

Are pill-popping turkeys a danger?

Treating poultry (and other food animals) with antibiotics could lead to some serious health consequences for human beings.

By Karen Ravn

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Turkeys, like any other animal, get sick. And while few would dispute that they should be treated when that happens, many scientists, medical professionals and animal experts are concerned that too much medicine is being given to too many turkeys -- and to too many food animals in general.

"The use and misuse are rampant," says Bill Niman, founder of Niman Ranch in Northern California and a member of the Pew Commission on Industrial Farm Animal Production.

Those concerned fear that the practice will have serious consequences for human health care -- and that some of those consequences are already starting to show up.

Antibiotics are approved in turkeys both for therapeutic use (meaning, to treat sick turkeys) and for disease prevention -- which usually means the rest of the flock will also be treated to keep the disease from spreading.

Antibiotics are used in this same way in other food animals, and in some cases they're also used for growth promotion, although that's not supposed to be done with turkeys.

The potential for danger from antibiotic use in farm animals comes in two forms, experts say: The antibiotics could remain in meat when people eat it. They could also contribute to the development of resistant bacteria.

If people are getting a dose of antibiotics every time they have a hamburger or a piece of chicken -- or a turkey drumstick -- this exposure could possibly be harmful. We all have benevolent bacteria in our bodies, and the antibiotics we eat could kill those good bacteria. Also, some people are sensitive to antibiotics, with reactions ranging from diarrhea to itching to seizures, and they could have these reactions to the food they eat.

Even critics of antibiotic use see this danger as minimal, at least in turkeys. A withdrawal time has been established for every antibiotic, based on testing how long it remains in the bird after usage has stopped. So if the withdrawal time is, say, two weeks, the antibiotic cannot be given for at least two weeks before the turkey goes to market.

Besides, the Food and Drug Administration and U.S. Department of Agriculture routinely examine the turkeys for residue of the drugs, says Sherrie Rosenblatt, spokeswoman for the National Turkey Federation, and on average, the birds are found to be 99.9% residue free.

The second concern -- that of antibiotic resistance -- has many more scientists worried. Resistance develops when antibiotics kill off some of the bacteria they're supposed to, but not all -- so only the super-strong survive. If this happens enough, the susceptible bacteria are wiped out, but a strain of resistant bacteria takes over in their place, and the antibiotics that used to work don't work any longer.

The Centers for Disease Control and Prevention calls antibiotic resistance one of its top concerns.

"There are bacteria that were once treatable with antibiotics that are now resistant to everything," says microbiologist Lance Price, director of metagenomics and human health at the Translational Genomics Research Institute in Phoenix.

No one doubts that much of the problem stems from improper or unnecessary antibiotic use by humans -- say, to treat viral infections like colds and flu. But Price says that part of the problem is certainly due to agricultural use.

One example is the use of fluoroquinolones to treat *Campylobacter* in chickens, says Dr. Sherwood Gorbach, distinguished professor of public health and medicine at Tufts University School of Medicine in Boston.

Campylobacter is the leading cause of bacterial diarrhea in the United States, and is typically treated by the fluoroquinolone Cipro. But since the mid 1990s, resistance to Cipro has gone up from 2% to 20% or even higher, Gorbach says. And he believes it's due to the use of Baytril, the form of the drug used in chickens.

The government found the drug troubling too. In 1996, the National Antimicrobial Resistance Monitoring System was created to monitor human and animal resistance to 17 antimicrobials (antibiotics, antivirals, antifungals and antiparasitics). And in 2005, using data from the monitoring system, the FDA banned the use of fluoroquinolones in poultry in order to reduce the prevalence of resistant *Campylobacter*.

Price led a team at the Bloomberg School of Public Health at Johns Hopkins University in Baltimore that studied the effectiveness of this ban by comparing *Campylobacter* resistance rates in 2004 and 2006. In a study published last year in *Environmental Health Perspectives*, the team tested chicken products from two conventional producers and three antibiotic-free producers -- 198 packages in 2004 and 210 in 2006 -- and found no significant change in the resistance rates.

But they did find that the *Campylobacter* from the two conventional producers were significantly more likely to be resistant than those from the antibiotic-free producers.

The team concluded that resistant strains of bacteria may continue to contaminate poultry products even after the drug is no longer being used.

How many antibiotics are used in agriculture? That is hard to estimate, scientists say, because there is no requirement to report this use.

"We . . . have no knowledge about how they are being used in the field, i.e., whether it is common practice to use them on a regular basis," says Siobhan DeLancey in the FDA Office of Public Affairs in Washington, D.C.

In 2001, the Union of Concerned Scientists, a Washington, D.C.-based nonprofit that advocates for a healthy environment, estimated that every year in this country 3 million pounds of antimicrobials are used in human medicine. By contrast, the organization estimated that 24.6 million pounds are used in food animals for nontherapeutic purposes: about 10.5 million pounds in poultry, 10.3 million pounds in hogs and 3.7 million pounds in cattle.

In poultry, the organization found, use had shot up since the 1980s, from 2 million to 10.5 million pounds, and only 40% of that increase could be attributed to growth in the poultry industry.

An earlier study by the Animal Health Institute came up with a much lower figure for agricultural use: 17.8 million pounds for therapeutic and nontherapeutic uses in all animals, not just poultry, hogs and cattle.

"But no one would challenge that we're using far more in agriculture than in human medicine," says Margaret Mellon, director of the food and environment program at the Union of Concerned Scientists.

Some view antibiotics as key to growing healthy turkeys in large numbers, which is not to say they believe in using the drugs willy-nilly.

In fact, growers have strong incentives to use as few as possible, says Francine Bradley, extension poultry specialist in the Animal Science Department at UC Davis. "They cost a lot of money, so no one gives them indiscriminately. Besides if they've overused them previously, they won't get a good response when they really need them."

But growers do need them sometimes, and not only to treat sick birds, but to keep the disease from spreading to the whole flock, says Daniel Fletcher, head of the Animal Science Department at the University of Connecticut. Without

them, costs would go up and price many people out of the meat market. "If we didn't use antibiotics," he says, "we'd have a tough time meeting the nutritional needs of people in this country."

Gorbach says there's a bill before Congress right now intended to allow more use of fluoroquinolones in chickens again and adds, "We feel very strongly that's the wrong thing to do."

Other studies also point toward dangers from antibiotic use in food animals.

* One, published in 2007 in the journal *Foodborne Pathogens and Disease*, found a possible link between the meat women eat and their chances of getting a urinary tract infection caused by drug-resistant *Escherichia coli* (*E.coli*).

In it, a team from UC Berkeley studied 99 women, comparing those with urinary tract infections caused by drug resistant *E. coli* to those with urinary tract infections caused by nonresistant *E. coli*. They found that women infected with *E. coli* resistant to multiple antibiotics ate chicken more often than the others. They also found that women infected with either ampicillin-resistant or cephalosporin-resistant *E. coli* ate pork more often.

The researchers concluded that the antimicrobial-resistant *E. coli* that cause urinary tract infections may come from poultry, pork or both.

* And in June, a study presented at the annual meeting of the American Society for Microbiology in Boston found potentially deadly methicillin-resistant *Staphylococcus aureus* -- or MRSA -- in nearly half of the 299 pigs tested on 10 farms in Iowa and Illinois, as well as in nine of the 20 farm workers they tested. (The study has not yet been published.)

Study lead author Tara Smith, an assistant professor of epidemiology at the University of Iowa, has speculated that the tetracycline used in hog farming may be responsible.

Yet in spite of such studies there remains no conclusive evidence that antibiotic use in food animals is to blame. And some believe it's all just a tempest in a turkey barn.

"Some people have an agenda against farm animals," says Murray Bakst, research physiologist at the Agricultural Research Service in Maryland. "There's more of a danger from people flushing antibiotics down the toilet than from the antibiotics in animal feed."