

For the Record

Straight talk about antibiotic use in food-animal production

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INSIGHTS ON THE ISSUE

No free lunch in banning antibiotics

"There are some remedies worse than the disease."

—Publius Syrus, 1st Century B.C.

Opponents of using antibiotics to improve efficiency of food-animal production argue that ending the practice would save some or all of the human medical costs caused by antibiotic resistance. In testament to the economic uncertainty of the issue, the best guesses about those costs run anywhere from \$100 million to \$30 billion yearly. Yet by ignoring the reality that farmers don't increase their feed costs by an estimated 4 percent to add subtherapeutic antibiotics for the fun of it, those opponents dismiss the very real costs their solution would also carry:

- An estimated across-the-board \$2 billion productivity loss to the pork industry alone. That estimated cost increase would likely be borne most heavily by the smaller, privately owned operations which can least afford to reinvest in improved buildings, labor and veterinary services that would be required.
- Increased food costs along the food chain, from producers to vendors to retailers and, ultimately, to consumers.
- Hidden long-term costs like an

immediate damper on companies' willingness to discover and bring new animal-health products to market.

Like the old parable of the blind wise men who proclaimed an elephant to be a spear, a snake, a tree, etc., depending on which small, narrow part of the whole they laid hands upon, the proponents of the shifty new math of antibiotic resistance never quite grasp the entire

economic picture. The increasing price tag of human health care caused by resistance to antibiotics is a very real cost. But that cost won't be reduced by increasing the cost of food production while ignoring the more painful investments that need to be made in human medicine. As the wit once noted, the only place you find a free lunch is in a mousetrap.

LESSONS LEARNED FROM OTHER INDUSTRIES

Don't just do something; stand there!

Public advocates, legislators, administrators, and members of the mass media today tend to share a bias toward action: Problems like antibiotic resistance can only be solved by swift and decisive movement. The real world, though, often steps in to remind us of the cost of such adolescent haste:

- Blaming an EPA report saying water chlorination might raise cancer risks, officials in Lima, Peru, refused to sufficiently chlorinate the city's already overtaxed water supply. A 1991 cholera epidemic related to polluted water killed almost 3,000 there.
- Limits on logging, grazing and road building on public lands in the West over the last 20 years directly contributed to the tinder buildup that sparked 2001's wildfires. They burned 7.1 million acres and killed 20 firefighters.
- After Washington state law started requiring insurance companies to cover pre-existing medical conditions, so many people waited until they got sick before buying health insurance—and then dropped it once treatment concluded—that the major insurance companies fled the state under logical fear of bankruptcy. By the late 1990s, a private individual could no longer buy health insurance—at any price—in all but three of the state's counties.
- Congress' Corporate Average Fuel Economy standards requiring carmakers to meet ever-increasing demands for fuel savings were intended to reduce air pollution and cut the need for oil exploration and development. In the process, the lighter, less crash-resistant cars it mandates kill and wound 22,000 additional drivers and passengers yearly. And the higher expense encourages owners of older, more-polluting cars to keep them on the road longer.

Also in this issue:

- Without the ability to use production-enhancing tools, family food costs will rise.
- The highest relative costs of banning antibiotics will be paid by future producers.
- The logical paradox behind the 'precautionary principle.'

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Opponents of antibiotic use in animals ignore both the immediate and long-term costs that banning the practice would carry.

If you have questions, or want to learn more about For the Record, contact Steve Kopperud, at skopperud@poldir.com, or visit us online at www.alpharma.com/ahd/For_The_Record

Studies predict real possibility of costlier food

For the record

Although immediate dollar costs to consumers caused by an antibiotic ban may not be large, they are real and they portend deeper, hidden costs.

It might seem obvious—by the fact that 90 percent of all US swine starting rations contain an antibiotic—that the value of those production tools is unquestionable. Ongoing research continues to attempt to assign dollar figures to that value:

Europe's model applied here

Iowa State economist Dermot Hayes extrapolated to the U.S. pork market the effects Sweden and Denmark experienced when those countries banned growth promotants. Assuming a ban in swine only, his modeling for the most-likely scenario

Management peculiar to US producers would probably also make the costs of a ban worse than in Europe, he notes. For instance, Swedish pig farmers don't wean pigs before five weeks, use bedded floors, and allow more pen space per animal.

On the positive side—positive for the industry but not necessarily for individual producers—Hayes also points out that the higher production costs would ultimately cut supply by reducing the number of producers or their output, resulting in higher prices for those remaining. Therefore, for the industry as a whole, net profit caused by an antibiotic ban would

reduce daily gain by 0.5 percent and feed efficiency by 1.1 percent, as well as increase death losses.

All told, for that typical producer after accounting for the cost of the antibiotic, that totals \$1,612, or 59¢ per pig marketed. That's about 9 percent of the net return Illinois producers showed in year 2000, according to Illinois' Farm Business Farm Management Association records.

Most costs are unpredictable

The National Research Council's Committee on Drug Use in Food Animals undertook an admittedly narrowly focused economic analysis in 1998. That study predicts that if subtherapeutic use of antibiotics were eliminated in all food-animal production, including poultry, the lost production advantages would cost consumers about 75 cents per week for a family of four.

However, the study authors acknowledged the potential hidden costs their study method passed over:

- There's no reliable method to estimate the value of any benefits that might result from a ban.
- The study predicts the chilling effect a ban would have on research and development of new products would ultimately be a higher cost.
- Once a subtherapeutic ban were in place, they note, strong incentives would follow to restrict therapeutic use to prevent illegal use of those drugs. That would reduce herd health and increase food costs.

Extra cost per family per week without subtherapeutic antibiotics

	With antibiotic substitutes	Without antibiotic substitutes
Chicken	8¢	17¢
Turkey	0¢	4¢
Beef	15¢	31¢
Pork	11¢	23¢
Total	34¢	75¢

Source: Committee on Drug Use in Food Animals, Panel on Animal Health, Food Safety, and Public Health, National Research Council. 1999. Costs of Eliminating Subtherapeutic Use of Antibiotics, in The Use of Drugs in Food Animals: Benefits and Risks. (Washington, DC: National Academy Press).

Predicted production losses caused by banning subtherapeutic antibiotics

	Best case	Most likely case	Worst case
Age at weaning	No increase	+1 week	+1 week
Days weaning to 50 lbs.	No increase	+5 days	+12 days
Feed efficiency 50 to 250 lbs.	No change	-1.50%	-1.50%
Piglet deathloss	1.50%	1.50%	4.00%
Finisher deathloss	No change	0.04%	No change
Pigs/sow/year	No change	-4.82%	-3.84%
Vet and therapeutic drug costs (Net feed cost per pig of feed antibiotics)	\$0.25	\$0.25	\$0.25

Source: Hayes DJ, Jensen HH, Backstrom L, Fabiosa J 1999. "Economic Impact of a Ban on the Use of Over-the-Counter Antibiotics." Staff Report 99-SR 90, Center for Agricultural and Rural Development, Iowa State University.

predicts a cost increase to producers of \$6.05 per head initially, dropping to \$5.24 per head after a decade without antibiotics. Those costs include higher death loss after weaning and slightly slower growth in all stages. He also included an additional week before weaning and construction costs to add sows to account for lower reproductive efficiency. His costs do not, however, include losses at the packing-plant caused by inconsistent animal size among groups.

Hayes warns that his study's numbers must be taken as averages—that the assumption masks wide differences from farm to farm. He suspects a ban would be relatively harder on concentrated operations in locales with many neighboring farms, in older buildings... in other words, in the traditional hog-rearing areas.

likely decline only by 79¢ per head, meaning the lost profit to the industry would total just over \$1 billion in today's dollars. That cost increase would raise the retail price of pork by 5¢ per pound, costing consumers \$748 million per year.

Expected cost: 9 percent of net

University of Illinois Veterinary pathologist Gay Miller and a team of researchers compiled data from the USDA NAHMS survey of US pork operations to predict the effects of a ban using current real-world domestic data.

Based on the management of a typical independent farrow-to-finish Midwest producer raising from 1,600 to 6,000 head yearly, Miller estimates that losing the use of antibiotics at subtherapeutic levels in the grow/finish phase would likely

Lost benefits would contribute to higher costs

Proponents of banning low-level livestock antibiotics rarely—if ever—grant that their theoretical savings in human health costs would only be purchased by producers' loss of the following [benefits of using antibiotics in food production](#), according to the Animal Health Institute:

■ **Better animal health:** Nearly all of the growth-promoting feed-through products are also used to treat and prevent a variety of illnesses in food animals, including coccidiosis and gastrointestinal disease, respiratory disease, liver abscesses, and metabolic imbalances in cattle. It is not unreasonable to expect that access to those applications would also be restricted once growth promotion were banned. The 1998 National Research Council economic analysis, for instance, granted that if those drugs remained legal for treatment after growth promotion uses were banned, a portion of producers would continue to use them illegally. Therefore, they concluded, some further legal controls on treatments will ultimately follow.

■ **Reduced death loss:** There's a fine line between subtherapeutic antibiotic use and mass medication to prevent a later disease outbreak. For instance, mass antibiotic application is particularly valuable in establishing early control of bovine respiratory disease, the leading cause of death loss in stocker and feedlot cattle and a \$700 million annual drain on that industry.

■ **Controlling outbreaks:** The judicious use of antibiotics suppresses the natural level of disease in herds and flocks before it spreads. By controlling those breaks, low-level antibiotic use avoids an increased reliance on therapeutic antibiotics at a later date, including compounds important in human medicine. Just such an unintended consequence was witnessed in Denmark, where overall use of antibiotics increased after subtherapeutic use was banned—and this, in a country where half the hogs

on records systems are certified pathogen-free and thus already, theoretically, on a relatively high health plane.

■ **Affordable food:** When used for health maintenance, antibiotics decrease the amount of feed needed, increase the rate of weight gain and improve feed efficiency, contributing to a high-quality, more affordable meat supply for consumers.

■ **Safe food:** Ironically, evidence shows that antibiotic use which reduces the pathogen load in a herd and individual animals actually decreases the chance that animal disease organisms will move up the food chain to cause food poisoning.

■ **Improved overall public health:** Better diets directly improve public health. By making nutrient-dense meat, milk and eggs more affordable and available, responsible antibiotic use improves overall public health.

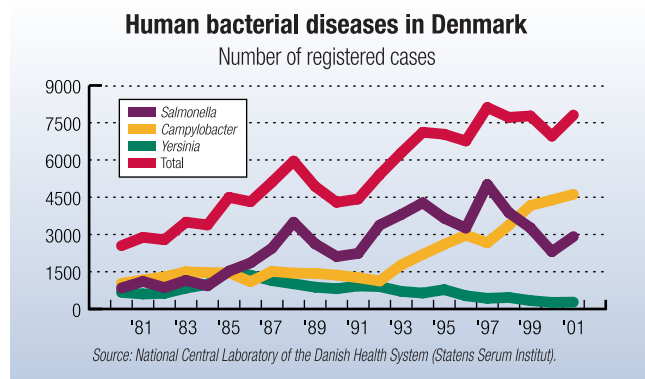
■ **Meeting global demands:** Demand for high-quality protein is being found in every country and region where incomes are rising. Agricultural production will have to triple over the next 40 years, mostly to feed a peak world population of 8.5 billion with a growing demand for milk and protein-rich meat. Decreasing production efficiency by banning antibiotics will increase costs for those food products, limiting their availability.

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Any theoretical benefit of banning antibiotic use in animals wouldn't come for free. Numerous benefits would be sacrificed in the process.

Dubious benefits

In return for the lost benefits, there's little guarantee banning antibiotics will make any positive impact on human health. The Danish experience bears this out, where rates of food poisoning caused by the two most common bacterial contributors, *Salmonella* and *Campylobacter*, continued to rise after banning antibiotics as growth promoters.



Recent research from University of Georgia's Scott Russell supports the contention that by holding down the level of subclinical herd disease through the use of antibiotics, animals—in this case poultry—go to market with fewer pathogens in their systems, and thus less potential to cause food poisoning in consumers. Tests on 3,200 randomly sampled broilers passing through a USDA inspected processing plant showed that birds coming from flocks with a higher incidence of lung disease caused by *E. coli* are far more likely to:

- Be contaminated with fecal material during processing
- Have a potentially contaminating tear made in the viscera during processing
- Carry higher levels of *Campylobacter* and *E. coli*. Previous work showed similar likelihood of contamination with *Salmonella*.

Source: Russell, S (2002). *Poultry Health Impact On Food Safety*. Proceedings of the 37th National Meeting on Poultry Health and Processing.

The less obvious risk we all face

My son, who runs the hog enterprise on our family farm since his father and I retired from livestock production, says this to me about the judicious use of antibiotics in pork production: We may be able to live without them, but it's going to take longer to get our products to market. We'll have to change



Sandy Greiner
State Legislator
Keota, Iowa

production cycles, facilities and management. But in the long run, we can probably live without them.

But there's one risk that concerns him as a producer—a risk we may not be able to live with. The science has demonstrated that without tools like antibiotics to address natural herd disease levels, the potential for food contamination outbreaks greatly increases. My years in commodity promotion work taught me it would take only one or two

high-profile incidences with *E. coli* or *Salmonella*, and there would suddenly be less demand for our product. And that means hardship many producers might not survive.

In my role now as a public official, my responsibility is to try to balance the risk of harm to both consumer and producer. But wouldn't it be tragic if, by rushing into hasty action in the name of good intentions, we ended up inadvertently harming both?

For the record

Today's food consumers demonstrate little patience for understanding the challenges of producing and delivering a safe, wholesome and economical food supply. For the Record, sponsored by a grant from ALPHARMA, is designed to help unite the industry and provide a unified, rational message to consumers facing the disinformation campaign against using food-animal antibiotics. Working together, we can set the record straight.

INSIGHTS ON THE ISSUE

Flawed, 'precautionary' logic

When Europe's courts upheld in late 2002 the ban on growth promotants there, it committed to accepted law the "precautionary principle." Japan, likewise, now appears to be heading toward basing animal-drug regulation on this non-science-based approach.

First enumerated by a 1992 global conference on the conflicts between development and environmentalism, the precautionary principle holds that the traditional

standard of balancing risks against potential benefits is no longer sufficient. Decisions should now err on the side of precaution, it says. In other words, as Europe's legislators have demonstrated in practice, antibiotic feeding should only be permitted after companies can prove it carries no risk.

Yet, Iowa State bioethicist Gary Comstock makes an elegant logical proof that the precautionary principle is flawed logically. Using the same

principle, he can prove two entirely opposite conclusions.

<p>1. There's no scientific certainty that genetic modification of crops and animals won't harm the environment.</p>	<p>2. But lack of scientific certainty is no reason to postpone cost-effective measures to protect the environment.</p>
<p>We must develop genetically modified foods.</p>	<p>Therefore, we must not develop genetically modified foods.</p>
<p>2. But lack of scientific certainty is no reason to postpone cost-effective measures to protect the environment.</p>	<p>1. There's no scientific certainty that genetically modified foods will protect the environment by feeding more people on fewer resources.</p>

LOGICAL CONCLUSIONS UNDERLYING THE DEBATE

Costs in killing innovation for tomorrow

The National Research Council's study on the costs of banning antibiotics acknowledged—without assigning a dollar estimate—that one of the biggest potential costs was not the effect a ban would have on animal production today, but on tomorrow's. Without confidence that they could recover the investment, the authors noted, drug companies would likely significantly curtail their development of future products.

The Animal Health Institute contends that the regulatory hurdles FDA puts animal drug makers through—coupled with a drift away from basing decisions on sound science—is already stifling innovation. An AHI survey of its member companies for fiscal 2001 found that despite steady increases in FDA's funding and personnel, and a declining number of new drug applications, 90 percent of the agency's responses to a sponsor's

request to review a new animal drug application were late—the longest delayed for 862 days. Almost 90 percent of the companies said they believe FDA's regulatory process has become virtually unpredictable.

"The deadlock at the Center," according to AHI's Ron Phillips, "has a chilling effect on the animal health industry's investment in important research and development, threatening the pipeline of products. ..."

