

does your child really need an antibiotic?

That's what you should ask yourself every time he is sick, now that drug resistance has become one of our most serious health threats. Our guide will help you find the answer.

by LESLIE GARISTO PFAFF

WHEN Beth Reimer heard her infant son Luke's 2 A.M. cry, the Springfield, Illinois, mom figured it was merely time for another late-night feeding. Still, it struck Reimer as odd that Luke's twin sister, Madeline, hadn't joined in. Then she realized that Madeline wasn't breathing. Frantic, Reimer dialed 911. When the EMTs arrived, they revived her 5-week-old baby and rushed her to the hospital, where doctors found that her lungs were infected with MRSA (methicillin-resistant *Staphylococcus aureus*), a life-threatening

bacterium that has become resistant to mainstream antibiotics.

The Reimer twins, who were born premature, had spent their first few weeks in the neonatal intensive care unit. When they came home at 4 weeks of age, Madeline had a runny nose and soon developed a croupy cough. But her pediatrician, who suspected it was a virus, had decided against prescribing an antibiotic.

Now the doctors had no choice and put Madeline on the antibiotic vancomycin. When she didn't respond, they switched to linezolid.

But Madeline grew progressively weaker and died 11 days later. That same day, Luke showed symptoms of MRSA and returned to the hospital, where the diagnosis was confirmed. Reimer and her husband, Ken, caught MRSA as well. Fortunately, all of their infections responded to antibiotics, and today Luke is a healthy 10-year-old. But the threat of MRSA haunted Reimer for years. "Anytime Luke coughed, it would send me into a panic," she says. "My family will never forget what MRSA took away from us."

A decade after Madeline's fatal illness, bacterial infections that can no longer be cured with standard antibiotics—or any meds, in some cases—remain a huge problem in the U.S. A study in *Pediatrics* found that rates of invasive MRSA, which infects 80,000 Americans and kills about 11,000 people each year—grew 10 percent among infants and children from 2005 to 2010. And *Staphylococcus aureus* is far from the only bacterium to develop resistance. Many of the microscopic bugs we've fought for a century (including those that can cause ear, sinus, and gastrointestinal infections) are becoming resistant to the drugs that target them.

Researchers from Chicago's Rush University Medical Center found that the prevalence of antibiotic-resistant superbugs that produce an enzyme called ESBL (extended spectrum beta-lactamase)—which makes them resistant to many

antibiotics—more than tripled between 1999 and 2011. Hundreds of other infectious bacteria have also developed resistance, leaving doctors with little choice but to try stronger alternatives with more side effects.

While initially limited to hospital settings, superbugs have begun to filter into the community at large. Meanwhile, few new antibiotics have been approved in recent years; the drugs weren't as profitable as others for, say, diabetes. The Centers for Disease Control and Prevention characterizes antibiotic resistance as one of the most serious health threats in the U.S.—and children are of particular concern, because they have the highest rates of antibiotic use. "Unless we drastically change the way we use antibiotics, they may become of no benefit to anyone," says James Wilde, M.D., professor of emergency medicine at Georgia Regents University, in Augusta.

➔ Unnecessary Prescriptions

Like many living things, bacteria are prone to random mutations, including those that can render antibiotics ineffective against them. The more often a child takes an antibiotic, the greater the chance that a resistant strain will colonize in his system. Even if he doesn't develop symptoms himself, he could easily transmit these harmful bacteria to others.

A big part of the problem: Doctors are dispensing these drugs to infants and children far more frequently than they should. A University of Utah study concluded that about one-quarter of pediatric visits that led to antibiotics being prescribed were for respiratory conditions for which these meds were not clearly indicated. Often, pediatricians are simply appeasing parents, who don't want to see their kid suffer and don't realize that the medication has either no effect or a potentially harmful effect. Scientists believe the use of antibiotics in animal feed and the increasing use of antibacterial soaps and other products may also be contributing factors to antibiotic resistance.

There are other reasons to avoid excessive antibiotic use among kids. These drugs can have unpleasant and even deadly side effects, including diarrhea, thrush, and, in some cases, severe allergic reactions. And children who take broad-spectrum antibiotics (meaning those that target a wide variety of bacteria) four or more times before age 2 are 16 percent more likely to be obese by age 5, according to the online edition of *JAMA Pediatrics*. Researchers suspect that antibiotics may be killing off microbes that impact a child's metabolism. We asked infectious-disease doctors to weigh in on whether kids really need these meds for eight common illnesses.



medication primer

Should your child require antibiotics for a bacterial infection, make sure she takes them exactly as prescribed by the pediatrician. Finishing only some of the medication or skipping a dose because she complains of a tummy ache can leave harmful bacteria in your child's system (which continue to multiply), possibly leading to a recurrence of the infection. Also keep in mind that the weakest bacteria tend to be killed off first, leaving behind the stronger bugs that are more likely to be resistant, notes Anastasia Levitin, Ph.D., of the Keck Graduate Institute, in Claremont, California.

If you're not sure why your doctor has prescribed an antibiotic, speak up. Ask whether it's a broad-spectrum drug (such as amoxicillin, a first-line drug for treating ear infections). If so, find out whether a narrow-spectrum one (such as some types of penicillin) might be an equally effective treatment. Broad-spectrum antibiotics increase the odds of creating resistant bacteria by wiping out good bugs in the gut that help keep harmful ones in check.





Think before you pour:
Antibiotics can cause tummy
troubles and have
been linked to obesity.

Common Cold

RX OR NOT? No

A cold is a viral illness that doesn't respond to antibiotics. "If your sick child is getting better, even very slowly, he doesn't need them," points out Sandra Arnold, M.D., professor of pediatrics at the University of Tennessee Health Science Center, in Memphis.

Sinus Infection (Sinusitis)

RX OR NOT? Not unless symptoms are severe

In most cases sinusitis subsides without treatment, so your pediatrician might prefer to wait for seven to ten days, says Dr. Arnold. But if the symptoms (which include green discharge, nasal congestion, facial pain, and a sinus headache) are intense and include a fever, she may prescribe antibiotics.

Ear Infection

RX OR NOT? Sometimes

Middle-ear infections in kids are, often needlessly treated with antibiotics, since 80 percent resolve without them, says Dr. Wilde. The American Academy of Pediatrics recommends waiting two or three days and using a kids' pain reliever for discomfort. However, children 6 to 24 months and older kids with severe symptoms can take oral antibiotics right away, while those with swimmer's ear (an infection limited to the outer-ear canal) can be treated with antibiotic ear drops, which are less likely than oral antibiotics to lead to resistance.

Sore Throat

RX OR NOT? Only if it's strep

The majority of sore throats are caused by viruses, with the notable



bring the good bugs back

Antibiotics don't only kill off harmful bacteria but also the billions of helpful microorganisms in the digestive system. That's why up to 15 percent of kids who take antibiotics experience diarrhea or vomiting (or both).

Fortunately, there's a simple way to ease these tummy troubles. "If your child is taking a broad-spectrum antibiotic, you should consider giving him a probiotic as well," says Morton Tavel, M.D., clinical professor emeritus at Indiana University School of Medicine, in Indianapolis. A daily dose of these beneficial bacteria can reduce or prevent antibiotic-associated GI problems.

Studies have shown that the probiotic *Lactobacillus GG* is especially helpful for alleviating these side effects. For kids, it's available in a chewable tablet form as well as a powder that can be mixed with water or other liquids. You can also try giving your child yogurt with the words "live cultures" on the label.

exception of Group A *Streptococcus*, which can cause pneumonia, toxic shock, and sepsis. While most strep infections disappear on their own, doctors usually prescribe antibiotics to prevent the rare but serious complication of rheumatic fever, an inflammatory disease that can damage the heart. If your child has a sore throat, your pediatrician will likely perform a rapid test for strep (which won't pick up every strain) and do a throat culture, which takes one or two days for results. "It's generally worth holding off on antibiotics until there is a positive result," says Iona Munjal, M.D., director of the Pediatric Antimicrobial Stewardship Program at the Children's Hospital at Montefiore, in New York City.

* Antibiotic eyedrops are less likely to contribute to resistance than oral meds.

Pinkeye (Conjunctivitis)

RX OR NOT? Probably

This inflammation of the membranes lining the inside of the eyelids and whites of the eyes is most often bacterial in young kids, though it can also be caused by viruses, allergies, and airborne irritants. Since pinkeye is highly contagious and there are no rapid tests to determine its origin, doctors tend to prescribe antibiotic eyedrops or ointment, topical treatments that may speed the recovery and are less likely to contribute to resistance than oral antibiotics, notes Seattle

pediatrician and *Parents* advisor Wendy Sue Swanson, M.D., author of *Mama Doc Medicine*.

Bronchitis

RX OR NOT? Rarely

In otherwise healthy children, this illness—an inflammation of the lining of the tubes that carry air to the lungs—is usually caused by a complication from a cold or the flu and is almost never bacterial, notes Dr. Munjal. If your pediatrician suspects a bacterial cause (such as pertussis, or whooping cough), he may culture your child's sputum and if the result is positive, treat the infection with antibiotics.

Pneumonia

RX OR NOT? It depends on a child's symptoms.

Lung infections can be viral or bacterial, and it isn't easy even for doctors to tell which is which. Most pneumonia in children, though, is viral, says Dr. Arnold. Pediatricians tend to diagnose pneumonia and decide on a course of treatment based on a thorough exam.

Lyme Disease

RX OR NOT? Yes

One-quarter of all cases of this tick-borne illness occur in kids. If blood tests confirm the presence of tick-borne bacteria (including Lyme and Rocky Mountain spotted fever), your child should go on a two- to four-week course of antibiotics. Early treatment is essential to prevent joint, heart, and neurological damage. Have your child checked ASAP if he exhibits fatigue, has difficulty thinking or speaking, or complains of headaches and nausea—even if you don't spot the telltale bull's-eye rash. ☼



flu-fighter facts

Antibiotics won't stop a virus, but there is a drug that can treat influenza. While flu shots should be your family's first line of defense, if your child catches this miserable illness, you may want to get her an antiviral called Tamiflu.

What is it?

This medication reduces the severity of influenza and shortens its duration by one or two days. The caveat: It must be given within 48 hours after symptoms begin. "After that, taking it won't help much," says *Parents* advisor Ari Brown, M.D., an Austin, Texas, pediatrician and author of *Baby 411*. As with an antibiotic, your child needs to finish the dosage even if he starts feeling better.

Is it recommended for all kids with flu?

Not necessarily. The American Academy of Pediatrics says Tamiflu should be considered for a child with severe symptoms. And to reduce the risk of pneumonia or other serious

complications, kids under 2 and those who have asthma or a compromised immune system should take it as soon as symptoms begin. If your child doesn't fit these criteria, talk the decision over with his doctor as Tamiflu can have side effects.

Should I give my whole family Tamiflu as a safeguard when one of us gets the flu?

Most pediatricians advise against this preventive practice, and Tamiflu is available only by prescription. It also costs around \$100 per person if you don't have drug coverage (and generally the highest co-pay if you do). "Simply take steps to avoid spreading germs at home," says Dr. Brown.

—Alexandra Pastore

