

Drug-resistant salmonella? Maybe next time

Outbreak in common food sparks worries about bug's growing immunity

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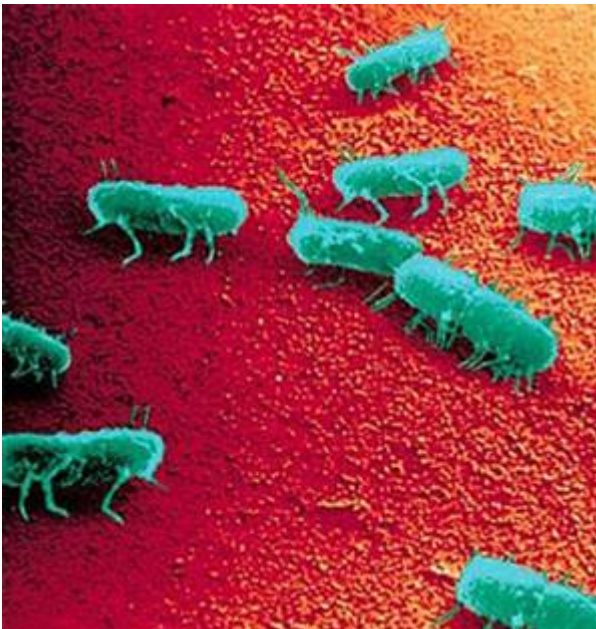
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Bill Marler

Salmonella Typhimurium bacteria, shown here, have been linked to a food poisoning outbreak that has sickened more than 500 people and contributed to eight deaths, federal health officials said.

Even as the list of peanut products linked to a national salmonella scare continued to expand, and the number of strains of bacteria associated with the outbreak climbed to four, federal health officials winding up an investigation said they may well have dodged a bullet.

"You could say that," said Dr. Peter Gerner-Smith, chief of the Enteric Diseases Laboratory Response Branch for the Centers for Disease Control and Prevention.

The salmonella strain that has sickened more than 500 people and contributed to eight deaths does not appear to be resistant to frontline antibiotics, state and federal health officials said. That means people infected by the Salmonella Typhimurium bacteria — including more than 280 children younger than 16 and 108 people hospitalized — could be successfully treated if they needed it.

But a worrisome rise over time in multidrug-resistant salmonella means the next outbreak in a common food such as peanut butter could be worse, infection experts said.

Nearly a quarter of certain Salmonella Typhimurium bacteria are resistant to at least five of the most widely used antibiotics, according to the National Antimicrobial Resistance Monitoring System (NARMS). As many as 30,000 additional salmonella infections, 300 hospitalizations and 10 deaths a year may be attributed to resistant strains, according to the World Health Organization.

"This is kind of an alert," said Dr. Stuart B. Levy, a professor at the Tufts University School of Medicine and president of the Alliance for the Prudent Use of Antibiotics. "We're lucky this time."

If the bacteria involved in the current crisis were as resistant as others have become, the outbreak could have produced more illnesses that were more severe, especially for vulnerable people such as babies, the elderly and those with compromised immune systems.

"There would be many more deaths than what we're seeing," said Lola Russell, a spokeswoman for the federal Centers for Disease Control and Prevention.

As it is, agency officials were working to wrap up the investigation of salmonella infections that first surfaced last fall, said Gerner-Smidt .

"When we have an outbreak, we try to do what we can to investigate or control it," he said.

The list of recalled food products has reached 390 and it's expected to continue to expand, officials said.

Four kinds of salmonella tied to outbreak

Four kinds of salmonella have been linked to the outbreak traced to a Blakely, Ga., food processing facility run by Peanut Corp. of America, federal Food and Drug Administration officials said Tuesday.

They included a strain of Salmonella Tennessee found in an unopened container of peanut butter from the plant and strains of Salmonella Senftenberg and Salmonella Mbandaka found in cracks in the processing center floor, staff members of Rep. Bart Stupak, D-Mich., who had been briefed on the outbreak, told the Associated Press. About 2,500 strains of salmonella exist.

Only one strain, Salmonella Typhimurium, has been linked to the human illnesses in this outbreak, officials said.

And the particular kinds of Salmonella Typhimurium — confirmed by state and federal officials as 0811MLJ and 0811SDC — actually are susceptible to common antibiotics.

"We're not really seeing any drug resistance there," said Stephanie Meyer, an epidemiologist with the Minnesota Department of Health, which has verified 35 infections linked to peanut products.

Officials in Ohio and California, two states with large numbers of victims, confirmed Meyer's findings.

That's in sharp contrast to a strain of *Salmonella Typhimurium* known as DT104, which has worried health officials for nearly three decades because of its resistance to at least five common antibiotics: ampicillin, chloramphenicol, streptomycin, sulfonamides and tetracycline.

Between 1979 and 1996, the prevalence of drug-resistant *Salmonella Typhimurium* DT104 isolates increased from less than 1 percent to nearly 34 percent, according to a CDC researcher writing in a 1998 article in the *New England Journal of Medicine*. By 2005, it had settled to about 22 percent, according to most recent NARMS data, but the bacteria also seem to be developing resistance to more drugs, including antibiotics of last resort such as quinolones and cephalosporins.

'We're running out of drugs'

"You go into a hospital right now and I sit and scratch my head because we're running out of drugs," said Dr. Cesar A. Arias, an assistant professor in the division of infectious diseases at the University of Texas Medical School in Houston.

In a perspective paper in this week's *New England Journal of Medicine*, Arias warns that drug resistance is becoming a pressing problem in many infections, including food-borne illnesses such as salmonella.

About 40,000 cases of salmonella are confirmed in the U.S. each year, but officials estimate the actual number of infections is at least 1.2 million, with about 600 resulting in death. The illnesses often are mistaken for other gastrointestinal problems, such as norovirus.

In recent years, the top four kinds of salmonella responsible for infection — *Typhimurium*, *Enteritidis*, *Newport* and *Heidelberg* — have been associated with outbreaks of multidrug-resistant illnesses.

In 2002, for instance, an outbreak of drug-resistant *Salmonella Newport* in ground beef affected 47 people in five states. Thirty-three patients were treated with antibiotics and 17 were hospitalized. One patient suffered a bloodstream infection and died.

In Yucatan, Mexico, the prevalence of drug-resistant *Salmonella Typhimurium* DT104 rose from none to 75 percent of all types between 2000 and 2005 and sparked infections that sickened dozens of children and killed at least three, according to a 2007 paper in the *Journal of Antimicrobial Chemotherapy*

In the vast majority of cases, salmonella infection does not need to be treated with antibiotics. The infection causes distressing illness, including diarrhea, fever and abdominal cramps, but most people clear it from their systems in four to seven days.

Vulnerable people, however, can develop severe illness and require antibiotic treatment. If the strain is resistant to the drugs, the results can be devastating, Arias said.

"The initial 48 hours with this infection can be crucial," he said. "If you delay the proper treatment, it's like you're not giving anything at all."

Antibiotics in animals spark resistance

The rise in drug-resistant salmonella and other illnesses can be traced to the overuse of antibiotics in humans as well as low-level use of the drugs in the nation's food animals, said Levy, of the Alliance for Prudent Use of Antibiotics, which has long warned of the dangers of growing drug resistance.

Animals are frequently given drugs not to treat disease, but to prevent disease and, often, to promote growth, he said. The APUA and others, including the Pew Campaign on Human Health and Industrial Farming, have lobbied Congress to limit or eliminate the practice.

Awareness that an infection as common as salmonella occurs in a food as common as peanut butter should jolt more people into alarm over rising drug resistance, said Laura Rogers, the commission's project director.

"The issue of antibiotic resistance has been going on since the 1970s," she said. "People get that hormones and steroids in foods are bad, but they don't think about antibiotics."

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Timeline: Salmonella outbreak

Sept. 8 - Jan. 2

Salmonella outbreak begins and spreads. Most people were sickened after Oct. 1.

Dec. 21

Shirley Mae Almer, 72, dies at a nursing home in Brainerd, Minn. At the time, the cause of her death was unknown.

Jan. 8

CDC announces it is collaborating with public health officials to investigate a salmonella outbreak in multiple states.

Jan. 9

Outbreak spreads to 42 states.

Jan. 10

King Nut Companies issues a [voluntary recall of peanut butter](#).

Jan. 12

Outbreak spreads to 43 states.

Jan. 13

Health officials urge nursing homes, hospitals, schools, universities and restaurants to toss

out King Nut brand peanut butter linked to the salmonella outbreak.

The CDC says the tainted peanut butter may have contributed to three deaths and 410 confirmed cases.

Jan. 15

Kellogg recalls peanut butter crackers.

Jan. 16

The FDA announces its investigators have traced the source of salmonella outbreak to a plant in Blakely, Ga., owned by Peanut Corporation of America.

Jan. 20

Number of those sickened by the illness climbs to 485.

A Vermont couple whose 7-year-old son became sick after eating peanut butter crackers files a lawsuit against Peanut Corporation of America.

Jan. 23

Trader Joe's, General Nutrition Centers Inc., Pet Smart and NutriSystem are among the retailers who recall peanut butter products. More than 125 items are recalled in all.

Jan. 25

Minnesota Department of Health reports [a woman in her 80s has died of salmonella](#), bringing the total number of reported deaths to seven.

Jan. 26

Relatives of Shirley Mae Almer, the 72-year-old who died of salmonella on Dec. 21, sue the operators of Peanut Corporation of America.

Jan. 27

Federal health officials announce [the Peanut Corporation of America has a history of problems](#), and had shipped products in the past that the companies own tests had found positive for salmonella.

Jan. 28

PCA voluntarily recalls all peanuts and peanut products processed in its Blakely, Ga., plant since Jan. 1, 2007. The expanded recall includes all dry- and oil-roasted peanuts, granulated peanuts, peanut meal, peanut butter and peanut paste. The company stops producing all peanut products at the Blakely plant.

As of 9 p.m. EDT, 529 persons infected with salmonella typhimurium are reported from 43 states, according to the CDC. Additionally, one ill person is reported from Canada.

At least 431 peanut butter-containing products are recalled by 54 companies using ingredients produced by the PCA facility after July 1, 2008.

Jan. 29

A combination of epidemiological analysis and laboratory testing by state officials in Minnesota and Connecticut, the FDA, and the CDC enable the FDA to confirm that the sources of the salmonella outbreak are peanut butter and peanut paste produced by the PCA at its Blakely, Ga., processing plant.

The Ohio Department of Health says two containers of peanut butter taken from a central Ohio nursing home have tested positive for salmonella.

Jan. 30

Stephen Sundlof, head of the FDA's food safety center, says the Justice Department will investigate possible criminal violations by the PCA processing plant, assisted by FDA investigators.

Feb. 2

President Barack Obama promises a comprehensive review of the FDA. The salmonella outbreak prompts voluntary recalls by makers of more than 800 products. The recalls reach into Canada and Europe.

According to the CDC, 550 cases in 43 states are tallied, with the most recent reported illness beginning on Jan. 17, 2009.

Feb. 3

The Associated Press learns that a peanut processing plant in Plainview, Texas, run by the PCA has operated for years uninspected and unlicensed by government health officials.

Feb. 5

The U.S. Agriculture Department suspends PCA from participating in government contract programs for at least a year. Agriculture Secretary Tom Vilsack removes Stewart Parnell, PCA president, from the USDA's Peanut Standards Board.

Federal officials say that nearly 168,000 emergency meal kits sent to Kentucky after an ice storm were recalled more than two weeks earlier.

According to the CDC, 575 cases are counted in 43 states with the most recent reported illness beginning on Jan. 22, 2009.

Feb. 6

The Agriculture Department says that it shipped possibly contaminated peanut butter and other foods to free school-lunch programs in California, Minnesota and Idaho in 2007 under a contract with PCA.

Corpus Christi Catholic School in Colorado Springs, Colo., closes early after a student is diagnosed with salmonella poisoning.

Feb. 11

Stewart Parnell, the owner of Peanut Corp. of America, refuses to testify at hearing.

Ohio officials report a salmonella-linked death, bringing the death toll to 9.

Feb. 12

The Texas Department of State Health Services orders a recall of all products ever shipped from the now-closed Peanut Corp. of America plant in Plainview.

The agency says "dead rodents, rodent excrement and bird feathers" were discovered near a production area in the facility.

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