



Antibiotics are **not** candy!

But we pop them like Skittles, and if we keep it up, they'll soon become useless against potentially lethal superbugs (imagine this: fatal UTIs). Erin Zammett Ruddy lays out the problem, the risks, and the unexpectedly simple solutions.

On New Year's Eve 2009, Jacquie Allen, 42, was told by doctors that her son Brody might not live through the night. What started a few days earlier as a strange pimple on his knee had morphed into a full-blown attack on the 12-year-old's body. "One day he was perfectly healthy and the next he was in septic shock," says Jacquie, who lives in Southern California with her husband and their five children. "He became completely swollen and jaundiced, and his organs were failing. They tested him for everything, but no one could figure out what was wrong. I felt like I was on an episode of *House*." Finally, doctors determined that Brody had methicillin-resistant staphylococcus aureus, or MRSA. It's a type of staph (a bacteria many of us have on our skin) that has become resistant to most antibiotics and can cause infections that are hard to diagnose, tricky to treat, and sometimes fatal. The infection quickly spread to Brody's joints. "They pumped him full of antibiotic after antibiotic, but nothing was working," Jacquie

says. Eventually, Brody's elbow became so inflamed that the only option was risky surgery. "The surgeon came in and said, 'Your son is going to die if we don't get that infection out *now*.'"

Brody made it through the surgery, but the MRSA was unrelenting. It took two more major operations to remove the infected tissue and stop the MRSA's spread. The Allens spent 19 days in the ICU. Before they left, Brody had a catheter implanted in a large vein in his arm so his parents could administer high doses of strong, specialized antibiotics around the clock for the next four months. He was told he'd never have full use of his arm again.

The doctors were wrong: Brody ultimately recovered completely, and now pitches for his Little League baseball team with the arm he almost lost. But we should all commit his story to memory, particularly any of us who have ever taken an antibiotic "just in case," or called the doctor asking for a prescription to help our child kick a stubborn cough. You see, every time we use an antibiotic, we

PROP STYLIST: AMY CHIN

give bacteria a chance to adapt and outsmart the medicine, explains Margaret Mellon, Ph.D., senior scientist of the Food and Environment program at the Union of Concerned Scientists. The bacteria develop and share resistance, so the next time they come in contact with the drug, it's a little less effective. There are already numerous strains that have outsmarted some of our strongest meds, and a few that are immune to virtually *all* of them.

The problem is cultural as well as medical. Americans take antibiotics carelessly, prophylactically, almost recreationally, and our overuse is creating superbugs that no drug will be able to kill. My friend Amy, who sold Zithromax (or the Z-pak, as this popular antibiotic is known) at points in her career as a drug rep, says, "At parties, people thought it was extremely impressive

faster and keep them from getting sick in crowded conditions. (To find out more about this part of the problem, see sidebar at right.) The United States Food and Drug Administration is finally starting to tackle agricultural use of antibiotics, but the rest is in our hands, and our doctors'. Preserving the effectiveness of antibiotics is "a huge public health issue," says Mellon, "and we need to start taking it more seriously right *now*."

The unkillable bug is coming

Ever get two days into your course of antibiotics, feel miraculously better, and think, *Wow, that's magic?* Well, it is. "When antibiotics came about in the 1940s, they completely transformed medicine, saving the lives of millions who would've died of these infections," says Arjun Srinivasan, M.D., a medical epidemiologist at the CDC. Moreover, without antibiotics, life-saving treatments like chemotherapy, organ transplants, and even simple surgeries would not be possible. "These drugs dramatically improve our lives," says Srinivasan. But the magic is at serious risk as resistant bacteria pick up steam. MRSA is the most well-known superbug, but it's certainly not the only one. "We've seen new forms of resistant disease emerge

over the last decade, and they will keep coming until we can get a handle on the overuse of antibiotics," Mellon says. The CDC, for example, has warned of the potential threat of untreatable gonorrhea. The second most commonly reported infectious disease in the United States, it has become less susceptible to a strong class of antibiotics called cephalosporins, typically the last line of defense. There are also resistant strains of *E. coli* causing hard-to-treat urinary tract infections. (Believe it or not, one strain of antibiotic-resistant UTIs has been traced back to the chicken we eat.) When a UTI isn't stopped, it can progress to a kidney infection and then to a blood infection, says Lance Price, Ph.D., a microbiologist at the Translational Genomics Research Center

The other major antibiotic issue: Farm animals

These drugs are also given to cows, chickens, and pigs—and it's hurting everyone's health.

Farmers feed their herds antibiotics, and not just when they're sick. On factory farms, for example, healthy broiler chickens ingest small doses of antibiotics (the same ones we need to cure human diseases) in their food daily to help them grow faster and prevent them from getting sick. "This would be like if your kids were going to day care and you said, 'Let's give them some antibiotics, just in case,'" says Gail Hansen, a public health advocate with the Pew Campaign on Human Health and Industrial Farming. Because the doses are so low, the antibiotics don't kill bacteria. Instead, the germs develop resistance. Then the bugs are passed to humans (see right). Farming-industry groups point out that this practice is approved by the Food and Drug Administration. But there has been some news on that front recently: The FDA has announced it's working with drug companies and farmers to phase out the use of antibiotics for growth promotion over the next few years. Their aim is to require a vet's assessment to dole out meds. "There is much more that lies ahead," says FDA deputy commissioner for foods Michael Taylor, "but this is an important step."

What illnesses actually need antibiotics?

YES	NO	MAYBE
Strep throat (if it's confirmed with a strep test)	Cold or flu (they're viral, not bacterial, so antibiotics don't work)	Ear infection (depends on whether it's viral or bacterial)
Pneumonia	Bronchitis (likewise, it's almost always viral, not bacterial)	Vaginal infections (depends on type)
Urinary tract infection		

that I had a Z-pak hookup." Some came right out and asked for samples, though she never caved. We pop antibiotics when we don't need them, we skip doses, we don't finish the full course because we feel better in six days instead of 10—and all those mistakes give the bacteria a chance to stick around and become resistant, explains Lauri Hicks, a medical epidemiologist and the director of the "Get Smart: Know When Antibiotics Work" campaign for the Centers for Disease Control and Prevention (CDC).

Consumers aren't the only problem: Another major contributing factor in this crisis is the overuse of antibiotics in the farming industry, Mellon says. It's standard practice to feed low doses of antibiotics to chickens, pigs, and cows to make them grow

HOW FARMS CONTRIBUTE TO SUPERBUGS



ANIMALS



ANTIBIOTICS

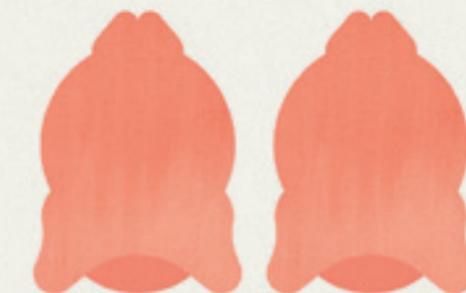
Low doses of antibiotics are put into feed and water to spur growth and ward off illness.



ANTIBIOTIC-RESISTANT BACTERIA

develop in the guts of the animals.

Animal waste contaminated with bacteria migrates off farms: Flies and farmers carry it away; exhaust from barns blows it into the air; manure-based fertilizer taints crops.



Bacteria from animals' guts get onto meat during slaughtering and processing.



PEOPLE GET SICK

Humans handle and eat the meat and contaminated produce, breathe the air, and get antibiotic-resistant bacteria on their skin or in their bodies that can cause serious, hard-to-treat infections.

ILLUSTRATIONS: MIKE LEMANSKI

in Flagstaff, AZ. “Blood infections have a 40 percent mortality rate. You can basically flip a coin to see whether you’ll live or die.” Srinivasan cites another example: “A type of bacteria called carbapenem-resistant enterobacteriaceae, or CRE, has become resistant to all antibiotics,” he says. If you pick up the infection, which can cause kidney, bladder, or blood infections, there is no treatment—and you’re four times more likely to die from it than if you get a similar infection that isn’t resistant to antibiotics.

Making matters worse, there are no new antibiotics in the pipeline. “It takes about a decade for a medication to go through the approval process, so we can be pretty sure we won’t have new antibiotics to turn to when the current ones stop working,” says Mellon. It’s a real wake-up call; adds Srinivasan, “The doomsday scenario some doubters said would never arrive, in some cases, is already here.”

Even when it’s not life-threatening, dealing with a stubborn infection is frightening. I know firsthand: During the month I breastfed my son, Alex, I had repeated bouts of mastitis, an infection common in nursing moms. I went on antibiotic after antibiotic, but the infection kept returning—because, it turns out, it was MRSA. I got on a specialized (as in \$7,000) antibiotic and had a few surgical procedures on my breast, which cleared the bacteria. Meanwhile, Alex was battling the superbug too—he got it from the hospital nursery and gave it to me—constantly erupting with boils in his diaper area that had to be drained and treated. In the four months we dealt with MRSA, I spent \$800 in copays alone. But that was nothing compared to the emotional toll. Every blemish we saw on Alex’s body led us into a *what-if-it’s-MRSA?* spiral. As if caring for a tiny new human weren’t stressful enough.

Forgetting the personal price of these run-ins with superbugs, “the loss of effective antibiotics is also a huge drag on our economy,” says Mellon. One recent study pegs the cost to the U.S. health-care system at upwards of \$26 billion a year. The good news is we can do something about it. “The better we use antibiotics, the less of an opportunity we give these bacteria to develop and spread,” says Srinivasan. “If you do a really good job of reducing antibiotic use, not only do you hold resistance steady, you can actually see it go down.” In other words, we have the power to reverse this crisis. And we *must*.

You—and your doctor—can help

Saving ourselves from the scary but all-too-real attack of the superbugs means we have to change our

habits and attitudes, fast. “We’re a society that seeks a quick fix to every problem,” says Hicks, “and for a long time, people have thought that the magic pill for any illness is an antibiotic.” But antibiotics only work on bacteria, not viruses—meaning they do nothing for a cold, the flu, bronchitis, and even most sinus infections. (See “What Illnesses Actually Need Antibiotics?” page 150.) Doctors know this, of course, but they often dole out the meds anyway, mostly to please their patients. “People get a runny nose and think they must have an antibiotic,” says Srinivasan. “They either ask for it outright or the doctor thinks, *Oh, if I don’t give her a prescription, she’ll be disappointed.*” It seems crazy, but fear of letting down a patient can compel a doctor to grab her prescription pad. “We’ve also heard from doctors that not writing a prescription would take additional time, because they’d have to sit and explain to the disgruntled patient why she doesn’t need it,” says Hicks. My friend Liz only has to call her doctor and say, “I think I have strep,” and a prescription arrives at CVS within the hour. She also takes a Z-pak with her on vacations just in case she gets sick. That overuse may have caught up with her: Liz often comes down with bronchitis in the winter, but this year, it turned into pneumonia. She needed two types of antibiotics and an anti-inflammatory steroid to clear it. It’s a lesson for all of us, reminds Hicks: You may not care about the larger public health threat, but if you want antibiotics to continue to work for *you*, use them sparingly.

Just as important, we need to quit stuffing our kids full of these meds at the first sign of a sniffle. Three out of 10 children who visit their pediatrician with a simple cold toddle out with a prescription. So when you or your kids see the doctor, let her know you’re not desperate for a script, that you just want advice on the best way to treat the illness, suggests Hicks. When it comes to colds, instead of plying ourselves with drugs, we should be treating the symptoms with OTC meds and nasal sprays, and do what we results-oriented Americans hate most: wait it out.

The point is not to avoid antibiotics at all costs, it’s to use them correctly. This is the idea behind the CDC’s “Get Smart: Know When Antibiotics Work” campaign,

with the arguably catchy line “Snort, sniffle, sneeze, no antibiotics, please!” The message seems to be making its way into the national dialogue. It even showed up last season in a scene on *30 Rock*: When Jack told Liz Lemon to take something for her cough, she deadpanned, “I’d rather see if it gets better on its own. Do you want me to go on my antibiotic rant? It’s endless. You’ll beg for death.” Go ahead and rant, experts say. “This truly is a national emergency,” warns congresswoman Louise M. Slaughter. She introduced the Preservation of Antibiotics for Medical Treatment Act, a bill that limits the use of antibiotics on farms to treating *sick* animals. But five years later, Congress has yet to pass it. “We’re taking what I think was the best medical breakthrough of the last century and destroying its efficacy,” she says. “But if we band together, we have the power to solve this problem.”



Please, join the fight against superbugs

1 Use antibiotics correctly. Work with your doctor to determine if an antibiotic will truly help what’s ailing you, then follow her instructions. Any time you skip doses, don’t finish a course, or drink alcohol when you’re on the meds, you make the antibiotic less effective and give bacteria a chance to become resistant.

2 Buy meat labeled “raised without antibiotics” or “organic.” Those exact phrases mean that antibiotics were not given to the animal needlessly. Watch out for wording; labels that say “all natural” guarantee

nothing. Some good, antibiotic-free brands: Applegate Farms, Murray’s Chicken, Bell & Evans, and Niman Ranch. Can’t find these in your market? Tell your grocer to stock up and that you and your friends will buy! Also ask your kids’ school to serve meat that was raised without antibiotics. (Go to saveantibiotics.org to download a letter you can send.) Chicago Public Schools just became the largest district in the country to do this.

3 Ask your favorite restaurants if they use meat raised without antibiotics. If a company like Chipotle can do it, why

can’t others? “Things will only change if we *ask* for changes,” says Gail Hansen, a public health advocate with the Pew Campaign on Human Health and Industrial Farming.

4 Spread the message. “Like” the group “Moms for Antibiotic Awareness Campaign” on Facebook, and get friends to do the same. Awareness is key: Most people have no idea which illnesses require antibiotics, nor do they know how much the drugs are used in food animals. “Unless you grew up on a farm, why would you know that?” says Hansen.

5 Tell Congress to pass a law. The Preservation of Antibiotics for Medical Treatment Act would withdraw the use of antibiotics that are vital to humans from food-animal production unless the animals are diagnosed with illnesses. Says U.S. Representative Louise M. Slaughter, who introduced the bill: “Send a letter to your member of Congress—along with this article!—and tell them to sign the bill and get it passed.” Personalize your own letter at saveantibiotics.org/moms/action.html, then get your reps’ addresses at senate.gov and house.gov.