Our Big Pig Problem

The U.S. should follow Denmark and stop giving farm animals low-dose antibiotics

For more than 50 years microbiologists have warned against using antibiotics to fatten up farm animals. The practice, they argue, threatens human health by turning farms into breeding grounds of drug-resistant bacteria. Farmers responded that restricting antibiotics in livestock would devastate the industry and significantly raise costs to consumers. We now have empirical data that should resolve this debate. Since 1995 Denmark has enforced progressively tighter rules on the use of antibiotics in the raising of pigs, poultry and other livestock. In the process, it has shown that it is possible to protect human health without hurting farmers.

Farmers in many countries use antibiotics in two key ways: (1) at full strength to treat animals that are sick and (2) in low doses to fatten meat-producing livestock or to prevent veterinary illnesses. (It is illegal in the U.S. to sell milk for human consumption from dairy cattle treated with antibiotics.) Although even the proper use of antibiotics can inadvertently lead to the spread of drug-resistant bacteria, the habit of using a low or subtherapeutic dose is a formula for disaster: the treatment provides just enough antibiotic to kill some but not all bacteria. The germs that survive are typically those that happen to bear genetic mutations for resisting the antibiotic. They then reproduce and exchange genes with other microbial resisters. Because bacteria are found literally everywhere, resistant strains produced in animals eventually find their way into people as well. You could not design a better system for guaranteeing the spread of antibiotic resistance.

The data from multiple studies over the years support the conclusion that low doses of antibiotics in animals increase the number of drug-resistant microbes in both animals and people. As Joshua M. Sharfstein, a principal deputy commissioner at the Food and Drug Administration, told a U.S. congressional subcommittee last summer, "You actually can trace the specific bacteria around and … find that the resistant strains in humans match the resistant strains in the animals." And this science is what led Denmark to stop subtherapeutic dosing of chickens, pigs and other farm animals.

Although the transition unfolded smoothly in the poultry industry, the average weight of pigs fell in the first year. But after Danish farmers started leaving sows and piglets together a few weeks longer to bolster the littermates' immune systems naturally, the animals' weights jumped back up, and the number of pigs per litter increased as well. The lesson is that improving animal husbandry—making sure that pens, stalls and cages are properly cleaned and giving animals more room or time to mature—offsets the initial negative impact of limiting antibiotic use. Today Danish industry reports that productivity is higher than before. Meanwhile reports of antibiotic resistance in Danish people are mixed, which shows—as if we needed reminding—that there are no quick fixes.

Lest anyone argue that Denmark is too small to offer a reasonable parallel to the U.S., consider that it is the world's largest exporter of pork. Like U.S. farmers, Danes raise pigs on an intensive, industrial scale. If they can figure out how to limit antibiotic use while actually increasing agricultural productivity, then so can Americans.

The American Medical Association, the Infectious Diseases Society of America, the American Public Health Association, a previous FDA commissioner and many others have advised the U.S. to follow suit. Last year the FDA published new guidelines calling for "judicious use" of antibiotics. Yet it ultimately left the decision on exactly when and where to use antibiotics up to individual farmers. That laissez-faire standard is not good enough, particularly when the health of the rest of the population is at stake.

Of course, the way veterinary antibiotics are used is not the only cause of human drug-resistant infections. Careless use of the drugs in people also contributes to the problem. But agricultural use is still a major contributing factor. Every day that passes brings new evidence that we are in danger of losing effective antibiotic protection against many of the most dangerous bacteria that cause human illness [see "The Enemy Within," by Maryn McKenna, on page 46]. The technical issues are solvable. Denmark's example proves that it is possible to cut antibiotic use on farms without triggering financial disaster. In fact, it might provide a competitive advantage. Stronger measures to deprive drug-resistant bacteria of their agricultural breeding grounds simply make scientific, economic and common sense. SA

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