

WHO advises kicking the livestock antibiotic habit

Africa News Service, December 15, 2015

Eliminating the routine use of antibiotics in livestock reduces human health risks without significantly harming animal health or farmers' incomes, according to a World Health Organization (WHO) report released last week. The report adds to a growing momentum to end the use of antibiotics to promote growth in farm animals. The European Union (E.U.) has ordered member countries to end the controversial practice by 2006, and fast-food giant McDonald's is pressing its meat suppliers to cut back on antibiotics as well.

The WHO review of experiences in Denmark, which has phased out the practice, is the most comprehensive assessment to date of the effects of banning antimicrobial growth promoters, says Peter Braam, WHO's project leader on food-borne diseases, who coordinated the effort. "Under conditions similar to those in Denmark," the panel wrote, "the use of antimicrobials for the sole purpose of growth promotion can be discontinued."

Low doses of antibiotics make farm animals grow slightly faster on less feed, presumably by easing minor infections that don't make animals overtly sick. But antibiotics spur some bacteria to develop resistance to the drugs, and those bugs, or the resistance genes they harbor, can make their way into meat and then the human gut. There, infections might withstand drugs akin to those used on the farm.

As antibiotic resistance spread in the last decade, the movement to phase out growth promoters gained traction. (Using antibiotics to treat sick animals or prevent infections from spreading has not been similarly criticized.) In 1997, WHO first recommended ending the practice. In 1998, Denmark--the largest pork exporter in the world--became the first country with a large livestock industry to phase it out, despite predictions from the animal-drug and livestock industries that the ban would lead to sicker animals, more contaminated meat, and economic damage to farmers.

To see how the "Danish experiment" has played out, scientists spent 4 years studying the prevalence of antibiotic-resistant microbes in farm animals, slaughterhouses, meat sold in groceries, and healthy people. They also tracked the impact of the ban on animal health and economic costs to farmers.

Overall, the ban accomplished its goals. Total antibiotic use in pigs and poultry was down 54% in 2001 from its peak in 1994. Drug-resistant strains in animals and meat fell dramatically; for example, 60% to 80% of *Enterococcus* bacteria samples from livestock resisted common antibiotics before the ban, whereas only 5% to 35% did so afterward. The data didn't show whether the phase-out reduced resistant bacteria in people, although other studies have revealed a link (*Science*, 4 January 2002, p. 27).

The ban had a slight downside for farmers, particularly pork producers. Farmers used about a third more antibiotics to treat sick animals after the ban. They had to treat just-weaned piglets for diarrhea about twice as often, piglets put on weight 2.6% more slowly, and slightly more died. Pig farmers'

costs increased 1%, but overall profits from pork production continued to increase in Denmark.

Together, the data show that "there is no longer any need [for growth promoters]--if there ever was," says microbiologist Stuart Levy of Tufts University School of Medicine in Boston, president of the Alliance for the Prudent Use of Antibiotics, a nonprofit group that includes researchers, doctors, and veterinarians.

Industry representatives beg to differ. The Danish ban hurt farmers without doing anything for public health, says Richard Carnevale of the Animal Health Institute in Washington, D.C., which represents manufacturers of animal antibiotics. He also faults the report for minimizing "significant economic costs to producers," such as installing equipment to keep bacteria out of the barns and hiring extra staff.

European officials have already moved to end the use of growth-promoting antibiotics. By 1999, the E.U. had banned five drugs that are identical or closely related to human medicines. Last month, the E.U. finalized rules for its member countries to end the practice by 2006.

No such ban is on the table in the United States, where the Food and Drug Administration (FDA) rules on antibiotics on a case-by-case, use-by-use basis, says Stephen Sundlof, director of the agency's Center for Veterinary Medicine. FDA is also reexamining animal drugs approved before 1999, when the agency began formally considering public health effects.

U.S. reformers, frustrated by FDA's pace, have turned to Congress. In July, four senators introduced a bill that would stop livestock producers from using penicillins, tetracyclines, and six other antibiotics on entire herds or flocks unless the manufacturer proves the use is safe for human health. A companion bill has been introduced in the House, and 300 groups, including the American Medical Association, have endorsed the legislation.

Reformers have also made inroads in the private sector. In June, McDonald's Corp., which buys 1.1 billion kilos of beef, pork, and poultry each year, announced that it would insist that its chicken suppliers cut antibiotic use and would provide incentives for its pork and beef suppliers to do the same. "That was fantastic coming from a high-profile company like McDonald's," Levy says. "We're waiting to see if Wendy's and Burger King will follow suit."

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Source Citation

Ferber, Dan. "WHO advises kicking the livestock antibiotic habit." *Science* 301.5636 (2003): 1027. *Opposing Viewpoints in Context*. Web. 12 Apr. 2016.

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Gale Document Number: GALE|A108197141