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FACT SHEET:

Lessons for Antibiotic Resistance from the Mad Cow Disease Outbreak

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What we feed to the animals we eat can have dramatic health consequences for humans, as the recent reports of Mad Cow disease (Bovine Spongiform Encephalopathy or BSE) in U.S. beef cattle make all too clear. Though BSE is not directly related to the antibiotic resistance problem, the two issues have common themes.

Mad Cow Disease

Mad Cow disease is *not* caused by bacteria, and is *not* treated with antibiotics. Rather, it is thought to be caused by abnormal prions, which are misfolded proteins concentrated in nervous system parts, particularly the brain, spinal cord, and nerve endings. The risk of contracting the fatal human version of the disease, known as variant Creutzfeldt-Jakob disease (vCJD) cannot be lessened by thoroughly cooking meat products, because prions (unlike bacteria and viruses) are not destroyed by heat. There are no effective treatments for the disease and it is invariably fatal. Worldwide, approximately 150 people have contracted vCJD.

BSE can be transmitted to cows through feed containing certain parts of cattle already infected with BSE. Although the Food and Drug Administration (FDA) banned the practice of feeding bovine protein to cows in 1997, enforcement and compliance have been questionable. Since the recently documented case in Washington State became public, the FDA moved to strengthen the ban by, among other things, placing further limits on use of certain animal protein in cattle feed.

Lessons for Antibiotic Resistance

Both Mad Cow disease and antibiotic resistance result at least in part from unwise choices about what we feed to agricultural animals (resistant bacteria also arise from overuse of antibiotics in human medicine). While feeding BSE-infected protein to cattle can lead to vCJD in humans, feeding medically important antibiotics to livestock leads to the development of antibiotic-resistant bacteria; such bacteria can then infect people directly via food, or via environmental pathways such as water and air. Resistant infections are particularly deadly to vulnerable individuals such as young children, seniors, and people with cancer, organ transplants, or HIV/AIDS.

The thousands of cases of antibiotic-resistant infections every year in the US – which make it harder, or even impossible, to treat serious bacterial diseases – dwarf the number of cases of vCJD that have occurred over the past decade around the globe. And just as action is needed to protect consumers against the risks of vCJD from Mad Cow disease, so too is action needed to reduce antibiotic use in agriculture in order to curtail the spread of antibiotic-resistant bacteria.

Massive quantities of antibiotics are routinely fed to agricultural animals – not to treat illness, but rather to promote slightly faster growth and to compensate for crowded, stressful conditions at intensive-livestock operations. Indeed, an estimated 70% of antibiotics used in the US each year are used as routine feed additives. Widespread agricultural use of antibiotics creates a massive pool of resistant bacteria. Even resistance in harmless bacteria is of concern, because bacteria (unlike higher organisms) can readily share their genetic material (DNA) with one another. In effect, bacteria can, and quite regularly do, teach each other to outsmart antibiotics. This occurs even among unrelated species of bacteria.

MORE

FACT SHEET: (continued)

Recent Developments

While the U.S. government has recently taken some new steps to further limit use in animal feed of materials that may spread BSE, its efforts to curtail use of antibiotic feed additives have been feeble at best. After years of delay, the U.S. Food and Drug Administration recently issued criteria for evaluating the safety of agricultural antibiotics, but stopped short of even setting a schedule for applying those criteria to feed additives now being sold – much less actually proposing to withdraw any from the market.

Meanwhile, several major poultry producers have announced that they have ended the routine use of medically important antibiotics as feed additives (although these claims are not independently verified), and a growing number of independent producers are profitably raising livestock and poultry without such feed additives. Nonetheless, most in the agribusiness and pharmaceutical industries continue to insist eliminating routine antibiotic feed additives would be unaffordable.

Recent experience rebuts this claim: Denmark, the world's largest pork exporter, banned antibiotic feed additives in 1999. According to an in-depth analysis of Denmark's experience by the World Health Organization, the actual economic impact was very small: poultry production costs did not change at all, and pork production costs increased a mere 1%, undetectable to consumers in the grocery store.

The Need for Action

The government was able to implement a ban on certain feed components in a matter of weeks to reduce the risk of spreading Mad Cow disease, and the need for rapid action to limit further spread of resistant bacteria is equally urgent. Bipartisan federal legislation is pending (The Preservation of Antibiotics for Medical Treatment Act, S. 1460/H.R. 2932) that would phase out routine use of medically important antibiotics as feed additives in animal agriculture.

For additional information on Mad Cow disease, see materials by the Center for Science in the Public Interest (www.cspinet.org/foodsafety/saferbeef.html) and the Food Animal Concerns Trust (www.fact.cc/BSE_Main.htm). For additional information on the Preservation of Antibiotics for Medical Treatment Act, see <http://actionnetwork.org/campaign/IntroductionS1460HR2932>.