may look like fun and games, but it’s actually a vital part of the developmental assessment. At the two-month visit, I’m watching for a baby’s response to my voice, for coos (which are a precursor to speech), and for the social smile that is universal among babies across cultures.

That said, you shouldn’t worry if you have a serious baby who responds to the world with gravitas. Not all babies smile all the time. Some are born skeptical.

While Colby is still holding Hallie, I move myself to either side of her to watch if she is able to track movement both ways with her eyes, and as her eyes follow me, I make sure they are tracking together.

I also observe her head control. That big head is still exhausting to

hold up for very long. Two-month-olds will lift their heads up in curiosity to look at something, then flop them back down on your shoulder. In doing so, they are developing their neck muscles and coordination.

I put my finger in her hand to check her grasp reflex. Infants are born with an automatic grasp reflex that usually continues until five or six months. After that the action of grasping is no longer automatic but deliberate.

I can already tell that Hallie is developing right on track: She curls her hand around my finger and squeezes, she has great head control, and she is a people person, talking back to me with little coos and sighs. It's all remarkably engaged and engaging for someone who has only been breathing on her own for fifty-six days.

I continue the exam by carefully evaluating her head, ears, eyes, nose, throat, lungs, heart, and abdomen. For this, the baby wears her birthday suit. I feel for femoral pulses, the beat of the heart as felt in the groin area. If femoral pulses are weak, pediatricians will sometimes detect aortic stenosis, a rare narrowing of the major blood vessel carrying blood to the baby. Between 10 and 15 percent of the time, this condition is detected before a child turns one. It often gets progressively worse as a child matures, and can be fatal when it is severe.

I also check for dislocating hips, which may indicate the hip socket is not developing normally. Congenital hip dysplasia probably occurs in no more than one in a thousand children and can be easily fixed if caught early. But if it's missed, in rare cases the baby could have lifelong hip problems. Some pediatricians who are keen to intervene may suggest repeated X-rays—exposing the baby to harmful radiation—and body casts, or even surgery, to fix the problem. This is necessary only in extreme cases. If your doctor recommends these interventions, you need a second opinion. Body casts can cause circulatory problems, muscle atrophy, and emotional problems for small children. Often the problem resolves on its own, especially if you wear your baby on your front or back with his legs splayed. The thing not to do is swaddle the baby too tightly with his legs together and extended straight.

After playing with Hallie, I pull up her head, height, and weight growth charts on the computer and share the data with her parents. Parents are often very interested in how their baby compares to what is considered “normal.” But what’s normal for another baby is not normal for yours. What is important in these growth charts is the trend of growth, not the specific numbers. The late Robert Mendelsohn, M.D., author of the terrific book *How to Raise a Healthy Child...in Spite of Your Doctor*, argued that we should do away with growth charts completely. He may have been on to something: These charts mainly serve the purpose of finding very rare outliers where a head is growing too fast due to hydrocephalus (a condition I’ve never seen in my practice) or where the skull fuses too soon in a condition called craniosynostosis, which I have seen only a few times in my career. Occasionally growth charts help us see that a baby is not getting enough nutrients to grow optimally. I explain to Hallie’s parents that there’s no need to worry about where their baby falls on the curves related to others, just how she is trending compared to her own curve.

“Is Hallie developing normally?” Colby asks me near the end of the visit.

“Sure is,” I respond. “She’s a champ.”

Breastfeeding Your Two-Month-Old

At the two-month visit, weight can sometimes be a challenge, typically for babies whose weight gain was borderline at two weeks.

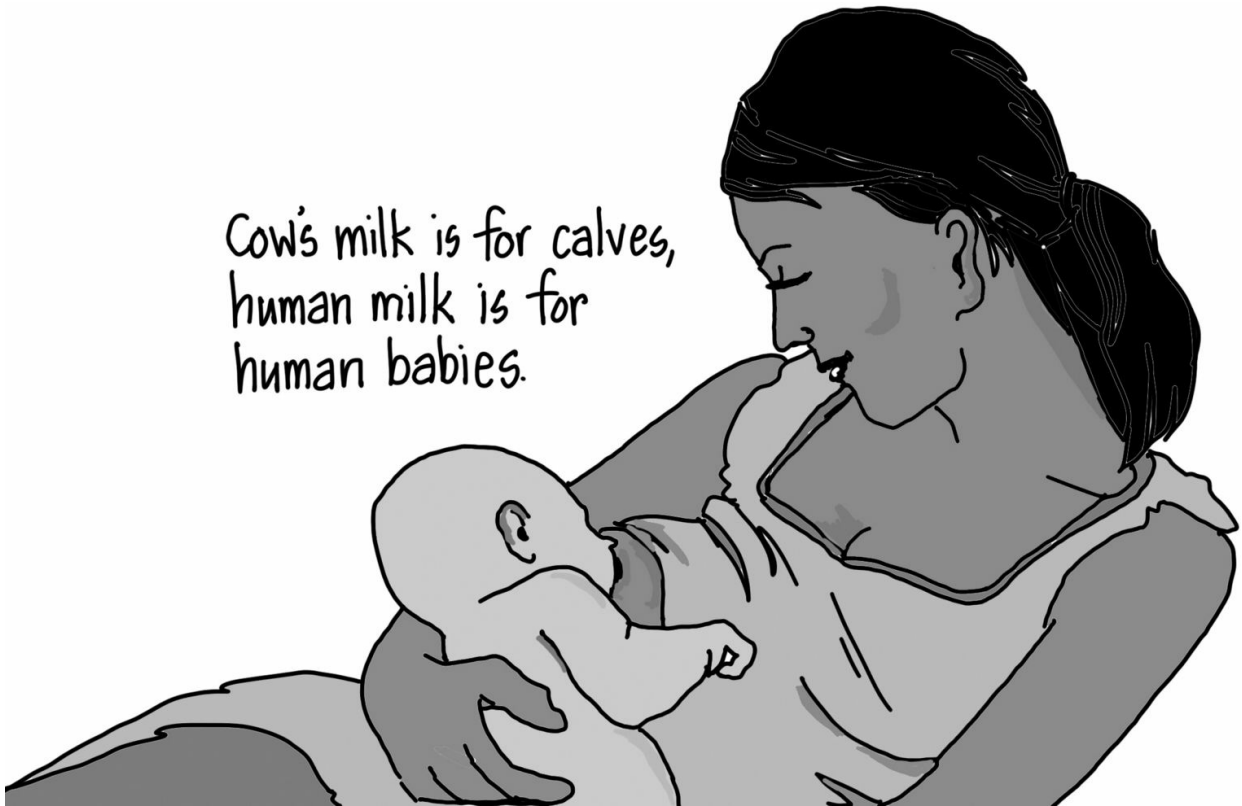
The more times per day you nurse and the better drained your breasts are at each feeding, the more milk your body will make. That's how moms are able to successfully and exclusively nurse twins and even triplets. It's pretty simple: If the milk is not removed from your breasts, your body does not have a signal to make more milk, and you will stop producing as much. It's worth mentioning something else here as well: How big or small your breasts are has no relationship with how much breast milk you make!

As before, make sure you are eating enough calories from whole foods, drinking enough water (starvation and dehydration shut off milk production), and getting enough rest. Cuddling with your baby, preferably in bed, with your shirt off, your baby in just a diaper, and a basket of healthy food, filtered water, and some good reading within reach is a guaranteed method to help your body make lots of milk. But finding time to rest and snuggle is often the biggest challenge for nursing moms. The grandmotherly advice to sleep when the baby sleeps? That is also a smart doctor's order. I know it often feels impossible (it did for my wife), especially if you're running around after older children or working full-time, but try to lie down with the baby, and preferably nap, as often as you can.

As I said in the last chapter, we do not want to start breastfed babies on bottles too early because of the risk of nipple confusion. It's best to exclusively breastfeed for the first forty days. But by two months most babies who have been exclusively breastfed can take a bottle every once in a while, or as often as once a day, without disrupting nursing. Hallie's parents shared their strategy with me: Colby takes Hallie in the evening and feeds her a bottle of pumped breast milk before bed, so Kayla can go to sleep early. In some families it may be more helpful

for the nonbreastfeeding parent to give an early morning bottle before work, so Mom can sleep in.

Cow's milk is for calves,
human milk is for
human babies.



Beguiled by Baby Poop and Pee

No matter how determined you were, before you had a baby, to pay no attention to this subject, I have yet to meet a new mom or dad who is not keenly interested in the baby's excretory habits. You are changing diapers constantly; pooping and peeing are twenty-four-hour concerns. And as any pediatrician will tell you, you can learn a lot about how healthy someone is by her poop.

At two months, breastfed babies may be having only one explosive bowel movement every two weeks, or they might be pooping several times a day. Both are perfectly normal. The appearance of breastfed poop can vary widely, but it is usually some shade of yellow, maybe sometimes a little green, with curdled bits in it that look like scrambled eggs or cottage cheese, and it smells faintly sweet.

Bottle-fed babies usually have much darker, harder poop that smells, well, like poop. One mom in my practice described the smell as moldy miso soup mix. That's pretty accurate! Bottle-fed baby poop will stain cloth, while breastfed usually will not.

Babies put everything in their mouths—your hair, leaves, the dog's tail. If you see something strange in your infant's poop, like a blade of grass, don't panic. As long as your baby is not acting lethargic or fussy and there is no blood in her stool or indication of pain, there's no reason for concern. Scientists are beginning to understand that all this oral exploration is actually a crucial way that a baby develops a healthy immune system.

If your baby is exclusively breastfed, you do not need to worry about constipation, even if a week has gone by with no bowel movement. It's coming with a vengeance. Constipation, on the other hand, is a common digestive problem in formula-fed babies and may be an indication that your baby has an intolerance to cow's milk or is not tolerating the formula brand you are using.

If you're worried that your baby is constipated, consult your doctor. But don't let your pediatrician prescribe the quick fix of a prescription or over-the-counter laxative. It's important to figure out what is causing the constipation—if there really is any—and not simply treat the symptoms.

Your baby should wet several diapers a day. If you use cloth diapers or infant pottyng (see the box on [this page](#)), a practice in many countries around the world, you will know exactly how much your baby is peeing. If you use disposables, it's harder to tell. Whatever diaper system you use, let your baby go diaper free as much as possible: Air on her skin is better than plastic or wet cloth and helps prevent diaper rash. Fewer than four wet diapers a day, combined with poor weight gain, would be a clue your baby is not getting enough to drink.

The Dirt on Diaper Rash

Diaper rashes generally fall into one of three categories. The most common is a contact rash—called contact dermatitis—that involves the areas where the diaper touches the skin. It can be due to the bowel movements being irritating, which I see weekly with infants in my practice. One little boy's entire bottom became raw and inflamed each time his stool touched his skin for more than a few minutes. This kind of angry rash is often due to formula or something in the mom's diet, and changing the formula brand or her diet usually resolves the issue. Diaper rash can also be caused by an allergic reaction to the plethora of synthetic chemicals, dyes, and perfumes in plastic diapers (not things you want in constant contact with your baby's sensitive skin). Avoid baby wipes when your baby has a rash because they can be irritating and leave a film on the skin. Gently clean the area with warm water and a cloth. Sitting the baby in the tub with warm water and a quarter cup of baking soda but no soap can be helpful. For any kind of diaper rash, lots of diaper-free time always helps. It's also useful to slather on diaper cream as a barrier to protect the skin from the irritating stool. I've found that white zinc-oxide-containing cream works best, but any barrier cream will probably do the trick.

The second most common rash is caused by yeast. This rash usually appears in the creases in the thighs and the butt crack. Yeast rashes also often have little red bumps near the edges (called satellite lesions). If you keep the area clean and dry—and give the baby lots of air time and some direct sunlight—this rash may go away by itself. If that doesn't work, you can alternate a couple of the different antifungal creams that are available without a prescription. But yeast can be very tenacious. Jennifer's toddler had a yeasty rash on the backs of her legs under her knees that did not respond to antifungal cream, so her friend made her a topical oil out of eight drops each of lavender, melaleuca, and frankincense in a roller bottle, topped off with fractionated coconut oil (a refined form of coconut oil that remains liquid at room temperature). The rash was gone the next day. Essential oils are becoming more popular with moms in my practice. Coming from my mainstream background, I'm a little skeptical about them, but I'm watching the outcomes with interest.

The third rash we sometimes see is an angry-looking red rash just around the anus. This may be a perianal strep infection. Yes, that's right, the rash is caused by the same strep bacteria that can cause strep throat (in this case, Group A β -hemolytic streptococcus). Symptoms include rectal itching and pain, as well as bloody stools in a third of the cases. The rash can spread to a child's vulva or penis. This rash, which often goes untreated because it is hard to diagnose, has been linked to other complications due to strep infections. That's the bad news. The good news is that oral antibiotics usually clear it up quickly, and if you are proactive in eating a diet rich in probiotics and low in sugar, it's unlikely your child will get it in the first place. I see contact dermatitis many times each day and yeast rash almost weekly in my practice, but only approximately one perianal strep infection a year.

I used to think that all babies got diaper rash. Then a stay-at-home dad named Joey brought his son Arun in for a well baby check. Arun's pudgy folds of thigh fat and the skin around his diaper area were completely rash-free. Joey told me that after reading an article about Vietnamese parents who cued their babies to pee and poop by whistling, he and his wife had decided to try infant pottyng. They used cloth diapers and

started making the same noise—a soft grunt that mimicked the baby’s own noises—each time Arun pooped. After a few weeks of paying attention to when Arun urinated and defecated, both Joey and his wife were able to anticipate when the baby needed to go and “catch” it. Soon they were taking off his diaper and making the noise, and Arun would poop as they held him over the toilet! “He’s pooped maybe twice in a diaper this month,” Joey told me. “Most of the time he just goes in the potty.” I stared at him in disbelief, secretly thinking that he and his wife were a little bit crazy.

But my mother, who as I’ve mentioned worked as a nurse for over thirty years, reminds me that babies in Rhodesian villages grew up completely diaper free. Even today, village women across Africa carry their babies on their backs without diapers. The mom learns to be attuned to the baby, so when the baby gets a little squiggly—indicating with body language that she needs to go—the mom slips the baby off her back and holds her over a latrine or by a tree.

This is harder to do in a Western context, of course, but what Americans call elimination communication (EC) has become popular enough among parents like Joey that you can find a wealth of information about it online. Ignore the crank articles that accuse parents of being competitive about potty training. That’s not the point. My theory is that journalists who portray it that way are culturally biased or jealous, or both.

Flatheads

Most parents know to put their babies on their backs to sleep, a practice that has been correlated with a reduction in SIDS, but some parents don't realize that babies need lots of tummy time while they are awake. They also need lots of time close to you, either held in your arms or carried on your body.

I don't recommend lugging your baby around in those pullout plastic bucket car seats, despite their popularity. They are a lot heavier and more cumbersome than they look. I also tell parents not to leave babies too long in bouncy chairs.

Even though some babies don't like tummy time, that's how they learn head control and gain muscle tone. Tummy time also helps to teach them coordination and new skills: Babies frustrated by being on their stomachs will work very hard to roll over (and be very surprised and proud of themselves when—what happened?—they are seeing the world from the vantage point of their backs).

Babies also derive great comfort and security from being held, which allows them to feel your heartbeat and smell your scent. Baby wearing has been shown to reduce fussiness and crying, enhance visual and auditory alertness, and promote bonding.

Think of the peaceful feeling you get being safe in someone's arms as they give you a hug. That's how your baby feels being carried in your arms or on your back.

But the most important reason you want to keep your baby off his back during waking hours is to avoid the uniquely modern-day Western problem of your baby getting a misshapen or “pancake” head. The medical name for pancake head is positional plagiocephaly. Unfortunately, as parents leave their babies on their backs too much, this condition has become increasingly common. These days as many as 47 percent of babies aged seven to twelve weeks have flat heads.

As long as a baby's head circumference is in the normal range, your baby's head shape should return to normal by the time she is one or two years old. A slightly asymmetrical head that is a bit flat on the back is nothing to worry about, but it is a signal that your baby may be spending too much time on her back. If the flattening is severe, some pediatricians will prescribe a special helmet. I do not recommend this. A well-designed study by researchers in the Netherlands found that these costly helmets have uncomfortable side effects, including sweating, pain, an unpleasant odor, and interference with cuddling. The study also showed that they are not actually effective.

And Now Let's Do the Vitamins

Your baby needs vitamin D to absorb calcium and to grow and maintain strong bones. Vitamin D plays a crucial role in the immune system to help the body fight off infection, and it is also important for your nerve cells to carry messages between the brain and the body. If you spend very little time outside, live north of the tropics, or live in a rainy place (like Portland, Oregon) or a city with tall buildings and air pollution that block the sunlight, your baby is likely not getting enough vitamin D. Although vitamin D transfers effectively through breast milk, the majority of American moms are not getting enough sunlight and vitamin D themselves.

It is important to get your baby outside and in direct sunlight without sunscreen for ten to fifteen minutes every day. But that may not be enough. Breastfeeding moms should consider having their vitamin D levels tested and also testing their infants. A thousand international units (IUs) of vitamin D, given as drops, can be beneficial for two-month-olds who are vitamin D deficient. A 2004 study determined that supplementing the mother with 2,000 to 4,000 IUs of vitamin D per day safely increased her and her baby's vitamin D status.

Until babies are eating live foods that contain beneficial bacteria (like lacto-fermented sauerkraut and pickles and cultured plain yogurt), a high-quality probiotic intended for infants can also be helpful, especially for formula-fed and colicky babies. Breast milk naturally contains lots of healthy bacteria, and breastfeeding moms should make an effort to eat fermented foods.

Autism Awareness, Even Now

As the parent of a two-month-old, you probably don't give much thought to autism. But, sadly, you need to. There is controversy about when autism begins and what causes it, but integrative physicians who work with autistic kids suspect that autism occurs in genetically vulnerable children who are also exposed to too many toxins, both in the womb and during the first few years of life. Autism rates have been steadily rising in the United States. In April 2015, the Autism Society San Francisco Bay Area released a study—using data from the California Department of Developmental Services (DDS), which is considered to have the most accurate prevalence-tracking system in the country—reporting that cases of severe autism are exponentially on the rise. In 1987 the DDS reported only 2,701 cases of autism; today the figure is over 76,000. A child is diagnosed with autism *every six minutes* in the United States. I wish I were making this up.

We do not have a definitive answer about what is causing autism, but as I discussed in [Chapter 1](#), we have compelling research that suggests possible culprits. Our children, we know, are exposed to more environmental toxins than ever before, and American children are far more likely to be exposed to known neurotoxins than are children in Europe.

We also know that these exposures can lead to epigenetic changes—external modifications to DNA that can turn certain genes on or off.

We also know that we can easily reduce our exposure to toxins, though we cannot change the genetic blueprint we are born with.

Compare the rates of autism in Norway to those in the United States. A Norwegian study published in the *Journal of the American Medical Association* in 2013, with a sample size of 85,176 children, found 114 diagnosed with autism, 56 with Asperger's syndrome, and 100 with PDD-NOS (pervasive developmental disorder—not otherwise

specified, a term used for children with autistic-like symptoms). Adding them all up, we see that 270 Norwegian children out of 85,176 were on the autism spectrum, or 0.3 percent, giving a rate of 3 spectrum children in 1,000 or 1 in every 333.

Depending on the statistics you look at, autism in America is *at least three and as much as six times higher than in Norway*. Which raises the question, what are they doing differently in Norway?

Though a rotavirus oral vaccine has been recently added to the vaccine schedule for Norwegian babies at six weeks, at the time the study was done, Norwegian infants did not get any vaccines until they were three months old. Only high-risk newborns got the hepatitis B vaccine. This means that unlike American infants, Norwegians were not receiving injected aluminum at birth, two months, and six months. Only one ultrasound, at eighteen weeks of gestation, is funded by their national health care system (though many women choose to get more privately). Norway also has one of the lowest C-section rates in the world, which means that most Norwegian infants are acquiring healthy and appropriate gut bacteria at birth that help them ward off infections and establish a healthy immune system. The vast majority of Norwegian babies are breastfed starting at birth (99 percent) and exclusively breastfed for the first months of life.

Is it possible that these superior Norwegian childhood health outcomes have nothing to do with vaccines? Yes. In a report issued by the Institute of Medicine in January 2013, a team of scientists concluded that there was “no evidence that the schedule is unsafe.” That sounds reassuring—until you read the report itself and realize it raises more questions than answers. The report does not address the issue of aluminum neurotoxicity. No large-scale studies with a control group of fully unvaccinated children have been conducted. We also have no well-designed studies of the cumulative effects of many of the vaccine ingredients, including aluminum, on infants and small children. Also lacking are long-term safety studies on the effects of adding more vaccines to the schedule. The truth is that we still do not have definitive answers about many aspects of vaccine safety in America. The one thing I know for sure, though, is that we need to

change how we are doing things in the United States and follow the precautionary principle. American children are becoming autistic at unprecedented rates. We must make safe changes to the American pediatric standard of care to stem the tide of neurological damage until we find out definitively what is going on. In the meantime, it's important to protect your two-month-old baby from any and all toxic exposures that you can. And the six vaccines that the CDC recommends you approve at two months are a place you can start that protection.

The CDC Vaccine Schedule for Two-Month-Olds

Your pediatrician will expect you to give your two-month-old baby six vaccines against eight diseases, as per the CDC's recommendations:

- **Hepatitis B** (2nd of 3 doses. The 1st is usually given at birth)
- **Rotavirus** (1st of 2 to 3 doses, depending on the brand)
- **Polio** (1st of 4 doses)
- **Hib** (1st of 4 doses)
- **DTaP** (1st of 5 doses)
- **Pneumococcus** (1st of 4 doses)

Though this is the schedule your doctor expects you to follow, the choice of when and how to vaccinate your infant is yours. Hopefully you have prepared your pediatrician at the two-week visit if you plan to delay some vaccines.

With an eye on keeping your baby safe from dangerous vaccine-preventable diseases and minimizing the risks of toxins that can affect the brain, endocrine system, immune system, and long-term health, let's talk more specifically about these six recommended vaccines.

Hepatitis B

As we discussed in [Chapter 3](#), hepatitis B is spread through the exchange of bodily fluids from sex and IV drug use. Since your baby will not be engaging in sexual activity or sharing dirty needles, the only medical reason to give the hepatitis B vaccine is that the birth mother has hepatitis B. Fewer than 0.1 percent of U.S. mothers have hepatitis B, so 99.9 percent of American babies don't need this vaccine. If your baby got the birth dose of this vaccine, don't beat yourself up. You can't undo what's been done, but you can safely stop the infant series

and politely refuse further doses.



Rotavirus

Rotavirus is a common viral infection that affects the digestive system. First isolated in 1973 by a team of researchers in Australia as a cause of diarrhea in small children, rotavirus can cause stomach cramping, stomach pain, and fever. A contagious bug that spreads easily via infected stool (we call this the oral-fecal route: infections in stool easily spread by contact from hand to object to mouth), rotavirus usually incubates for only two days. In America, children are more likely to be infected in winter. Usually a mild illness, rotavirus can cause severe diarrhea and vomiting in babies and children who have compromised immune systems. The biggest concern with rotavirus—as with all diarrheal diseases—is dehydration. This is especially dangerous for malnourished children and children who live in hot climates.

Rotavirus is most common in children between three months and

three years of age. Babies under three months who are breastfed almost always have maternal antibodies that protect them from the virus. If they do get the disease, their symptoms are usually so mild that it goes undetected. By age five, most children with healthy immune systems exposed to rotavirus are immune to it.

The Rotavirus Vaccine

The first vaccine against rotavirus, RotaShield (made by Wyeth), was licensed in 1998 but withdrawn from the market the following year because it caused a marked increase of intussusception, an intestinal blockage, where one part of the intestine slides into another like a telescope, creating a folded layer of intestine that can block food and fluid from passing through. Intussusception is a serious complication that must be treated immediately with an enema or surgery to remove the blocked tissue. Without prompt intervention, intussusception can be fatal.

The RotaShield vaccine was associated with 98 cases of confirmed intussusception reported to the Vaccine Adverse Events Reporting System (VAERS) during the first fourteen months it was given to American infants, including at least one death.

In 2006 a new rotavirus vaccine (RotaTeq, made by Merck) was approved for every child in the United States. In 2008 a second rotavirus vaccine (Rotarix, made by GlaxoSmithKline) was licensed by the FDA. Both vaccines are given orally to babies by squirting a sweetened live-virus liquid into their mouths.

Is the Rotavirus Vaccine Safe?

RotaTeq and Rotarix are considered safe and are being used by seventy-seven countries worldwide. However, there is considerable evidence that the new generation of rotavirus vaccines may also cause intussusception. Intussusception was an extremely rare event prior to the introduction of the rotavirus vaccines, but since then rates of intussusception have increased. While this vaccine is celebrated in developing countries for reducing death rates from vomiting and diarrhea, it appears to be increasing death rates from intussusception.

Rotarix contains porcine circovirus, and RotaTeq contains baboon retrovirus. Viral contaminants from other animal species have unknown health risks for humans. We must have good evidence of safety before we introduce these unknowns into our children. My other concern is that this live-virus vaccine sometimes causes the very disease it is supposed to prevent.

My colleague John Trainer, M.D., a physician who cares for five thousand people in his practice in Jacksonville, Florida, has seen side effects from the rotavirus vaccine firsthand. “Our kids—more than one—got a week of diarrhea from the vaccine,” explains Trainer, who is the father of five and whose wife is also an M.D. “We went back to the pediatrician and said, ‘This vaccine is worse than the disease. We’re done here.’” Trainer no longer recommends the vaccine.

The early safety trials of the rotavirus vaccine found that the vaccine caused severe reactions in older children. So now the rotavirus vaccine series cannot be started after a baby is over fifteen weeks (a little less than four months) old, and all doses must be given by the time a baby is eight months old.

The new generation of the vaccine was never tested on babies or children over eight months of age. This also concerns me. Why would you give an infant who has an immature immune system something that may be too dangerous to give a one- or two-year-old?

Is the Rotavirus Vaccine Effective?

The CDC reports that before the vaccine was widely used, between twenty and sixty children died from rotavirus in America each year, but since vaccine use became widespread, there have been no deaths from rotavirus. This is the basis of its claim that the rotavirus vaccine is effective. But these estimated numbers of death from rotavirus are based on a retrospective study that looked at morbidity associated with diarrheal disease between 1968 and 1991. They are inaccurate and misleading. Rotavirus was not identified as an infectious agent until 1973, and hospitals did not routinely test for its presence in patients with diarrhea until the past decade. Diarrheal illness is known to be caused by many different viruses (enteroviruses, noroviruses,

and others) as well as by bacteria (salmonella, shigella, campylobacter, and *Clostridia difficile*, among others). The effects of many of these can be much more severe than the diarrheal illness caused by rotavirus. By overattributing rotavirus as the cause of years of diarrheal illness, vaccine efficacy is grossly exaggerated. I can't tell you how effective this vaccine really is, but I can tell you that in my last practice, after we started giving the rotavirus vaccine, there was no appreciable difference in the amount of vomiting and diarrheal illness we were seeing.

Data from my own practice shows that those infants who got the rotavirus vaccine were four times more likely to have gastroenteritis and diarrheal illness than those who did not get the vaccine.

If you look only at rotavirus hospitalization rates, this vaccine would seem to have been a cost-effective intervention. According to the CDC, when rotavirus vaccination began in 2006, hospitalization of children under five for acute gastroenteritis from *any* cause declined by 31 percent by 2008. By 2012 the reduction was 55 percent.

What this surveillance fails to take into account is that the reduction in hospitalizations may have little or nothing to do with the vaccine. I have been practicing pediatrics for thirty years. I can count on one hand the number of children needing hospitalization for diarrhea and vomiting. Since I opened my practice in 2008, not a single child has received the rotavirus vaccine. I refuse to stock it. Yet only one child in seven years has been hospitalized for severe dehydration. The unvaccinated children in my practice either are not getting rotavirus, or the illness is so mild that it requires no intervention. The use of an effective medication to stop the vomiting may be the real reason we see fewer hospitalizations. Because of effective antinausea drugs, it is rare that a child with rotavirus diarrhea and vomiting needs to be hospitalized. The reduction being celebrated in the literature as due to the vaccine is likely due to better medication.

**My Take on the Rotavirus Vaccine for TWO-MONTH-
OLDS**

In America the vast majority of rotavirus infections in children will be mild. When vomiting and diarrhea are severe, antinausea drugs exist to treat the problem. My experience indicates that the rotavirus vaccine is unnecessary, as long as families practice good hygiene, drink clean water, and have access to health care if a child gets dehydrated and needs IV fluids. The rotavirus vaccine may be helpful for families living in rural areas with no ready access to a hospital or for families traveling outside the United States to remote parts of the world. But rotavirus vaccine is unnecessary for American babies. There is no reason to give it. I recommend saying, “Thanks, but no thanks, Doc.” Take a pass on the rotavirus vaccine.

Polio

In the middle of the twentieth century, poliomyelitis—known informally as polio—was a frightening disease for American parents, usually striking children in the warmer summer months, often spread at public swimming pools. *M*A*S*H* TV series actor Alan Alda got polio when he was seven; the symptoms started with a runny nose, then vomiting, and then a stiff neck.

“I didn’t really know what it meant to have polio,” Alda explains in his 2005 memoir, *Never Have Your Dog Stuffed*. “It didn’t seem so bad. Every day, a new toy arrived in my hospital room from a Hollywood gag and gift shop: magic cards; the disappearing penny trick; the straw tube you put your fingers in and then you can’t get them out again.” After he came home from the hospital, his parents massaged his locked-up muscles, putting scalding hot blankets on them every few hours in order to prevent permanent paralysis. These treatments left Alda screaming in pain.

Today if you drive down the potholed streets of Niamey, the capital city of Niger, you see beggars at every traffic light and roundabout. Many are polio survivors, their limbs visibly mangled and misshapen by the disease. Polio can be absolutely devastating. Parents have good reason to be scared.

Considering how deadly and scary this disease seems to be, you may be surprised to realize that in the vast majority of polio cases, a person has no symptoms of any kind. For those who do develop symptoms,

less than 1 percent will suffer permanent paralysis. For children who contract *paralytic* polio, between 2 and 10 percent will die, usually because the chest or throat becomes paralyzed. The majority of children and adults who get even the most severe polio, however, recover with no lasting symptoms.

There are three subtypes of polio. Type 2 wild poliovirus appears to have been eradicated globally, and no new cases of type 3 have been detected since 2012, suggesting it is on the verge of eradication. Type 1 still remains to be eradicated.

The last case of poliomyelitis acquired in the United States occurred in 1979. One person who caught polio outside the country and imported it to the United States in 1993 did not infect anyone.

The Polio Vaccine

In 1953 a bespectacled young doctor named Jonas Salk, who had been working hard to develop a polio vaccine, announced that he had injected himself, his wife, and his three sons with his invention, a step intended to prove its safety and efficacy. A year later widespread polio vaccine trials began in the United States. Parents—especially those in the upper middle class—rushed to have their children vaccinated against polio, a disease that at the time was claiming too many young lives.

In 1961 a scientist named Albert Sabin, who had developed an oral vaccine that combined live and weakened strains of the three viruses found to cause paralysis, including polio, got approval for it. The use of this oral live-virus vaccine (OPV) was determined to do more harm than good (see below) and was no longer recommended in the United States as of 2000 and in the United Kingdom as of 2004, but it is still used in other countries around the world.

Inactivated polio vaccine (IPV), IPOL made by Sanofi, is now the only polio vaccine available in the United States that vaccinates only against polio.

There are also three combination vaccines, which include polio:

Kinrix (made by GlaxoSmithKline)

Pediarix (made by GlaxoSmithKline)

Pentacel (made by Sanofi)

Is the Polio Vaccine Safe?

The IPV seems to be safe. In thirty years of giving thousands of injections of this vaccine, I have not seen any reaction other than local redness at the injection site. The IPV does not contain mercury or aluminum. It does, however, contain formaldehyde. Though I would not hesitate to give this vaccine, the presence of formaldehyde, even in trace amounts, concerns me.

I have not had good outcomes with the all-in-one vaccines that contain polio. One of my pediatric nurse practitioners is married to a local pediatrician. Her husband was working with a large children's clinic in town, and his practice was using Pentacel (which combines the DTap, IPV, and Hib in one vaccine), which significantly reduced the number of needle pokes for babies. She reported that they were not seeing side effects using it. We tried it briefly in my past practice but found the combo vaccine caused an increase in side effects, including high fevers, sore limbs, and severely irritable kids whose parents were calling us worried the next day. I briefly tried it again more recently, and again we started getting calls from parents whose babies were inconsolable and often had high fevers. We got so many phone calls that we discontinued it two weeks later.

Pentacel has 330 micrograms of aluminum. Pediarix has 850 micrograms. Kinrix has 600 micrograms. I do not recommend these combination vaccines.

Is the Polio Vaccine Effective?

Rates of paralytic polio in the United States dropped from over 21,000 in 1952 to about 900 in 1961. The global campaign to eradicate polio certainly seems to be working, thanks in large part to the availability of polio vaccines. The full story of the eradication of polio, however, is a little more complicated.

Today we credit the efficacy of the polio vaccine for the sharp fall in polio rates, but this assumption is problematic. Some credit

chlorinating water in public swimming pools, a practice that became widespread as a way to limit the spread of polio, as a contributing factor to the decline. David D. Rutstein, M.D., head of the preventive medicine department at Harvard Medical School, writing in *The Atlantic* in 1957, pointed out that the decline in polio cases could not be definitively attributed to the vaccine:

In 1947, for no apparent reason, there was a sharp drop to about 10,000 cases. After that, there were a number of “high polio years” reaching a peak in 1952 with 57,879 cases, which was followed by a drop-off to about half that number in 1955. These fluctuations in the number of cases per year have no known explanation and occur not only in the United States but in many parts of the world. It is of interest that a sharp drop also occurred in England and Wales in these same two years, 1955 and 1956, even though in those countries only 200,000 children had received but one or two injections in a program which began in the late spring of 1956. It is, therefore, impossible to tell whether the decrease from 1955 to 1956 in the United States is a result of the polio vaccine program or whether it is just another sharp swing in the usual pattern of the disease.

Suzanne Humphries, M.D., a nephrologist based in Virginia, points out that American public health officials have exaggerated the efficacy of the polio vaccine by changing the definition of polio and ceasing to count most of the paralysis formerly attributed to polio. Let me explain Dr. Humphries’s argument: Just as the vast majority of flu-like illnesses (fever, aches, malaise) are not caused by the influenza virus, the majority of infectious paralysis cases are actually not caused by the poliomyelitis virus but by other infectious diseases.

The paralysis we now associate only with polio, called AFP for acute flaccid paralysis, can actually be caused by over a dozen lesser-known virus types and other infections, including Guillain-Barré syndrome (which is most likely what paralyzed Franklin Delano Roosevelt, not polio), enteroviral encephalopathy, and cholera. All these were lumped

together and counted as polio until 1955, when the definition of polio was changed to more accurately tally the spread of the poliovirus. When we compare polio rates before and after 1955, we are comparing kiwis to grapefruits. As Dr. Rutstein points out, though the vaccine has certainly played an important role in stopping the spread of polio, its efficacy has most likely been exaggerated.

Regardless of whether all the credit should go to the mass vaccination program, in the United States polio became so rare that for a period of about eight years there was a *greater risk of contracting and being paralyzed by polio from the vaccine* (which used to be a live virus administered orally, usually on a sugar cube, which is how I always got it) than from contracting the naturally occurring disease. Between 1992 and 2000, there were zero infections of naturally acquired polio among American children, but the vaccine itself was paralyzing at least seven children a year.

Instead of discontinuing mass polio vaccinations in America, a reengineered polio vaccine went into use in 2000.

My Take on the Polio Vaccine for TWO-MONTH-OLDS

Despite its safety and efficacy, there is no real reason for an American two-month-old to get the polio vaccine, especially if the family is not traveling outside North, Central, and South America.

There has not been a newly acquired case of polio in over thirty-five years, which means that the chances of your baby contracting polio are zero.

I've heard pediatricians try to scare parents by saying, "Polio is just a plane ride away."

That theoretical argument holds little water. In the past thirty-five years, millions of people from countries where there are still active infections of polio have traveled to the United States, yet no one in America has become sick. Is this because polio vaccine uptake rates are high, or is it because polio does not at this time pose any kind of real threat? Ask Howard Morningstar, M.D., who graduated from Yale Medical School, completed his residency in family medicine at Brown University, and has been working as a family physician in Ashland, Oregon, for almost twenty years. Dr. Morningstar is less concerned about possible side effects of

vaccines than about the potential overall effect on the immune system of giving too many vaccines to very young children. “I would rather use the long-term, tried-and-true ways to prevent epidemics—sanitation, nutrition, hygiene, health awareness—and save the emergency measures, like mass vaccinations, for true emergencies.”

At the same time, if you are traveling outside the United States, the polio vaccine may be necessary. In 2014 there were 359 cases of wild poliovirus infections reported in nine countries, 306 (85 percent) in Pakistan, 28 (8 percent) in Afghanistan, and 6 (2 percent) in Nigeria—the three countries where polio has never been completely eradicated.

Previously polio-free countries that had polio cases in 2014 included Equatorial Guinea, Cameroon, Somalia, Ethiopia, Iraq, and Syria.

The World Health Organization has declared the international spread of polio a public health emergency. As a result, new regulations are being put in place if you plan to travel to affected countries. If you will be staying in one of these countries for more than four weeks, you will need a booster (required before you may leave that country) regardless of your past immunization status.

Children or adults who have never been vaccinated can get a second polio vaccine (IPV) four weeks after the first, and get a third dose four weeks after that. If you have enough time, the fourth dose for children should be given at least six months after the previous dose.

So if your family plans to travel internationally, getting the polio vaccine is a good idea and an evidence-based choice. If you have no plans to leave the Americas, there is no quantifiable chance that your baby could get polio at this time and no compelling evidence that your two-month-old needs this vaccine.

***Haemophilus influenzae* Type B (Hib)**

Haemophilus influenzae type B (Hib) is a disease that primarily affects children five years old and under. The *Haemophilus influenzae* bacteria commonly live in a human’s nose and throat, but when there are too many of them, or your child’s immune system is compromised, the bacteria can infect the airway (epiglottitis), brain (meningitis), lungs (pneumonia), or bloodstream (sepsis). Physicians my age and older remember too well the hospitals full of children with meningitis, the airway emergencies with epiglottitis, and the miracle that the Hib vaccine was when it was introduced in 1985. We saw this disease virtually disappear in a few short years. The unknown is whether these

serious illnesses would return if we stopped this vaccine. I suspect they would, as the bacteria are alive and well in the noses of adults and older children today.

The Hib Vaccine

The first vaccine to protect against Hib diseases was introduced in 1985. An improved vaccine was licensed two years later.

Today the Hib vaccine comes in five options:

ActHIB (Sanofi)

Hiberix (GlaxoSmithKline)

PedvaxHIB (Merck)

Pentacel (Sanofi)

MenHibrix (GlaxoSmithKline)

A sixth vaccine, Comvax (Merck), was discontinued, and the last doses expired in early 2015.

Most pediatricians usually stock only one brand of any given vaccine, as the costs of purchasing and storing vaccines make it prohibitive to stock multiple brands. Parents don't realize that the decision of which brand to stock is usually based on cost and profit margins, due either to buying group arrangements or to one vaccine having a better profit margin than another.

I don't blame pediatricians for trying to make their business cost-effective, as pediatric office overhead is high, but I personally choose which vaccines to stock and offer my patients based on what will expose them to the lowest toxic load of heavy metals like aluminum and mercury. I do not carry mercury-containing vaccines in my practice (especially not the multidose flu shots that inject a 25-microgram dose of mercury with each dose given).

Is the Hib Vaccine Safe?

Although one small study has shown a small increase in the risk of type 1 juvenile diabetes among children who received the Hib vaccine, a larger study showed no link.

Depending on which brand you use, the Hib vaccine is perhaps the purest vaccine on the market. Do not give Hib in a combined vaccine. If your doctor is using a combined vaccine, your baby is getting a dangerously large dose of aluminum. (See [Chapter 1](#) for reasons to avoid aluminum whenever possible.) The ActHIB brand contains no mercury, aluminum, or animal products and has only minimal formaldehyde.

Is the Hib Vaccine Effective?

Postvaccine follow-up studies have shown a 71 percent decrease in Hib disease in under-five-year-olds from 1989 to 1991, and an 82 percent decrease in Hib meningitis between 1985 and 1991. This vaccine alone is believed to have prevented more than ten thousand cases of meningitis. In 2011 in the United States, there were only fourteen cases of serious Hib diseases a year, and fewer than 250 non-type B or unknown types of *Haemophilus influenzae* invasive disease respectively.

As I mentioned in the introduction, this vaccine was introduced during my training in the late 1980s, and we saw an immediate significant drop in the numbers of children with meningitis and serious *Haemophilus* infections like epiglottitis and sepsis. A child with suspected epiglottitis who was often drooling and unable to swallow would be rushed to the operating room, where X-rays were taken and the airway stabilized by intubation (a breathing tube placed down your trachea to protect your airway). Once a weekly occurrence, epiglottitis is a condition basically unfamiliar to younger doctors who have trained since the vaccine was introduced. Had you walked the floors of Valley Medical Center or Fresno Children's Hospital before then, you would have seen several young children with severe meningitis, many of whom would not be neurologically normal if they survived the infection. These are infections of the past, a testament to a successful vaccine.

My Take on the Hib Vaccine

The Hib vaccine offers tremendous benefit with minimal side effects. I recommend you give it to your infant on the usual CDC schedule of two, four, six, and twelve months. I prefer the ActHIB brand, which contains no mercury or aluminum.

Diphtheria, Tetanus, and Pertussis

Three bacterial illnesses, diphtheria, tetanus, and pertussis (whooping cough), are all covered by one vaccine: DTaP.

Diphtheria is an illness that usually involves a severe sore throat, fatigue, and lethargy, caused by the bacterium *Corynebacterium diphtheria*. Maud Hart Lovelace writes in her 1941 autobiographical novel *Betsy-Tacy and Tib* that when little red-headed Tacy finally recovers from diphtheria and her house is fumigated and she is released from quarantine, her two best friends are beside themselves with joy. Tacy's mother "came out on the porch and watched them, and she was smiling but she looked as though she wanted to cry." Mrs. Kelly had not been sure her daughter would survive the illness. My wife's uncle, Bobby, died of diphtheria at the age of one in 1935. Diphtheria, once so deadly it was called the "strangling angel of children," has been virtually eradicated from the United States. There have been no deaths from diphtheria in children for at least thirty-five years. Your chance of getting diphtheria is less than 1 in 100 million.

Tetanus (also known as lockjaw) is a severe illness that usually involves a stiff neck, difficulty swallowing, and muscle spasms caused by the bacterium *Clostridium tetani*, which is found in soil, animal dung, and dust. Tetanus is not communicable. In the past eleven years there have been an average of 29 recorded cases of tetanus per year (except in 2009, which had a record low of 18 cases), 49 percent of which occur in people over fifty and many of which are among intravenous drug users, especially heroin addicts, who are at the greatest risk for the disease.

Two babies were reported with tetanus in 1989.

The incidents of tetanus in children under five in over twenty-five years: 0.

Pertussis (also known as whooping cough) is a respiratory illness that usually involves a persistent cough and is caused by *Bordetella pertussis* bacteria. Whooping cough usually starts like a cold but often progresses to the worst cough you have ever experienced. You experience the sensation that you cannot get enough air, and the coughing fits that occur in older children and adults may result in a whooping gasp for air at the end of the cough spell. Infants and young children may not have the classic whoop but will be coughing more than you have ever seen. Most deaths tend to be in very young infants, as a result typically of inability to breathe and get enough air, or of apnea (they just stop trying to breathe).

Pertussis continues to be a common illness in America and around the world, despite the vaccine. Recent data shows a rise in pertussis cases in the past few years, close to 29,000 cases in both 2013 and 2014.

The worst year for pertussis in recent memory was 2012, which saw 48,277 cases of pertussis in the United States. Fifteen infants under three months died; one infant between three and twelve months died; and two children between one and four years old died. Two adults over age fifty-five died.

In 2013 there were twelve deaths in the under-three-months age group, and one death in the one-to-four-year-olds.

In 2014 there were eight deaths in the under-three-months age group, one infant in the three-to-eleven-months group, and two children between one and four years.

Pertussis has an incubation of five to twenty-one days, so there can be quite a lag time between when a baby is exposed and when he gets sick. Pediatricians need to be more wary when an infant is coughing and not just assume it is bronchiolitis (inflammation of the bronchioles) but actually test for pertussis. This is done by a polymerase chain reaction (PCR) test of mucus with a nose swab. The

result can be back in less than twenty-four hours. If the result is positive, your doctor will prescribe antibiotics, which can be life-saving.

The DTaP Vaccine

When I was in training and during my first few years working as a pediatrician at Legacy Emanuel Hospital in Portland, we used the whole-cell DPT vaccine, as it was the only vaccine available in the United States at that time. Japan had been using the acellular DTaP, which we would eventually change to, for about seven years, and was reporting significantly reduced side effects compared to the DPT. I literally cringed every time I gave a DPT vaccine at that time. High fevers were almost universal following vaccination, seizures were common, and deaths sometimes occurred.

To compound the problem, in the early 1990s aspirin was falling out of favor, so doctors would routinely recommend that parents give their infants acetaminophen (the main ingredient in Tylenol) at the time of the shot or even an hour beforehand in an attempt to reduce the high fevers and seizures associated with the vaccine. As we discussed in [Chapter 1](#), we have since learned that acetaminophen is associated with increased risk of neurological damage.

Despite my fear that this vaccine was sometimes causing harm, I had also seen babies with pertussis in the ICU struggling to breathe and had heard from a colleague about an infant who died from the disease. I was forced to make a judgment call between two bad options. I chose the vaccine.

In the mid-1990s we made the smart switch to a safer, acellular pertussis vaccine, and by 1997 the whole-cell vaccine was no longer available.

There are currently five DTaP vaccines in use in American pediatrics:

Daptacel (Sanofi)

Infanrix (GlaxoSmithKline)

Kinrix (GlaxoSmithKline; it combines DTaP with polio)

Pediarix (GlaxoSmithKline; it combines DTaP with polio and hepatitis B)

Pentacel (Sanofi; it combines DTaP with polio and Hib)

Is the DTaP Vaccine Safe?

The DTaP vaccine is relatively safe, and I use it in my practice, but unfortunately it contains aluminum. As with any vaccine, it comes down to weighing the risks and the benefits. Because pertussis is difficult to treat and deaths in infants can occur, I recommend this vaccine on the CDC schedule.

Is the Pertussis Vaccine Effective?

Recent data suggests that the current acellular vaccines are not as effective in providing protection against whooping cough as they were even just a few years ago. Australia, with a population of nearly 24 million, had more than 150,000 cases of pertussis from 2008 to 2012, despite very high vaccine uptake rates for infants and children. Some researchers hypothesize that the high rates of pertussis among vaccinated Australians show that the bacterium itself is evolving and the vaccine does not cover the current infectious strains.

In one 2015 study of fully vaccinated teenagers in Washington State, researchers found that the Tdap vaccine was only 73 percent effective a year after vaccination and just 34 percent effective two to four years later, leading them to conclude that the “lack of long-term effectiveness may contribute to increases in pertussis among adolescents.” Another study, published in 2016, found that during a whooping cough outbreak in a Florida preschool from September 2013 to January 2014, nearly 50 percent of the children who got sick with whooping cough were fully vaccinated. Only 5 children in the entire 117-child preschool were not fully vaccinated. Of them, two had received at least one dose of pertussis vaccine but not the complete series, and came down with whooping cough (one was hospitalized). The other three children were completely unvaccinated but did not get pertussis. The fact that so many preschoolers who were fully up to date with this vaccine still succumbed to whooping cough suggests that the

vaccine is not working as well as it should to prevent transmission of pertussis. It also appears that fully vaccinated children are transmitting the disease.

Though the pertussis vaccine provides some protection, it is far from perfect. It seems to be losing its effectiveness, and the science suggests that vaccine-induced immunity wanes over time. If this is true—and I suspect it is—we can expect to see significant increases in pertussis cases worldwide. So it is imperative that, in addition to providing the vaccine, we do everything we can to boost our babies' immune systems.

Cocooning

Babies younger than three months are at highest risk of complications from pertussis, which is why I recommend that parents cocoon their newborns: For the first few months of your baby's life, avoid air travel and indoor contact with crowds or sick people, and make sure caregivers and your older children are in good health. Consider asking them to get vaccinated against pertussis, but don't make the mistake of thinking that just because they have been vaccinated they are immune from the disease. Since pertussis is an illness that is often spread among school-age kids (both vaccinated and unvaccinated), keeping your baby close, avoiding too much contact with older kids, and doing everything you can to support your family's immune health makes good sense.

My Take on the DTaP Vaccine for TWO-MONTH-OLDS

With the rise of pertussis infections, possibly due to changing pertussis strains, we clearly need a better vaccine. In addition to vaccination, we also need other ways to boost the immune system to fight this infection. At the same time, the chance your baby will die from pertussis may be reduced if you vaccinate your two-month-old, as well as family members and caregivers. Though I am concerned about the amount of aluminum in this vaccine, and I would like to see a vaccine with better efficacy, I recommend you vaccinate your child against pertussis at two, four, six, and eighteen months and get a booster at age four, as per the CDC

schedule.

***Streptococcus pneumoniae* (Pneumococcus)**

After the Hib vaccine was introduced in 1985, *Streptococcus pneumoniae* (pneumococcus) became the leading cause of meningitis in children under five years old. There are more than ninety strains of pneumococcus bacteria that can cause infections. These different strains can cause blood infections (sepsis), lung infections (pneumonia), ear infections (otitis media), sinus infections (sinusitis), and eye infections (conjunctivitis). Pneumococcus can also cause infections around the eye (periorbital cellulitis), mastoid bone (mastoiditis), heart (endocarditis or pericarditis), bone (osteomyelitis), and joints (arthritis), as well as generalized tissue infections (cellulitis).

In 2014 there were 28,000 cases of invasive pneumococcal disease a year in the United States for all ages, and just under 2,000 infections in children under five. Three of these children died. While pneumococcal infections are treatable with antibiotics, infants sometimes get dangerously ill before parents get them treated. Small children are most vulnerable to meningitis and sepsis, which can result in brain damage or death.

The Pneumococcus Vaccine

The first vaccine, Prevnar-7, was introduced in 2000. It covered seven of the most dangerous strains. Prevnar-7 was used for about ten years. However, within a few years of using this vaccine, doctors and researchers started to notice that different strains of the bacteria not covered in the vaccine were causing serious pneumococcal infections like meningitis. So vaccine manufacturers added more strains to the vaccine. Prevnar-13 (PCV13), which protected against more bacterial strains, replaced Prevnar-7 in 2010.

Is the Pneumococcus Vaccine Safe?

This vaccine has 125 micrograms of aluminum, the lowest amount of all aluminum-containing vaccines. How much aluminum do I think is

safe? NONE! So what are we to do? It is, again, weighing benefit against risk.

The Prevnar-13 vaccine also contains 100 micrograms of polysorbate 80. This is a common chemical that is added to some vaccines and to food (it's used as an emulsifier—making mustard more spreadable and ice cream creamier). One 2015 study found that in rodents, ingesting polysorbate 80 disrupted the composition of bacteria in the gut, causing low-grade inflammation and obesity. Some consumer advocates are concerned that polysorbate 80 may be to blame for rising rates of bowel disease. However, there is very little information on the safety of injecting polysorbate 80. Though food and vaccine manufacturers, as well as the FDA, generally consider it safe, a 2005 case study found that injected polysorbate 80 can trigger anaphylactic shock, which is a severe allergic reaction.

Is the Pneumococcus Vaccine Effective?

Studies showed that from 1998 (before the vaccine) to 2007, invasive pneumococcal infections decreased by 76 percent in the most vulnerable children under five years. The pneumococcal vaccine was very effective at reducing invasive disease (meningitis and sepsis), and it has had some limited effectiveness at reducing otitis media (ear infection). As a practicing pediatrician during the pneumococcal vaccine era, I can say the reduction in both meningitis and ear infections was noticeable. But this group of bacteria seems to change in the face of vaccine-stimulated immunity in the population. We will need to continually change the vaccine to keep up with the bacteria.

My Take on the Pneumococcus Vaccine FOR TWO-MONTH-OLDS

If you have a family history of autism, immunodeficiency, or MTHFR defects, it is better to avoid this aluminum-containing vaccine. For children whose families do not have a history of immune dysfunction, I believe the benefits of the pneumococcus vaccine outweigh the risks. Do not give this vaccine at the same time as another aluminum-containing vaccine, and you should avoid acetaminophen before and after.

This vaccine has 125 micrograms of aluminum. Because the DTaP also has a lot of aluminum, I recommend you give the first dose of the Prevnar-13 vaccine when your baby is three months old. Give the second dose at five months and the third between seven and nine months. This way your baby is not receiving more than one aluminum-containing vaccine at a time.

Toss the Tylenol, Especially after Vaccines

Hallie's mom holds her in her arms and breastfeeds her while Hallie gets her DTaP and Hib, one shot in each thigh. After a few seconds of crying, she is back to her happy and smiling self.

"Expect she might be a little more fussy than usual for a couple days and may get a low-grade fever in response to the shots," I explain to her parents. "If the fever gets over 102, start by cooling her down with a wet washcloth on her forehead and body. The evaporating water on her skin will cool her down. If you feel strongly she needs a pain reliever, don't use Tylenol."

Ibuprofen, my preferred fever reducer and pain medication, is not approved for use in children younger than six months, which leads most doctors to recommend acetaminophen.

As we discussed in [Chapter 1](#), the evidence is mounting that acetaminophen, a pain reliever added to more than six hundred over-the-counter and prescription medications and one that is commonly prescribed for children, is implicated in the autism epidemic. It depletes the body's reserves of glutathione, a simple molecule produced in your body that is a powerful antioxidant, which helps the body get rid of harmful toxins.

Yet most pediatricians continue to recommend it to parents—sometimes even prophylactically before the vaccine is given. The last thing you want to do after you give a baby a vaccine is to compromise that baby's ability to get rid of toxins.

What If You Don't Want to Do Any Vaccines at the Two-Month Visit?

In Denmark, Sweden, and Iceland, three countries where infant

mortality rates are among the lowest in the world, babies do not get *any* vaccines until three months of age. European health authorities, who are less influenced by the pharmaceutical industry, have determined that breastfeeding—not early vaccination—is the key to the best infant outcomes.

While it may be true that a tiny baby's body can react and respond to multiple antigens (the infectious part of the vaccine) at the same time, it is also true that with each vaccine we are injecting a number of accompanying toxic substances. Many babies may be okay getting several vaccines at a time, but some will not.

Some of my patients, often citing the better infant health outcomes in Europe, prefer not to start any vaccines at this young age.

This is your choice as a parent. It is also your responsibility to be sure, especially if you decide not to vaccinate, that you have thoroughly weighed the risks and the benefits and you can live with the choices you make.

If your baby happens to be unlucky and either gets an infectious disease or has a bad vaccine reaction, how will you feel?

If you don't give the DTaP and your baby ends up being one of those ten to twenty children a year who die of pertussis, can you live with yourself?

If you do give the vaccines per CDC guidelines and your baby ends up with autism, or developmental delays, can you live with yourself?

These are hard questions to answer, and they should be. Both scenarios are rare—though the chance of a lethal infectious disease is much smaller than the chance of an eventual diagnosis of autism—but they both need to be considered.

What If You Want Your Baby to Get Just One Vaccine at a Time?

Some of my parents decide that they feel comfortable giving their infant only one vaccine at a time. I actually like this idea. The benefit is that if your baby has a reaction to a vaccine, you will know for certain which one caused the problem.

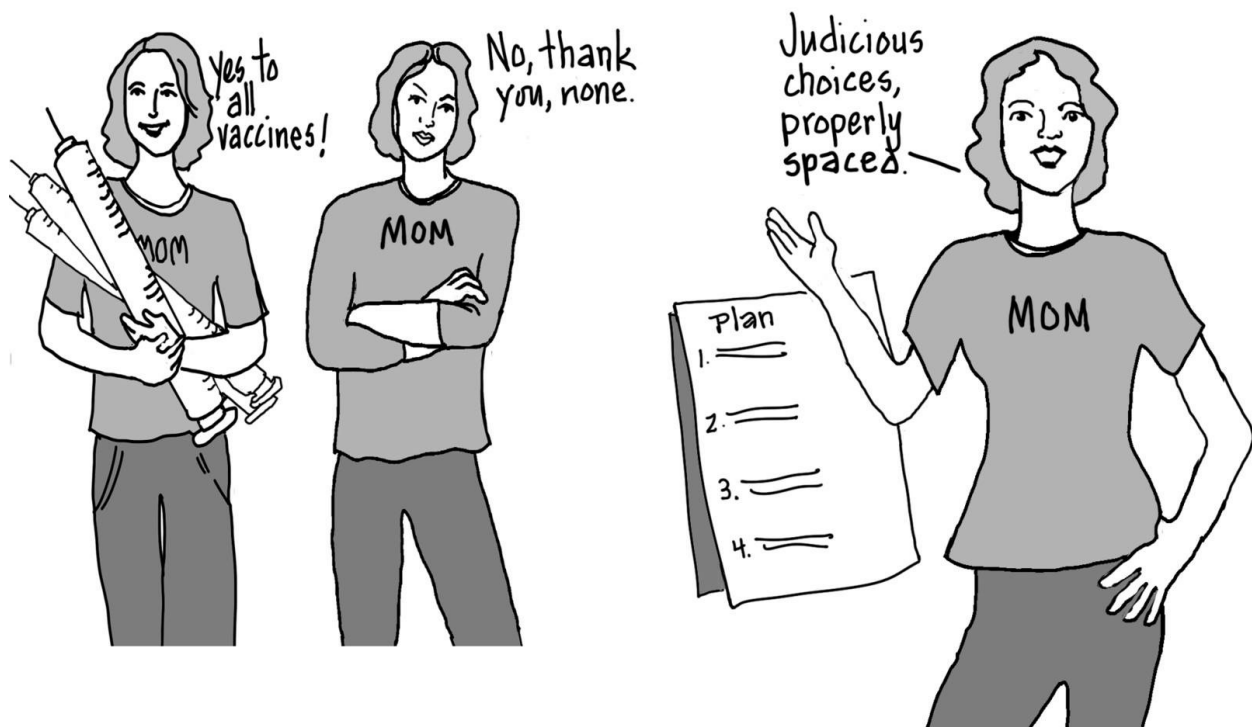
If you wanted to modify my Vaccine-Friendly Plan to have only one

shot at a time, it would be reasonable to give the DTaP at two months, return for the Hib two weeks later, and then give the Prevnar two weeks after that, at the three-month visit.

The downside to doing one vaccine at a time is that it involves a few extra visits to the pediatrician. Medical professionals assume that parents won't return for vaccines if they are not done all at once. Not true, at least in my experience.

—

A final word of caution: I would not give vaccines while your child is ill. Even if your child could handle both the illness and the vaccine reaction, why take the chance? When you vaccinate a sick child, you increase the risk of her running a high fever that may be illness-related but may also be a vaccine side effect.



Dr. Paul's Plan FOR TWO-MONTH-OLDS

1. **Avoid acetaminophen.** Acetaminophen interferes with the body's

natural ability to rid itself of toxins. Question your doctor's recommendation to use any product containing acetaminophen. If you need to reduce fever, sponge the baby with a damp washcloth.

2. Delay hepatitis B, polio, and rotavirus vaccines. Unless Mom has hepatitis B, your baby has no risk of getting hepatitis B until he is sexually active or sharing dirty needles. There has not been a case of polio acquired in the United States since 1979, and rotavirus is a treatable illness if you have access to health care.

3. Give DTaP, Hib, and Prevnar vaccines. On balance it feels like the risk of bacterial meningitis and serious infection is worth preventing. In the case of Hib, the risk of side effects is very low. The DTaP does have aluminum and should be avoided by those with a family history of autism or immune issues. Prevnar prevents the worst strains of pneumococcus, which causes meningitis and serious infections. Return for a shot-only visit at three months to get Prevnar, to allow one month between aluminum-containing vaccines.

4. Breast is best. Continue exclusively breastfeeding, which is the best food for your baby and the best way to give her the healthiest start in life.

5. Give 1,000 IUs of vitamin D daily. This is given in liquid form. I have tested thousands of children over the past decade, and 99 percent of them were deficient in vitamin D; most are *severely* so. While you can test, and I encourage testing, you can just about be certain your child needs extra vitamin D. If you want to get vitamin D naturally, you'll need to take a lot of fish oil or get a lot of sun exposure (which carries the risk of skin cancer). Sunscreen, while providing some protection from skin cancer, also blocks most of the vitamin D production.

6. Wear your baby. Baby-wearing has been shown to promote bonding, quiet alertness, and a sense of well-being. You can't spoil a baby! Hold them, talk to them, and interact with them as much as you both want to. Don't forget you will both benefit from lots of skin to skin.

7. Tummy time. Tummy time during waking hours helps your baby develop coordination, muscle tone, and problem-solving skills.

8. Back to sleep. It is safest for your baby to sleep on his back at this age. But she may already be showing her independent thinking. If she has taught herself to roll over and prefers to sleep on her stomach, there's not much you can do. Just make sure the baby is sleeping on a hard surface without too many blankets or pillows or stuffed animals (which can

cause suffocation).

9. Kindness counts. The transition into parenthood is a process that takes time, patience, and love. You are still getting to know your baby and getting to know yourself as a parent. Be kind to yourself and others, especially your spouse.

The Six Questions Parents Ask Me Most **ABOUT TWO-MONTH-OLDS**

ABOUT BREASTFEEDING

1. Do I need to give my breastfed baby bottles of water?

A: Giving babies bottles of water was a popular practice in the 1970s and 1980s. But there is no reason to give a breastfed baby water. Just make sure you are well hydrated, and your baby will get all the hydration she needs through your milk.

ABOUT TEETHING

2. Is my baby teething?

A: Babies can get teeth at any time, but the average first tooth usually arrives around the seventh or eighth month. It is possible to get a first tooth earlier, usually between two and four months. A teething baby will drool copiously, put objects in her mouth, and want to gnaw or even bite on everything (including you). As the first teeth break through the gums, she may act fussy. You can buy natural teething rings (no plastic!) or make ice or breast milk popsicles for your baby. One of my children used the La-Z-Boy recliner handle to teethe on.

ABOUT POOP

3. My baby pooped seven times today. Does she have diarrhea?

A: Watery, frequent stool is common in breastfed babies. You may change as many as ten or twelve poopy diapers in one day. Unless she's acting lethargic or spiking a fever, your baby does not have diarrhea. Formula-fed babies are more prone to diarrhea. If the poop is an unusual color or the baby seems sick, take her to the doctor.

ABOUT ILLNESS

4. When does a baby get a first cold?

A: Probably not until after six months of age. I rarely see younger infants in my own office for colds. If you're exclusively breastfeeding, your baby gets the passive protection of your antibodies from your breast milk. But infants certainly can get colds. Your best protection—in addition to breastfeeding—is to keep your baby away from sick people. It also makes sense to avoid air travel and indoor crowds, especially in the winter. If you have older children who are in day care or school, you can count on quite a few colds during the first two winters of your baby's life.

5. I think my baby has a fever. What should I do?

A: Though I'm not usually quick to suggest that parents bring their children to the doctor, if your baby is under two months old and has a fever over 100.6°F (38.4°C), you should contact your doctor. If your baby is acting ill (with lethargy and lack of appetite), take her in to be seen right away. A fever is not usually cause for concern, but in very small babies it can be a sign of something serious. After two months of age, as long as your baby is acting normally and eating and sleeping well, a fever of less than 102 or 103°F is not cause for concern. In fact, a fever is the body's natural way to fight infections, as discussed in [Chapter 6](#).

Look at your baby, not at the thermometer! If the baby is acting sick or weak or is not nursing well—or if anything has you worried (parents know when something is wrong)—call your doctor.

6. Can a two-month-old baby get croup?

A: A croupy cough sounds like a barking seal, and your baby will have a hoarse, noisy inhale. It is typically caused by the parainfluenza virus and generally occurs in babies six months to two years of age. For older children and adults, it usually manifests like a common cold. There's no treatment for croup, and doctors usually don't test for it. We recognize it by the signature sound of the cough. I recommend using a humidifier if it seems severe. If your child is looking scared and having trouble breathing, bring him to the doctor. In very severe cases he may be prescribed a steroid to decrease inflammation in the airways.

Chapter 6

Keeping Your Baby Healthy in the First Nine Months

“Let’s go for a ride in the boat,” Julie, my pediatric nurse, says cheerfully while walking down the hall toward our office scale with four-month-old Ethan, who, buck naked, is being carried by his dad. We like to weigh babies without even a diaper in the first year of life in order to get as accurate a reading as possible.

“Thar she blows!” exclaims Julie as Ethan pees all over the scale.

Ethan’s father looks embarrassed, but he shouldn’t be. Babies pee on the scale all the time, and we’re used to cleaning it up. Urine is fairly sterile anyway, so no worries. Besides, every time you get peed on, you get a new star on your parent badge.

The fact that most well baby visits start with the scale can be a problem for both doctors and parents. Breastfed babies, formula-fed babies, babies from different ethnic backgrounds, and babies with Down syndrome all grow differently. And if you and your partner are smaller than average, we would not expect your baby to be in a high percentile for height or weight.

If you promise to remember that there is a huge range of normal, I’ll give you some averages. Your baby will grow about 6 inches taller from four months to one year. The average one-year-old will be almost 30 inches tall. Your baby will gain about 8 pounds from four months to a year and weigh on average 21 pounds. But the main thing we are interested in on the growth curve is the trend of your baby’s growth, not the actual numbers. A sharp dip from one visit to another can

sometimes be a red flag that something is wrong.

We typically measure your baby's height with the baby lying on the exam table, either on a measuring mat or lined up next to a measuring stick. Sometimes we draw two lines on the exam table paper with a pencil—one by his head and one by his feet—while your baby squirms, and then measure the distance between them once you pick him up again. Don't be alarmed if your baby's height seems to jump around, one visit in the seventy-fifth percentile and another in the twenty-fifth, then back up again. This is almost always due to human error. It is very difficult to get an accurate height of someone who cannot stand tall and straight on his own and has no interest in being still!

We also measure head circumference at these visits by putting a paper or cloth measuring tape around the largest part of the head above the eyes and ears. When Nurse Julie put the tape around Ethan's head, he raised his eyebrows curiously, trying to see what was going on. Other babies burst into tears or move their heads around, not liking being measured. It doesn't hurt them in any way, and it's over in just a few seconds. We measure babies' heads until age two, when head growth slows down, to make sure the brain is growing normally.

Breast Is Still Best for Four-, Six-, and Nine-Month-Old Babies

Until four months, a baby's diet should be only breast milk. Even after you start introducing solids, breast milk should make up the bulk of your baby's diet. Breastfeed as long as you can, with the goal of nursing for at least a year. If you get to six months, you'll have beaten the national average. Keep going! The longer you breastfeed, the lower the risk of obesity for your baby, and the greater your baby's intelligence, ability to fight infections, and sense of well-being will be.

I know this is easier advice to give than it is for some new moms to follow. My wife had a hard time breastfeeding. One of our sons was very fussy at the breast. Sometimes a few simple dietary changes for the mom—eliminating cow's milk, for example—can make a dramatic difference for a baby with food sensitivities. Unfortunately, no doctor suggested we try changing my wife's diet. We ended up giving our infant the “free” formula sample we had been given in the hospital, though in retrospect I wish that we had not.

As I mentioned earlier, I recommend donor breast milk if you need to give your baby anything but milk from your own body. Some families also make their own whole-food-based infant formula. To my knowledge, there has been no well-designed scientific study on the use of homemade infant formula. I'd like to see one done. In the absence of data, the FDA, which regulates commercial infant formula—and conveniently ignores the research that shows that formula-fed babies have disproportionately higher levels of lead in their bodies, disrupted gut flora, which may make them more susceptible to chronic disease, and a higher risk of death from SIDS—does not recommend that parents make infant formula at home. I'm skeptical of the FDA's stance against homemade formula. I have had babies in my practice who survived and thrived on a combination of breast milk and

homemade formula. I also know several strapping young people who drank bottles of raw goat's milk (instead of store-bought formula) when their breastfeeding mothers needed to be away from them for several hours, a common practice among parents in the early 1980s in Oakland and Berkeley, California.

If you do end up using artificial milk in the first four to six months, avoid soy-based formula. Most soy in the United States has been genetically modified, and most soy-based formula also contains a large amount of aluminum. In 2010 researchers in Staffordshire, England, measured aluminum content in a variety of infant formulas and concluded: "The aluminium content of a range of well known brands of infant formulas remains high and particularly so for a product designed for preterm infants and a soya-based product designed for infants with cow's milk intolerances and allergies. Recent research demonstrating the vulnerability of infants to early exposure to aluminium serves to highlight an urgent need to reduce the aluminium content of infant formulas to as low a level as is practically possible." If for whatever reason you have to use soy, at least make sure the formula is organic. Even though it costs more, organic formula is always a better choice.

You Can Have Your Work and Breastfeed Too

"Dr. Paul, since I've gone back to work, I feel like I don't have enough milk," Emily, an outgoing new mom who works in the computer industry, tells me at the four-month well baby visit.

"Do you ever pump?" I ask as I glance at Joey's growth chart. He is right on track: in the fiftieth percentile for height and weight.

"Once at work during my lunch break," Emily answers. "I get about four to five ounces total, but in the evenings I feel like Joey's still hungry after I nurse him."

To troubleshoot this common problem, it is a good idea to start building up a freezer full of breast milk even before you go back to work. The pumping will stimulate your breasts to make more milk and may make pumping easier when you're away from your baby. Your employer is now required by federal law to give nursing moms with

infants up to one year of age a private place to pump and a reasonable amount of break time to do so, whether you are a full-time or part-time employee (unless your employer has fewer than fifty employees and can also demonstrate that compliance with the provision “would impose an undue hardship”). Since feeling stressed can make pumping less successful, it’s a good idea to talk to your boss in advance, if you can. Some employers are happy to see babies in the office (we certainly are), so you may be able to arrange for a caregiver to bring the baby to work at mealtimes. It’s high time for America to join the twenty-first century and offer working moms at least four months paid parental leave, as they do in Europe, Canada, and elsewhere around the world. Until that happens, however, know that you are doing the best you can.

Food Rules: How and When to Start Solids

There's nothing more amusing than watching a baby eat solid food for the first time. He usually widens his eyes in astonishment and puckers his lips, unsure what to make of the unfamiliar invasion in his mouth. He may spit the food out all over the person who has put such an outrage in his mouth. He may roll the food around on his tongue, drool more copiously than a Newfoundland, or close his fist around the spoon to jam it farther into his mouth, eager for more. Reactions vary. Parents have a lot of fun taking pictures and videos of a baby's first food experience, so get out your smartphone or camera.

But some of my parents feel nervous too, worrying about how and what to feed the baby. They want to give their babies healthy, developmentally appropriate, and tasty food, but the conflicting information they read online and hear from health care providers, friends, and well-meaning family members feels overwhelming.

The Most Important Rule Is Simple: Feed Your Baby Real Food

Advice for great starter foods is below, but let's start with what you shouldn't feed your baby now (or ever). Don't give your baby conveniently packaged "food" or cereals with those chubby-cheeked, well-fed babies smiling out from the packaging. Don't feed your baby out of a jar. Jarred baby food is designed to sit on a grocery shelf for months; it has been so highly processed and pasteurized that it contains only a fraction of the nutrients of the original plants. As the Committee on Nutrition of the French Society of Pediatrics put it, "The nutritional benefit to be expected from the consumption [of processed baby foods] is minimal." Foods and other products engineered specifically for babies and marketed relentlessly to parents (including over-the-counter medicine, teething biscuits, and Pedialyte) too often contain extra additives, including harmful petroleum-based artificial dyes, too much sodium, and added sugar or other sweeteners. Though

baby food companies spend an enormous amount of money trying to convince both parents and doctors that their “food” is scientific, systematic, and tested, proven to ensure optimal health for our babies and toddlers, this is simply untrue.

You probably haven’t realized that baby food manufacturers have been marketing to you since you first got pregnant—through Internet ads, ads in the magazines you leaf through at the doctor’s office, and coupons for “free” stuff. Don’t be duped!

The American Academy of Pediatrics still recommends introducing solids at six months. However, I’ve been reading with great interest the research that shows reduced allergies when solids are introduced between four and six months. New evidence suggests that earlier introduction of foods like peanuts may result in fewer allergies. Had we known about starting solids at four months with our boys, I imagine we might have been able to avoid formula. The addition of solids gives the family another way to get nutrients into the baby, a way for others to help with feeding, and—as long as you start with wholesome organic produce—a way to boost the immune system with phytonutrients, vitamins, and minerals.

Start solids with one food at a time, offering just a few bites. Expect most of it to come back out. Babies are not quite sure what to do with their tongues, and it may take them several weeks, or longer, to get the hang of swallowing. My favorite way to feed a baby is to sit him on my lap facing the table as I eat my meal.

Never force-feed a baby or try to trick her into eating. A baby who turns her head away from a spoon is telling you with her body language that she is full. It’s important that you respect that. Your baby has an internal compass—triggered by hormonal signals that are sent to her brain—that tells her when she is full. When parents try to give the baby “just one more bite,” even after she has indicated that she does not want more, they are inadvertently setting her up for a lifetime of food issues and even predisposing her to obesity. The baby will tell you when she’s hungry, and she will tell you when she is full. Your job is to pay attention, not to fret over how much your baby has eaten.

Read the Baby, Not the Guidelines

Every baby is different, but most babies show an interest in food between four and six months. My recommendation is that you read your baby, not the guidelines. If your baby no longer has an extrusion reflex (where he pushes his tongue out of his mouth), is able to sit comfortably on your lap, holds his head up by himself, and shows an interest in food, you can safely start feeding him solids.

If your six-month-old is nursing well and gaining weight and thriving on breast milk but shows no interest in food, continue to pay attention to eating the healthiest diet *you* can, knowing that she will start eating solids when she's ready.



Always feed your baby
fresh, whole, real food.

Sugar by another name is just as bad. The human brain requires a steady supply of a type of sugar called glucose, which is needed for healthy development and function. But what babies do not need is processed sugar or processed sweeteners of any kind, which predispose young children to diabetes, obesity, metabolic disorders, yeast overgrowth, and a host of other health problems, including tooth decay.

Instead, choose whole foods that are naturally sweet, like yams, whole dates, and fresh fruits. These foods are high in vitamins, nutrients, and fiber and are wonderful for new eaters.

There are many ways that food manufacturers add sugar to their products. One way to avoid this is to avoid all packaged foods. But parents must become savvy consumers and learn to read ingredient lists. If you see any of the following ingredients added to the baby food you were going to buy, put it back on the shelf:

- barley malt
- beet sugar
- brown rice syrup
- brown sugar
- cane juice
- cane juice crystals
- caramel
- carob syrup
- corn sweetener
- corn syrup
- corn syrup solids
- dehydrated cane juice
- demara
- dextran
- ethyl maltal
- evaporated cane juice
- fructose
- glucose
- glucose syrup
- golden syrup
- high-fructose corn syrup
- malt extract
- malt syrup
- maltodextrin

- maltose
- muscovado
- panela (also known as raspadura)
- raw sugar
- sucrose
- sugar
- treacle
- turbinado
- yellow sugar

First Foods

Almost any whole food is a good first food for a baby: mashed organic banana, organic cooked yam, avocado, puréed cooked carrots or peas or apples (otherwise known as applesauce). Let your baby try the foods you love! Feeding a baby should be a joy, not a chore.

Generally in Europe, I'm told, parents start with single fruits, considering them easier to digest, then gradually introduce vegetables. In the United States we tend to recommend starting with yellow vegetables, then moving on to green vegetables, then fruit. The thinking is that babies will get used to sweet things if you start with fruit, and then refuse vegetables. But who likes yellow vegetables? (Summer squash is one of my coauthor's least favorite foods.)

I don't hold much stock in the American strategy; obesity rates among small children in this country are exploding. In the past thirty years, according to the CDC, obesity has more than doubled among children and quadrupled among teens.

I find that babies on either side of the Atlantic will eat happily when provided with fresh home-prepared baby food. Ruth Yaron's *Super Baby Food: Your Complete Guide to What, When, and How to Feed Your Baby and Toddler* is a great resource and an inspirational read for anyone interested in nutrition, especially if you want to make your own baby food.

Do not feed your baby raw honey, which carries the risk of botulism.

A Word About Choking

Babies love to put things in their mouths, and older babies are sneaky enough to pick up objects off the floor, tuck them into one of their cheeks, and continue crawling as usual, drooling. They are not trying to give you a heart attack; they are being little scientists exploring their brave new world. They are also priming their immune systems in a

healthy way. Researchers are beginning to realize that the immune system benefits when babies eat dirt!

But because they are such oral learners, it's especially important to be careful not to give your child any toys with small removable parts, and keep choking hazards out of a baby's reach. This is easier for parents with only one child. When there are older siblings in the house, you can't be as vigilant about LEGOs and other small items. And even the most careful parent cannot watch a baby every minute of the day.

Unfortunately, something like one child dies from choking on food every five days in the United States, and more than ten thousand children a year are taken to the emergency room for food-related choking incidents. Peanuts, popcorn, hard candies, or pieces of hard food, like coin-shaped hotdog slices, are dangerous for inexperienced eaters because they won't dissolve and break apart if they end up down the wrong pipe, and they can block your baby's airway.

New eaters are learning how to coordinate using their tongue or gums (or teeth) to chew and breathe at the same time, so you have to be especially vigilant.

If your baby starts to choke, you need to determine if he can still breathe. If he can, the airway is only partially obstructed, and you should not try to clear it because you might make things worse. Instead, get him to the hospital immediately.

If he can't breathe or is not making sounds, his airway is completely obstructed. You must take emergency action yourself. You can look in his throat to see if the object is visible and try to remove it with your fingers. Do this only if you are sure there is no risk that you might push the object farther down.

If you can't reach the object, hold the baby upside down by his feet, or put him facedown on your lap with his head and shoulders hanging down. Sometimes gravity will dislodge the food or other item. If not, give him a slap between the shoulder blades with the heel of your hand. Try slapping him several times, which should dislodge the object or induce him to cough up the item. Don't ever slap a child on the back who is sitting or standing upright, as this can force a choking hazard

even farther into his throat.

Because choking is so common in babies under one, I recommend that every parent take an emergency first aid class.

What About Breakfast for Babies?

Breakfast is one of our country's unhealthiest meals. The boxed cereals we call breakfast in America are a creation of the laboratory and should not be fed to kids. I recommend whole-milk organic yogurt or oatmeal made from organic steel-cut oats or rolled oats for a new eater's breakfast. You can also make a yummy brown rice porridge if you prefer. Bananas go well with oatmeal, and you can add all sorts of healthy extras, including cooked and puréed vegetables, beans, and meat. As soon as you know your baby can safely eat nut butter, you can add that to breakfast mush as well. I'm also a champion of soft scrambled (preferably free-range) eggs, puréed prunes, and homemade applesauce.

Still, I have a secret to share that will benefit babies and adults alike: There's no reason to eat "breakfast foods" for breakfast. In Japan—a country with one of the lowest obesity rates and the highest life expectancy—adults and children alike often start the day with rice porridge or steamed rice, miso soup with chopped seaweed, natto (fermented soybeans), seaweed salad, grated daikon radishes or other seasonal vegetables, broiled fish, fermented pickles, and other delicious whole foods. Why not? Leftovers are great for breakfast. What we usually think of in America as lunch and dinner foods work well too.

Snacks for Babies

Perhaps my biggest regret with my own children, and I see this daily in my practice even in the foodie city of Portland, is the use of processed foods for snacks. Anything a baby eats should be whole-food based, even "snacks."

Finger foods packaged with big lettering proclaiming they are "all natural" are where many of us get trapped into using processed options instead of whole foods. Snack crackers shaped like goldfish are

not real food! They may say fish on the label, but they are actually processed wheat-based junk, even the organic kind. “Fruit chews” usually contain little more than high-fructose corn syrup and dyes. Don’t be fooled by the words *organic*, *natural*, *gluten-free*, or *fruit* in the names of products like these. These are little more than marketing terms for processed foods, designed to dupe you into thinking they are healthy.

For a baby’s snack, choose cut-up soft fruit, a mashed-up cold baked potato, or a mashed avocado. Plain whole-milk cultured yogurt with live beneficial bacteria is usually well tolerated, even by babies who are or become lactose intolerant. Bananas are also great because they come in their own packaging. Carry an espresso spoon in your baby bag or purse. You’ll be surprised how often you use it!

If you forget to bring soft food for the baby, you can buy something healthy and chew it up yourself. (Parents in every culture around the world chew food for their babies, even if Americans might initially think it’s “gross.” What’s gross is eating fake food full of toxins.)

As children become more experienced eaters and get more teeth, and the risk of choking is gone, carrot sticks, cucumbers, green beans, broccoli, apples, oranges, stone fruit, nuts of all kinds (walnuts, almonds, pistachios, brazil nuts, hazelnuts), and unsweetened dried fruit all make healthy and convenient snacks.

Feeding Grateful

My childhood friend Lovemore’s granddaughter, Grateful, was born with a cleft lip and palate, which is when the bones and tissues of a baby’s upper jaw, nose, and mouth don’t fuse together properly during the first six to ten weeks of gestation. More than 4,400 babies are born in the United States every year with orofacial birth defects, which are even more common in the developing world. In America, if your baby is born with a cleft lip or a cleft palate or both, it can be surgically fixed under general anesthesia. In places where families do not have access to surgeons skilled in this kind of repair work, like Zimbabwe, a problem like this means a lifetime of eating difficulties, teasing, self-shame, and social ostracism. In Zimbabwe people would assume

Grateful was mentally retarded. Lovemore called me a few months after Grateful was born, his voice heavy with sadness. There was no one in Zimbabwe who could do the repair competently.

Maiya and I knew we had to help. I arranged for Shriners Hospital in Portland to donate the surgery, and, as I mentioned in [Chapter 3](#), we invited Grateful and her mother, Shamsu, to stay in our home.

But there was a problem. Grateful, who was having feeding difficulties because of her birth defect, was too small to be safely operated on. She came to us when she was about six months old, an alert, charming, wide-eyed baby with thin arms and legs. Shriners Hospital told Shamsu that she had to get her weight up before they would do the surgery, or else it was too dangerous. Our job was to feed her.

Shamsu gave a gasp of disbelief when I pulled a miniature blender out of a kitchen cabinet and blended cooked sweet potatoes and a little water to make up homemade baby food for Grateful. Though Grateful's cleft lip and palate made breastfeeding difficult, it turned out she loved eating off a spoon. We fed her cooked carrots, sweet potatoes, broccoli, green beans, and peas, and we puréed the meat that was on the table for dinner to add to her vegetables. In a few months Grateful was deemed strong enough to survive the operation. The surgery took eight hours, and Grateful was back home with us in just a few days. I wish I had fed my sons the same way. Grateful taught us all how natural and easy it is for a baby to eat real food. When Shamsu and Grateful went back to Zimbabwe, Grateful was just over a year old, walking on chubby little legs, smiling at everyone, her lip and palate totally healed.

What If Food Allergies Run in Your Family?

To prevent food allergies, we used to tell parents to avoid introducing babies to highly allergenic foods like eggs, peanuts, and fish. Now new research in the field of food allergies—one randomized clinical trial in a group of high-risk children conducted by researchers in London—suggests that desensitizing allergy-prone children to peanuts by offering them between four and eleven months of age may actually

prevent a peanut allergy from developing.

If nut allergies run strong in your family, I would use caution here. If you want to try introducing nut butters to your young infant, first apply a little to the baby's wrist. If there is redness or any noticeable allergic response as a result, do not give your baby this nut butter. If you see that there is no reaction, begin with the tiniest amount (a quarter teaspoon or less), and be ready to go to the doctor's office or emergency room if your baby develops a severe rash or has trouble breathing or swallowing. It is also important to have diphenhydramine (Benadryl is the best-known brand) on hand to administer while on the way to the hospital in the event of an allergic reaction. Make sure it is dye-free.

Check first with your doctor on this approach, as this is a new technique, and information and protocols change quickly in pediatric medicine.

America's Gluten Problem

Food sensitivities can be the cause of health issues in babies, including upset stomach, diarrhea or constipation, eczema, dry skin, and irritability, to name just a few. Many integrative medicine, functional medicine, osteopathic medicine, and naturopathic medicine doctors use IgG food sensitivity tests to check for food sensitivities. The IgG food sensitivity test will measure antibodies in a blood sample against up to one hundred different foods. Since you have to be exposed to the foods before your body would mount an immune response, I rarely do this test before a year of age. The company I use is able to run these tests on a few drops of blood from a finger prick. Fifteen to twenty years ago only a small percentage of children, usually those with severe eczema, had elevated IgG to gluten (wheat, barley, rye, and spelt). Today more than 50 percent of the tests I send show a reaction to gluten.

Something has changed in the past twenty years. Our intestines have become unable to keep the gluten protein away from the immune system, and we are now developing harmful immune responses against gluten. In the severe form, a gluten intolerance is known as

celiac disease, an autoimmune disorder where eating gluten stimulates your immune system to begin attacking your own tissue. Common symptoms of celiac disease are bloating, stomachaches, poor weight gain, diarrhea, skin and mouth sores, and irritability. The prevalence of celiac disease has been estimated at as many as 1 in 141 adults, though the majority are unaware that they have it. We don't have reliable numbers for how many children have celiac disease, but diagnosis isn't really possible until after they start eating solid foods, between six months and two years old.

A few years ago I asked Dr. Erica Zelfand, one of my favorite naturopaths, why she was gluten free. A naturopathic doctor, or N.D., is a physician who goes through rigorous medical training with a focus on holistic, proactive prevention and traditional healing methods. A licensed N.D. attends a four-year naturopathic medical school and learns the same basic sciences as an M.D. in addition to studying clinical nutrition, homeopathy, botanical medicine, and even counseling.

"During my immunology class in medical school, the professor asked us to raise our hands if we were gluten free," Dr. Z explained. "One third of the class raised their hands. 'So the rest of you are just trying to develop an autoimmune disorder by eating gluten, right?' the professor said."

David Perlmutter, M.D., a neurologist in private practice in Naples, Florida, and author of the best-selling *Grain Brain*, points out in an interview with a journalist from *The Atlantic* that grains are high on the glycemic index, which means that an hour and a half or two hours after you eat them, your blood sugar is going to rise, which is harmful to the brain. He argues that brain inflammation, which is partly caused by gluten, is implicated in ADHD, dementia, decreased libido, chronic headaches, anxiety, and epilepsy.

A senior research scientist at MIT, Stephanie Seneff, Ph.D., points out that the endocrine-disrupting herbicide glyphosate is routinely sprayed on fields of wheat. Ron, a third-generation wheat farmer who brings his children to my practice, shared that each year the wheat has higher and higher gluten content. Farmers buy the seed from

corporations that have modified it to produce plants with higher gluten content, and are paid more for the higher gluten wheat. In other words, farmers are being economically forced to use seed that is highly hybridized to produce the highest gluten content. Indeed, most of the wheat Americans consume is only a distant relative of wheat we ate just a few decades ago.

“Wheat can...reach deep down into virtually every organ of the body, from the intestines, liver, heart, and thyroid gland all the way up to the brain,” writes William Davis, a preventive cardiologist who practices in Milwaukee and author of the best-selling *Wheat Belly*. “In fact, there’s hardly an organ that is *not* affected by wheat in some potentially damaging way.”

Why the rise in gluten intolerance? I’ve come to suspect that American wheat is so hybridized and modified that it is now a challenge for our immune system and should be avoided completely. I don’t eat gluten anymore, but your family may be able to tolerate it. If you are going to eat wheat and other gluten-containing carbohydrates, I recommend organic and whole grains, especially sprouted grains. You can also try heirloom wheat, which is becoming more popular, like einkorn, spelt, and emmer wheat. I’m not convinced that this will completely spare you a gluten-mediated challenge to the immune system, but I suspect it might. Given the rising rates of gluten intolerance and celiac disease, it may make sense to avoid giving your baby foods that contain gluten.

Normal Development for Your Baby Is How Your Baby Develops

At the four-, six-, and nine-month well baby visits, we assess your baby's gross motor skills, fine motor skills, language acquisition, and social development. Be aware that there are huge ranges of "normal." A baby usually learns to roll over between four and six months. But some eager babies are even walking by six months, and others are doing...mostly nothing. I know we pediatricians, with our endless checklists and questions, foster these concerns in parents, but it's important for both doctors and parents not to get too hung up on milestones. At the same time, if your gut instinct (not the charts, not the checklists) is telling you something is wrong, pay attention and make sure your doctor does too.

One of my sons was content in a bouncy seat for hours (not what I recommend) and was unhappy whenever we put him on his tummy on the floor (which we should have done more). He did not learn to roll over until he was seven months old, which is considered delayed. But by eighteen months he was talking in full sentences, which is considered advanced. In retrospect, I understand that he was focused on learning language, and motor skills came later for him. Comparing your baby with the Joneses' may lead only to frustration and unnecessary anxiety.

The first big motor skill for your baby is holding her big head up on her own. That and the ability to push the upper body off the ground on her hands when she is on her tummy are typical around four months of age. Babies this age can typically bear some weight on their legs if you hold them up. They might also roll from front to back or, very rarely, both ways.

By six months most babies are rolling both ways. If put in the sitting position, they can usually stay there briefly, leaning forward on their

hands. (We call this tripoding.) I don't recommend you artificially place your baby in a sitting position or in a bouncy seat or exercise seat that supports her for very long. You want your baby to go through the natural developmental stages, as they play an important role in corresponding brain development beyond the motor skill you are observing. Left on their own with plenty of floor time, most babies will usually roll and then crawl before sitting.

By nine months, babies are sitting well and usually crawling. They can usually pull to standing with support and have started to cruise (walking around with help from the furniture, your arms, or an adult leg to stay balanced). Follow your baby's cues, and interact with him as often as you can. You can have fascinating wordless conversations at this age, and nine-month-old babies usually have fabulous senses of humor. Try throwing a piece of spaghetti at the wall or pretending to miss your own mouth with a spoon, and you'll see what I mean. But resist the temptation to hurry him into walking or anything else. It seems to be beneficial for development for babies to crawl on their hands and knees, though some will create their own style of crawling (using their bums, for example) and others, like Tucker, will skip crawling entirely. When you miss crawling, some say children can have trouble reading, but good studies on this are hard to find. There are cultures—in Africa, Indonesia, and Papua New Guinea—where crawling is purposely avoided, and these children seem to develop normally.

At each well baby visit your doctor will provide the opportunity to evaluate your baby's muscle tone. Regardless of whether your baby can yet move in the next developmental way, good muscle tone is what we are looking for. Low tone (hypotonia) can be associated with neurological and developmental issues.

Fine Motor Skills at Four, Six, and Nine Months

At four months, babies have very crude fine motor skills, if any at all. They can usually bring their hands together in the midline, and they love to reach for objects (and stuff them into their mouths). But they have not yet developed the pincer grasp, which usually comes around

nine months.

At six months, babies will usually be able to transfer an object like a rattle from one hand to another. They will also be able to shake a rattle up and down.

At nine months, your baby will likely have that pincer grasp that allows her to pick up a single Cheerio (except remember, we are going to get away from processed food and dump the Cheerios and “vege-wheels” that are still just processed junk food). Some babies will work hard to pick up a tiny piece of food using the pincer grasp, while you can practically see other babies thinking, “Forget that,” while raking in a whole handful (or forgoing use of their hands altogether and bending in half over a table to eat with their mouths). Offer ripe fruit or well-cooked vegetables at this age for a baby to play with. Most of it will fall onto the floor. This is the age babies will want to start feeding themselves—let them! They’re sure to make a huge mess, but more important, they are practicing fine motor skills.

There is nothing like the persistence of an infant or toddler learning a new skill. If only we adults could be so persistent when it came to worthy tasks! Ever seen a baby who just gave up on learning to walk? Me neither. They all get it eventually.

Social and Language Development at Four, Six, and Nine Months

At four months, babies are cooing and giving social smiles, either responding to a smile from someone else or initiating a smile to get one in return. I love this age, and I like to brag that there is no baby I won’t get to smile—period. I’ve had a couple tough ones in my career but have yet to fail. Some babies will blow raspberries and bubbles if you play the game with them, and they will squeal and laugh. Pause after you ask your baby a question to give him time to answer, and enjoy how much he revels in being social and talking back and forth with you. Someday he will be a teenager and may not be so chatty.

Around six months, most babies love to be held, and many may sit still on your lap as you read them a picture book. They are babbling in their own language now, trying out lots of sounds. My daughter Natalie invented her own language that she used until she was almost

two years old. She would expressively talk up a nonsense storm of sounds while using hand gestures. No one ever understood her, but we pretended to. This is an age where your baby will show interest and pleasure in others and may also start to develop stranger anxiety, where anyone other than the main caregivers becomes threatening and scary.

Full-blown stranger anxiety is very common by nine months, although none of my kids had it. Our children had multiple caregivers by this age, and several parent figures, so they were used to being passed around from one loving adult to another. Babies with a stay-at-home parent who is their whole world are most likely to develop a healthy fear of strangers. Would you give a hug to someone you'd never met before? There's nothing wrong with this—it's completely normal.

By nine months many babies develop separation anxiety and cry when you leave them with someone else.

For the parent who is gone at work all day, a baby's preferences at this age can make them feel bad. "I don't think Eva likes me. She cries when I get near her and won't let me hold her," George, a dad who traveled a lot for his job, told me in tears, heartbroken.

Some babies will go right to you, while others need the time and space to come to you. "Try lying on the floor for a really long time while Eva has floor time, and eventually she'll crawl up to you or try to get on you," I advised. By the next visit, Eva and George were thick as thieves.

By nine months, most babies are babbling and saying "ma ma" and "da da," though they don't always know what it means. Often "da da" is a baby's first word because it is easier to say than "ma ma." Repeated sounds at this age often stand for a category and not a specific person, though some precocious babies will be assigning words to specific things at this age. ("Woof," "ut oh," "da da," "ma ma," "bye bye," and "no," which is much easier to say than yes, are all common first words for American babies.) Nine-month-old babies are usually able to wave bye-bye, play peek-a-boo, and imitate sounds. This is also when you will see that they are responding to their name.

Put babies to sleep on a firm surface
on their backs.



Do You Really Need to Take a Healthy Baby to the Doctor?

I'm going to make a very unpopular statement, but here it is: As a country, we could save a fortune on health care if we cut out the four-to-nine-month well baby visits, provided the baby is developing normally as I've described above. I rarely find anything that I wouldn't have already picked up at the two-week or two-month visit. Sure, it's a good idea to track weight, height, and development, but the real reason for all these well baby visits is for the pediatrician to administer vaccines.

I have my reservations about taking a healthy baby to a doctor where the waiting room is full of sick kids. So does a team of researchers from Iowa Carver College of Medicine that analyzed health information for more than 84,500 families from 1996 to 2008. They found that children under six and their families had a 3.2 percent increase in visits to the doctor for flu-like illnesses after going in for well baby visits. Experts estimate that this amounts to about 700,000 preventable infections each year! Though the study's authors do not recommend skipping well baby visits, they do urge doctors to follow better hygiene practices in the waiting room, including more hand washing and cleaning the office. They also recommend not scheduling

well baby visits during local flu outbreaks. In my practice I have two waiting rooms, one for well babies and one for my sick patients.

For infants under one year old coming in for well baby visits, we schedule them during the first half of the day whenever possible. Why? Because by late morning sick kids are coming for same-day appointments, and there is no way to keep the air in the office from getting contaminated with infectious diseases like the common cold, influenza, bronchiolitis, bacterial pneumonia, or in rare cases whooping cough.

In the end, I think the safest thing you could probably do and should do is stay away from your doctor's office, especially during the winter! There, I've gone and done it—I've said what shouldn't be said. If your doctor's office has only one waiting room, it can be downright scary to sit in a waiting room full of sick kids with your well newborn or young infant. At least find a doctor practicing safe well baby visits.

Health plans have systems for grading doctors on the quality of their care. In pediatrics, sadly, most of the metrics have to do with how many vaccines you gave and how many well baby visits you got children in for. Both are arbitrary indicators of a doctor's ability to follow guidelines rather than promote optimal infant health and actually create healthier children and families.

Sleep Concerns

Perhaps the single most important topic for parents of babies aged four to nine months is sleep. If you are not getting it, you know how important it is. Sleep deprivation for parents is linked with depression. I've seen even the most upbeat parents look desperate when they are not getting enough sleep.

So what are the secrets I can share from decades in the business (keeping in mind that doctors learn little, if anything, about sleep in medical school and that most advice you get from pediatricians is based on their own cultural assumptions and experiences)? First, realize that your baby is a unique person, and that you may need to tailor your parenting style to match your baby. Some babies sleep well and easily, while others don't need as much sleep, have trouble settling

down, and are so curious about the world that they resist going to sleep at night; wake up often, eager to find out if there is something going on that they are missing; and generally drive their parents crazy. Sometimes you parent your baby as you were parented or as you parented an older sibling, and it works perfectly. Sometimes it just doesn't. If your baby is resisting your parenting around sleep, it is we the parents who need to adjust.

In *The Happiest Baby on the Block*, best-selling author Harvey Karp points out that babies are very vulnerable in the first few months of life and suggests that parents do all they can to mimic the noises and movements babies felt in the womb in order to help them sleep.

We certainly have ample evidence that you cannot spoil your child during the first year of life, in spite of how guilty your mother tries to make you feel when you respond to your baby's cries. So wear your baby, keep her with you, nurse her as often as she wants and needs (in the womb she was fed continuously through the umbilical cord), and be as gentle and loving as you possibly can. If there are two parents, take turns, especially at night, so you both get adequate sleep. It can be tremendously beneficial for moms to learn to breastfeed lying on their side, which can allow them to rest, or even sleep, while the baby is nursing.

In the village in Zimbabwe where I grew up, families slept together in a one-room hut. Mothers would nurse their babies through the night as needed, and it just seemed to work. But I can assure you that with my children, and their hyperactive temperaments, no one would have rested if we had tried the family bed approach.

It does not have to be all or nothing. You can keep the baby with you in the early months, then transition him to his own room later on. You may start by having the baby sleep in a separate room and then have several months when he is a toddler, or if he goes through a particularly fearful stage, keeping him in bed with you.

Once you have decided to transition your baby to a separate room, when should you start? What works for many of my parents is to start gently laying the baby in her own crib for naptime, if not nighttime, when she is between two and three months old. Put your baby in the

crib while she is still awake but very sleepy, a practice that will help her learn to fall asleep on her own and not need to be rocked or nursed. It is safer not to use bumper pads in your infant's crib. If the baby fusses a little, sing to her or pat her back, trying not to pick her up unless she gets too upset.

If you don't have your baby sleeping on his own by about six months, you can end up in a situation where he is standing up in the crib screaming for you to rescue him. This is exactly what you don't want, as you want sleep time to be a peaceful time, and you want your baby's crib to be a happy place. I don't recommend you let your baby cry it out, a practice that has become so popular it has its own acronym (CIO) on social media. Some doctors recommend the practice of letting babies cry, even to the point that they vomit. They suggest closing the door to your baby's room and not opening it again for twelve hours. Doing this teaches your baby to believe something I don't think any human should ever feel: that no matter how scared or sad he feels, no one will be there to care and comfort him.

Even very small children feel safer and better cared for when they have consistency and predictability, especially around bedtime. Create a predictable bedtime ritual that always happens in the same order: teeth brushing or toothbrush gnawing if your baby has no teeth, followed by a bath (though there is no rule that you have to bathe a baby every night), three board books (reading the same ones every night will delight your baby even as it makes *your* brain go numb), some baby massage (we called it "sleepy massage" in our house), and then lullabies.

Some babies learn to sleep relatively easily on their own. Others panic when they are left alone. If your baby is struggling with separation, keep him close. He has the rest of his life to become independent.

When Your Baby Has a Fever

Two days after Ashley Housley's three-year-old and her five-month-old baby spent the day at her in-laws' house, they called her with the news that they both had the flu. She was more than a little upset. "Oh,

boy, was I mad,” she says now, laughing at the memory. “I told them, ‘We have a tiny baby, and it’s flu season, and you knew you didn’t feel well, but you pretended you did because you didn’t want to cancel your play date!’” Sure enough, a few days later her three-year-old son, Bridger, got sick. He loved to let his baby sister, Quill, suck on his fingers, and the next day the five-month-old’s body felt like it was on fire.

Ashley took the baby’s temperature: 103.4°F.

“She was just so little,” Ashley remembers, “which really made me nervous.” She sent her husband to the drugstore for fever medication and asked some trusted mom friends for advice. They recommended skin-to-skin to help the baby regulate her temperature, so Ashley undressed Quill, took off her own shirt, and nursed the naked baby as she lay on her body. Twenty minutes later she took Quill’s temperature again. It was down to 101.6. More important, Quill had settled down. Instead of fussing and whimpering, she was sound asleep.

The first thing I tell worried parents when they come in with a feverish baby over four months old is that a fever is a sign of a healthy immune system doing its job. The most likely cause of a fever in a baby is actually the common cold. Fevers are also a common reaction to vaccines, teething, and other viral and bacterial infections. Rarely, fevers can be caused by too much time in the sun, by accidental poisoning, and by prescription or over-the-counter medications (including antihistamines and antibiotics). Fevers that are a side effect of medication are called drug-induced hyperthermia. Though doctors are universally aware that this happens, no one really knows how often.

The majority of fevers in babies clear up on their own without medication. The key, when a baby has a fever, is to figure out what’s wrong—think of the fever as a helpful clue but not a cause for concern in and of itself. If your baby’s forehead feels warm but she’s not acting lethargic or unhappy, she may simply be overdressed! Don’t laugh. Sometimes it’s that simple.

You may be surprised to learn that there is no real relationship between how high your baby’s temperature is and how severe the

illness. But if your baby has a fever accompanied by lethargy, trouble nursing, or unusually protracted crying, then he needs to be seen. We worry about fevers in very small infants because they are so vulnerable, and there are increased risks in the first two months of life such that any fever over 100.6°F or 38.4°C rectal should prompt a visit to your doctor. Still, it is only when a fever goes over 104°F or the temperature changes rapidly that the fever itself can cause febrile seizures.

Not every child's normal body temperature is 98.6°F, and some children tend to get fevers more than others. You can take your baby's temperature either under his arm or with a rectal thermometer. Though rectal readings are more accurate, they are really necessary only during the first two months of life. Lubricate the thermometer and insert it only 1 centimeter (half an inch).

I know you've never heard a doctor say this before, but if a fever is caused by a bacterial or viral infection, the best strategy is to leave it alone. The fever is helping your baby clear the infection by making more white blood cells and speeding up their activity so they can go on the attack against the bacteria or virus that is making him sick. Fever also decreases the amount of available iron in the bloodstream, which creates a less hospitable environment for germs.

A systematic review of the existing literature found that reducing fevers in laboratory animals has consistently been shown to increase their death rates from infectious disease. Other studies have shown that artificial fever reduction prolongs the itching in children with chicken pox and negatively interferes with the immune response after vaccines, increasing the duration of viral shedding. Since having a fever seems to help the immune system work more effectively and reducing a fever may actually prolong the flu and shingles, the best response is the one that the doctor is least likely to recommend: Let the fever run its course.

Vaccines at the Four-, Six- and Nine-Month Visits

The CDC recommends (and most states mandate) the following vaccines:

At four months:

- **DTaP** (2nd of 5 doses)
- **Hib** (2nd of 4 doses)
- **Polio** (2nd of 4 doses)
- **PCV** (2nd of 4 doses)
- **Rotavirus** (2nd of 3 doses)

At six months:

- **DTaP** (3rd of 5 doses)
- **Hib** (3rd of 4 doses)
- **Pneumococcus** (3rd of 4 doses)
- **Rotavirus** (3rd dose may be needed, depending on the brand)
- **Influenza** (started between 6 and 12 months; 2 doses 1 month apart, and then yearly)

At nine months (or between six and eighteen months):

- **Hep B** (3rd of 3 doses)
- **Polio** (3rd of 4 doses)

I don't know about your experience reading the above list, but I find

just writing it to be overwhelming. So many vaccines are now being recommended for such small babies. Compare the current schedule with the CDC's past childhood vaccine guidelines. In 1983 the vaccine schedule recommended *only* the DTaP and the polio vaccine at two, four, and six months! Hepatitis B, if given at all, was given to immigrants from countries where hepatitis B was endemic, as well as to sexually promiscuous adults.

At four and six months old, I recommend continuing the DTaP, Hib, and Prevnar (see the detailed discussion in the previous chapter). A brief refresher here:

DTaP helps protect babies against three diseases: diphtheria, tetanus, and pertussis. Pertussis, also known as whooping cough, is a bacterial infection that remains a problem in the United States, infecting more than 31,000 people a year. The majority of deaths from whooping cough are in the under-three-month age group (which means your older baby is at less risk not of getting whooping cough, but of having lethal complications). The complete vaccine series, a total of five shots by age four, seems to provide protection. The DTaP vaccine is not perfect, however. The efficacy rate is only between 80 and 85 percent after three doses, and the protection wanes quickly. Pertussis is a tricky disease, and we have not been able to design an effective pertussis-only vaccine. When pertussis antigens are bundled with diphtheria and tetanus, the vaccine is most effective, which is why there are three components. Diphtheria, widespread in the nineteenth century, has essentially been eradicated in the United States. We have only one case of diphtheria every few years. Tetanus is an acute soil-borne bacterial infection. It is not an infectious disease, and it cannot be spread from one child to another. It is usually contracted from deep puncture wounds (nails, factory equipment), infected needles, and contaminated animal feces. Tetanus becomes a concern once a baby is crawling and walking. We see about twenty-nine cases of tetanus a year out of 300 million people living in the United States.

Hib and Prevnar are important vaccines, preventing most of the bacterial meningitis cases that would infect children under age five. When I was a resident in the 1980s, we had so many young children

with meningitis coming through the emergency department that I could do a lumbar puncture—where you put a long needle into the lower back between two vertebrae and into the spinal fluid sac that covers the spinal cord—with my eyes closed, simply by feel. Pediatric residents today might do only one or two in their entire three years of training because those vaccines have been so effective.

Hepatitis B and Rotavirus Vaccine: “Thanks, but No Thanks, Doc”

As discussed in detail in [Chapters 3](#) and [5](#), I do not recommend the infant series of the hepatitis B vaccine (a total of three shots) or the rotavirus vaccine (three oral doses). The risk of damage to your baby’s immune system from the toxins in the vaccines exceeds the limited benefits from these vaccines.

The Flu Vaccine for Infants

Because influenza viral strains can change from year to year, the flu vaccine is recommended annually for babies starting at six months old. For the first year your child gets a flu vaccine—if she is under nine years old—the CDC recommends two doses of the vaccine four weeks apart. The influenza vaccine is given by injection with a needle (the flu shot) or is sprayed into the nostrils of a child over two (the flu mist).

The composition of the flu vaccine changes every year in an attempt to match the most infectious strains likely to circulate that year.

At this writing there is a trivalent vaccine (protecting against three flu viruses) approved for children aged six months and older: Fluzone IIV3 (made by Sanofi).

There is also a quadrivalent vaccine (protecting against four flu viruses) approved for ages six months and older: Fluzone Quadrivalent (made by Sanofi).

Finally, there is a nasal spray (protecting against four flu viruses), recommended for children aged two to eight years: FluMist (made by Medimmune).

In February 2015 the Advisory Committee on Immunization

Practices voted to recommend the annual flu vaccine for everyone six months of age and older. Its reasoning: Large numbers of children under five end up hospitalized for complications due to influenza. The CDC also points out that during the 2013–14 influenza season there were more than one hundred flu-related pediatric deaths.

Are These Flu Vaccines Safe?

Since the vaccine has a different composition each year, it is very difficult to assess the safety of these flu vaccines, and long-term safety studies are rarely conducted. It is imperative to insist on a single-dose vial to avoid exposure to mercury. The multidose vials contain 25 micrograms of mercury (thimerosal) in each dose, which is most definitely *not* safe. The nasal FluMist is a live virus and is not safe for children who are immune-compromised. The live-virus flu vaccine sheds the virus, which means that the vaccine-derived live virus is present in body fluids of a recently vaccinated child or adult for some time.

Are Flu Vaccines Effective?

Flu vaccine effectiveness is highly variable from year to year. Because we cannot accurately predict which strains of influenza will be circulating in advance, it is one of our least effective vaccines.

Does Your Six-Month-Old Need a Flu Vaccine?

Every year during the flu season pharmaceutical companies spend an inordinate amount of money to persuade Americans to get the flu shot. You see ads at the grocery store, the drugstore, in the newspapers, online, on the evening news, and even at the airport. I don't condone this kind of relentless and aggressive advertising by for-profit businesses, and I don't believe pharmaceutical companies have the interest of public health in mind with this kind of direct advertising. Despite the federal government's recommendation that every child get a flu shot, not all states mandate it.

I recommend the flu vaccine for children with major underlying health issues and asthma, who are at greater risk of death from the flu than are children with healthy immune systems. In my practice about

a quarter of families choose to give their children this vaccine, and most of my staff also get it, which I recommend as well. It is interesting to note that over the years, those nurses in my office who skipped the flu shot (against my advice) have not come down with the flu. Having a healthy immune system seems to be just as effective as, or perhaps more effective than, getting the vaccine.

What your pediatrician may not know is that the estimated number of flu cases reported yearly by the CDC actually refers not to tested and confirmed flu cases but to all reported flu-like illnesses. Since doctors rarely test children presenting with flu-like symptoms for the presence of influenza, it is impossible to distinguish influenza infections from other viruses. Unlike other doctors, in our practice we actually test sick children who might have the flu, and we have found that only 20 percent of those tested actually have influenza. Out of more than eleven thousand children in my practice, although fewer than 10 percent get the flu shot, we see fewer than twenty confirmed cases of the flu each year. In the past eight years, we have had no hospitalizations due to complications from the flu. The vast majority of flu-like illnesses are caused not by the influenza viruses that these vaccines target but by other viruses.

As my colleague Lawrence Palevsky, M.D., a physician in private practice on Long Island, told Jennifer in an interview: “What people don’t understand is that most illnesses that are flu-like in humans are not documented to be caused by the influenza virus....It’s just assumed that if someone has a flu-like illness, it’s most likely caused by the influenza virus.”

Flu vaccine effectiveness is highly variable and often very low. During years when there is a mismatch between the viruses causing the flu and the viruses in the vaccines, efficacy can be as low as 10 percent. According to the CDC, the vaccine efficacy ranges from 10 to 60 percent. A 2015 study by a team of researchers from the United Kingdom, the United States, and China showed that children catch the flu from influenza only once every two years and that people over thirty catch the flu caused by influenza only twice every ten years.

In addition to the flu shot’s lack of effectiveness, safety issues

become most important in relation to a six-month-old infant or very young child. The first year your infant gets the flu vaccine, the CDC recommends giving two flu shots a month apart, but the science is not settled about whether this recommendation is safe. We need studies that look at the risks, benefits, and long-term health outcomes of giving children this young the same shot spaced one month apart. We also need studies comparing the health outcomes for unvaccinated children with those of vaccinated children, and comparing selectively vaccinated children with completely vaccinated children. Personally, given the relatively poor effectiveness of this vaccine and the unknown long-term side effects, I believe it is reasonable to skip this vaccine. I leave it up to parents, however, to make the best decision for their own children.

If Your Baby Is at Risk FOR AN AUTOIMMUNE DISORDER OR AUTISM, IT IS SAFER TO DELAY VACCINES

I do not recommend *any* vaccines for your baby in the first year of life if you have a family history of any of the following diseases:

- Addison's disease
- Autism
- Celiac disease
- Dermatomyositis
- Graves' disease
- Hashimoto's thyroiditis
- Multiple sclerosis
- Myasthenia gravis
- Pernicious anemia
- Reactive arthritis
- Rheumatoid arthritis
- Sjögren's syndrome
- Systemic lupus erythematosus

What If You Change Your Mind About a Vaccine?

A lot of families who join my practice tell me that they were misinformed about vaccines. Some report that their previous doctors told them the vaccines were “required by law.” But no federal law in the United States forces vaccination, though all states require certain vaccinations for entry to public school unless an exemption is provided. However, California recently passed a law barring partially vaccinated or unvaccinated children from attending public and private schools or day care without a medical exemption. Other families tell me that their pediatricians said that if they decided to delay or forgo even one vaccine, their family would be kicked out of the practice. One couple who wanted to refuse the birth dose of the hepatitis B vaccine was actually threatened by an angry nurse in the hospital who insisted he would call Child Protective Services and report them for parental neglect.

These families feel like they were bullied by doctors and hospital staff and were treated disrespectfully. The attitude of doctors is often that such parents must be “idiots,” “extremists,” or “antivaccine fanatics.” They tell me that finally they agreed to vaccines that they would have chosen to delay if they had been given proper informed consent.

If you begin a vaccine series that you subsequently decide you don’t want your baby to have, what should you do? Don’t stress. Rest assured that it is not too late to stop doing a vaccine. The only risk you run if you don’t complete the series is that your child may be less protected from the disease in question, which is a risk you must decide if you are willing to take. Even if you did one or two doses of hepatitis B, for example, you need not do the third. You can always catch a child up on vaccines later—if and when you choose.

- 1. Keep breastfeeding.** Human breast milk is still your baby's best food.
- 2. Read your baby, not the guidelines.** Start solids when your baby shows interest in food.
- 3. Fresh food rules.** Feed your baby fresh whole foods (mashed or puréed), preferably organic, not food from a jar or processed cereals.
- 4. Take a first aid class.** Babies put everything in their mouths, and new eaters are notoriously good at choking. Take an inexpensive community first aid class. Ask all your baby's caregivers and your family members to do the same.
- 5. Get DTaP, Hib, and Prevnar vaccines.** These three vaccines will help keep your baby safe from potentially serious diseases.
- 6. Say no thank you to influenza, hepatitis B, and rotavirus vaccines.** These vaccines are unnecessary, and the flu vaccine is often ineffective. Several flu vaccines currently on the market contain mercury, a toxic chemical that should have no place in your baby's life.
- 7. Continue to avoid acetaminophen.** As discussed in [Chapter 1](#), this popular pediatric pain-killer is toxic to a growing baby's liver and causes glutathione depletion. Glutathione is nature's mop, and your baby's body needs it to clean up toxins.
- 8. Make sleep a priority, for yourself and for your baby.** Babies thrive on consistent sleep, and so do their parents. Get as much sleep as you can, even if that means you aren't as productive as usual or you have to step back from the rat race.
- 9. Remember that the only constant is change.** As soon as you get used to your baby at this age, she will surprise you by doing something new. If you find yourself frustrated, remind yourself that the only constant is change.
- 10. Trust your instincts.** You know your baby better than your doctor, your mom, your mother-in-law, or anybody else does. If you feel something is wrong and find yourself being dismissed as an "overanxious parent," find a doctor who will listen. If you are sure your baby is fine or if you want to forgo a recommended test, medication, or vaccine, don't let your pediatrician bully you into accepting something for your baby that you don't want.

The Seven Questions Parents Ask Me Most ABOUT FOUR-, SIX-, AND NINE-MONTH-OLDS

ABOUT FEEDING

1. When should we start solids?

A: Children who grow up around animals and on farms have fewer allergies to animals and hay. It seems that when the immune system is exposed to things early, it adapts and accepts those things as a normal part of its world. Recent research has shown reduced peanut allergies among infants who start peanuts earlier. Why not get the immune system accepting foods? I recommend starting solids between four and six months or as soon as your baby shows interest.

2. What solids should we introduce first?

A: Organic unprocessed whole fresh foods! Roasted yam, mashed banana, and avocado all make perfect first foods. Ruth Yaron's *Super Baby Food* and Gill Rapley's *Baby-Led Weaning* are both great books that can help you get started. Whatever you first feed your baby, avoid all processed foods, as well as foods with white flour, added sugar or other sweeteners, artificial food dyes, and other artificial ingredients.

3. What foods should babies avoid?

A: Babies should not eat honey until age one, due to the risk of botulism. Be careful to avoid foods that present choking hazards, including peanuts, grapes, raisins, popcorn, and hotdog slices. Avoid processed foods altogether, including the Cheerios and processed "vegetable" wheel snacks that parents so often think of as appropriate finger foods! I also recommend you avoid all but fresh-squeezed juices. For more on why I don't recommend canned juices, see [Chapter 1](#).

ABOUT SLEEPING

4. Is co-sleeping okay?

A: When it comes to where the baby sleeps, there is really no right or wrong. You should do what works best for your family. In some cultures the whole family sleeps comfortably in one room, and in plenty of American families parents and siblings bed-share. Co-sleeping has the advantage of making nighttime breastfeeding easier, especially if you learn to nurse comfortably while lying down. But if you can get your baby happily settled in her own room, sleeping apart from the baby may work

best. A family that sleeps well, regardless of how they do it, is a happier family. Wherever she sleeps, make sure the baby is on a firm surface. If you do bed-share, consider using a co-sleeper to keep you from potentially smothering your baby.

ABOUT TEETH

5. When does a baby get a first tooth?

A: The average age of a first tooth is seven to eight months, but babies also normally get teeth as early as three months and as late as eighteen months. The later the better, actually, since when the teeth come in late, there is less time for bacteria to cause cavities. Occasionally babies are born with teeth. If this happens, consult a pediatric dentist. Sometimes these teeth need to be removed.

ABOUT ILLNESS

6. How can I keep my baby from getting sick?

A: Breastfed babies are much less likely to get sick than bottle-fed babies. The longer you breastfeed and the healthier you eat, the better. Day care, the church nursery, the gym nursery, and yes, the pediatrician's office (yikes, I said it) are germ factories where infants are likely to catch illnesses. If you're able to stay home with your baby or have an in-home nanny, your baby will not get sick as often. I see no value in "building your child's immune system" by purposefully getting her sick in the first few years of life. Politely ask visitors to stay away when they're ill, even if it's just a cold. A mild cold for an adult or older child can turn into bronchiolitis or croup for an infant. Avoid air travel, especially in the northern hemisphere from December to April (this is when we have our RSV—respiratory syncytial virus—and influenza epidemics, not to mention whooping cough). Vaccinating the baby against pertussis and the two major causes of meningitis (Hib for *Haemophilus*, and PCV13 for pneumococcal) will also help him stay healthy.

ABOUT SKIN PROBLEMS

7. What's the difference between dry skin and eczema, and what can I do about it?

A: When your baby's skin is very dry but natural oil—coconut oil, avocado oil, or sesame oil—moisturizes effectively, it is simply dry skin. If moisturizing doesn't work, your baby may have eczema. Eczema is an

autoimmune disorder and is often caused by allergies. Make changes to both your diet and the baby's. Leading triggers for eczema in babies include ingredients in baby formula, gluten, dairy, and eggs. If dietary changes don't help, your pediatrician may refer you to an allergist.

Chapter 7

Your One-Year-Old

It's her birthday, and Janelle is dressed in her Sunday best for her one-year well baby visit to my office. Her mom, Heather, and I review Janelle's growth charts together, looking at her height, weight, body mass index (BMI), and head circumference. Janelle is petite—in the twenty-fifth percentile. She's also light for her age. Her weight is in the tenth percentile.

“Like I was as a kid,” her mom says. “I didn't grow until high school!”

During the exam, I observe a baby's motor skills. One-year-olds can crawl and pull to standing, and many are starting to walk. Most babies will be walking by eighteen to twenty months of age, and some start as early as six months. I always marvel at the persistence of babies learning to walk. They are tireless!

Walking is dependent on muscle strength, coordination, and temperament. Some babies are just naturally motivated to move. Others are happy sitting around and doing very little. It does not matter when your baby learns to walk: Research has found no correlation between age of walking and intelligence.

I also observe fine motor skills. The pincer grasp—picking up a small object by pinching it between the thumb and index finger—should be natural by this age. One-year-olds will also hold objects in each hand and may bang them together. This is a great age to introduce board books if you haven't already, as most babies at this age will sit and look at the pictures.

Language is advancing at this age, and most babies understand

more than they speak. It's typical to hear a twelve-month-old say "ma-ma" or "da-da," sometimes directed at the correct parent but not always.

As I mentioned earlier, my daughter invented a complex language of her own. She had a lot to say, but not in any language we understood. She communicated, complete with hand gestures and gibberish, endless intonations and facial expressions, for most of her second year of life. Two of my sons did not say their first words until around eighteen months, while their brother could carry on a semiadult conversation by that age. This speaks to the huge variability in developmental milestones and why it is important to stimulate your child's development, but not to panic if it is not fitting exactly into the normal pattern. Language is especially variable child to child.

Social development continues to progress. One-year-olds should be making eye contact and engaging with others in reciprocal social interactions. They can wave hello, clap their hands, and point to things they want or that interest them, or to indicate where they want to go, and they can look in the same direction as you do so you can look at something together. I can almost always get a wave bye-bye at the end of this visit.

As much as we look forward to our children growing up, parents often start feeling nostalgic on a baby's first birthday (which is sometimes how younger siblings come along). As you watch your child grow into a little person who can walk, talk, and interact with others, you become aware that your real job is to let him go.

Yes, they need us. Now and always.

Yes, we nurture, guide, protect, and love them.

But one day, if all goes well, they will use those once kissable, fat-padded, exquisitely soft baby feet to walk away from us.

What Should Your One-Year-Old Be Eating?

Focus on feeding your one-year-old real fruits and vegetables, chemical-free red meat, chicken, fish that is low on the food chain, and other high-quality proteins. They can also start eating nut butters, mashed beans, and whole grains. Dates, yams, and other naturally sweet foods are great to feed to babies at this age, but there is no reason to give kids *anything* with added sugar. (Try using applesauce, pineapple, or pitted dates to sweeten your one-year-old's birthday cake.)

One day when I was working at the Emanuel Medical Center's outpatient clinic, a toddler came in at nine A.M. with a Coke in one hand and a doughnut in the other.

"Why is he eating this?" I inquired.

"Oh, that's all he'll eat." His mom laughed.

I was dismayed to see such a small child eating such unhealthy food. But just a few years later I realized that my own son was insisting on sugar cereal for breakfast and apple juice at every meal. He loved apple juice so much that when he first saw the frothy opaque waves at the Oregon coast, he exclaimed in delight, "Bapple juice!," which was his word for all liquids. My wife and I frowned over our brown-haired boy's head. Later we talked about how even though we should have known better, the unhealthy eating had gotten out of hand.

I have less of an excuse than other parents. I did not grow up in America, and I did not eat highly processed, artificially sweetened foods as a kid. We had homemade oatmeal or corn porridge for breakfast; guavas, papayas, mangoes, bananas, and indigenous fruits like dragon fruit, jujube, and governor's plums for snacks; and meat and vegetables with rice, potatoes, or *sadza* (the Zimbabwean staple made from cornmeal cooked stiff enough to eat with your hands) for dinner. Dessert beyond fresh fruit was reserved for special occasions.

If we were lucky enough to have it, it was made from scratch. My own kids were not so fortunate: With two working parents, we had fallen into the trap of “convenience.”

“That’s all he’ll eat” is the universal parent excuse for toddlers who have slipped into poor eating habits. And “He doesn’t like _____” (fill in the blank here with healthy options: brown rice, unsweetened yogurt, lacto-fermented sauerkraut).

Those were the excuses we made in our house too. My wife and I had given too much power to a small child, acting like he was the person who had the final say. I gave a silent apology to that mom I had felt so judgmental of all those years before. Here I was feeding my own toddler the same way. It was true that our son loved junk food and bapple juice and often refused to eat anything else, but we were the ones who had allowed him to get into those poor habits. We were the ones who did the food shopping. So we stopped buying processed foods and juice and started offering him whole fresh foods and water instead. It was a hard transition. I would open the fridge and say, “All gone,” and the poor little guy, tremendously disappointed, would start howling. I commiserated but did not give in.

At Janelle’s well baby checkup, I was delighted to see Heather pull a glass container of cut-up strawberries and grapes out of a diaper bag for her daughter’s snack. Don’t be seduced by those popular pouches of processed and puréed “organic” “all natural” toddler foods. Even if they don’t contain added sugar or petroleum-based food dyes, you are squeezing a nutrient-depleted substance out of a plastic container that leaches chemicals. Any fruit or vegetable in juice or purée form sitting on a shelf for several months will also release methanol, which our bodies convert to formaldehyde. You don’t want your baby eating that stuff. (For more on methanol and formaldehyde, see [Chapter 1](#).)

Beware of feeding your one-year-old genetically modified corn and soy. Though no genetically modified wheat is officially grown in the United States for commercial sale, most nonorganic corn and soy crops grown in this country are genetically modified to tolerate Roundup—glyphosate—an endocrine disruptor that disturbs the body’s beneficial bacteria and has been linked to a host of other health

problems. I talked more about it in [Chapter 1](#).

If you give your one-year-old starches and cereals, try to avoid conventional wheat. As I mentioned in the last chapter, American farmers generally grow the same breed of wheat, from which the nutrients have essentially been bred out. Plants are supposed to grow in a diverse ecosystem with other plants, insects, animals, fungi, many soil microbes, and living soil that is more biological matter than it is rock particles. But wheat, a grass that originally evolved in that ecosystem, is now too often grown in a field with only one species and in soil made up of dead rock particles with chemical fertilizer.

Choose organic wheat and other grains, if you can, and try heirloom varieties like einkorn, spelt, emmer, and kamut, which are available in health food stores and some conventional supermarkets. Whole sprouted grains are the most nutritious, the most easily digested, and generally the best choice. My more health-conscious families often choose to limit wheat consumption, buying organic and heirloom wheat instead of conventional. Some are raising their children wheat-free.

Others try to avoid all gluten, a protein found in wheat, barley, spelt, and rye. As I've discussed, gluten seems to be increasingly detrimental to children's health. Active celiac disease, an autoimmune disorder triggered by gluten, can cause severe health problems including weakened bones, stunted growth, diarrhea, and painful stomachaches. Celiac disease affects less than 1 percent of the population. That may not seem like a lot. But gluten intolerance—which can be a sign of an overactive, dysfunctional immune system—is much more common, though not well understood.

Symptoms of gluten intolerance in children include brain fog, headaches or even migraines, acne, joint pain, eczema, and diarrhea. A food sensitivity test will almost always show high antibodies against gluten-containing grains for those who are gluten sensitive. I also encourage parents to keep a food journal for your child and record the timing and severity of any symptoms, which can appear hours or even days after eating gluten. Try eliminating foods containing gluten for at least a month and up to three months, and see if the symptoms go

away. In my practice, I see surprisingly high numbers of gluten-intolerant children. They tend to have leaky guts, which leads to other immune issues and sometimes even affects brain development. Eliminating gluten helps tremendously. But if your family has no history of gluten intolerance and your newly minted eater tolerates it well, you don't need to worry about gluten.

If you are going to introduce dairy, offer your baby cultured full-fat plain yogurt, not the sorry excuse for yogurt full of sugar, aspartame, or other artificial sweeteners that is often specifically marketed toward toddlers. If you read the ingredients, you'll see that sweetened yogurt often contains as much sugar as Jell-O, if not more! Your baby will like the plain yogurt just fine, and you can use cut-up fruit to sweeten it for older siblings. If lactose intolerance and allergies to dairy products run in your family, your twelve-month-old does not need dairy. Just make sure he gets enough healthy fats from avocado, extra-virgin olive oil, coconut oil, flax, nut butters, seed butters, beans, eggs, and meats.

If you are raising a vegetarian, be sure to give a chewable or liquid vitamin B12 supplement (you spray it under the tongue), and pay special attention to getting enough proteins, iron, and calcium.



Snacks are food too,
so feed your child
healthy snacks.

A child's developing brain needs more DHA (docosahexaenoic acid), an omega-3 fatty acid, during the nine months of pregnancy and in infancy than at any other time. The main sources of DHA are breast milk and fish. If your child is not nursing or eating fish, then be sure to add ground flax meal, flax oil, or purified fish oil to his diet.

What Should Your One-Year-Old Be Drinking?

Breast milk and filtered water! Our bodies are more than 70 percent water, which is vital for survival. Your one-year-old gets water in breast milk, in the foods he consumes, and by drinking water and other liquids throughout the day. You can also safely begin giving your toddler cow's milk at age one. If your child is lactose intolerant, goat's milk and camel's milk are both healthy options.

As I mentioned in [Chapter 2](#), our municipal water systems don't do enough to remove the pesticides, herbicides, pharmaceuticals, and heavy metal toxins that are present in drinking water. Filtering your drinking water, which I recommend, helps reduce your child's exposure to some of these toxins. Offer your one-year-old filtered water throughout the day, but don't insist she drink it. Her body will tell her when she's thirsty (usually at a rate of about an ounce per pound of body weight, if you like to geek out on numbers, as I do). Add a slice of lemon or orange to make it more festive. Coconut water is another good choice for hydration. Your child will drink as much as he needs.

Don't be duped into thinking you should be giving a child this age any of the "follow-on" or "follow-up" toddler formulas that are advertised as being designed for "optimal nutrition" for one-year-olds. Read the ingredients: These fancy and expensive formulas are nothing more than highly processed, GMO-laden, sugary drinkable junk.

Nursing Your One-Year-Old

Breast milk is a super food for one-year-olds, and I encourage you to keep breastfeeding for as long as you like. Don't ever let anyone tell you your twelve-month-old is "too old to nurse." I've heard misinformed though well-meaning people say, "If he's old enough to ask for it, he's too old to do it." This is complete nonsense. Every

newborn asks for what he wants, through body language, coos, and cries. Breastfeeding provides nutrition, immune support, comfort, and a secure feeling of attachment. It is correlated with higher IQ scores, less obesity, and less heart disease later in life. The benefits of breastfeeding continue for as long as you breastfeed your baby.

Go to Sleep, Sweet Baby

Have you ever noticed how every baby and toddler board book ends with a child peacefully asleep? It would be nice if that were always the case in real life, but every parent knows that with toddlers, sleep can be a challenge. Some parents feel resentful, finding themselves stuck in rounds of endless stories and demands for more snacks and drinks right before bed. Others have worked out a pleasant nighttime ritual but are exhausted because their one-year-old wakes at the crack of dawn every morning, literally prying their eyes open with pudgy little hands.

For some families the solution is co-sleeping. I know many families for whom this works very well and everyone rests and awakens refreshed. For others, it just isn't an option. Every family is different. Sleeping arrangements may vary from child to child.

If you have a one-year-old but don't yet have a bedtime routine that works, your angel has probably become a very sophisticated negotiator, whose primary goal is to get as much mommy and daddy time as possible. For this age group, sleep is not on their mind. They want more of you! Awake! (And more of the interesting world around them. So much to explore, so little time! So interesting that it's dark outside!)

I find that sleep problems have nothing to do with how wonderful a parent you are during the day. And there is no right or wrong, only what works best for your family. Whatever method you use, make sure both parents are on the same page or it won't work. The best advice I can give you is to be kind, gentle, and patient with yourself and your one-year-old. This too will pass.

What If You Don't Enjoy Parenting?

“Do you enjoy Janelle?” I ask her mom. This simple question often opens the door to talking about parenting challenges. It may seem strange for a pediatrician to ask, but how we feel about ourselves as parents, how we interact with our children, and even how we feel about them all have an effect on their health and well-being.

We all love our children, but we don't always enjoy them all the time. And depending on the temperament of your baby and where you are in your own life, twelve months can be an especially trying age for some parents. The parenting “job” is often harder than we could ever have imagined before having children. Some new parents rise to the occasion seemingly effortlessly, while others become understandably overwhelmed. Heather, who seemed so poised and self-assured, surprised me by bursting into tears.

“I just can't seem to do anything right. I don't think I'm a good mom,” she confided. She explained she and her husband had no family nearby, that he traveled a lot for work and she was often on her own. Even when he was in town, he usually didn't come home until after bedtime. She had left a successful career in sales to become a stay-at-home mom. Though from the outside it looked like she was doing everything right—the healthy snacks, the perfectly stocked diaper bag, the adorably dressed and smiling baby—she felt bored, frustrated, and unfulfilled.

“Not all adults are naturals at this early childcare stuff,” I reassured.

After listening more, I asked Heather if she might consider going back to work. She lit up at the thought, but then bit her lip. “We decided we wanted to raise our own children at home and not let someone else raise them in day care,” she sighed, the light gone from her face.

It's wonderful if you can stay home with your child, but it can also

be very isolating. Parents need lots of real-life support. Look for playgroups, support groups, and library activities so you can meet other parents with children the same age as yours. And there's no reason to feel guilty about hiring babysitters or doing reciprocal play dates to give yourself a break. There's also no reason to feel guilty if you want or need to go back to work. A happy parent is in the best position to raise a happy baby, so don't lose sight of your own needs.

Blood Tests for a One-Year-Old

If your family lives in a home built before the 1960s, there may be lead paint on your walls or lead in the water pipes that can harm your baby. If a lead screening was not done by now, ask your doctor to check your child's lead levels.

I also screen for anemia. A surprising number of children are iron deficient at this age and anemic as a result. We usually screen for iron deficiency and lead exposure at the nine-month or twelve-month visit or whenever a parent requests it.

If your baby's lead levels are too high (over 5 micrograms per deciliter), then you need to systematically review your home and your child's environment to find the sources of lead exposure and remove them. The most common sources are lead paint that creates lead-contaminated dust and leaches into the soil around the old house. The greatest exposure comes from opening and closing lead-painted windows and from toddlers eating peeling paint from the windowsills. Old pipes may have lead in them, so if you live in an old house, don't drink unfiltered tap water or cook with unfiltered tap water. You can have your water tested. As I talked about in the introduction, there really is no safe level of lead.

Iron deficiency in babies can lead to lower IQ, poor growth, anemia, and a long list of other symptoms, including fatigue, pale skin, weakness, shortness of breath, headaches, pica (eating nonfood things like dirt), cold hands and feet, and general poor health. When we check blood levels, virtually everyone's iron levels are too low. Foods that are high in iron include red meat, eggs, and green leafy vegetables. There are iron-fortified cereals, though I prefer your child eat natural whole foods. The best way to avoid iron deficiency is a healthy, well-rounded, whole-food diet.

Reading aloud encourages a
lifetime love of books.



Vaccines at the One-Year Visit

The one-year visit is a big one in terms of vaccinations. Before getting into what's on deck and what I recommend, let's pause and address the elephant in the room. Though most children may be able to handle this many vaccines at the same time, for some immature immune systems this amount can be overwhelming. Together these vaccines contain an enormous load of aluminum and other toxic ingredients, including formaldehyde, as well as four live-virus injections (measles, mumps, rubella, and chicken pox).

This one-two punch of toxins and autoimmune triggers plus the live viruses overwhelms some infants, triggering an autoimmune attack on the brain and other tissues and causing chronic inflammation and cellular damage that we come to later recognize as developmental delays and autism.

In my own integrative pediatric practice over the past seven-plus years, despite having a high-risk population (I attract families with children with autism and developmental delays), I have *had no new cases of autism in those following the Vaccine-Friendly Plan out of nearly eleven hundred children who are now 2.3 to 7 years old*. According to national averages, I should have *at least* twenty-four cases of autism in this group, if not many more, given the numerous high-risk families I care for.

I have more than a hundred families with children with severe autism, all of whom came to me after their children were diagnosed. Ask these parents about the MMR vaccine, and more than half will tell you they lost their child shortly after that vaccine. "Within days of the MMR, my one-year-old started screaming inconsolably and banging his head on his crib rails, and stopped saying the few words he had been saying," one mom explains. "He retreated into his own world, preferring to play alone, lost his eye contact, and would spin things for hours."

This is called regressive autism, which occurs when a child appears to be developing normal social and language skills but then starts to lose them. Sometimes it happens within hours or days of the MMR vaccine, and sometimes it is less closely linked, happening between the age of one and two years. There is tremendous debate about what percentage of autism cases in children are regressive. One meta-analysis that included data from 29,000 children with autism found that regressive autism occurs at least 32 percent of the time. Other published research posits that regressive autism comprises the majority of cases—as high as 75 percent.

To add to the confusion, we have many families with autistic children who do not believe their children were damaged by vaccines.

How can this be?

Autism is a spectrum disorder that affects different children in different ways and has multiple triggers. Comparing autism to cancer is a good analogy. Everyone understands that there are many causes of cancer and that everyone who gets cancer responds to it differently. We now know definitively that environmental triggers put humans at higher risk for cancer, including smoking, carcinogenic chemicals, and exposure to X-rays. At the same time, some people smoke a pack a day until they are ninety years old and never develop lung cancer, while some nonsmokers die from lung cancer.

The human body is complicated and multidimensional.

Just as every one of us has a unique fingerprint, every one of us has a different way of responding to environmental and genetic triggers for different diseases. The majority of children can get vaccines without suffering neurological damage as a result, and of course, some neurological alterations have nothing to do with vaccines. Even parents who have seen children regress into autism shortly after vaccines (a regression that is often accompanied by diarrhea and severe gastrointestinal imbalances) feel the vaccines had nothing to do with it.

But it is a lie to say that all vaccines are safe for all children all the time.

It is also a lie to say that it has been “scientifically proven” that there is no link between vaccines and autism.

Sadly, many of my medical colleagues are in denial.

First of all, it is scientifically very difficult to prove a negative.

Secondly, there are peer-reviewed studies that have shown that vaccines are linked to autism. You can find my annotated list of the scientific studies that every parent should be aware of in [Appendix G](#).

Thirdly, in both the United States and Italy, the courts have awarded monetary damages to children who have suffered debilitating mitochondrial disorder that led to autism and brain inflammation that led to autism as a result of vaccines. In December 2003 an almost-two-year-old boy in northern California named Ryan started shaking uncontrollably after receiving the MMR and hepatitis B vaccines. According to court documents, he cried inconsolably and stopped saying words like *Mommy* and *Daddy*, which he had said hundreds of times before. Later he broke out in a measles-like rash. In January 2013 Ryan B. Mojabi’s family was awarded \$969,474.91 for injuries caused by the MMR vaccine, in addition to an unspecified sum of money—which is anticipated to be millions of dollars—to provide for his future care. The original court filing states that Ryan suffered “a severe and debilitating injury to his brain, described as Autism Spectrum Disorder (‘ASD’).” Debilitating brain injury, brain inflammation, and encephalitis are also called autism.

Finally, the statement “vaccines don’t cause autism” is so general that it is practically meaningless. Currently we give thirty-four doses of ten vaccines against fourteen diseases to children by age six.

34 doses of 10 vaccines against 14 diseases by age 6

52 doses of 12 vaccines against 16 diseases by age 18

Birth: hepatitis B

2 months: DTaP, polio, Hib, hep B, rotavirus, PCV

4 months: DTaP, polio, Hib, rotavirus, PCV

6 months: DTaP, polio, Hib, hep B, rotavirus, PCV, flu

7 months: flu

12–18 months: DTaP, MMR, Hib, PCV, chicken pox, hep A

2–6 years: DTaP, polio, MMR, chicken pox, flu (5 doses)

7–18 years: Tdap, flu (12 doses total), HPV (3 doses total),
meningococcal
(2 doses)

Whether any given vaccine can be pinpointed as the exact and only cause of autism is not what we're talking about. Whether the current childhood vaccine schedule is a contributing factor in the devastating rise of autism—to say nothing of autoimmune disorders, obesity, depression, and other illnesses—among America's children, is. Whether we are overvaccinating our children to the point of causing harm, in the same way we are overprescribing antibiotics, is the real and relevant question for all of America's children.

There has never been a study done comparing fully unvaccinated children to fully vaccinated children. I will write that sentence again for anyone reading quickly: *There has never been a study done comparing fully unvaccinated children to fully vaccinated children.*

For over twenty years, since parents first started noticing that their children were regressing into autism following mercury-containing vaccines, parents, researchers, and medical professionals have been calling for a statistically significant study comparing completely unvaccinated children to children vaccinated on time on the CDC vaccine schedule. If vaccines did not cause autism, then after comparing a cohort of vaccinated and unvaccinated children (controlled for other variables like income level, diet, breastfeeding status, and the use of acetaminophen), we would find that the autism rates are the same. A study like this would put the question to rest once and for all. Of course it would show that vaccines don't cause autism, and we could get out the champagne and end the debate. Parents would understand that they were wrong, that their children's slide into autism was really "just a coincidence," that it is also a coincidence that unvaccinated younger siblings never developed autism. Public health officials could reestablish public trust, and we

could start finding the real reason for the autism epidemic.

Why do we lack the will to answer this question with a well-designed scientific study? The excuse I've heard over and over again is that a study like that would be "unethical." Vaccines are such a tremendous advantage to babies and small children, and not vaccinating is so fraught with danger, that we could never knowingly allow parents to forgo vaccines. As one doctor put it, "I think any parent who does not vaccinate is committing child abuse." So sanctioning such a study would be akin to abusing children.

The other argument against a study of this kind is that it would knowingly put other children in harm's way. "In my practice you will vaccinate, and you will vaccinate on time. You will not get your own spaced-out schedule that increases your child's risk of illness or adverse event," one angry pediatrician wrote on Facebook to the parents in his practice, echoing words I have heard from other doctors as well. "I will not have measles-shedding children sitting in my waiting room. I will answer all your questions about vaccine [sic] and present you with facts, but if you will not vaccinate, then you will leave my practice."

This doctor went on to say that he would report parents who did not vaccinate to Child Protective Services for medically neglecting their children. "I have patients who are premature infants with weak lungs and heart. I have kids with complex congenital heart disease," the doctor continued. "I have kids who are on chemotherapy for acute lymphoblastic leukemia who cannot get all their vaccines. In short, I have patients who have true special needs and true health issues who could suffer severe injury or death because of your magical belief that your kid is somehow more special than other children and what's good for other children is not good for yours."

How, I wonder, does a preschool child without hepatitis B, whose parents have made an educated, informed decision not to do the hepatitis B vaccine, put anyone at risk, be it the cancer patient or the immune-compromised patient? Is blind adherence to outdated protocols that are no longer supported by current research the way we want to practice medicine? This retreat to paternalism, where doctor

knows best, is a step in the wrong direction.

But let's suspend disbelief for a moment and pretend this pediatrician's argument makes sense. There's still a catch. We now have such significant numbers of entirely unvaccinated and partially vaccinated children that the ethical argument no longer works. It is not unethical to do a retrospective study to investigate the choices parents are making. One such study has been done. Researchers compared equal numbers of unvaccinated, partially vaccinated, and fully vaccinated homeschooled children in several states. They found that the partially vaccinated and fully vaccinated children were significantly more likely to have a host of illnesses, including allergies, ADHD, and autism.

Don't bother looking for that study in any journal, though. It was slated to be published in a major medical journal after passing through a rigorous peer-review process. At the eleventh hour the journal let the epidemiologists who conducted the research know that it had changed its mind. It is unusual—almost unheard of—for a scientific study that has passed peer review and been scheduled for publication to be pulled like this. Except when the subject is vaccines.

And when data that illustrates problems with vaccines is published, it runs the risk of being censored postpublication. A 2014 study based on CDC data showing that African American boys who receive the MMR vaccine before age three are more than three times more likely to develop autism than African American boys who get the vaccine after three years of age was retracted a few months after it was published by the journal *Translational Neurodegeneration*. Critics argued that the data presented in the study was manipulated, but in August 2014 a senior scientist at the CDC, William Thompson, Ph.D., confirmed in a press release on his lawyer's website that data from the retracted study was accurate. Thompson admitted that the CDC had manipulated data to keep the public from knowing that early administration of the MMR vaccine has been associated with autism.

This certainly is not enough to convince me that vaccines cause immune and neurological dysfunction, but it does give me pause. Furthermore, in July 2013 Elizabeth Mumper, M.D., founder of the

Rimland Center for Integrative Medicine in Lynchburg, Virginia, and an internationally known expert on autism, showed that autism could be greatly reduced by following an alternative protocol among the patients in her practice. Mumper combed the scientific literature and made several evidence-based changes to her medical practice. These included reducing exposure to environmental toxins, increasing breastfeeding, improving nutrition, promoting healthy gut bacteria through probiotics, avoiding antibiotics and acetaminophen, and delaying several vaccines.

It worked.

In nearly three hundred patients who followed Mumper's protocol, she saw no cases of autism. Based on national statistics at the time, she should have had at least six.

Some skeptics critique Mumper's study because of its small sample size and the large number of variables she looked at. But David Berger, M.D., who has been in private practice in Florida since 1997 and is also an expert in autism, has been using similar strategies for over ten years and has had more than five hundred children born into his practice. Since he changed to a more evidence-based way of practicing medicine and spacing out vaccines, Dr. Berger has had *no new cases* of autism. Perhaps that is just a coincidence too.

Except that it is not. Data from nearly eleven hundred children born into my practice and following the vaccine-friendly plan confirms these doctors are on to something. (See [Appendix E](#).) A slower vaccine schedule that minimizes exposure to aluminum and other toxins, and gives the Hib and PCV only at the twelve-month visit, combined with a diet of real whole fresh foods, adequate vitamin D, exercise, and a healthy microbiome, promotes, perhaps even guarantees, a healthy brain.

With all that context in mind, let's look at the menu of vaccines your child will face at the one-year visit. Up to eight vaccines against ten diseases can be given at this visit, including four or five live-virus vaccines (depending on which flu shot you choose):

Hepatitis B (3rd dose, recommended between 6 and 18 months)

Hib (4th dose, recommended between 12 and 15 months)
PCV (4th dose, recommended between 12 and 15 months)
Polio (3rd dose, recommended between 6 and 18 months)
Influenza (yearly)
MMR (measles, mumps and rubella; a triple live-virus vaccine;
1st of 2 doses, recommended between 12 and 15 months)
Chicken pox (a live-virus vaccine, 1st of 2 doses, recommended
between 12 and 15 months)
Hepatitis A (1st of 2 doses)

I have given you the facts and my recommendations for hepatitis B, Hib, PCV, polio, and influenza in previous chapters. Here are my recommendations for the MMR, chicken pox, and hepatitis A vaccines and for a safer protocol for administering them.

Measles

Measles, also called rubeola or English measles (as opposed to German measles, which I discuss below), is caused by the morbillivirus. This virus is so contagious that you can get it just by touching an object that an infected person has touched, or by coming into a room where someone with measles coughed hours before. It's primarily spread from coughing and sneezing, and it is easy to recognize by the all-body rash. This viral infection usually gives children fever, horrible congestion, a cough, and pinkeye followed by a pink raised rash that typically starts on the face and spreads down the body. The very young and those with compromised immune systems are more likely to develop pneumonia as a result of measles, or brain inflammation that in about one in one thousand reported cases can result in death. It's important to understand that before there was a vaccine, measles was so common that most parents didn't take their children to the doctor. Most cases were unreported. Only 1 in 10,000 children who got it died. A child with measles is contagious for several days before the rash appears, which makes it easy to spread and a hard disease to contain. Once infected, you don't get sick for seven to eighteen days.

Some 90 percent of those exposed to someone with measles will get it if they have not had it before or have not been vaccinated. That's the bad news. The good news is that children who get measles have lifelong immunity to it. Unlike polio, which can cause a painful and sometimes debilitating syndrome in survivors (called postpolio syndrome), measles seems to have no lasting ill effects. To the contrary, getting measles is associated with a reduced risk of allergies.

Measles does make you or your child feel very sick, but the illness (and the accompanying rash) usually lasts for only a week. Although measles has no effective pharmaceutical treatment, resting in a darkened room (often light hurts infected people's eyes), drinking plenty of fluids, and finding ways to relieve the itchy rash make the illness more tolerable. Cornstarch or oatmeal baths can help with itching, as can topical applications of calamine lotion or aloe vera. (The natural gel inside this plant is also healing for other skin ailments, including sunburn. I recommend you keep an aloe vera plant in your house.)

Globally, children deficient in vitamin A are more likely to get measles. A Cochrane review—the gold standard in unbiased medical analysis—published in 2005 found that high doses of vitamin A given over two days can be helpful in reducing death from measles.

Most people who catch measles survive the infection, especially in countries where there is good hygiene, nutrition, and access to clean water. It is very rare that children with normal, healthy, high-functioning immune systems suffer complications or death as a result of measles. Ask your parents or grandparents—you'll be surprised how many of them had it.

Although most of my friends and I had measles as children in the 1960s and survived without problems (and indeed, the CDC's Division of Viral Diseases reports that there have been no deaths from measles in the United States for over a decade), I know too well how deadly measles can be. As I mentioned in the introduction, I had a playmate in Rhodesia—Taurai was his name—who died from complications of measles.

Mumps

Mumps is a viral infection that usually begins with loss of appetite, headache, and muscle aches. It is found in a person's saliva and spread through the air—mainly through sneezing, coughing, or breathing contaminated spit. The illness usually lasts about a week. Doctors are taught to look for facial swelling to diagnose mumps: Children with mumps often get chubby cheeks and have swelling under their ears and chin. Mumps is an uncomfortable illness and can make you very sick. There is no treatment for it beyond alleviating symptoms and rest.

Though once a common childhood illness, we see very few cases of mumps in America nowadays. In 2014 there were 1,223 reported cases, and the year before only 584. Mumps is almost always a mild childhood illness. It can cause deafness (about 1 in 20,000) and brain swelling (1 in 6,000). Death from mumps is “exceedingly rare,” according to the CDC, and is much more likely to occur in adults than in children. Despite a few highly publicized outbreaks of mumps on college campuses in recent years (dorms and close-contact settings are perfect breeding grounds for mumps), very few students have been infected, and none have died.

German Measles (Rubella)

Rubella is another mild illness caused by a viral infection. The rash that it causes looks like a mild form of measles and usually disappears within three to five days. Though up to 50 percent of rubella illnesses are so mild you do not even know you have one, symptoms usually include a mild fever, runny nose, and swollen glands before the telltale rash appears. Rubella is mildly contagious, spread from person to person through coughing and other secretions.

The last major outbreak of rubella occurred fifty years ago, in 1964–65. Today reported cases of rubella are exceedingly rare. In 2004 an independent panel of public health officials and infectious disease experts concluded that rubella had been eliminated from the United States, as another independent panel reiterated in 2011.

Rubella is mild in children but can be more dangerous for young

adults, especially women of childbearing age. A pregnant woman infected with rubella in the first trimester has a 25 percent higher risk of miscarriage. If a pregnant woman gets rubella and does not miscarry, it can cause “congenital rubella syndrome” in her baby, resulting in serious health problems, including deafness, blindness, heart defects, and developmental delays. Young women infected with rubella may experience swollen glands in the back of the neck and joint pain that can last for several weeks. Serious complications of rubella include brain inflammation and chronic arthritis.

The Measles Vaccine

The first two measles vaccines were introduced in 1963. Routine vaccination with the MMR (measles, mumps, rubella) vaccine began in the late 1960s in the United States, but the inactivated-virus vaccine was withdrawn from the market after just four years because it was ineffective (and seemed to be causing atypical measles). The live-virus vaccine was withdrawn in 1975 because it caused high fevers and measles-like rashes. The first-generation measles vaccine was also associated with encephalopathy and a fatal complication called subacute sclerosing panencephalitis (SSPE), both of which can also be caused by measles itself.

In the early 1980s a reengineered measles-mumps-rubella vaccine was introduced (MMR II). Until 2009 parents could also get measles-only, mumps-only, and rubella-only vaccines, all manufactured by Merck. But in 2009, for reasons that are unclear to me, Merck announced that it would no longer manufacture separated individual doses of these vaccines. As of this writing, no measles-, mumps-, or rubella-only vaccines are currently available in America or Canada, which means that the only way to boost your immunity to any one of these three diseases is to get the three-live-virus vaccine.

There are currently two MMR vaccines available for American children, both manufactured by Merck.

MMR II: a live attenuated virus vaccine approved for children over twelve months of age as well as for babies six months and older who are traveling to high-risk parts of the world where there is an active

measles epidemic. Infants who get the MMR before age one will still need two other doses at age twelve months and at age four to six years, per CDC recommendations.

ProQuad: a vaccine against four viral infections, measles, mumps, rubella, and varicella (chicken pox) that is used in children aged one to twelve. In theory this vaccine offers a convenience—four vaccines in one pinprick. However, I do not recommend this vaccine as it is associated with a much higher rate of seizures.

Is the Measles Vaccine Safe?

Like other live-virus vaccines, this one has side effects. It is common for a recently vaccinated child to get sick with a low-grade fever and a measles-like rash one to two weeks after the vaccine. Other common side effects include fever, irritability, malaise, congestion, and cough. Parents should also be aware that subacute sclerosing panencephalitis (SSPE), an acute and sometimes fatal illness, has also been reported following the MMR vaccine. This complication, which also occurs with wild measles, is very rare.

The MMR vaccine, in combination with other vaccines, may be causing neurological damage in some children, though we do not know how or why. The most severe cases of regressive autism seem to occur between the ages of twelve and thirty-six months. No one really understands why a child who seems to be developing normally slips into severe autism between twelve and fifteen months of age. Perhaps the brain and the immune system are uniquely vulnerable to exposure to environmental toxins at that age? I suspect this is true. I also suspect that brain networks are so well connected by age three that even if environmental exposures cause harm to a three-year-old child's brain, he would not become autistic.

As I have discussed above, we do not know if vaccines cause autism. But we do know that the MMR live-virus vaccine is a problematic vaccine for some susceptible children. Until we have a reliable way of identifying which children are most vulnerable to side effects from the MMR vaccine, it is safer to delay it until your child is a little older, talking well, and has no obvious neurological issues. By age three you

can be confident that your child's language and development are on track. Waiting until age three, when brain development is well along its way, is both wisest and safest.

Is the MMR Vaccine Effective?

This is a thorny question that epidemiologists and researchers have had trouble answering. Though the sharp decline in measles is usually attributed to the measles vaccine, there was an inexplicable resurgence between 1989 and 1991, with more than 55,000 measles cases recorded in America and 120 deaths attributed to the disease. This puzzled health officials since measles vaccine uptake rates were over 95 percent at the time, prompting the CDC to add a second measles shot—a booster to be given between four and six years of age—in 1989.

I have found that the MMR vaccine provides excellent immunity against measles if the shot is delayed until age three, instead of giving it between twelve and fifteen months. When given at age three or later, the immune response to the MMR vaccine is so robust that your child usually does not need a second MMR (as the CDC currently recommends for four-to-six-year-olds). Of the close to five hundred children in my practice who received just one dose of MMR, 98 percent showed immunity to measles. Of the one-third of these children who got the MMR after age three, 99 percent (172) showed immunity to measles. The measles IgG blood test was done an average of 3.5 years after the vaccine was given, showing that the measles vaccine provides lasting immunity. If you have your child tested for measles immunity, ask your doctor to give you a copy of the results of the blood work, which is your proof. Schools are required to honor proof of immunity—either that your child has had the disease, or that your child's lab blood levels of the immune globulin IgG against measles show that she is protected and does not need a second MMR vaccine. If your child's school gives you any problems, contact your local public health department.

This data suggests that more than one measles vaccine may not be necessary, especially if you wait to give the MMR at or after age three. Any doctor can order a blood test to check your child's titers (the

measles antibody level in his blood) to see if he has high enough antibodies against measles to be immune. If he does, the MMR booster is unnecessary.

My Take on the MMR Vaccine

This one is simple: I recommend that you wait until age three to give your child the MMR vaccine and then have her titers tested between the ages of four and six to determine if she needs a booster.

Is it too dangerous to leave your child unprotected against measles until age three? Let's look at the numbers. There were fewer than three hundred cases of measles per year in the United States in the last ten years, in a population of three hundred million people, which means that your child's chance of getting measles is currently about one in a million. If your child does get measles, the chance he will die is about one in a thousand. This means that in the United States your chances of dying from measles is one in a billion. That's a risk I'm willing to live with, particularly when you take into account my direct observation of children who have become autistic after getting the MMR on the CDC schedule. I have about a hundred families who have joined my practice after their children became autistic who have told me that their normally developing one-year-old became severely autistic after the twelve-month or eighteen-month vaccines, including the MMR.

Chicken Pox

The year was 1989, and I was working at Emanuel Children's Pediatric After-hours Clinic in Portland when a very ill young fellow, about eight years old, came in with a classic case of varicella: severe chicken pox. He had more than a hundred raised red bumps all over his face, head, arms, and body. Some of the bumps were filled with clear fluid, some had crusted over, and some new ones that were just little red bumps were appearing. He had an "I'm in pain" look on his face, and his parents told me he had had an unusually high temperature the day before: 104°F (40°C). His heart rate was about 160, almost double what it should have been.

One quick look, and I knew he needed to be hospitalized.

This little boy went straight to the ICU.

Tragically he died a few days later from overwhelming infection.

Two weeks later his brother came to see me in the same clinic with the same illness: chicken pox. You can imagine the fear these parents felt as I tried to reassure them that lightning doesn't strike twice in the same place.

Their second son was extremely ill but recovered. This was a devastating event for the family and for me as a young doctor, making me realize I should never underestimate the serious nature of infectious disease. Chicken pox is rarely fatal. Before the advent of the vaccine, we saw about one hundred deaths a year from chicken pox, out of an estimated 3.7 million cases. (Indeed the disease was so common and so mild that it often went unreported.) More than half these deaths occurred in adults, and most of the deaths attributed to chicken pox were in children and adults with a compromised immune system. In retrospect, I suspect my patient who died must have had an undiagnosed immune deficiency that likely was familial since his brother also had a severe case of chicken pox.

Though it can be serious, the vast majority of the time varicella causes a mild childhood illness. The first sign of the disease is usually a low fever and loss of appetite, followed by the classic rash described above.

The Chicken Pox Vaccine

The current recommendation by the CDC and AAP is to give the first dose of the chicken pox vaccine between twelve and fifteen months of age, and a booster at four to six years, along with the MMR booster.

There are two vaccines against chicken pox available for one-year-olds, both of them made by Merck:

Varivax protects only against varicella, the virus that causes chicken pox. This live attenuated virus vaccine is approved for anyone over the age of twelve months.

ProQuad protects against four diseases—measles, mumps, rubella,

and varicella—and is approved for children aged twelve months to twelve years. As I mentioned above, I do not recommend this highly reactive vaccine. The risk of febrile seizures and other severe reactions, including a vaccine-induced blood disorder called thrombocytopenia, is simply too high.

Is the Chicken Pox Vaccine Safe?

Most toddlers tolerate this vaccine without lasting ill effects, but because this vaccine is a live attenuated virus, the side effects from it can be similar to the symptoms of chicken pox itself.

Before the vaccine came into widespread use, it was studied for safety in ten thousand children. The researchers found that 20 percent of the kids had injection site reactions to the chicken pox vaccine, 15 percent had fever, and 4 percent got a chicken-pox-like rash up to four weeks after the shot. Systemic reactions (body aches, feeling ill, fatigue, stomachaches, headaches, and irritability) occurred in 85 percent of people after the first dose and 66 percent after the second. These reactions are considered common and expected and are not usually a cause for concern.

However, the varicella vaccine has been found to cause serious adverse reactions, including lung swelling (pneumonitis), seizures brought on by high fevers (occurring in one in a thousand), and a bleeding problem called idiopathic thrombocytopenic purpura (a condition that is caused by low platelets and results in hospitalization of up to two months). Neurological reactions, including encephalitis, spinal cord inflammation, Guillain-Barré syndrome, facial paralysis, lack of coordination, and seizures without fever have also been reported. Pneumonia, Stevens-Johnson syndrome (a severe allergic reaction), and Henoch-Schönlein purpura (a severe immune reaction) occur very rarely as a result of this vaccine.

Is the Chicken Pox Vaccine Effective?

This vaccine has been very effective in eradicating varicella as a childhood illness. These days I rarely see even a single case of chicken pox. However, official estimates of efficacy of the varicella vaccines

that are currently available vary. The European Union estimates that the vaccination against varicella is only 85 percent effective. The CDC has found that two doses of the vaccine result in 98 percent efficacy.

In 2014 there were about 9,893 cases of chicken pox in the United States, and in 2015 there were 8,184 confirmed cases. The handful of cases I have seen in the past few years have been very mild, which is unsurprising since chicken pox is most often a mild disease.

Is the Chicken Pox Vaccine Necessary?

Parents and doctors alike were surprised when this vaccine was universally recommended to toddlers in 1995. Chicken pox used to be a childhood rite of passage for almost all humans and has never been an illness that parents or medical professionals had a reason to fear. My experience was that most parents did not want this vaccine in those initial years, feeling that natural immunity, which gives lifelong protection, was better than vaccine-stimulated immunity. Most parents in my practice still feel this way.

At the same time, there was an interesting debate about whether getting vaccinated against chicken pox might protect against shingles—a serious, often painful illness, usually seen in adults, that is caused by the varicella virus, which stays dormant in the body even after the rash and illness go away. Adults who have had chicken pox can get shingles. The thinking among some researchers was that intentionally giving a weakened varicella virus to children might result in fewer or less severe cases of shingles in adults. Since shingles is rare in people under forty and this vaccine has only been available for a little over twenty years, we don't yet have proof of this logic. Surprisingly, we are now seeing shingles in vaccinated children and young adults.

My Take on the Chicken Pox Vaccine

Though chicken pox is a mild illness, it is highly contagious. If your baby gets chicken pox, you or another caregiver will need to stay home and care for him for about two weeks, which is how long it usually takes to recover. If you're worried about missing work, or you are concerned about your child getting chicken pox, I recommend giving

her this vaccine. That said, I do not think vaccinating against chicken pox is necessary or that the chicken pox vaccine should ever have been added to the childhood vaccine schedule.

I do not recommend giving your toddler the combination vaccine (ProQuad), not only because of the side effects (see above) but also because it contains four live viruses. Giving a quadruple live-virus vaccine to a toddler is a mistake. When a toddler catches an illness naturally, he does not catch four at once. I have serious concerns about hitting the immune system of a twelve-month-old baby with four live viruses, even though they are weakened. The other problem with giving measles, mumps, rubella, and chicken pox in one vaccine is that if your child does have a bad reaction to the vaccine, you have no way of knowing which component he is reacting to.

Hepatitis A

Less than a year after we moved to Rhodesia, my mom started feeling dizzy and weak. She was trying to hang up clothes on the line to dry, but when she put her hand out to the clothesline, she missed it. “I couldn’t judge the distance,” she remembers. “I didn’t want to eat anything.” My dad, Norman, was supposed to travel to visit rural churches that day. He asked her if she wanted him to stay home, but Mom insisted she would be all right. But she wasn’t. She agreed to let one of the old men in the village, who had an ancient vehicle, drive her to the hospital in Rusape. When asked by the hospital doctor how she was doing, she replied, “I’m peeing coffee.”

Knowing instantly what was wrong with her, the doctor put her to bed in the hospital and sent someone to get word to my father. My mom went into the hospital weighing 137 pounds. In the next few weeks her weight dropped to under 120. She remembers the first time she was allowed to get out of bed to take a bath. Her body looked bright orange alongside the whiteness of the tub.

My mom had hepatitis A, a very contagious viral infection that affects the liver and that is spread mostly through contaminated food and water. You can also get it from contact with someone else who has it. When my father finally came home, he spent the night in Arnoldine

with us children. By the time he got up the next morning, he wasn't feeling well. Instead of going just to visit my mom, he ended up in the hospital too. They both spent three weeks in the hospital and another three weeks convalescing before coming back to the village.

In adults the symptoms of hepatitis A include fatigue, dark urine, nausea, vomiting, abdominal pain, clay-colored bowel movements, loss of appetite, fever, joint pain, and discolored skin (yellow or orange). It can be so mild that you develop no symptoms, or it can be a severe illness that lasts several months.

Doctors agree that hepatitis A is a mild illness in young children. While about 80 percent of adults have some symptoms from the disease, the majority of children have none. Young children rarely get the jaundiced skin that is so characteristic of other liver infections. In children we usually see only a mild fever, some nausea, and decreased appetite, if that.

I can't tell you if my siblings, my playmates, or I had hepatitis A. But I can tell you that none of us got sick. Once you have had the disease, you have lifelong immunity to it.

Unlike other types of hepatitis, hepatitis A rarely causes long-term liver damage or becomes chronic. Though unpleasant, it is almost never a life-threatening illness in adults, unless someone has other health complications.

Hepatitis A Vaccine

The first vaccine against hepatitis A was licensed in the United States in 1995. Four years later it was recommended for higher-risk areas of the country, such as Alaska. In 2006 the hepatitis A vaccine was recommended by the CDC for all children at twelve months of age.

Because hepatitis A is typically a minor illness and is relatively rare in much of the country, currently only nineteen states and the District of Columbia require children to get the hepatitis A vaccine. Oregon, where I practice, is one of them.

There are three hepatitis A vaccines in use today:

Havrix (GlaxoSmithKline), an inactivated virus, comes in two

formulations, one for children under eighteen and one for adults. The minimum age for this vaccine is one year.

Vaqta (Merck), an inactivated virus, is also available for both children and adults. Minimum age is one year.

Twinrix (GlaxoSmithKline) contains inactivated viruses hepatitis A and hepatitis B. The minimum age for this three-dose vaccine series is eighteen years old.

What Is the Risk of Getting Hepatitis A?

“That’s the most ridiculous thing I ever heard of,” my eighty-one-year-old mother protested when I told her that hepatitis A is required in Oregon and several other states. “There’s no hepatitis A around here.”

Though it is endemic in other parts of the world, hepatitis A is rare in the United States. There was about 1 case of hepatitis A for every 100,000 people in 2007, the year after the vaccine was universally recommended. In 2011 we had 1,398 cases, only 0.4 cases per 100,000 people.

There are currently fewer than 2,000 reported cases of hepatitis A each year in the United States, rarely in children. In thirty years of practicing medicine, I have never diagnosed a single case of pediatric hepatitis A.

Is the Hepatitis A Vaccine Safe?

In the many years I’ve administered it, I have seen only mild side effects from this vaccine. These reactions include fever, fussiness, headache, dizziness, nausea, sore throat, and soreness at the injection site. More serious side effects—hours of crying, a high fever that lasts for several days, seizures, fainting, Guillain-Barré syndrome, and anaphylactic allergic reactions—have also been reported with this vaccine but are thought to be very rare. If your child experiences a severe reaction after the first shot, she should not get a second dose.

The hepatitis A vaccines are manufactured using human lung cells grown from aborted fetal tissue, and the vaccines themselves contain human cell matter. The long-term safety ramifications of injecting humans with human DNA remain unknown. Both brands contain

some form of formaldehyde, a known carcinogen. (The Havrix brand contains 50 micrograms of formalin, which is a solution of formaldehyde that is 37 percent water.) Havrix and Vaqta also contain small amounts of neomycin, a common antibiotic, used to keep the cell culture sterile. Children with a known allergy to neomycin should not get this vaccine. Havrix contains polysorbate 20, an ingredient I have concerns about. These pediatric vaccines also contain aluminum. Vaqta contains 225 micrograms, and Havrix contains 250 micrograms. Aluminum is a known neurotoxin, as we discussed in [Chapter 1](#).

Is the Hepatitis A Vaccine Effective?

Since this disease is almost never seen in children, it becomes very difficult to assess the effectiveness of these vaccines. However, research done in children and adults has found hepatitis A vaccine effectiveness to be between 82 and 95 percent.

My Take on the Hepatitis A Vaccine

This vaccine seems to have more risks than benefits for one-year-old babies. Children this age are at minimal risk from hepatitis A infection but maximal vulnerability to toxins.

I used to recommend this vaccine for every child after age two. After reviewing the data, I now believe that it is best to skip this vaccine altogether for children, especially in the preschool age group, when avoiding toxins continues to be very important. The bottom line is that most states see no reason to mandate this vaccine, the illness is very mild among children, and hepatitis A is extremely rare in the United States. Most of my families decline it, filling out a personal belief or religious exemption form required by day cares, pre-K programs, and public schools.

Families traveling overseas to areas where hepatitis A is prevalent may want to get this vaccine.

How to Gracefully Say “No, Thank You” to Some Vaccines

Vaccine-friendly pediatricians like me are comfortable working with you to space out your child’s vaccines. If you are in one of those

practices that have a policy of discharging families who don't follow the exact CDC schedule, you will need to find a new doctor (and you'll want one anyway, as this is unethical and unacceptable behavior for a medical professional). Doctors are well compensated for administering vaccines, so there is a profit incentive to give as many as possible. I don't mean to imply that doctors vaccinate only for profit, but I can assure you that office managers who are trying to balance the books know how important it is to give as many of the recommended vaccines as possible.

Tell your doctor you are researching vaccines and would be interested in learning what she has to say about each of the ones being recommended. If you want to delay a given vaccine and you know why, then go ahead and state your case. Or simply say, "We need a little more time to research our options."

Consider coming to each of your well child visits with a signed vaccine refusal form. Tell your doctor that you are educated and well informed and that you respectfully decline those vaccines that you are not comfortable with at this time for your child.

Dr. Paul's Plan FOR ONE-YEAR-OLDS

1. Set clear and reasonable boundaries. While you cannot spoil a baby under six months old, you can spoil a one-year-old. At this age, children do not need to get whatever they want whenever they want it. Start setting gentle but firm boundaries.

2. Drive safely. Motor vehicle accidents are the second leading cause of preventable deaths in American children aged one to four. Car seats must be installed safely, and seatbelts must be worn at all times. The car seat is safest when installed in the back middle seat. The less you drive, the less risk you have of a car accident. Walking is a healthy option.

3. Say yes to Prevnar and Hib. Your baby needs these vaccines to avoid severe bacterial infections.

4. Say no to MMR and chicken pox. It is safer to wait until your baby is three years old before you vaccinate against measles, mumps, and

rubella, a vaccine that contains three live viruses. Chicken pox is an unnecessary vaccine for a mild disease.

5. Breastfeed. For as long as you both feel good about it, the health benefits of breastfeeding continue.

6. Get out of the way. Sometimes it seems that as parents we just need to get out of the way, encourage and support our children, and then let them explore and interact with the world on their own terms.

7. Baby-proof. Remove poisons from under the sink, and cover electrical sockets. Place window locks on upstairs windows. I recently had a toddler fall out of a second-story window onto concrete. Despite a skull fracture, he seems to be fine.

The Six Questions Parents Ask Me Most **ABOUT ONE-YEAR-OLDS**

1. My sweet, placid baby just turned one and is throwing massive temper tantrums. What can I do?

A: Tantrums come from an excess of emotion, usually frustration. It's important to be loving and kind to your miserable twelve-month-old without inadvertently teaching her that if she throws a great big noisy fuss, she will always get what she wants. Distraction sometimes works. I remember once when my daughter was facedown on the kitchen floor screaming at the top of her lungs beating the floor, her hands slapping loudly as if she were swimming the freestyle stroke. I threw myself on the floor and did exactly as she did, screaming and pounding beside her. She stopped, turned her head to look at me, and smiled. That was the end of the tantrum. It's not always easy to keep your sense of humor, but try to anyway.

2. What can my twelve-month-old eat?

A: Though you should avoid choking hazards like peanuts, pieces of raw carrot, and hotdog slices, babies can eat anything after age one, even raw honey. Avoid processed baby "foods" that come in pouches, bags, and jars. Offer babies a wide variety of healthy, real food, and don't worry too much about how much or how often they eat.

3. Is it okay to breastfeed past one?

A: It's not only okay, it's wonderful. If your child is breastfeeding and you both enjoy it—carry on!

4. What can my twelve-month-old drink?

A: Breast milk is the perfect beverage. Organic whole milk is also fine now too, unless your baby shows signs of a dairy intolerance. Filtered water is also a good option. I recommend that parents avoid juice, and there is never a reason for a one-year-old to drink soda, which is full of toxins (like carcinogen-contaminated caramel color) and loaded with processed sugar.

5. How can I get my baby to sleep through the night?

A: It depends on your philosophy and your baby's temperament. If your baby is high-energy and high-strung, sleep may be your family's most challenging issue. It's normal for young children to wake up at night. As long as you do not inadvertently encourage nighttime wakefulness, eventually he will start sleeping through the night. Some doctors recommend teaching your baby to "cry it out." While that technique works for some families and you need to do what is best for yours, I do not recommend attempting to train anxious toddlers to cry themselves to sleep. This becomes torture for everyone, your baby's anxiety goes through the roof, and no one sleeps.

6. Is it okay for my baby to sleep with me?

A: Yes. While the family bed is not for everyone, there is nothing wrong with co-sleeping if that's what works best for you. Just make sure you have a firm mattress.

Chapter 8

The Toddler and Preschool Years

After your baby turns one, you won't be bringing her to the doctor for well baby checks quite as often as when she was an infant.

The standard schedule for well baby checkups is:

15 months

18 months

2 years (24 months)

2.5 years (30 months)

3 years (36 months)

Three is the magic number. After age three, unless they get sick, children come for routine checkups only once a year. Some doctors tell parents they can skip the fifteen-month and thirty-month well child visits, and I agree these visits are not medically necessary for an otherwise healthy child.

At his eighteen-month visit, Victor buries his head shyly in his mom's arms after making eye contact and giving me a smile. He steals glances at me as I talk with his parents. I ask his mom about his language.

"About twenty words, and a whole lot that we don't understand," his mom says. I smile and tell her about my daughter's nonstop gibberish at this age, filled with facial expressions and hand gestures, and how I used to talk back with similar sounds. We understood each other

perfectly.

Language development is highly variable. Some toddlers talk in complete sentences, while others say only a few words. The typical eighteen-month-old has about ten to twenty words, like Victor, and the typical two-year-old has about fifty. But no child is really “typical,” and children raised in bilingual households tend to start speaking a little later. You can help your child learn to speak by talking to him, reading to him, asking him questions, and pausing to listen to the answers (even if they’re in gibberish). Toddlers who spend a lot of time watching TV or playing video games, which are passive activities that I do not recommend for children under three, can be speech delayed. But as long as your child understands simple sentences, can follow simple directions, makes eye contact, and is speaking a few words by age two, there’s usually nothing to worry about. If there is a loss of language or of eye contact, or if your normally gregarious child starts to disengage socially from those around him, preferring to play alone, that is a red flag for concern.

By eighteen months a toddler’s fine motor skills are advancing: She can messily feed herself (and you) with a spoon, and she likes putting large puzzle pieces into place or stacking rings on a cone. Wooden blocks, musical instruments, shape sorters, and other toys that encourage motor skills are all great for this age.

Most eighteen-month-olds walk fast and are clumsy and stiff when they run. With their big heads, toddlers are top heavy and often fall down. My son’s face was so scraped and bruised by his constant falls as a toddler that my wife worried that people would think he was abused. By age two, toddlers are going up and down stairs with ease and are kicking and throwing a ball. They may even be learning to catch.

Don’t stress about how much your toddler weighs or how tall she is unless she has truly fallen off her own growth curve, which is very rare. The variety in body shapes and sizes is as genetic as it is environmental. As always, the more you do to feed your child real whole foods, the healthier she will be, and the better she will grow. Let her feed herself, no matter how much of a mess she makes or how

much of the food ends up in the dog's mouth or on the floor. This is an important skill for a toddler to master and an essential part of growing up. Her job is to get dirty. Your kitchen will be clean once your children go to college.

Feed your child lots of foods high in omega-3 fatty acids, which are especially important for healthy development: flaxseeds, walnuts, sardines (a great choice as they are low on the food chain and less likely to be contaminated with heavy metals), salmon, soybeans, and edamame. Fish oil (up to 1,000 milligrams a day) is also an excellent way to ensure your child is getting omega-3s. You can mix the liquid into a green smoothie or other favorite beverage, though many toddlers are happy to drink it straight. Feeding your toddler fermented foods and other probiotics (like plain cultured yogurt and kefir) at every meal is important for the immune system. These living foods help populate the intestinal tract with beneficial bacteria that keep infectious diseases from taking hold.

If your toddler's diet is not as well rounded as you want it to be, or if you notice your youngster getting sick a lot, you can try a natural multivitamin with methyl-B12 and methylfolate, especially if your family has the MTHFR genetic polymorphism (discussed in [Chapter 2](#)).

Unless your youngster is spending a lot of time outside naked and you live close to the equator, I also recommend a daily dose of vitamin D3 at this age (usually 1,000 IUs, though exact dosing will depend on your child's weight). Vitamin D can be given as a liquid or in chewable form.

Do everything you can to have family meals together at least a few times a week, preferably every day. This was a favorite time for our family since both my wife and I worked full-time, and it gave us a chance to all be together. We used a high chair to prevent dinnertime from turning into a game of toddler chase.

And Then They Turn Three

“Come on, broder,” Natalie, who was four, said to Noah, who had just turned three, pulling him along.

“Sissy” and “Nono,” each carrying a backpack, were on their way to preschool.

Three has to be my favorite age, as most children are verbal, engaging, and delightful. Three-year-olds usually enjoy interacting socially, though some may have lingering stranger-danger anxiety, and others may be naturally shy or reserved. The tantrums, urgency, and categorical behavior that often accompany the twos give way to a more even-tempered outlook on life. For many children, anyway. Children who skip the “terrible twos” sometimes get hit with a large dose of them at age three. We had one child like that. A wonderful, easygoing, delightful toddler, he decided he was in charge on his third birthday. It was as if a switch had been flipped. This child (notice I’m not telling you which one) would bark out commands, say an emphatic “No!” to just about any request, and stomp around as if he were possessed. For nearly a year his nickname in our house was “The General.”

Your three-year-old should be able to get herself dressed, but expect the shirt to be put on backward and the shoes to be on the wrong feet. If it doesn’t bother your preschooler, it shouldn’t bother you. They need the practice. A good strategy is to allow extra time to get ready when you have to be somewhere. Choices help toddlers and preschoolers feel they are in control: “Do you want to wear the blue shirt or the green one?” “Should I fix your shoes, or do you want your brother to help you?”

Language explodes around age three, when most preschoolers are able to talk in full sentences. You should be able to understand some—if not all—of what they say. If your child has language difficulties or delayed speech, tell your pediatrician you would like to have his

hearing tested. Sometimes undiagnosed hearing issues are the reason for poor speech at this age. Your doctor will refer your child to a speech therapist for an evaluation.

Fine motor skills are taking off now. Three is the perfect age for coloring books, crayons, and puzzles. Some three-year-olds can draw circles and squares and will start learning to write letters, especially if they have an older sibling to copy.

Three-year-olds will climb stairs with alternating feet, and many can learn to balance on one foot. Give them plenty of time and space to run, jump, and climb. Their job is to play! And get dirty! Three is also a good time to get a tricycle or a scoot bike (a balance bike that has no pedals or brakes).

Three is an age when children may have imaginary friends. Don't panic, it's normal!

This is also a time when children become especially curious about body parts and the difference between boys and girls. With easier access after they are out of diapers, many at this age discover that self-stimulation feels good. I've actually had parents bring in their preschoolers sick with worry because their children were wiggling in their car seats and going into a trance and the parents thought they might be having seizures. They were actually just masturbating.

If you have more than one child, you'll need to make alone time with just your three-year-old. As well as with your partner, if you have one. And yourself.

The Tooth, the Whole Tooth, and Nothing but the Tooth

Some babies are born with teeth, though this is very rare (occurring in one in every two or three thousand births). Others start getting their baby teeth when they are a few months old. One-year-olds usually have two front top teeth and two on the bottom. As long as the first tooth comes by eighteen months, it is still considered normal. By age three your child will usually have twenty baby teeth. Between five and seven years old, those baby teeth will start to fall out, replaced by permanent teeth.

Now that your baby has teeth on the top and the bottom, and maybe even a first molar or two, it's time to commit to practicing good oral hygiene. If you are feeding your child healthy foods, you are more than halfway there. Calcium-rich foods, especially, help grow strong teeth; foods high in sugar rot the teeth. There's such a strong connection between diet and healthy teeth that a good dentist can look into your child's mouth and tell you about his diet. It's no surprise, then, that babies and toddlers at the most risk of early tooth decay and cavities are those who eat sweets and starchy foods more than three times a day, as well as those who use a bottle past fifteen months. Before bottles came into widespread use, tooth decay in baby teeth was very rare. This is a good place to correct a popular misconception: Breast milk is not "cariogenic," meaning it does not cause cavities, and prolonged breastfeeding does not lead to tooth decay.

If your doctor tells you to stop breastfeeding your toddler because it causes tooth decay, he's giving you bad advice. I do, however, recommend that you brush your toddler's teeth after nursing and try not to nurse during the night. Breast milk contains milk sugar, which is why toddlers love it so much. I have seen a handful of breastfed two-to-three-year-olds who nursed throughout the night end up with

multiple cavities.

Use the tiniest bit of toothpaste, no more than a pea-sized amount, on your child's baby teeth. Let her brush herself, and then do a "check brush" to get any spots she missed. Use a natural toothpaste with ingredients you recognize, or make your own. Children should not get any fluoride before age four. Toddlers love to eat toothpaste, so you don't even want fluoride toothpaste in the house, unless you keep it well out of reach. Fluoride competes with iodine, thus impairing thyroid function. Normal thyroid function is very important for brain development. It is okay to use fluoride toothpaste only once your child learns to spit out the toothpaste after brushing and doesn't eat it as soon as your back is turned.

I recommend you take your toddler to the dentist by age two or three, or sooner if you notice any issues with the teeth. Pediatric dentists like to have a first visit at age one to start the education process, but that seems like overkill to me since a twelve-month-old may not have any teeth yet.

Be sure to find a dentist who gives you a choice about both X-rays and fluoride treatments. Many dentists will dismiss your concerns about the danger of X-ray exposure, insisting that digital X-rays are harmless because the dosage is so low. They may point out that flying in an airplane exposes a child to higher doses of radiation. But the damage caused by X-rays is cumulative. It doesn't make any difference how low any given exposure is if you accumulate enough exposure over time that it causes harm to your child or her offspring. Remind your dentist that fetal deformities and brain damage are proven effects of X-ray exposure and can affect your children's children, which is why it is important to keep your kids away from unnecessary ionizing radiation. Politely decline annual X-rays at the beginning of dental visits and allow X-rays only if the dentist visually identifies a problem that warrants further investigation.



Driving Little Miss Daisy

Unintentional injuries, which include motor vehicle accidents, are the number-one cause of death in children aged one to four in America. The most dangerous thing you do every day is put your child in a car and drive it. Jennifer's friend Vicky lost her teenage son in a car accident, as did her friend Adam. Her soccer buddy Katie died in a car crash in December 2015, right before Christmas, after the car hit a patch of black ice. And Jennifer's friend's father accidentally struck and killed a pedestrian on a poorly lit road while driving at night, a tragedy he had to live with for the rest of his life.

I know you also have friends and family who have died in car-related accidents. I am not bringing this up to scare you but because it's important to look at the evidence and evaluate the risks. It is imperative that you use a properly installed car seat every time your child is in the car and that you wear your seatbelt every time you get behind the wheel.

One of the best ways to keep our toddlers safe and healthy is to spend as little time in the car as possible. I know that's easier said than done. Unless you live in a big city like New York, chances are you take driving for granted and not driving doesn't seem like an option. But for the health of your toddler, it is worth looking at your driving habits and seeing if you could get to where you need to go by walking, bicycling, or taking public transportation.

Using your foot ponies is healthier for so many reasons. Being outside gives you much-needed sunlight, which your body converts to vitamin D; the exercise in transit helps boost your mood; and walking is less expensive than driving.

Car Seat Safety

If your child weighs at least twenty pounds, his car seat can face

forward, though crash tests in Sweden have shown that backward-facing car seats are safer for children up to age four. I can't overemphasize the importance of correct car seat installation, which can literally make the difference between the life and death of your child if you do get into a crash. The seat must be securely buckled according to the manufacturer's directions, and the five-point harness must be snug around the baby's body. If you're unsure, bring your car seat to your local fire station, and ask them to check that it is properly installed. This, more than anything else you do, could very well save your child's life.

Swim Safety

Two families were sitting by the side of a pool when one mom, fully clothed, suddenly launched herself into the water. Her five-year-old son, who had been at the bottom of the pool seeing how long he could hold his breath, popped his head out of the water a moment later, grinning.

“Why’d you jump in with your clothes on?” he asked innocently.

“I thought you were drowning!” his mom cried.

That is a true story, and both families had a good laugh at the worried mom’s expense, but the truth is accidental drowning is a real cause for concern, especially for toddlers and preschoolers. In the United States about two children drown each day. And for every child who dies from drowning, five more are rushed to the emergency room after a scare in the water.

The best way to keep your child safe in and around the water is to teach him how to swim. Most children age one to four who drown do so in home swimming pools.

Another phenomenon that emergency room doctors have been seeing with increasing frequency is secondary drowning. This happens when a child who is learning to swim or gets dunked breathes so much water into the lungs that she has trouble breathing after she is out of the pool. The water in the lungs can cause swelling and other complications. Though not common, secondary drowning happens more with special needs and autistic children who are less aware in the water. If a child of any age is excessively coughing, spluttering, complaining of chest pains, or acting excessively tired or lethargic after swimming, take her to the emergency room.

As autism rates go up among America’s children, accidental drowning is becoming more common. Accidental drowning accounts for over 90 percent of the deaths in children under fourteen with

autism who wander away.

Children must also be supervised in the bathtub and at the beach. A few years ago a thirteen-month-old in Colorado drowned in the bathtub while his mom was on Facebook in another room. A tragedy like this is entirely avoidable with proper supervision. Teach your children to never turn their backs on the ocean, as big waves can come up quickly. Also make sure everyone who is in a boat, both children and adults, wears a lifejacket at all times. Finally, having every adult in your family learn CPR can mean the difference between life and death by drowning.

A Dog Is a Toddler's Best Friend, Except When It's Not

“Dogs teach gentleness, caring, and compassion.”

“Dogs eat crumbs.”

“Dogs teach responsibility.”

“Kids learn to pick up toys so the dog won't eat them.”

“Having a dog encourages playing outside, playing fetch, going for walks.”

“Getting a dog from a shelter makes your child feel like a hero.”

“When you're thirteen and nobody likes you, your parents can't understand you, your dog still adores you and wags his tail with unconditional love.”

These are just some of the reasons so many families in my practice love having dogs. It is healthy for children to grow up around pets: Infants who live with dogs and cats are less likely to develop allergies later in life, and walking the dog ensures that children will be outside exercising several times a day. But if you have a family dog, or you decide to get one, it is also important to be careful. Most dogs should be supervised around toddlers and preschoolers, as children at this age can be particularly unpredictable and often play too rough. Dogs are social animals, and they will sometimes bite or be aggressive with a small child to establish their order in the pack.

I treat children who have been bitten by dogs several times a year. Jason was reaching for his dog's food (which toddlers love to eat, by the way) when the dog snapped his jaws through the skin of Jason's fingers near the knuckles. The dog was just giving him a warning to stay away from his food. If he had bit him harder, Jason might have lost a finger.

When a dog bites a child, we worry about infections. Rabies, a

serious disease that infects the nervous system and is almost always lethal, is thankfully extremely rare in America. From 2003 to 2014 there were only seven cases of rabies among children in the United States. Of these, all were from bat bites except one case where the animal was unknown. This shows how unlikely it is that your child will be bitten by a rabid dog. However, in cases of dog bites where the rabies status of the animal is unknown, the dog may be quarantined and closely watched for signs of the disease.

A child who is bitten by a rabid dog or other animal will get four doses of rabies vaccine: one dose right away, and additional doses on the third, seventh, and fourteenth day after exposure. A rabies immune globulin injection is usually given at the same time as the first dose. Two brands of this vaccine are available for emergencies, RabAvert (made by Novartis) and Immovax (made by Sanofi Pasteur). We don't give rabies vaccines to children unless they have had a confirmed exposure to the virus, because the disease is rare and there are many severe side effects associated with this vaccine. If an animal that bites your child tests positive for rabies, your child should get the shots.

Though different counties have different reporting requirements, in every state a dog owner is liable if his dog bites people without justification. If your child is bitten by a stranger's dog, it is imperative that you seek medical attention immediately, report the bite to your local health authority, and get the name, address, and phone number of the pet owner. In many states, a dog owner's homeowner's insurance will pay the medical bills.

The way we treat the wound depends on the severity of the dog bite. Usually thorough cleaning with soap and water will be enough. If there is excessive bleeding or the bite is really deep, we may also need to suture the wound and start antibiotics to prevent infection.

Attention Pleases, Praise Hurts

A little boy at breakfast was drinking a glass of water. “You’re a good water drinker,” his mother said, smiling. This may sound sweet, but studies show that too much praise is actually detrimental to a small child’s self-esteem. Children need a realistic sense of self, not an overly inflated one. Indiscriminate praise (“You’re a good water drinker” or “You’re good at riding on that choo choo train”) not only makes it difficult for children to evaluate themselves realistically, but it encourages them to constantly judge others and themselves. A child who is constantly praised for something he is good at is less likely to try something new, for fear of not being good at it. As Madeline Levine, Ph.D., explains in her book *The Price of Privilege*, overpraise does not grow a child’s character, foster compassion, or help him find a moral compass; it gives him, instead, a disturbing sense of entitlement and a tendency toward narcissism. Levine also points out that we often praise our children to bolster our own needs, not theirs, because it makes us feel good.

The proven method for bolstering a child’s self-esteem and encouraging learning is to notice the effort the child has put into something, not the outcome. Since it takes no effort to drink water or ride a choo choo train, those behaviors should not be praised. Be attentive. Like a roving reporter, you can notice and describe: “Are you making a castle with those blocks?” or “I see you’ve been working hard on that drawing. Tell me about it.”

Praise the effort,
not the outcome.



Darwin Never Used Flashcards: The Importance of Play

You won't see a doctor writing a prescription for it, but perhaps we should: Play is the training ground for child development. Allow your toddler and preschooler as much undirected play as he or she wants. It may not look to you like your child is doing much beyond pretending to be a silly pirate, using a scarf as an imaginary friend, or getting freshly laundered clothes filthy by making mud pies, but as children play pretend their brains are on fire, generating new neurons, learning cause and effect, and investigating how the world works. As University of California at Berkeley research psychologist Alison Gopnik, Ph.D., explains, a child playing pretend is actually a “pint-sized scientist testing theories.” One of the best things about toddlers and preschoolers is that they can make a game out of anything.

“A lot of people think, ‘I need to play classical music, I need to teach them the alphabet,’” explains Maya Shetreat-Klein, M.D., an integrative pediatric neurologist based in New York City and author of *The Dirt Cure*. Shetreat-Klein acknowledges that music is wonderful for children—as is reading—but argues that unstructured time to play and explore is more important for optimal brain development. “Let children play and be exposed to the world, nature, especially dirt, and different foods and different experiences, and even the possibility of injuries,” Shetreat-Klein advises. “All of this information gets processed by the body and the nervous system to create a healthy brain and body.”

No fancy gadgets necessary. No flash cards. No enrichment classes (though those are a nice way for *you* to make friends with other parents). Just let your children play.

Let's Play Cleanup

Toddlers and preschoolers love to “help.”

There is a lot they can do: Fold clothes, “sponge” counters, and chop vegetables using a child-appropriate knife with a thick handle. Give them a blunt pair of scissors, a pile of parsley, and a bowl and let them cut it into bits. Or fill a spray bottle with water, hand your toddler a sponge, and let him loose in the bathroom.

They are walking mess makers, but most toddlers and preschoolers also enjoy cleaning up, especially if it’s accompanied by singing (the sillier the song the better) and involves throwing toys into a basket or timing how many items can be put away before the buzzer rings.

As long as it’s a game for them, it counts as play.

Learning to Use the Potty as Something Other Than a Hat

If your child is developing normally, the earlier you begin with potty learning and the more relaxed you are about it, the easier it will be. The trend in the United States is to wait to teach a preschooler, but delaying potty training can actually create problems. Using a diaper as a toilet becomes a habit that then must be unlearned, which can often be difficult and result in unnecessary struggles. Many an unhappy parent has come in for a well child checkup at age three or even four, despairing over potty training. I know it might not help to hear it when you are in the midst of the struggle, but this too shall pass.

Don't believe the hype about waiting to toilet-train until after your child turns two. There is no right time to start potty training—it can begin whenever you and your child decide you are ready. For some, that readiness begins in infancy. For others, it may not be until age two. Historians point out that in past generations the majority of American children were out of diapers by eighteen months—as they still are today in many countries around the world—and urologists say that most children are ready to learn to use the potty by between twelve and eighteen months, if not before.

If your baby, at any age, signals that he needs to pee or poo, whip off his diaper and hold him over the toilet. That will give you one less diaper to clean or add to the landfill, and it will keep him from associating the need to go with soiling a diaper.

Disposable diapers make awareness difficult. They're a billion-dollar industry marketed with the promise of "convenience," but the longer you use disposable diapers, the longer your child will be in diapers, which is anything but convenient. We recommend you switch to cloth diapers or cloth training pants to help your child create awareness. Children in cloth diapers tend to potty-learn more easily.

Toddlers and preschoolers who are having a lot of trouble learning to use the toilet may have underlying health problems, including ADD/ADHD, anxiety, constipation, and gastrointestinal problems. If toilet training is becoming a struggle, you should seek help from a competent psychologist as well as your pediatrician, who can identify and treat the root causes of the problem.

What About Naps?

Toddlers and preschoolers need naps. At eighteen months many children will still be taking two a day. Though some children simply need less sleep than others and may give up napping early, even at age four and five most kids benefit from naps.

How can you tell? If your toddler is showing signs of tiredness during the day—rubbing his eyes, laying his head on your shoulder, yawning, acting cranky, or acting very hyper (which is what some kids do when they're overtired)—he still needs a nap.

If you have a child who really doesn't need to nap, schedule some downtime anyway. When you create a predictable quiet-time routine in the middle of the day, even the most active little ones will settle down for a nap. Restorative sleep is very important for a healthy immune system. Which means, by the way, that you shouldn't feel guilty about taking naps too.

Ah-choo! What You Need to Know About the Common Cold

Your healthy preschooler is a mucus-making machine, generating as much as four cups of the stuff a day! In adults most of that mucus is swallowed and goes unnoticed. But littler kids seem to be constant faucets, with drool running down their mouths and snot coming out of their noses. It's all good, and all normal.

A runny nose can be the first sign of a common cold, which is caused by one of more than a hundred common viruses. Preschoolers get the most colds of any age group, especially in the winter. As long as your child is well hydrated and not lethargic, there's no reason to go to the doctor. In fact, there's a reason to stay away from the doctor, who is likely to prescribe an unnecessary antibiotic, which can compromise your toddler's health down the road, or to recommend acetaminophen, which can cause liver damage and brain inflammation, as discussed in [Chapter 1](#).

You may have heard the expression "Starve a fever, feed a cold." This bad advice has been traced back to the sixteenth century, when it was thought that the body could generate warmth by eating during a cold, and cool off by starving during a fever. It's nonsense. There is no right prescription for how much or how little a sick child should eat. Offer a variety of nourishing foods, but let your child decide what she wants. Her body will know what's best.

My prescription for the common cold is to encourage rest; make nourishing homemade chicken soup with lots of vegetables (the water-soluble vitamins from the veggies make the broth extra nutritious); serve soothing herbal tea, fresh squeezed fruit juices, or anything else she is willing to drink; and add in a heaping dose of love. Avoiding dehydration and keeping your child comfortable are key. Studies show that zinc and vitamin C can reduce the severity and duration of a

common cold. Zinc usually comes in lozenges or chewable tablets. Vitamin C comes in chewable tablets or powder that you can add to liquids.

A Note About Common Childhood Illnesses

You never want your child to get sick, and it's easy to panic when that normally urgent, bossy, tiny person you love so much is suddenly droopy-eyed and quiet, lying limply beside you or glued to your body. You want to do something right away to stop the suffering. But when your child has a healthy immune system, common childhood illnesses will usually resolve themselves.

Some small people are so healthy that their bodies are mounting a natural immune response to a host of different viruses and bacteria even when they don't show any signs of illness.

I believe in parental instincts, and you should too. If your gut is telling you something is really wrong, no matter what the symptoms, take your child to a doctor, urgent care, or even the emergency room—and don't let the doctor brush off your concerns.

But also remember that homemade chicken soup, a nest of blankets on the couch, a cold washcloth to a small forehead, and some mommy and daddy kindness are often the only prescription your baby needs to get well.

Why Is My Child's Eye Pink?

Pinkeye, also called conjunctivitis, is common in toddlers and kids of all ages. Unlike blocked tear ducts, the number-one cause of eye discharge in newborns and infants, a red or goopy eye in toddlers is caused either by an allergy or by an infection. Rarely it can be from a trauma, like a poke in the eye. If the eye gives off a clear watery discharge and is itchy, the cause may be allergies. When there is thick yellow, green, or gray pus, a bacterial cause is more likely, and you should take your toddler to the doctor or at least give a call. Some pediatricians will treat pinkeye over the phone, but most choose to take a look, as often there is an associated ear infection.

Bacterial conjunctivitis is highly contagious and easily spread. In this case you should keep your child away from others and also wash the eye as needed, changing washcloths every time so you don't inadvertently reinfect the eye. If the discharge does not go away by itself in a few days (which it often will in children with healthy immune systems) or is heavy, thick, or foul-smelling, you need to see a doctor. In this case, antibiotics—usually given as a cream or in drops—are warranted.

If you see swelling around the eye or on the eyelid, then you must get your toddler to the doctor that day. A periorbital cellulitis, which is an infection in the tissue around the eye, can be dangerous and require IV antibiotics. We try to catch these infections early to avoid hospitalization.

Viral conjunctivitis rarely has pus. Though it is easily spread from one toddler to another, this kind of infection will run its course, usually in less than a week, and should not be treated with antibiotics. There's no reason to go to the doctor, who may unnecessarily prescribe an antibiotic. Just make sure to wash your child's hands and your own frequently. If the eye is bothersome, washing it gently with a warm wet washcloth will help relieve symptoms. If there is little pus and your

child is not sick, the infection is probably viral.

Allergic conjunctivitis is not contagious but is very persistent. The way to treat it is to identify and remove the cause of the allergy and find ways to support the immune system. Your pediatrician may refer you to an allergist.

Why Does My Child's Ear Hurt?

Small children love to put small objects in their ears and up their noses. Perhaps it is part of figuring out geometry (“Will this jellybean *really* fit up my nostril?”). In thirty years of practicing pediatrics, I have had to remove a peanut, dried Play-Doh, an earring, and even a dead cockroach, to name just a few things, from my patients’ ear canals.

So when your toddler or preschooler tugs on her ear or complains of an ear owie, it is worth asking if she put anything in there. (Don’t ask in an angry voice, or she might be too ashamed to tell you. First you need to fix the problem; later you can explain why it wasn’t a good choice to put that pussy willow in her ear.) Or grab a flashlight and look for yourself. If you see a foreign object in her ear, don’t try to remove it yourself, as you may lodge it farther into the ear and create an even bigger problem. Bring her to the doctor to have the offending object safely removed.

The other common cause of an earache is otitis media, a middle ear infection. Ear infections, like eye infections, can be caused both by viruses and by bacteria. According to the National Institutes of Health, five out of six children will get at least one ear infection before age three. But ear infections are also one of the most overdiagnosed diseases in America. Usually if doctors see that the eardrum looks red or even pink (it is supposed to be light gray or whitish), we assume it is infected. But a red eardrum can also be caused by crying or other irritation. In the absence of other symptoms—fever, lethargy, tugging on the ears—it’s unlikely your child has an ear infection.

Ear infections were the bread and butter of pediatrics from the 1980s into the 2000s. We still see plenty of them, but the Prevnar and Hib vaccines, which protect against bacterial strains that cause ear infections, have effectively reduced their numbers in children. Most ear infections will resolve on their own—whether they are viral or

bacteria—without the need for antibiotics.

If you suspect your child has an ear infection, I recommend trying some simple home remedies and waiting forty-eight hours before you bring him to the doctor, unless the symptoms get worse. Two to three drops of garlic mullein ear oil, which you can make yourself or buy inexpensively at any health food store, can clear up an earache in just a few hours. Making an onion earmuff will not only soothe your little one's sore ear, it will make you both laugh. You do this by slicing an onion in half and removing the inner layers until only three rings remain. Bake the onion at 300°F in the oven until it is warm. Wrap the outer onion in a towel, and cup the hollow side over your toddler's ear, taking care to make sure it is not too hot. The warmth of the onion is very soothing. If you don't believe me, try it on yourself first.

The challenge is knowing when an ear infection is bad enough that it requires antibiotic treatment. One family I treated earlier in my career had three children who all suffered from recurring ear infections, which were treated with round after round of antibiotics. I was still practicing conventional medicine back then and was unaware of the importance of eating healthy and fermented foods, taking vitamin D and probiotics, and reducing stress to better support the immune system. One of their children ended up having thirteen infections in nine months! This poor kid was plagued with health issues for years, long after the ear infections finally cleared up. It's no wonder, since research shows that antibiotics impair the immune system.

That Little Itch May Be Telling You Something (About Scabies)

Three sisters, aged nine, seven, and three, came to see me recently with “owies” all over their bodies. The older two had a super itchy rash on their hands, stomach, and buttocks. The littlest had flat tiny spots on the palms of her hands and the soles of her feet that did not itch.

I needed only one look at these rashes to diagnose what was wrong: scabies.

Scabies is a highly contagious skin condition caused by a tiny eight-legged mite, *Sarcoptes scabiei*. About three hundred million humans harbor this mite. Smaller than the head of a pin, the female mite burrows steadily underneath the skin, laying eggs along the way. Though she eventually dies, her eggs start the next generation: Even tinier hatched infant mites burrow back to the surface of your skin, looking to land on other humans and begin the cycle again.

The intense itching children feel when they are infected with scabies is caused by the adult female’s journey down under. It is worse if you’ve been previously infected, which triggers a more intense inflammatory response.

Some people mistakenly think that scabies is only a sexually transmitted disease. In reality, scabies is common in children, easily passed from human to human through direct skin-to-skin contact or from infected bedding. The main symptom, besides the itching, is a rash of small red raised bumps and blisters.

I prescribe a scabicide called permethrin, which is a cream that you rub on your child’s body and leave on overnight. An alternative is to use 1 ounce of a 1 percent lotion or 30 grams of cream of lindane, applied on the whole body for about eight hours. But since lindane is known to cause seizures from topical use, I do not recommend it. It’s also important to disinfect clothes and bedding in hot water, so no one

in the family gets reinfected.

My colleague Aviva Romm, a Yale-trained M.D. and a specialist in herbal medicine, recommends one nonscabicide treatment that works. Taking two baths a day in green soap (an alkaline medicated soft soap you can buy from the pharmacy that is made from vegetable oil, potassium hydroxide, oleic acid, and glycerin) with a few drops of added thyme oil, combined with maniacal washing of all the bedding in the house every day, will clear the scabies infection in a week.

Hand, Foot, and Mouth Disease

Most common in children under five, this viral infection usually starts with a fever, loss of appetite, a sore throat, and a general feeling of being sick and miserable (which doctors call malaise). Soon after feeling bad, a child usually gets small white or tiny red mouth sores, as well as a red spotted body rash. Though it's called hand, foot, and mouth disease because of the spots that appear on a child's hands, feet, and mouth, the rash also may appear on the trunk, knees, genitals, bottom, and elbows. It's very contagious, easily spread through direct contact with someone infected or by touching something that an infected child played with and still has the virus on it.

A definitive diagnosis to confirm the presence of the enterovirus is made through a stool sample, but I can usually diagnose this disease by carefully examining a child who has it. I don't usually send a sample to a lab because there is no treatment for hand, foot, and mouth disease. It usually clears up on its own, without complications, in a couple of weeks at the most. It's important to keep a child with hand, foot, and mouth disease well hydrated. If his mouth hurts, he may be reluctant to eat or drink. Homemade strawberry, mango, or other fruit popsicles made with coconut water or fresh juice with some healthy extras thrown in (like spinach, chia seeds, and chunks of fresh fruit) go a long way to soothe an aching mouth. Cold liquids are the key.

This childhood infection is common and mild. Once your child no longer has a fever, she can return to school or day care.

Fifth Disease

If you notice your preschooler looks like he's been slapped in the face, he may have fifth disease. Caused by parvovirus B19, fifth disease often begins like a common cold, with a low-grade fever, headache, runny nose, and other mild symptoms. A few days after these symptoms, you'll notice a blotchy netlike rash. The rash is usually gone in a few days, but it can last up to three weeks. Parvovirus B19 infection is so mild that most people don't know they have it. There's no need to take your child to the doctor.

Roseola

Roseola used to be called sixth disease (because it was once considered the sixth most common skin rash illness in childhood after, you guessed it, fifth disease). It is another mild viral illness that infects kids between the ages of three months and four years. It usually starts with irritability and a fever, which can spike quickly, and then is followed by a pink-colored rash.

With roseola, your child will have a high fever for three or four days and, almost on cue, the day the fever breaks a rash appears. Like fifth disease and hand, foot, and mouth disease, roseola has no treatment. It resolves on its own without complications, and children usually get it only once.

What If Your Child Has Autism?

As I've mentioned previously, one of the most significant changes in pediatrics over the past twenty-five years has been the rise in autism. Sometimes the early warning signs that a child might be slipping into autism are subtle. Maybe you notice your preschooler has started hand flapping or stopped making as much eye contact. Other times autism seems to come on much more suddenly: An abrupt loss of speech or eye contact are the most common red flags.

If you have any concerns that your child might have autism, your pediatrician can do a screening called an M-CHAT, which stands for Modified Checklist for Autism in Toddlers. The American Academy of Pediatrics now recommends screening tests for every child. In my office we administer the M-CHAT questionnaire at eighteen months and two years. Most pediatricians would not miss an autistic child when the case is severe, but this screening can be helpful in identifying signs that are less obvious. I find it useful, as I want to do everything possible as early as possible for that child who may be starting to slip away.

It's terrifying and upsetting to contemplate that your child might have autism. But with autism that has been induced by exposure to toxins, many of the associated symptoms can be reversed once the child is no longer exposed to those toxins. The healthier we can get a child's body, the more quickly we can heal his brain. As my colleague Maya Shetreat-Klein, M.D., the pediatric neurologist based in New York who works with children who have autism spectrum disorders, explains, "The brain is a garden that grows from the rest of the body, the gut, and all the other systems. By having a healthy body, you create a fertile ground to have a good nervous system." I'm not promising that you will be able to cure your child's autism by improving his physical health, but you may make a big difference in lessening the symptoms.

Early Intervention for Autism.

As soon as your child has been diagnosed with autism, you can start early intervention. One of the most effective is Applied Behavior Analysis (ABA), a system that uses positive reinforcement to help children improve their social, language, and self-care skills. Autistic children often suffer from severe anxiety and sensory overload. Occupational therapy, with specialists who are skilled at sensory integration work and other techniques, can be a huge help. Physical therapy may help with motor skills for those struggling with coordination issues. Speech therapy can help get language going.

If your child is showing symptoms of autism, has an abnormal M-CHAT screening, or shows other signs of developmental delays, your doctor should stop giving vaccines. Early signs of autism are often an indication of underlying genetic vulnerabilities that can be exacerbated by vaccines. The risk that vaccines are causing brain inflammation outweighs the risk of infectious diseases. This is also time to remove as many toxins from the environment as possible, if you haven't already. For more about how to mitigate your child's exposure to toxins, see [Chapter 1](#).

The MMR Vaccine for Three-Year-Olds

Unless you have a child who has developmental issues (language, social, or motor delays) or autism or any regression of skills since age one, I recommend the MMR vaccine for your three-year-old if he has not already had it.

By giving the MMR to children at age three, we protect the population from measles outbreaks. Herd immunity—or community immunity, which I prefer to call it—is where enough of the population is immune to a disease, either from having been exposed to it previously or from vaccination, so that even when an infected person enters the community, very few people get sick, and the disease cannot pass from person to person.

When measles broke out at Disneyland in December 2014, community immunity worked well. Though it is a highly infectious disease, no one died. In fact, only 147 people came down with measles across the entire United States (131 of them in California). From the beginning of January to the middle of December 2015, some 189 people in the United States had measles. Only one person got measles in Oregon from the Disney outbreak—an adult—and no one caught it from him. The MMR is a highly effective live-virus vaccine.

It is important that a child's immune system be mature enough to handle a vaccine that contains three live viruses, that a child be in good health when he receives this vaccine, and that the neurons in the brain be sufficiently myelinated. (Myelin is the protein that coats neurons and works as an electrical insulator. When children have enough myelin coating their brain cells they can pass electrical signals most efficiently. The process of myelination lasts for several years after birth.) While we have no large-scale studies comparing the outcomes of children who are completely unvaccinated with children who are vaccinated on the current schedule, data from a senior scientist at the CDC, William Thompson, Ph.D., whom I mentioned in the last

chapter, shows that African American boys who received the MMR vaccine before thirty-six months of age had a 300 percent increase in the autism rate over boys who got the vaccine after thirty-six months. This study was retracted by the peer-reviewed medical journal that first published it, for reasons unknown, but the data still speaks volumes to the potential danger for some children of giving the MMR too soon.

As discussed in [Chapter 7](#), delaying the MMR vaccine until age three results in excellent protection against measles.

It is not a good idea to inject other toxins in conjunction with three live viruses. Make sure that your child does not get any aluminum-containing vaccines in the same visit. Do not ever give acetaminophen (Tylenol) before or after this vaccine.

In my practice I always give the MMR by itself. We never use the combined MMRV, which contains four viruses (measles, mumps, rubella, and chicken pox) and is associated with increased seizures.

If your family has a history of autism or if there are developmental delays, autoimmune issues in your child, or a family history of autoimmune disorders, or if a child is homozygous for the MTHFR C677T mutation, I do not recommend this vaccine.

Reading Vaccine Package Inserts

To be completely informed about any vaccine or medication, parents need to get in the habit of reading package inserts before going to well baby visits. Vaccine package inserts are readily available online. Be savvy as you review the information. The inserts usually contain long lists of side effects, which are also reported in people given the placebo. In most cases they report that the side effects of the vaccines match those of the placebo. Why is that? It often has to do with the study design. When testing the HPV vaccine, as discussed in [Chapter 10](#), researchers used an aluminum-containing injection (instead of saline) for the placebo group for the initial HPV trials. They then used individuals who were given the first generation of the HPV vaccine as the control group and compared them to individuals getting the newer HPV vaccine. Is it any

wonder that the “control groups” had nearly identical side effects to the vaccine groups being tested?

I recently talked to a parent who was upset to learn from the package insert that the MMR vaccine we had given her child was manufactured from cells grown from aborted fetal tissue. “I would never have agreed to get that vaccine if I had known,” she said. I apologized. In the course of a well child visit, there simply isn’t enough time to go over everything listed in a package insert. I strongly recommend you read every vaccine insert before your child’s well child visit. See [Appendix D](#) for a list of vaccine ingredients.

Dr. Paul’s Plan FOR TODDLERS AND PRESCHOOLERS

1. Toddler-proof your home. Your big-headed, walking, talking little human is now a great explorer. Matches, lighters, prescription medications, and cleaning supplies with bright labels beckon to a curious child and must be kept out of reach. Your home need not resemble a fortress and you do not need to buy expensive safety gadgets, but electrical outlets should be covered, blind cords kept wrapped, and guns secured in a safe.

2. Skip the screens. While television gives parents a much-needed break and allows busy couples with young children some private time to reconnect, preschoolers should be spending as little time in front of the TV as possible. The less they watch the better.

3. Read to your toddler. Reading improves language and academic skills and is magic for your child’s self-esteem and your special bond. Studies show that children who are read to often do better in school. The practice it takes to sit still and pay attention reduces distraction and improves children’s attention spans. Visit the library to get a fresh crop of new-to-you books without the expense of buying them.

4. Get the MMR vaccine at age three. A triple live-virus vaccine before age three is too much for many children to handle. The immune system responds so well to the MMR vaccine at age three that your child most likely won’t need a booster later on. If you are traveling to a part of the world where measles is endemic, however, the CDC schedule recommends the shot between twelve and fifteen months.

5. Eat meals together. As tempting as it is to feed the little ones first and

eat later, it's important to include your children in family meals. Family meals create an invaluable sense of family unity and help establish positive lifelong eating habits.

6. Eat real food. If it comes in a bag or a box, was made in a factory, or has a long list of ingredients, it is not real food. Choose eggs, meat, fish, nuts, seeds, fresh vegetables and fruits, whole grains, plain whole-milk yogurt, and kefir over packaged “kid-friendly” food.

7. Take your supplements. Almost all toddlers and preschoolers need extra vitamin D3 (1,000 IUs daily until your child weighs 40 pounds or 20 kilograms, then 2,000 IUs after that). Fish oil, methylfolate, and methyl-B12 can also be beneficial. Vitamin D and fish oil are available in either liquid or chewable form. Methyl-B12 and methylfolate are available in small chewable tablets.

8. Don't play catch-up on vaccines before age three. Even if your child is thriving physically, developmentally, and socially, and your family does not have risk factors that make vaccination riskier, it is safer to catch a child up on vaccines after age three.

The Seven Questions Parents Ask Me Most **ABOUT TODDLERS**

ABOUT BUMPS AND BRUISES

1. My eighteen-month-old son falls down all the time and bangs himself up so badly, I'm worried people are going to think he's abused. How can I keep him from falling?

A: You can't. And you shouldn't. Toddlers will be toddlers. Their big heads relative to their small bodies make them fall down a lot. They pick themselves up and try again, and the cause and effect teaches them to be more cautious. Except when it doesn't. But the bumps and bruises won't hurt them. Children's bones are like green twigs—they are made to bend. It's only us adults who have a tendency to get badly hurt when we fall.

2. My preschooler started screaming at the park, and now he won't move his arm. Is it broken?

A: Chances are your son has a pulled elbow, not a broken arm. Nursemaid's elbow is very common in toddlers and usually happens when

an adult or older sibling pulls too hard on a small child's arm. The dislocated radial head (also called a radial head subluxation) is easily fixed in a pediatrician's office with a simple maneuver. We turn the palm up and then extend and flex the elbow while pulling on the hand, which allows the elbow to pop back into place. It hurts a lot for a split second when it pops into place, but the cure is instantaneous. If your preschooler is prone to nursemaid's elbow or you can't get to a doctor, there are videos online that show exactly how to do the maneuver yourself to pop the elbow back into place.

ABOUT BEHAVIOR ISSUES

3. My two-year-old son has started hitting, kicking, and biting. What can I do?

A: Our children mimic everything they see, so if you tend to lose your cool, your child will too. Spanking, yelling, and parent tantrums all contribute to children acting out. If you're having trouble controlling your temper, find a therapist to help you.

That said, toddlers and preschoolers often experiment with acting aggressively, the same way they experiment with throwing tantrums and complaining that something hurts. It's usually because they want attention. Let's say your child hits, kicks, or bites another child. That child cries. Your child is suddenly showered with your negative and undivided attention ("Bad boy, say you're sorry!"). The response is motivating because it got a reaction and gave him a sense of being powerful and in control. So he does it again.

My best advice is to give as little attention as possible to the perpetrator and as much attention as possible to the person who's been hurt. Say, "Oh, no, that must have hurt. Your brother needs to learn to use words when he's upset. Come on, let's go put a bandage on your boo boo," and tend to the victim. Catch your troublesome one doing something good as often as possible. "I like how you asked for that toy instead of just grabbing it. High five!"

4. Why is my three-year-old daughter throwing tantrums?

A: Some children struggle with being two or three because they feel they should be in charge and everyone should do what they say. They get tremendously frustrated at their own limitations (being too short to reach the sink, putting two legs in one pant hole) and furious about limits adults impose on them. Tantrums often are the result of that frustration. Help her learn better ways to express herself by naming the feelings she can't express ("You must feel really mad to be kicking the floor that hard"),

playing pretend games with stuffed animals that include tantrums and ways to resolve them, and giving her other ways to express feelings that don't involve screaming at the top of her lungs. ("Here's a piece of paper. Draw me a picture of how you feel. I'll draw one too.")

Tantrums can also be caused by hunger or fatigue. Pay attention to when your toddler is tantruming. If it's in the evening, she's telling you with her behavior that she's tired and needs an earlier bedtime. If it's right before lunch, she may have been so busy playing that she is having a blood sugar crash (and you probably are too).

5. Our three-year-old used to do a lot for herself, like put on her sandals and get her bowl from her drawer in the kitchen. Now that she has a baby sister and we need her to be more independent, she's forgotten how to do all those things. Is this normal?

A: Regressing when a new baby comes along is very common. I've even seen older siblings develop nervous tics, stutters, and other physical ailments after the birth of a baby. Though difficult and upsetting for parents, it is perfectly normal. It will help if you can schedule some special alone time with your older child, or have other loving adults in her life spend time alone with her. Don't shame your older child if she says she hates the baby or asks when the baby's going away. As hard as these sentiments are for parents to hear, your child is expressing normal emotions. Instead of telling her never to say that, you could invite her to draw a picture of how she feels, or ask her where she wants the baby to go or what she hates most. Having a new baby is a time of adjustment for the whole family.

ABOUT POTTY LEARNING

6. Potty training my two-year-old isn't going well, and I'm at my wit's end.

A: Every child learns to use the potty eventually. Though some take longer than others, your child won't be in diapers forever. It's hard right now, but this too shall pass. Children who are not as aware of their body functions can learn by watching others. Take your child with you when you use the toilet, and have him sit on a potty chair too.

ABOUT FOOD

7. My two-and-a-half-year-old wants to eat only white foods. What can I do?

A: Offer a wide variety of healthy whole foods, and let your child eat as much or as little as he wants. A growing child's appetite is often erratic. He may eat an elephant's weight one day and pick at his food the next. As long as you are offering only healthy foods and he is not filling up on sweets or juice or milk before meals, he will get the nutrients he needs. Toothpicks make everything tastier. Animal faces made out of food make it more fun to eat. Adding healthy extras (see [this page](#)) to smoothies, sauces, yogurt, and homemade desserts is a way to slip in some extra nutrition. At this age your child's diet is easier to control. When he gets older, it becomes more difficult.

Chapter 9

Baby's Going to *School*? Common Illnesses, Common Complaints, and Common Sense About Vaccines for Your School-Age Child

“I have a present for you,” Brian says, beaming at me as he sits on the exam table swinging his legs. He hands me several drawings that are really good.

“Why, thank you, Brian!” I smile back. “How have you been?”

Brian considers the question for a moment before nodding his head. “Just fine,” he pronounces. “How about you, Dr. Paul?”

From your baby's first birthday to the day you send your child to school seems like a lifetime when you are in the midst of it: the countless diaper changes, neighborhood walks, trips to the playground, mud pies in the backyard, camping adventures, visits to the zoo and the library, picture books read, puzzles done, and games of Candy Land played (again and again and again). Then you look back—and realize that the time has flown by.

After age three, we ask parents to bring their children to the doctor for a checkup just once a year. You see your pediatrician at other times only if your child gets sick or injured.

Brian, almost five, has mastered gender identification. He's wearing a plaid shirt, khaki shorts, and an Oregon Ducks baseball cap. Though he's comfortable talking to me and self-motivated, his mom tells me he is shy with other children. A talkative only child who is not naturally

social, he mostly interacts with adults. We discuss trying activities with other children to ease the transition into kindergarten. Brian hangs his head for a moment, not liking the idea. I tell his mom not to push him. It is great to try something social like soccer, dance class, or drawing, but if your child feels uncomfortable or does not want to go back, there is no reason to force it.

Four- and five-year-olds are starting to distinguish fantasy from reality, and they love to play pretend. Interactive games like charades, cards, and even board games are also becoming possible at this age. Playing games helps children understand how to interact with others, manage different personalities and needs, and deal with conflicts. Kids this age are also learning how to win and lose—some with more grace than others—be part of a team, and be more independent. Don't be dismayed if your child cheats. This is normal behavior and does not mean he will grow to adulthood not knowing how to play fair. Don't ever worry that your child is playing too much pretend or has too much unscheduled time. What may look like mindless fun to you is actually learning. In several countries with excellent educational systems and high-performing young adults, including Finland and Sweden, no formal teaching is started before age seven.

"Did you get yourself dressed today, Brian?" I ask, pointing to his baseball cap. His mom nods vigorously but lets Brian answer my questions himself. By age five, children are able to dress themselves independently, as Brian can, though they don't always want to. Separation from a primary parent becomes easier too.

At age four, most children will draw an amoeba person, and at age five the person may have a head and body along with arms and legs. Four-year-olds can usually draw a circle, and a five-year-old is usually able to copy a square and a triangle and perhaps write his name if he has been practicing. These skills vary widely from child to child. I have a five-year-old in my practice who can draw a limousine with the driver's face in detail (beard, glasses, white gloves) and another who only likes to scribble.

Most four-year-olds ask the question Why? over and over again. I've had

a few who were masters. Edward, at four years old, had this down. During his exam I ask him to open his mouth and say aah.

“Why?” Edward asks.

“So I can see your tonsils and throat,” I respond.

“Why?” he asks again.

“So I can tell if you are sick or your tonsils are too big.”

“Why?” he continues.

His mom (firmly): “Edward, that’s enough.”

Edward (without missing a beat): “Why, Mommy?”

Though it may feel exasperating to answer the question Why? all the time, your preschooler is genuinely curious. We adults have been in the world for a long time and have lost our sense of wonder. Not your child. He is still trying to figure out what the world is and how it works. Why? is a legitimate question, a request for more information, and it should be answered with a reasonable response (not “Because” or “Because I said so”).

Another little four-year-old, Davidson, already knew his name, address, and phone number (a skill we are losing with the advent of smartphones and one usually not seen until age five or six), as well as the alphabet.

“He can count to a thousand,” Davidson’s mom told me proudly. I decided not to request a demonstration. His mom also said that he had already taught himself to read. It’s more typical that a four- or five-year-old will retell familiar stories from memory as he “reads” a book he has listened to over and over. Your child can learn to follow the words on the page with her finger, from left to right and from top to bottom.

Davidson was a ham. He beamed with delight as he showed me the gross motor skills I requested, standing on one foot for three to five seconds on each side, hopping across the exam room. Sometime between ages four and five, most children will be able to skip, walk heel to toe, and start learning to ride a bike.

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At the five-year visit, we discuss the family plans relating to school. Some children will do better in school if they start kindergarten when

they are more mature, while others thrive as the youngest in the class. I recommend you discuss school readiness with your doctor, your child's preschool teacher, and other trusted adults who will give you an honest opinion based on your child's readiness.

When Sally's Scared to Go to School

At the beginning of the school year, it's important to be patient with your child and also with yourself. For some children, the transition to school is seamless. For others, it's much harder, especially if elementary school is the first time you and your child have been away from each other during the day. Don't compare your child's morning behavior to anyone else's. It's important to make the school familiar before your child attends: You can visit the inside of the building, spend some time together on the playground, and perhaps even ask the teacher to come to your house and spend fifteen minutes with your child on her home turf. (Home visits by kindergarten teachers are the norm in some schools in Oregon but not in every state.) Having friendly, warm interactions with the teacher in front of your child also sends the message that you know and trust this adult and he can too.

Make sure your child is going to school well rested and well fed. A hungry child is a fearful child; a child loaded up on canned juice, artificial food dyes, and sugary foods (like conventional breakfast cereal) will be more prone to anxiety and hyperactivity.

Walk your child to school or play an energetic game of chase, lava monster, or hide and seek on the play structures before school starts. Doing this will give you both outdoor time and exercise, which has been shown to improve concentration and reduce anxiety in children.

“Ouch, Ouch, Ouch, My _____ Hurts.”

Young children often have what we call somatic complaints, body symptoms that represent no underlying disease or illness but rather a need for more attention from Mommy or Daddy. Sometimes this is a learned behavior that comes about after seeing how strongly parents react to real pain.

That’s why Leone started to cry wolf. Five years old, she was on the child seat on the back of her mom’s cargo bicycle when her foot got caught in the spokes while the wheel was turning. “It feels like my foot is on fire!” she cried, sobbing all the way to the emergency room. She continued screaming so loudly in the ER waiting room that the nurses ushered her back immediately, her mother, father, and older sister all doting on her. An X-ray and examination revealed that though she had a painfully skinned and sprained ankle and part of the winter boot she had been wearing was shredded, no bones were broken. Exhausted and subdued, Leone left the ER with a new stuffed Dalmatian and the undivided attention of three of the people she loved the most.

After that she started feigning pain because she had seen how powerfully the adults around her reacted when she was genuinely hurt.

Of course you should pay close attention when a child tells you something hurts, and always take real pain seriously. But it’s also good to remember that sometimes what a child really wants is Mommy or Daddy to stop what they are doing and pay attention—undivided attention—just to them!

If the complaints come right before school or before something else that is causing your child anxiety, they are probably stress related. It’s important to remember that this pain is real, even if the cause is psychological. As with physical pain, the best way to remedy it is to figure out and address the underlying cause.

“Mommy, My Head Hurts”

Headaches can be brought on by a variety of things: The influenza virus, a cold, or another underlying illness; too much sun; a blow to the head; dehydration; low blood sugar; hunger; an allergic reaction to certain foods (especially nitrates in meat and MSG—monosodium glutamate—a flavor enhancer often added to Asian food and present in packaged foods labeled as “natural flavors”); and stress are just a few causes of headaches in children. Most headaches in children are not serious and don’t require medical treatment. They will usually resolve themselves after a healthy meal and a good night’s rest.

If your child tells you his head hurts, the first line of attack is to have him drink a glass of water, give him some food, and have him lie down quietly for a little while. A cold washcloth to his forehead and some loving attention from you—headache-be-gone kisses, reading a book together, a back massage—often work wonders.

I don’t recommend you give your child pain medication for a headache until you’ve tried nonpharmacological interventions. If you feel strongly that he needs pain relief, first try a quarter of a teaspoon of turmeric in a glass of juice. Turmeric is a natural anti-inflammatory and very helpful in fighting headaches. I do not recommend any products that contain acetaminophen (see [Chapter 1](#)).

If you have a family history of migraines and the headaches seem worse when lights are bright but get better when lying down in a dark quiet room, your child may be prone to migraines. These are exceedingly rare in children under ten but get more common as your child gets older. If what we call an aura appears—preheadache symptoms like flashing spots or anything the child is aware of just before the headache—your child is most likely having a migraine. Migraines are largely preventable by avoiding MSG, “natural flavors” (which are anything but natural), and artificial food dyes and colors and by taking magnesium with calcium, as well as vitamin D and

vitamin K2. School-age children can take 500 milligrams of calcium, 100 to 200 milligrams of magnesium, 2,000 IUs of vitamin D3, and 10 to 20 micrograms of vitamin K2 (menaquinone) daily. You can get these vitamins in liquid form, but by this age your child can learn to swallow pills.

If your child has a persistent headache that is typically worse when she wakes in the morning or is so painful it wakes her from a deep sleep in the middle of the night, and is accompanied by physical weakness, blurred vision, or a drastic personality change, see your doctor right away. Though extremely rare, severe headaches with this pattern can sometimes be caused by a brain tumor.

“Daddy, My Tummy Hurts”

Stomachaches can be brought on by a variety of different things. Parents bring their children to my office with tummyaches several times a week, even though they will often resolve on their own at home. In my experience the most common causes of stomachaches are constipation or simply a child's need to defecate; undiagnosed food allergies, particularly to dairy products (lactose intolerance) or gluten (gluten intolerance); and stress.

If you suspect your child has a food allergy, you can see a pediatrician (who may or may not run some tests or refer you to an allergist), or you can try an elimination diet at home (see [this page](#) for more on this process). If the stomachache is accompanied by vomiting or diarrhea, and other people in your family or at school have similar symptoms, your child most likely has a viral gastroenteritis. Her body is doing its job: ridding itself of the virus that is causing the illness. The only concern here is that your child gets enough fluids. Offer small sips of her favorite drinks as often as possible, even if she throws them up again. Now is a time to give your child clear liquids, water, juice, sports drinks without dyes, or rehydration solutions, because dehydration is a real concern. Homemade chicken soup is my favorite option, if you have time to prepare it.

If the vomiting is too severe to keep fluids down, your doctor may prescribe a medicine like ondansetron (better known by its brand name, Zofran) to stop the vomiting. In severe cases, your child may need to be admitted to the hospital to get rehydrated with IV fluids.

If your child has a stomachache that does not resolve itself by going to the bathroom and is accompanied by a fever, lethargy, and loss of appetite, another possible culprit is appendicitis, an infected appendix.

The appendix is a small pouchlike organ on the lower right side of the abdomen. It was once thought to be a vestigial organ, from our

evolutionary past (like tailbones and wisdom teeth), but with no real present-day function. Scientists now understand that the appendix is a storehouse for beneficial bacteria, which it flushes into the digestive tract after a diarrheal disease.

Appendicitis is rare—a busy pediatrician may see it once or twice a year—and is treatable by removal of the appendix (an appendectomy). But it's important not to miss it, as my colleague who worked at a busy clinic once did. When a young woman in his office had symptoms of stomach pain, fever, and general malaise, he mistook it for the flu, which he had diagnosed several times already that day. He could have easily felt that her abdomen was tender with guarding (where a patient won't let you push down on the abdomen) when he did a physical exam, but it was the end of the day and he was tired and rushing. He should have realized her flu-like symptoms were much more serious when she cried out in pain while bending her right leg to put on her pants. This young woman's appendix burst, and she spent a month recovering in the hospital. You can sleuth out appendicitis by having your child lie on her back, bending her legs, and bringing first her left leg and then her right leg to her chest. If she feels acute tummy pain as she brings her right leg to her chest, you need to see a doctor.

Another way pediatricians can distinguish appendicitis from less serious causes of abdominal pain is to ask a child to jump. If he winces in pain on landing, he may have appendicitis. As part of the exam, we will percuss (tap on) the abdomen. If that causes pain, especially if it is in the lower right part of the abdomen, then it may indicate appendicitis. A child with appendicitis may also experience rebound tenderness. If you gently push down on one part of the abdomen and release quickly, the child experiences pain in the area of the appendix as you quickly remove your hand from another part of the abdomen.

“Grandma, My Throat’s Sore”

Sore throats in children are very common, especially during the winter. They are caused by a variety of things, most frequently a viral infection that cannot be treated with antibiotics. Exuberant yelling, throaty crying, postnasal drip, excessive coughing (caused by a cold virus or allergies), Coxsackie virus (which causes hand, foot, and mouth disease), exposure to cigarette smoke, and breathing dry air can also cause sore throats in children.

How can you tell if your child has a sore throat caused by a virus without taking him to the doctor? Viral infections usually come on slowly, with symptoms showing up over the course of a couple of days. This kind of sore throat is often accompanied by swollen neck glands, a low-grade fever, and a runny nose. Your child’s secretions (snot and phlegm) will usually—though not always—run clear and be watery.

Trust your own judgment on this. If you feel your child is really sick, don’t hesitate to go into the doctor. But unless your child has acute symptoms, like difficulty breathing, or the throat pain is so severe she doesn’t want to eat, there is no reason to take her to the doctor.

In fact, you may have a good reason to avoid the doctor. Busy pediatricians and urgent cares are notorious for overprescribing antibiotics, which leads to antibiotic resistance and a decrease in the healthy bacteria in your child’s body that help fight disease. As mentioned earlier, prescribing an antibiotic for a viral infection is not only unnecessary, it’s a surefire way to compromise her immune system and make it more likely that she will get repeated illnesses.

A sore throat caused by a bacterial infection usually comes on much more abruptly than a viral infection. If your child suddenly spikes a high fever and you see a very red throat, or red dots on his tongue, or white stuff in the back of the throat (like cottage cheese), or it really hurts to swallow, she may have strep throat.

Strep throat is contagious and can cause complications. The serious complication that doctors learn about in medical school and subsequently fear most is rheumatic heart disease, which can lead to heart valve complications in severe cases. You should know that there are so few cases of rheumatic fever in the United States that states no longer track and report the incidence of this disease, so our statistics are unreliable. Of the illnesses that do occur, they are overwhelmingly in children from American Samoa and in children aged five to fifteen. The average age among children for rheumatic fever among these children is eleven. In fact, it is extremely unlikely that any child under five years old will develop rheumatic fever.

Strep throat is easily assessed through a rapid strep test that gives results while your family is still in the office or through a throat culture that takes one to two days for results. Both are done with a swab rubbed over the tonsils and require your child to open wide. If the rapid test, though highly accurate, comes back negative but a doctor has a strong suspicion it is strep, he will order the throat culture just to be sure. Strep is conventionally treated with antibiotics (usually penicillin or amoxicillin), and it is thought that you prevent the possibility of serious complications by treating it quickly. Though most doctors in America treat strep throat with antibiotics, it is important to understand that this is not a benign intervention: I suspect that more children have adverse reactions to the antibiotics than are at risk of rheumatic fever. Allergies and severe side effects from antibiotics are common, and antibiotics kill not only invasive bacteria but also the beneficial bacteria that are the first line of the immune system.

A systematic review of the use of antibiotics to treat sore throat found that using antibiotics shortens the illness by an average of only one day. It concluded that “absolute benefits are modest” and that many of those treated with antibiotics in modern Western society will derive no benefit. I still recommend that parents treat proven strep throat infections with antibiotics, as do most M.D.’s. However, I strongly discourage the use of antibiotics for a sore throat that has not been proven to be caused by streptococcus, since most other causes are viral and antibiotics will cause more harm than good.

For any sore throat, use palliative home remedies to keep your child comfortable: lemon tea with honey, warm saltwater gargles, and herbal throat sprays all help. When the presence of strep is confirmed via a lab culture, some parents also try having their child gargle with oregano oil, which works as a natural antibiotic.

As with any contagious disease, don't forget to throw away your child's toothbrush, as the bristles can harbor strep and cause repeated infections. If your child is being treated with antibiotics, throw the brush away after a few days of antibiotics.

“Grandpa, Everything Hurts”

For the child with lots of phantom aches and pains, you might ask if her elbow hurts, if her knee hurts, and if her nose hurts. If she answers yes but otherwise seems well, you may be the victim of that ever-present desire for more attention. There’s nothing wrong with spending more time with and paying more attention to a child in your care. In fact, I recommend it. But try to give your child honest words to use—not fake symptoms—to ask for your attention.



Ringworm

Tinea corporis, better known as ringworm, is not a worm at all. It's a fungal infection (think of it as being in the mushroom family, so don't stress) on the skin or scalp. The same fungus, which thrives in moisture and warmth, also causes athlete's foot (an infection between the toes) and jock itch (an infection in the groin area). It typically looks like a slightly raised patch the size of a dime or nickel, with the outer edge more raised than the rest of the patch. In light-skinned children, the rash may look pink or even red, and it may look a bit dry compared to the skin around it.

Ringworm can be confused with a type of dry skin called nummular eczema, which also manifests as a coin-shaped raised rash. When in doubt, a dermatologist will take a scraping and can then identify it by its characteristic hyphae (the branching structure of a fungus) or by a lab culture.

I most often see ringworm in school-age children, particularly youngsters who have taken up wrestling and have a lot of skin-to-skin contact with other kids. But children and adults of any age can get ringworm. Though it's contagious, ringworm is a pretty benign infection that will often resolve on its own, and you can try treating it without going to the doctor.

Doctors used to treat scalp ringworm with X-rays. I'm glad we don't do that anymore. I've found that alternating a couple of different topical antifungal agents (clotrimazole, miconazole, ketoconazole, terbinafine, naftifine, or tolnaftate), which you can get over the counter, will clear the infection up in two to four weeks. It can take as much as two months to go away. Apply one of each a couple times a day, rubbing it in well. You can also treat ringworm with lavender oil. Apply it directly to the rash two to three times a day. You'll notice that the rash dries out immediately (if it doesn't, it may be eczema) and takes two to four weeks to resolve. Fungal scalp infections may require

oral antifungal medication.

About Allergies

By definition, an allergy is an immune system overreaction to a substance that is actually harmless. Allergy symptoms include a range of physical reactions from rashes, itchiness, and runny nose to much more serious, even lethal problems with breathing difficulties and extreme swelling. The American College of Allergy, Asthma, and Immunology estimates that 9.5 million children have skin allergies and 8.3 million have respiratory allergies. The most common allergies are to grasses, mold, dust, animal dander, poison oak (on the West Coast), poison ivy (on the East Coast), and bee stings. Allergies can appear at any age. Some families with children who have mild to severe allergies find that when they move to a different climate (Boston to Santa Fe, for example), they get a reprieve that can last as long as seven years, or however long it takes for the body to become sensitized and overreactive to the new environment. Allergies usually get better with age.

Doctors test for what they call true allergies by measuring the amounts of a substance in the antibody called Immunoglobulin E, or IgE, which is present in minute amounts in the body and plays the main role in allergic diseases. Mistakenly identifying harmless substances as harmful, the IgE, which is secreted from blood cells, triggers the release of substances like histamines that then cause inflammation and a cascade of allergic reactions.

True allergies can be ascertained by skin testing, which is typically done in an allergist's office, or by a blood test called an Immunocap, which measures your child's IgE blood levels against potential allergens. If your child suffers from asthma (wheezing, shortness of breath, difficulty breathing), allergic rhinitis (that endless runny nose), allergic conjunctivitis (itchy eyes), or hay fever, she has allergies. If your child is allergic to dust and house molds, she may have symptoms all year round. If your child is allergic to timothy grass—the most

common allergen among children in Oregon—then symptoms appear most often in the spring and summer, especially if she plays baseball, likes to roll in the grass, or is near a hay farm on a hot windy day.

If your child suffers from allergies that trigger asthma, it is very important that you identify what she is allergic to and do everything you can both to avoid the allergens and to reduce inflammation in the body. Asthma can be serious, can land your child in the hospital, and in rare cases can even be fatal. The good news is that if you identify the triggers and minimize contact with them, you will see big improvements. Asthma is also very manageable by using an inhaler (we usually prescribe albuterol, a medication that relaxes the muscles around the airways in the lungs) or steroids, taken via an inhaler or orally for severe asthma.

Life-Threatening Allergies: WHEN YOUR CHILD NEEDS TO CARRY EPINEPHRINE

In September 2015 a sixteen-year-old boy named Simon Katz was passed a s'more at a homecoming bonfire. He took one bite and went into anaphylactic shock. No one had told him that the s'more was made with peanut butter. Though Simon's father administered his son an epinephrine shot, it took them six minutes to get to urgent care. Simon died.

In the past decade, we have seen a dramatic rise in the number of severe—and sometimes fatal—allergic reactions in children and young adults. The most common triggers of a severe reaction are bee, wasp, and hornet stings, as well as peanuts.

Parents usually find out that their child has a severe allergy from an immediate reaction right after the exposure: breaking out in hives, having difficulty breathing. If you suspect your child has severe allergies, your doctor can order a blood test to uncover the allergens.

The onset of a severe allergy is typically at the first or second time of exposure. Symptoms to watch for include itching or swelling of the mouth or throat, hoarseness, shortness of breath or difficulty breathing, and severe hives (a blotchy red raised rash). In the worst case, your child can go into shock, categorized by a weak pulse and rapid heart rate. He may pass out from lack of oxygen or poor blood circulation.

Your child's care providers, teachers, relatives, friend's parents, and

any other adults in his life should be alerted about his severe allergies. He can also wear an alert bracelet or necklace. Injectable epinephrine (which is adrenaline, a chemical hormone, usually injected into the thigh) can stop the allergic reaction and save your child's life. If your child has had a previous severe allergic reaction, he should carry an EpiPen at all times.

There is some compelling evidence that vaccines given in the first year of life can be a trigger for autoimmune disorders and allergies. This is one of the many reasons that I recommend delaying some infant vaccines.

Food Allergies

Since I've started practicing, I've seen a huge jump in children being diagnosed with increasingly severe food allergies at younger and younger ages. There is a lot of debate in the medical community about the differences among food allergies, food sensitivities, and food intolerances. Unfortunately, if you tell a doctor your child has a food sensitivity, he may well roll his eyes and secretly label you "one of those parents" who believes anything, falls for anything, and embraces woo-woo stuff. But do not let your doctor dismiss your child's reactions to food (or anything else for that matter).

Knowing what foods your child is sensitive to can be incredibly helpful in treating eczema, gastrointestinal disorders, and brain issues, as well as behavior, language, and learning problems.

Severe food allergies will trigger an IgE reaction, but some food intolerances and hypersensitivities, which lead to inflammation and cause a host of unpleasant physical symptoms, cannot be identified by IgE testing. Some doctors will measure food sensitivities by measuring levels of Immunoglobulin G (IgG) in the blood, the most abundant type of antibody that is found in all body fluids and is secreted to protect against bacterial and viral infections, but most traditionally trained M.D.'s don't believe that food sensitivity (IgG) testing yields credible results.

I am not among them! I have seen literally hundreds of children recover from eczema, stomach, and intestinal issues, and make

marked improvements in language delays and developmental issues, after we identified food sensitivities and removed offending foods from their diet.

Try an elimination diet: Take any foods you suspect your child is allergic or sensitive to (or that someone else in the family is allergic to) out of his diet, one by one, and see if the pain goes away. Sometimes it is best to remove dairy, gluten, and eggs all at once for at least a month, then one by one reintroduce them back into the diet to determine which of these foods, if any, is causing problems. Keep a food notebook so you can track the foods your child is eating. As you add foods back in, see if the stomachaches return. If your child has multiple food allergies, eliminating one food may not stop the pain. Often the chemical additives and dyes in foods are causing the problem. I know I sound like a broken record at this point, but you must feed your child a real-food diet and read ingredient lists. If you see unrecognizable chemicals in the ingredients, that item is not food and should go back on the shelf, not into your grocery cart.

If your child is suffering from an allergy, the best thing you can do is to identify and remove the allergen (removing black mold from your home, for example, which you can do yourself, with proper safeguards in place, or hire a professional service to do for you). Do everything you can to stabilize the child's immune system, which includes eating a whole-food, preferably organic diet, eating plenty of smaller fish that are at the bottom of the food chain or taking purified fish oil, introducing beneficial bacteria into your system through probiotics and lots of fermented natural foods, making sure you get enough vitamin D (we are all deficient in North America and much of the world), exercising daily for at least thirty minutes and making an effort to be active throughout the day, and avoiding all the toxins we talked about in [Chapter 1](#).

“I’m Worried My Child Is Too Fat”

The Standard American Diet (aptly nicknamed SAD) is loaded with processed foods, sweet drinks, and snacks that come from a factory, not a farm.

We are growing a nation of insulin-resistant children. Insulin is a hormone secreted by the pancreas that controls the amount of sugar in the bloodstream. When children become insulin resistant, even a small amount of sugar, flour, high-fructose corn syrup, or even artificial sweeteners can trigger the pancreas to release insulin. This flood of insulin leads our cells to become resistant to it, which means we need to make even more insulin just to keep our blood sugar levels normal. Insulin release signals the body to store fat: The more we secrete insulin, the more we store fat. So children and adults who are insulin resistant will actually store more fat and gain more weight than the next person, even when they are actually not eating more. It’s a vicious cycle that puts our children at risk for diabetes, high blood pressure, morbid obesity, and even early death.

The solution to overweight children, then, is often what is in the fridge and cupboards. Who does the shopping? Not your child! Whoever is doing the shopping needs a do-over, a major shift in thinking. Without putting any focus on the child before me, I counsel my parents to just start getting rid of the problem foods: breakfast cereals, juice cocktails, soda, candy, crackers, white bread and white pasta, boxed or bagged anything. We gradually shift to real foods—vegetables, fruits, eggs; whole-milk yogurt, cheese, and whole milk (if your child tolerates dairy); fermented foods, meats and fish, nuts and seeds. Calories matter, but when your child is insulin resistant, what he eats is more important than how much he eats. Offer your child high-protein foods like meat, fish that is low on the food chain (like sardines, mackerel, trout, and anchovies), nuts, and nut butters. Make sure he eats a little fat and protein in every meal and snack. If your

child won't eat fish, consider a purified fish oil supplement or ground flax meal to get the important omega-3 fatty acids.

I also like *Super Baby Food* author Ruth Yaron's idea of "healthy extras," whole foods you can add to any meal or dish you serve your family to make it richer in nutrients.

Dr. Paul's Healthy Extras

Almonds, hazelnuts, pistachio nuts, walnuts (you can blend them and add to pasta sauce or pancakes)

Brewer's yeast

Coconut (coconut oil, dried coconut flakes, shredded coconut)

Cooked beans

Desiccated liver

Dried nettles

Fresh herbs (basil, oregano, sage, and thyme). More than just seasonings, these are healthy additions to any meal!

Nutritional yeast

Seeds of all kinds (flax, chia, hemp, pumpkin, sesame, watermelon)

Shredded vegetables (raw or cooked, including broccoli, cabbage, carrots, celery, green beans, kale, spinach, and Swiss chard)

If changing your diet feels overwhelming, I recommend you consult with a diet expert who knows how to get you started on real whole foods.

If your child really is too fat, he is probably already starting to realize it himself. He can't lift himself onto the swing, he doesn't run as fast as his classmates, and he wears clothes several sizes bigger than his age group. Even very young children get teased and bullied for being overweight at school.

As his parents, you have a responsibility to help him, but you have to be careful not to harp on his weight. One of Jennifer's relatives used to scold her daughter for eating, slap her hand away from food, and say, "You don't want to go to fat girl camp, do you?" resulting in a lifetime

of struggles with weight and self-esteem. While some children are normally chunky and will grow into lean adults, we are seeing childhood obesity more and more often in younger and younger children. Your children may be genetically predisposed to be bigger and heavier than average. That is not a problem, and you should not let your pediatrician make it into one. At the same time, usually because of a combination of being formula fed, having a poor diet as a toddler, and lifestyle and psychological problems, as well as a genetic predisposition toward carrying more weight, some children will turn to compulsive and unhealthy eating that leads to lifelong problems with food.

We must lead by example. Parents, it's not "Do as I say," it's "Do as I do."

As challenging as it might be while you juggle making a living and raising your family, you must model healthy eating as well as a healthy lifestyle. Turn off the video games, social media, and other Internet distractions and get outside and walk, bike, and hike, or play soccer, football, basketball, or any other sport you enjoy with your child.

Never eat with the TV on. Never, ever. Did I mention never? I know a lot of people do this, but it's one of our most destructive American habits and has been linked to obesity. When a child or adult is glued to the TV, our brain is distracted, and we just keep shoveling food in mindlessly, missing our body's internal signals that we are full.

“I’m Worried My Child Has Autism”

If you are worried that your child might be autistic, you’re not alone. As I’ve mentioned, as many as one in forty-five children in America is now considered autistic. The current autism epidemic is affecting so many children that it should be a concern for us all.

Contrary to what I was led to believe from reading scientific journals, and from consulting with autism experts at leading centers, autism is not a hopeless situation that means a child has no future. There are many things you can do to help your child that will often (though not always) make a noticeable difference. Some children are able to recover to the point that they lose the diagnosis. I’m sorry to say that many of my colleagues, instead of being delighted about this and curious to understand what interventions worked most effectively, often insist that these children were not autistic in the first place! This denial of autism recovery absolutely baffles me. It suggests such a gross level of incompetence on the part of the doctors who made the diagnosis, and such circular thinking on the part of the doctors denying that the initial diagnosis was correct, that I worry about the future of my profession.

Recovery from autism is possible. Every child I have seen who has been diagnosed with autism has made some progress. For a small percentage, the progress is painfully slow, and the child continues to have significant neurological challenges. If your child is not improving while your friends’ children are, it can be devastating. All you can do is your best.

Autism: Genetic vulnerability + toxic exposures (pesticides, standard American diet, early ultrasounds, vaccine ingredients, our current childhood vaccine schedule + acetaminophen) + overuse of antibiotics = a 1-in-45 chance of your child getting autism

Ask the parents whose children are suffering the most. They tell such a similar story that it gives me goose bumps. They did absolutely everything their doctors told them. They had ultrasounds often, sometimes at every prenatal visit, because their obstetrician recommended it. They had an “emergency” C-section birth or drugs during labor. They gave their child round after round of antibiotics. They did all of the shots on the CDC-recommended schedule, and they gave prophylactic Tylenol before and afterward *on their doctor’s recommendation*. And they watched their child get sicker and sicker until one day he disappeared. Do everything the medical establishment tells you to do, and you have a one-in-forty-five chance of having a child with autism.

And when these parents ask, “Why? What happened? What did I do wrong?” the doctor says he has no idea. And when they ask, “What can I do to fix it?” the doctor says to start researching institutions for their child’s long-term care because there is no cure for autism. And then the kicker: The doctor insists that autism is genetic. This is the magical thinking we train doctors to engage in.

Why are so many of my colleagues so quick to deny there is an autism epidemic, to discount the harm caused by toxins in the environment, and to dismiss autism recovery? Is it because we do not want to face the fact that we doctors may be causing the current crisis, or have we simply been blinded by misinformation?

Autism is genetic in the sense that those who become autistic are genetically predisposed to be more vulnerable to environmental toxins. Exposure to toxins that cause brain inflammation is a major factor. So your first job if your child has been diagnosed with autism or you are worried that his brain is being damaged is to stop his exposure to all ongoing toxins, which means giving him no further vaccines; eating fresh, whole organic foods; drinking filtered water; and making sure your home is free of toxins and drugs (mold, lead, cleaners, pesticides, flame-retardants, fluoride, aspartame, acetaminophen).

I’m not saying that we have definitive proof, in the form of double-blind controlled studies, that any one of these things caused your child’s autism. But I am saying they are all suspect, especially for those

of us who are genetically vulnerable, as we talked about in detail in [Chapters 1 and 2](#).

Your next job is to look into nutrient deficiencies and start replacing the key nutrients that are most likely deficient in your child's diet. Find a doctor, one who is trained in integrative medicine, functional medicine, or naturopathic medicine *and* who has experience treating children with autism, who can do the necessary testing and help guide you.

Be prepared to try numerous interventions, to be open-minded to anything that might help your child get well, and to see sometimes heartbreakingly uneven improvement on the path to recovery. The first thing I recommend is that parents try an absolutely (no cheating) gluten-free, dairy-free, organic-only diet. What makes changing a child's diet so tricky is that our autistic kids often crave the very foods that they should not be eating. "My child will die if I take away gluten and dairy" is a common reaction I hear from parents.

I recommend a coach, another parent, or a diet expert who can help you through this process. It is tough indeed. But I've seen several cases of nonverbal three- and four-year-old children with autism who started to speak in sentences after a few weeks or months on a gluten-free, casein-free diet. One child, I'll call him Joel, was nonverbal, anxious, and severely autistic. He had never made eye contact. When he came to see me two months after finally going completely gluten free, he said, "Hi Dr. Paul, my Thomas choo choo," looking me in the eye and holding up his train. My eyes filled with tears of joy. I had just witnessed a near complete recovery from severe autism through the simple (though decidedly not easy) removal of gluten and dairy from the diet.

When your child has a disease that baffles modern medicine, you have to do a tremendous amount of research on your own. You are now joining the ranks of enlightened parents who know more about nutrition, brain inflammation, biome depletion, and vaccines than most doctors.

Vaccines and School-Age Kids

The current schedule recommends the following boosters for children four to six years old:

DTaP (diphtheria, tetanus, acellular pertussis)

IPV (polio)

MMR (measles, mumps, rubella)

varicella (chicken pox)

flu shot each year

It's easier to individualize the vaccine schedule when your child is an infant. Once your child goes to school—especially a public school—you will probably be required to fill out myriad forms, answer myriad questions, and get myriad approvals (depending on the state) if you choose to opt out.

Don't let jumping through these hoops intimidate you or make you question your decisions.

You, not the state legislators, know best what vaccines are right for your family.

You, not your doctors, have to live with the consequences of the health decisions you make.

Since vaccines are effective, it is your unvaccinated child—not someone else's vaccinated child—whose health might be compromised if an infectious disease starts going around the school. Many may tell you that because of “alternative parents,” who are not getting every vaccine, a child with a compromised immune system cannot attend school. This is untrue. As a parent in my practice recently shared, his daughter with leukemia was kept at home until her white blood cell count was high enough for her immune system to adequately fight the many infections she could catch at school. The oncologist had pointed

out that there are many infections for which there are no vaccines, so this little girl needed to stay away from all indoor crowds. Period.

Children sometimes come down with diseases for which they have been fully vaccinated. I saw this firsthand in my practice in 2012, when fifteen of my fully vaccinated patients had lab-confirmed cases of whooping cough. In the 2015 outbreaks of whooping cough in Kansas and North Carolina, as well as in a 2015 mumps outbreak in Missouri, nearly all the infected individuals were fully vaccinated. These outbreaks reflect waning immunity in fully vaccinated children, who are often as likely to transmit the disease as unvaccinated children. But public health officials and the media use these outbreaks to vilify parents who choose to forgo vaccines and to push more vaccines on the public. (It didn't work? Get another one!) What these incidents really teach us, however, is that vaccinated children sometimes succumb to infectious diseases. It would be in the real interests of public health to help parents learn how to most effectively support their children's immune health, in addition to giving vaccines.

If you follow my vaccine-friendly plan, by the time your child is ready for school, he will be protected against the two major causes of bacterial meningitis (Hib and pneumococcal) and will not need any more of those vaccines. He will also be up to date on the DTaP (diphtheria, tetanus, acellular pertussis), which is currently a five-dose series. He will have received a booster between fifteen and eighteen months and will need another between four and six years old.

What About Polio?

I discussed the specifics of the polio vaccine and the incidence of the disease in [Chapter 5](#), but here's the recap. Polio has been eradicated from the United States, Central America, and South America. The last confirmed case of wild-virus polio acquired in the United States was in 1979, and the last imported case was in 1993, more than twenty years ago. Unless you live in a part of the world where polio still exists, or your family is planning international travel, your school-age child doesn't need this vaccine. The polio vaccine can be given at any time before you might travel to a high-risk country. I recommend you get at

least two doses, two months apart, before you travel. A third dose can be given six months after the second dose if you have time. A fourth dose is not needed if the third dose is given at or after age four.

What About Measles?

We talked about measles in [Chapter 7](#). Unless you homeschool, the MMR vaccine is one you will be revisiting when your child goes to school. This vaccine, which contains three live viruses (measles, mumps, and rubella), seems to be the most controversial of all the vaccines on the CDC's current schedule. In the summer of 2015 California joined West Virginia and Mississippi by passing a bill into law that takes away religious and philosophical vaccine exemptions and bars partially vaccinated or unvaccinated children from attending public or private school, as well as day care, unless they have a medical exemption. California lawmakers justified denying parents medical freedom, in part, because of a measles outbreak at Disneyland.

Should we be afraid of measles?

It certainly is a contagious disease. It can also be devastating for children who are undernourished or have compromised immune systems, like my friend Taurai.

But the current hate-mongering around parents concerned about the measles vaccine is unfortunate, a reflection more of prejudice, misinformation, and irrational fear than of reality. The truth is that the majority of healthy children exposed to measles recover from this disease without incident.

Reading picture books and watching television shows from the late 1960s and early 1970s is instructive for realizing just how much our cultural perception of measles has changed. The popular children's book *Babar and the Doctor* shows three little elephants and their monkey friend all getting measles, in bed looking miserable, covered with red spots. The book then reports that "measles isn't a dangerous disease. After a few days the children can be out of bed again, playing with the gifts that Babar has brought them." The measles go away almost as quickly as they came, and they're all back in the garden eating grapes. When Peter Brady comes home with measles on *The*

Brady Bunch, a popular television series about a blended family with six children, Mrs. Brady reports to Mr. Brady that their son has all the usual symptoms: a rash, a mild fever, and a big smile. The smile is because he gets to miss school, as do his five siblings who get the illness too.

Like me, my colleague Lyn Redwood, R.N., had such a mild case of measles, she doesn't even remember being sick. Her husband, a prominent emergency room doctor in Atlanta, Tommy Redwood, M.D., does. He had it at the same time as his older brother and appreciated the brother bonding time.

The chance that your child will be exposed to measles in the United States is very low. In 2014, the worst year in a over a decade for measles, we had fewer than seven hundred cases with no deaths; half of the cases were in an unvaccinated Amish community that expects to get natural immunity from the diseases they contract. In December 2014 there was only one case of measles in the entire state of Oregon—an adult in Lane County. So Oregon children had no quantifiable risk (that's a fancy way of saying zero) of getting measles, and Oregon adults had a one-in-four-million chance of catching the disease.

All this said, nobody these days wants to get sick from measles, the vaccine is highly effective, and given how contagious measles is, I recommend your child get this vaccine. I recommend that your child's first dose of the MMR vaccine be given at age three and then that you ask your doctor to test for titers at age four or later to make sure the vaccine worked, which is what we do in my practice. As I mentioned in [Chapter 7](#), a titer is a test of the actual amount of antibodies against a disease in your blood. If you have adequate titers, you are considered protected. Though the CDC recommends two doses of measles vaccine for children (at twelve to fifteen months and then a booster at four to six years), I've found that just one dose of the MMR vaccine is highly effective and almost always enough. We recently tallied the numbers. Ninety-eight percent of my patients who had had only one shot showed immunity to measles when their blood was tested.

If you previously decided to postpone the MMR vaccine until your child was old enough to go to school, now is a good time to get it.

What About Chicken Pox?

A second dose or booster of the chicken pox vaccine is recommended for children aged four to six years. This second dose was added to the schedule in 2005 because so many vaccinated children were getting chicken pox, albeit mild cases (of what is already for the majority of children a mild disease). One dose of chicken pox vaccine is considered to be 86 percent effective. Two doses are thought to be 98 percent effective.

The vaccine program against varicella, while very effective at reducing cases of childhood chicken pox, has had the unexpected consequence of eliminating what's known as the booster effect. Chicken pox virus is the same virus that causes shingles. So when adults who have already had chicken pox as children are exposed to the virus again, this exposure protects them from shingles. That's why children who catch varicella boost the immunity of the adults around them, helping protect them from shingles. Deaths in America from chicken pox among children have been replaced by the increasing rate of deaths among the elderly (there are about ninety-six shingles-related deaths each year), to say nothing of the excruciating pain that recurring shingles infections can cause. Perhaps this is a worthwhile trade-off. I don't pretend to have the answer.

If you are worried about chicken pox, now is as good a time as any to get the vaccine. Many of my families choose to wait until their children are teens, since chicken pox seems to be a more severe illness the older we get.

I do not recommend using the all-in-one MMRV (measles, mumps, rubella, chicken pox) vaccine as it carries an increased risk of seizures and other side effects.

What About the Flu Shot?

An influenza vaccine, which changes every year, is now recommended annually from the age of six months until death.

Children under nine years old who are getting the shot for the first time are supposed to get two doses, one month apart.

I recommend the single-dose flu shot for children with severe asthma, renal disorders, heart conditions, and lung disorders. These conditions put your child at higher risk of death if he gets the flu. All single-dose flu shots are mercury free, though they do contain formaldehyde.

What about the rest of us? The majority of healthy children do just fine with the flu and recover easily. They do not need this shot.

Because the flu vaccine changes every year, it cannot be adequately tested for safety or efficacy. Some years when the vaccine components are a “good match” with the circulating flu viruses, the vaccine is highly effective. Other years it is not.

The multidose flu shot is the last remaining vaccine that has a large dose (24.5 micrograms) of mercury (thimerosal), which is added as a preservative. Don't give a mercury-containing flu shot to your child.

A Healthy Immune System Is the Key to Avoiding Infections

Over the past thirty years I've worked with some pediatric nurses who were firmly against the flu vaccine and did not get it. Each year I would tell them "You're making a bad decision, you're going to regret it," as pediatric nurses are guaranteed to be exposed to all the worst flu strains that come through town. To my surprise, these nurses were as healthy as or healthier than my staff that did get the flu shot, myself included.

I know that is anecdotal and perhaps just a coincidence, but it is an interesting observation and a coincidence that many of my colleagues have seen in their practices as well.

How can unvaccinated nurses who are surrounded by the flu all winter long not get sick? The answer, of course, is that they have robust and healthy immune systems that successfully fight off the infectious diseases they are exposed to.

A healthy immune system is the key to avoiding infections.

This is, after all, the way we avoid the hundreds of other infections for which there are no vaccines.



Dr. Paul's Plan FOR FOUR-TO-SIX-YEAR-OLDS

- 1. Stay off screens.** Children need interactive play to thrive at this age. Limiting screen time (or better yet, having no TVs in the home) is important for their best brain and body development.
- 2. Read, read, read.** The more you read to your child, the more you ensure that she will spend a lifetime loving books.
- 3. Exercise together (and apart).** Your children need to be moving their bodies as much as they can every day, and so do you. Exercise improves mood, energy levels, immune system function, and restful sleep. Make time in your busy day as a parent to exercise as well.
- 4. Get the booster for DTaP.** While your school-age child won't die if she gets pertussis, this booster will help the younger siblings and more vulnerable people in the community from getting whooping cough. It will also give your child protection from tetanus.
- 5. Get MMR titers tested.** If your child's titers to measles are low, get the

second MMR shot. We no longer have separate measles, mumps, and rubella vaccines, or I would recommend you get only the one you need. If you don't have a doctor willing to test titers, change doctors. Since measles is highly contagious, it's important your child is protected against it before starting school.

6. Skip the flu shot. The efficacy of the influenza vaccine varies from year to year and may do more harm than good for otherwise healthy children. If your child was born premature, has lung or heart issues, or suffers from asthma, I recommend the shot.

7. Continue eating well and drinking filtered water. What you give your child to eat has an effect on every aspect of her health. The fuel she needs to get through the day should not contain sugar, harmful additives, or food dyes.

8. Supplement with purified fish oil and vitamin D. High in omega-3 fatty acids, fish oil supports the immune system as well as the brain. A school-age child can take 1,000 mgs a day of fish oil and 1,000 to 2,000 IUs of vitamin D.

9. Avoid acetaminophen. Acetaminophen magnifies the negative impact of all other toxins that enter the body. Read the label of every medication. If it contains acetaminophen, put it back on the shelf.

10. Nix the gum and diet drinks. Never give your child anything that contains the artificial sweetener aspartame. Aspartame becomes methanol that becomes formaldehyde, triggering direct toxicity as well as activating the immune system itself, setting the stage for lifelong autoimmune disorders.

The Five Questions Parents Ask Me Most **ABOUT** **FOUR-TO-SIX-YEAR-OLDS**

ABOUT BEHAVIOR

1. How do I help my five-year-old stop pitching fits?

A: Children (like adults) can be overwhelmed by their negative emotions: anger, disappointment, jealousy, sadness. If your child throws himself on the ground and pounds his arms and legs, he's feeling a lot of emotions. Our job is to help him understand that the emotions are normal and okay

but that making a great big noisy fuss, especially in public, is not an appropriate way to communicate them.

If you're at home and feeling calm yourself, you can try to distract your unhappy child before his disappointment turns into a full-blown tantrum. Singing "You can't always get what you want" works well in Jennifer's house; getting down on the floor and pounding my hands and fists alongside an upset child has worked in mine. Evasive maneuvers can also be effective ("Look what I see out the window—a little gray squirrel!"). A little humor goes a long way.

If your child is following you around the house screaming, walk calmly into the child's bedroom and say quietly, "As soon as you are quiet, you can be with Mommy and Daddy. But you need to calm down first." Be sure to respond immediately when he is quiet with a hug and a kind word: "I'm so glad you want to be with Mommy. I know you're having a hard time." If the response is more screaming, put him back in his room with the same instructions. If you calmly and lovingly set appropriate boundaries, tantrums at this age can be almost entirely avoided.

In public, bring your child to a safe place until he calms down.

If you are feeling furious, tell your child that you need a time-out because you are too angry to act like a grown-up. Then go into a different room until *you* calm down. Screaming as loud as you can into a pillow helps, or hitting a heavy bag set up in the basement. By the time you're breathing normally and thinking clearly again, your child will be too.

Never give in to a child's request because he is pitching a fit. That teaches him it is appropriate for him to scream, shout, and flail in order to get what he wants.

If you have a severely anxious or autistic child, he may need to be held, reassured, and calmed as you both wait out the storm.

ABOUT BED-WETTING

2. Brittany is *still* bed-wetting. What can I do?

A: Bed-wetting is very frustrating for parents, but it's also completely normal at this age. About 10 percent of seven-year-olds bed-wet, and 5 percent of ten-year-olds may still be wetting the bed.

Children who are deep sleepers and have small bladders will not wake up to their body's signals that they need to pee. They'll wet the bed and sleep right through it, often denying it happened in the morning. ("It's water, Mommy, I swear.") Bed-wetting is normal and most common in families where at least one parent was a bed-wetter. A change in the family—death, divorce, or the birth of a new sibling—can also cause bed-wetting, as can bullying, difficulties at school, and sexual abuse. If you

suspect your child is wetting the bed for an underlying psychological reason—if your child has become suddenly anxious, or if you think your child has been the victim of abuse—consult a psychologist as soon as possible. Bed-wetting that starts after your child's been dry at night for at least six months should be evaluated by a doctor. It could be caused by a bladder infection, constipation (a rectum stuffed with poop makes bladder control impossible), or another rarer physical problem or neurological issue.

The worst thing you can do is spank, shame, or scold your bed-wetter. He is not doing it on purpose, is as embarrassed and as uncomfortable about it as you are, and is as desperate as you are to find a way to stop it, believe me. Even if you don't show disapproval, your child knows you are upset. No one wants to wake up in a urine-soaked bed.

Try eliminating dairy products. Don't let your child drink anything but small sips of liquids after dinner. Make sure he pees right before bed. It can also help to rouse him in the night, right before you go to bed, and take him to the bathroom.

After about age ten, your doctor may recommend a prescription medication called vasopressin (DDAVP), a hormone that shuts down urine production overnight. It's expensive and often not covered by insurance. I rarely recommend it, but I do think it has its place. Vasopressin can allow a child to go on overnight school trips and sleepovers that would otherwise be too embarrassing.

ABOUT SLEEP

3. I think my child's having night terrors. What should I do?

A: Night terrors cause the child to scream and be frantic and agitated but not to wake up, and in the morning she will usually have no memory of them. Night terrors are thought to be a hereditary condition that has no known cause or cure but that is usually outgrown by age twelve. Be sure to keep your child safe while she is having a night terror, and try to breathe until it is over. One of my school-age patients had night terrors every night for months. His parents tried tracking when he had the terrors and then waking him fifteen minutes beforehand to see if they could stop a terror before it happened, which is effective for some children. That didn't work for them at all. What did work was cleaning up their son's diet completely (cutting out all artificial dyes or colors and processed foods) and giving him a calcium-magnesium supplement.

4. What should I do about my daughter's nightmares?

A: I had recurring nightmares as a child. My parents would march me

back to bed if I woke them in the night. I recall lying there, terrified, trying not to fall asleep so I wouldn't have the same nightmare. I could tell you those dreams in detail to this day, and I was only six years old.

If your child wakes you in the middle of the night terrified from a nightmare, don't scold her and send her back to bed. Let her tell you about it (if she wants to), reassure her that as real as it seemed, it was actually a scary dream, and lie down with her until she falls back asleep. A cup of warm coconut milk and honey or calming tea can also help.

Before bedtime the next evening, let her help you make a Nightmares Be Gone! spray by adding a few drops of lavender oil to a spray bottle of water. This powerful stuff misted around the room will keep the monsters and bad dreams at bay. Tell her Dr. Paul said so. It works every time.

ABOUT GENDER EXPECTATIONS

5. Is it okay to let my son wear pink dresses?

A: "I had to say no," a mom of twins said, wringing her hands in despair. "I just couldn't let Sammy wear a sundress. He's only five now. But what if he wants to wear one when he's older?" It's very common for little boys to be interested in dressing in what we consider "girls' " clothes and for girls to want to do "boy" things, like play ninjas or have very short hair. Most children play various gender roles as part of growing up. They are trying on different social expectations and figuring things out for themselves. It's fun to dress up in different kinds of clothes. Though this makes some parents very anxious, there is no reason to pass any judgment on these types of gender-bending activities. Let your son wear what he wants. There are children whose gender identity really does not match the body they were born into. Efforts to change or convince your child that he is wrong or that his desire to wear a pink dress is bad will only make him feel unloved and even desperate. Why shouldn't a boy wear pink? Why shouldn't a girl have short hair? Most children end up typical for their gender. In the case that your child truly feels different than the gender she was born with, you want to be the one who is always there for her, without judgment, only love.

Chapter 10

“It’s Your Fault I Failed My Driver’s License Test, Mo-om!”: Keeping Preteens and Teens Healthy Without Sacrificing Your Sanity

Movies, television, and a lot of contemporary fiction depict teenagers as irresponsible, sex-crazed, lazy, and selfish. But if you look past those stereotypes and focus on the positive aspects of this intense time of growth and change in your child’s life, you may find yourself enjoying the teen years more than you expected. Your teens are not so much lazy as tired—they’re growing! They aren’t lacking judgment (well, maybe they are)—they’re exhibiting courage, curiosity, and a willingness to try new things! Think of the teen years as a positive, exciting, creative, and innovative time in your child’s life, and they will be.

Most parents don’t realize that puberty is a process that takes several years. Because of endocrine-disrupting chemicals in our food, our water, and the environment, as well as lifestyle disruptions—like stress and lack of exercise—boys and girls in America are entering puberty at younger and younger ages. Girls today generally begin puberty between eight and thirteen (with an average of nine and a half) and boys around ten, which is two years earlier than just a few decades ago. If your once-placid child is having a lot of mood swings, the changes happening in his body may partly explain why. Every child is affected differently by hormonal changes.

One young man confided in me that when he got his first erection at age eleven, he was terrified, sure he had some kind of fast-growing penile cancer. Another mom told me that when her daughter got her first period at age ten, she mistook the dried brown blood in her underwear for excrement and believed she had pooped her pants.

We usually see your child once a year for a checkup, though you may need to bring her in for a separate sports physical, and older teens may need to come more often after they become sexually active. A good pediatrician is your child's ally as he or she learns to be comfortable in a new and perplexing body, and your ally too, helping you navigate the sometimes rocky waters of your changing relationship with the young person in your home who shares your DNA and is suddenly two inches taller than you.

Every preteen and teen knows the drill of the physical exam, though some feel more nervous about it than they have in the past. Before it's my turn, a nurse or nursing assistant checks their height, weight, blood pressure, and temperature and asks if they are experiencing any health concerns. When I come in, I check their eyes, ears, nose, and throat; feel for lymph nodes; listen to the heart and lungs; and palpate the abdomen for masses or an enlarged liver or spleen. I also check the spine for scoliosis, examine the joints, and make sure the reflexes are working properly. I ask about recent injuries and any current aches or pains. I explain what I'm doing as I poke and prod. While your child answers my questions, I am also assessing his mood and ability to interact and make eye contact with me.

"How do you feel about your 'pearance?" I ask a stocky boy named John. Tweens and teens worry a lot about their looks and what their peers think of them, and this is one of my standard questions.

"I like my parents just fine," John answers, giving his mom a sideways glance and smile.

"Your appearance, not your parents!" I explain.

I get a guffaw for that every time.

Joking aside, the most common health problems I see in tweens and teens are weight issues, depression, anxiety, attention disorders, strep

throat, mononucleosis, allergies, eczema, upper respiratory infections, gastrointestinal problems (abdominal pain, constipation, or diarrhea), and school-related problems like relationship angst and learning challenges.

Weighty Matters

You may have heard your perfectly healthy, even skinny, nine- or ten-year-old lament that she's "too fat." Children, especially girls, at younger and younger ages can feel self-conscious about their weight. I think doctors have a responsibility to address our culture's pressure to be thin. During preteen and teen well child checks, I point out that the models in most magazines and on the Internet are often thin to the point of being ill, and that our most beloved starlets are often suffering from eating disorders such as anorexia or bulimia.

As much as an obsession to be thin is unhealthy, we have a growing problem with overweight children in America. Our most recent statistics don't look good: 18 percent of American children aged six to eleven, and 21 percent of adolescents aged twelve to nineteen, are actually obese. More than a third of all children are considered overweight. Though there is normal variation among children and many stocky kids will grow into lean adults, if I see that a preteen or teen has reached an unhealthy weight, we talk about it.

A child like John who is overweight is well aware of it by now.

"Are you interested in working on your weight?" I ask him.

Like most of my patients, John says he is. Both he and his parents express relief that I've addressed it openly.

"I've been struggling with my weight since college," I share. I was slim in high school, weighing about 160 pounds, captain of the field hockey team and a cross-country runner. But in college and medical school, I completely discounted the importance of exercise, spending almost all my time studying. At one point as a young adult I weighed over 225 pounds. I have a body that wants to put on fat, and managing my weight has been an ongoing struggle.

"Would you be interested in hearing what works for me?" I ask John.

He nods enthusiastically.

“The key for me is cutting out processed foods. I need to stay away from cookies, candy, ice cream, and sweets. It also helps if I avoid crackers, bread, and white pasta. If I stick to meat, fish, vegetables, and fruit, I lose weight. Exercise helps for sure, but if I don’t get my diet right, I gain weight.”

The reason most children get overweight is unhealthy eating combined with lack of exercise. Several studies also show that the types of bacteria present in our intestines can cause weight gain or weight loss. In laboratory experiments scientists have actually been able to induce obesity in some mice and prompt others to lose weight by altering the composition of bacteria in their guts without changing diet or exercise.

Sometimes a sudden weight gain or weight loss can be the result of academic or social stress. I recommend families that need more support around a child’s weight issues see a competent and compassionate psychologist or dietary expert who has a proven track record helping young adults cope with eating issues.

Stress Matters

A little bit of stress is not a bad thing. The adrenaline surge your child feels right before a flag football game gives her more energy to play well; the stress right before a test actually improves his thinking and his performance. But when stress gets out of control, or when a teen is living in a constant state of high anxiety, it has a negative impact on his or her capacity to fight off infectious diseases and stay healthy. Elevated levels of stress hormones can also lead to chronic inflammation, which can cause, or be a major factor in causing, certain autoimmune disorders, including multiple sclerosis, ulcerative colitis, Crohn's disease, and rheumatoid arthritis.

Yet Karen O'Dougherty, an educator based in Ashland, Oregon, who has been teaching body awareness classes and leading support groups for teens for seventeen years, tells me that most parents don't realize how much stress their children are under. "The amount of anxiety kids are feeling has really increased," O'Dougherty says. "Out of every group of eight girls, I have at least two or three who are suffering from severe anxiety or depression. It wasn't that way ten years ago."

If you suspect your child is anxious or depressed, it is important to be proactive and get help for him and for the entire family. Stress relief can come in many forms. What works for one teen may not work for another. Keep trying until you find the right approach. Nonpharmaceutical intervention must be your first line of defense to help your teen manage stress: weekly massage, yoga, meditation, daily exercise, and talk therapy (with a guidance counselor, pastor, or competent therapist, or in a teen support group) are all proven interventions that will help your teen feel less stress and give her lifelong stress management skills. We are too quick these days to prescribe children antidepressants and opiates, which are highly addictive, to combat anxiety and depression. Though your child may ultimately need medication to get back on track, it should be a last

resort.

“Turn Your Head and Cough”

Starting around age eleven, boys get a mortifyingly embarrassing (to them) hernia check, where the doctor uses a gloved finger to push up past the testicle, at the same time asking the young man to turn his head and cough. The cough sends a wave of pressure through the abdomen, allowing the doctor to feel if a boy has a hernia in the lower abdominal wall. We have them turn their heads so they don't cough on us.

A hernia is where a loop of bowel passes through an abdominal hole (the hole would be left over from the time when the testicle was formed in the abdomen) and moves into the scrotum, an event that almost always happens before birth but sometimes does not cause problems until a boy becomes a young adult.

We used to recommend surgery for every hernia, no matter how small, believing that it would avoid potentially life-threatening problems, like an intestinal blockage. That recommendation has thankfully changed. If your son has a small potential inguinal hernia, a wait-and-see approach is best.

So What Do Docs Talk to Teens About While Parents Are Out of the Room?

Starting at age eleven or twelve, when a child comes in for a yearly checkup, I make sure to have a little one-on-one conversation—doctor to patient—before the end of the visit. Some parents don't want to leave the room, and that's fine, of course, but I recommend you find a doctor you trust and let your doctor talk with your child alone. Your maturing sons and daughters are likely to have questions about sexuality, masturbation, or their changing bodies that they just won't discuss in front of their parents.

I don't ever want what happened to Michael Rushby to happen to one of my patients. A sixteen-year-old boy from the United Kingdom, Mikey was too embarrassed to tell his parents that he had found a growth on his testicles. Eight months went by before he mentioned it to his twenty-two-year-old brother. By then the disease had spread to his chest and abdomen. Mikey died twelve days later of a cancer that could have been treated if it had been caught earlier.

"We can discuss anything you want, and I can answer any of your questions. I won't repeat anything you tell me to your parents without your permission," I explain in front of the parent and the teen. "Except if you are feeling suicidal or homicidal, in which case I need to do everything I can to keep you safe, and that includes telling your mom and dad."

When parents are out of the room, we discuss school, drinking, drugs, dating, safe sex, and anything that's on a teenager's mind.

I start these talks by asking about school. If a child responds that she hates school, I try to find out why.

Kids struggle in school for several reasons. The most common include ADD, ADHD, and learning disabilities that are not being adequately addressed. For so many of our ADD and ADHD children,

school is the most challenging part of their lives. Children struggling with attention deficit disorders come home exhausted.

“A lot of really smart, intelligent children are struggling in school these days,” I remind worried teens and their parents. “In fact, some of the smartest among us are struggling the most with focus, which makes school hard.”

The best way parents can help preteens and teens who are struggling in school is to stay as involved as possible, communicate often with teachers and administrators, and become their child’s advocate. Drastic measures are sometimes necessary at this age: a change of schools, a switch to homeschooling, even a year off doing an apprenticeship if school is a main source of unhappiness. If a class or a teacher is making a child miserable, I don’t believe in forcing him to tough it out. It will be more beneficial for the whole family to instead help him find a subject that he likes.

Preteens and teens struggling with attention issues do best with simple one-step instructions. Teach them a “do it now” approach. If not, the chore will be completely out of mind five seconds later, as soon as he turns his attention to something else. Many of us do not outgrow this out-of-sight-out-of-mind tendency. To this day, I will get up in the middle of a discussion with parents to get something I have just mentioned, so I don’t forget.

We also talk about family dynamics once parents are no longer in the room. Children share their challenges with me: the younger sibling who doesn’t give a teen enough space, the authoritative parenting that feels infantilizing, an older sibling’s drug problem. If there is something dangerous going on in the home—like child abuse or domestic violence—pediatricians are mandatory reporters, which means we are required by law to report it.

And then we move on to hygiene, which becomes more of an issue after a child goes through puberty. “When do you take baths or showers?” I’ll ask. “How often do you brush your teeth?” Don’t assume your teens are bathing regularly or even brushing their teeth without being reminded. Many are not. Some parents want to give their children space, but you often have to instruct them to practice good

oral hygiene. They need to brush after every meal, or at least twice a day, and floss or use a water flosser once a day as well. If your teen gets out of the habit of good oral hygiene, a mouth full of cavities is in her future. Make sure your children are getting their teeth professionally cleaned and having regular dental checkups, every six months if possible, but at least once a year.

As children reach the teenage years, drugs and alcohol become more of an issue. “How many of your friends are drinking or using drugs? How about marijuana?” I usually ask kids starting around fourteen or fifteen or whenever it seems appropriate to the particular child.

I’m relieved when the answer is none. But drugs and alcohol in our schools are ubiquitous, and teenagers use them not just because they are succumbing to peer pressure but also to self-medicate against anxiety and depression. Even if your teen has not tried drugs or alcohol, chances are he has friends or acquaintances who are using regularly. It’s not my job to moralize to children or to parents, but it is my job to honestly share the most current health information with them. About 570,000 people die annually due to drug use: 440,000 from diseases related to tobacco, 85,000 from alcohol use, 20,000 from illegal drugs, and 20,000 from prescription drug abuse. A child’s brain is growing until about age twenty-four. Experimenting with drugs, especially hallucinogenic drugs, during that time can lead to irreparable brain damage.

Teens who experiment with alcohol are at risk both for drunk driving and for alcohol poisoning, both of which can be fatal. Since teenagers are so inexperienced, they do not know how much alcohol is safe to drink for their metabolism. In July 2011 a fourteen-year-old in California died at an unsupervised slumber party while drinking soda spiked with vodka with her friends. In July 2015 a sixteen-year-old died after his parents allegedly tried to teach him a drinking lesson by making him do shots of Fireball whiskey and Jack Daniel’s.

“The greatest single choice I see over and over in my patients that will make the difference between doing well in school and going to college or dropping out of school is whether or not you drink or do drugs,” I tell teenagers. “You have to make that choice every single

day.” I make a V holding my two hands together at the wrist and spreading my fingers out. “This is that fork in the road, where you choose which path to follow: that of the crowd heading to a party to drink or do drugs, or that of the student who’s decided to focus on clean sober fun, studying, and having meaningful relationships.”

The average age of sexual intercourse is seventeen in the United States, though teenagers are often involved in kissing, heavy petting, and oral sex much earlier. I talk to teens, when it is appropriate, about what they are using for protection and if they are having safe sex. I counsel them to use condoms as this greatly reduces the chance of getting most sexually transmitted diseases, and I explain to teen boys about birth control options to avoid unwanted pregnancy. (My female nurse practitioner has this conversation with teen girls.) My attitude about sex is that it is out there, children are doing it, and even though I think it is healthier and safer to have intercourse in a committed long-term relationship, it’s not my job to moralize but to help keep kids safe, if and when they choose to engage in sex.

Teens often privately ask me about birth control and sexually transmitted diseases. Though nationwide teen pregnancies are on the decline, I’ve seen two young women (aged fifteen and sixteen) get pregnant in the past two years.

Talking to Teens About the Birds and the Bees

“Son, I think it’s time we had a talk about growing up and becoming a man,” my dad said when I was twelve. I was sitting on my bed, and he pulled up a chair for our “discussion” of the birds and the bees. All I remember was—AWKWARD! I had had health classes at school about sex and reproduction, and I was pretty sure *I* knew more about sex than my dad, since he was a Methodist missionary. (Teenagers know vastly more than their parents until they are in their twenties, when parents miraculously get smart again.)

Though I felt awkward about it (and I’m sure my dad did too), the best thing you can do to help your child through puberty is to create an atmosphere of openness in your family, give your son or daughter as much information as he or she feels ready to hear, and always be available to answer questions.

Instead of having “the talk,” as my father had with me, a series of unscripted conversations with your children works better. When we were walking to the park one day and saw a used condom on the sidewalk, I used that as an opportunity to explain to my children what a condom was, and to talk about the importance of birth control (and proper trash disposal). They rolled their eyes but listened with interest. When my children overheard part of a news story on the radio about AIDS, our dinnertime conversation that night was about sexually transmitted diseases.

Don’t assume that your child’s school (or friends or TV shows) will cover what you want her to know about puberty and sexuality. You really do need to talk about it. Some parents worry that talking about sex will invite a young teen to start having it. In fact, the opposite is true. Research shows that the more parents talk openly to their children about sex, the less likely children are to engage in precocious sexual activity. An empowered, knowledgeable teen is a teen who makes safer, smarter choices.

Your Teen Needs to Express Herself

In the late 1990s my daughter Natalie came home from school one day with clown-red hair. Her natural, beautiful black hair was gone!

“It looks awful!” I cried without thinking. “What have you done?”

Natalie stomped off, mad as could be.

I have since learned that self-expression is part of the teenage experience, that dyes fade and hair grows back, and that it would have been better for my relationship with Natalie and her self-esteem to keep my negative reaction to myself (or share it out of earshot with my wife and my own therapist). As hard as it is, as parents we have to tolerate our teenagers’ need for self-expression and understand they are searching for a unique identity.

So if your teenager experiments with hair color or length, clothing styles, makeup, and jewelry, it’s probably better to keep your opinions to yourself. You don’t want your twelve-year-old to look like a twenty-two-year-old with full eyeliner and bright red lipstick, I know. But criticizing her or forcing her to wash her face will backfire; it’s likely to make her feel bad about herself and sneak on makeup after she leaves the house. If she asks what you think, you can answer honestly, but don’t volunteer negative criticism. At some point you do want to talk as a family about how, for better or worse, people are judged by their appearance and how we send certain social signals depending on how we dress.

If your child wants to do something more permanent—like get a tattoo or a body piercing—it is appropriate for you to set a boundary. Regardless of whether it is legal for him to do so, you have the right as a parent to keep him from making a permanent change to his appearance, until he turns eighteen or is no longer living under your roof. Every state is different: Thirty-eight states prohibit body piercing and tattooing on minors without parental consent; Nevada has no laws

addressing body art.

Though permanent tattoos are becoming more popular, as a doctor I recommend against them. Some dyes contain heavy metals, including lead and mercury. Permanent tattooing carries other health risks: infection of HIV or hepatitis B from dirty needles, a severe allergic reaction to the pigments in the industrial-grade ink, small knots that form under the skin called granulomas, and problems later in life if you need MRI imaging. Doing body art with henna, which is made from a tree bark, is a safer and nonpermanent alternative. Young teens can also have a lot of fun with temporary tattoos and tattoo pens that will wash off in a couple of weeks.

Let teens express themselves.



How to Listen So Your Teen Will Talk

Open communication during adolescence is the key to keeping your child safe and healthy, but subterfuge is sometimes necessary. You may have noticed that asking your teen about his day generally elicits nothing more engaging than a grunt. To get more than a shrug and a “fine,” try asking substantive open-ended questions: “What did Maya and Gabi decide to wear for twin day?” or “What happened with the popcorn experiment in science lab?” or “What did you and your friends think of the presidential debate?” Make sure to listen once your teen starts talking. As tempting as it is, don’t interrupt! And do your best not to judge.

Humor (as long as it is not at your youngster’s expense) is a good way to get teens to pay attention. When one of Jennifer’s children left a sink full of dirty dishes, she knocked on the closed bedroom door, shouted, “Mail delivery service!” and handed her teen a letter. “Our backs are very itchy, and we really need you to wash us,” the letter read. “Please clean us up ASAP before your mom has a conniption and we become permanently caked with dirt. Love, your dishes.” Her usually stubborn and slow-to-do-chores teen came right out to tidy up. The problem with clever techniques like notes from the kitchen dishes is that they usually work only once or twice. But try them anyway.

If your teen comes home noticeably angry, acknowledge the strong emotions. “You seem upset,” you might say, or “Is something bothering you?” Pause long enough for an answer. If your child says, “I don’t know,” invite him to “make something up.” Suggesting your child make up an answer can take the pressure off his feeling like there is one right answer to the question or that he needs to tell you something he thinks you want to hear. You’re more apt to get a genuine response when you invite kids to do this. Then just listen. The goal is to be there for him first and problem-solve later.

One of our sons came home from school dejected and withdrawn,

which was totally out of character. At first he wouldn't say why. He finally confessed he was being bullied on the bus. When we coaxed it out of him, we found out that the bullying had been going on for weeks. We called a family meeting and decided together to send all the brothers to knock on the door of the bully, who lived down the street, and introduce themselves. We found out later that the boy who was bothering our son was living in an abusive home. After the brotherly visit, he didn't bother our son again. Even if the bullying had not been so easily stopped, my son learned that day that his family was there for him during tough times, ready to listen and lend a hand.

Peers are very important to preteens and teens. We tend to do what our peers are doing. You will get big clues into what is going on in your child's life by observing his friends' activities and behavior. Invite friends to stay for supper, or offer to drive them places. The time you spend with your child's friends can be a gold mine of information. Friends are often much more willing to tell you what has been going on in your teen's life than your own teen is!

As much as our children may withdraw from us when they are teenagers, we need to stay as loving and connected to them as we can. They still need us to parent them, to set clear and reasonable limits, and to stay involved in their lives.

Angry Birds

Dealing with adolescent anger is a big challenge for many of the families in my practice. Teenagers, especially boys, get angry. While a toddler tantrum can often be calmed by a hug or a distraction, the anger coming from a teenager who is taller, and perhaps stronger, than you is much more difficult. It is okay for your child to feel really angry, and it is also okay for him to express that anger, as long as he does so without hurting others or himself. Help your teen find healthy outlets for anger: chopping wood, lifting weights, boxing, long-distance running. Social activities like performing in the marching band, drumming or playing the trumpet in a school ensemble, or singing in a group are also ways for teens to release tension and make noise. Consider putting a punching bag in the garage.

If the anger is really out of control, sometimes parents get hurt. If your son or daughter is violent toward you, you need to get help. As sad and hard as this is, it may not be physically safe for you to continue living together. At the same time, I have seen lifestyle improvements help teenagers deal with anger issues and other strong emotions. Enough sleep, healthy eating, and daily vigorous exercise (which is a must for all adolescents) help regulate extreme emotions and promote feelings of well-being.

If your teen seems angry or upset around the clock, it is time to find a competent family therapist. One child's extreme behavior is often an expression of the whole family's issues. If you struggle to keep your own anger in check, it's likely your teen will also. As hard as it may be to admit it, you probably need counseling too.

Too Much Teen Time Is Spent Online

The average American teenager spends nearly every waking moment—besides time in school or at work—in front of a screen, usually online, texting an average of sixty times a day. Egad.

When teens spend too much time interacting on social media, playing video games, watching television, and surfing the Internet, they experience:

- **Weight gain:** Teen boys who spend the most time in front of a screen have the greatest increase in body fat, according to a study of teens published in the *American Journal of Epidemiology*.
- **Disrupted sleep:** More than two hours of screen time after school was linked to insomnia and less sleep, according to a Norwegian study of nearly ten thousand sixteen-to-nineteen-year-olds published in the *British Medical Journal*.
- **Anxiety:** Time on Facebook, Instagram, and SnapChat can lead to social anxiety and feelings of diminished self-worth. The more young adults check Facebook, the worse they feel about their lives, found a study by researchers at the University of Michigan.
- **Depression:** In otherwise healthy teenagers, each additional daily hour of television increased their odds of becoming depressed by 8 percent, according to a study by researchers at the University of Pittsburgh and Harvard Medical School published in the *Archives of General Psychiatry*.
- **Poor performance at school:** Teenagers who spend the most time instant-messaging after lights out reported getting less sleep, being more tired, and performing more poorly academically than teens who put their cell phones away after dark, according to a 2016 study of more than 2,300 high-

schoolers in New Jersey.

Some families have had good luck with setting an Internet bedtime for the whole household, having a docking station for electronics so they charge outside a youngster's room, and trading hours of exercise for hours online (so your child uses social and other media for only as many hours as she exercises, preferably outside). I know how hard it is, but you have to limit screen time for your teens.

Do as I Do, Not as I Say

A parent's behavior always has a profound effect on a child, but even more so during the teen years. In order for us to keep our teens safe and healthy, we grown-ups have to engage in safe and healthy behaviors ourselves: eating real food, exercising regularly, limiting our own screen time, engaging in responsible sex (which means no parade of new boyfriends or girlfriends through the house if we are no longer with our child's other parent), driving safely, and wearing a helmet when skiing or biking.

If you don't drink or use drugs or smoke cigarettes, this won't necessarily stop your teenagers from these activities, but it is impossible to discourage teens from doing something—like drugs—that you yourself are doing.

Families that play games and sports together, have a weekly family movie night, or are engaged in activities outside of the home (volunteering, going for hikes, watching sporting events) tend to be more connected to each other and, as a result, be healthier. Teenagers in these families tend to have positive values beyond what they see on TV and what their peers embrace.

My plan for parents who want their teens to blossom into healthy, thoughtful, and self-confident adults:

1. Pay attention to your own health, stress levels, and confidence.
2. Spend quality time with your teens.

Zits Depend on Your Diet and Stress Levels

“I feel so bad for Paula,” Jennifer’s teen said the other day. “Her skin used to be clear, and now she has acne everywhere.”

Skin problems make already self-conscious teenagers feel even more awkward about their looks. Pimples are not just a problem that affects young people: One in seven adults in America has acne.

We are beginning to understand that acne is yet another disease of Western culture. Indigenous adolescents who eat no processed foods, are active during the day, spend a good deal of time outside, and presumably have more diverse beneficial bacteria in their intestines are not prone to having any acne, let alone severe acne like Jennifer’s daughter’s friend. Researchers have recently uncovered that certain strains of bacteria are present in young people with clear skin but not in those plagued with acne. Though we don’t yet know exactly which microorganisms we need in and on our bodies in order to have the healthiest skin, the first and most effective defense against teenage acne is a lifestyle change from a diet of junk food, additives, and processed foodlike substances to a diet of real food, including fresh vegetables, high-quality protein, and fermented and cultured foods rich in beneficial bacteria. Reducing stress, engaging in daily vigorous exercise, and removing all sugar and sweeteners from your teen’s diet will also improve her skin.

I have seen good results, over time, with teens suffering from bad skin who stop eating sugary, greasy, and processed foods. My experience dovetails with current research: A randomized controlled study of forty-three young men aged fifteen to twenty-five with acne in Australia found that after twelve weeks those eating foods lower on the glycemic index (which basically means fewer sweets) had fewer pimples than those eating carbohydrate-dense, typically sugary foods. It would make sense that a sugar-free and wheat-free diet discourages the proliferation of unhealthy acne-causing bacteria and encourages

the growth of beneficial bacteria on the skin. It's not an easy take-a-pill solution (and it's a hard sell for teens addicted to junk food), but it works.

You may notice that your teen's skin gets worse around exam time or during other periods of stress. Researchers from Stanford University have confirmed that stress exacerbates acne. Too much stress weakens the immune system and causes inflammation, allowing for infections of all kinds. Another way to improve acne without resorting to medications is to help your teen reduce the stress in her life.

Drivers Beware: My Child Is Now Behind the Wheel

While laws vary from state to state, teenagers are legally allowed to learn to drive between fourteen and sixteen and can get at least a provisional driver's license by sixteen. Some young adults are very motivated by the independence and responsibility that come with being able to drive.

It is not uncommon for teenagers to fail either the written or the practical portion of the driver's exam the first time they take it, which is a learning experience in itself. Once he passes the written portion and gets his learner's permit, have your teen drive with you as often as possible so he can get as much experience as he can before taking the practical test.

Getting a driver's license is a wonderful and exciting rite of passage. It can also be a major source of stress.

When one mom I know took her sixteen-year-old to the driving test, she realized after they arrived at the Department of Motor Vehicles that they had brought an outdated insurance card. They rescheduled the test, which her daughter then failed. Though a competent and careful driver, my friend's daughter was so nervous driving with the examiner that she mistook a one-way street for a two-way street and drove the wrong way down it!

"It's your fault I failed, Mo-om," her daughter lashed out on the tearful drive home.

This story has a happy ending: My friend's husband rearranged his work schedule to drive their daughter to take the test a second time. The bad-luck-bringing mother was not allowed to come. Perhaps my friend's daughter was right that it was her mother's fault: The second time she passed with no mistakes!

Driving is one of the most dangerous and life-threatening activities your teen will ever do, especially at ages sixteen and seventeen, when a

disproportionate number of accidents happen. Sadly, teenage drivers cause more automobile accidents than any other age group. It's imperative that you teach your teenager to drive safely and responsibly, to never text or talk on the phone while driving, and to never drive drunk. Easier said than done, I know. But let your teenager know that you will always pick her up from a party or friend's house if she has been drinking or doing drugs, no questions asked and no recriminations, and that she should call you or another trusted adult rather than drive drunk. Ask your child's doctor, pastor, close relatives, and other friends to talk to him about car safety and safe driving. Find one or two other adults who are willing to make themselves available if your teen has been drinking, in case he is too ashamed to come to you. Advice to be cautious coming from a trusted adult who is not the parent is often easier for a new driver to hear.

And Now Let's Do the Vaccines

The CDC recommends the following vaccines for preteens and teens:

Ages eleven to thirteen

Human papilloma virus vaccine (HPV): 3 doses

Meningococcal conjugate vaccine (MCV4): 1 dose

Tdap (booster)

Influenza (yearly)

Ages thirteen to eighteen

MCV4 booster (at age sixteen)

Influenza (yearly)

Meningococcal B (for students attending colleges with outbreaks)

In the early 1980s it was recommended that U.S. children between the ages of six and eighteen get only one vaccine—a tetanus/diphtheria booster. Today we recommend children get *more than fifteen times* as many shots in the same time frame. Let's take a closer look at these recommendations.

Human Papilloma Virus (HPV)

The doctor brought in a Styrofoam cup filled with liquid nitrogen. She took a sterile swab and dabbed the lesion on the young man's penis, put the swab back into the liquid nitrogen, and dabbed another lesion. After each dab, the lesion and the skin around it turned white and then thawed. The cringing young man did his best not to squirm as the doctor dabbed each lesion three times.

This young man had genital warts, lumps of growth on his penis and scrotum, caused by the human papilloma virus. My colleague was

doing a procedure called cryotherapy, a freeze-thaw cycle with liquid nitrogen that makes the virus explode. Warts are what we call “field pathogens.” Though they do disappear by themselves, if you leave them, they often spread and cause more infection.

There are more than 150 different kinds of human papilloma virus: Strains of HPV also cause the warts children get on their fingers, the bottoms of their feet, and between their toes. About thirty different strains of HPV can be sexually transmitted, causing lesions on the scrotum, penis, anus, rectum, vagina, and vulva, as well as sores in the mouth and throat, usually contracted through oral sex.

Cryotherapy is both painful and uncomfortable, as is having genital warts. It is not an experience I would wish on any young person.

HPV is estimated to infect fourteen million people a year. According to the CDC, almost every sexually active adult will get at least one HPV infection.

In the majority of cases (some 90 percent), HPV is not a serious infection. A healthy immune system clears the HPV virus, and the infected cells return to normal, so much so that most people infected with HPV don’t know they ever had it. Once your body has successfully fought off an HPV infection, antibodies against those viral strains remain in your system, making it unlikely you will be infected with the same strain twice.

In cases where your immune system does not clear the infection, warts appear a few weeks or months after exposure. These warts can interfere with sexual relations, causing discomfort, itching, and embarrassment. Though they will usually go away without treatment, most doctors recommend cryotherapy to freeze them off.

While the HPV infection itself is not dangerous, some strains of HPV can lead to slow-growing, highly treatable cancers. These cancers usually take years to develop. Pap smears can detect cancer risk long before it develops. Fast-growing, highly aggressive small-cell cervical cancer, called neuroendocrine cancer, and cervical and uterine sarcomas, which can be highly invasive, are not caused by HPV.

Using condoms substantially lowers your risk of contracting HPV.

The HPV Vaccine

There are currently three HPV vaccines licensed for use in the United States:

- **Gardasil** (made by Merck). Approved in 2006 and indicated for use in both girls and boys aged nine to twenty-six. This vaccine helps protect against four strains of HPV: 6, 11, 16, and 18. Strains 6 and 11 can cause warts; strains 16 and 18 can lead to cancer.
- **Cervarix** (made by GlaxoSmithKline). Used since 2009 and approved for girls and women aged nine to twenty-five. This vaccine helps protect against two strains of HPV: 16 and 18.
- **Gardasil-9** (made by Merck). Approved in 2014 and indicated for use in both males and females aged nine to twenty-six. This vaccine helps protect against nine strains of HPV: types 6, 11, 16, 18, 31, 33, 45, 52, and 58.

Propaganda Talks

When a new vaccine is brought to market, a marketing blitz occurs as the vaccine manufacturer identifies experts, usually infectious disease specialists at teaching hospitals and universities, who are willing to become spokespersons for the vaccine. These experts are paid well for the talks they then give on behalf of the company, talks that usually include a fancy lunch or dinner (alcohol included) for the doctors who attend them. The slick slides are often made by the vaccine manufacturer, the presenter's university logo making the presentation even more authoritative.

I first learned about the HPV vaccine in 2006, over a gourmet dinner with my colleagues paid for by a vaccine manufacturer. The event was at a fine restaurant in Portland. I rarely could find time to attend these presentations, but I really wanted to learn more about this new vaccine, and combining learning with a gourmet meal seemed like an efficient and pleasant way to do so. An infectious disease expert from Oregon Health and Science University, our state's premier medical institution of higher learning and its only medical school, gave

the presentation. For an hour a group of medical doctors and other health professionals ate dinner and drank on Merck's nickel as we learned about the epidemiology of the human papilloma virus and how the leading strains responsible for cervical cancer were selected for the vaccine. We learned that the prelicensing trials showed that the vaccine was so effective that the researchers stopped the follow-up trial after less than four years to rush it to market.

I enjoyed both the presentation and the charbroiled filet mignon with roasted red potatoes. I left feeling good about Gardasil, the only HPV vaccine on the market at the time. I felt optimistic that the vaccine would help us significantly reduce cervical cancers and genital warts.

In 2009 the HPV vaccine was approved for use in boys as well. While boys obviously can't get cervical cancer, they can get genital warts and spread the virus to the girls with whom they are sexually active.

So I started giving the vaccine in my office.

The direct marketing by Merck to the public was so effective that I had many parents calling wanting the vaccine. A win-win for everyone.

Only it wasn't.

In my practice we saw a child lose consciousness within minutes of vaccination, which left me and my staff deeply concerned. I started doing extensive research to better understand the risks and benefits of this vaccine.

A Case for Caution

As early as 2008, concerns about the HPV vaccine started to appear in peer-reviewed journals. In an editorial entitled "Human Papillomavirus Vaccination—Reasons for Caution," published in the *New England Journal of Medicine*, Charlotte Haug, M.D., Ph.D., a Norwegian researcher, pointed out that though the vaccine was highly successful in reducing the incidence of precancerous cervical lesions caused by HPV-16 and HPV-18, no one could know whether the vaccine would ultimately prevent not only cervical lesions but also cervical cancer and death. Though parents were being told that the

vaccine would prevent cervical cancer, the young women given the vaccine were not followed for long enough to determine if their risk of cervical cancer was indeed reduced.

What we did know even then (and this part was left out of the fancy talk I attended) was that during the original HPV Gardasil trials, there were 258 adverse events and 40 deaths out of the 29,323 people studied. That represents a death rate of 1 in 733 and adverse events of 1 in 114.

Since the vaccine has come into widespread use, the numbers look even worse.

Since 2008 at least sixty girls and women in Canada have convulsed or developed disabling joint and muscle pain and other debilitating conditions after receiving Gardasil. A girl named Natalie Kenzie developed egg-size lumps on the bottoms of her feet after the first dose. She was in constant pain: Her joints swelled, and her limbs twitched uncontrollably. Thirteen-year-old Kaitlyn Armstrong also started experiencing pain throughout her body, from her back to her knees to her hips. The parents of both of these girls had been told that the Gardasil vaccine had no significant risks or side effects. Though neither girl had had these health problems in the past, doctors insisted that the Gardasil vaccine had not triggered the unusual symptoms.

A team of reporters from Canada's largest newspaper, the *Toronto Star*, thought otherwise, publishing an investigation of the Gardasil vaccine on the front page of the paper on February 5, 2015, that featured their stories. Canadian doctors complained, maintaining that there was no proof that anything in these girls' medical history was caused by Gardasil. The debilitating health problems they experienced postvaccination were, apparently, just a coincidence. Two other girls featured in the article died after being given the vaccine. Readers can no longer access this information, since the newspaper pulled the investigation from its website.

Instead of censoring information about the severe side effects of the vaccine, in 2013 Japan *stopped* recommending the HPV vaccine, after noting over more than nineteen hundred adverse reactions, including difficulty walking, body pain, joint pain, severe headaches, nausea,

and numbness, over a hundred of which were serious. The Japanese Health Ministry found an “undeniable causal relationship” between the vaccine and the side effects in at least eleven girls, and the suspension remains in effect in Japan. Israel also began reevaluating the safety of Gardasil, and Utah’s Southwest Public Health Department does not stock or recommend it, citing that the risks outweigh any benefits and that it is eroding the public’s trust in vaccines.

Two years ago, in an attempt to get some clarity on how dangerous the HPV vaccine really was, I did a Vaccine Adverse Events Reporting System (VAERS) search, which anyone can do on the government website: vaers.hhs.gov/data/data. The CDC is quick to point out that reports of adverse events after vaccination “do not mean that the reported problem was caused by a vaccine.” Despite this caveat, what I found at the time was disturbing: Gardasil was reported for 29 of the 59 deaths from vaccines in children ages six to seventeen and 17 of 48 deaths in adults aged eighteen to twenty-nine.

In January 2015 I had a visit from Merck’s local drug representative. She was eager to share with me her “exciting news” about the new Gardasil-9, a new and improved HPV vaccine that covers nine strains of HPV. The new vaccine has 500 micrograms of aluminum (compared to 225 in the older version), as well as 50 micrograms of polysorbate 80 and a small amount of yeast proteins.

“What about the side effects?” I asked.

The drug sales rep pulled out her company information, and we looked at it together. The first thing I noticed was that the safety studies for this vaccine had no real control group. Instead, they used individuals who had been administered an older Gardasil vaccine and compared outcomes. In order to know which side effects are truly being caused by any given vaccine, you have to have an appropriate control group. This is Science 101. But even though the safety studies were poorly designed, out of the 15,705 individuals administered Gardasil-9, there were 354 reported serious adverse events, including five deaths.

One reported side effect of Gardasil is autoimmune disorders: 2.2

percent for Gardasil-9 and 3.3 percent for the old Gardasil. The overall rate of serious side effects from Gardasil-9 (2.3 percent) may not seem worrisome until you compare apples to apples. Cervical cancer rates are reported as a number per 100,000. For every 100,000 people using Gardasil-9, there will be 2,300 serious adverse events (2,300 out of 100,000), while the cervical cancer diagnosis rate in the United States is 7.7 out of 100,000. What does this mean? By using this vaccine, we potentially cause 2,300 adverse events while theoretically preventing fewer than eight cases of cervical cancer.

In 2013 an international team of researchers investigated three cases of previously normal young women who developed secondary amenorrhea (loss of menstruation) following HPV vaccinations, which did not respond to treatment. All three women experienced nausea, sleep disturbances, joint pain, and a range of cognitive and psychiatric disturbances after having the vaccine. Two of the women were found to have antibodies directed at attacking their ovaries and thyroids, suggesting that the HPV vaccine triggered a debilitating and ongoing autoimmune response.

“We documented here the evidence of the potential of the HPV vaccine to trigger a life-disabling autoimmune condition,” the researchers concluded in the peer-reviewed *American Journal of Reproductive Immunology*. “The increasing number of similar reports of post HPV vaccine-linked autoimmunity and the uncertainty of long-term clinical benefits of HPV vaccination are a matter of public health that warrants further rigorous inquiry.”

According to Merck’s instructions—and as any doctor or nurse can tell you—any patient vaccinated against HPV must be closely monitored: “Because vaccinees may develop syncope [temporary loss of consciousness caused by a sudden drop in blood pressure], sometimes resulting in falling with injury, observation for 15 minutes after administration is recommended. Syncope, sometimes associated with tonic-clonic movements [tonic-clonic is a seizure that affects the entire brain] and other seizure-like activity, has been reported following vaccination with GARDASIL.”

From my own clinical experience, as well as from talking to

colleagues, I suspect severe reactions to the HPV vaccine are actually much more common than parents are being told. Lauren Damon, a registered nurse based in Westerville, Ohio, spent one summer giving vaccines at the Columbus Health Department Immunization Clinic. Of the five times she personally administered the shot that summer, three children (two girls and one boy) had severe reactions. “One girl stood up and tipped over. Luckily her mom caught her. She lost consciousness, she just went Jell-O,” Damon remembers. “Another girl said she felt dizzy. She started sweating, and her skin turned pale. They kept her in the back for an hour of observation before they let her leave. She had altered mental status.” None of these reactions, which are considered “normal,” was reported to VAERS.

Is this vaccine safe? Clearly it is not.

Do the benefits outweigh the risks? Weighing the risk of death or of a severe vaccine reaction, including the possibility of a lifetime of pain, thyroid malfunction, or autoimmune disease, against theoretical prevention of a slow-growing, highly treatable cancer, I would have to say no. Japan has got it right. The benefits of Gardasil do not outweigh the risks. I do not recommend this vaccine.

Meningococcal Disease

You’ve probably read about it in the newspaper or online: a child or young adult who died unexpectedly or lost a limb due to a serious meningococcal infection. Though this disease is very rare, it is extremely serious. It’s terrifying to care for a child in the intensive care unit who is infected with meningococcal disease and struggling to stay alive.

Meningococcal disease is any illness that is caused by the bacterium *Neisseria meningitidis*, also known as meningococcus. Like other forms of meningitis caused by viral or fungal infections, bacterial meningitis is an inflammation of meninges, the membranes that cover the brain and spinal cord. Patients usually get a rash of broken blood vessels (nonblanching petechiae or purpura), which rapidly progresses. Other symptoms include fever, painful headache, stiff neck, sensitivity to light, nausea, and vomiting, extreme sleepiness,

and confusion.

An infection with meningococcus bacteria can cause meningitis (a brain infection), as well as meningococcal sepsis (a blood infection) and pneumonia.

This bacterial infection is sometimes seen on college campuses because people are living in close quarters. It is easily spread by kissing (through a person's spit) and any other exchange of respiratory and throat secretions.

A 2015 meningitis outbreak at the University of Oregon resulted in seven confirmed cases and one death. Meningococcal disease can overwhelm a child's immune system and very quickly cause death or lasting problems (like mental retardation). If your child gets meningitis, he has a 10 to 15 percent chance of dying.

While it affects only a handful of children each year in Oregon—where we have about four million residents—meningococcal disease is responsible for 1,400 to 2,800 cases a year in the United States. The risk of contracting a meningococcal infection is higher for freshman college students living in dorms. Once someone in your dorm or your home is infected, your risk goes up by five hundred to eight hundred times. For this reason, if you are exposed to someone with meningitis, you need to be treated even if you do not seem to be sick.

People Needing Treatment for Meningococcal Exposure

- Housemates of the infected person, especially children under two
- Childcare or preschool personnel in contact with the infected person during the seven days prior to the illness
- Anyone who kissed or shared a toothbrush or bodily secretions with the infected person during the seven days prior to the illness
- Anyone seated next to the infected person on an eight-hour or longer flight

The good news is that meningococcal infection is treatable, responding well to antibiotics if you catch it early. If you think your teen has meningitis, or if she complains of a severe headache or is acting unresponsive or confused, take her to your doctor or the nearest emergency room immediately. Children tragically and unnecessarily die from bacterial meningitis because we pediatricians—so quick to intervene in other, often unnecessary ways—fail to listen to a worried mother, dismiss her concerns as “hysterical,” and send a sick child home instead of being absolutely certain that it is not meningitis. This should never happen.

I recommend an immediate complete blood count, called a CBC, for any child with symptoms of meningitis or with a petechial rash (red or purple skin spots) or purpura (a purple rash). If the child has meningococcal infection, the CBC will typically show a very low or a very high white blood cell count with a high percentage of young, immature white blood cells, which usually signifies a serious infection. You may hear your doctor mention neutrophils and bands—the immature white blood cells—and say the words “left shift.” *Left shift* is a phrase we use in medicine to describe the presence of a high number of immature white blood cells. This usually means that the body is fighting such a serious infection that the bone marrow is producing white blood cells and releasing them into the bloodstream before they are fully mature. In cases where meningitis is suspected, it makes good medical sense to begin intravenous antibiotics.

Early treatment with antibiotics has significantly reduced the mortality rate of this disease. Severe or lethal infections occur when it is not treated quickly enough.

The Meningococcal Vaccine (MCV4)

Six different bacterial strains are responsible for most of the serious meningococcal disease: serogroups A, B, C, Y, X, and W. Serogroup A is more common outside the United States, particularly in sub-Saharan Africa, where I grew up. Since 2005 we have had two vaccines available in the United States for use in children eleven and older:

Menactra (made by Sanofi Pasteur)

Menveo (made by GlaxoSmithKline)

Both vaccines cover serogroups A, C, Y, and W-135. These groups (except for A) are thought to be responsible for 75 percent of the severe meningococcal disease in children over eleven in the United States. Both of these vaccines are mercury and aluminum free and contain only a small amount of formaldehyde. I recommend children in my practice get a meningitis vaccine starting at age eleven.

Until 2015 we did not have a vaccine that contained group B, which is the most common cause of meningitis in children under five. It has been extremely difficult for manufacturers to develop an effective vaccine for serogroup B.

There are now two brand-new vaccines to protect against meningitis caused by group B:

Bexsero (made by GlaxoSmithKline)

Trumenba (made by Pfizer)

Bexsero is designed to be a two-shot series given at least one month apart. This vaccine contains 519 micrograms of aluminum, an unacceptably large dose of a known neurotoxin. Given what we know about aluminum toxicity (see [Chapter 1](#)), plus the fact that serotype B is not usually the cause of meningitis in older children and that no testing has been done to determine if it is safe to give this vaccine in combination with the vaccines that protect against the other serotypes, I do not recommend it.

Trumenba is designed as a three-shot series, where the second dose is given two months after the first and the final dose six months after the first. Trumenba contains 180 micrograms of polysorbate 80 (see [this page](#)) and 250 micrograms of aluminum. Because it contains less aluminum, this vaccine may be a safer choice for college students. Unless your teen is living near an active outbreak of meningitis that is confirmed to be caused by serotype B, however, there is no reason to have this vaccine. At a 2015 meeting of the CDC's advisory committee

on immunization practices, the decision was made *not* to recommend routine universal vaccination with either Bexsero or Trumenba. I'm glad that the CDC is proceeding with caution in this instance.

Catching Your Teen Up on Vaccines

If your child has not had the hepatitis B series, then the preteen years are a good time to get this vaccine. The hepatitis B vaccine Engerix-B has 250 micrograms of aluminum. Recombivax has 250 micrograms of aluminum. Both are a three-shot series. Give the second dose at least four weeks after the first dose and the third and final dose at least eight weeks after the second dose and at least sixteen weeks after the first.

If your child has never had rubella or the vaccine for it, I recommend it, especially for girls. Rubella can cause health problems for the fetus during pregnancy, which makes this vaccine a smart choice for women of childbearing age. The best option for girls who want protection is to get a rubella vaccine by itself, but a rubella-only vaccine is, unfortunately, not currently available. That means, to get vaccine-induced protection from rubella, your child will need the MMR vaccine. If you choose to do the MMR at this time, make sure it is given by itself. This is a vaccine with three live viruses. As I've talked about in other parts of this book, that can be rough on the immune system. Be especially careful not to allow the MMR at the same time your child is getting an aluminum-containing vaccine, which also challenges the immune system. And be sure not to give any pain reliever with acetaminophen postvaccination.

If your child never got the hepatitis A vaccine, now would be a good time to consider it. The hepatitis A vaccine has 250 micrograms of aluminum and thus should not be given at the same time as any of the other aluminum-containing vaccines. It is a two-shot series. The second dose is given at least six months after the first.

If your child has not had chicken pox, this vaccine is another one to consider. Chicken pox is a more serious illness in adults than in children. See [Chapter 7](#) for more about chicken pox.

Should Your Teen Get Several Vaccines at Once?

I was trained to think that the body can handle multiple vaccines at once. Some experts argue that giving thousands of shots to a child at the same time is completely safe. But the idea that a child's or adult's body can handle thousands of vaccines at once is ludicrous. While it is true that we are bombarded with antigens by the thousands on a daily basis, vaccines are far from just a pure antigen. They are complex concoctions that include measurable amounts of toxic chemicals, and often aluminum. When you inject multiple toxins at once, as we discussed in [Chapter 1](#), you risk overwhelming the body's natural defense mechanisms and detoxification abilities.

So if you decide to catch your preteen or teenager up on vaccines, give only one vaccine at a time, and watch closely for both immediate and long-term side effects. Also be vigilant about their overall health and well-being. If you perceive any unusual symptoms, illnesses, or fatigue following a vaccine, you should stop the vaccine series. The last thing we want to do is cause harm to a child's immune system as we are trying to boost it!

The next chapter will outline other ways to support the immune system, and indeed, you may choose to focus on those methods to help your kids stay healthy, rather than the smorgasbord of vaccines we now invite our children to feast on.



Dr. Paul's Plan FOR PRETEENS AND TEENS

1. Eat dinner together. Regular family dinners have been associated with many positive outcomes in teens, including higher grade-point averages and self-esteem and lower rates of substance abuse, teen pregnancy, and depression. Dinner conversation does more to boost a young person's vocabulary than reading, studies show. Regular family meals have been associated with lower rates of obesity and eating disorders in children and adolescents. Home-cooked meals (even from a Crock-Pot), family dinners, and a diet of real food are among the most important health practices we can impart to our children.

2. Make smart food choices, and consider some supplements. Most teens will benefit from taking each day 5,000 IUs of vitamin D3, a multivitamin that has methyl-B12 and methylfolate, 1,000 to 2,000 milligrams of omega-3 purified fish oil, and extra vitamin C at 500 to 1,000 milligrams, to help them feel healthier and happier. Green leafy vegetables can provide folate, and red meat is a natural source of B12, so if your teen is eating these daily and does not have the MTHFR defect (see [Chapter 2](#)), he might be getting enough from his diet. Teens who

don't eat fish or flaxseeds regularly should take a fish oil or flax supplement to get adequate omega-3 fatty acids, which is important for proper immune system and brain function. Humans are one of the few mammals who don't make their own vitamin C. If your teen is not eating a diet high in citrus fruits and vitamin-C-rich vegetables (which include chili peppers, red bell peppers, kale, and broccoli), he probably needs extra vitamin C, which is vital for overall brain and body health.

3. Exercise daily. Teenagers involved in organized sports and physical activity of all kinds have higher levels of self-confidence and well-being, lower levels of obesity, and fewer health challenges. Teens should be doing an hour or more of exercise a day. A good rule of thumb is to make sure your teen is exercising for as long as she is spending in front of a screen.

4. Limit TV, video games, and social media. Too much screen time can lead to depression and even suicidal thoughts for your teen and everyone else in the family. Have a docking station for electronics so she does not have access to them at night or in the morning, turn off the Internet at night, and make watching TV a family—not an individual—activity.

5. Promote positive peers. Our children will do what their friends are doing. Encourage your teen to form friendships with young people who have similar values.

6. Create an atmosphere of openness. Talk about the hard stuff, like sex, drugs, depression, and self-harm. Remind your youngster often that you are always available to listen and problem-solve.

7. Seek support. Get professional help for your youngster and the whole family if your child is struggling with depression, anxiety, mental health issues, or learning challenges.

8. Say yes to whooping cough and meningococcal (MCV4 but not B) vaccines. A Tdap booster will help your teen avoid whooping cough and reduce the risk that she will spread it to others. Though meningitis is a treatable disease, it is also very serious. Getting the shot during the teen years will help protect your child against the most common causes of bacterial meningitis in the case of an outbreak at a high school or college.

9. Say no to the HPV vaccine. This is one of the most reactive and least effective vaccines being offered to young people in America. HPV vaccination has been suspended in Japan, and new concerns about the vaccine's side effects are emerging all the time. The risk of severe side

effects outweighs its potential benefit. I do not recommend it.

The Nine Questions Parents Ask Me Most ABOUT TWEENS AND TEENS

ABOUT NEGATIVE EMOTIONS

1. My child is battling depression and anxiety. What can we do?

A: Anxiety and depression are caused by an imbalance of neurotransmitters. Children suffering from anxiety and depression are in terrible psychological pain, battling feelings of hopelessness. Depression is usually associated with sleep issues, poor appetite, sadness, and sometimes tearfulness or inconsolable crying. If you see a change in your child's behavior—she stops enjoying her usual activities and starts isolating herself from friends and family—she may be depressed.

There is help for depression, both natural remedies and prescription medications that can be life saving and don't necessarily have to be lifelong. Studies have shown that taking fish oil that has an EPA/DHA ratio of about three to one daily (1,500 to 2000 milligrams) for six months is as beneficial as taking antidepressants to recover from depression. Taking 5,000 IUs of vitamin D3 daily can also help improve mood, especially in winter.

Exercise releases natural endorphins that will help elevate your child's mood and lessen feelings of despair. Do everything you can to make sure she is getting regular exercise: Have her join a sports team, figure out a reward system if she bikes or walks to and from school, go on runs together, sign her up for a martial arts class, try rowing. Any kind of exercise can help, but vigorous exercise is the most effective. Doing something challenging will get her out of her head spin, at least for the duration of the intense exercise, which is a much-needed break indeed.

Talk therapy can also be invaluable. Teenagers are going through a lot of hormonal changes, learning to deal with their sexual feelings, and trying to navigate social situations and academic expectations. Having someone to listen to their fears, anxieties, and feelings of unhappiness is a big help. If you can't afford a private therapist, find out about state-sponsored mental health counseling and free support groups for teens.

If dietary supplements, exercise, and talk therapy are not helping, an SSRI (selective serotonin reuptake inhibitor) is the next thing to try. These medications work by increasing the levels of the neurotransmitter serotonin available in the brain. Too little serotonin is associated with

depression. It can take a while to determine the right drug and the right dosage, and you will need to work closely with your doctor to figure out what is best for your child. I've seen the fewest side effects and had the best luck with escitalopram (Lexapro). The most commonly used SSRI, fluoxetine (better known by the brand names Prozac and Sarafem), has a half-life of several weeks and thus takes over a month to reach effective levels in your body. The side effects from this drug can take up to a month to go away. This is no longer a drug I recommend for teens.

2. I'm worried my son is suicidal. Should I talk to him about it?

A: Yes! Talk as openly as you can. "You seem really unhappy lately. Can you tell me what's going on?" If he shrugs and says, "I don't know," or doesn't answer, invite him to "make something up," then give him time to respond and really listen. Sometimes teens shut down when we question them directly, so you can try initiating a conversation about someone else: "My friend Maddie's son told her last week he was thinking about committing suicide. I feel really sad about it. He's really having a hard time," or "I don't know if I ever told you that Dad's cousin George tried to commit suicide when he was fifteen." Another technique to get a teenager to open up: Go out for a drive. When you are sitting side by side, it seems less threatening to open up about tough topics.

You can and should ask your child if he is feeling suicidal. Asking him will not increase the chance he will try to commit suicide. Quite the opposite: It will begin a conversation that will air the overwhelming pain he is feeling and the bad thoughts he is having and can be the first step to getting help. If your child says yes, he is having thoughts about committing suicide, ask him if he has a plan. If he says he does, you must get help immediately. Contact a counselor, make an appointment with his doctor, or go to the emergency room if it feels it can't wait until tomorrow. Do not leave your suicidal child alone. He needs a team rallying to support him through this. It is vital that your child know that you are there for him no matter what.

ABOUT SLEEP

3. Why is my teen having so much trouble sleeping?

A: Sleep problems have become increasingly common among preteens and teens in my practice. Our children's bodies need a consistent sleep schedule, as much when they are teens as when they were toddlers. At the same time, most teenagers' natural biological rhythms are changing, prompting them to be more wakeful in the late evenings and exhausted in the mornings. Though their natural desire is to stay up late and get up

even later, they have to get up early to go to school, participate in extracurricular activities, and accommodate the family's schedule. This can cause insomnia, exhaustion, and surliness from lack of sleep. The teen years are a time of great emotional and physical change, which also leads to interrupted sleep.

The number-one cause of insomnia in teens in my practice is too much caffeine. If your youngster is exposed to caffeine in any form (regular and decaffeinated coffee, tea, energy drinks, caffeinated soda, chocolate, coffee ice cream, and even some breath mints and chewing gums contain caffeine), make sure that she has it only in the mornings.

Be sure your child is not playing video games, using social media, or watching intense TV shows right before bed. Exposure to light-emitting screens actually suppresses melatonin levels and makes you feel less tired. Researchers from Brigham and Women's Hospital in Boston found that using an e-reader before bed not only makes it harder to fall asleep but also impacts how tired or awake you feel the next day. One strategy is to share the new research or this book with your child so she knows why she should be reading from a book and not an e-reader at night. Disabling the household's Internet access an hour before bedtime will also help.

Melatonin can help reset your internal sleep clock. Start by having your teen take $\frac{1}{2}$ to 1 milligram two hours before bedtime. If this dose of melatonin does not work after a week or two, try taking 2, then 3 milligrams. You can safely give up to 10 milligrams of melatonin an hour before bed on those nights your teen just can't settle down, but I do not recommend this higher dose on a daily basis.

If psychological concerns are negatively affecting your child's sleep, make sure she knows that you are always available to listen, even in the middle of the night. Having a midnight snack, some hot milk with honey (Jennifer's mom's secret sleep aid), or sleepy tea can also help. Sometimes journaling, even in the middle of the night, can give your teen an outlet for those thoughts she does not know what to do with.

4. How much sleep does my teenager need?

A: Every young person is different, but most need between nine and ten hours of sleep a night. Some need even more. You may notice that your teen is happier and more energetic after eleven or even twelve hours of sleep.

5. My son's tired all the time. What can he do to have more energy?

A: Fatigue is a lack of energy, suggesting that your body needs more nutrients or more rest, or needs to heal from an infection or other disruption of hormones or neurotransmitters.

Excessive fatigue can be a sign of depression. Your doctor can

evaluate your child for depression and anxiety. Once the depression and anxiety are addressed, the fatigue should improve.

If your teenager is not depressed and is getting enough sleep, the most important thing he can do to have more energy is to clean up his diet. Eat only whole foods, including lots of vegetables and fruits, fish and high-quality meat, nuts, and seeds. Try cutting out dairy and gluten, as food allergies can cause fatigue.

Some supplements can also help with fatigue. When our bodies are deprived of nutrients, we get tired and moody. Have him take 5,000 IUs of vitamin D daily, 1,000 to 2,000 milligrams of fish oil daily, a B-complex or multivitamin with methyl-B12 and methylfolate, and 1,000 milligrams of vitamin C two to three times a day.

If there is no change in energy levels, the fatigue might be mononucleosis (“mono”), which is caused by Epstein-Barr virus (EBV). Your doctor can order a simple blood test measuring IgG and IgM against EBV to confirm. A complete blood count (CBC) will screen for anemia, which is especially common in menstruating women whose diets are low in iron. I would also recommend an erythrocyte sedimentation rate (ESR), a comprehensive metabolic panel (CMP), and thyroid tests to make sure we are not missing other medical causes of the fatigue.

ABOUT BEHAVIOR CHALLENGES

6. How can I get my teen to stop acting like a jerk?

A: Just as with babies and toddlers, some teenagers are easy to be around and care for, while others are so challenging they could bring Mother Teresa to her knees. Most children between the ages of thirteen and nineteen (though some begin earlier) are trying to find ways to express their uniqueness and independence and define their own place in the world on their own terms. At the same time, they are far from grown up. They still need nurture, support, family time, boundaries, and love. Although it may not seem like it by the way your teen is pushing you away, criticizing you, and telling you how embarrassing you are and how much you are ruining her life, studies show that most American teenagers would actually like to spend *more time* with their parents, not less.

The challenge for parents is to help our teens realize we are on their side and can actually give them good advice from time to time. They need to know that we will not abandon them or allow them to destroy their lives right in front of us.

It can be very hard to live with a hormonal teenager. When yours is driving you the most crazy, take a deep breath and remember how happy you were to hold him in your arms as a newborn. You were meeting a

brand-new person for the first time yet someone you had somehow known—and loved—all your life. As much as they need firm boundaries, our teenagers need our unconditional love.

If we want kindness and respect from them, we have to model kindness and respect, as challenging as this can sometimes be. Notice the good stuff, and catch them doing something right as often as you can: “I like how you were so kind to your friend when she was freaking out about her homework,” “I see how hard you’ve been studying lately,” “I’m happy you’ve taken some time to relax and watch TV.” Be spontaneously kind to them—deliver a smoothie while they are doing homework, bring home a CD you think they might like, write them a silly note that includes a dumb joke, offer to drive them to the mall. The small kindnesses add up, and help everyone feel better about cohabitating.

If you need support during a difficult time, get family and individual counseling. If the first counselor doesn’t work out, try another. A counselor told me something that changed my attitude forever: “If the person is not acting lovingly, he must be hurting.” That simple affirmation changed everything for me! Instead of feeling attacked by my loved one, I could be empathetic and treat them with the love I would surely offer if they were in pain. Which they were.

7. All my teenager will eat is junk food. What can we do?

A: I sure understand this one, as my teen boys had a huge desire for fast food (which I don’t eat) and processed junk food (which I rarely eat and don’t bring into the home).

“There’s nothing to eat,” one of them complained as he peered into a fridge full of vegetables, fruit, and healthy leftovers. What he really was saying was “There are no corndogs, burritos, taquitos, or pizza.” There were also no cookies, crackers, chips, candy, energy bars, or snack foods that come in a bag or a box. The large basket of wonderful fruit didn’t qualify as food in his view.

At some point your teens will be in college or out of the house and making their own decisions about what they eat. You can only do your best in setting them up for a lifetime of good health by eating well yourself, talking to them about good nutrition, and providing them with healthy wholesome food while they still live at home. Don’t give in to the demands for junk food, and don’t allow them to buy it with your money. Eventually they will eat well, and eventually they will thank you for your conscientious parenting. Maybe when they’re thirty!

8. Will you test my teen for drug use?

A: If you suspect your teenager is abusing drugs or alcohol, you’re probably right. But before you ask your doctor to do a urine screening,

you both need to work out a plan for what to do with the results. If the test comes out negative but you know they are using, how will that help? If the test is positive and confirms what you already know, then what? The only time I encourage a urine drug screen is when the teenager is on board and has expressed a willingness to be compliant with living drug or alcohol free or has requested the screening to earn back lost trust and privileges.

ABOUT SCREEN TIME

9. How much time should my teen spend on electronics?

A: If you have to ask this question, the answer is probably less than she is now. Parents are often unaware of how manipulative, addictive, and violent today's video games are. In one popular game, the avatar you control can kill the prostitute he has just paid for sex in order to steal the money he spent on her. Popular TV shows and movies—even ones slated for the youngest audiences—often prioritize materialism and normalize rudeness, bullying, and racism. The majority of female characters in American films are hypersexualized. According to research by the Geena Davis Institute on Gender in Media, women have far fewer speaking roles than men, make up only 17 percent of crowd scenes, and are disproportionately depicted as objects of sexual desire. Muslims are often portrayed in movies as terrorists and never as the good guys. African Americans continue to be stereotyped as thugs. These stereotypes affect how teens think about themselves and others. You may not agree with me, but I'm convinced that most TV shows and video games teach teens that rude and even violent behavior is acceptable and that cruelty and prejudice are social norms. The way to minimize this media influence is to talk to your teens openly about what you don't like about it, as well as to limit and monitor TV, video games, and time spent online.

Chapter 11

The Best Ways to Support Your Child's Immune System: Dr. Paul's Cheat Sheet

He's the best physician that knows the
worthlessness of the most medicines.

*~Benjamin Franklin, Poor Richard's Almanack,
1733*

True story, though the names are changed: Valeria's four-year-old son Hunter got a severe case of chicken pox that lasted for weeks. He had the pox everywhere: on his face, his torso, and even his buttocks. Hunter was inconsolable, scratching desperately and burning with fever, and Valeria regretted following her husband's inclination and not giving him the chicken pox vaccine. If they had another child, she decided, she would vaccinate against chicken pox.

Rachel, Valeria's neighbor, also declined the chicken pox vaccine, though she did so in the hopes that four-year-old Lily would catch it naturally. Rachel had had a mild case of chicken pox when she was sixteen, as had her husband. So Rachel did what she could to expose Lily. When twins at Lily's preschool had a doctor confirm their rash was chicken pox, Rachel took Lily to their house. She and her daughter read books and played quiet games with the twins for two hours in the playroom with the door closed and no windows open. Just to be sure Lily was exposed, Rachel suggested Lily share a lollipop with her friends. Lily refused, but all three girls repeatedly sucked on their lollies and dipped them into a glass of water, which Lily then drank.

Lily never got chicken pox.

Why did Hunter get chicken pox but Lily did not?

Why do two children get the same illness, but one child gets a much more serious case than another?

Why did my friend Taurai die from measles while his sister got such a mild case that she barely remembers it?

Immunologists seek answers to questions like these all the time, as they—along with doctors, researchers, and of course, parents—look for the best ways to keep children safe and healthy.

Some of the answers are obvious: A child who has been taught good hygiene and washes his hands regularly is less vulnerable to communicable diseases than a child who doesn't. If two children both run through soil that contains tetanus, the child wearing shoes is less likely to get it. A young person who always uses condoms is at much less risk of getting a sexually transmitted disease than one who engages in unprotected intercourse. And depending on the efficacy of the vaccine in question, a child who is vaccinated against an infectious disease has a greatly reduced risk of contracting it.

Suzanne Humphries, M.D., a nephrologist based in Virginia with twenty years of clinical experience, points out an interesting phenomenon. A close look at the epidemiology of many diseases for which we have developed vaccines—including measles and polio—shows that these diseases were already on the decline in the population when vaccines against them were introduced. The medical community credits the vaccines as the number-one factor in reducing incidence of these diseases. But, conversely, we credit other factors—such as good hygiene, proper sanitation, and naturally acquired immunity—for eradicating diseases that are no longer a threat in America but for which there were never effective vaccines. Diseases that plagued Americans in the nineteenth century, like cholera, which killed millions of people worldwide, and scarlet fever, which killed thousands, have disappeared in the United States and not because of vaccines.

I believe that some vaccines have been highly effective in helping to

eradicate diseases. At the same time, when it comes to “vaccine-preventable” diseases, too many of my medical colleagues dismiss the importance of sanitation, hygiene, and naturally acquired immunity in eradicating lethal diseases, instead giving most, if not all, of the credit to vaccines.

It is unquestionably true that vaccines play an important part in modern medicine. But contrary to what many doctors believe, vaccines are only one small piece in solving the immunity puzzle.

What is not obvious to most doctors in America is that it is *not* medicine that keeps a child healthy, and it is also *not* vaccines. Keeping the immune system in balance is the real key to good health.

What Keeps a Child Healthy Is a Healthy, Robust Immune System

Our immune system is a fascinating network of tissues, organs, and cells that work together to protect the body from infection, repair wounds, and rid us of anything unfamiliar (like splinters, which, if not plucked out by tweezers, will either be broken down and absorbed by the body or slowly pushed to the surface of the skin by cell growth). It is constantly functioning on a low level of surveillance, quickly removing foreign invaders and cleaning up dead or damaged cells. And it is actually very efficient at clearing wild infections.

The immune system can run into two potential problems: It can be underactive and fail to respond to a real threat, or it can be overactive and attack perceived albeit benign threats. In the case of an overactive immune system, it gets confused and attacks its own tissues, which leads to a host of chronic, sometimes acute health problems. When the immune system's search-and-destroy mechanisms get overstimulated, which can happen when our beneficial gut bacteria are depleted and we ask our bodies to fight too many diseases at the same time; when we are too clean (so the immune system has nothing to fight against); or even when too many vaccines are given at once, we can get the collateral damage of autoimmune disorders that plague so many American children these days.

It's easy to get overwhelmed by all the things we shouldn't do. If you've read this far into our book, you know that the list is miles long. Avoid endocrine disruptors like plastic, medications like Tylenol, conventional cleaning products that contain poisonous ingredients, aluminum-containing vaccines, off-gassing chemicals in furniture and construction materials, artificially sweetened drinks, packaged foods.

And on and on and on.

Kind of makes you want to run to a 7-Eleven and buy a bright blue

Slurpee and a Snickers bar, doesn't it?

As careful as we try to be, especially when our children are little, so much of what they do, what they eat, and what they are exposed to is out of our control. Grandma brings over a six-pack of soda; the well-meaning parents at school serve pink frosted cupcakes with red candy hearts for Valentine's Day; and that favorite babysitter has no idea you shouldn't microwave plastic. And then there you are, with a toddler who needs new sandals and no money in your bank account, so you buy the flip-flops at the dollar store and realize only after you bring them home that they are off-gassing so much, the smell makes you sick and probably wouldn't be DPA (Dr. Paul Approved).

Going against cultural conventions isn't easy. It is no fun to be the mom or dad saying no all the time (no soda, no fast food, no candy, no plastic flip-flops). It's no fun to disagree with your doctor or be labeled a "difficult patient."

Don't despair. I am convinced that we are in the midst of an exciting and profound cultural change. The pendulum is swinging back toward healthy eating, more exercise, and cleaner living. I know it's not there yet. I know that, depending on where you live, it may be difficult to find like-minded parents who share your values, habits, and ideals.

But keeping your children as healthy as possible does not have to be a chore. As you do what you can to shore up your child's immune system, you can let go of the fear of illness and embrace the fun.

Fun?

Yes, fun.

The inner workings of the immune system are complicated and fascinating: There's a lot that research scientists and doctors know already, and there's a lot that we have yet to understand.

I'm tempted to go into a long digression about macrophages, white blood cell counts, TH1 cells, immune memory, antibodies, and more, but I won't. What I will tell you is that when I asked a prominent immunologist what was the number-one thing she wished people understood about the human immune system, she responded, "That it's mostly in your gut." Which brings me back to having fun with all

the information you've read in this book. What could be more fun than eating interesting, different, and new-to-you foods? It's also fun to buy cool new things (like stainless steel lunch containers so you aren't sending your kids' food in plastic anymore), and to experiment with making homemade nontoxic concoctions like laundry detergent and tooth powder.

If you read no other chapter of this book, this epic cheat sheet will tell you much of what you need to know to keep your children safe and healthy.

*The benefits of breastfeeding
last a lifetime.*



How to Support Your Child's Immune System (and Your Own)...Naturally

Dr. Paul's EPIC CHEAT SHEET

1. Nurse your baby. Breast milk contains a microcosm of healthy bacteria, antibodies, proteins, and nutrients that will give your baby the best start in life. Once you get the hang of it, breastfeeding is also the most grounding, stress-relieving, and miraculous cuddle time you will have with your baby. The longer you breastfeed, the more credit you rack up in the healthy baby bank. As many a mom who was not sure she would nurse even for six months but ended up nursing for two or three years can tell you, breastfeeding is an effective way to defuse a toddler tantrum, help an anxious preschooler fall asleep, and ease the transition from only child to older sibling. You and your baby get to decide how long you both want to nurse. Take it one drop at a time at the beginning, and you will be surprised to find a blink of the eye later that you are nursing a walking, talking, not-so-little person. It's all good. Your baby is getting your live antibodies for as long as you are breastfeeding, which means breastfeeding has both an immediate positive effect on an infant's immune system and health benefits that will last a lifetime.

2. Enjoy the cuddles. Every time you hold your baby, cuddle your baby, kiss your baby, and hug your baby, you are helping her develop a deep and lasting sense of well-being and attachment. You aren't just kissing her tiny little tushy, you are actually teaching her that she is lovable and loved. When you answer her cries with love, you show her that people in her life respond quickly and kindly to her needs, which lays a foundation for a healthy childhood. We know from unspeakably sad observational studies done on humans during World War II, as well as from Harry Harlow's practical studies done on primate infants in the late 1950s, that babies who are isolated and deprived of affection suffer severe psychological distress, physical stunting, and even death. Researchers at the University of Miami Medical School found that premature babies who were massaged for fifteen minutes three times a day gained weight 47 percent more quickly than babies left alone in incubators, were discharged six days earlier from the hospital, and even did better on mental and physical tests eight months later. Human babies thrive on affection. In fact, humans of all ages need active touching to generate growth hormones (which is why you should be loving and affectionate with your teens and your partner). These growth hormones help us grow strong bones and strong immune systems. When you spend time interacting with your child at any age, you send her the message that you care about her, love her, and want to be with her. A well-loved child is a child who thrives.

3. Laugh a lot. What pediatrician is going to tell you to laugh? Me. All those tickles and giggles are actually helping your baby's immune system, and your older children's, to say nothing of your spouse's! Laughter has been shown to trigger the release of endorphins and reduce hormones that cause stress. Laughter also helps soften the cervix during labor; it helps keep your blood pressure from spiking into your eyeballs when your toddler stuffs an entire bar of soap down the drain (it doesn't seem funny at the time, but it will later. Ask me how I know); and it defuses tension when your teenager fails her driving test and says it was your fault.

4. Relish relaxing. Just sit there, don't do anything. It may be the opposite of what you grew up believing, but taking time to breathe and be present has been proven to support our immune systems, lower our stress levels, and promote longevity. A newborn teaches us to be focused on the here and now, if we take the time to listen. And this is a lesson we can apply to ourselves and our children for the rest of our lives. Listen to guided meditations, take a walk in the woods, go to the gym just to sit in the hot tub, start doing yoga. Allow your infant to have quiet alert time without needlessly stimulating him. Children need to daydream. So do adults. If you are a person who rushes from one thing to the next, it's time to slow down. Too much stress is a major player in immune dysfunction. Have you ever noticed that you often get sick right after a deadline or a stressful event? Psychological stress causes inflammation in the body, which weakens the immune system. If someone asks you what you're doing and the answer is "Nothing," you are doing just what you should be! When we are still and quiet and listen to our bodies and take care of our own needs—and teach our children to do the same—we enhance our body's natural defenses against disease.

5. Rock your body. Along with stress, a sedentary lifestyle is a leading contributor to immune dysfunction among children and adults in America. I know I just told you to sit there and do nothing, but you've also got to move it, move it, move it. Don't get bogged down by how much exercise, by when you exercise, or by whether you're "good" at exercising, just do it however, whenever, and wherever you can. The goal is for you and your children to be active for as much of the day as possible—a goal that your child's school will do its best to undermine. Give your baby plenty of opportunities to kick and punch and exercise his little limbs: Put him facedown on the floor during waking hours, let him bounce up and down on your lap, and encourage him to reach his little arms toward toys. Take the stairs instead of the elevator, stand or even walk (Jennifer has a treadmill desk) when you are at work or in a meeting or at a conference, make time to go for a hike, or just walk around the block once or twice a

day with your kids. Have your child walk, bike, or scooter to school and to friends' houses. Play chase, have jumping jack contests, throw a ball in the backyard, or go to the park. Do anything and everything so that everyone in your whole family is moving their bodies. Organized sports and ballet classes are great too, of course. But not everyone can afford them. Even if you're completely broke, you can still turn the radio on full blast while you're tidying up after dinner, pick up your toddler, and get your groove on. Making love often is another enjoyable and cost-free way for grown-ups to exercise.

6. Keep kids hydrated. As I've mentioned throughout this book, drinking clean water is important. In many municipalities water comes to the tap containing contaminants from pesticides and herbicides to pharmaceuticals, heavy metals, and other toxins. It's important for a healthy immune system not to overload the body with chemicals, which is why I stress filtering your water. Have fun learning about, trying, and making your own healthy beverages. Add a handful of fresh spinach or kale to fruit smoothies; try kombucha (a symbiotic fermented drink popular among the crunchy set) and kefir (another probiotic drink kids love). Buy fresh coconuts, stick straws into them, and drink out the coconut water (it's delicious). If you live in the country, borrow a cider press from a neighbor, and press your own cider with apples from abandoned trees. When a child has an infection that causes vomiting and diarrhea, the immune system is working overtime to rid the body of the infection. It's especially important to keep a child hydrated, as dehydration, not the infection itself, is often the biggest concern. Excreting toxins through sweat and urine is a way our bodies keep us from getting inflamed.

7. Eat strange and interesting (real) foods. You can turn around the advice to avoid eating and drinking fake foods that trigger inflammation (sugary drinks, artificially sweetened products, trans fats, partially hydrogenated vegetable oils, processed foods, and candy) by seeking out interesting, new-to-you foods that promote wellness and a healthy immune system. Make healthy eating into a game you play with your family. Each week try a vegetable you've never tasted before; have a blind taste test where you see if your kids can recognize different kinds of apples; make your own lacto-fermented pickles or cultivate your own plain yogurt; visit a farm; go to a pick-your-own; try unusual healthy whole foods like goji berries, chia seeds, dandelion greens, adzuki beans, fermented garlic, buffalo meat, venison, escargots, and komatsuna. Teach your children that healthy eating is not about what they can't have but about all the amazing and delicious real foods there are to try.

8. Connect in real life. Social isolation leads to unhappiness, depression, and stunted growth in both children and adults. Increasingly researchers are finding that time spent online, especially consuming social media, makes people feel bad about themselves. What that means is that you need to be sure you and your children stay offline and off screens and make real-life connections. You especially need real-life support systems when you are pregnant, have a new baby, are learning to breastfeed, are puzzling through the toddler years, or are figuring out where to send your child to school. Humans evolved to live in multigenerational social groups, and the countries where people live the longest, healthiest lives, like Japan, are places where family stays together. You can't pick your family, but you can pick your friends. Join a church, start a supper club, seek out volunteer work that brings you in contact with others. Surround yourself with supportive, interesting, kind people. Go out of your way for them. (Some studies show that we feel happier when we are helping others than when others are helping us.) Show up for birthday parties, book clubs, and other social gatherings. The Internet is a great place to find people and to chat. But it's even better to leave your cell phone at home and enjoy the company of others.

9. Read together. Hold your baby on your chest skin to skin when she is an infant and read to yourself, look at board books together when she is just a few months old (she'll love patting the images, flipping the pages, and gnawing on a corner of the book), and start reading picture books and then chapter books out loud as soon as your child shows interest. Reading together is an active and effective way to stimulate your child's brain. Unlike watching TV, reading (or listening to a book) actively improves a child's concentration, memory, and imagination.

10. Get down and dirty. It's hard for most Americans today to imagine the squalor that city dwellers were used to in the nineteenth century. The water in England was so polluted that people, even children, drank beer. It was common for tenement apartments in New York City to have fourteen or fifteen families sharing the same privy, which would be encrusted with human excrement. Horse dung with flies buzzing around it and worms crawling through it made the air in Baltimore stink. That level of filth was unhealthy, and squalor and crowding were major factors in the spread of disease. At the same time, it turns out that letting kids play in the dirt is actually beneficial. The bacteria, viruses, and worms that enter the body through the soil are now understood to be necessary for the development of a well-functioning immune system. As Dr. Graham Rook, a professor at the Centre for Clinical Microbiology at the University College London, explained to *Health Day News*, these organisms present in mud,

untreated water, and feces “were with us right from the start of humanity....Over the course of evolution these bugs had to be tolerated, they came to activate the tolerance of the immune system. They are the police force that keeps the immune system from becoming trigger-happy. Basically, the immune system is now attacking things it shouldn’t be attacking.” One fascinating study found that when children are exposed to animal feces and microbes in the soil, they have less inflammation in their bodies (which can lead to chronic medical issues, like heart disease) later in life.

What does that mean for your family? Wallow in the mud. Build rock and stick forts. Walk barefoot outside. Make mud balls. And consider having a pet—exposure to a dog, a cat, rabbits, chickens, or other animals will reduce your child’s likelihood of having allergies. Encouraging your kids to get down and dirty in the great outdoors will actually help them lead healthier lives.



11. Embrace your inner Captain Safety, but don’t be a Nervous Nellie. There are a lot of companies that want to sell you a lot of baby safety products. Do you need them? Probably not. You may want to put a gate up to keep the baby from falling down the stairs and put protectors in electrical sockets, but your house should not look like a fortress. Babies learn from trial and error. Getting burned one time at the stove is enough to teach a toddler to keep his fingers out of the fire. At the same time, you must have a safe car seat that is correctly installed, and your child must

wear a helmet when she is on a bicycle, scooter, motorcycle, unicycle, or any other fast-moving wheeled conveyance. Captain Safety employs common sense and good judgment. Captain Safety also lets his children take risks: Kids as young as three or four can cut with knives, as they do in Germany and Japan; kids of any age should be allowed to climb trees as high as they feel comfortable going. (Make a rule that they have to get up and down by themselves, and leave the rest to them.) A relaxed approach to risk-taking, as Christine Gross-Loh, Ph.D., explains in her book *Parenting Without Borders: Surprising Lessons Parents Around the World Can Teach Us*, keeps children safer by helping them hone their judgment about what they can and cannot do. We do children a disservice if we hover around them and continually tell them to “be careful” and “watch out.” We give them the best safety protection by letting them take the risks they feel ready for.

12. Choose vaccines based on the real science, your family’s needs, and common sense, not on hype, bullying, or the baloney idea that your doctor knows best. As you know, I’m an advocate of vaccines. They are a brilliant invention: a proven way to trick the body’s immune system into creating antibodies against diseases that can be severe or even fatal without getting the actual disease. But there is no one-size-fits-all when it comes to vaccines, and there should not be. The Vaccine-Friendly Plan of forgoing all vaccines during pregnancy, delaying the hepatitis B shot until adolescence, spreading out aluminum-containing vaccines (see [Dr. Paul’s Vaccine Plan at a Glance](#) in the Appendixes), and doing only one vaccine at a time has worked tremendously well in my practice, effectively keeping children safe from harmful infectious diseases while also preventing them from getting autism and autoimmune diseases. But no one but you can decide what is best for your child and your family when it comes to vaccines. Do your research, learn the risks, and decide what you feel most comfortable doing. If you delay vaccines, you can always do them later. And once you have decided, know that you are a smart parent making a smart decision.

13. Get enough sleep. Since children and adults who don’t get enough sleep are more likely to get sick from infectious diseases, I encourage my parents to make sure their babies and children are sleeping as much as they need to for optimal health. This varies quite a bit from baby to baby. Jennifer had one who took three long naps during the day and still slept about twelve hours at night and another who barely needed nine hours of sleep a night and gave up afternoon naps while most toddlers were still taking two. Your child probably needs more sleep than you think. Promote healthy sleep hygiene by creating a gentle and enjoyable nighttime ritual,

putting blackout shades and curtains on the windows for the summer months, keeping all electronics, including e-readers and television sets, out of your child's room, and setting a good example by getting enough sleep yourself.

14. Trust your children. Though they don't always communicate in words, our children always tell us the truth about what is working well to keep them healthy and what is not. If you have followed all your doctor's recommendations and your child still has a baffling array of health problems, your child's body is a testament to your doctor's mistakes.

15. Trust yourself. You are the parent, and you are the real expert. If you feel like something is wrong with your child, don't stop until you find the answer. Your biggest trust should be placed in yourself, not a doctor, not a government vaccine schedule, not this book. In the words of Dr. Benjamin Spock, trust yourself. You know more than you think you do.



Chapter 12

So Where Do We Go from Here?

A headline from January 21, 2016, in the *Los Angeles Times* announces that “a bizarre birth defect,” where a baby’s intestines and other organs are born outside the body, is on the rise. A CDC report asserts that it is urgent we figure out what environmental factors are causing this condition, which is called gastroschisis. Possible culprits: something in the mother’s diet, medication taken during pregnancy, or some toxic exposure in utero.

Gastroschisis is rare, but the number of children struggling with environmentally induced health problems, including autism, attention deficit disorders, autoimmune diseases, and mood disorders, continues to rise in the United States. We no longer have epidemics of infectious diseases spurred on by poor sanitation, the lack of clean drinking water, malnutrition, and overcrowding. That’s good news. But, as we’ve been talking about throughout this book, more young children have brain disorders than ever before. Children are also suffering from food allergies, eczema, juvenile diabetes, pediatric cancer, anxiety disorders, depression, obesity, and high blood pressure.

Young adults aren’t doing well either. In 2013 the National Research Council and the Institute of Medicine came out with a troubling report that found that younger Americans are sicker than ever before, sicker than young people in other industrialized countries, and sicker than their parents. “The panel was struck by the gravity of its findings,” it reads. “For many years, Americans have been dying at younger ages than people in almost all other high-income countries.”

What these numbers show is that our immune systems are not working correctly. Something is going wrong.

It's frustrating. And heartbreaking.

Why is this happening? As parents struggle to raise healthy children in an increasingly toxic world, our government agencies spend more time catering to private interests than promoting real health. Health care in our country is more expensive than in any other in the world, yet our outcomes are among the worst of industrialized nations. We have a medical system that is unfortunately funded by illness—the more children are sick, the more money doctors make.

At the same time, doctors like me are increasingly judged on “quality measures,” which are determined by insurance companies and government agencies, which in turn are influenced more by special business interests than by true health outcomes. If I see children *more often* for well visits during the first two years of life, insurance and government grading systems indicate that I am a *better* doctor than the doctor whose patients are healthy and at home! And the more vaccines I give those children, the better quality care I am purportedly providing.

This is absurd, of course, but this is what we're up against.

You should be outraged by how today's babies and young children are being poisoned, by how doctors are lying to you about the risks and benefits of the procedures they recommend, and by how often you are being given misleading medical information based on a doctor's ignorance, personal bias, and the medical culture at large.

But there's a silver lining in these storm clouds: Once your eyes are opened to this broken system, you can take back your family's health. And your own.

Don't let any doctor tell you it's too late to make changes.

Don't let any doctor tell you there's no hope for your child.

Don't let any doctor dupe you into believing that the lifestyle improvements you plan to make aren't going to make a difference.

Even for those of us who learn this information after damage has already been done to our children's health, it is not too late.

You can make a huge positive impact on your family's health right now by adopting the practices we've recommended in this book.

As you make a plan to maximize your child's potential for good health, you have to be proactive. Just doing what your pediatrician or doctor tells you to do will get your family what it has been getting America's children: an epidemic of autism and brain disorders, allergies and asthma, diabetes and obesity.

Doctors know what they know.

And they are always right.

Until they realize they are wrong.

Anticipate resistance.

Try to be patient.

Practice compassion.

I was once exactly where they are. I had parents asking me if vaccines could ever be a problem. I didn't know it at the time, but my response was pure propaganda: "Vaccines are proven to be safe and effective. There's no link between vaccines and autism."

Be kind to those health care providers.

Give them this book.

As parents, you have more power than you think. A parent encouraged me to attend the Defeat Autism Now! conference, where my eyes were opened to the problems in our medical system. Parents brought me books, peer-reviewed scientific studies, magazine articles, and newspaper clippings. I read every one.

My patients have made a profound difference in my way of thinking and the way I practice medicine. I graduated from medical school sure I knew everything. I am now a practitioner who is willing to listen and learn, ready to partner with the families in my care to find the answers we need together. Those families share stories of the medical strategies that have helped their children, sometimes recommended by naturopathic doctors (who do almost as much training as traditional M.D.'s but also learn about alternatives to Western medicine, including nutritional medicine, herbal medicine, acupuncture, and chiropractic).

Mainstream doctors tend to dismiss alternative health practices as nonsense or quackery. That's a tragedy of Western medicine. No doctor should be too close-minded to investigate and become educated about a treatment, however alternative or foreign to his or her medical education, that helps a child heal.

Luckily there is a growing number of vaccine-friendly doctors. We are physicians in integrative, functional, and naturopathic medicine who are willing to take a step back and help patients find the root cause of their health problems. This group of pioneers is sometimes scorned by the mainstream medical establishment for underscoring the importance of healthy eating and avoiding toxins. We are even ridiculed by our colleagues just for wanting to educate ourselves about essential oils, homeopathy, acupuncture, and nutritional interventions. These mainstream doctors feel more comfortable upholding the status quo of pharmaceutical and surgical interventions even when those practices are causing harm. They feel deeply threatened by other doctors—and their patients—who try looking elsewhere. Luckily it doesn't matter what other doctors think. You get to choose for yourself. What matters most is your family's good health, not your health practitioner's approach.

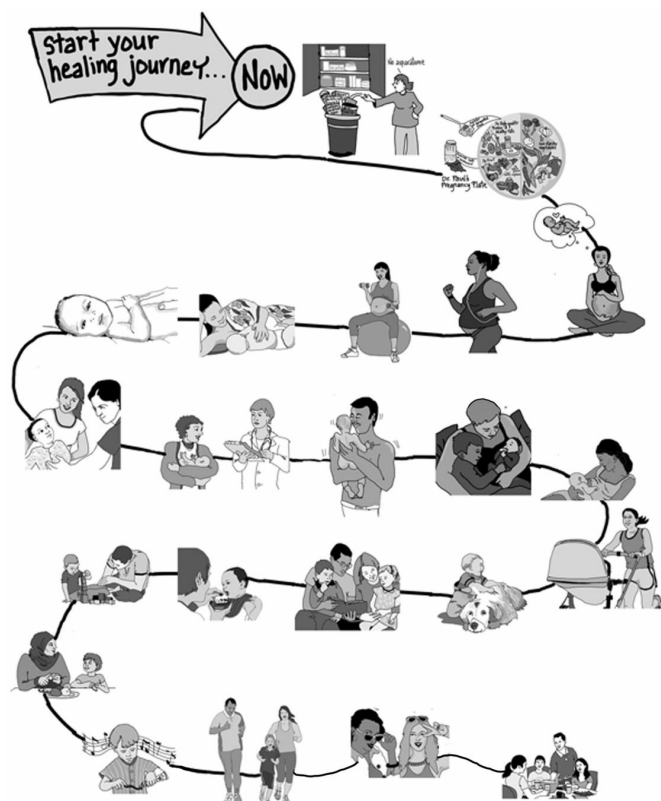
Vaccine-friendly doctors understand the current system is broken.

Vaccine-friendly doctors know that the idea that we are genetic disasters waiting to happen and in need of pharmaceutical saviors is ridiculous.

The truth is that we are genetic miracles. We are born with the ability to heal ourselves. All we need is to be properly nurtured, provided the right nutrients, and protected from stress, toxins, and disease.

You have already started down the path to better health by reading this book. Keep going.

Thank you for letting us come along for the ride.



For Jennifer's daughter, Athena,
and
Paul's ten children,
and
for all the children bravely living with
health challenges not of their own making,
and the heroic parents working to restore them back to health

Acknowledgments

“I’m driving up to Salem,” Michael Framson said in his raspy no-nonsense way when he called Jennifer out of the blue. “Would you be willing to testify in front of the Senate Committee on Health Care?”

Oregon’s senators were meeting on February 18, 2015, to consider Senate Bill 442, a proposed law that would forbid children from going to school unless they were fully vaccinated according to CDC guidelines. Missing even one vaccine—the noncommunicable hepatitis B, say, or chicken pox—would bar children from school. The bill proposed to do away with religious and philosophical exemptions to vaccines, effectively taking medical decision making away from parents and doctors and putting it in the hands of state legislators.

We have both always been pro-vaccine. We were both fully vaccinated as children, albeit on different schedules (because of our age difference). As a health care professional, Paul has had many more shots than most American adults. As a Fulbright scholar who has also worked in international development and human rights, Jennifer got several extra rounds of vaccines as an adult. We both chose to vaccinate our children. But we also felt strongly that this Oregon bill was wrong, that people should have medical choices, and that vaccines—like any other medical interventions—should not be imposed on families in exchange for the right for children to go to school. We knew that in a state of 3.9 million people, only one *adult* had come down with measles. Because Oregon’s vaccination rates were high and Oregonians’ health robust, that adult with measles had made a swift recovery without spreading the infectious disease to anyone else. We were both also confident that vaccines work, so we knew that the fear that unvaccinated children could somehow spread diseases to

vaccinated children was only theoretical.

If Michael Framson, himself the father of a vaccine-injured young adult, had not called Jennifer, and had Paul not made plans to clear his schedule for half a day and drive to Salem to testify against SB442, Jennifer and Paul would not have met, and this book would not have been written. Michael is the first person we have to thank, along with J. B. Handley, one of the smartest, most strategic, and most outspoken people we know, who has supported this project from its inception. J.B., also the father of a vaccine-injured son, grabbed Paul's arm and gave Paul his spot in the lineup in order for Paul's testimony to be heard. We are grateful to all the other parents, medical professionals, and activists who came together to form Oregonians for Medical Freedom and to speak out against the bill, which was ultimately defeated.

A special shout-out to the brilliant, dedicated Rebecca Tweed, as well as to Ava Adams, Yvonne Aileen, Lyn Barton, Charlie Bauer, Joshua Boettiger (rabbi and spiritual leader of Temple Emek Shalom), Scot and Lori Bolsinger, Karyssa Booth, Paula Bryant-Trerise, Stacy Cayce, Greg Clark, Angela Decker, Sandra Ganey, Sonja Grabel, Anna and Kale Houppermans, Janis Hunt Johnson, Danna Laqua, Rubi Lee, Sarah Lozoff, London Lunoux, Paula Lynam, Adam Marx, Leslie Becknell Marx, Paige Morse, Lisa Katherine Nichols, Dave Nourie, Jessie Palmer, Shayna Perkinson, Courtney Perry, Laura Roe, Maya Roe-Bauer, Roanna Rosewood, Lizzy Royce, David Sawyer, Liz Schmidt, Robert Snee, Sara Soltani, the Church of Christ Scientist community in Ashland, as well as Christie Dames, Eric Gladden, Sharla Jacobs, Robert Kennedy Jr., Zoey O'Toole, and thousands of other medical freedom fighters and friends. We would also like to thank the Oregon state legislators on both sides of this issue who listened attentively to the public testimony (even though they did not necessarily agree with it): Tim Knopp, Jeff Kruse, Elizabeth Steiner Hayward, Laurie Monnes Anderson, Chip Shields, Alan Bates, and Peter Buckley, among many others.

The testimony that stood out the most that day was that of an articulate, energetic, and clearly dedicated pediatrician who busily

handed every member of the senate committee an inch-thick packet of scientific data. Dr. Paul Thomas explained to the Senate Health Care Committee that he was seeing excellent results in his practice by vaccinating children using a slightly modified, evidence-based protocol, which included no birth series of the hepatitis B vaccine and only one aluminum-containing vaccine at a time.

Paul and Jennifer started corresponding about the urgent need for people, especially pregnant women, new parents, and medical practitioners, to understand how to avoid the immunological damage, chronic diseases, and brain injuries that are currently plaguing America's children while at the same time be protected against infectious diseases. We met in person several times. A few months after that senate hearing, we decided to write this book.

Thank you to our brilliant, kind, and totally fabulous literary agent, Stephanie Tade, who is an expert dealmaker and a sage, pointing out an important life lesson that roadblocks often lead to better paths; and to Marnie Cochran, our wonderful, responsive, smart editor at Ballantine; her assistant, Betsy Wilson; our publicist, Sharon Propson; the best copy editors in the world, directed by Loren Noveck, senior production editor; the interior designer, Diane Hobbing; and Victoria Allen, who designed our fabulous cover. We are also grateful to Nancy Margulies, who came out of retirement to do the illustrations for this book because she believed in the project and had a great love for Jennifer's mother's work on symbiosis. A special thank-you to Melissa Chianta, our tireless, meticulous, and dogged fact-checker, as well as to Sara Vigneri, who also helped fact-check. Any mistakes that remain in the book are ours. Thank you to assistants Tanessa Toten and Nicole Mullen; to best-selling author Alisa Bowman, who has been a tireless supporter, champion, and editor of this book since its first inception; to Lyn Redwood, R.N., who is a colleague, a brave freedom and cancer fighter, and a friend (as well as to Lyn's husband, Tommy Redwood, M.D., as much as he prefers to stay behind the scenes); to author and friend Christine Gross-Loh, Ph.D.; best-selling author, friend, and warrior Hope Edelman whose advice, as always, has proved invaluable; activist and lawyer Georganne Chapin of Intact

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The employees at Integrative Pediatrics were always ready to field phone calls and even pull Paul out of an exam room when Jennifer needed a question answered. They set up great pranks that were captured on video to remind Paul to keep laughing, and they have always been committed to providing the best, safest, and most evidence-based care to the eleven thousand children in Paul's practice, through gentle vaccination, encouraging the best nutrition, listening to parents, and helping families understand how to avoid toxins. A special shout-out to those employees with whom Paul founded Integrative Pediatrics: Maiya Thomas, R.N.; Aja Crocker; Jan Golden, R.N.; Shirley Goudzwaard, L.P.N.; Becky Graff, R.N.; Julie Graham; Lef Hylton; L.P.N.; Mallory Johnson; Cathy Lien, P.N.P.; Kristy Madore; Taremeredzwa Mutepfa; Stephanie Osborne; Joann Springer; Wendy Ware, P.N.P.; and Shaudine Woody, R.N. Ongoing gratitude to the many other employees, past and present, who contribute so much

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We would like to acknowledge the pioneers of the DAN! (Defeat Autism Now!) movement who were so instrumental in opening Paul's eyes to the scientific research that had already been done that showed issues with heavy metals, gut dysfunction, biochemistry, toxins, immunity issues, and autism, especially Bernard Rimland, who founded the Autism Research Institute and guided us from the "refrigerator mom" era, when parents were being blamed for causing their child's autism, into the era of science and research. We also thank James Adams, Ph.D.; Kenneth Bock, M.D.; Stephanie Cave, M.D.; John Green, M.D.; Martha Herbert, M.D./Ph.D.; Jill James, Ph.D.; Jerry Kartzinel, M.D.; James Neubrandner, M.D.; Paul Shattock; and Anju Usman, M.D.; among many others. These pioneers were decades ahead of their time in seeking to understand the root causes

and to find medical treatments to heal the medical condition we are calling autism, rather than just treating its symptoms or giving up on children.

Thank you to Jon Pangborn, Ph.D., and Sidney Baker, M.D., for their depth of knowledge and understanding of the biochemistry and biomedical aspects of autism and to Richard Deth, Ph.D., for his pioneering work with thimerosal toxicity, including his masterpiece “Molecular Origins of Human Attention: The Dopamine-Folate Connection.” Thank you to the late Jaquelyn McCandless, M.D., for her important contributions and the book *Children with Starving Brains: A Medical Treatment Guide for Autism Spectrum Disorder*; to the late Robert Mendelsohn, M.D., an integrative pediatrician before the term *integrative* was coined; to Woodrow Monte, Ph.D., author of *While Science Sleeps*, for his personal encouragement and mentorship; David Kirby, author of *Evidence of Harm: Mercury in Vaccines and the Autism Epidemic*; and Robert Sears, M.D., a champion of medical freedom, parental rights, and lasting immunity, as well as author of the outstanding *The Vaccine Book: Making the Right Decision for Your Child* and the first board-certified pediatrician to publicly challenge the CDC vaccine schedule and offer safe, reasonable, and evidence-based alternatives.

Our families have helped us tremendously while writing this book. Jennifer’s children, Hesperus, Athena, Etani, and Leone, have been quick to criticize their mom add their thoughts to the conversation, dismiss bad titles, and suggest topics to include. Thanks also to Jennifer’s father, Thomas N. Margulis; younger sister extraordinaire Katherine Starkman Margulis; older brothers Dorion Sagan, Jeremy Sagan, and Zachary Margulis-Ohnuma; mother-in-law Susan Selfridge, whose continual support has been a blessing; sisters-in-law Mary Margulis-Ohnuma and Robin Kolnicki; father-in-law Jim Propis; aunts Joanie Glashow and Sharon Kleitman; uncles Jeffrey Kessel, Michael Margulis, Shelly Glashow, and Danny Kleitman; the accomplished educational consultant and nonfiction writer Laurie Olsen, whom we are lucky to call “Auntie Lolo”; nephews Atticus Margulis-Ohnuma and Tonio Sagan; nieces Sara Sagan and Miranda

and Madeline Margulis-Ohnuma; and cousins Jacob Kessel, Hannah Margulis-Kessel, Josh Olsen, and Jesse, Frieda, and Yarrow Bay. Jennifer owes a debt of gratitude to her late mother, microbiologist Lynn Margulis, that she can never repay. Paul's parents, Norman Thomas and Winnie Thomas, have generously helped him over the years to achieve his career goals of founding a new pediatric practice, blogging, creating a thriving YouTube channel, and writing this book. They were instrumental in teaching him the importance of helping others, being a voice for the voiceless, and challenging the status quo when the status quo was wrong.

A special shout-out to Judy Margulis, Jennifer's aunt, supporter, and home birther, as well as the best surrogate grandma four kids could have. And to Susan Langston, who splurges on writing retreats, airplane water slides, and college savings accounts; makes cloth hopscotch courts; plays ninjas; and is the all-round best friend a girl could wish for (except when she's spending *three weeks* rafting the Colorado River with her hipper, more adventurous, and more outdoorsy friends). Jennifer's soccer and basketball buddies kept her honest, both on and off the court. Though you didn't always show up for games, you know who you are.

Jennifer's husband, James, has been an integral part of writing this book, editing chapters, putting in long hours with the kids, and playing chauffeur so Jennifer could sneak in extra time to write. We are grateful to him for lending us his smarts, math skills, and scientific expertise, and for the hand-ground decaf lattes that kept Jennifer going. Thank you, James.

Paul has numerous friends who have given of themselves tirelessly over the years expecting nothing in return. Thank you to Donna Urban for decades of friendship, support, and wise counsel, and to Patty Van Antwerp for always jumping in and doing whatever needed doing, organizing, and freeing Paul to put the effort needed into his writing, research, blogging, and YouTube endeavors. Thank you to all of Paul's friends, who have been kind, generous, supportive, and helpful. You know who you are.

A huge and special thank-you to Noah Thomas, who came up with

the YouTube idea a few years ago, saying, “Dad, you have too much to offer not to share it with the world,” and has singlehandedly created and built the [paulthomasmd YouTube channel](#). Paul’s more than 150,000 YouTube subscribers, especially those who call him out on *every video* for not wearing gloves, deserve mention here as well. You criticize and kibitz, and we love you all.

Paul’s wife, Maiya, has been a champion of this book from the start, supporting Paul’s endeavors, sacrificing her time, and standing beside him in everything. Thank you to each of Paul’s ten children: Rufaro for a summer of research; Natalie for caring for your younger siblings when we were not available; Tucker, Luke, and Noah for welcoming our expanding family even when it meant you had to sacrifice; Aja for taking on the difficult parent role when we were away; Chido for help with social media; and Tare, Themba, and Zani for filling our home with laughter and joy, even as you grieved the loss of both your biological parents.

Thank you to all our children for everything you have all done to make our families what they are.

—Jennifer Margulis, Ph.D., Ashland, Oregon

—Paul Thomas, M.D., Portland, Oregon

Appendix A

Recommended Reading

If every person who wanted to become a parent read just three books before getting pregnant, we would see dramatic and instantaneous improvements in the health and well-being of America's children. And because our babies and children would start enjoying such good health, the vast majority of doctors (including pediatricians) would have to find other ways to make a living! These books were first published a while ago, but the practical advice, wisdom, and parent empowerment within them remain timeless. We recommend you read them in this order:

Mendelsohn, Robert, M.D. *How to Raise a Healthy Child...In Spite of Your Doctor*. New York: Ballantine Books, 1987.

Wiessinger, Diane, Diana West, and Teresa Pitman. *The Womanly Art of Breastfeeding*. New York: Ballantine, 1958.

Yaron, Ruth. *Super Baby Food*. Peckville, PA: F. J. Roberts, 1996.

Appendix B

CDC Vaccination Schedules, 1983 and 2016

CDC vaccine schedule in 1983

DTP [2 months]
OPV [2 months]
DTP [4 months]
OPV [4 months]
DTP [6 months]
MMR [15 months]
DTP [18 months]
OPV [18 months]
DTP [4–6 years]
OPV [4–6 years]
Td [14–16 years]

CDC vaccine schedule in 2016

Influenza [pregnancy]
DTaP [pregnancy]
Hepatitis B [birth]
Hepatitis B [2 months]
Rotavirus [2 months]
DTaP [2 months]
Hib [2 months]
PCV [2 months]

IPV [2 months]
Rotavirus [4 months]
DTaP [4 months]
Hib [4 months]
PCV [4 months]
IPV [4 months]
Hep B [6 months]
Rotavirus [6 months]
DTaP [6 months]
Hib [6 months]
PCV [6 months]
IPV [6 months]
Influenza [6 months]
Influenza [7 months]
Hib [12 months]
PCV [12 months]
Influenza [12 months]
Hep A [12 months]
MMR [12–15 months]
Varicella [12–15 months]
DTaP [15–18 months]
Hep A [18 months]
Influenza [2 years]
Influenza [3 years]
Influenza [4 years]
DTaP [4–6 years]
IPV [4–6 years]
MMR [4–6 years]
Varicella [4–6 years]
Influenza [5 years]
Influenza [6 years]

Influenza [7 years]
Influenza [8 years]
Influenza [9 years]
Influenza [10 years]
Influenza [11 years]
Tdap [11–12 years]
HPV [11–12 years]
MCV4 [11–12 years]
HPV [11–12 years]
Influenza [12 years]
HPV [12.5 years]
Influenza [13 years]
Tdap [13–18 years]
HPV [13–18 years]
Influenza [14 years]
Influenza [15 years]
Influenza [16 years]
MCV4 [16 years]
Influenza [17 years]
Influenza [18 years]

Appendix C

Ten Questions to Ask When Looking for a Pediatrician

1. What would you like me to know in order to keep my family healthy?
2. Are you open to an alternative vaccine schedule?
3. Are you open to families who want to try alternative health approaches, like dietary changes, nutritional supplements, chiropractic, and massage, in addition to your recommendations?
4. What do you tell parents who aren't willing to do all the CDC-recommended vaccines or who feel more comfortable with a delayed vaccine schedule?
5. How do you communicate with parents who are hesitant to follow your advice?
6. If we need support in breastfeeding, how would you help us?
7. What is your attitude about prescribing antibiotics? When do you think they are necessary?
8. What advice do you give parents about sleeping with the baby?
9. What makes you different from other pediatricians?
10. What else would you like us to know about your practice and your philosophy about health?

Appendix D

List of Vaccine Ingredients, by Vaccine*

*The most comprehensive, accurate, and up-to-date list of ingredients in any given vaccine is found in the manufacturer's insert. Ask your doctor for a copy or access the insert online. This data comes from the CDC's website, last updated in April 2015. You can see the whole table here: cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf. Aluminum content in each vaccine can be found on the chart on [this page](#).

DT (Sanofi)	aluminum potassium sulfate, peptone, bovine extract, formaldehyde, thimerosal (trace), modified Mueller and Miller medium, ammonium sulfate
DTaP (Daptacel)	aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, Stainer-Scholte medium, modified Mueller's growth medium, modified Mueller-Miller casamino acid medium (without beef heart infusion), dimethyl 1-beta-cyclodextrin, ammonium sulfate
DTaP (Infanrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium
DTaP-IPV (Kinrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, Vero (monkey kidney) cells, calf serum, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, Fenton medium (containing bovine extract), modified Latham medium

	(derived from bovine casein), modified Stainer-Scholte liquid medium
DTaP-HepB-IPV (Pediarix)	formaldehyde, glutaraldehyde, aluminum hydroxide, aluminum phosphate, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, yeast protein, calf serum, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium, Vero (monkey kidney) cells
DTaP-IPV/Hib (Pentacel)	aluminum phosphate, polysorbate 80, formaldehyde, sucrose, glutaraldehyde, bovine serum albumin, 2-phenoxethanol, neomycin, polymyxin B sulfate, Mueller's growth medium, Mueller-Miller casamino acid medium (without beef heart infusion), Stainer-Scholte medium (modified by the addition of casamino acids and dimethyl-beta-cyclodextrin), MRC-5 (human diploid) cells, CMRL 1969 medium (supplemented with calf serum), ammonium sulfate, and medium 199
Hep A (Havrix)	aluminum hydroxide, amino acid supplement, polysorbate 20, formalin, neomycin sulfate, MRC-5 cellular proteins
Hep A (Vaqta)	amorphous aluminum hydroxyphosphate sulfate, bovine albumin, formaldehyde, neomycin, sodium borate, MRC-5 (human diploid) cells
Hep B (Engerix-B)	aluminum hydroxide, yeast protein, phosphate buffers, sodium dihydrogen phosphate dihydrate
Hep B (Recombivax)	yeast protein, soy peptone, dextrose, amino acids, mineral salts, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, formaldehyde, phosphate buffer
Hep A/hep B (Twinrix)	formalin, yeast protein, aluminum phosphate, aluminum hydroxide, amino acids, phosphate buffer, polysorbate 20, neomycin sulfate, MRC-5 human diploid cells
Hib (ActHIB)	ammonium sulfate, formalin, sucrose, modified Mueller and Miller medium
Hib (Hiberix)	formaldehyde, lactose, semi-synthetic medium
Hib (PedvaxHIB)	aluminum hydroxphosphate sulfate, ethanol, enzymes, phenol, detergent, complex fermentation medium

Hib/hep B (Comvax)	yeast (vaccine contains no detectable yeast DNA), nicotinamide adenine dinucleotide, hemin chloride, soy peptone, dextrose, mineral salts, amino acids, formaldehyde, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, sodium borate, phenol, ethanol, enzymes, detergent
Hib/Mening. CY (MenHibrix)	tris (trometamol)-HCl, sucrose, formaldehyde, synthetic medium, semisynthetic medium
Human Papillomavirus (HPV) (Cervarix)	vitamins, amino acids, lipids, mineral salts, aluminum hydroxide, sodium dihydrogen phosphate dehydrate, 3-O- desacyl-4' monophosphoryl lipid A, insect cell, bacterial, and viral protein
Human Papillomavirus (HPV) (Gardasil)	yeast protein, vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, L-histidine, polysorbate 80, sodium borate
Human Papillomavirus (HPV) (Gardasil-9)	yeast protein, vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, L-histidine, polysorbate 80, sodium borate
Influenza (Afluria)	beta-propiolactone, thimerosal (multidose vials only), monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, neomycin sulfate, polymyxin B, egg protein, sucrose
Influenza (Agriflu)	egg proteins, formaldehyde, polysorbate 80, cetyltrimethyla- mmonium bromide, neomycin sulfate, kanamycin, barium
Influenza (Fluarix) Trivalent and Quadrivalent	octoxynol-10 (Triton X-100) alpha-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80), hydrocortisone, gentamicin sulfate, ovalbumin, formaldehyde, sodium deoxycholate, sucrose, phosphate buffer
Influenza (Flublok)	monobasic sodium phosphate, dibasic sodium phosphate, polysorbate 20, baculovirus and host cell proteins, baculovirus and cellular DNA, Triton X-100, lipids, vitamins, amino acids,

	mineral salts
Influenza (Flucelvax)	Madin Darby Canine Kidney (MDCK) cell protein, MDCK cell DNA, polysorbate 80, cetyltrimethylammonium bromide, beta-propiolactone, phosphate buffer
Influenza (Fluvirin)	nonylphenol ethoxylate, thimerosal (multidose vial-trace only in prefilled syringe), polymyxin, neomycin, beta-propiolactone, egg proteins, phosphate buffer
Influenza (Flulaval) Trivalent and Quadrivalent	thimerosal, formaldehyde, sodium deoxycholate, egg proteins, phosphate buffer
Influenza (Fluzone: Standard (Trivalent and Quadrivalent), High-Dose, & Intradermal)	formaldehyde, octylphenol ethoxylate (Triton X-100), gelatin (standard trivalent formulation only), thimerosal (multidose vial only), egg protein, phosphate buffers, sucrose
Influenza (FluMist) Quadrivalent	ethylene diamine tetraacetic acid (EDTA), monosodium glutamate, hydrolyzed porcine gelatin, arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, gentamicin sulfate, egg protein
Meningococcal (MCV4-Menactra)	formaldehyde, phosphate buffers, Mueller Hinton agar, Watson Scherp media, modified Mueller and Miller medium, detergent, alcohol, ammonium sulfate
Meningococcal (MCV4-Menveo)	formaldehyde, amino acids, yeast extract, Franz complete medium, CY medium
Meningococcal (MPSV4-Menomune)	thimerosal (multidose vial only), lactose, Mueller Hinton casein agar, Watson Scherp media, detergent, alcohol
Meningococcal (MenB—Bexsero)	aluminum hydroxide, <i>E. coli</i> , histidine, sucrose, deoxycholate, kanomycin

Meningococcal (MenB—Trumenba)	polysorbate 80, histidine, <i>E. coli</i> , fermentation growth media
MMR (MMR-II)	Medium 199 (vitamins, amino acids, fetal bovine serum, sucrose, glutamate), Minimum Essential Medium, phosphate, recombinant human albumin, neomycin, sorbitol, hydrolyzed gelatin, chick embryo cell culture, WI-38 human diploid lung fibroblasts
MMRV (ProQuad)	sucrose, hydrolyzed gelatin, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, human albumin, sodium bicarbonate, potassium phosphate monobasic, potassium chloride, potassium phosphate dibasic, neomycin, bovine calf serum, chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells
Pneumococcal (PCV13—Pevnar-13)	casamino acids, yeast, ammonium sulfate, polysorbate 80, succinate buffer, aluminum phosphate, soy peptone broth
Polio (IPV—Ipol)	2-phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B, monkey kidney cells, Eagle MEM modified medium, calf serum protein, Medium 199
Rotavirus (RotaTeq)	sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80, cell culture media, fetal bovine serum, vero cells <i>[DNA from porcine circoviruses (PCV) 1 and 2 has been detected in RotaTeq. PCV-1 and PCV-2 are not known to cause disease in humans.]</i>
Rotavirus (Rotarix)	amino acids, dextran, sorbitol, sucrose, calcium carbonate, xanthan, Dulbecco's Modified Eagle Medium (potassium chloride, magnesium sulfate, ferric (III) nitrate, sodium phosphate, sodium pyruvate, D-glucose, concentrated vitamin solution, L-cystine, L-tyrosine, amino acids solution, L-glutamine, calcium chloride, sodium hydrogenocarbonate, and phenol red) <i>[Porcine circovirus type 1 (PCV-1) is present in Rotarix. PCV-1 is not known to cause disease in humans.]</i>
Tdap (Adacel)	aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, ammonium sulfate, Stainer-Scholte medium, dimethyl-beta-cyclodextrin, modified Mueller's growth medium, Mueller-Miller casamino acid medium (without beef heart

	infusion)
Tdap (Boostrix)	formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80 (Tween 80), Latham medium derived from bovine casein, Fenton medium containing a bovine extract, Stainer-Scholte liquid medium
Varicella (Varivax)	sucrose, phosphate, glutamate, gelatin, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, sodium phosphate monobasic, potassium chloride, EDTA, residual components of MRC-5 cells including DNA and protein, neomycin, fetal bovine serum, human diploid cell cultures (WI-38), embryonic guinea pig cell cultures, human embryonic lung cultures

Appendix E

Clinical Data from Dr. Paul's Practice

A team of researchers have been reviewing and tabulating the health outcomes of 2,230 children over age two and under age seven who were patients at my clinic, Integrative Pediatrics, from June 2008 (which is when the clinic first opened) to February 2015. We are in the process of compiling this data for a retrospective study approved by Western Institutional Review Board. We are examining incidence of autism, developmental delays, hospitalizations, infectious diseases, and sick visits. The following data is preliminary but serves to answer one key question: Does Dr. Paul's Vaccine-Friendly Plan help reduce the incidence of autism?

Patients were divided into three groups as follows:

Group 1: Following Dr. Paul's Vaccine-Friendly Plan: These children were either born into my practice or established care by the two-month well baby visit. They did not get the birth or infant hepatitis B vaccine. If they got the hepatitis A vaccine, it was after age two. If they got the MMR and chicken pox vaccines, it was at or after age three.

There were 1,098 children in Group 1.

Group 2: Unvaccinated: Because of parental choice, these children had no vaccines.

There were 238 children in Group 2.

Group 3: Other/Most Vaccinated: Though there was some individual variability, many children in Group 3 were vaccinated according to the CDC guidelines.

There were 894 children in Group 3.

Group	Total	Autism/ASD	Rate
1	1,098	0	0
2	238	0	0
3	894	15	1/60

Using the previous CDC autism rate of one in fifty, we would have expected approximately twenty-two cases of autism in Group 1, but *there were no autism or ASD (autism spectrum disorder) diagnoses*.

We would have expected to have approximately four cases of autism in Group 2, but *there were no autism or ASD diagnoses*.

We would have expected to have approximately seventeen cases of autism in Group 3, and there were fifteen autism/ASD diagnoses, which mirrors the national average. This data demonstrates with a high level of statistical significance that the Vaccine-Friendly Plan—as well as not vaccinating at all—was associated with less autism/ASD.

Appendix F

If Your Child Has a Bad Vaccine Reaction: How to File a VAERS Report

If you suspect your child has had a bad reaction to vaccines, you should file a report to the Vaccine Adverse Effects Reporting System (VAERS). VAERS is a safety surveillance system that was established in 1990 and is managed by the CDC and the FDA. A doctor, parent, or any adult who has personally had a bad health outcome after a vaccine can file this report. Any postvaccination medical event that concerns you—even if your doctor is dismissive and does not believe it is connected to a vaccine—can and should be reported. Because VAERS is a passive surveillance system, we know that vaccine reactions are underreported. Filing a report helps the government collect data on the true incidence of vaccine reactions.

There are three ways to file a VAERS report:

1. Online: This is the easiest and most effective way. It is a five-step process that begins here: vaers.hhs.gov/esub/index#Online.
2. By fax: Download the VAERS Form at vaers.hhs.gov/resources/vaers_form.pdf, and fax the completed form to 1-877-721-0366.
3. By mail: Send a completed form to VAERS, P.O. Box 1100, Rockville, MD 20849-1100. You can get the form online or call 1-800-822-7967 to request the form, which includes prepaid

postage.

Appendix G

Science Every Parent Should Know About

We live in an exciting time, when everyday folks have access to scientific information that used to be available only to a select few. Even if you are not a professional researcher or a scientist, we encourage you to read and educate yourself on topics affecting your children's health. The selected studies are ones we think every parent should be aware of. For every study listed here, there are dozens of others that we didn't have room to include.

On the Dangers of Aluminum

Bishop, N. J., et al. "Aluminum Neurotoxicity in Preterm Infants Receiving Intravenous-Feeding Solutions." *New England Journal of Medicine* 336, no. 22 (May 29, 1997): 1557–61, [ncbi.nlm.nih.gov/pubmed/9164811](https://pubmed.ncbi.nlm.nih.gov/9164811).

In this study from 1997, researchers tested the brains of 182 babies who had been born prematurely and given intravenous feeding solutions. About half the feeding solutions contained aluminum and half did not. When the surviving babies were then tested at eighteen months of age, the researchers found that the infants given aluminum-containing intravenous feeding solutions had impaired neurological development. They found that the longer the infant was exposed to aluminum-containing intravenous feeding solution, the more significant the cognitive delays. Numerous other studies—on both animals and humans—show that aluminum has no natural function in

the body and can interfere with cellular metabolism, information transfer in DNA, and enzyme function. Aluminum is neurotoxic through increased lipid peroxidation, making cells more vulnerable to free radical attack.

Shaw, C. A., et al. “Aluminum-Induced Entropy in Biological Systems: Implications for Neurological Disease.” *Journal of Toxicology* 2014 (2014), Article ID 491316, doi: 10.1155/2014/491316.

A team of researchers from several universities, including the University of British Columbia and the Massachusetts Institute of Technology, examine in detail how aluminum is implicated in neurological diseases, including Lou Gehrig’s disease (ALS), Alzheimer’s disease, and autism spectrum disorders. They cite research that has shown that aluminum adjuvants can cause inflammation and autoimmune disorders, and they propose that aluminum adjuvants used in childhood vaccines are one cause of autism. We recommend you print this article out in its entirety and give it to your doctor to read. Earlier research done by two of the authors (C. N. Shaw and L. Tomljenovic, “Are There Negative CNS Impacts of Aluminum Adjuvants Used in Vaccines and Immunotherapy?” *Immunotherapy* 6, no. 10 [2014]; hindawi.com/journals/jt/2014/491316) has pointed out that countries that require the most aluminum-adjuvanted vaccines for children have the highest autism rates, which raises concerns about the increasing use of aluminum in vaccines.

Perricone, C., et al. “Autoimmune/Inflammatory Syndrome Induced by Adjuvants (ASIA) 2013: Unveiling the Pathogenic, Clinical and Diagnostic Aspects.” *Journal of Autoimmunity* 47 (December 2013): 1–16, doi: 10.1016/j.jaut.2013.10.004.

An international team of medical researchers from Israel and Italy

shows that exposure to environmental toxins, including aluminum, can lead to autoimmune and brain dysfunction. They identify a new autoimmune disease that is actually caused by the adjuvants in vaccines, called Autoimmune (Auto-inflammatory) Syndrome Induced by Adjuvants (ASIA), and mention that genetic predisposition plays a key role in how much patients will be damaged by vaccines. This article and its accompanying citations show that there is an urgent need to individualize the vaccine schedule to minimize the risk of vaccine-induced health problems in children with genetic vulnerabilities.

On the Dangers of Acetaminophen

Shaw, William, Ph.D. “Evidence That Increased Acetaminophen Use in Genetically Vulnerable Children Appears to Be a Major Cause of the Epidemics of Autism, Attention Deficit with Hyperactivity, and Asthma.” *Journal of Restorative Medicine* 2, no. 1 (October 2013): 14–29, ingentaconnect.com/content/aarm/jrm/2013/00000002/00000001/art00003.

In this review article, William Shaw, a biochemist and autism researcher, argues that the increased rates of autism, asthma, and attention deficit disorders are linked to the pediatric use of acetaminophen, which is known to disrupt the body’s ability to rid itself of toxic chemicals. Shaw also presents compelling data from Cuba, where acetaminophen has never been used in pediatrics, and where autism rates are significantly lower than in the United States. We now have more than six studies in peer-reviewed medical journals that suggest a causal link between the use of acetaminophen (the main ingredient in Tylenol) and brain dysfunction. Three new peer-reviewed articles on how acetaminophen unexpectedly affects cognition have been published in 2016.

On Mercury in Vaccines

Geier, D. A., et al. “A Dose-Response Relationship Between Organic

Mercury Exposure from Thimerosal-Containing Vaccines and Neurodevelopmental Disorders.” *International Journal of Environmental Research and Public Health* 11 (2014): 9156-70, mdpi.com/1660-4601/11/9/9156/htm.

Multidose flu shots given to pregnant moms and recommended yearly for children beginning at six months of age contain the mercury-based preservative thimerosal. This study provides epidemiological evidence supporting a significant relationship between the amount of mercury exposure from thimerosal-containing vaccines and the subsequent risk of neurodevelopmental disorder diagnosis. Calculating cumulative exposure to mercury based on medical records, the researchers found that children exposed to mercury were at significantly higher risk for increased pervasive developmental disorders like autism, as well as for other developmental delays, tic disorders, and hyperkinetic syndrome of childhood.

On the Risks Associated with the MMR Vaccine

In the late 1990s, a team of gastroenterologists at the Royal Free Hospital in London treated a dozen children who had psychiatric disorders—mostly autism—as well as stomach problems. These scientists were surprised to find evidence of vaccine-strain measles virus in the bowels of the affected children. In 1998 they published their findings in the prestigious British medical journal *The Lancet* with the modest assertion: “We have identified a chronic enterocolitis [inflammation of the small intestine and colon] in children that may be related to neuropsychiatric dysfunction. In most cases, onset of symptoms was after measles, mumps, and rubella immunisation. Further investigations are needed to examine this syndrome and its possible relation to this vaccine.” The paper has since been retracted by the journal, and its lead author, Dr. Andrew Wakefield, has been so vilified by the medical and scientific community that his last name is nearly synonymous with scientific fraud. The General Medical Council in the United Kingdom alleged that Wakefield and his colleagues,

including Dr. John Walker-Smith, failed to obtain necessary permissions to use the children's data and subjected the children to unnecessary medical procedures. In March 2012 Walker-Smith, whose professional insurance coverage paid for the appeal to contest the allegations against him, was cleared of wrongdoing. Wakefield's insurance would not pay for an appeal. He lost his license to practice medicine.

The medical community and the pharmaceutical companies have vehemently objected to the idea of a causal link between the MMR vaccine and autism, blaming Wakefield's "fraudulent science" for sparking widespread "hysteria." Yet what has been left out of the mainstream conversation is that the *Lancet* study's findings have been repeatedly validated in subsequent research, including a 2002 study that found a strong association between MMR and autism, leading the researchers to speculate that "stemming from this evidence, we suggest that an inappropriate antibody response to MMR, specifically the measles component thereof, might be related to pathogenesis of autism." (V. K. Singh et al., "Abnormal Measles-Mumps-Rubella Antibodies and CNS Autoimmunity in Children with Autism," *Journal of Biomedical Science* 9, no. 4 (2002): 359–64.) It has been repeatedly confirmed, both in the scientific literature and in clinical practice, that children with autism often have gastrointestinal problems like chronic diarrhea, painful stomachaches, and inflammatory bowel disease. It is now widely accepted that the most common comorbidity (a fancy word doctors use to describe coexisting health problems) in children with autism are gastrointestinal disorders.

I've spoken personally with more than a hundred families who report that their seemingly normally developing child regressed into autism after the MMR vaccine. Though this could be a temporal coincidence—which is what the mainstream medical establishment believes—my practice data shows that, for whatever reason, children have a reduced risk of developing autism if the MMR vaccine is delayed to age three.

A recent study (B. S. Hooker, "Measles-Mumps-Rubella Vaccination Timing and Autism Among Young African American Boys: A

Reanalysis of CDC Data,” *Translational Neurodegeneration* 3, no. 16 [2014]) reanalyzed a data set obtained from the CDC and found that African American boys have a 340 percent increased risk of autism if they get the MMR vaccine before thirty-six months. This study has also been retracted, but a senior scientist at the CDC, William Thompson, Ph.D., has been granted whistleblower status and has admitted publicly that the CDC *intentionally* excluded data that showed a significant link between MMR and autism. A 2016 documentary by Emmy–Award-winning television journalist Del Bigtree and Andrew Wakefield explores the case for fraud at the CDC: *Vaxxed: From Cover-Up to Catastrophe*.

On Overvaccination and Increased Risk of Illness, Death

While vaccines generally reduce your risk for any given infectious disease, some science suggests that too many vaccines increase your risk of other infections as well as of overall mortality.

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Miller, Neil Z., and Gary S. Goldman. “Infant Mortality Rates Regressed Against Number of Vaccine Doses Routinely Given: Is There a Biochemical or Synergistic Toxicity?” *Human and Experimental Toxicology* 30, no. 9 (2011): 1420–28, [ncbi.nlm.nih.gov/pmc/articles/PMC3170075](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC3170075).

In their analysis of the vaccination schedules of thirty-four developed nations, medical researchers Miller and Goldman found a significant correlation between the infant mortality rates and the number of vaccines infants receive. They point out that American infants at that time received twenty-six vaccine doses, the highest in the world, yet thirty-three nations had better infant mortality rates.

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Goldman, Gary S., and Neil Z. Miller. “Relative Trends in Hospitalizations and Mortality Among Infants by the Number of

Vaccine Doses and Age, Based on the Vaccine Adverse Event Reporting System (VAERS), 1990–2010.” *Human and Experimental Toxicology* 31, no. 10 (2012):1012–21, ncbi.nlm.nih.gov/pubmed/22531966.

Examining 38,801 VAERS reports to identify infants who had serious adverse events after receiving vaccines, this study found that infants who received the most vaccines were more likely to be hospitalized than infants who received fewer vaccines. Among the reports of death after vaccination, the researchers found that infants getting between five and eight vaccines were more likely to die than those who got between one and four vaccines. Being vaccinated at under six months resulted in a greater risk of death than being vaccinated between six and twelve months.

On the Increase of Autism.

Nevison, Cynthia D. “A Comparison of Temporal Trends in United States Autism Prevalence to Trends in Suspected Environmental Factors.” *Environmental Health* 13, no. 73 (2014), ehjournal.net/content/13/1/73.

Many dismiss the idea that autism rates have increased in the United States. “We’re just more aware of it,” they insist. “The higher rates aren’t real, they’re just based on better reporting.” Cynthia Nevison, who earned her Ph.D. from Stanford University, empirically investigated whether autism is on the rise or whether the much higher reported rates of autism are indeed because of better diagnosis. Her research confirmed that diagnosed prevalence of autism has risen dramatically in America over the last several decades and that it continues to rise. Nevison found that while 20 to 25 percent of the increase in autism can be attributed to increased awareness and diagnosis, 75 to 80 percent of the increase in autism is real.

Zablotsky, B., et al. “Estimated Prevalence of Autism and Other Developmental Disabilities Following Questionnaire Changes in the 2014 National Health Interview Survey.” *National Health Statistics Report* 87 (November 13, 2015), [cdc.gov/nchs/data/nhsr/nhsr087.pdf](https://www.cdc.gov/nchs/data/nhsr/nhsr087.pdf).

In November 2015 the CDC released new data showing that one in every forty-five children in America has autism spectrum disorder, which is the number we use in this book. The CDC reports that over 2 percent of children in America are on the spectrum, a significant increase from 2011–13 data that showed that 1.25 percent of children had autism. Because of the lag time between birth and diagnosis, experts believe that these numbers may actually be lower than the real rates of autism among America’s children.

On Autism and Inflammation

Vargas, D. L., et al. “Neuroglial Activation and Neuroinflammation in the Brain of Patients with Autism.” *Annals of Neurology* 57, no. 1 (2005): 67–81, [ncbi.nlm.nih.gov/pubmed/15546155](https://www.ncbi.nlm.nih.gov/pubmed/15546155).

In the search to understand the triggers for autism, as well as how to treat it, scientists have been trying to understand how the brains of people with autism differ from the brains of people without autism. This has proven unexpectedly difficult. But this landmark study led by Diana Vargas, who was in the department of neurology at Johns Hopkins University School of Medicine at the time, examined the brains and cerebral spinal fluid of patients with autism and found that patients with autism have inflammation in their brains. In this case, the researchers found that the brains of patients with autism had a marked increase in certain kinds of cytokines (small proteins that are especially important in the immune system).

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Atladóttir, H. O., et al. “Maternal Infection Requiring Hospitalization

During Pregnancy and Autism Spectrum Disorders.” *Journal of Autism and Developmental Disorders* 40, no. 12 (2010): 1423–30, doi: 10.1007/s10803-010-1006-y.

Conducted by a team of Scandinavian researchers, this study examined data from children born in Denmark between 1980 and 2005. They found that infections requiring hospitalization in pregnant women correlated with autism risk in their offspring. These infections included influenza, viral gastroenteritis, and urinary tract infections. Severe viral infections during the first trimester of pregnancy resulted in a threefold risk for autism in children, and serious bacterial infections during the second trimester caused a 1.5-fold increase in risk. This study is important because it links inflammation during the first two trimesters in pregnancy to an increased risk in autism, suggesting that pregnant women must avoid anything that causes an inflammatory response, especially in early pregnancy.

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Brown, A. S., et al. “Elevated Maternal C-Reactive Protein and Autism in a National Birth Cohort.” *Molecular Psychiatry* 19, no. 2 (2014): 259–64, ncbi.nlm.nih.gov/pubmed/23337946.

Led by researchers at Columbia University, this study examined blood from 1.2 million pregnancies in Finland. The researchers found that elevated levels of the established marker of inflammation, C-reactive protein (CRP), during pregnancy were associated with a significant increase in autism risk in offspring. Since vaccines trigger inflammation in pregnant women, and we see here that inflammation is associated with autism, this study suggests that vaccines during pregnancy are a potential trigger for autism. Another study, “Inflammatory Responses to Trivalent Influenza Virus Vaccine Among Pregnant Women” (Christian, L. M., et. al. “Inflammatory responses to trivalent influenza virus among pregnant women.” *Vaccine* 8, no. 29 (2011): 8982–87, doi: 10.1016/j.vaccine.2011.09.039) found significant increases in CRP in the bloodstreams of pregnant women

one to two days after being vaccinated.

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Kharbanda, E. O., et al. “Evaluation of the Association of Maternal Pertussis Vaccination with Obstetric Events and Birth Outcomes.” *Journal of the American Medical Association* 312, no. 18 (2014): 1897–1904, jama.jamanetwork.com/article.aspx?articleid=1930817.

The CDC now recommends pregnant women be given a vaccine against pertussis, which will theoretically protect her newborn. We have no evidence that this vaccine is safe for the developing fetus or if the maternal antibodies against pertussis will actually protect the baby. This retrospective study of more than twenty thousand pregnant moms who received the Tdap during pregnancy is used to justify that the Tdap vaccine is safe. However, the study found a small but statistically significant increase in chorioamnionitis, an inflammation and infection in the womb, which is associated with an increased risk of neonatal mortality. Weighing the unknown benefit of vaccinating pregnant women against Tdap against the documented increase of inflammation, this study provides evidence that the Tdap vaccine during pregnancy is not safe.

Appendix H

FDA Statement on Injected Aluminum Safety

FDA, U.S. Food and Drug Administration

The information on this page is current as of April 1 2015.

TITLE 21—FOOD AND DRUGS

CHAPTER I—FOOD AND DRUG ADMINISTRATION

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SUBCHAPTER C—DRUGS: GENERAL

PART 201—LABELING

Subpart G—Specific Labeling Requirements for Specific Drug Products

WARNING: This product contains aluminum that may be toxic. Aluminum may reach toxic levels with prolonged parenteral administration if kidney function is impaired. Premature neonates are particularly at risk because their kidneys are immature, and they require large amounts of calcium and phosphate solutions, which contain aluminum.

Research indicates that patients with impaired kidney function, including premature neonates, who receive parenteral levels of aluminum at greater than 4 to 5 [micro]g/kg/day accumulate aluminum at levels associated with central nervous system and bone toxicity. Tissue loading may occur at even lower rates of administration.

[65 FR 4110, Jan. 26, 2000, as amended at 67 FR 70691, Nov. 26, 2002; 68 FR 32981, June 3, 2003, emphasis ours]

Above are excerpts of the FDA document that specifically states not to inject more than 5 micrograms per kilogram of child's weight per day. The word *parenteral* is used in medicine to mean not taken by mouth but injected into a vein (IV) or into a muscle (IM). This is perhaps the most important government document on the issue of aluminum safety as relates to vaccines. A newborn weighs at most 11 pounds or 5 kilograms. According to these FDA guidelines, that newborn should get no more than 25 micrograms of aluminum a day.

You can access this document at the following FDA link:

accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=201.323.

It is also archived at drpaulapproved.com.

Appendix I

Dr. Paul's Vaccine Plan at a Glance

Combining this vaccine plan with exclusive breastfeeding, eating a diet of real food, getting enough vitamin D, exercising, and avoiding toxins like acetaminophen, aspartame, and glyphosate, the children in Dr. Paul's practice have experienced superior health and a significantly lower rate of autism than the national average, which is 1 in 45.

If you have autism in the family, a history of autoimmune disorders, or a significant MTHFR mutation: consider delayed vaccines until at least age five.

Pregnancy: No vaccines

Birth: No vaccines

2 months: Hib, DTaP

3 months: Prevnar

4 months: Hib, DTaP

5 months: Prevnar

6 months: Hib, DTaP

7–9 months: Prevnar

1 year: Hib, Prevnar

18 months: DTaP

2 years: No vaccines

3 years: MMR (always give MMR by itself)

4–6 years: DTaP (consider varicella)

10 years: Tdap (boost every 5–10 years)

11 years: Menveo or Menactra (meningococcal) (consider varicella, if your child has not had chicken pox)

12–14 years: Consider hepatitis B (three-dose series)

16–18 years: Menveo or Menactra (consider meningococcal B, hepatitis A)

Go to drpaulapproved.com for a free expanded ebook of this vaccine plan.

Notes

All URLs referenced in this note section were accessed in February 2016.

Introduction

children of fathers over forty-five: B. M. D’Onofrio et al., “Paternal Age at Childbearing and Offspring Psychiatric and Academic Morbidity,” *JAMA Psychiatry* 71, no. 4 (2014): 432–38, archpsyc.jamanetwork.com/article.aspx?articleid=1833092.

children of women who were obese: Lauren C. Reynolds et al., “Maternal Obesity and Increased Risk for Autism and Developmental Delay Among Very Preterm Infants,” *Journal of Perinatology* 34, no. 9 (2014): 688–92, ncbi.nlm.nih.gov/pmc/articles/PMC4152391.

any time you put a child under general anesthesia: “Your Child’s General Anaesthetic,” Patient, patient.co.uk/health/your-childs-general-anaesthetic.

there was a slim possibility: Andreas Fischer, “Under the Knife: Study Shows Rising Death Rates from General Anesthesia,” *Time*, August 4, 2011, healthland.time.com/2011/08/04/under-the-knife-study-shows-rising-death-rates-from-general-anesthesia.

anesthesia can kill brain cells: Bob A. Rappaport et al., “Anesthetic Neurotoxicity: Clinical Implications of Animal Models,” *New England Journal of Medicine* 372 (February 26, 2015): 796–97, doi: 10.1056/NEJMp1414786.

“After I realized that vaccine damage”: John Hicks, discussion with author, May 8, 2015.

“Conversion of the percentage”: These emails were obtained through a Freedom of Information Act (FOIA) request submitted by the Coalition for SafeMinds, a nonprofit advocacy group made up of parents of children with autism, researchers, and medical professionals that formed to get mercury out of vaccines. They were later summarized in a memo to Congressman Dan Burton (R-IN) dated May 21, 2002. For a detailed discussion of how the CDC and the FDA did not tally the total amounts of mercury in vaccines, see “Mercury in Medicine: Are We Taking Unnecessary Risks?,” *Hearing Before the House Committee on Government Reform*, July 18, 2000, 106th Cong., 2nd sess., gpo.gov/fdsys/pkg/CHRG-106hhrg72722/html/CHRG-106hhrg72722.htm, as well as David Kirby, *Evidence of Harm: Mercury in*

Vaccines and the Autism Epidemic: A Medical Controversy (New York: St. Martin's Griffin, 2005), chap. 9.

Thimerosal has mostly been phased out: “Vaccine Excipients,” Institute for Vaccine Safety, Johns Hopkins Bloomberg School of Public Health, May 28, 2014, vaccinesafety.edu/components-Excipients.htm.

In 1983 the CDC recommended eleven total shots: “Table 1. Recommended Schedule for Active Immunization of Normal Children and Infants,” CDC, cdc.gov/vaccines/schedules/images/schedule1983s.jpg.

In 2015 the CDC recommended at least fifty shots: “Figure 1. Recommended Immunization Schedule for Persons Aged 0 Through 18 Years,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-schedule.pdf.

nearly 300 other vaccines: “Medicines in Development for Vaccines,” Pharmaceutical Research and Manufacturers of America, April 20, 2012, phrma.org/media/releases/nearly-300-vaccines-development-prevention-treatment-disease.

Chapter 1: Toxins, Toxins, Toxins

Brayen spent the next thirty-two days: Marcy Martinez, “Harlingen Boy Drinks Drano That His Dad Poured into a Gatorade Bottle,” KGBT [Valley Central.com](http://valleycentral.com/news/local/harlingen-boy-drinks-drano-that-his-dad-poured-into-a-gatorade-bottle?id=635136), June 28, 2011, valleycentral.com/news/local/harlingen-boy-drinks-drano-that-his-dad-poured-into-a-gatorade-bottle?id=635136.

poisoned by windshield wiper fluid: “10 Kids Drink Windshield-Wiper Fluid at Day Care,” NBCNews.com, March 13, 2009, nbcnews.com/id/29675664/ns/us_news-life/t/kids-drink-windshield-wiper-fluid-day-care/#.VbDvzIttXyA.

tiki torch fuel: Betty Casey, “Tiki Torch Fuel Poses a Serious Danger to Children,” *Tulsa Kids*, June 2012, tulsakids.com/June-2012/Tiki-Torch-Fuel-Poses-a-Serious-Danger-to-Children.

Oklahoma toddler Jhonethyn Bumpas: “Torch Fuel Kills Oklahoma Toddler,” News9.com, November 15, 2012, news9.com/story/20113898/news-9-investigates-torch-fuel-kills-oklahoma-toddler.

one in every forty-five American children: “Estimated Prevalence of Autism and Other Developmental Disabilities Following Questionnaire Changes in the 2014 National Health Interview Survey,” CDC, National Health Statistics Report no. 87, November 13, 2015, cdc.gov/nchs/data/nhsr/nhsr087.pdf. The number of children estimated to have autism has gone up since we began writing this book. The most often cited CDC estimates of autism are one in sixty-eight. See “Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years: Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2010,” *Morbidity and Mortality Weekly Report* 63 (March 28, 2014): 1–21, cdc.gov/mmwr/preview/mmwrhtml/ss6302a1.htm?s_cid=ss6302a1_w.

Toxins That May Be Implicated: A systematic review of neurotoxins in 2006 outlined the dangers of lead, methylmercury, polychlorinated biphenyls, arsenic, and toluene. Philippe Grandjean and Philip J. Landrigan have added six additional developmental neurotoxicants—manganese, fluoride, chlorpyrifos, dichlorodiphenyltrichloroethane, tetrachloroethylene, and the polybrominated diphenyl ethers. P. Grandjean and P. J. Landrigan, “Neurobehavioural Effects of Developmental Toxicity,” *Lancet Neurology* 13,

no. 3 (2014): 330–38, doi: 10.1016/S1474-4422 (13)70278-3.

Acetaminophen (also called paracetamol): “Common Medicines,” KnowYourDose.org, knowyourdose.org/common-medicines.

Endocrine disruptors: “Endocrine Disruptors,” National Institute of Environmental Health Sciences, August 11, 2015, niehs.nih.gov/health/topics/agents/endocrine.

Fluoride, a chemical added to drinking water: “Harvard: Fluoride Can Increase Autism and Attention Deficit Disorder,” *Washington’s Blog*, March 10, 2014, washingtonsblog.com/2014/03/harvard-fluoride-can-increase-attention-deficit-disorder.html; “Sources of Fluoride,” FluorideAlert.org, fluoridealert.org/issues/sources.

Methanol, a chemical found in cigarette smoke: “Methanol,” Office of Environmental Health Hazard Assessment, oehha.ca.gov/public_info/facts/pdf/Methanol2012.pdf; “Methanol,” National Institute for Occupational Safety and Health, cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html.

Mercury, an element found in thimerosal: “Vaccines, Blood & Biologics: Thimerosal in Vaccines,” FDA, August 20, 2015, fda.gov/BiologicsBloodVaccines/SafetyAvailability/VaccineSafety/UCM096228#t2.

more than six hundred prescription and over-the-counter: For a list of medications that contain acetaminophen, see “Common Medicines,” KnowYourDose.org, knowyourdose.org/common-medicines.

children who took Tylenol after: Stephen T. Schultz et al., “Acetaminophen (Paracetamol) Use, Measles-Mumps-Rubella Vaccination, and Autistic Disorder,” *Autism* 12, no. 3 (2008): 293–307, doi: 10.1177/1362361307089518.

research conducted...on laboratory rats: B. H. Lauterberg and J. R. Mitchell, “Toxic Doses of Acetaminophen Suppress Hepatic Glutathione Synthesis in Rats,” *Hepatology* 2, no. 1 (1982): 8–12, ncbi.nlm.nih.gov/pubmed/7054070.

acetaminophen...can wreak havoc on living cells: D. J. Hoivik et al., “Gender-Related Differences in Susceptibility to Acetaminophen-Induced Protein Arylation and Nephrotoxicity in the CD-1 Mouse,” *Toxicology and Applied Pharmacology* 130, no. 2 (1995): 257–71, ncbi.nlm.nih.gov/pubmed/7871539.

causing mitochondrial disruptions: P. C. Burcham and A. W. Harman, “Mitochondrial Dysfunction in Paracetamol Hepatotoxicity: In Vitro Studies in Isolated Mouse Hepatocytes,” *Toxicology Letters* 50, no. 1 (1990): 37–48, ncbi.nlm.nih.gov/pubmed/2296776.

Giving already susceptible children Tylenol: Readers interested in this topic will find the following articles helpful: Ann Z. Bauer and David Kriebel, “Prenatal and Perinatal Analgesic Exposure and Autism: An Ecological Link,” *Environmental Health* 12, no. 41 (2013), doi: 10.1186/1476-069X-12-41; Peter Good, “Did Acetaminophen Provoke the Autism Epidemic?,” *Alternative Medicine Review* 14, no. 4 (2009): 364–72, altmedrev.com/publications/14/4/364.pdf; Stephen Shultz, “Can Autism Be Triggered by Acetaminophen Activation of the Endocannabinoid System?” *Acta Neurobiologiae Experimentalis* 70, no. 2 (2010): 227–31, ane.pl/pdf/7026.pdf; William Shaw, “Increased Acetaminophen Use in Genetically Vulnerable Children Appears to Be a Major Cause of the Epidemics of Autism, Attention Deficit with Hyperactivity, and Asthma,” *Journal of Restorative Medicine* 2, no. 1 (2013): 14–29, doi: 10.14200/jrm.2013.2.0101; and Stephen T. Schultz et al., “Acetaminophen (Paracetamol) Use, Measles-Mumps-Rubella Vaccination, and Autistic Disorder,” *Autism* 12, no. 3 (2008): 293–307, doi: 10.1177/1362361307089518.

The researchers don’t suggest that circumcision: Ann Z. Bauer and David Kriebel, “Prenatal and Perinatal Analgesic Exposure and Autism: An Ecological Link,” *Environmental Health* 12, no. 41 (2013), doi: 10.1186/1476-069X-12-41.

significantly higher risks of attention deficit disorders: Zeyan Liew et al., “Acetaminophen Use During Pregnancy, Behavioral Problems, and Hyperkinetic Disorders,” *Journal of the American Medical Association Pediatrics* 168, no. 4 (2014): 313–20, doi: 10.1001/jamapediatrics.2013.4914.

“The suggestion of a defined cause-effect”: K. Schrör, “Aspirin and Reye Syndrome: A Review of the Evidence,” *Paediatric Drugs* 9, no. 3 (2007): 195–204, ncbi.nlm.nih.gov/pubmed/17523700.

the leading cause of acute liver failure: A. M. Larson et al., “Acetaminophen-Induced Acute Liver Failure: Results of a United States Multicenter, Prospective Study,” *Hepatology* 42, no. 6 (2005): 1364–72, ncbi.nlm.nih.gov/pubmed/16317692.

actually not a very effective pain reliever: Manuela L. Ferreira et al., “Efficacy and Safety of Paracetamol for Spinal Pain and Osteoarthritis: Systematic Review and Meta-analysis of Randomised Placebo Controlled

Trials,” *BMJ* 350 (March 2015), doi: [dx.doi.org/10.1136/bmj.h1225](https://doi.org/10.1136/bmj.h1225); Michael Doherty et al., “A Randomised Controlled Trial of Ibuprofen, Paracetamol, or a Combination Tablet of Ibuprofen/Paracetamol in Community-Derived People with Knee Pain,” *Annals of the Rheumatic Diseases* 70, no. 9 (2011): 1534–41, doi: 10.1136/ard.2011.154047.

ibuprofen, the main ingredient: G. Sigthorsson et al., “Intestinal Permeability and Inflammation in Patients on NSAIDs,” *Gut* 43, no. 4 (1998): 506–11, [ncbi.nlm.nih.gov/pubmed/9727292](https://pubmed.ncbi.nlm.nih.gov/9727292/); “Ibuprofen: Important Warning,” MedLine Plus, September 15, 2015, [nlm.nih.gov/medlineplus/druginfo/meds/a682159.html](https://pubmed.ncbi.nlm.nih.gov/medlineplus/druginfo/meds/a682159.html).

more than 100,000 hospitalizations and 16,000 deaths: M. Michael Wolfe et al., “Gastrointestinal Toxicity of Nonsteroidal Antiinflammatory Drugs,” *New England Journal of Medicine* 340, no. 24 (1999): 1888–99, doi: 10.1056/NEJM1999 06173402407.

Magnesium deficiency...cause of headaches: S. Demirkaya et al., “Efficacy of Intravenous Magnesium Sulfate in the Treatment of Acute Migraine Attacks,” *Headache* 41, no. 2 (2001): 171–77, [ncbi.nlm.nih.gov/pubmed/11251702](https://pubmed.ncbi.nlm.nih.gov/11251702/); R. H. Waring, “Report on Absorption of Magnesium Sulfate (Epsom Salts) Across the Skin,” Magnesium Online Library, January 10, 2004, mgwater.com/transdermal.shtml.

turmeric, a spice derived from a ginger-like root: Subash C. Gupta et al., “Therapeutic Roles of Curcumin: Lessons Learned from Clinical Trials,” *AAPS Journal* 15, no. 1 (2013): 195–218, doi: 10.1208/s12248-012-9432-8; N. Chainani-Wu, “Safety and Anti-inflammatory Activity of Curcumin: A Component of Turmeric (*Curcuma longa*),” *Journal of Alternative and Complementary Medicine* 9, no. 1 (2003): 161–68, [ncbi.nlm.nih.gov/pubmed/12676044](https://pubmed.ncbi.nlm.nih.gov/12676044/).

Formaldehyde is a known carcinogen: National Toxicology Program, *Report on Carcinogens*, 13th ed. (Research Triangle Park, NC: Department of Health and Human Services, Public Health Service, 2014), ntp.niehs.nih.gov/ntp/roc/content/listed_substances_508.pdf.

formaldehyde...multiple sclerosis: A. P. Khokhlov, “Disorders of Formaldehyde Metabolism and Its Metabolic Precursors in Patients with Multiple Sclerosis,” *Zhurnal Nevropatologii Psikhatrii Imeni S.S. Korsakova* 89, no. 2 (1989): 45–48, [ncbi.nlm.nih.gov/pubmed/2471378](https://pubmed.ncbi.nlm.nih.gov/2471378/).

formaldehyde...autism: Woodrow C. Monte and Ralph G. Walton, “Dietary Methanol and Autism,” *Medical Hypotheses* 85, no. 4 (2015): 441–46, doi:

10.1016/j.mehy.2015.06.025.

Myelination allows information: Woodrow C. Monte, *While Science Sleeps: A Sweetener Kills* (Lexington, KY: CreateSpace, 2011).

This means that a one-year-old: *Environmental Health Criteria 196: Methanol* (1997) by the International Programme on Chemical Safety (IPCS) under the joint sponsorship of the United Nations Environment Programme, the International Labour Organisation, and the World Health Organization, p. 8.

over 70 grams of ethanol: “Blood Alcohol Concentration (BAC),” Clemson Redfern Health Center, clemson.edu/campus-life/campus-services/redfern/alcohol/bac.html.

“may cause birth defects of the central”: “Methanol: Systemic Agent,” CDC, National Institute for Occupational Safety and Health (NIOSH), Emergency Response Safety and Health Database, May 28, 2015, cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html.

methanol to damage the neurological system: “NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Methanol,” U.S. Department of Health and Human Services, National Toxicology Program, Center for the Evaluation of Risks to Human Reproduction, September 2003, ntp.niehs.nih.gov/ntp/ohat/methanol/methanol_monograph.pdf.

cause death to developing mice embryos: J. M. Hansen, “Methanol, Formaldehyde, and Sodium Formate Exposure in Rat and Mouse Conceptuses: A Potential Role of the Visceral Yolk Sac in Embryotoxicity,” *Birth Defects Research (Part A)* 73, no. 2 (2005): 72–82, ncbi.nlm.nih.gov/pubmed/?term=Methanol%2C+Formaldehyde%2C+and+Sodium+Formate+Exposure+in+Rat+and+Mouse+Conceptuses%3A+A+Potential+Role+of+the+Visceral+Yolk+Sac+in+Embryotoxicity.

it suggests a strong correlation: Woodrow C. Monte and Ralph G. Walton, “Dietary Methanol and Autism,” *Medical Hypotheses* 85, no. 4 (2015): 441–46, doi: 10.1016/j.mehy.2015.06.025.

the peer-reviewed journal: Though *Medical Hypotheses* was not formerly a peer-reviewed journal, it recently changed its guidelines. “Guide for Authors,” Elsevier, elsevier.com/journals/medical-hypotheses/0306-9877/guide-for-authors.

But despite our collective understanding: One study found that children whose moms had cord blood mercury levels ≥ 7.5 $\mu\text{g/L}$ were four times as likely to have an IQ score below 80. Joseph L. Jacobson et al., “Relation of Prenatal Methylmercury Exposure from Environmental Sources to Childhood IQ,” *Environmental Health Perspectives* 123, no. 8 (2015), doi: 10.1289/ehp.1408554. Another study found that prenatal mercury exposure decreased methylation (a key metabolic pathway important for neurotransmitter function and getting rid of toxins), resulting in delayed neurodevelopment. It identified specific loci residing in the EMID2 gene that were hypomethylated as a probable mechanism for the neurotoxicity. Jennifer Z. J. Maccani et al., “Placental DNA Methylation Related to Both Infant Toenail Mercury and Adverse Neurobehavioral Outcomes,” *Environmental Health Perspectives* 123, no. 7 (2015), doi: 10.1289/ehp.1408561. See also “Mercury in Drugs and Biologic Products,” SafeMinds.org, safeminds.org/wp-content/uploads/2014/07/Mercury-in-Drugs-and-Biologics-FDA-updated-2009.pdf.

In 2000 the National Research Council (NRC) found: Committee on the Toxicological Effects of Methylmercury, Board of Environmental Studies and Toxicology, Commission on Life Sciences, National Research Council, *Toxicological Effects of Methylmercury* (Washington, DC: National Academy Press, 2000), 11, nap.edu/read/9899/chapter/1.

The FDA was even more generous: David Kirby, *Evidence of Harm: Mercury in Vaccines and the Autism Epidemic, a Medical Controversy* (New York: St. Martin’s Press, 2006), 49.

125 times the safe limit: To understand how I did the math, with references to each agency’s guidelines, please see *ibid.*, 55.

mercury in at least three different multidose flu shots: “Vaccine Excipient and Media Summary,” **Appendix B** in J. Hamborsky, A. Kroger, and S. Wolfe, eds., *Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book*, 13th ed. (Washington, DC: Public Health Foundation, 2015), cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

silver dental fillings: Jennifer D. Zwicker et al., “Longitudinal Analysis of the Association Between Removal of Dental Amalgam, Urine Mercury and 14 Self-Reported Health Symptoms,” *Environmental Health* 13, no. 95 (2014), doi: 10.1186/1476-069X-13-95.

Removal of amalgam fillings: *Ibid.*

But don't have mercury fillings removed: Normal thyroid function in mothers is vital for normal brain development in the fetus. Researchers have found an inverse relationship between maternal mercury exposure among mothers who took iodine tablets and thyroid hormone levels. Sabrina Llop et al., "Synergism Between Exposure to Mercury and Use of Iodine Supplements on Thyroid Hormones in Pregnant Women," *Environmental Research* 138 (2015): 298–305, doi: 10.1016/j.envres.2015.02.026. Another study showed that methyl mercury, at low levels generally considered safe, was associated with subclinical autoimmunity among reproductive-age females. Emily C. Somers et al., "Mercury Exposure and Antinuclear Antibodies Among Females of Reproductive Age in the United States: NHANES," *Environmental Health Perspectives* 123, no. 8 (2015): 792–98, doi: 10.1289/ehp.1408751.

mistakenly assumed that ingested aluminum: The Children's Hospital of Philadelphia states that an infant gets 4 milligrams during the first six months of life in vaccines and that during the same period infants get 7 milligrams from breast milk and about 38 milligrams in infant formula or 117 milligrams in soy-based formula. This is apparently its justification for injecting this neurotoxin. "Vaccine Ingredients—Aluminum," Children's Hospital of Philadelphia, November 4, 2014, chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/aluminum#.VlqQz2SrRo4.

in children who had kidney problems: E. Nathan and S. Pedersen, "Dialysis Encephalopathy in a Non-dialysed Uraemic Boy Treated with Aluminum Hydroxide Orally," *Acta Paediatrica Scandinavica* 69, no. 6 (1980): 793–96, ncbi.nlm.nih.gov/pubmed/?term=%E2%80%9CDialysis+Encephalopathy+in+a+Non-dialysed+Uraemic+Boy+Treated+with+Aluminum+Hydroxide+Orally%2C%E2%80%9D; Sharon P. Andreoli, et al., "Aluminum Intoxication from Aluminum-Containing Phosphate Binders in Children with Azotemia Not Undergoing Dialysis," *New England Journal of Medicine* 310, no. 17 (April 26, 1984): 1079–84, doi: 0.1056/NEJM198404263101704.

higher levels of aluminum in their urine: W. W. K. Koo et al., "Response to Aluminum in Parenteral Nutrition During Infancy," *Journal of Pediatrics* 109, no. 5 (1986): 877–83, ncbi.nlm.nih.gov/pubmed/3095522; W. W. K. Koo et al., "Response of Preterm Infants to Aluminum in Parenteral Nutrition," *Journal of Parenteral and Enteral Nutrition* 13, no. 5 (1989): 516–19, ncbi.nlm.nih.gov/pubmed/2514293.

amount of aluminum was directly related: N. J. Bishop et al., "Aluminum Neurotoxicity in Preterm Infants Receiving Intravenous-Feeding Solutions," *New England Journal of Medicine* 336, no. 22 (1997): 1557–61, ncbi.nlm.nih.gov/pubmed/9164811.

evidence of toxicity from parenteral aluminum: FDA, “Aluminum in Large and Small Volume Parenterals Used in Total Parenteral Nutrition; Delay in Effective Date,” *Federal Register*, January 26, 2001, federalregister.gov/articles/2001/01/26/01-2125/aluminum-in-large-and-small-volume-parenterals-used-in-total-parenteral-nutrition-delay-of-effective.

“Research indicates that patients”: Ibid.

cause developmental delays: M. Tariq, “A Review of Reproductive Toxicity of Aluminum,” in *Reproductive Toxicology*, ed. Mervyn Richardson (Weinheim, Germany: VCH, 1993), 245–61.

At least six separate studies: G. Cherroret et al., “Effects of Postnatal Aluminum Exposure on Choline Acetyl Transferase Activity and Learning Abilities in the Rat,” *Neurotoxicology and Teratology* 14, no. 4 (1992): 259–64, ncbi.nlm.nih.gov/pubmed/?term=%E2%80%9CEffects+of+Postnatal+Aluminum+Exposure+on+Choline+Acetyl+Transferase+Activity+and+Learning+Abilities+in+the+Rat%2C%E2%80%9D; M. S. Golub et al., “Maternal and Developmental Toxicity of Chronic Aluminum Exposure in Mice,” *Fundamental and Applied Toxicology* 8, no. 3 (1987): 346–57, ncbi.nlm.nih.gov/pubmed/?term=%E2%80%9CMaternal+and+Developmental+Toxicity+of+Chronic+Aluminum+Exposure+in+Mice%2C%E2%80%9D; M. S. Golub et al., “Behavioral Performance of Swiss Webster Mice Exposed to Excess Dietary Aluminum During Development or During Development and as Adults,” *Toxicology and Applied Pharmacology* 133, no. 1 (1995): 64–72, ncbi.nlm.nih.gov/pubmed/7597711; G. Muller et al., “Developmental Alterations in Offspring of Female Rats Orally Intoxicated by Aluminum Lactate at Different Gestation Periods,” *Teratology* 42, no. 3 (1990) 253–61, ncbi.nlm.nih.gov/pubmed/?term=Developmental+alterations+in+offspring+of+female+rats+orally+intoxicated+by+aluminum+lactate+at+different+gestation+periods; K. R. Reuhl, “Delayed Expression of Neurotoxicity: The Problem of Silent Damage,” *Neurotoxicity* 12, no. 3 (1991): 341–46, ncbi.nlm.nih.gov/pubmed/?term=Delayed+expression+of+neurotoxicity%3A+The+problem+of+silent+damage; D. Santucci et al., “Early Exposure to Aluminum Affects Eight-Arm Maze Performance and Hippocampal Nerve Growth Factor Levels in Adult Mice,” *Neuroscience Letters* 166, no. 1 (1994): 89–92, ncbi.nlm.nih.gov/pubmed/?term=Early+Exposure+to+Aluminum+Affects+Eight-arm+Maze+Performance+and+Hippocampal+Nerve+Growth+Factor+in+Adult+Mice; R. A. Yorkel, “Toxicity of Gestational Aluminum Exposure to the Maternal Rabbit and Offspring,” *Toxicology and Applied Pharmacology* 79, no. 1 (1985): 121–33, ncbi.nlm.nih.gov/pubmed/?term=Toxicity+of+gestational+aluminum+exposure+to+the+maternal+rabbit+offspring.

injected aluminum caused neurotoxicity in mice: C. A. Shaw, “Aluminum Hydroxide Injections Lead to Motor Deficits and Motor Neuron Degeneration,” *Journal of Inorganic Biochemistry* 103, no. 11 (2009): 1555–62, doi: 10.1016/j.jinorgbio.2009.05.019.

aluminum can interfere with cellular metabolism: J. D. Birchall and J. S. Chappell, “Aluminum, Chemical Physiology, and Alzheimer’s Disease,” *Lancet* 2, no. 8618 (1988): 1008–10, ncbi.nlm.nih.gov/pubmed/2902440.

information transfer in DNA: J. C. Troncoso et al., “Immunocytochemical Studies on Neurofilament Antigens in the Neurofibrillary Pathology Induced by Aluminum,” *Brain Research* 364, no. 2 (1986): 295–300, ncbi.nlm.nih.gov/pubmed/?term=%E2%80%9CImmunocytochemical+Studies+on+Neurofilament+Antigens+in+the+Neurofibrillary+Pathology+Induced+by+Aluminum%2C%E2%80%9D; S. J. Karlik et al., “Interaction of Aluminum Species with Deoxyribonucleic Acid,” *Biochemistry* 19, no. 26 (1980): 5991–98, ncbi.nlm.nih.gov/pubmed/7470444.

interfere with enzymes: G. A. Trapp, “Studies of Aluminum Interactions with Enzymes and Proteins,” *NeuroToxicology* 1 (1980): 89.

neurotoxic through increased lipid peroxidation: M. C. Dominguez et al., “Effect of Aluminum and Lead Salts on Lipid Peroxidation and Cell Survival in Human Skin Fibroblasts,” *Biological Trace Element Research* 47, nos. 1–3 (1995): 57–67, ncbi.nlm.nih.gov/pubmed/7779576.

(depending on the brand): “Components of Tdap Vaccine,” Johns Hopkins School of Public Health, vaccinesafety.edu/components-Tdap.htm.

“must be more concerned about aluminum content”: D. Fanni et al., “Aluminum Exposure and Toxicity in Neonates: A Practical Guide to Halt Aluminum Overload in the Prenatal and Perinatal Periods,” *World Journal of Pediatrics* 10, no. 2 (2014): 101–7, doi: 10.1007/s12519-014-0477-x.

Close to eight hundred man-made chemicals: Åke Bergman et al., eds., *State of the Science of Endocrine Disrupting Chemicals 2012: Summary for Decision-Makers* (Geneva: United Nations Environment Programme, 2013), 2, apps.who.int/iris/bitstream/10665/78102/1/WHO_HSE_PHE_IHE_2013.1_eng.pdf?ua=1.

Syngenta used a public relations team: Rachel Aviv, “A Valuable Reputation,” *The New Yorker*, February 10, 2014, newyorker.com/magazine/2014/02/10/a-valuable-reputation.

Endocrine disruptors not only: Bergman et al., *State of the Science of Endocrine Disrupting Chemicals 2012*.

Glyphosate can cause both slow death and acute poisoning: Darren M. Roberts et al., “A Prospective Observational Study of the Clinical Toxicology of Glyphosate-Containing Herbicides in Adults with Acute Self-Poisoning,” *Clinical Toxicology* 48, no. 2 (2010): 129–36, doi: 10.3109/15563650903476491.

imbibed glyphosate in Sri Lanka: Ibid.

we pump at least 128,000 tons: “U.S. to Place Restrictions on Glyphosate Use,” Global Agriculture, April 2, 2015, globalagriculture.org/whats-new/news/news/en/30540.html.

lowering recommended fluoride levels: Alexandra Sifferlin, “U.S. Lowers Recommended Fluoride Levels in Drinking Water,” Time.com, April 27, 2015, time.com/3837133/fluoride-drinking-water-teeth. The Department of Health and Human Services now recommends 0.7 milligrams of fluoride per liter of water, which is almost half of the 1.2 milligrams that has been recommended since 1962. “US Lowers Fluoride Levels in Drinking Water for First Time in Over 50 Years,” *Guardian*, April 27, 2015, theguardian.com/environment/2015/apr/27/fluoride-levels-us-drinking-water-lowered-splotchy-teeth.

The Cochrane Collaboration: Anne-Marie Glenny et al., “Water Fluoridation for the Prevention of Dental Caries,” Cochrane Collaboration, June 18, 2015, doi: 10.1002/14651858.CD010856.pub2.

In very small quantities fluoride: Committee on Fluoride in Drinking Water, Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Research Council of the National Academies, *Fluoride in Drinking Water: A Scientific Review of EPA’s Standards* (Washington, DC: National Academies Press, 2006), 205–67, nap.edu/openbook.php?record_id=11571&page=266.

precautionary principle: Marco Martuzzi and Joel A. Tickner, eds., *The Precautionary Principle: Protecting Public Health, the Environment and the Future of our Children* (Copenhagen: World Health Organization Europe, 2004), euro.who.int/__data/assets/pdf_file/0003/91173/E83079.pdf.

Chapter 2: Pregnancy Matters

And your partner's job is: Katrina Johnson, "The Effects of Maternal Stress and Anxiety During Pregnancy," Maternal Substance Abuse and Child Development Project, Emory University School of Medicine, [psychiatry.emory.edu/PROGRAMS/GADrug/Feature%20Articles/Mothers/The%20effects%20of%20maternal%20stress%20and%20anxiety%20during%20pregnancy%20\(moto7\).pdf](http://psychiatry.emory.edu/PROGRAMS/GADrug/Feature%20Articles/Mothers/The%20effects%20of%20maternal%20stress%20and%20anxiety%20during%20pregnancy%20(moto7).pdf).

In case you think this is just hippie advice: Laura Beil, "Typical American Diet Can Damage the Immune System," *Science News*, May 18, 2015, sciencenews.org/article/typical-american-diet-can-damage-immune-system.

A healthy diet can help prevent: Teresa Fung, ed., *Healthy Eating: A Guide to the New Nutrition. A Harvard Medical School Special Health Report* (Cambridge, MA: Harvard Health Publications, 2011), 26–39.

mother's immune system...transferred to the fetus: L. A. Hansen et al., "The Transfer of Immunity from Mother to Child," *Annals of the New York Academy of Sciences* (Impact Factor: 4.38) 987, no. 1 (2003): 199–206, doi: 10.1111/j.1749-6632.2003.tb06049.x.

health outcomes of the baby: F. N. Jacka et al., "Maternal and Early Postnatal Nutrition and Mental Health of Offspring by Age 5 Years: A Prospective Cohort Study," *Journal of the American Academy of Child and Adolescent Psychiatry* 52, no. 10 (2013): 1038–47, ncbi.nlm.nih.gov/pubmed/24074470. A useful discussion of how poor nutrition in pregnancy leads to other negative health outcomes can be found in "Poor Health During Pregnancy May Have Long-Term Effects on Child's Health, Study Suggests," *Science Daily*, July 1, 2008, sciencedaily.com/releases/2008/06/080630200951.htm.

"Our inflammatory diets cause problems": William Parker, Ph.D. (associate professor, Duke University School of Medicine), interview by author, June 1, 2015.

caramel color often contains 4-methylimidazole: J. S. Tyler, "Caramel Color in Soft Drinks and Exposure to 4-Methylimidazole: A Quantitative Risk Assessment," *PLOS One* (February 18, 2015), journals.plos.org/plosone/article?id=10.1371/journal.pone.0118138.

convert the methanol in aspartame to formaldehyde: C. Trocho et al., “Formaldehyde Derived from Dietary Aspartame Binds to Tissue Components In Vivo,” *Life Sciences* 63, no. 5 (1988): 337–49, [ncbi.nlm.nih.gov/pubmed/?term=%E2%80%9CFormaldehyde+Derived+From+Dietary+Aspartame+Binds+to+Tissue+Components+In+Vivo%2C%E2%80%9D](https://pubmed.ncbi.nlm.nih.gov/?term=%E2%80%9CFormaldehyde+Derived+From+Dietary+Aspartame+Binds+to+Tissue+Components+In+Vivo%2C%E2%80%9D).

trigger for autoimmune disorders: Woodrow C. Monte, *While Science Sleeps: A Sweetener Kills* (Lexington, KY: CreateSpace, 2011).

Aspartame is so bad for human health: Woodrow C. Monte, “Aspartame, Methanol and the Public Health,” *Journal of Applied Nutrition* 36, no. 1 (1984): 42–58, dorway.com/doctors-speak-out/aspartame-methanol-the-public-health.

there are toxins in the water: The most comprehensive guide for readers who are interested in questions of water contamination (and also other toxins) was put together by three doctors and two researchers: Ted Schettler et al., *In Harm’s Way: Toxic Threats to Child Development* (Cambridge, MA: Greater Boston Physicians for Social Responsibility, 2000), psr.org/chapters/boston/resources/in-harms-way-report-download.html?referrer=https://www.google.com.

A Norwegian study on maternal folate: P. Surén et al., “Association Between Maternal Use of Folic Acid Supplements and Risk of Autism Spectrum Disorders in Children,” *Journal of the American Medical Association* 309, no. 6 (2013): 570–77, doi: 10.1001/jama.2012.155925.

taking regular folate or folic acid: R. Obeid, W. Holzgreve, and K. Pietrzik, “Is 5-methyltetrahydrofolate an Alternative to Folic Acid for the Prevention of Neural Tube Defects?” *Journal of Perinatal Medicine* 41, no. 5 (2013): 469–83, doi: 10.1515/jpm-2012-0256.

Variations in the MTHFR gene: “MTHFR,” Genetics Home Reference, National Library of Medicine, November 2014, ghr.nlm.nih.gov/gene/MTHFR; H. Chen et al., “Methylenetetrahydrofolate Reductase Gene Polymorphisms and Recurrent Pregnancy Loss in China: A Systematic Review and Meta-analysis,” *Archives of Gynecology and Obstetrics* 293, no. 2 (2016): 283–90, [ncbi.nlm.nih.gov/pubmed/26399758](https://pubmed.ncbi.nlm.nih.gov/26399758/); Lesley Plumptre et al., “High Concentrations of Folate and Unmetabolized Folic Acid in a Cohort of Pregnant Canadian Women and Umbilical Cord Blood,” *American Journal of Clinical Nutrition* 102, no. 4 (2015): 848–57, doi: 10.3945/ajcn.115.110783.

vitamin D levels affect your vitamin K levels: Kate Rheaume-Bleue, *Vitamin K2 and the Calcium Paradox: How a Little-Known Vitamin Could Save Your*

Life (New York: Wiley, 2012).

cautioned against giving the Tdap...during pregnancy: Trudy V. Murphy et al., “Prevention of Pertussis, Tetanus, and Diphtheria Among Pregnant and Postpartum Women and Their Infants: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report* 57, no. 4 (2008): 1–47, 51, cdc.gov/mmwr/preview/mmwrhtml/rr5704a1.htm.

a massive experiment on unborn American children: “Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccine (Tdap) in Pregnant Women,” *Morbidity and Mortality Weekly Report* 62, no. 7 (2013): 131–35, cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm.

every pregnant mom in America...get the Tdap vaccine: “Pregnancy Rates for U.S. Women Continue to Drop,” CDC, December 2013, cdc.gov/nchs/data/databriefs/db136.htm.

330 and 250 micrograms of aluminum respectively: “Highlights for Prescribing Information: Adacel,” FDA, fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm142764.pdf; “Highlights for Prescribing Information: Boostrix,” FDA, fda.gov/downloads/BiologicsBloodVaccines/UCM152842.pdf.

Pregnant women who catch it: ACOG Committee on Obstetric Practice, “ACOG Committee Opinion Number 305, November 2004: Influenza Vaccination and Treatment During Pregnancy,” *Obstetrics and Gynecology* 104, no. 5, pt. 1 (2004): 1125–26, ncbi.nlm.nih.gov/pubmed/15516422. See also “Pregnant Women and Influenza (Flu),” CDC, cdc.gov/flu/protect/vaccine/pregnant.htm.

only about 23 percent effective: “Seasonal Influenza Vaccine Effectiveness, 2005–2015,” CDC, November 18, 2015, cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm.

only 9 percent effective among children: personal communication between CDC and researcher Melissa Chianta. See also Brendan Flannery and Jessie Clippard, “End-of-Season Influenza Vaccine Effectiveness Estimates for the 2014–2015 Season: US Influenza Vaccine Effectiveness (Flu VE) Network” (slide presentation), Advisory Committee on Immunization Practices meeting, June 24, 2015, cdc.gov/vaccines/acip/meetings/downloads/slides-2015-06/flu-02-flannery.pdf.

vaccinated women had the same risk: S. B. Black et al., “Effectiveness of Influenza Vaccine During Pregnancy in Preventing Hospitalizations and Outpatient Visits for Respiratory Illness in Pregnant Women and Their Infants,” *American Journal of Perinatology* 21, no. 6 (2004): 333–39, ncbi.nlm.nih.gov/pubmed/15311370.

higher incidence of gestational diabetes and eclampsia: F. Trotta et al., “Evaluation of Safety of A/H1N1 Pandemic Vaccination During Pregnancy: Cohort Study,” *British Journal of Medicine* 348 (May 29, 2014), doi: 10.1136/bmj.g3361.

flu vaccine results in inflammation in pregnant women: Alexander W. Kay et al., “Enhanced Natural Killer-Cell and T-Cell Responses to Influenza: A Virus During Pregnancy,” *Proceedings of the National Academy of Sciences* 111, no. 40 (2014): 14506–11, doi: 10.1073/pnas.1416569111.

flu vaccine provokes a measurable inflammatory response: Lisa M. Christian et al., “Inflammatory Responses to Trivalent Influenza Virus Vaccine Among Pregnant Women,” *Vaccine* 29, no. 48 (2011): 8982–87, doi: 10.1016/j.vaccine.2011.09.039.

inflammation during pregnancy...miscarriage: O. B. Christiansen et al., “Inflammation and Miscarriage,” *Seminars in Fetal and Neonatal Medicine* 11, no. 5 (2006): 302–8, ncbi.nlm.nih.gov/pubmed/16682265.

inflammation during pregnancy...depression: Lisa M. Christian et al., “Depressive Symptoms Are Associated with Elevated Serum Proinflammatory Cytokines Among Pregnant Women,” *Brain, Behavior, and Immunity* 23, no. 6 (2009): 750–54, doi: 10.1016/j.bbi.2009.02.012.

inflammation during pregnancy...death: Alexander W. Kay et al., “Enhanced Natural Killer-Cell and T-Cell Responses to Influenza: A Virus During Pregnancy,” *Proceedings of the National Academy of Sciences* 111, no. 40 (2014): 14506–11, doi: 10.1073/pnas.1416569111.

inflammatory response in pregnant women: Alan S. Brown et al., “Elevated Maternal C-Reactive Protein and Autism in a National Birth Cohort,” *Molecular Psychiatry* 19, no. 2 (2014): 259–64, doi: 10.1038/mp.2012.197.

thimerosal...is 49.6 percent ethylmercury: Martyn A. Sharpe, Andrew D. Livingston, and David S. Baskin, “Thimerosal-Derived Ethylmercury Is a Mitochondrial Toxin in Human Astrocytes: Possible Role of Fenton Chemistry in the Oxidation and Breakage of mtDNA,” *Journal of Toxicology* 2012, Article ID 373678 (2012), doi: 10.1155/2012/373678.

hazardous waste: “Managing Excess Vaccines,” Wisconsin Department of Natural Resources, Waste and Materials Management, PUB-WA 841, February 2010.

washing your hands: Tara Parker-Pope, “With Soap and Water or Sanitizer, a Cleaning That Can Stave Off the Flu,” *New York Times*, September 14, 2009, nytimes.com/2009/09/15/health/15well.html?_r=0.

the toxins the bacteria release: “Pertussis (Whooping Cough),” CDC, September 8, 2015, cdc.gov/pertussis/about/causes-transmission.html.

In 2012...eighteen children died: “2012 Final Pertussis Surveillance Report,” CDC, cdc.gov/pertussis/downloads/pertuss-surv-report-2012.pdf.

The deaths are typically even fewer: “2013 Final Pertussis Surveillance Report,” CDC, cdc.gov/pertussis/downloads/pertuss-surv-report-2013.pdf; *ibid.*, 2014 report.

Tdap vaccine contains an amount of aluminum: “Highlights for Prescribing Information: Adacel,” FDA, fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm142764.pdf.

biological products for infants: “Study Reports Aluminum in Vaccines Poses Extremely Low Risk to Infants,” FDA, February 6, 2015, fda.gov/BiologicsBloodVaccines/ScienceResearch/ucm284520.htm.

“There is simply too much evidence of risk”: Cindy Schneider, M.D., to author, September 17, 2015.

“It looked like my face”: Emilie Ritchie (mother) to author, May 26, 2015.

Bell’s palsy...a possible side effect: W. Zhou et al., “A Potential Signal of Bell’s Palsy After Parenteral Inactivated Influenza Vaccines: Reports to the Vaccine Adverse Event Reporting System (VAERS)—United States, 1991–2001,” *Pharmacoepidemiology and Drug Safety* 13, no. 8 (2004): 505–10, [ncbi.nlm.nih.gov/pubmed/?term=A+potential+signal+of+Bell%27s+palsy+after+parenteral+inactivated+influenza+vaccines%3A+reports+to+the+Vaccine+Adverse+Event+Reporting+System+\(VAERS\)%E2%80%94United+States%2C+1991%E2%80%932001](http://ncbi.nlm.nih.gov/pubmed/?term=A+potential+signal+of+Bell%27s+palsy+after+parenteral+inactivated+influenza+vaccines%3A+reports+to+the+Vaccine+Adverse+Event+Reporting+System+(VAERS)%E2%80%94United+States%2C+1991%E2%80%932001).

a possible adverse event following vaccination: B. Rath et al., “All That Palsies Is Not Bell’s—The Need to Define Bell’s Palsy as an Adverse Event Following Immunization,” *Vaccine* 26, no. 1 (2007): 1–14, ncbi.nlm.nih.gov/pubmed/18037542.

flu vaccine is one of the most reactive: “Data and Statistics,” U.S. Department of Health and Human Resources, Health Resources and Services Administration, July 1, 2015, hrsa.gov/vaccinecompensation/statisticsreport.pdf.

Reactions that warranted government compensation: hrsa.gov/vaccinecompensation/dojpresentation.pdf, 11–17. A photocopy of the original Department of Justice document, which no longer seems to be available online, can be found here: healthimpactnews.com/2014/government-pays-compensation-to-80-flu-vaccine-injuries-and-deaths-in-3-month-period.

C-sections...so overused: Joyce A. Martin et al., “Births in the United States, 2013,” *NCHS Data Brief* no. 175 (December 2014): 1, cdc.gov/nchs/data/databriefs/db175.htm.

Norway...has a C-section rate under 16 percent: Save the Children, *The Urban Disadvantage: State of the World’s Mothers 2015* (Fairfield, CT: Save the Children, 2015), 9, savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bdo-df91d2eba74a%7D/SOWM_EXECUTIVE%20SUMMARY.PDF; “At a Glance: Norway: Statistics,” UNICEF, December 27, 2013, unicef.org/infobycountry/norway_statistics.html.

two to four times more likely to die from a C-section: Literally dozens of studies have show that death rates are higher among C-section births, even in low-risk women. For one, see S. Liu et al., “Maternal Mortality and Severe Morbidity Associated with Low-Risk Planned Cesarean Delivery Versus Planned Vaginal Delivery at Term,” *Canadian Medical Association Journal* 176, no. 4 (2007): 455–60.

The American way of birth...highest maternal mortality rate: 2015 Save the Children, *Urban Disadvantage*, p. 59, savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bdo-df91d2eba74a%7D/SOWM_2015.PDF.

it is by far the costliest: Elisabeth Rosenthal, “American Way of Birth, Costliest in the World,” *New York Times*, June 30, 2013, nytimes.com/2013/07/01/health/american-way-of-birth-costliest-in-the-world.html?pagewanted=all.

“According to the best studies available”: Alice Dreger, “The Most Scientific Birth Is Often the Least Technological Birth,” *The Atlantic*, March 20, 2012, theatlantic.com/health/archive/2012/03/the-most-scientific-birth-is-often-the-least-technological-birth/254420.

“stay away from obstetricians altogether”: Neel Shah, “Are Hospitals the Safest Place for Healthy Women to Have Babies? An Obstetrician Thinks

Twice,” *Conversation*, June 3, 2015, theconversation.com/are-hospitals-the-safest-place-for-healthy-women-to-have-babies-an-obstetrician-thinks-twice-42654.

Chronic stress has a negative effect on the body and the brain: A. Lotan et al., “Amygdalar Disconnectivity Could Underlie Stress Resilience in the Ahi1 Knockout Mouse: Conclusions from a Resting-State Functional MRI Study,” *Molecular Psychiatry* 19, no. 144 (2014), nature.com/mp/journal/v19/n2/full/mp2013191a.html.

The common antibiotic tetracycline...slow bone growth: Errol R. Norwitz and James A. Greenberg, “Antibiotics in Pregnancy: Are They Safe?” *Reviews in Obstetrics and Gynecology* 2, no. 3 (2009): 135–36, ncbi.nlm.nih.gov/pmc/articles/PMC2760892.

liver failure in pregnant mothers: T. D. Norman, J. C. Schultz, and R. D. Hoke, “Fatal Liver Disease Following the Administration of Tetracycline,” *Southern Medical Journal* 57 (1964): 1038–42, ncbi.nlm.nih.gov/pubmed/14179316.

trimethadione is associated with craniofacial deformations: Bruce M. Carlson, *Human Embryology and Developmental Biology* (Mosby, 1994), 145.

Zofran should never be given in pregnancy: Michelle Llamas, “Popular Nausea Drug Zofran May Increase Risk of Birth Defects,” *Drugwatch*, October 21, 2015, drugwatch.com/2015/02/18/zofran-may-increase-risk-of-birth-defects; Gideon Koren, “Treating Morning Sickness in the United States—Changes in Prescribing Are Needed,” *American Journal of Obstetrics and Gynecology* 211, no. 6 (2014): 602–6, doi: 10.1016/j.ajog.2014.08.017.

neuromuscular changes in the pregnant mom: Ibid.

non-medical ultrasounds: U.S. Food and Drug Administration, Avoid Fetal “Keepsake” Images, Heartbeat Monitors, 12/16/2014, fda.gov/ForConsumers/ConsumerUpdates/ucm095508.htm.

“answer a relevant clinical question”: American College of Obstetricians and Gynecologists, Committee on Obstetric Practice, Committee Opinion Number 656, February 2016, Committee Opinion, acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Guidelines-for-Diagnostic-Imaging-During-Pregnancy-and-Lactation.

Pitocin...can have a negative effect: American Congress of Obstetricians and

Gynecologists, “Study Finds Adverse Effects of Pitocin in Newborns,” news release, May 7, 2013, acog.org/About-ACOG/News-Room/News-Releases/2013/Study-Finds-Adverse-Effects-of-Pitocin-in-Newborns.

Prematurely kick-starting labor: Simon G. Gregory et al., “Association of Autism with Induced or Augmented Childbirth in North Carolina Birth Record (1990–1998) and Education Research (1997–2007) Databases,” *JAMA Pediatrics* 167, no. 10 (2013): 959–66, doi: 10.1001/jamapediatrics.2013.2904.

Chapter 3: Welcome to the World, Baby

“As a doctor, I am”: Atul Gawande, “Overkill,” *The New Yorker*, May 11, 2015, newyorker.com/magazine/2015/05/11/overkill-atul-gawande.

Swedish children...better social and fine motor skills: Ola Andersson et al., “Effect of Delayed Cord Clamping on Neurodevelopment at 4 Years of Age: A Randomized Clinical Trial,” *JAMA Pediatrics* 169, no. 7 (2015): 631–38, doi: 10.1001/jamapediatrics.2015.0358.

preemies: E. Nevill and M. P. Meyer, “Effect of Delayed Cord Clamping (DCC) on Breathing and Transition at Birth in Very Preterm Infants,” *Early Human Development* 91, no. 7 (2015): 407–11, doi: 10.1016/j.earlhumdev.2015.04.013.

full-term infants: H. M. Nesheli et al., “Effect of Late vs. Early Clamping of the Umbilical Cord (on Haemoglobin Level) in Full-Term Neonates,” *Journal of the Pakistan Medical Association* 64, no. 11 (2014): 1303–5, ncbi.nlm.nih.gov/pubmed/25831651.

less likely to hemorrhage: G. J. Hofmeyr, K. D. Bolton, D. C. Bowen, and J. J. Govan, “Periventricular/Intraventricular Haemorrhage and Umbilical Cord Clamping. Findings and Hypothesis,” *South African Medical Journal* 73 (1988): 104–6; G. J. Hofmeyr et al., “Periventricular/Intraventricular Hemorrhage Following Early and Delayed Umbilical Cord Clamping: A Randomized Controlled Trial,” *Online Journal of Current Clinical Trials*, Doc. no. 110 (1993).

higher iron stores: Susan J. McDonald et al., “Effect of Timing of Umbilical Cord Clamping of Term Infants on Maternal and Neonatal Outcomes,” *Cochrane Database of Systematic Reviews* (July 11, 2013), doi: 10.1002/14651858.CD004074.pub3.

skin-to-skin time immediately after birth: Raylene Phillips, “The Sacred Hour: Uninterrupted Skin-to-Skin Contact Immediately After Birth,” *Newborn and Infant Nursing Reviews* 13, no. 2 (2013): 67–72, medscape.com/viewarticle/806325.

low-birth-weight newborns have a significantly: Ellen O. Boundy et al., “Kangaroo Mother Care and Neonatal Outcomes: A Meta-analysis,”

Pediatrics, December 22, 2015, doi: 10.1542/peds.2015-2238.

“a once-in-a-lifetime experience”: Raylene Phillips, “The Sacred Hour: Uninterrupted Skin-to-Skin Immediately After Birth,” *Newborn and Infant Nursing Reviews* 13, no. 2 (2013): 67–72, medscape.com/viewarticle/806325.

The tradition of putting silver nitrate: Ronald B. Standler, “Statutory Law in the USA: Requiring Silver Nitrate in the Eyes of Newborns,” website of Dr. Ronald B. Standler, December 17, 2006, rbs2.com/SilvNitr.pdf.

Newborn gonorrhea infections: Ulrich C. Schaller and Volker Klauss, “Is Credé’s Prophylaxis for Ophthalmia Neonatorum Still Valid?,” *Bulletin of the World Health Organization* 79, no. 3 (2001): 262–63, [who.int/bulletin/archives/79\(3\)262.pdf](http://who.int/bulletin/archives/79(3)262.pdf).

This prophylactic treatment is recommended: American Academy of Pediatrics, “Prevention of Neonatal Ophthalmia,” in L. K. Pickering et al., eds. *Red Book: 2009 Report of the Committee on Infectious Diseases*, 28th ed. (Elk Grove Village, IL: American Academy of Pediatrics, 2009), 827–28.

U.S. Preventive Services Task Force: U.S. Preventive Services Task Force, *Final Evidence Review for Ocular Prophylaxis for Gonococcal Ophthalmia Neonatorum: Preventive Medication*, July 2011, uspreventiveservicestaskforce.org/Page/Document/EvidenceReportFinal/ocular-prophylaxis-for-gonococcal-ophthalmia-neonatorum-preventive-medication.

At least thirty-two states: Standler, “Statutory Law in the USA.”

ample evidence that they should be abandoned: “A Meta-analysis of the Efficacy of Ocular Prophylactic Agents Used for the Prevention of Gonococcal and Chlamydial Ophthalmia Neonatorum,” *Journal of Midwifery and Women’s Health* 55, no. 4 (2010): 319–27, doi: 10.1016/j.jmwh.2009.09.003.

Chlamydia: “2014 Sexually Transmitted Diseases Surveillance: Chlamydia,” CDC, cdc.gov/std/stats14/chlamydia.htm.

causes other than chlamydia, gonorrhea: D. W. Kimberlin et al., eds., *Red Book: 2015 Report of the Committee on Infectious Diseases*, 30th ed. (Elk Grove Village, IL: American Academy of Pediatrics, 2015), 974.

“act as a catalyst for bonding mechanisms”: Johan N. Lundström et al., “Maternal Status Regulates Cortical Responses to the Body Odor of Newborns,” *Frontiers in Psychology* 4 (September 5, 2013): 597, doi: 10.3389/fpsyg.2013.00597.

15 to 25 percent of adults with hepatitis B: “Hepatitis B: General Information,” CDC, cdc.gov/hepatitis/HBV/PDFs/HepBGeneralFactSheet.pdf.

made this discovery rather serendipitously: Baruch S. Blumberg, *Hepatitis B: The Hunt for a Killer Virus* (Princeton, NJ: Princeton University Press, 2002), 84.

in the early 1980s, after the FDA licensed it: “Achievements in Public Health: Hepatitis B Vaccination: United States, 1982–2002,” CDC, cdc.gov/mmwr/preview/mmwrhtml/mm5125a3.htm#tab.

In 1991 the recommendations changed: “Hepatitis B Virus: A Comprehensive Strategy for Eliminating Transmission in the United States Through Universal Childhood Vaccination: Recommendations of the Immunization Practices Advisory Committee,” CDC, November 22, 1991, cdc.gov/mmwr/preview/mmwrhtml/00033405.htm.

widespread use of the newborn/infant series: “State Information: Hepatitis B Prevention Mandates for Daycare and K-12,” Immunization Action Coalition, January 15, 2015, immunize.org/laws/hepb.asp.

“People were going around in shock”: Tina Kimmel (former research analyst, California Department of Public Health), interview by author, June 16, 2015.

Why on earth would the CDC: If you have a tainted blood transfusion, you also risk getting hepatitis B, but donated blood in the United States is tested for contamination. “Testing HCT/P Donors for Relevant Communicable Disease Agents and Diseases,” FDA, fda.gov/BiologicsBloodVaccines/SafetyAvailability/TissueSafety/ucm095440.htm.

the hepatitis B vaccine contains 250 micrograms of aluminum: The Engerix B brand, pediatric dose, contains 250 micrograms of aluminum per dose. Recombivax HB is even worse: According to the package insert, all formulations (including pediatric) contain 0.5 milligram of aluminum (500 micrograms) per 1 milliliter of vaccine. The package insert is at fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM110114.pdf, p. 7.

If your baby weighs 7 pounds at birth: N. J. Bishop et al., “Aluminum Neurotoxicity in Preterm Infants Receiving Intravenous-Feeding Solutions,” *New England Journal of Medicine* 336, no. 22 (1997): 1557–61, doi: 10.1056/NEJM199705293362203.

no amount is safe: The following peer-reviewed articles inform my conclusion that injected aluminum is toxic to children: W. W. K. Koo et al., “Response to Aluminum in Parenteral Nutrition During Infancy,” *Journal of Pediatrics* 109, no. 5 (1986): 877–83, [ncbi.nlm.nih.gov/pubmed/3095522](https://pubmed.ncbi.nlm.nih.gov/3095522/); W. W. K. Koo et al., “Response of Preterm Infants to Aluminum in Parenteral Nutrition,” *Journal of Parenteral and Enteral Nutrition* 13, no. 5 (1989): 516–19, [ncbi.nlm.nih.gov/pubmed/2514293](https://pubmed.ncbi.nlm.nih.gov/2514293/); N. J. Bishop et al., “Aluminum Neurotoxicity in Preterm Infants Receiving Intravenous-Feeding Solutions,” *New England Journal of Medicine* 336, no. 22 (1997): 1557–61, [ncbi.nlm.nih.gov/pubmed/9164811](https://pubmed.ncbi.nlm.nih.gov/9164811/); E. Nathan and S. E. Pedersen, “Dialysis Encephalopathy in Non-dialysed Uraemic Boy Treated with Aluminum Hydroxide Orally,” *Acta Paediatrica Scandinavica* 69, no. 6 (1980): 793–96, [ncbi.nlm.nih.gov/pubmed/7211365](https://pubmed.ncbi.nlm.nih.gov/7211365/); S. P. Andreoli, J. M. Bergstein, and D. J. Sherrard, “Aluminum Intoxication from Aluminum-Containing Phosphate Binders in Children with Azotemia Not Undergoing Dialysis,” *New England Journal of Medicine* 310, no. 17 (1984): 1079–84, doi: 10.1056/NEJM198404263101704; “Aluminum in Large and Small Volume Parenterals Used in Total Parenteral Nutrition; Amendment; Delay of Effective Date,” FDA, *Federal Register* 67, no. 228 (November 26, 2002): 70691–92, [fda.gov/OHRMS/DOCKETS/98fr/02-29924.htm](https://www.fda.gov/OHRMS/DOCKETS/98fr/02-29924.htm); ASCN/ASPEN Working Group on Standards for Aluminum Content of Parenteral Nutrition Solutions, G. L. Klein et al., “Parenteral Drug Products Containing Aluminum as an Ingredient or a Contaminant,” *American Journal of Clinical Nutrition* 53 (1991): 399–402, ajcn.nutrition.org/content/53/2/399.full.pdf+html?sid=7d9f15e3-1b15-496a-a963-662e492f66df; G. L. Klein, “Aluminum Content of Parenteral Nutrition Products,” in *Aluminum Toxicity in Infants’ Health and Disease*, ed. P. F. Zatta and A. C. Alfrey (Singapore: World Scientific, 1997): 157–67; D. Fanni et al., “Aluminum Exposure and Toxicity in Neonates: A Practical Guide to Halt Aluminum Overload in the Prenatal and Perinatal Periods,” *World Journal of Pediatrics* 10, no. 2 (2014): 101–7, [ncbi.nlm.nih.gov/pubmed/?term=Aluminum+exposure+and+toxicity+in+neonates%3A+a+practical+guide+to+halt+aluminum+overload+in+the+prenatal+and+perinatal+periods](https://pubmed.ncbi.nlm.nih.gov/?term=Aluminum+exposure+and+toxicity+in+neonates%3A+a+practical+guide+to+halt+aluminum+overload+in+the+prenatal+and+perinatal+periods;); L. Tomljenovic and C. A. Shaw, “Mechanisms of Aluminum Adjuvant Toxicity and Autoimmunity in Pediatric Populations,” *Lupus* 21, no. 2 (2012): 223–30, [ncbi.nlm.nih.gov/pubmed/?term=Tomljenovic%2C+L.+and+Shaw%2C+C.A.+2012+Lupus+21\(2\)%3A223-230.](https://pubmed.ncbi.nlm.nih.gov/?term=Tomljenovic%2C+L.+and+Shaw%2C+C.A.+2012+Lupus+21(2)%3A223-230.)

we are literally poisoning them: Code of Federal Regulations, “Title 21—Food and Drugs, Chapter I—Food and Drug Administration, U.S. Department of Health and Human Services, Subchapter C—Drugs: General, Part 201—Labeling,” April 1, 2015, accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=201.323.

“Hepatitis B vaccine was designed”: John Hicks, M.D., interview by author, June 16, 2015.

majority of children...are no longer protected: Tzu-Wei Wu et al., “Chronic Hepatitis B Infection in Adolescents Who Received Primary Infantile Vaccination,” *Hepatology* 57, no. 1 (2013): 37–45, doi: 10.1002/hep.25988.

immunity rates among sixteen-to-nineteen-year-olds: A. B. Middleman et al., “Duration of Protection After Infant Hepatitis B Vaccination Series,” *Pediatrics* 133, no. 6 (2014): e1500–7, doi: 10.1542/peds.2013-2940.

“As pediatricians, we’re supposed to stand up”: Hicks interview.

There are actually two kinds: J. M. Conly and K. Stein, “The Production of Menaquinones (Vitamin K₂) by Intestinal Bacteria and Their Role in Maintaining Coagulation Homeostasis,” *Progress in Food and Nutrition Science* 16, no. 4 (1992): 307–43, ncbi.nlm.nih.gov/pubmed/1492156.

the risk of vitamin-K-deficiency bleeding (VKDB): R. Schulte et al., “Rise in Late Onset Vitamin K Deficiency Bleeding in Young Infants Because of Omission or Refusal of Prophylaxis at Birth,” *Pediatric Neurology* 50, no. 6 (2014): 564–68, doi: 10.1016/j.pediatrneurol.2014.02.013.

We usually see it in: H. Gopakumar et al., “Vitamin K Deficiency Bleeding Presenting as Impending Brain Herniation,” *Journal of Pediatric Neurosciences* 5, no. 1 (2010): 55–58, ncbi.nlm.nih.gov/pmc/articles/PMC2964800/.

All six survived, but three: R. Schulte et al., “Rise in Late Onset Vitamin K Deficiency Bleeding”; See also R. Dekker, “Evidence on the Vitamin K Shot,” *Evidence Based Birth*, March 18, 2014, evidencebasedbirth.com/evidence-for-the-vitamin-k-shot-in-newborns.

Aluminum is not an ingredient: “Vitamin K₁,” MedLibrary.org, December 13, 2013, medlibrary.org/lib/rx/meds/vitamin-k1-2.

death in premature babies: “Neonatal Deaths Associated with the Use of Benzyl Alcohol—United States,” *Morbidity and Mortality Weekly Report* 31, no. 22 (1982): 290–91, cdc.gov/mmwr/preview/mmwrhtml/00001109.htm.

toxicity in newborns: “Vitamin K₁,” MedLibrary.org, December 13, 2013, medlibrary.org/lib/rx/meds/vitamin-k1-2/.

safe in small quantities: “Electronic Code of Federal Regulations,” Title 21, Subpart 172.80, December 23, 2015, ecfr.gov/cgi-bin/text-idx?SID=oeed1abe

39801b6d63ae994an3aa60c&mc=true&node=se21.3.172_1840&rgn=div8.

metabolic dysfunction: Benoit Chassaing et al., “Dietary Emulsifiers Impact the Mouse Gut Microbiota Promoting Colitis and Metabolic Syndrome,” *Nature* 519, no. 7541 (March 5, 2015): 92–96, doi: 10.1038/nature14232.

metabolic disorders: For a good discussion of the questions raised by this new scientific research in mice, see Melissa Healy, “Is Common Food Additive to Blame for Rising Rates of Bowel Disease?,” *Los Angeles Times*, February 25, 2015, latimes.com/science/sciencenow/la-sci-sn-metabolic-bowel-emulsifiers-20150225-story.html.

Glacial acetic acid is an irritant: “Acetic Acid,” Toxnet, toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+40.

Babies given oral vitamin K in Denmark: K. N. Hansen, M. Minousis, and F. Ebbesen, “Weekly Oral Vitamin K Prophylaxis in Denmark,” *Acta Paediatrica* 92, no. 7 (2003): 802–5, ncbi.nlm.nih.gov/pubmed/12892158.

In New Zealand parents who: “Newborn Services Clinical Guideline,” adhb.govt.nz/newborn/Guidelines/Blood/VitaminK.htm.

“medicine that no one else can replicate”: Avera, “Breast-Feeding Is Best: Why Human Milk Is ‘Liquid Gold’ for Newborns,” news release, May 1, 2013, avera.org/experience/shared/releases/news/2013/donormilk.

They advertise aggressively to pregnant: Jennifer Margulis, *Your Baby, Your Way: Taking Charge of Your Pregnancy, Childbirth, and Parenting Decisions for a Happier, Healthier Family* (New York: Scribner, 2013), 155.

“junk food for babies”: Ibid., 160.

If bilirubin levels remain extremely high: V. K. Bhutani et al., “Predictive Ability of a Predischage Hour–Specific Serum Bilirubin for Subsequent Significant Hyperbilirubinemia in Healthy Term and Near-Term Infants,” *Pediatrics* 103, no. 1 (1999): 6–14, ncbi.nlm.nih.gov/pubmed/9917432.

Colonization rates during pregnancy range from 20 to 30: F. Gary Cunningham, M.D., et al., *Williams Obstetrics*, 23rd ed. (New York: McGraw-Hill Medical, 2010), 1220.

chorioamnionitis: Ibid., 581.

treat both moms and babies with antibiotics: D. W. Kimberlin et al., eds., *Red Book: 2015 Report of the Committee on Infectious Diseases*, 30th ed.

(American Academy of Pediatrics, 2015), 745.

When my first son was born in 1987: American Academy of Pediatrics, Committee on Fetus and Newborn, “Report of the Ad Hoc Task Force on Circumcision,” *Pediatrics* 56, no. 4 (1975): 610–11.

potential medical benefits: American Academy of Pediatrics, Task Force on Circumcision, “Report of the Task Force on Circumcision,” *Pediatrics* 84, no. 2 (1989): 388–91.

another statement about circumcision: American Academy of Pediatrics, Task Force on Circumcision, “Male Circumcision,” *Pediatrics* 130, no. 3 (2012): e756–85, ncbi.nlm.nih.gov/pubmed/22926175.

“After a comprehensive review of the scientific evidence”: “Newborn Male Circumcision,” American Academy of Pediatrics, August 27, 2012, aap.org/en-us/about-the-aap/aap-press-room/pages/newborn-male-circumcision.aspx.

He equates circumcision with child abuse: “Female Genital Mutilation,” WHO, who.int/reproductivehealth/topics/fgm/prevalence/en/.

the circumcision rate in America: Maria Owings et al., “Trends in Circumcision for Male Newborns in U.S. Hospitals: 1979–2010,” CDC, National Center for Health Statistics, August 22, 2013, cdc.gov/nchs/data/hestat/circumcision_2013/Circumcision_2013.htm.

When England changed to universal health coverage: World Health Organization, *Male Circumcision: Global Trends and Determinants of Prevalence, Safety and Acceptability* (Geneva: World Health Organization, 2007), whqlibdoc.who.int/publications/2007/9789241596169_eng.pdf.

Now less than 5 percent of men: “Circumcision: The Cruellest Cut?” *Guardian*, August 28, 2012, theguardian.com/world/2012/aug/28/circumcision-the-cruellest-cut.

“if such a procedure is irreversible”: Holm Putzke, “Let Boys Decide at 16 Whether to Be Circumcised,” *New York Times*, July 11, 2012, nytimes.com/roomfordebate/2012/07/10/an-age-of-consent-for-circumcision/let-boys-decide-at-16-whether-to-be-circumcised.

an 80 percent increase in infantile autism: Morten Frisch and Jacob Simonsen, “Ritual Circumcision and Risk of Autism Spectrum Disorder in 0- to 9-year-old Boys: National Cohort Study in Denmark,” *Journal of the Royal*

Society of Medicine 108, no. 7 (2015): 266–79, doi: 10.1177/0141076814565942.

which can cause cell death: Y. Xie et al., “Mechanisms of Acetaminophen-Induced Cell Death in Primary Human Hepatocytes,” *Toxicology and Applied Pharmacology* 279, no. 3 (September 15, 2014): 266–74, ncbi.nlm.nih.gov/pubmed/24905542; and J. J. Hu et al., “Sex-Related Differences in Mouse Renal Metabolism and Toxicity of Acetaminophen,” *Toxicology and Applied Pharmacology* 122, no. 1 (1993): 16–26, ncbi.nlm.nih.gov/pubmed/8378930.

Chapter 4: The First Two Weeks of Life

new parents get paid maternity: United Nations Development Program, *Human Development Report, 2014: Sustaining Human Progress; Reducing Vulnerability and Building Resilience* (New York: United Nations, 2014), hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf.

“dirty dozen”: “Avoid the Dirty Dozen: EWG’s Shopper’s Guide to Pesticides in Produce,” Environmental Working Group, ewg.org/foodnews/list.php.

Ankyloglossia, which may affect: Glenn C. Isaacson, “Ankyloglossia (Tongue-Tie) in Infants and Children,” UpToDate, June 1, 2015, uptodate.com/contents/ankyloglossia-tongue-tie-in-infants-and-children.

Their breastfeeding outcomes: Monica Hogan, Carolyn Westcott and Mervyn Griffiths, “Randomized, Controlled Trial of Division of Tongue-Tie in Infants with Feeding Problems,” *Journal of Paediatrics and Child Health* 41 (2005): 246–50, doi: 10.1111/j.1440-1754.2005.00604.x.

The Cochrane Collaboration: Joyce E O’Shea et al., “Frenotomy for Tongue-Tie in Newborn Infants,” *Cochrane Database of Systematic Reviews* no. 4 (2014), doi: 10.1002/14651858.CD011065.

a 2011 review: A. H. Constantine, C. Williams, and A. G. Sutcliffe, “A Systematic Review of Frenotomy for Ankyloglossia (Tongue Tie) in Breast Fed Infants,” *Archives of Disease in Childhood* 96, no. 1 supp. (2011): A62–63, adc.bmj.com/content/96/Suppl_1/A62.3.abstract.

frenotomy is associated with: “Treatment of Ankyloglossia and Breastfeeding Outcomes: A Systematic Review,” *Pediatrics* 135, no. 6 (2015), pediatrics.aappublications.org/content/135/6/e1458.long.

comparing normal bathing with sponge bathing: Janet Bryanton et al., “Tub Bathing Versus Traditional Sponge Bathing for the Newborn,” *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 33, no. 6 (2004): 704–12, doi: 10.1177/0884217504270651.

There is no treatment for HPIVs: “About Human Parainfluenza Viruses (HPIVs),” CDC, August 18, 2015, cdc.gov/parainfluenza/about/prevention-treatment.html.

Tub baths...less heat loss: Cynthia Loring et al., “Tub Bathing Improves Thermoregulation of the Late Preterm Infant,” *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 41, no. 2 (2012): 171–79, doi: 10.1111/j.1552-6909.2011.01332.x.

Tub baths...happier babies: Bryanton et al., “Tub Bathing Versus Traditional Sponge Bathing.”

The back-to-sleep campaign: Felicia L. Trachtenberg et al., “Risk Factor Changes for Sudden Infant Death Syndrome After Initiation of Back-to-Sleep Campaign,” *Pediatrics* 129, no. 4 (2012): 630–38, pediatrics.aappublications.org/content/early/2012/03/21/peds.2011-1419.

loss of happiness after the birth of a baby: Rachel Margolis and Mikko Myrskylä, “Parental Well-Being Surrounding First Birth as a Determinant of Further Parity Progression,” *Demography* 52, no. 4 (2015): 1147–66, link.springer.com/article/10.1007%2Fs13524-015-0413-2.

new moms have postpartum depression: Brenda M. Y. Leung and Bonnie J. Kaplan, “Perinatal Depression: Prevalence, Risks, and the Nutrition Link—A Review of the Literature,” *Journal of the Academy of Nutrition and Dietetics* 109, no. 9 (2009): 1566–75, andjrnal.org/article/S0002-8223%2809%2900768-8/abstract.

one in ten new dads battle negative feelings: Pilyoung Kim and James E. Swain, “Sad Dads: Paternal Postpartum Depression,” *Psychiatry (Edgmont)* 4, no. 2 (2007): 35–47, ncbi.nlm.nih.gov/pmc/articles/PMC2922346.

The vaccines you’ll be expected to get: “Recommended Immunizations for Children from Birth Through 6 Years Old: By Age,” CDC, January 26, 2015, cdc.gov/vaccines/schedules/easy-to-read/child-easyread.html.

The National Childhood Vaccine Injury Act: “Instructions for Using VISs,” CDC, November 10, 2015, cdc.gov/vaccines/hcp/vis/about/required-use-instructions.html.

look at their baby, not at the scale: Jay Gordon, “Look at the Baby, Not the Scale,” Dr.JayGordon.com, February 23, 2010, drjaygordon.com/newborns/scales.html.

Cow’s milk is designed for calves: Carol S. Johnston and Woodrow C. Monte, “Infant Formula Ingestion Is Associated with the Development of Diabetes in the BB/Wor Rat,” *Life Sciences* 66, no. 16 (2000): 1501–7, sciencedirect.com/science/article/pii/S0024320500004677; Cristina Rodríguez-Juan et al.,

“Increased Levels of Bovine Serum Albumin Antibodies in Patients with Type 1 Diabetes and Celiac Disease–Related Antibodies,” *Journal of Pediatric Gastroenterology and Nutrition* 37, no. 2 (2003): 132–35, journals.lww.com/jpgn/Fulltext/2003/08000/Increased_Levels_of_Bovine_Serum_Albumin.9.aspx; Jukka Karjalainen et al., “A Bovine Albumin Peptide as a Possible Trigger of Insulin-Dependent Diabetes Mellitus,” *New England Journal of Medicine* 327, no. 5 (1992): 302-7, doi: 10.1056/NEJM199207303270502#t=abstract.

Carrageenan causes inflammation: “Opinion of the Scientific Committee on Food on Carrageenan,” European Commission’s Scientific Committee on Food, February 2003, ec.europa.eu/food/fs/sc/scf/out164_en.pdf.

Chapter 5: The Two-Month Visit

check her grasp reflex: Yasuyuki Futagi, Yasuhisa Toribe, and Yasuhiro Suzuki, “The Grasp Reflex and Moro Reflex in Infants: Hierarchy of Primitive Reflex Responses,” *International Journal of Pediatrics* 2012 (2012): 191562, hindawi.com/journals/ijpedi/2012/191562.

aortic stenosis: “Pediatric Valvar Aortic Stenosis,” Medscape.com, August 19, 2015, emedicine.medscape.com/article/894095-overview.

Congenital hip dysplasia: Stephen K. Storer and David L. Skaggs, “Developmental Dysplasia of the Hip,” *American Family Physician* 74, no. 8 (2006): 1310–16, aafp.org/afp/2006/1015/p1310.html.

The late Robert Mendelsohn: Robert Mendelsohn, *How to Raise a Healthy Child...In Spite of Your Doctor* (New York: Ballantine Books, 1987), 187.

It’s best to exclusively breastfeed: Nancy Mohrbacher and Kathleen Kendall-Tackett, *Breastfeeding Made Simple* (Oakland, CA: New Harbinger, 2010), 128.

And as any pediatrician: “Stool Color: When to Worry,” Mayo Clinic, October 12, 2012, mayoclinic.org/stool-color/expert-answers/faq-20058080.

infant pottyng: Thi Hoa Duong, Ulla-Britt Jansson, and Anna-Lena Hellström, “Vietnamese Mothers’ Experiences with Potty Training Procedure for Children from Birth to 2 Years of Age,” *Journal of Pediatric Urology* 9, no. 6 (2013): 808–14, jpurol.com/article/S1477-5131%2812%2900262-8/abstract.

the plethora of synthetic chemicals: These can include m-Xylene, p-anisaldehyde, ethylbenzene, styrene, isopropylbenzene, dipentene, m-methoxybenzaldehyde, methyl cinnamate, toluene, 1,3,5-trimethylbenzene, trichloroethylene, and 1-methylcyclopentylamine, 1,2,3-trimethylcyclopentane, as well as trace amounts of dioxin. R. C. Anderson and J. H. Anderson, “Acute Respiratory Effects of Diaper Emissions,” *Archives of Environmental Health* 54, no. 5 (1999): 353–58, tandfonline.com/doi/abs/10.1080/00039899909602500?journalCode=vzeh20.

melaleuca: C. F. Carson, K. A. Hammer, and T. V. Riley, “*Melaleuca alternifolia* (Tea Tree) Oil: A Review of Antimicrobial and Other Medicinal Properties,”

Clinical Microbiology Reviews 19, no. 1 (2006): 50–62, ncbi.nlm.nih.gov/pmc/articles/PMC1360273.

frankincense: Rafie Hamidpour et al., “Frankincense (*rǔ xiāng*; boswellia species): From the Selection of Traditional Applications to the Novel Phytotherapy for the Prevention and Treatment of Serious Diseases,” *Journal of Traditional Complementary Medicine* 3, no. 4 (2013): 221–26, ncbi.nlm.nih.gov/pmc/articles/PMC3924999.

The rash can spread: Lawrence C. Brilliant, “Perianal Streptococcal Dermatitis,” *American Family Physician* 61, no. 2 (2000): 391–93, 397, aafp.org/afp/2000/0115/p391.html.

Ignore the crank articles: Tatiana Morales, “7 Months Old? Potty Train Her!” CBS News, October 11, 2005, cbsnews.com/news/7-months-old-potty-train-her/; Anemona Hartocollis, “Baby’s Latest: Going Diaperless,” *New York Times*, April 18, 2013, nytimes.com/2013/04/19/nyregion/babys-latest-going-diaperless-at-home-or-even-in-the-park.html?_r=0.

Most parents know: Felicia L. Trachtenberg et al., “Risk Factor Changes for Sudden Infant Death Syndrome After Initiation of Back-to-Sleep Campaign,” *Pediatrics* 129, no. 4 (2012): 630–38, pediatrics.aappublications.org/content/129/4/630.

Baby wearing...crying: Urs A. Hunziker and Ronald G. Barr, “Increased Carrying Reduces Infant Crying: A Randomized Controlled Trial,” *Pediatrics* 77, no. 5 (1986): 641–48, pediatrics.aappublications.org/content/77/5/641.

alertness: Anneliese F. Korner and Rose Grobstein, “Visual Alertness as Related to Soothing in Neonates: Implications for Maternal Stimulation and Early Deprivation,” *Child Development* 37, no. 4 (1966): 867–76, jstor.org/stable/1126609?seq=1#page_scan_tab_contents.

bonding: Réjean Tessier et al., “Kangaroo Mother Care and the Bonding Hypothesis,” *Pediatrics* 102, no. 2 (1998): e17, pediatrics.aappublications.org/content/102/2/e17.

have flat heads: Aliyah Mawji et al., “The Incidence of Positional Plagiocephaly: A Cohort Study,” *Pediatrics* 132, no. 2 (2013): 298–304, pediatrics.aappublications.org/content/early/2013/07/02/peds.2012-3438.

helmets have uncomfortable side effects: Renske M. van Wijk et al., “Helmet Therapy in Infants with Positional Skull Deformation: Randomised Controlled Trial,” *BMJ* 348, no. 1 (2014): g2741, bmj.com/content/348/bmj.g2741.

Your baby needs vitamin D: “Vitamin D,” National Institutes of Health’s Office of Dietary Supplements, June 24, 2011, ods.od.nih.gov/factsheets/VitaminD-Consumer.

2,000 to 4,000 IUs of vitamin D per day: Bruce W. Hollis and Carol L. Wagner, “Vitamin D Requirements During Lactation: High-Dose Maternal Supplementation as Therapy to Prevent Hypovitaminosis D for Both the Mother and the Nursing Infant,” *American Journal of Clinical Nutrition* 80, no. 6 (2004): 1752S–8S, ncbi.nlm.nih.gov/pubmed/15585800.

today the figure is over 76,000: “Autism Rising: A Report on the Increasing Autism Rates in California,” Autism Society San Francisco Bay Area, April 2015, sfautismsociety.org/uploads/1/1/7/4/11747519/autism_rising_2015.pdf.

diagnosed with autism every six minutes: We calculated this number by taking 4 million births per year and the number 1 in 45 children with autism. Divide 1 million by 45, divided by 365 days, divided by 24 hours a day, which equals one new case of autism every six minutes.

A Norwegian study: Pål Surén et al., “Association Between Maternal Use of Folic Acid Supplements and Risk of Autism Spectrum Disorders in Children,” *Journal of the American Medical Association* 309, no. 6 (2013): 570–77, jama.jamanetwork.com/article.aspx?articleid=1570279.

Norwegian infants did not get any vaccines: “Childhood Immunisation Programme in Norway,” Norwegian Institute of Public Health, July 5, 2015, fhi.no/artikler/?id=90915.

Only high-risk newborns got the hepatitis B vaccine: “Vaccine Against Hepatitis B,” Norwegian Institute of Public Health, February 23, 2015, fhi.no/artikler/?id=90951.

Norwegians were not receiving injected aluminum: A single dose of aluminum above 4 to 5 micrograms per kilogram a day has been shown to cause neurological damage and developmental delays in premature infants.

“no evidence that the schedule is unsafe”: Committee on the Assessment of Studies of Health Outcomes Related to the Recommended Childhood Immunization Schedule, *The Childhood Immunization Schedule and Safety: Stakeholder Concerns, Scientific Evidence and Future Studies* (New York: National Academies Press, 2013), iom.nationalacademies.org/~media/Files/Report%20Files/2013/Childhood-Immunization-Schedule/ChildhoodImmunizationScheduleandSafety_RB.pdf.

Your pediatrician will expect you: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

Fewer than 0.1 percent of U.S. mothers: D. W. Kimberlin et al., eds., *Red Book: 2015 Report of the Committee on Infectious Diseases*, 30th ed. (Elk Grove Village, IL: American Academy of Pediatrics, 2015), 403.

First isolated in 1973: Ruth Bishop, “Discovery of Rotavirus: Implications for Child Health,” *Journal of Gastroenterology and Hepatology* 24, no. 3 supp. (2009): S81–85, ncbi.nlm.nih.gov/pubmed/19799704.

first vaccine against rotavirus, RotaShield: “Withdrawal of Rotavirus Vaccine Recommendation. CDC,” *Morbidity and Mortality Weekly Report* 48, no. 43 (1999): 1007, ncbi.nlm.nih.gov/pubmed/10577495.

Without prompt intervention: “Intussusception—Children,” U.S. National Library of Medicine Medical Encyclopedia, May 14, 2014, nlm.nih.gov/medlineplus/ency/article/000958.htm.

The RotaShield vaccine was associated: Lynn R. Zannardi et al., “Intussusception Among Recipients of Rotavirus Vaccine: Reports to the Vaccine Adverse Event Reporting System,” *Pediatrics* 107, no. 6 (2001): E97, pediatrics.aappublications.org/content/107/6/e97.

RotaTaq: “RotaTaq,” FDA, December 4, 2014, fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm094063.htm.

Rotarix: “Rotarix,” FDA, March 2, 2015, fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm133920.htm.

may also cause intussusception: Manish M. Patel, “Intussusception Risk and Health Benefits of Rotavirus Vaccination in Mexico and Brazil,” *New England Journal of Medicine* 364, no. 24 (2011): 2283–92, doi: 10.1056/NEJMoa1012952; James Jiang et al., “Childhood Intussusception: A Literature Review,” *PLoS One* 8, no. 7 (2013): e68482, journals.plos.org/plosone/article?id=10.1371/journal.pone.0068482.

increasing death rates from intussusception: “Rotavirus Vaccines and Intussusception,” WHO, who.int/vaccine_safety/committee/topics/rotavirus/rotarix_and_rotateq/Dec_2011/en; W. K. Yih et al., “Intussusception Risk After Rotavirus Vaccination in U.S. Infants,” *New England Journal of Medicine* 370 (2014): 503–12, doi: 10.1056/NEJMoa1303164.

Rotarix contains porcine circovirus: Joseph G. Victoria et al., “Viral Nucleic Acids in Live-Attenuated Vaccines: Detection of Minority Variants and an Adventitious Virus,” *Journal of Virology* 84, no. 12 (2010): 6033–40, jvi.asm.org/content/84/12/6033.short.

RotaTeq contains baboon retrovirus: Laura Hewitson et al., “Screening of Viral Pathogens from Pediatric Ileal Tissue Samples After Vaccination,” *Advances in Virology* 2014, Article ID 720585, greenmedinfo.com/sites/default/files/pdf/ML-Hewitson_2014_Advances_in_Virology.pdf.

“Our kids—more than one—got a week of diarrhea”: John Trainer, M.D., interview by author, January 3, 2016.

So now the rotavirus vaccine series cannot be started: “Rotavirus Vaccine: Questions & Answers,” CDC, September 14, 2012, cdc.gov/vaccines/vpd-vac/rotavirus/vac-faqs.htm.

The new generation: “Know the Rotavirus Vaccine Schedule,” Oklahoma State Department of Health, ok.gov/health/pub/PRG/04d.pdf.

between twenty and sixty children died from rotavirus: CDC, *Manual for the Surveillance of Vaccine-Preventable Diseases* (Atlanta, GA: CDC, 2011), chap. 13, cdc.gov/vaccines/pubs/surv-manual/chpt13-rotavirus.html.

But these estimated numbers: Paul E. Kilgore et al., “Trends of Diarrheal Disease-Associated Mortality in U.S. Children, 1968 Through 1991,” *Journal of the American Medical Association* 274, no. 14 (1995): 1143–48, jama.jamanetwork.com/article.aspx?articleid=389779.

Rotavirus was not identified: Ruth Bishop, “Discovery of Rotavirus: Implications for Child Health,” *Journal of Gastroenterology and Hepatology* 24, no. 3 supp. (2009): S81–85, doi: 10.1111/j.1440-1746.2009.06076.x.

when rotavirus vaccination began in 2006: Eyal Leshem et al., “Acute Gastroenteritis Hospitalizations Among US Children Following Implementation of the Rotavirus Vaccine,” *Journal of the American Medical Association* 313, no. 22 (2015): 2282–84, jama.jamanetwork.com/article.aspx?articleid=2319155.

Alan Alda got polio when he was seven: Alan Alda, *Never Have Your Dog Stuffed* (New York: Random House, 2005), 17–18.

“I didn’t really know”: Ibid., 18.

Considering how deadly: “What Is Polio?” CDC, October 15, 2014, cdc.gov/

polio/about/index.htm.

three subtypes of polio: Olen M. Kew et al., “Possible Eradication of Wild Poliovirus Type 3—Worldwide, 2012,” *Morbidity and Mortality Weekly Report* 63, no. 45 (November 14, 2014); 1031–33, cdc.gov/mmwr/preview/mmwrhtml/mm6345a4.htm.

The last case of poliomyelitis acquired: CDC, *CDC Health Information for International Travel 2016* (New York: Oxford University Press, 2016), 81, wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/poliomyelitis.

One person who caught polio: “Polio Disease—Questions and Answers,” CDC, August 11, 2014, cdc.gov/vaccines/vpd-vac/polio/dis-faqs.htm.

A year later widespread polio vaccine trials: Marcia Meldrum, “A Calculated Risk: The Salk Polio Vaccine Field Trials of 1954,” *BMJ* 317, no. 7167 (1998): 1233–36, ncbi.nlm.nih.gov/pmc/articles/PMC1114166.

The use of this oral live-virus: Public Health England, *The Green Book: Immunisation Against Infectious Disease* (London: Crown, 2013), 313–28, gov.uk/government/uploads/system/uploads/attachment_data/file/148141/Green-Book-Chapter-26-Polio-updated-18-January-2013.pdf.

it is still used in other countries: “Polio Vaccination,” CDC, December 17, 2014, cdc.gov/vaccines/vpd-vac/polio.

three combination vaccines, which include polio: “U.S. Vaccine Names,” CDC, October 8, 2014, cdc.gov/vaccines/about/terms/USVaccines.html.

It does, however, contain formaldehyde: “Vaccine Excipient and Media Summary,” Appendix B in J. Hamborsky, A. Kroger, and S. Wolfe, eds., *Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book*, 13th ed. (Washington, DC: Public Health Foundation, 2015), April 2015, cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

Pentacel has 330 micrograms: Pentacel, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM109810.pdf.

Pediarix has 850 micrograms: Pediarix, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM241874.pdf.

Kinrix has 600 micrograms: Kinrix, Full Prescribing Information, FDA, [fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM241453.pdf](https://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM241453.pdf).

Rates of paralytic polio in the United States dropped: “Poliomyelitis,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, [cdc.gov/vaccines/pubs/pinkbook/downloads/polio.pdf](https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/polio.pdf).

to about 900 in 1961: Kathleen R. Stratton et al., eds., *Vaccines for the 21st Century: A Tool for Decisionmaking* (Washington DC: Institute of Medicine, 2000), 25, [nap.edu/read/5501/chapter/4#25](https://www.nap.edu/read/5501/chapter/4#25).

Some credit chlorinating water: Kevin Olsen, “Clear Waters and a Green Gas,” *Bulletin for the History of Chemistry* 32, no. 2 (2007): 129–40, scs.illinois.edu/~mainzv/HIST/bulletin_open_access/v32-2/v32-2%20p129-140.pdf.

“In 1947, for no apparent reason”: David D. Rutstein, “How Good Is the Polio Vaccine?” *Atlantic*, February 1957, [theatlantic.com/magazine/archive/1957/02/how-good-is-the-polio-vaccine/303946](https://www.theatlantic.com/magazine/archive/1957/02/how-good-is-the-polio-vaccine/303946).

Dr. Humphries’s argument: Suzanne Humphries, *Dissolving Illusions* (Lexington, KY: CreateSpace, 2013), 222–92.

The paralysis we now associate: Armond S. Goldman et al., “What Was the Cause of Franklin Delano Roosevelt’s Paralytic Illness?” *Journal of Medical Biography* 11, no. 4 (2003): 232–40, jmb.sagepub.com/content/11/4/232.long.

Between 1992 and 2000, there were zero infections: Lorraine Niño Alexander et al., “Vaccine Policy Changes and Epidemiology of Poliomyelitis in the United States,” *Journal of the American Medical Association* 292, no. 14 (2004): 1696–701, [jama.jamanetwork.com/article.aspx?articleid=199583](https://www.jama.jamanetwork.com/article.aspx?articleid=199583).

Instead of discontinuing mass polio vaccinations: Ibid.

“I would rather use the long-term, tried-and-true ways”: Jennifer Margulis, “Vaccine Debate,” *Mothering Magazine*, July-August 2009.

In 2014 there were 359 cases: José E. Hagan et al., “Progress Toward Polio Eradication—Worldwide, 2014–2015,” *Morbidity and Mortality Weekly Report* 64, no. 19 (May 2015): 527–31, [cdc.gov/mmwr/preview/mmwrhtml/mm6419a5.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6419a5.htm).

Previously polio-free countries: Ibid.

spread of polio a public health emergency: “Statement on the 6th IHR Emergency Committee Meeting Regarding the International Spread of Wild Poliovirus,” WHO, August 17, 2015, who.int/mediacentre/news/statements/2015/ihr-polio-17-august-2015/en.

Children or adults: “Catch-Up Schedule,” CDC, January 28, 2015, cdc.gov/vaccines/schedules/hcp/imz/catchup.html.

the miracle that the Hib vaccine was: “*Haemophilus influenzae* Disease (Including Hib),” CDC, April 2, 2014, cdc.gov/hi-disease/vaccination.html.

The first vaccine to protect against Hib: Ibid.

Today the Hib vaccine: “U.S. Vaccine Names,” CDC, October 8, 2014, cdc.gov/vaccines/about/terms/USVaccines.html.

I do not carry mercury-containing vaccines: Lisa A. Grohskopf et al., “Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2015–16 Influenza Season,” *Morbidity and Mortality Weekly Report* 64, no. 30 (2015): 818–25, cdc.gov/mmwr/preview/mmwrhtml/mm6430a3.htm.

Although one small study has shown: J. Barthelow Classen and David C. Classen, “Association Between Type 1 Diabetes and Hib Vaccine: Causal Relation Is Likely,” *BMJ* 319, no. 7217 (1999): 1133, ncbi.nlm.nih.gov/pmc/articles/PMC1116914.

a larger study showed no link: J. Tuomilehto et al., “Association Between Type 1 Diabetes and *Haemophilus influenzae* Type B Vaccination: Birth Cohort Study,” *BMJ* 318, no. 7192 (1999): 1169–72.

The ActHIB brand contains no mercury: This vaccine is saline diluent (0.4 percent sodium chloride). Each 0.5-milliliter dose is formulated to contain 10 micrograms of purified capsular polysaccharide conjugated to 24 micrograms of inactivated tetanus toxoid and 8.5 percent of sucrose.

Postvaccine follow-up studies: William G. Adams, “Decline of Childhood *Haemophilus influenzae* type B (Hib) Disease in the Hib Vaccine Era,” *Journal of the American Medical Association* 269, no. 2 (1993): 221–26, jama.jamanetwork.com/article.aspx?articleid=402647.

prevented more than ten thousand cases of meningitis: Ibid.

only fourteen cases of serious Hib diseases: “Vaccines and Immunizations: *Haemophilus influenzae* Type B,” in Hamborsky, Kroger, and Wolfe, eds.,

Epidemiology and Prevention: Pink Book, chap. 8, cdc.gov/vaccines/pubs/pinkbook/hib.html.

I prefer the ActHIB brand: ActHIB, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM109841.pdf.

“came out on the porch and watched”: Maud Hart Lovelace, *Betsy-Tacy and Tib* (New York: HarperCollins, 2000), 83.

There have been no deaths: CDC, *Manual for the Surveillance of Vaccine-Preventable Diseases* (Atlanta, GA: CDC, 2011), chap. 1, cdc.gov/vaccines/pubs/surv-manual/chpt01-dip.html.

less than 1 in 100 million: Approximately four million births annually in the United States times thirty-five years means 140 million American children have been born since the last case of diphtheria.

Tetanus (also known as lockjaw): “Tetanus,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Preventions: Pink Book*, chap. 21, cdc.gov/vaccines/pubs/pinkbook/downloads/tetanus.pdf.

Two babies were reported with tetanus: Ibid.

The incidents of tetanus in children: Ibid.

Pertussis continues to be: “2014 Final Pertussis Surveillance Report,” *Morbidity and Mortality Weekly Report* 64, no. 36 (2015): 1019–33, cdc.gov/pertussis/downloads/pertuss-surv-report-2014.pdf.

The worst year for pertussis: “2012 Final Pertussis Surveillance Report,” *Morbidity and Mortality Weekly Report* 62, no. 33 (2013): 669–82, cdc.gov/pertussis/downloads/pertuss-surv-report-2012.pdf.

In 2013 there were twelve deaths: “2014 Final Pertussis Surveillance Report,” *Morbidity and Mortality Weekly Report* 64, no. 36 (2015): 702–15, cdc.gov/pertussis/downloads/pertuss-surv-report-2013.pdf.

In 2014 there were eight deaths: Ibid.

Japan had been using: Amy Fine, “Diphtheria, Tetanus and Acellular Pertussis Vaccine (DTaP): A Case Study,” April 2003, unpublished, available at iom.nationalacademies.org/~media/Files/Activity%20Files/Disease/VaccineFinancing/FineBackgroundPaper.pdf.

There are currently five DTaP vaccines: “U.S. Vaccine Names,” CDC, October 8, 2014, cdc.gov/vaccines/about/terms/USVaccines.html.

The DTaP vaccine is relatively safe: “Vaccine Excipient and Media Summary,” Appendix B in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

Australia, with a population of nearly 24 million: Matt Wade, “Australia’s Population Hits 24 Million Faster than Expected,” *Sydney Morning Herald*, February 12, 2016, smh.com.au/national/australias-population-hits-24-million-faster-than-expected-20160211-gms2pe.html.

more than 150,000 cases of pertussis: Connie Lam, “Rapid Increase in Pertactin-deficient *Bordetella pertussis* Isolates, Australia,” *Emerging Infectious Diseases* 20, no. 4 (2014): 626–33, doi: 10.3201/eid2004.131478; “Whooping Cough Vaccine: How Well Is It Working?” ABC Health & Wellbeing, August 14, 2012, abc.net.au/health/thepulse/stories/2012/08/14/3567495.htm.

pertussis among vaccinated Australians: Lam et al., “Rapid Increase in Pertactin-Deficient *Bordetella pertussis* Isolates.”

“lack of long-term effectiveness”: Anna M. Acosta et al., “Tdap Vaccine Effectiveness in Adolescents During the 2012 Washington State Pertussis Epidemic,” *Pediatrics* 135, no. 6 (2015): 981–89, pediatrics.aappublications.org/content/early/2015/04/28/peds.2014-3358d.

outbreak in a Florida preschool: “Sustained Transmission of Pertussis in Vaccinated, 1–5-Year-Old Children in a Preschool, Florida, USA.” medscape.org/viewarticle/856912.

the chance your baby will die from pertussis: Helen E. Quinn et al., “Parental Tdap Boosters and Infant Pertussis: A Case-Control Study,” *Pediatrics* 134, no. 4 (2014): 713–20, pediatrics.aappublications.org/content/early/2014/09/09/peds.2014-1105.

After the Hib vaccine was introduced: “Pneumococcal Disease,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 17, cdc.gov/vaccines/pubs/pinkbook/downloads/pneumo.pdf.

In 2014 there were 28,000 cases: “ABCs Report: Streptococcus Pneumonia, Provisional 2014,” CDC, October 19, 2015, cdc.gov/abcs/reports-findings/survreports/spneu14.html.

Pprevnar-13 (PCV13)...replaced: “U.S. Vaccine Names,” CDC, October 8, 2014, cdc.gov/vaccines/about/terms/USVaccines.html

This vaccine has 125 micrograms: Pprevnar-13, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM201669.pdf.

The Pprevnar-13 vaccine also contains: Pprevnar-13, package insert, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM201669.pdf.

in rodents, ingesting polysorbate 80: B. Chassaing et al., “Dietary Emulsifiers Impact the Mouse Gut Microbiota Promoting Colitis and Metabolic Syndrome,” *Nature* 519, no. 7541 (March 5, 2015), nature.com/nature/journal/v519/n7541/full/nature14232.html.

polysorbate 80 may be to blame: Melissa Healy, “Is Common Food Additive to Blame for Rising Rates of Bowel Disease?” *Los Angeles Times*, February 25, 2015, latimes.com/science/sciencenow/la-sci-sn-metabolic-bowel-emulsifiers-20150225-story.html.

generally consider it safe: E. A. Coors et al., “Polysorbate 80 in Medical Products and Nonimmunologic Anaphylactoid Reactions,” *Annals of Allergy and Asthma Immunology* 95, no. 6 (2005): 593–99, ncbi.nlm.nih.gov/pubmed/16400901.

invasive pneumococcal infections decreased: Tina Q. Tan, “Pediatric Invasive Pneumococcal Disease in the United States in the Era of Pneumococcal Conjugate Vaccines,” *Clinical Microbiology Reviews* 25, no. 3 (2012): 409–19, ncbi.nlm.nih.gov/pmc/articles/PMC3416489.

The pneumococcal vaccine was very effective: Chantal W. B. Boonacker et al., “Cost Effectiveness of Pneumococcal Conjugate Vaccination Against Acute Otitis Media in Children: A Review,” *Pharmacoeconomics* 29, no. 3 (2011): 199–211, link.springer.com/article/10.2165%2F11584930-000000000-00000.

acetaminophen...implicated in the autism epidemic: “Acetaminophen Safety: Be Cautious But Not Afraid,” *Harvard Men’s Health Letter*, January 1, 2014, health.harvard.edu/pain/acetaminophen-safety-be-cautious-but-not-afraid.

depletes the body’s reserves of glutathione: Stephanie Seneff, Robert M. Davidson, and Jingjing Liu, “Empirical Data Confirm Autism Symptoms

Related to Aluminum and Acetaminophen Exposure,” *Entropy* 14, no. 11 (2012): 2227–53, [mdpi.com/1099-4300/14/11/2227](https://doi.org/10.3390/entropy14112227).

Denmark: Danish Health and Medicines Authority, *The Denmark Childhood Vaccination Program, 2015* (Denmark: Rosendahls Schultz Grafisk, 2014), 3, sundhedsstyrelsen.dk/en/health/~/_media/B74655FEA6DF4771998A6BDEA96A374A.ashx.

Iceland: “National Childhood Vaccination Programme in Iceland as of September 2015,” Directorate of Health, landlaeknir.is/servlet/file/store93/item27472/Almennar_bolusetningar_barna_eftir_september_2015_ENSKA.pdf.

among the lowest in the world: WHO, Global Health Observatory data repository, “Infant Mortality Data by Country,” apps.who.int/gho/data/view.main.200.

babies do not get *any* vaccines: Readers who would like to compare vaccine schedules in European countries can find them at “Vaccine Schedule,” European Centre for Disease Prevention and Control, [vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.aspx](https://europea.eu/Pages/Scheduler.aspx).

Chapter 6: Keeping Your Baby Healthy in the First Nine Months

The longer you breastfeed, the lower the risk of obesity: G. Victora et al., “Association Between Breastfeeding and Intelligence, Educational Attainment, and Income at 30 Years of Age: A Prospective Birth Cohort Study from Brazil,” *Lancet Global Health* 3, no. 4 (2015): e199–205, thelancet.com/journals/langlo/article/PIIS2214-109X%2815%2970002-1/abstract.

the greater your baby’s intelligence: Ibid.

ability to fight infections: David Meyers, “Breastfeeding and Health Outcomes,” *Breastfeeding Medicine* 4, no. s1 (2009): S13–15, doi: 10.1089/bfm.2009.0066.

In the absence of data...higher levels of lead: Carol M. Sukhn et al., “Impact of Breast vs. Formula Feeding Mode on Primary Teeth Lead Level: Retrospective Clinical Study and Literature Review,” *Lebanese Medical Journal* 62, no. 1 (2014): 14–21, lebanesemedicaljournal.org/lmj/2014/04/28/impact-of-breast-vs-formula-feeding-mode-on-primary-teeth-lead-level-retrospective-clinical-study-and-literature-review.

disrupted gut flora: Aifric O’Sullivan et al., “Early Diet Impacts Infant Rhesus Gut Microbiome, Immunity, and Metabolism,” *Journal of Proteome Research* 12, no. 6 (2013): 2833–45, doi: 10.1021/pr4001702.

higher risk of death from SIDS: Fern R. Hauck et al., “Breastfeeding and Reduced Risk of Sudden Infant Death Syndrome: A Meta-Analysis,” *Pediatrics* 128, no. 1 (2011): 103–10, pediatrics.aappublications.org/content/early/2011/06/08/peds.2010-3000.abstract.

does not recommend that parents make infant formula: “Questions & Answers for Consumers Concerning Infant Formula,” FDA, June 2015, fda.gov/food/foodborneillnesscontaminants/peopleatrisk/ucm108079.htm#12.

drank bottles of raw goat’s milk: On the subject of alternatives to cow’s milk, camel’s milk, which has been consumed by humans across the Middle East and Africa for centuries, has recently become available in the United States and is being recommended by some doctors who treat children with autoimmune disorders. Close in composition to human milk and considered an ecologically more sustainable option (camels need less water and land than

cows, and they produce less methane), camel milk may be found to be a good alternative for small children. If you are interested in learning more about it, I recommend Nick Tabor's balanced article "The Mysterious Medicinal Powers of Camel Milk," *Good*, November 11, 2014, magazine.good.is/features/camel-milk-autism.

avoid soy-based formula: "Adoption of Genetically Engineered Crops in the United States, 1996–2015," USDA Economic Research Service, ers.usda.gov/media/185551/biotechcrops_d.html.

most soy-based formula: Jatinder Bhatia and Frank Greer, "Use of Soy Protein-Based Formulas in Infant Feeding," *Pediatrics* 121, no. 5 (2008): 1062–68, pediatrics.aappublications.org/content/121/5/1062.

"The aluminium content of a range": Shelle-Ann M. Burrell and Christopher Exley, "There Is (Still) Too Much Aluminium in Infant Formulas," *BMC Pediatrics* 10, no. 63 (2010), bmcpediatr.biomedcentral.com/articles/10.1186/1471-2431-10-63.

Your employer is now required: "Frequently Asked Questions—Break Time for Nursing Mothers," U.S. Department of Labor, dol.gov/whd/nursingmothers/faqbtnm.htm.

offer working moms at least four months paid parental leave: "Maternity and Paternity Leave in the EU," European Parliamentary Research Service, December 2014, europarl.europa.eu/RegData/etudes/ATAG/2014/545695/EPRS_ATA%282014%29545695_REV1_EN.pdf.

Canada: "Employment Insurance Maternity and Parental Benefits," Government of Canada, servicecanada.gc.ca/eng/ei/types/maternity_parental.shtml#long.

As the Committee on Nutrition: J. Ghisolfi et al., "[Processed Baby Foods for Infants and Young Children: A Dietary Advance? A Position Paper by the Committee on Nutrition of the French Society of Paediatrics]," *Archives de Pédiatrie* 20, no. 5 (2013): 523–32, ncbi.nlm.nih.gov/pubmed/23562320.

Foods and other products: "Food Dyes: A Rainbow of Risks," Center for Science in the Public Interest, cspinet.org/new/pdf/food-dyes-rainbow-of-risks.pdf.

recommends introducing solids at six months: "Infant Food and Feeding," American Academy of Pediatrics, aap.org/en-us/advocacy-and-policy/aap-health-initiatives/HALF-Implementation-Guide/Age-Specific-Content/Pages/Infant-Food-and-Feeding.aspx.

reduced allergies when solids are introduced: David M. Fleischer et al., “Primary Prevention of Allergic Disease Through Nutritional Interventions,” *Journal of Allergy and Clinical Immunology: In Practice* 1, no. 1 (2013): 29–36, [jaci-inpractice.org/article/S2213-2198\(12\)00014-1/fulltext](http://jaci-inpractice.org/article/S2213-2198(12)00014-1/fulltext).

earlier introduction of foods like peanuts: David M. Fleischer, “Consensus Communication on Early Peanut Introduction and the Prevention of Peanut Allergy in High-Risk Infants,” *Pediatrics* 136, no. 3 (2015): 2015-394, pediatrics.aappublications.org/content/136/3/600.

a type of sugar called glucose: Jeremy Berg, John L. Tymoczko, and Lubert Stryer, *Biochemistry*, 6th ed. (New York: W. H. Freeman, 2006), 766.

processed sugar or processed sweeteners: Gary Taubes, “Is Sugar Toxic?” *The New York Times Magazine*, April 17, 2011, nytimes.com/2011/04/17/magazine/mag-17Sugar-t.html?_r=0.

obesity has more than doubled among children: “Childhood Obesity Facts,” CDC, August 27, 2015, cdc.gov/healthyyouth/obesity/facts.htm.

one child dies from choking on food: Carole Stallings Harris et al., “Childhood Asphyxiation by Food. A National Analysis and Overview,” *Journal of the American Medical Association* 251, no. 17 (1984): 2231–35, jama.jamanetwork.com/article.aspx?articleid=392639.

food-related choking incidents: Meyli M. Chapin et al., “Nonfatal Choking on Food Among Children 14 Years or Younger in the United States, 2001–2009,” *Pediatrics* 132, no. 2 (2013): 275–81, pediatrics.aappublications.org/content/early/2013/07/23/peds.2013-0260.

In Japan...lowest obesity rates: “Obesity Update,” OECD, June 2014, oecd.org/els/health-systems/Obesity-Update-2014.pdf.

In Japan...highest life expectancy: “World Health Statistics 2014,” WHO, who.int/mediacentre/news/releases/2014/world-health-statistics-2014/en.

More than 4,400 babies are born: “Facts About Cleft Lip and Cleft Palate,” CDC, November 2015, cdc.gov/ncbddd/birthdefects/cleftlip.html#ref.

desensitizing allergy-prone children to peanuts: George Du Toit, “Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy,” *New England Journal of Medicine* 372, no. 9 (2015): 803–13, doi: 10.1056/NEJMoa1414850.

The prevalence of celiac disease: Alberto Rubio-Tapia et al., “The Prevalence

of Celiac Disease in the United States,” *American Journal of Gastroenterology* 107, no. 10 (2012): 1538–44, nature.com/ajg/journal/v107/n10/full/ajg2012219a.html.

points out that the endocrine-disrupting herbicide glyphosate: Anthony Samsel and Stephanie Seneff, “Glyphosate, Pathways to Modern Diseases II: Celiac Sprue and Gluten Intolerance,” *Interdisciplinary Toxicology* 6, no. 4 (2013): 159–84, ncbi.nlm.nih.gov/pmc/articles/PMC3945755.

“Wheat can...reach deep down”: William Davis, *Wheat Belly* (New York: Rodale Books, 2014), 4.

Why the rise in gluten intolerance?: James Hamblin, “This Is Your Brain on Gluten,” *The Atlantic*, December 2013, theatlantic.com/health/archive/2013/12/this-is-your-brain-on-gluten/282550.

crawling is purposely avoided: Kate Wong, “Crawling May Be Unnecessary for Normal Child Development,” *Scientific American*, July 1, 2009, scientificamerican.com/article/crawling-may-be-unnecessary.

3.2 percent increase in visits to the doctor: Jacob E. Simmering et al., “Are Well-Child Visits a Risk Factor for Subsequent Influenza-Like Illness Visits?” *Infection Control and Hospital Epidemiology* 35, no. 3 (2014): 251–56, ncbi.nlm.nih.gov/pmc/articles/PMC4380138.

Though doctors are universally aware: “Drug Fever,” UpToDate, November 2014, uptodate.com/contents/drug-fever.

reducing fevers in laboratory animals: Sally Eyers et al., “The Effect on Mortality of Antipyretics in the Treatment of Influenza Infection: Systematic Review and Meta-Analysis,” *Journal of the Royal Society of Medicine* 103, no. 10 (2010): 403–11, ncbi.nlm.nih.gov/pubmed/20929891.

artificial fever reduction prolongs the itching: T. Doran, “Acetaminophen: More Harm than Good for Chicken Pox?” *Journal of Pediatrics* 114, no. 6 (1989): 1045–48, ncbi.nlm.nih.gov/pubmed/2656959.

increasing the duration of viral shedding: Neil M. H. Graham et al., “Adverse Effects of Aspirin, Acetaminophen, and Ibuprofen on Immune Function, Viral Shedding, and Clinical Status in Rhinovirus-Infected Volunteers,” *Journal of Infectious Diseases* 162, no. 6 (1990): 1277–82, ncbi.nlm.nih.gov/pubmed/2172402.

Since having a fever seems to help: Thomas A. Mace et al., “Differentiation of

CD8+ T Cells into Effector Cells Is Enhanced by Physiological Range Hyperthermia,” *Journal of Leukocyte Biology* 90, no. 5 (2011): 951–62, jleukbio.org/content/90/5/951.long.

may actually prolong the flu and shingles: Karen I. Plaisance et al., “Effect of Antipyretic Therapy on the Duration of Illness in Experimental Influenza A, *Shigella sonnei*, and *Rickettsia rickettsii* Infections,” *Pharmacotherapy* 20, no. 12 (2000): 1417–22, doi: 10.1592/phco.20.19.1417.34865; “Maryland Researchers Find Anti-Fever Drugs May Cause Flu,” *Science Daily*, December 29, 2000, sciencedaily.com/releases/2000/12/001228090125.htm.

The CDC recommends...the following vaccines: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

Compare the current schedule: “Vaccine History: Vaccine Availability Timeline,” Children’s Hospital of Philadelphia, chop.edu/centers-programs/vaccine-education-center/vaccine-history/vaccine-availability-timeline#.
Vna4jlL5rBw.

Pertussis, also known as whooping cough: As you can see from this CDC pertussis surveillance, the number of pertussis cases is highly variable. In the past five years for which we have data, the average number of infections has been 31,231 with 27,550 in 2010, 18,719 in 2011, 48,277 in 2012, 28,639 in 2013, and 32,971 reported in 2014. “Pertussis Cases by Year (1922–2014),” CDC, cdc.gov/pertussis/surv-reporting/cases-by-year.html.

The efficacy rate: “Vaccines and Immunizations: Pertussis,” in J. Hamborsky, A. Kroger, and S. Wolfe, eds., *Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book*, 13th ed. (Washington, DC: Public Health Foundation, 2015), chap. 16, cdc.gov/vaccines/pubs/pinkbook/pert.html.

We see about twenty-nine cases of tetanus a year: “Tetanus Surveillance—United States, 2001–2008,” *Morbidity and Mortality Weekly Report* 60, no. 12 (2011): 365–69, cdc.gov/mmwr/preview/mmwrhtml/mm6012a1.htm.

The influenza vaccine is given: “Children, the Flu, and the Flu Vaccine,” CDC, August 2015, cdc.gov/flu/protect/children.htm.

a trivalent vaccine...a quadrivalent vaccine...a nasal spray: “Provider Information: Influenza Vaccine Information Statement,” CDC, September 2015, cdc.gov/vaccines/hcp/vis/vis-statements/flu-hcp-info.pdf.

recommend the annual flu vaccine for everyone six months: “Summary Report: February 26, 2015 (Meeting Minutes),” Advisory Committee on Immunization Practices (ACIP) (Washington, DC: CDC, 2015), cdc.gov/vaccines/acip/meetings/downloads/min-archive/min-2015-02.pdf.

Its reasoning: “Children, the Flu, and the Flu Vaccine,” CDC, August 2015, cdc.gov/flu/protect/children.htm.

more than one hundred flu-related pediatric deaths: “2013–2014 Influenza Season: Questions & Answers,” CDC, August 2014, cdc.gov/flu/pastseasons/1314season.htm.

The multidose vials contain 25 micrograms: “Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2015–16 Influenza Season,” *Morbidity and Mortality Weekly Report* 64, no. 30 (2015): 818–25, cdc.gov/mmwr/preview/mmwrhtml/mm6430a3.htm.

The nasal FluMist: “Important Safety and Eligibility Information,” FluMist, flumistquadrivalent.com/consumer.

Flu vaccine effectiveness is highly variable: “Seasonal Influenza Vaccine Effectiveness, 2005–2015,” CDC, December 2015, cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm.

“What people don’t understand is that”: “What the Doctor Isn’t Telling You About the Flu Vaccine,” *Mothering*, December 7, 2011, mothering.com/articles/pregnancy-and-the-flu-shot/.

During years when there is a mismatch: Michael T. Osterholm et al., “Efficacy and Effectiveness of Influenza Vaccines: A Systematic Review and Meta-Analysis,” *Lancet Infectious Diseases* 12, no. 1 (2012): 36–44, thelancet.com/journals/laninf/article/PIIS1473-3099%2811%2970295-X/abstract.

the vaccine efficacy ranges from 10 to 60 percent: “Seasonal Influenza Vaccine Effectiveness, 2005–2015,” CDC, cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm.

only once every two years: Adam J. Kucharski et al., “Estimating the Life Course of Influenza A(H3N2) Antibody Responses from Cross-Sectional Data,” *PLoS Biology* 13, no. 3 (2015): e1002082.

Several flu vaccines currently: “Vaccine Excipient and Media Summary,” Appendix B in Hamborsky, Kroger, Wolfe, eds., *Epidemiology and*

Prevention: Pink Book, cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

Children who grow up around animals: Mark Holbreich et al., “Amish Children Living in Northern Indiana Have a Very Low Prevalence of Allergic Sensitization,” *Journal of Allergy and Clinical Immunology* 129, no. 6 (2012): 1671–73, jacionline.org/article/S0091-6749%2812%2900519-2/abstract.

reduced peanut allergies among infants: George Du Toit, “Randomized Trial of Peanut Consumption in Infants at Risk for Peanut Allergy,” *New England Journal of Medicine* 372, no. 9 (2015): 803–13, nejm.org/doi/full/10.1056/NEJMoa1414850.

Chapter 7: Your One-Year-Old

no correlation between age of walking: Oskar G. Jenni et al., “Infant Motor Milestones: Poor Predictive Value for Outcome of Healthy Children,” *Acta Paediatrica* 102, no. 4 (2013): e181–84, doi: 10.1111/apa.12129.

Any fruit or vegetable: Woodrow C. Monte, “Methanol: A Chemical Trojan Horse as the Root of the Inscrutable U,” *Medical Hypotheses* 74, no. 3 (2010): 493–96, medical-hypotheses.com/article/S0306-9877%2809%2900693-8/abstract.

Though no genetically modified wheat: “Wheat,” U.S. Department of Agriculture, ers.usda.gov/topics/crops/wheat/background.aspx.

Roundup—glyphosate—an endocrine disruptor: “Glyphosate, Pathways to Modern Diseases II: Celiac Sprue and Gluten Intolerance,” *Interdisciplinary Toxicology* 6, no. 4 (2013): 159–84, ncbi.nlm.nih.gov/pmc/articles/PMC3945755.

Celiac disease affects less than 1 percent: Alberto Rubio-Tapia et al., “The Prevalence of Celiac Disease in the United States,” *American Journal of Gastroenterology* 107, no. 10 (2012): 1538–44, nature.com/ajg/journal/v107/n10/full/ajg2012219a.html.

regressive autism occurs at least 32 percent: Brian D. Barger, Jonathan M. Campbell, and Jaimi D. McDonough, “Prevalence and Onset of Regression within Autism Spectrum Disorders: A Meta-analytic Review,” *Journal of Autism and Developmental Disorders* 43, no. 4 (2013): 817–28, link.springer.com/article/10.1007/s10803-012-1621-x#page-1.

regressive autism comprises the majority of cases: Graham E. Ewing, “What Is Regressive Autism and Why Does It Occur? Is It the Consequence of Multi-Systemic Dysfunction Affecting the Elimination of Heavy Metals and the Ability to Regulate Neural Temperature?” *North American Journal of Medical Sciences* 1, no. 2 (2009): 28–47, ncbi.nlm.nih.gov/pmc/articles/PMC3364648.

Thirdly, in both the United States: Sharyl Attkisson, “Family to Receive \$1.5M+ in First-Ever Vaccine-Autism Court Award,” CBS News, September 10, 2010, cbsnews.com/news/family-to-receive-15m-plus-in-first-ever-

vaccine-autismcourt-award.

Italy: Paul Bignell, “Italian Court Reignites MMR Vaccine Debate After Award over Child with Autism,” *Independent*, June 16, 2012, independent.co.uk/life-style/health-and-families/health-news/italian-court-reignites-mmr-vaccine-debate-after-award-over-child-with-autism-7858596.html.

Ryan started shaking uncontrollably: Court Claim No. 06-227V, uscfc. uscourts.gov/sites/default/files/opinions/CAMPBELL-SMITH.MOJABI-PROFFER.12.13.2012.pdf.

Currently we give thirty-four doses often vaccines: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

African American boys who receive the MMR vaccine: Brian S. Hooker, “Measles-Mumps-Rubella Vaccination Timing and Autism Among Young African American Boys: A Reanalysis of CDC Data,” *Translational Neurodegeneration* 3, no.16 (2014), translationalneurodegeneration.com/content/3/1/16.

was retracted: Brian S. Hooker, “Retraction: Measles-Mumps-Rubella Vaccination Timing and Autism Among Young African American Boys: A Reanalysis of CDC Data,” *Translational Neurodegeneration* 3, no. 22 (2014), ncbi.nlm.nih.gov/pmc/articles/PMC4183946.

Thompson admitted that the CDC: William W. Thompson, Ph.D., “Regarding the 2004 Article Examining the Possibility of a Relationship Between MMR Vaccine and Autism,” August 27, 2014, morganverkamp.com/august-27-2014-press-release-statement-of-william-w-thompson-ph-d-regarding-the-2004-article-examining-the-possibility-of-a-relationship-between-mmr-vaccine-and-autism.

Furthermore, in July 2013 Elizabeth Mumper: Elizabeth Mumper, “Can Awareness of Medical Pathophysiology in Autism Lead to Primary Care Autism Prevention Strategies?” *North American Journal of Medicine and Science* 6, no. 3 (2013): 134–44, najms.net/wp-content/uploads/vo6io3.pdf#page=34.

Since he changed to a more evidence-based: “From Preconception to Infancy: Environmental and Nutritional Strategies for Lowering the Risk of Autism by David Berger, MD, FAAP,” *Autism One*, April 23, 2012, autismone.org/content/preconception-infancy-environmental-and-nutritional-

strategies-lowering-risk-autism-david-be.

Up to eight vaccines against ten diseases: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

To the contrary, getting measles: Helen Rosenlund et al., “Allergic Disease and Atopic Sensitization in Children in Relation to Measles Vaccination and Measles Infection,” *Pediatrics* 123 no. 3 (2009): 771–78, ncbi.nlm.nih.gov/pubmed/19255001.

A Cochrane review: Hui Ming Yang, Meng Mao, and Chaomin Wan, “Vitamin A for Treating Measles in Children,” Cochrane Collaboration (October 2015), doi: 10.1002/14651858.CD001479.pub3.

In 2014 there were 1,223 reported: “Mumps Cases and Outbreaks,” CDC, December 2015, cdc.gov/mumps/outbreaks.html.

Mumps is almost always: “Vaccines and Immunizations: Mumps,” in J. Hamborsky, A. Kroger, and S. Wolfe, eds., *Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book*, 13th ed. (Washington, DC: Public Health Foundation, 2015), chap. 15, cdc.gov/vaccines/pubs/pinkbook/mumps.html.

“exceedingly rare”: “Mumps,” CDC, May 2015, cdc.gov/mumps/hcp.html.

Rubella is another mild illness: “Vaccines and Immunizations: Rubella,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 20, cdc.gov/vaccines/pubs/pinkbook/rubella.html.

rubella had been eliminated: Ibid.

The live-virus vaccine was withdrawn: “Vaccines and Immunizations: Measles,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 13, cdc.gov/vaccines/pubs/pinkbook/meas.html.

subacute sclerosing panencephalitis (SSPE): Robert S. Mendelsohn, M.D., *How to Raise a Healthy Child...In Spite of Your Doctor* (New York: Ballantine, 1984), 237.

In the early 1980s a reengineered: “MMR II,” Merck, merck.com/product/usa/pi_circulars/m/mmr_ii/mmr_ii_pi.pdf.

Until 2009 parents could also get: “Q & As About Monovalent M-M-R

Vaccines,” CDC, October 2009, cdc.gov/vaccines/vac-gen/shortages/mmr-faq-12-17-08.htm.

Infants who get the MMR: MMR-II, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM123789.pdf.

ProQuad: ProQuad, Full Prescribing Information, Merck, merckvaccines.com/Products/ProQuad.

Parents should also be aware that subacute: MMRII, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/m/mmr_ii/mmr_ii_pi.pdf.

Though the sharp decline in measles: “Measles, Mumps, and Rubella—Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report* 47, no. RR-8 (1998): 1–57.

This puzzled health officials: American Academy of Pediatrics, Committee on Infectious Diseases, “Age for Routine Administration of the Second Dose of Measles-Mumps-Rubella Vaccine,” *Pediatrics* 101, no. 1 (1998): 129–33, pediatrics.aappublications.org/content/101/1/129.full.

There were fewer than three hundred cases: “Measles Cases and Outbreaks,” CDC, cdc.gov/measles/cases-outbreaks.html.

Before the advent of the vaccine: “Prevention of Varicella: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report* 45, no. RR11 (July 12, 1996): 1–25, cdc.gov/mmwr/preview/mmwrhtml/rr5604a1.htm.

The current recommendation: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

Varivax protects: Varivax, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/v/varivax/varivax_pi.pdf.

ProQuad protects: ProQuad, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/p/proquad/proquad_pi.pdf.

it was studied for safety: Varivax, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/v/varivax/varivax_pi.pdf.

However, the varicella vaccine: Ibid.

The European Union estimates: “Varicella Vaccine in the European Union,” European Centre for Disease Prevention and Control, April 2014, ecdc.europa.eu/en/publications/Publications/Varicella-guidance-2014-consultation.pdf.

The CDC has found that two doses: “Vaccines and Immunizations: Varicella,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 22, cdc.gov/vaccines/pubs/surv-manual/chpt17-varicella.html.

about 9,893 cases of chicken pox: “Notifiable Diseases and Mortality Tables,” *Mortality and Morbidity Weekly Report* 64, no. 51 (January 1, 2016), cdc.gov/mmwr/preview/mmwrhtml/mm6451md.htm?s_cid=mm6451md_w.

While about 80 percent of adults: “Viral Hepatitis—Hepatitis A Information,” CDC, August 2015, cdc.gov/hepatitis/hav.

In 2006 the hepatitis A vaccine: Ibid.

There are three hepatitis A vaccines: “Vaccines and Immunizations: Hepatitis A,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 9, cdc.gov/vaccines/pubs/pinkbook/hepa.html.

There was about 1 case of hepatitis A: CDC, *Manual for the Surveillance of Vaccine-Preventable Diseases* (Atlanta, GA: CDC, 2011), chap. 3, cdc.gov/vaccines/pubs/surv-manual/chpt03-hepa.html.

In 2011 we had 1,398 cases: “Vaccines and Immunizations: Hepatitis A,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 9, cdc.gov/vaccines/pubs/pinkbook/hepa.html; Vaqta package insert, merck.com/product/usa/pi_circulars/v/vaqta/vaqta_pi.pdf.

However, research done in children: V. Demicheli and D. Tiberti, “The Effectiveness and Safety of Hepatitis A Vaccine: A Systematic Review,” *Vaccine* 21, nos. 19–20 (2003): 2242–45, ncbi.nlm.nih.gov/pubmed/12744850.

Motor vehicle accidents are the second: “10 Leading Causes of Death by Age Group, United States, 2013,” CDC, cdc.gov/injury/images/lc-charts/leading-causes_of_death_by_age_group_2013-a.gif.

Chapter 8: The Toddler and Preschool Years

But no child is really “typical”: J. Meisel, “The Bilingual Child,” in T. Bhatia and W. Ritchie, eds., *The Handbook of Bilingualism* (London: Blackwell Publishing, 2004) 91–113.

Some babies are born with teeth: “Natal Teeth,” U.S. National Library of Medicine, Medical Encyclopedia, February 25, 2014, nlm.nih.gov/medlineplus/ency/article/003268.htm.

early tooth decay and cavities: “A Pediatric Guide to Children’s Oral Health” American Academy of Pediatrics, www2.aap.org/oralhealth/docs/OralHealthFCpagesF2_2_1.pdf.

Breast milk is not “cariogenic”: Luigi Paglia, “Does Breastfeeding Increase Risk of Early Childhood Caries?” *European Journal of Paediatric Dentistry* 16, no. 3 (2015): 173, ncbi.nlm.nih.gov/pubmed/26418916

breastfeeding does not lead to tooth decay: Karin L. Weeheljm et al., “Prolonged Demand Breast-Feeding and Nursing Caries,” *Caries Research* 32, no. 1 (1998): 46–50, ncbi.nlm.nih.gov/pubmed/9438571.

flying in an airplane: Martina Sanlorenzo et al., “The Risk of Melanoma in Airline Pilots and Cabin Crew: A Meta-analysis,” *JAMA Dermatology* 151, no. 1 (2015): 51–58, doi: 10.1001/jamadermatol.2014.1077.

Unintentional injuries, which include motor vehicle: “10 Leading Causes of Death by Age Group, United States—2013,” CDC, cdc.gov/injury/images/lc-charts/leading_causes_of_death_by_age_group_2013-a.gif.

If your child weighs at least twenty: Irene Isaksson-Hellman et al., “Trends and Effects of Child Restraint Systems Based on Volvo’s Swedish Accident Database (Report No SAE 973299),” *Proceedings of Child Occupant Protection 2nd Symposium* (November 1997): 43–54, papers.sae.org/973299.

In the United States about two children drown: “Unintentional Drowning: Get the Facts,” CDC, cdc.gov/HomeandRecreationalSafety/Water-Safety/waterinjuries-factsheet.html.

Most children age one to four who drown: “Unintentional Drowning: Get

the Facts,” CDC, cdc.gov/HomeandRecreationalSafety/Water-Safety/waterinjuries-factsheet.html.

Accidental drowning accounts for: Lori McIlwain and Wendy Fournier, “Lethal Outcomes in Autism Spectrum Disorders (ASD): Wandering/Elopement,” January 20, 2012, nationalautismassociation.org/wp-content/uploads/2012/01/Lethal-Outcomes-In-Autism-Spectrum-Disorders_2012.pdf.

A few years ago a thirteen-month-old: “Affidavit: Mom on Facebook When Child Drowned,” CNN.com, January 18, 2011, cnn.com/2011/CRIME/01/18/colorado.mother.charged.

It is healthy for children to grow up around pets: Ganesa Wegienka et al., “Lifetime Dog and Cat Exposure and Dog- and Cat-Specific Sensitization at Age 18 Years,” *Clinical and Experimental Allergy* 41, no. 7 (2011): 979–86, doi: 10.1111/j.1365-2222.2011.03747.x.

Rabies, a serious disease that infects: “Human Rabies,” CDC, September 2015, cdc.gov/rabies/location/usa/surveillance/human_rabies.html.

From 2003 to 2014: Ibid.

However, in cases of dog bites: D. W. Kimberlin et al., eds., *The Red Book: 2015 Report of the Committee on Infectious Diseases*, 30th ed. (Elk Grove Village, IL: American Academy of Pediatrics, 2015), 658.

A child who is bitten by a rabid dog: “Rabies Vaccine,” CDC, September 2014, cdc.gov/rabies/medical_care/vaccine.html.

A rabies immune globulin injection: “Human Rabies Immune Globulin,” CDC, April 2011, cdc.gov/rabies/medical_care/hrig.html.

RabAvert (made by Novartis): “Rabies Vaccine for Human Use,” FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM312931.pdf.

Immovax (made by Sanofi Pasteur): “Imovax,” FDA, fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm180097.htm.

A child who is constantly praised: Madeline Levine Harper, *The Price of Privilege: How Parental Pressure and Material Advantage Are Creating a Generation of Disconnected and Unhappy Kids* (New York: HarperCollins, 2006).

“pint-sized scientist testing theories”: Alison Gopnik, “Let the Children Play, It’s Good for Them!” *Smithsonian Magazine*, July 2012, smithsonianmag.com/science-nature/let-the-children-play-its-good-for-them-130697324/?no-ist.

“A lot of people think”: Maya Shetreat-Klein (pediatric neurologist), interview by author, July 8, 2015.

For some, that readiness begins in infancy: I particularly like this extended discussion of when to start potty training, which I think parents will find useful: Gwen Dewar, “The Timing of Toilet Training: What’s the Best Potty Training Age?” *ParentingScience.com*, parentingscience.com/potty-training-age.html.

out of diapers by eighteen months: John A. Martin et al., “Secular Trends and Individual Differences in Toilet-Training Progress,” *Journal of Pediatric Psychology* 9, no. 4 (1984): 457–68.

most children are ready to learn to use: E. Bakker and J. J. Wyndaele, “Changes in the Toilet Training of Children During the Last 60 Years: The Cause of an Increase in Lower Urinary Tract Dysfunction?” *British Journal of Urology* 86, no. 3 (2000): 248–52, doi: 10.1046/j.1464-410x.2000.00737.x.

a billion-dollar industry: “Baby Diapers Market Is Expected to Reach \$59.4 Billion Globally by 2020—Allied Market Research,” PRNewswire, November 6, 2014, prnewswire.com/news-releases/baby-diapers-market-is-expected-to-reach-594-billion-globally-by-2020—allied-market-research-281748011.html.

“Starve a fever, feed a cold”: Mark Fischetti, “Fact or Fiction?: Feed a Cold, Starve a Fever,” *Scientific American*, January 3, 2014, scientificamerican.com/article/fact-or-fiction-feed-a-cold.

zinc and vitamin C can reduce: Naomi K. Fukagawa, “Zinc Lozenges Reduce the Duration of Common Cold Symptoms,” *Nutrition Reviews* 55, no. 3 (1997): 82–85, nutritionreviews.oxfordjournals.org/content/55/3/82.long; Shaun Marshall, “Zinc Gluconate and the Common Cold. Review of Randomized Controlled Trials,” *Canadian Family Physician* 44 (May 1998): 1037–42, ncbi.nlm.nih.gov/pmc/articles/PMC2277668/pdf/canfamphys00051-0099.pdf; and Richard Nahas, “Complementary and Alternative Medicine for Prevention and Treatment of the Common Cold,” *Canadian Family Physician* 57, no. 1 (2011): 31–36.

at least one ear infection: “Ear Infections in Children,” National Institute on Deafness and Other Communication Disorders, nidcd.nih.gov/health/

[hearing/pages/earinfections.aspx](#).

We still see plenty of them: Robert Cohen et al., “A 13-Year Survey of Pneumococcal Nasopharyngeal Carriage in Children with Acute Otitis Media Following PCV7 and PCV13 Implementation,” *Vaccine* 33, no. 39 (2015): 5118–26, [linkinghub.elsevier.com/retrieve/pii/S0264-410X%2815%2901124-X](#); Junko Hasegawa et al., “Pneumococcal Vaccination Reduced the Risk of Acute Otitis Media: Cohort Study,” *Pediatrics International* 57, no. 4 (2015): 582–85, [ncbi.nlm.nih.gov/pubmed/25615843](#).

antibiotics impair the immune system: Aida Semic-Jusufagic et al., “Assessing the Association of Early Life Antibiotic Prescription with Asthma Exacerbations, Impaired Antiviral Immunity, and Genetic Variants in 17q21: A Population-Based Birth Cohort Study,” *Lancet Respiratory Medicine* 2, no. 8 (2014): 621–30, [thelancet.com/journals/lanres/article/PIIS2213-2600\(14\)70096-7/fulltext](#).

***Sarcoptes scabiei*:** Robert Buckman, *Human Wildlife: The Life That Lives on Us* (Baltimore, MD: Johns Hopkins University Press, 2002), 17.

lindane is known to cause seizures: “Lindane,” U.S. National Library of Medicine, February 2012, [nlm.nih.gov/medlineplus/druginfo/meds/a682651.html](#).

a screening called an M-CHAT: “Welcome to the Official M-CHAT Website,” [mchatscreen.com](#).

recommends screening tests: “AAP Statement on U.S. Preventive Services Task Force Draft Recommendation Statement on Autism Screening,” American Academy of Pediatrics, August 2105, [aap.org/en-us/about-the-aap/aap-press-room/pages/AAP-Statement-on-U-S-Preventive-Services-Task-Force-Draft-Recommendation-Statement-on-Autism-Screening.aspx](#).

In fact, only 147 people: “Measles Outbreak Traced to Disneyland Is Declared Over,” NBC News, April 17, 2015, [nbcnews.com/storyline/measles-outbreak/measles-outbreak-traced-disneyland-declared-over-n343686](#).

some 189 people in the United States: “Measles: Measles Cases and Outbreaks,” CDC, December 16, 2015, [cdc.gov/measles/cases-outbreaks.html](#).

Only one person got measles in Oregon: “Measles Outbreak—California, December 2014–February 2015,” *Morbidity and Mortality Weekly Report* 64, no. 06 (2015): 153–54.

The process of myelination lasts: Tomáš Paus et al., “Structural Maturation of Neural Pathways in Children and Adolescents: In Vivo Study,” *Science* 283, no. 5409 (1999): 1908–11, sciencemag.org/content/283/5409/1908.short.

While we have no large-scale studies: Frank DeStefano et al., “Age at First Measles-Mumps-Rubella Vaccination in Children with Autism and School-Matched Control Subjects: A Population-Based Study in Metropolitan Atlanta,” *Pediatrics* 113, no. 2 (2004): 259–66, pediatrics.aappublications.org/content/113/2/259.

African American boys who received the MMR: Brian S. Hooker, “Measles-Mumps-Rubella Vaccination Timing and Autism Among Young African American Boys: A Reanalysis of CDC Data,” *Translational Neurodegeneration* 3, no. 16 (2014), translationalneurodegeneration.com/content/3/1/16.

We never use the combined MMRV: Shu-Juan Ma et al., “Risk of Febrile Seizure After Measles-Mumps-Rubella-Varicella Vaccine: A Systematic Review and Meta-Analysis,” *Vaccine* 33, no. 31 (2015): 3636–49, ncbi.nlm.nih.gov/pubmed/26073015.

first generation of the HPV vaccine: Gardasil, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/g/gardasil/gardasil_pi.pdf.

If you are traveling to a part of the world: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

Chapter 9: Baby's Going to School?

Of the illnesses that do occur: “Acute Rheumatic Fever and Rheumatic Heart Disease Among Children—American Samoa, 2011–2012,” *Morbidity and Mortality Weekly Report* 64, no. 20 (May 29, 2015): 555–58, cdc.gov/mmwr/preview/mmwrhtml/mm6420a5.htm.

Though most doctors in America treat strep: For a longer discussion of how crucial beneficial bacteria are to a healthy immune system, read Jennifer Margulis’s “The Zoo in You. You Thought You Were Human. But You’re Not,” *Jefferson Monthly*, October 1, 2015, ijpr.org/post/zoo-you-you-thought-you-were-human-youre-not#stream/o.

“absolute benefits are modest”: C. B. Del Mar, P. P. Glasziou, and A. B. Spinks, “Antibiotics for Sore Throat,” *Cochrane Acute Respiratory Infections Group* 2 (2004): CD000023, doi: 10.1002/14651858.CD000023.pub2.

treat scalp ringworm with X-rays: Robert S. Mendelsohn, M.D., *How to Raise a Healthy Child...In Spite of Your Doctor* (New York: Ballantine, 1987), 14.

estimates that 9.5 million children: “Allergy Facts,” American College of Allergy, Asthma and Immunology, acaai.org/news/facts-statistics/allergies.

Simon died: Tom McGhee, “Chatfield High Student Dies After Eating S’more Containing Peanut Butter,” *Denver Post*, September 23, 2015, denverpost.com/news/ci_28864937/chatfield-high-student-dies-after-eating-smore-containing.

a dramatic rise in the number: “Trends in Allergic Conditions Among Children: United States, 1997–2001,” NCHS Data Brief no. 121 (May 2013), cdc.gov/nchs/data/databriefs/db121.pdf.

a trigger for autoimmune disorders: Alessandra Soriano, Gideon Nesher, and Yehuda Shoenfeld, “Predicting Post-Vaccination Autoimmunity: Who Might Be at Risk?” *Pharmacological Research* 92 (February 2015): 18–22, sciencedirect.com/science/article/pii/S104366181400139X; C. A. Shaw and L. Tomljenovic, “Aluminum in the Central Nervous System (CNS): Toxicity in Humans and Animals, Vaccine Adjuvants, and Autoimmunity,” *Immunologic Research* 56, no. 2 (2013): 304–16, link.springer.com/article/10.1007%2Fs12026-013-8403-1.

allergies will trigger an IgE reaction: “Food Allergy,” American Academy of Allergy, Asthma and Immunology, aaaai.org/conditions-and-treatments/library/at-a-glance/food-allergy.aspx.

Yaron’s idea of “healthy extras”: Ruth Yaron, *Super Baby Food* (Peckville, PA: F. J. Roberts Holding, 2013).

being formula fed: W. H. Oddy, “Early Infant Feeding and Adiposity Risk: From Infancy to Adulthood,” *Annals of Nutrition and Metabolism* 64, nos. 3–4 (2014): 262–70, karger.com/Article/Abstract/365031.

having a poor diet: Bianca Turnbull, Julie Lanigan, and Atul Singhal, “Toddler Diets in the UK: Deficiencies and Imbalances. 1. Risk of Micronutrient Deficiencies,” *Journal of Family Health Care* 17, no. 5 (2007): 167–70, ncbi.nlm.nih.gov/pubmed/17990656; Bianca Turnbull, Julie Lanigan, and Atul Singhal, “Toddler Diets in the UK: Deficiencies and Imbalances. 2. Relationship of Toddler Diet to Later Health,” *Journal of Family Health Care* 17, no. 6 (2007): 197–200, ncbi.nlm.nih.gov/pubmed/18201013.

lifestyle and psychological problems: Anne Martin et al., “Lifestyle Intervention for Improving School Achievement in Overweight or Obese Children and Adolescents,” *Cochrane Database of Systemic Reviews* 3 (March 2014): CD009728, ncbi.nlm.nih.gov/pubmed/24627300.

eat with the TV on: Yannis Manios et al., “Obesity and Television Watching in Preschoolers in Greece: The GENESIS Study,” *Obesity* 17 no. 11 (2009): 2047–53, doi: 10.1038/oby.2009.50.

one in forty-five children in America: “Estimated Prevalence of Autism and Other Developmental Disabilities Following Questionnaire Changes in the 2014 National Health Interview Survey,” *National Health Statistics Report*, no. 87 (November 13, 2015), cdc.gov/nchs/data/nhsr/nhsr087.pdf. The number of children estimated to have autism has gone up since we began writing this book. The most often cited CDC estimate of autism incidence is one in sixty-eight. See “Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years: Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2010,” *Morbidity and Mortality Weekly Report* 63 (March 28, 2014): 1–21, cdc.gov/mmwr/preview/mmwrhtml/ss6302a1.htm?s_cid=ss6302a1_w.

The current schedule: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

whooping cough in Kansas and North Carolina: “Pertussis (Whooping Cough) Cases Still Increasing in Reno County,” Reno County Health Department, renogov.org/DocumentCenter/View/2026; and Michael Hennessey, “13 Cases of Whooping Cough Confirmed in Davie County Schools,” Fox8, December 18, 2015, myfox8.com/2015/12/18/13-cases-of-whooping-cough-confirmed-in-davie-county-schools.

mumps outbreak in Missouri: “6 University of Missouri Students Confirmed with Mumps,” Associated Press, July 28, 2015, fox2now.com/2015/07/28/6-university-of-missouri-students-confirmed-with-mumps.

last confirmed case of wild-virus polio: “Vaccines and Immunizations: Polio Myelitis,” CDC, cdc.gov/vaccines/pubs/pinkbook/downloads/polio.pdf.

religious and philosophical vaccine exemptions: “New Law (SB 277) Effective in 2016,” California Department of Public Health, Immunization Branch, shots forschool.org/laws/exemptions.

The popular children’s book: Laurent de Brunhoff, *Babar and the Doctor* (New York: Random House, 1971).

When Peter Brady comes home: “Is There a Doctor in the House?” *The Brady Bunch*, Season 1, episode 16, aired December 26, 1969.

In 2014, the worst year: “Measles (Rubeola),” CDC, July 1, 2015, cdc.gov/measles/vaccination.html.

only one case of measles in the entire state: “Lane County: Measles Patient Visited 4 Businesses, May Have Exposed Public,” KATU2, January 20, 2015, katu.com/news/local/lane-county-measles-patient-visited-4-businesses-may-have-exposed-public.

This second dose was added to the schedule in 2005: “Prevention of Varicella Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report* 56, no. RR04 (June 2007): 1–40, cdc.gov/mmwr/preview/mmwrhtml/rr5604a1.htm.

vaccinated children were getting chicken pox: A. S. Lopez et al., “One Dose of Varicella Vaccine Does Not Prevent School Outbreaks: Is It Time for a Second Dose?” *Pediatrics* 117, no. 6 (2006): 1070–77, ncbi.nlm.nih.gov/pubmed/16740809.

One dose of chicken pox vaccine: D. W. Kimberlin et al., eds., *Red Book: 2015 Report of the Committee on Infectious Diseases*, 30th ed. (Elk Grove Village,

IL: American Academy of Pediatrics, 2015), 856.

Two doses are thought to be 98 percent: “Chicken Pox (Varicella),” CDC, February 12, 2015, cdc.gov/chickenpox/vaccination.html.

Deaths in America from chicken pox: “Shingles Surveillance,” CDC, May 1, 2014, cdc.gov/shingles/surveillance.html.

All single-dose flu shots are mercury free: “Vaccine Excipient and Media Summary,” [Appendix B](#) in J. Hamborsky, A. Kroger, and S. Wolfe, eds., *Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book*, 13th ed. (Washington, DC: Public Health Foundation, 2015), cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

The multidose flu shot: AFLURIA, Full Prescribing Information, CSL Limited, labeling.csl.com/PI/US/Afluria/EN/Afluria-Prescribing-Information.pdf.

Bed-wetting is very frustrating: “Bedwetting,” HealthyChildren.org, American Academy of Pediatrics, November 21, 2015, healthychildren.org/English/ages-stages/toddler/toilet-training/Pages/Bedwetting.aspx.

Chapter 10: “It’s Your Fault I Failed My Driver’s License Test, Mo-om!”

Girls today generally begin puberty: “Puberty in Girls,” *Merck Manual*, merck-manuals.com/home/women’s-health-issues/biology-of-the-female-reproductive-system/puberty-in-girls.

an average of nine and a half: P. A. Lee, S. S. Guo, and H. E. Kulin, “Age of Puberty: Data From the United States of America,” *APMIS* 109, no. 2 (2001): 81–88, ncbi.nlm.nih.gov/pubmed/11398998.

boys around ten: Marcia E. Herman-Giddens et al., “Secondary Sexual Characteristics in Boys: Data from the Pediatric Research in Office Settings Network,” *Pediatrics* 130, no. 5 (2012): e1058–68, pediatrics.aappublications.org/content/early/2012/10/15/peds.2011-3291.

Our most recent statistics don’t look good: “Childhood Obesity Facts,” CDC, August 2015, cdc.gov/healthyyouth/obesity/facts.htm.

types of bacteria present in our intestines: Claudia Wallis, “How Gut Bacteria Help Make Us Fat and Thin,” *Scientific American*, June 1, 2014, scientificamerican.com/article/how-gut-bacteria-help-make-us-fat-and-thin.

induce obesity in some mice: John K. DiBaise, Daniel N. Frank, and Ruchi Mathur, “Impact of the Gut Microbiota on the Development of Obesity: Current Concepts,” *American Journal of Gastroenterology Supplements* 1, no. 1 (2012): 22–27, nature.com/ajgsup/journal/v1/n1/full/ajgsup20125a.html.

“The amount of anxiety kids are feeling”: Karen O’Dougherty, interview by author, December 17, 2015.

what happened to Michael Rushby: “Mom Issues Health Warning After 16-Year-Old Son Dies of Testicular Cancer,” *Foxnews.com*, May 21, 2013, foxnews.com/health/2013/05/21/after-16-year-old-son-dies-testicular-cancer-mom-urges-others-to-get-checked.html.

About 570,000 people die annually: “How Many People Die Each Year from Drug Usage?” NIDA for Teens, drugabuse.gov.

In July 2011 a fourteen-year-old: Mikaela Conley, “14-Year-Old Dies of

Possible Alcohol Poisoning at Her Own Sleepover,” ABC News, July 14, 2011, abcnews.go.com/Health/14-year-dies-alcohol-poisoning-slumber-party/story?id=14065038.

In July 2015 a sixteen-year-old: Rob Quinn, “Teen Dies After Parents’ ‘Lesson About Drinking,’” *Newser*, September 16, 2015, wcnc.com/story/news/health/2015/09/16/teen-dies-after-parents-lesson-about-drinking/32498017.

The average age of sexual intercourse: “Sexual Activity Between Males and Females,” CDC, August 2015, cdc.gov/nchs/nsfg/key_statistics/s.htm#sexualactivity.

nationwide teen pregnancies are on the decline: “Trends in Teen Pregnancy and Childbearing,” U.S. Department of Health and Human Services, August 2015, hhs.gov/ash/oah/adolescent-health-topics/reproductive-health/teen-pregnancy/trends.html.

the more parents talk openly to their children: Kathleen A. Commendador, “Parental Influences on Adolescent Decision Making and Contraceptive Use,” *Pediatric Nursing* 36, no. 3 (2010): 147–56, medscape.com/viewarticle/726737_1.

Every state is different: “Tattooing and Body Piercing, State Laws, Statutes, and Regulations,” National Conference of State Legislatures, November 6, 2015, ncsl.org/research/health/tattooing-and-body-piercing.aspx.

Permanent tattooing carries other health risks: “Think Before You Ink: Are Tattoos Safe?” FDA, February 2009, fda.gov/ForConsumers/ConsumerUpdates/ucm048919.htm.

in front of a screen, usually online: “Generation M2: Media in the Lives of 8- to 18-Year-Olds,” Kaiser Family Foundation, January 2010, kff.org/other/event/generation-m2-media-in-the-lives-of.

texting an average: Amanda Lenhart, “Teens, Smartphones & Texting,” Pew Research Center, March 19, 2012, pewinternet.org/2012/03/19/teens-smartphones-texting.

Weight gain: Tracie A. Barnett et al., “Teens and Screens: The Influence of Screen Time on Adiposity in Adolescents,” *American Journal of Epidemiology* 172, no. 3 (2010): 255–62, aje.oxfordjournals.org/content/172/3/255.full.pdf.

Disrupted sleep: Mari Hysing et al., “Sleep and Use of Electronic Devices in

Adolescence: Results From a Large Population-Based Study,” *BMJ OPEN* 5, no. 1 (2015): e006748, bmjopen.bmj.com/content/5/1/e006748.

Time on Facebook, Instagram, and SnapChat: “Anxiety UK Study Finds Technology Can Increase Anxiety,” Anxiety UK, July 2012, anxietyuk.org.uk/news/for-some-with-anxiety-technology-can-increase-anxiety.

The more young adults check Facebook: Ethan Kross et al., “Facebook Use Predicts Declines in Subjective Well-Being in Young Adults,” *PLoS One* 8, no. 8 (2013): e69841, journals.plos.org/plosone/article?id=10.1371/journal.pone.0069841.

each additional daily hour of television: Brian A. Primack et al., “Association Between Media Use in Adolescence and Depression in Young Adulthood,” *Archives of General Psychiatry* 66, no. 2 (2009): 181–88, archpsyc.jamanetwork.com/article.aspx?articleid=210196.

Teenagers who spend the most time instant-messaging: K. Grover et al., “Effects of Instant Messaging on School Performance in Adolescents,” *Journal of Child Neurology* (January 13, 2016), ncbi.nlm.nih.gov/pubmed/26762509.

Pimples are not just a problem: “Acne Is the Most Common Skin Condition in the United States, Affecting Approximately 40 to 50 Million Americans Annually,” American Academy of Dermatology, aad.org/media/stats/conditions.

Indigenous adolescents: Loren Cordain et al., “Acne Vulgaris: A Disease of Western Civilization,” *Archives of Dermatology* 138, no. 12 (2002): 1584–90, archderm.jamanetwork.com/article.aspx?articleid=479093.

certain strains of bacteria are present: Sorel Fitz-Gibbon et al., “Propionibacterium acnes Strain Populations in the Human Skin Microbiome Associated with Acne,” *Journal of Investigative Dermatology* 133, no. 9 (2013): 2152–60, nature.com/jid/journal/v133/n9/full/jid201321a.html.

those eating foods lower on the glycemic index: Robyn N. Smith et al., “A Low-Glycemic-Load Diet Improves Symptoms in Acne Vulgaris Patients: A Randomized Controlled Trial,” *American Journal of Clinical Nutrition* 86, no. 1 (2007): 107–15, ajcn.nutrition.org/content/86/1/107.full.

stress exacerbates acne: Annie Chiu, Susan Y. Chon, and Alexa B. Kimball, “The Response of Skin Disease to Stress Changes in the Severity of Acne Vulgaris as Affected by Examination Stress,” *JAMA Dermatology* 139, no. 7 (2003): 897–900, archderm.jamanetwork.com/article.aspx?articleid=

479409.

Driving is one of the most dangerous: “Teenagers,” Insurance Institute for Highway Safety Highway Loss Data Institute, iihs.org/iihs/topics/t/teenagers/fatalityfacts/teenagers.

teenage drivers cause more automobile: “Teenagers,” Insurance Institute for Highway Safety Highway Loss Data Institute, iihs.org/iihs/topics/t/teenagers/topicoverview.

The CDC recommends the following: “Recommended Immunizations for Persons Aged 0 Through 18 Years Old, United States 2015,” CDC, cdc.gov/vaccines/schedules/downloads/child/o-18yrs-child-combined-schedule.pdf.

a tetanus/diphtheria booster: “Recommended Schedule for Active Immunization of Normal Infants and Children” (table), cdc.gov/vaccines/schedules/images/schedule1983s.jpg.

more than 150 different kinds of human: “What Is HPV?” CDC, December 2015, cdc.gov/hpv/parents/whatishpv.html.

almost every sexually active adult: “Genital HPV Infection—Fact Sheet,” CDC, February 2015, cdc.gov/std/HPV/STDFact-HPV.htm#a7.

Gardasil (made by Merck): Gardasil, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/g/gardasil/gardasil_pi.pdf.

Cervarix (made by GlaxoSmithKline): Cervarix, Full Prescribing Information, GlaxoSmithKline, gsksource.com/pharma/content/dam/GlaxoSmithKline/US/en/Prescribing_Information/Cervarix/pdf/CERVARIX-PI-PIL.PDF.

Gardasil-9 (made by Merck): Gardasil-9, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf.

though the vaccine was highly successful: Charlotte Haug, “Human Papillomavirus Vaccination—Reasons for Caution,” *New England Journal of Medicine* 359 (August 2008): 861–62, doi: 10.1056/NEJMe0804638.

What we did know even then: Gardasil, Full Prescribing Information, Merck, merck.com/product/usa/pi_circulars/g/gardasil/gardasil_pi.pdf.

an investigation of the Gardasil: “A Note From the Publisher,” *Toronto Star*, February 2015, thestar.com/news/2015/02/20/a-note-from-the-publisher.html; Nick Mulcahy, “Japan Withdraws HPV Vaccine Recommendation for

Girls,” [Medscape.com](https://www.medscape.com/viewarticle/806645), June 25, 2013, [medscape.com/viewarticle/806645](https://www.medscape.com/viewarticle/806645).

“undeniable causal relationship”: Anna Fifield, “The Science Doesn’t Support Them, but Japanese Anti-Vaxxers Are Winning on HPV,” *Washington Post*, November 10, 2015, [washingtonpost.com/news/worldviews/wp/2015/11/10/the-science-doesnt-support-it-but-japanese-anti-vaxxers-are-winning-on-hpv/](https://www.washingtonpost.com/news/worldviews/wp/2015/11/10/the-science-doesnt-support-it-but-japanese-anti-vaxxers-are-winning-on-hpv/).

Israel also began reevaluating: Dan Even, “Health Risks Push Ministry to Reconsider HPV Vaccine for Teen Girls,” *Haaretz*, September 2, 2013, [haaretz.com/israel-news/.premium-1.545014](https://www.haaretz.com/israel-news/.premium-1.545014).

Utah’s Southwest Public Health Department: Kirsten Stewart, “Utah Health Official Bans Gardasil, Stirring Up Controversy,” *Salt Lake Tribune*, December 6, 2013, archive.sltrib.com/story.php?ref=/sltrib/news/57224192-78/vaccine-health-percent-utah.html.csp.

“do not mean that the reported problem”: “Understanding the Vaccine Adverse Event Reporting System (VAERS),” CDC, [cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-vaers-color-office.pdf](https://www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-vaers-color-office.pdf).

500 micrograms of aluminum: Gardasil-9, Full Prescribing Information, Merck, [merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf](https://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf).

the safety studies were poorly designed: Gardasil, Highlights of Prescribing Information, Merck, [merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf](https://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf).

One reported side effect: Gardasil-9, Full Prescribing Information, Merck, [merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf](https://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf).

The overall rate: Ibid.,7.

For every 100,000 people using Gardasil-9: “SEER Stat Fact Sheets: Cervix Uteri Cancer,” National Cancer Institute, seer.cancer.gov/statfacts/html/cervix.html.

“We documented here the evidence”: Serena Colafrancesco et al., “Human Papilloma Virus Vaccine and Primary Ovarian Failure: Another Facet of the Autoimmune/Inflammatory Syndrome Induced by Adjuvants,” *American Journal of Reproductive Immunology* 70, no. 4 (2013): 309–16, doi: 10.1111/aji.12151.

“Because vaccinees may develop syncope”: Gardasil, Merck, [merckvaccines.com](https://www.merckvaccines.com).

com/GardasilReimbursementModal/Pages/home?keepThis=true&TB_iframe=true&height=1000&width=870.

“One girl stood up and tipped over”: Lauren Damon, R.N., interview by author, May 13, 2015.

A 2015 meningitis outbreak: “2015 Meningococcal Update,” State of Oregon, public.health.oregon.gov/DiseasesConditions/DiseasesAZ/MeningococcalDisease/Pages/Meningococcal-Update.aspx.

Meningococcal disease can overwhelm: “Vaccines and Immunizations: Meningococcal Disease,” in Hamborsky, Kroger, and Wolfe, eds., *Epidemiology and Prevention: Pink Book*, chap. 14, cdc.gov/vaccines/pubs/pinkbook/mening.html.

he has a 10 to 15 percent chance of dying: Ibid.

While it affects only a handful: “Prevention and Control of Meningococcal Disease,” *Morbidity and Mortality Weekly Report* 54, no. RR-7 (May 2005): 1–17, cdc.gov/mmwr/preview/mmwrhtml/rr5407a1.htm.

risk of contracting a meningococcal: D. W. Kimberlin et al., eds., *Red Book 2015 Report of the Committee on Infectious Diseases*, 30th ed. (Elk Grove Village, IL: American Academy of Pediatrics, 2015), 548.

Once someone in your dorm: “Vaccines and Immunizations: Meningococcal Disease,” in J. Hamborsky, A. Kroger, and S. Wolfe, eds. *Epidemiology and Prevention of Vaccine Preventable Diseases: The Pink Book*, 13th ed. (Washington, D.C.: Public Health Foundation, 2015), chap. 14, cdc.gov/vaccines/pubs/pinkbook/mening.html.

People needing treatment: Ibid.

Serogroup A is more common outside the United States: “Meningococcal Meningitis,” WHO, who.int/mediacentre/factsheets/fs141/en.

Since 2005 we have had two vaccines: “Prevention and Control of Meningococcal Disease,” *Morbidity and Mortality Weekly Report* 54, no. RR-7 (May 2005): 1–17, cdc.gov/mmwr/preview/mmwrhtml/rr5407a1.htm.

contains 519 micrograms of aluminum: Bexsero, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM431447.pdf.

Trumenba is designed as a three-shot: Trumenba, package insert, fda.gov/

downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM421139.pdf.

250 micrograms of aluminum: Drusilla L. Burns, “Summary Basis for Regulatory Action,” FDA, June 16, 2014, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM424125.pdf.

decision was made *not* to recommend: “Use of Serogroup B Meningococcal Vaccines in Persons Aged ≥ 10 Years at Increased Risk for Serogroup B Meningococcal Disease: Recommendations of the Advisory Committee on Immunization Practices, 2015,” *Morbidity and Mortality Weekly Report* 64, no. 22 (June 2015): 608–12, cdc.gov/mmwr/preview/mmwrhtml/mm6422a3.htm.

Engerix-B has 250 micrograms of aluminum: Engerix-B, Full Prescribing Information, GlaxoSmithKline, gsksource.com/pharma/content/dam/GlaxoSmithKline/US/en/Prescribing_Information/Engerix-B/pdf/ENERIX-B.PDF.

Recombivax has 250 micrograms of aluminum: Recombivax HB, package insert, Merck, merck.com/product/usa/pi_circulars/r/recombivax_hb/recombivax_pi.pdf.

The hepatitis A vaccine has 250 micrograms: Havrix, Full Prescribing Information, FDA, fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM224555.pdf.

Some experts argue that giving thousands of shots: Paul Offit, et al., “Addressing Parents’ Concerns: Do Multiple Vaccines Overwhelm or Weaken the Infant’s Immune System?” *Pediatrics* 109, no. 1 (January 2002), pediatrics.aappublications.org/content/109/1/124.long.

Dinner conversation does more: The Family Dinner Project (a nonprofit organization currently operating from the offices of Project Zero at Harvard University), thefamilydinnerproject.org/resources/faq.

organized sports and physical activity: “What We Stand to Lose in Our Obsession to Win,” U.S. Anti-Doping Agency, truesport.org/library/documents/about/true_sport_report/True-Sport-Report.pdf.

Too much screen time can lead to depression: Mingli Liu, Lang Wu, and Shuqiao Yao, “Dose-Response Association of Screen Time-Based Sedentary Behaviour in Children and Adolescents and Depression: A Meta-Analysis of Observational Studies,” *British Journal of Sports Medicine* (November 2015),

pii: bjsports-2015-095084.

even suicidal thoughts: “Pennsylvania Student Britney Tongel Becomes Latest Teen to Commit Suicide Due to Cyber-Bullying,” *MassLive*, February 24, 2011, masslive.com/bullying/index.ssf/2011/02/pennsylvania_student_britney_tongel_becomes_latest_teen_to_c.html.

taking fish oil that has: Shima Jazayeri et al., “Comparison of Therapeutic Effects of Omega-3 Fatty Acid Eicosapentaenoic Acid and Fluoxetine, Separately and in Combination, in Major Depressive Disorder,” *Australian and New Zealand Journal of Psychiatry* 42, no. 3 (2008): 192–98, anp.sagepub.com/content/42/3/192.long; M. Elizabeth Sublette et al., “Meta-analysis: Effects of Eicosapentaenoic Acid in Clinical Trials in Depression,” *Journal of Clinical Psychiatry* 72, no. 12 (2011): 1577–84, ncbi.nlm.nih.gov/pmc/articles/PMC3534764; Giuseppe Grosso et al., “Role of Omega-3 Fatty Acids in the Treatment of Depressive Disorders: A Comprehensive Meta-Analysis of Randomized Clinical Trials,” *PLoS One* 9, no. 5 (2014): e96905, ncbi.nlm.nih.gov/pmc/articles/PMC4013121.

Taking 5,000 IUs of vitamin D3: “Depression,” Vitamin D Council, December 22, 2015, vitamindcouncil.org/health-conditions/depression.

fluoxetine: Prozac, Highlights of Prescribing Information, FDA, accessdata.fda.gov/drugsatfda_docs/label/2011/018936s091lbl.pdf.

using an e-reader before bed: Anne-Marie Changa et al., “Evening Use of Light-Emitting e-Readers Negatively Affects Sleep, Circadian Timing, and Next-Morning Alertness,” *PNAS* 112, no. 4 (2015): 1232–37, pnas.org/content/112/4/1232.full.pdf.

teenagers would actually like to spend more time: Madeline Levine, Ph.D., *The Price of Privilege: How Parental Pressure and Material Advantage Are Creating a Generation of Disconnected and Unhappy Kids* (New York: Harper, 2006), 31.

The majority of female characters: Geena Davis Institute, “Addressing Unconscious Bias,” *McKinsey Quarterly*, February 2015, mckinsey.com/insights/organization/addressing_unconscious_bias.

Chapter 11: The Best Ways to Support Your Child's Immune System

cholera: “Cholera,” WHO, Fact Sheet no. 107, July 2015, who.int/mediacentre/factsheets/fs107/en.

scarlet fever: Matthew Smallman-Raynor et al., *World Atlas of Epidemic Diseases* (Boca Raton, FL: CRC Press, 2004), chap. 5.

even when too many vaccines: Yehuda Shoenfeld, *Vaccines and Autoimmunity* (Hoboken, NJ: Wiley-Blackwell, 2015).

collateral damage of autoimmune disorders: Ken Tsumiyama, Yumi Miyazaki, and Shunichi Shiozawa, “Self-Organized Criticality Theory of Autoimmunity,” *PLoS One* 4, no. 12 (2009): e8382, journals.plos.org/plosone/article?id=10.1371/journal.pone.0008382.

premature babies who were massaged: Tiffany Field, Miguel Diego, and Maria Hernandez-Reif, “Preterm Infant Massage Therapy Research: A Review,” *Infant Behavior and Development* 33, no. 2 (2010): 115–24, sciencedirect.com/science/article/pii/S016363830900112X.

trigger the release of endorphins: R. I. M. Dunbar et al., “Social Laughter Is Correlated with an Elevated Pain Threshold,” *Proceedings of the Royal Society B* 279, no. 1731 (2012): 1161–73, rspb.royalsocietypublishing.org/content/279/1731/1161.

reduce hormones that cause stress: Lee S. Berk et al., “Neuroendocrine and Stress Hormone Changes During Mirthful Laughter,” *American Journal of Medical Sciences* 298, no. 6 (1989): 390–96, journals.lww.com/amjmedsci/Abstract/1989/12000/Neuroendocrine_and_Stress_Hormone_Changes_During.6.aspx.

“were with us right from the start”: Dennis Thompson, “A Little Dirt May Be a Good Thing,” *HealthDay News*, September 9, 2011, health.usnews.com/health-news/family-health/articles/2011/09/09/a-little-dirt-may-be-a-good-thing.

when children are exposed to animal feces: Thomas W. McDade et al., “Early Origins of Inflammation: Microbial Exposures in Infancy Predict Lower Levels of C-Reactive Protein in Adulthood,” *Proceedings of the Royal*

Society B 277, no. 1684 (2009): 1129–37.

Encouraging your kids to get down: *The Dirt on Dirt*, National Wildlife Federation, nwf.org/pdf/Be%20Out%20There/Dirt_Report_2012.pdf.

Chapter 12: So Where Do We Go from Here?

“a bizarre birth defect”: Melissa Healy, “Bizarre Birth Defect Is on the Rise, Researchers Are Baffled,” *Los Angeles Times*, January 21, 2016, latimes.com/science/sciencenow/la-sci-sn-bizarre-birth-defect-rise-cdc-20160121-story.html.

gastroschisis: “Increasing Prevalence of Gastroschisis—14 States, 1995–2012,” *Morbidity and Mortality Weekly Report* 65, no. 2 (January 22, 2016): 23–26, cdc.gov/mmwr/volumes/65/wr/mm6502a2.htm?s_cid=mm6502a2_w.

“The panel was struck by the gravity”: National Research Council and the Institute of Medicine, *U.S. Health in International Perspective: Shorter Lives, Poorer Health*, January 2013, iom.nationalacademies.org/~media/Files/Report%20Files/2013/US-Health-International-Perspective/USHealth_Intl_PerspectiveRB.pdf.

Health care in our country is more expensive: Steven Brill, “Bitter Pill: Why Medical Bills Are Killing Us,” *Time*, February 20, 2013, uta.edu/faculty/story/2311/Misc/2013,2,26,MedicalCostsDemandAndGreed.pdf.

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