

For the Record

Volume 7, Issue 3 — August 2008

Straight talk about antibiotic use in food animal production presented by ALPHARMA Inc., Animal Health

THERE'S NO DEFENSE LIKE A GOOD OFFENSE

News flash:

- Pigs root.
- Cattle wade.
- Chickens eat...what chickens will eat doesn't pass for polite dinner conversation.

Obvious though those facts of farm life may strike you, it too often seems to come as a shock to the modern consumer activist. Their Walt Disney version of animal production airbrushes out the dust, the mud, the flies, the dung and the bacteria you work against every day. Rather than pretend they don't exist or that returning to yesteryear farming will somehow naturally prevent food contamination, today's producers understand it's their responsibility to actively seek out tools—old and new—to protect food.

"Every day we go to combat against an invisible enemy," Swift & Co. president and CEO John Simons once told a meeting of the National Chicken Council, "and every time we put a safe product on a consumer's plate we score a victory. [And,] we're measured against zero tolerance," he rightly noted. "We're measured against perfection."

In that modern world of high-stakes consumer

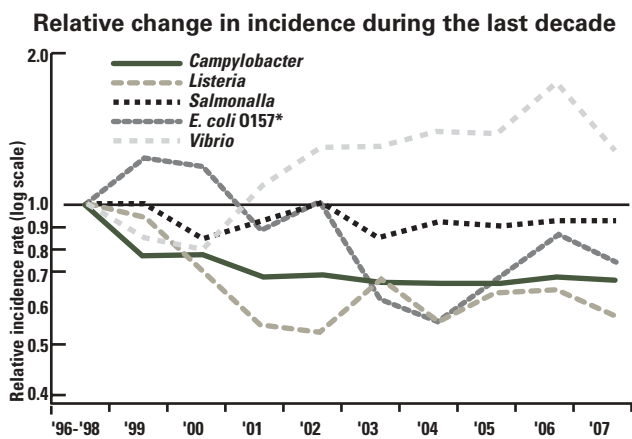


protection, as U.S. Health and Human Services Secretary **Michael Leavitt** noted in the wake of a vegetable *Salmonella* outbreak that sickened a thousand people as of presstime, "We simply cannot inspect our way to product safety."

One of the good offenses that may help defend against food-borne bacteria pre-inspection is the preventive use of antibiotics. Inside you'll find a review of the research suggesting banning them is worse than unnecessary; it could actually make food less safe.

THE NUMBERS PUT FOOD PROTECTION IN PERSPECTIVE

Media-driven scares over food contamination have masked the reality. The U.S. food supply is safer than it's ever been and arguably the safest in the world. Witness the progress over the last decade and a half in reducing the incidence of food poisoning related to several of the bacteria common in food animals. With one exception, all are below the population incidence levels from ten years ago.



* Includes only Shiga-toxin producing *E. coli*.

Source: MMWR Morb Mortal Wkly Rep. 2008 Apr 11;57(14):366-70.

Also in this issue

- A brief review of three decades of research demonstrates that antibiotic use makes a difference in potential safety of poultry, pork and beef
- It's time to stop pointing fingers of blame and approach the battle against antibiotic resistance from one perspective
- Why worry about all this microbiology? Looking at the natural world 'post Pasteur'

For the record...

Research suggests banning the use of antibiotics which help protect animals from diseases that could infect humans might be more than needless over-precaution. It could actually hurt food safety.

COULD BANNING FARM ANTIBIOTICS ACTUALLY

Stung by activist criticism, some in agriculture would **abandon antibiotic use**. After all, they argue, it would do nothing but add to our cost—which presumably might be passed on. But there's

'Abandoning judicious antibiotic use could be neglecting our duty to protect consumers'

an unconsidered downside to that surrender-with-dignity strategy: Growing evidence points to the possibility antibiotics aren't simply safe and effective in keeping animals healthy—they may actually help keep consumers safe by preventing food-borne disease. If so, eliminating their judicious use could be worse than needless; it could be neglecting our duty to protect consumers. Here's what the science says:

POULTRY

■ Several studies going back to the mid 1970s demonstrate adding antibiotics to their drinking water can control and reduce both *Salmonella* and *E. coli* infection in chickens.

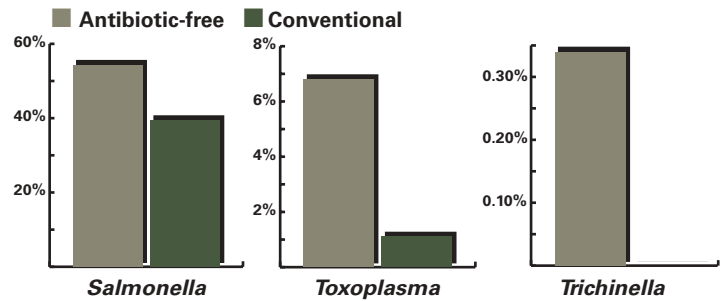
■ French research in 1997 showed dosing birds with **enrofloxacin**, which was banned by FDA in 2005, could clear a flock of *Salmonella*. A similar 2000 study in Georgia which added beneficial bacteria to block *Salmonella* from recolonizing the gut **reduced the shedding rate** in layers from 25 and 33 percent down to 0 and 4 percent.

■ Wisconsin work found giving day-old chicks a combination of the antibiotics trimethoprim and polymyxin **prevented *Salmonella* colonization** and cleared existing infections.

■ Georgia poultry processing professor and microbiologist Dr. Scott Russell, PhD, tracked the outcome in the processing plant of birds affected by airsacculitis, the common infection caused by *E. coli* and typically controlled by low-level antibiotic use. Dr. Russell found that not only did the disease cost the average growout house more than 32,000 pounds of

ANTIBIOTIC-FREE PIGS MORE LIKELY TO CARRY GERMS

A new study found pigs raised without antibiotics had higher rates of three food-borne pathogens than those from conventional farms. Thirty percent more of the antibiotic-free pigs carried *Salmonella* than conventional ones.



Source: Gebreyes WA, Bahnsen PB, Funk JA, McKean J, Patchanee P. Seroprevalence of *Trichinella*, *Toxoplasma*, and *Salmonella* in antimicrobial-free and conventional swine production systems. *Food borne Pathog Dis.* 2008 Apr;5(2):199-203.

chicken annually, it also increased the levels of fecal contamination at the plant, lead to more processing errors because birds varied in weight, and **increased levels of *Campylobacter* contamination**. Subclinical disease in chickens obviously affects carcass contamination, Russell concluded, and those levels of subclinical disease can be reduced by antibiotics.

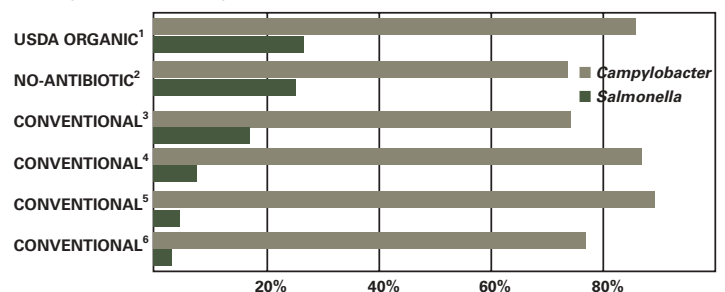
■ Risk assessment expert Dr. Tony Cox, PhD, mathematically modeled the **human illness rates** attributable to food poisoning—both antibiotic resistant and susceptible. His model estimated that for every one day someone is sick because the use of antibiotics in chickens contributed

to their treatment being less effective, 4,000 others are spared a day of illness because antibiotics **reduce the risk of food poisoning**.

■ Numerous studies have shown organic, antibiotic-free chickens are more likely than conventionally raised birds to be contaminated with bacteria. A University of Bristol study in 2002 found that while 58 percent of the 130 conventional flocks tested were infected with *Campylobacter*, **100 percent of the 60 organic flocks were infected**. A Danish study found likewise: One-third of 79 conventional broiler flocks tested positive; **every one of the 22 organic ones did**. And a 2006 Belgian study showed the inci-

ANTIBIOTIC-FREE CHICKEN POSE SALMONELLA RISK

Consumer Reports magazine sampled more than 500 fresh broilers bought at supermarkets, gourmet shops and natural-food stores in 23 states. It found the chickens most likely to be contaminated with *Salmonella* were those grown either organically or without use of antibiotics.



Brands: 1. Coastal Range, Coleman, D'Artagnan, Eberly's, Maverick Ranch, MBA Smart Chicken, Organic Raised Right, Rosie, Whole Foods, and Wise. 2. Bell & Evans, Buddy's, Coleman, MBA Smart Chicken, Murray's, North Country Farms, Ranger, Rocky, Rocky Jr., Springer Mountain, Wegman's, Whole Foods. 3. Perdue. 4. Pilgrim's Pride. 5. Tyson. 6. Foster Farms. Source: *Dirty Birds*. *Consumer Reports*. 2007 Jan;72(1):21-23.

LEAD TO MORE FOOD BORNE DISEASE?

dence of *Campylobacter* at slaughter for organic flocks was nearly triple to quadruple the conventional ones, depending on sampling site.

■ A study of retail organic and conventional chicken carcasses in Maryland found although the levels of *Campylobacter* didn't differ statistically, the rate of *Salmonella* contamination was nearly 1.5 times higher in the organic chickens.

SWINE

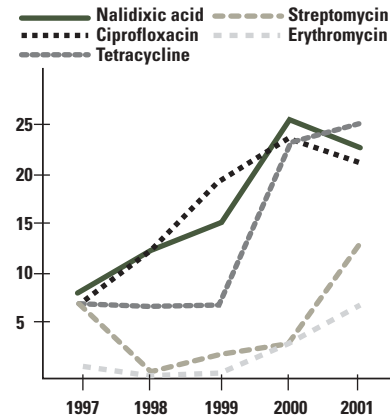
■ Although the success rate varies widely, some studies suggest treating *Salmonella*-infected sows with antibiotics may reduce or prevent infection of weaned pigs and make herd-level control or eradication possible.

■ A June 2008 Ohio State study found 54 percent of hogs raised on antibiotic-free operations were infected with *Salmonella*, compared to only 39 percent in conventional operations. The antibiotic-free farmed pigs also carried higher rates of the microscopic parasite *Toxoplasma*, and two of the antibiotic free pigs were *Trichinella* positive. Trich, spread by garbage feeding, is the reason cooks have traditionally been warned to overcook pork. Confinement production

WHERE ARE THE RESULTS ON RESISTANCE RATES?

Giving up the protective benefits of antibiotics might be more open to debate if banning farm antibiotics could be shown to prevent disease in humans. It hasn't. After Denmark banned low-level farm antibiotic use in 1998, human-drug resistance to *Campylobacter* didn't fall, as advocates expected. It rose sharply. Overall rates of *Campylobacter* rose as well, even as they fell by 30 percent in this country, where antibiotics remain legal.

Percent of European *Campylobacter* isolates resistant to antibiotics



Source: DANMAP, adapted from Hayes DJ, Jensen HH. "Lessons from the Danish Ban on Feed-Grade Antibiotics." *Choices* 2003 3rd Qtr 18(03):1-6.

has virtually eradicated it from the conventional supply.

BEEF AND DAIRY CATTLE

■ USDA research in 2002 found that cattle fed neomycin sulfate for 48 hours, held for the mandatory 24 hour pre-slaughter drug withdrawal, and then shipped to market, shed significantly fewer *E. coli* O157:H7 than pen mates not given the antibiotic. Even five days after the drug's withdrawal, although the numbers of conventional *E. coli* had

returned to normal, pre-treatment levels, the dangerous O157:H7 strains did not return.

■ A 2005 cooperative study between Minnesota, Wisconsin, Michigan State and Cornell in 129 dairies reported that not feeding an ionophore in weaned and bred heifer diets increased the odds of finding *Salmonella* by more than three times. Not feeding pre-weaned calves a medicated milk replacer increased the odds by just under three times.

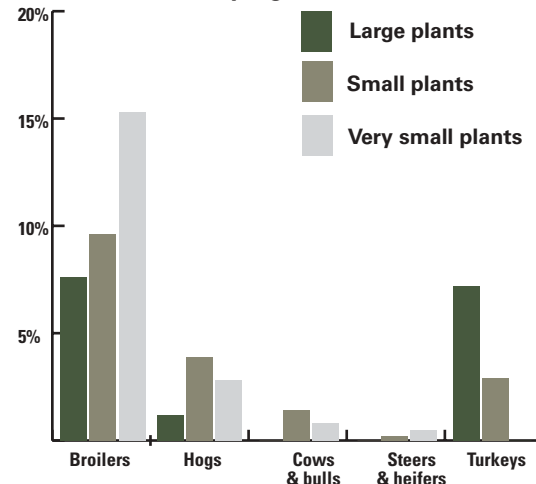
ANTIBIOTICS FORM ONE LINK IN A BROAD, PROTECTIVE FOOD CHAIN

Opponents of large-scale animal production, such as the recent PEW Commission on animal agriculture, often point to antibiotic use as a broader indictment of the system—if animals weren't raised intensively, they argue, they wouldn't need medications. However, it appears the opposite is closer to the truth. Organic meat, milk and eggs are typically discovered to be more likely to carry disease-causing organisms because the overall chain of protection in organic production is weaker, from farm to retail outlet.

That reality is supported by USDA's ongoing *Salmonella* monitoring program, which found that animals entering large, automated processing plants are typically found to be far less likely to be contaminated than those entering small packing plants.

Source: USDA. *Progress Report on Salmonella Testing of Raw Meat and Poultry Products, 1998-2007.*

Percent positive *Salmonella* tests in USDA's HACCP-verification program



Antibiotic Truths.com Web bonus

For a more comprehensive list of the research exploring the question of how antibiotics help protect food safety, go to AntibioticTruths.com, click on this issue, and then [click on this link](#).

Principal Points Antibiotics guard food safety Vol 7. No. 3. August 2008

- Modern food-production technology enables animal producers to control many of the potential contaminating factors surrounding the naturally often messy business of raising food.
- One of those tools may be the use of antibiotics to keep animals in top condition and to help prevent disease.
- Several studies demonstrate judicious use of medications helps control infectious disease organisms that can occur virtually everywhere in the chain, whether on large farms or small, local, traditional farms. Controlling those bacteria as part of a wider system reduces risk of contamination in food growing, processing and delivery.
- Such management is one reason the U.S. food supply has grown safer, not more risky, over the past decade, as witnessed by the declining incidence of most food-borne diseases.
- Recent studies have also found animal products from organic farms tend to be more often contaminated with bacteria that can cause human illness. Small size, older animals, non-use of antibiotics and processing in smaller, less-modern processing plants all may contribute to their increased risk.

For the Record, sponsored by a grant from ALPHARMA Inc., Animal Health, is designed to help unite the industry and provide a unified, rational message on behalf of producers whose freedom to use safe, effective, economical production methods is at stake. Working together, we can set the record straight on antibiotics.

Questions or comments? E-mail Steve Kopperud at skopperud@poldir.com or editor Mike Smith at CustomMedia@Food360.com. Read past issues or link to more information on this issue at www.AntibioticTruths.com.

WE NEED A 'ONE MEDICINE' SOLUTION

DR. WILLIAM HUESTON, DVM, DIRECTOR, UNIV. OF MINN. CENTER FOR ANIMAL HEALTH AND FOOD SAFETY

The emergence of “super bugs” and the weakening of antibiotics is a major concern for veterinarians like me, who swear an oath to promote public health as well as protect animal health. Many factors contribute to the increase in antibiotic-resistant bacteria—the misuse of antibiotics being a major culprit. The challenge is to sort out which factors contribute most significantly and then determine how to focus prevention to achieve the greatest effect.

It's unfortunate that this issue seems to have pitted the agricultural industry and public health professionals against each other, when both have a common goal: A safe, abundant and affordable food supply. We need physicians and veterinarians to work together in a “One Medicine” approach.

One Medicine pulls together physicians, nurses, veterinarians, environmental health specialists, and public health workers along with engineers, epidemiologists, statisticians and economists, all collaborating to break

new ground in discovery and application.

There is no single “silver bullet” that will solve this emerging problem. Addressing antibiotic resistance requires a collaboration. Practices in hospitals, drug sales, and farms all need equal scrutiny. By working together in the spirit of One Medicine we can successfully address these challenges, just as we have combated numerous others, from tuberculosis to brucellosis. One Medicine will help ensure the U.S. food supply is one of the most abundant, affordable, safe and wholesome in the world. There are answers to this problem, but it's going to take a unified search. The answer will come from working together, not pointing fingers.



NEW AGE MICROBIO-POLITICS

Some of today's most vocal criticism of technological agriculture grows from the “post-modern” school of thought. A product of 1960s academia, postmodernism is a belief that the 20th century's trust in science to improve the human condition was misguided. Science wasn't just a benevolent means to describe the physical world.

It was, instead, a “construct”—a secret code created by those in power in order to legitimize and maintain their power. Agricultural philosopher Dr. Paul B. Thompson, PhD, warned animal agriculture in the 2001 *Journal of Dairy Science* that it must embrace postmodernism if we are to understand and respond to our critics.

Now, Massachusetts Institute of Technology cultural anthropologist Dr. Heather Paxson, PhD, suggests we are entering a brave new “Post-Pasteurian” world, one that reinterprets the similar artificial constructs of biology and germs.

“A curious mix of political libertarians and foodies is questioning some of the motives and logics underpinning the Pas-

teurian food regime,” Dr. Paxson writes in *Cultural Anthropology*. If you look at food safety through the eyes of Pasteur, the father of modern microbiology, you're simply being suckered into another power construct—a “microbiopolitical” one that seeks to control the masses by panicking them over invisible food contaminants.

Thus, consumers who skirt milk-safety regulations to buy unpasteurized milk, as raw-milk activist Dr. Ron Schmid, ND, says, are simply gourmet freedom fighters, rebelling against the state's imposition over what goes into their bodies. Likewise, the U.S. ban on raw cheese like Camembert, French sociologist Pierre Boisard says, is less about protecting consumers from *Listeria* poisoning than it is about repressing the wild, sensual—even sexual—gluttony of eating such a raw, unrefined animal product.

“Puritanism is...reentering through the back door in the form of provisions purportedly aimed at alimentary hygiene,” Boisard writes. “...the moral order is [now] trying to get at us at the dining table.”

