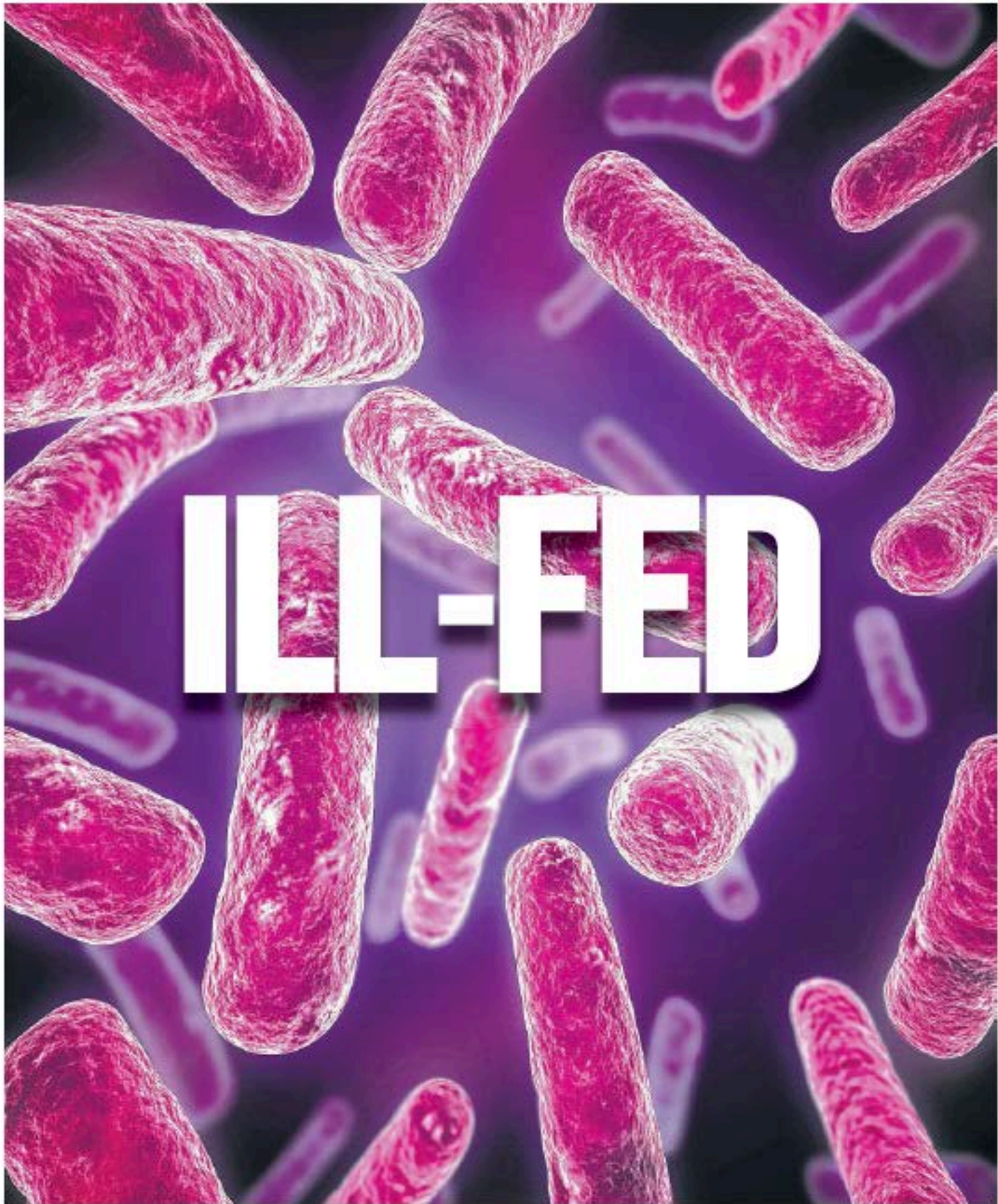


Almost 50 million Americans get food poisoning every year, a growing number of them from antibiotic-resistant bacteria



By Susan Bloom / FOR THE STAR-LEDGER

During a recent outing with her 4- and 7-year-old sons, Princeton resident Elizabeth Semrod, 42, stopped off for a fast-food lunch but ended up getting more than she bargained for.

"I ordered a grilled chicken wrap, but four to five bites in, I noticed that the chicken looked uncooked and tasted funny, so I threw it out immediately," she said.

But that it wasn't soon enough for Semrod to avoid food poisoning. She suffered almost immediate stomach pains and vomiting as well as a lingering nausea that left her feeling "not quite right" even days later.

An estimated 48 million people in the United States suffer from food poisoning each year, according to the Centers for Disease Control and Prevention.

Semrod's illness was likely the result of *E. coli* or salmonella, bacteria that normally live in the intestines of healthy people and animals but in undercooked meat or raw vegetables can sometimes lead to vomiting, diarrhea, abdominal cramps and even life-threatening kidney failure.

The CDC estimates that 2 million Americans get sick every year at the hands of antibiotic-resistant bacteria and that at least 23,000 will die as a result of antibiotic-resistant infections.

Experts began warning of the growing threat of antibiotic resistance in the 1970s, 20 years after farmers first noticed that giving antibiotics to healthy pigs, cows



DAVID GARD/FOR THE STAR-LEDGER

Aly Cohen, who warns of the growing use of chemicals in raising livestock, visits a neighbor's chickens last month in Cranbury.

costs," said Aly Cohen, a rheumatologist and integrative medicine practitioner in Monroe Township and author of new book "The Smart Human's Guide to Living Healthy in a Chemical World," which will be released

and chickens made them grow both faster and fatter, for reasons that are still largely unknown.

"Livestock farmers soon began feeding animals low doses of antibiotics like penicillin and tetracycline in their food or water to prevent infection and to accelerate their growth rate, enabling farmers to turn their inventory faster and make less of an investment in each animal's food

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later this year.

This would become a common farming practice, she said, so much so that by 2011, roughly 30 million pounds of antibiotics were sold for meat and poultry production.

According to Cohen, the unique properties of bacteria combined with unsafe farming practices have led to the rise in food-related bacterial infections in humans.

MUTATING THREAT

While penicillin was first discovered in 1928, "by 1940, scientists saw that some bacteria could mutate themselves to skirt antibiotics, resulting in resistant strains of bacteria," she said. With growing demand for meat and chicken, livestock have been increasingly confined to small spaces, making them more prone to infections and infectious spread.

"Strong, highly resistant strains of bacteria that haven't been killed by the low-dose antibiotics can quickly spread among the animals and then be transferred from animals to humans on the food itself as well as through its packaging," she said.

According to Donald Schaffner, professor at Rutgers University's School of Environmental and Biological Sciences in New Brunswick, antibiotic-resistant bacteria, like their nonresistant counterparts, can also make their way onto produce by exposure to untreated animal manure used as fertilizer, handling by infected farmworkers, contaminated water and other conduits.

So-called "super bugs" — bacteria resistant to more than three classes of



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Aly Cohen demonstrates proper food preparation techniques needed to fend off illnesses such as E. coli or salmonella.

So-called "super bugs" — bacteria resistant to more than three classes of antibiotics are more prevalent than ever, experts say.

antibiotics — such as E. coli, salmonella, MRSA, C. difficile and Neisseria gonorrhoeae are more prevalent than ever and are infecting an increasing number of healthy immune systems, Cohen said.

DWINDLING ARSENAL

She noted that humans' growing resistance to existing treatment has made the solution no longer clear. "Because a single antibiotic can take up to 20 years to develop at a cost of up to \$1.7 billion per drug and it can soon become ineffective, pharmaceutical companies are becoming increasingly hesitant to invest in the development of new drugs," Cohen said.

The result? "We're slowly losing our arsenal of treatments and literally running out of antibiotics, which could truly pose a threat to treating

routine infections, such as those which develop from a skinned knee, a dog bite, or childbirth," he said.

FDA ACTS

In December, the FDA acknowledged its concern over antibiotic resistance by requesting that the farming industry restrict its use of antibiotics in livestock feed for the purpose of "disease prevention" as opposed to "growth promotion." As of late last month, 25 of 26 antibiotics manufacturers volunteered to stop labeling drugs critical to the treatment of human infection as acceptable for animal growth promotion.

"It's great that the FDA is aware of the severity of the problem and this is a smart start, but it's not clear that it's good enough," Cohen said.

Schaffner sees these moves as the beginning of the end.

"I think use of antibiotics for growth promotion and livestock is probably a technology whose time has passed," said Schaffner. "Given growing concern about the development of antibiotic-resistant bacteria, public opinion may win the day even if the science isn't clear-cut."

PROTECTING YOURSELF

With salmonella causing 1.2 million illnesses in the United States each year, Aly Cohen, who practices rheumatology and integrative medicine in Monroe Township, recommends extra caution when handling raw meat and poultry. Cohen said it's wise to assume that all packaged meat and poultry has bacteria in or on it and offers the following tips:

■ **Last on the list** — "When you buy raw poultry or meat at the store, pick it up last," she said. "The longer it remains in a refrigerated environment, the more it will avoid the growth of bacteria."

■ **That's a wrap** — "Wrap raw meat or chicken separately to prevent those packages from contaminating other products."

■ **Compromised carts** — "A recent study showed that 13 percent of kids under 13 were exposed to bacteria from meat or chicken through the shopping cart, so keep meat wrapped and away from them."

■ **Opt for organic** — Though recent studies showed it contained the same bacteria as non-organic meat, organic cuts were found to have less presence of antibiotic-resistant super bugs.

■ **Avoid cross-contamination** — "Designate a cutting board and knife only for raw meat or chicken in your kitchen so that there's no cross-contamination and clean them well after each use."

■ **Smart storage** — Store meat on the lowest shelf of the refrigerator, which is the coolest spot and avoids juices dripping onto items below.

■ **Turn down the heat** — "Don't thaw frozen poultry or meat at room temperature — keep it refrigerated."

■ **What's in a name?** — Don't be fooled by antibacterial soaps, which contain triclosan or bactroban. "These chemicals promote resistance but can affect the endocrine system and have been linked to cancer in research on animals. Standard soap and water are most effective."