

Antibiotics: Animals also face drug-resistant infections

Continued from Page 1

lives and killing one infected person in the U.S. every 15 minutes.

Some people blame the crisis on doctors for over-prescribing antibiotics; others accuse livestock producers of drug overuse in food animals. But drug resistance is a wickerwork of interconnecting causes and consequences, and experts say the public should focus less on finger-pointing and more on solutions.

“If you understand antibiotic resistance, then it hasn’t been explained to you adequately,” said Mike Apley, veterinarian and professor at Kansas State University’s College of Veterinary Medicine.

‘Wonder drugs’
Antibiotics such as penicillin, dubbed the “wonder drug of World War II,” have saved countless lives.

Alexander Fleming, the scientist who discovered penicillin, wrote, “When I woke up just after dawn on September 28, 1928, I certainly didn’t plan to revolutionize all medicine by discovering the world’s first antibiotic, or bacteria killer. But I suppose that was exactly what I did.”

Yet Fleming recognized the danger of his discovery’s misuse. In his 1945 Nobel Prize acceptance speech, he warned against the potential for resistance.

“But did we pay attention to that warning?” asked Ellen Silbergeld, a Johns Hopkins University professor who has worked with the World Health Organization on antibiotic resistance. “No. We humans have not been very careful in how we’ve managed antibiotics.”

Health care providers have grown dependent on these miracle drugs. According to the Centers for Disease Control and Prevention, about 47 million antibiotic courses, or 30%, are prescribed annually in U.S. medical facilities for infections that don’t need antibiotics. The result: bacteria that can survive, or resist, antibiotics used against them.

Animals, too, face drug-resistant infections.

Producers say antibiotics in moderation are as necessary to animals as to people. Humane livestock production, they say, means sick animals must be treated, not left to suffer.

The first antibiotics were not intended for animals. But in 1950, an American company, Lederle Laboratories, noticed chickens grew faster when fed the antibiotic chlortetracycline. The drugs bounded in popularity as producers used them to fatten animals, prevent disease and treat illness.

But overuse in animals, as with people, has engendered resistant bacteria. And as antibiotics become less effective, more livestock die from incurable infections.



Sierra Dawn McClain/Capital Press

The Homer Ranch’s cows and their calves follow his truck as he rolls out a bale of triticale on a snowy January morning.

Old drug, new tricks
The burden would be lightened if researchers developed new classes of antibiotics. But that’s not happening.

“The antibiotic groups farmers have today are likely the same ones they’ll have for the rest of their lives,” said Apley of Kansas State University.

The last new antibiotic group was introduced in 1978. Since then, new antibiotics have been released, but they represent chemical modifications of existing groups rather than new classes.

This is because of the scrawny economic incentive. A U.S. Food and Drug Administration spokesperson told the Capital Press it costs about \$2 billion to develop one new drug, but since doctors and veterinarians are encouraged to prescribe antibiotics in moderation, the return on that investment is slim. And because resistance can develop in six years, the long-term effectiveness of any new drug is fleeting.

That’s why, Apley said, scientists call this the “post-antibiotic era.” He said hospitals and farmers should use antibiotics judiciously to make sure the drugs in their toolkit keep working.

Bacteria and opossums
Resistance is not about bacteria “outsmarting” medications or the researchers who developed them. It’s about how quickly bacteria multiply under pressure.

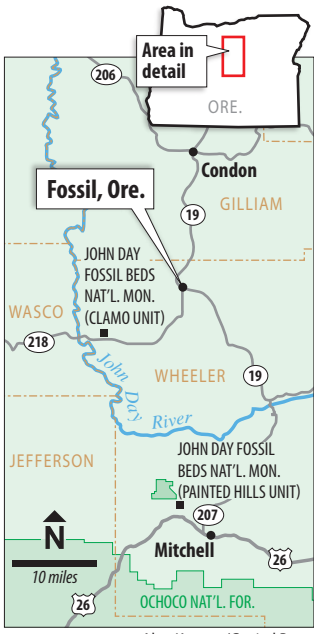
“Bacteria are like opossums. They’re stupid and they have a lot of offspring,” Apley said.

Resistance, or as Apley calls it, “the R-word,” is part of the biological struggle for survival. Under pressure, bacteria reproduce exponentially.

“Get ‘em backed in a corner in tight little populations, and they’ll fight,” he said. “Drugs are powerful tools we need, but if we press these populations too hard, they’ll spring up stronger.”

Species-blaming
Although CDC reports show hospitals are the main epicenters of drug-resistant outbreaks, researchers have identified relationships between bacteria-resistant genes in pathogens such as E. coli and salmonella that are found in both humans and farm animals.

Many infections, however,



Alan Kenaga/Capital Press

have no connection to agriculture. For example, drug-resistant klebsiella, which can cause pneumonia, arose not from food animals, but from sources such as human sewage.

“Some resistant infections aren’t linked to livestock in any way, and others are,” said Apley. “It’s scientifically unfounded and wrong to think use in livestock is the only driving force in resistance. But it’s naive to think it’s not connected at all.”

William Flynn, deputy director for science policy at the FDA’s Center for Veterinary Medicine, said antimicrobial stewardship begins with prevention. He encourages farms to work with veterinarians to identify husbandry, housing or production practices that could reduce illness.

Prevention in practice
Mehrten Homer, president of the Painted Hills Natural Beef co-op, backed his truck toward the barn and, with an assist from his automated Hydra Bed, hoisted a round bale of sweet-smelling triticale onto his pickup.

Then he drove toward higher pastures, bumping along the narrow road that snaked around the ridge of the hills. It was a January morning and the yellow-brown slopes of Fossil, Ore., were scumbled with white snow.

At 74 he still works outside six hours a day.

“I can’t quit,” he said. “Don’t even know what that

word means. Why retire when you love what you’re doin’?”

On the hilltop, he unwound the mammoth hay bale and called the cows and their calves with a cooing noise. He coaxes rather than drives his animals to new pasture to reduce their stress.

The cows tramped forward. A bald eagle swooped overhead, and a bony coyote slipped through the grass, glancing over its shoulder before disappearing over the ridge.

Here, on 17,000 acres, Homer and his family raise cattle for Painted Hills. The majority of their animals come from auctions, but they also keep a herd of breeding stock.

The business has always raised cattle antibiotic-free. It isn’t easy or cheap, Will Homer, Mehrten’s son, said. But he said the beef is healthier and tastier that way.

Raising healthy cattle
The Homers use management strategies to limit illness.

For most of their lives, the cattle graze on foothills in groups of 100 head. It takes about 35 acres to support a single animal, Mehrten Homer said.

At 14 months, the cattle are moved to a feeding facility for finishing with corn, barley and alfalfa.

Perry Martin, feed lot manager, said keeping the animals robust is his priority.

“We do everything we can to keep these animals healthy and safe short of wrapping them in bubble wrap,” Martin said.

A conventional feed yard affords each animal only 9 to 12 inches of bunk space at the feed trough; Martin stocks by square footage of the feedlot instead, giving each animal 200 square feet.

Genetics play another crucial part in disease prevention.

“We study genetic backgrounds and keep deep records,” Martin said. “We use those lines that have a history of staying healthy.”

Geography and climate play a role, too. Cattle from wetter areas are more disease-prone, he said.

Because stress leads to sickness, when new calves arrive on the ranch, they are given 24 hours to eat and rest. They also get vaccines, said Will Homer.

He has established relationships with trucking companies to ensure drivers transporting cattle drive slowly to keep animals calm.

Allowing cows to birth naturally also reduces illness, Mehrten Homer said. Calving takes place on the range underneath juniper trees — “those nasty water-sucking leeches,” as he calls them — which stay dry under their canopies.

Part of preventing infections, said Will Homer, is cultivating industry knowledge. The Homers said technology has advantages, but many decisions should still be rooted in “good old-fashioned knowledge” like body scoring, a visual rating system for conditioning.

At the slaughterhouse
According to Buck McKay, a public affairs specialist for the USDA, the agency’s Food Safety and Inspection Service approves the claim “antibiotic free” and similar labeling for animals that never receive antibiotics.

To use this label, producers must provide documentation. The USDA has the right to enforce, but critics say inspections are rare.

A producer may choose to house animals that have received antibiotics in the same facility as antibiotic-free animals. The USDA merely requires these animals be marked and separated before slaughter — with a colored ear tag, for example. Producers typically sell these meats on a different market, either under their own brand name or to another.

Painted Hills Natural Beef follows this pattern. The company works with a Tyson plant in Wallula, Wash., to process their animals — “everything but the moo,” as Will Homer says. In the morning, when the facility has been sterilized from the previous day, the Homers send their antibiotic-free animals to Tyson for processing. The few animals that received antibiotics when sick are sent to the slaughterhouse in a separate batch at the end of the day to avoid cross-contamination and are sold to another brand.

This method isn’t foolproof. The journal Annals of Agricultural and Environmental Medicine shows antibiotic-resistant bacterial strains have been found on surface swabs from slaughterhouses across the U.S., even after cleaning. But a combination of antimicrobial spray treatments on carcasses and keeping batches of animals separated has been proven to radically reduce the amount of E. coli in processed meat.

When steaks are high
Consumer expectations are shifting, and producers are changing to meet demands.

Tyson has reduced the use of antibiotics in its chicken flocks by using probiotics, essential oils and improved breeding practices — although the business still uses some poultry feed with shared-class antibiotics.

McDonalds, Wendy’s and Taco Bell no longer buy chicken from growers using medically important antibiotics. “Medically important” is a designation for antibiotics crucial to curing human diseases.

Despite the changes, Silbergeld, of Johns Hopkins, said combatting antibiotic resistance is impossible without greater public pressure to push companies to use drugs responsibly.

But public pressure is far from overpowering.

First, while 73% of U.S. consumers are more likely to choose products labeled “natural,” an unregulated umbrella term that means little in practice, only 35% of consumers seek labels such as “no antibiotics,” according to Information Resources Inc., a market research firm.

Second, many consumers may not be able to afford antibiotic-free options. According to Jerome Rosa of the Oregon Cattlemen’s Association, “antibiotic-free” beef costs about 5-10% more than conventional beef.

The most recent data on food stamps — formally called the Supplemental Nutrition Assistance Program — shows nearly 35 million people in the U.S. receive benefits, and the average SNAP benefit per person amounts to \$1.40 per meal. For many low-income families, choosing pricier labels such as “antibiotic-free,” even if desirable, is not affordable.

So the market continues for meat from food animals that may have been given antibiotics.

Whatever the consumer demands, Will Homer said Painted Hills Natural Beef will keep producing beef without antibiotics.

“I actually think it’s tougher on the animals,” he said. “They have to be harder. But because it’s the right thing and improves meat quality, we’ll keep doing it.”

A job ‘well done’
Painted Hills Natural Beef continues to expand its business.

“I couldn’t have done it without my family,” said Mehrten Homer. His two sons work with him – Will in the office and Lee on the ranch. His grandkids, too, live in Fossil. “And my wife Glenda. You wouldn’t believe the work she’s done. Why, she’s a one-man show.”

Sunlight caught in Mehrten’s eyes. He grinned. “I love my cows, love my family. Can’t have no better than this. What else is there?”

Back at the Painted Hills Natural Beef office, Mehrten tapped the snow off his boots, then plodded inside. The room smelled of hickory-smoked beef jerky. Mehrten and Will were getting ready to send out a sales representative to offer samples at grocery stores such as Market of Choice, where it all started.

This time, the person at the meat counter wouldn’t be laughing at them.

Groundwater: Nitrate is found in most fertilizers and manure

Continued from Page 1

to such high levels of nitrates and nitrites in food and drinking water may be linked to a condition called methemoglobinemia, or a decreased ability of blood to carry oxygen in the body, according to the federal Centers for Disease Control and Prevention.

J.R. Cook, founder and director of the Northeast Oregon Water Association, said Hansell’s bill directs the task force to study groundwater connectivity in the basin, which in turn will lead to more targeted, site-specific solutions for reducing nitrates.

“There’s been a ton of work in the (management area) to identify each and every potential contributor and develop game plans for each of those nutrient loads,” Cook said. “But what we need to do is get into a task force and then break it out by aquifer, because what we can do to manage (nitrates) in one area isn’t going to be a fix for another area.”

The proposal comes as activists with eight groups and one individual filed a petition with the EPA on Jan. 16 requesting emergency action in

the management area. Among other measures, the petition asks the federal government to ban any new confined animal feeding operations, or CAFOs, in the basin, such as the Easterday Farms Dairy near Boardman.

The petition was signed by Food and Water Watch, Friends of Family Farmers, WaterWatch of Oregon, Columbia Riverkeeper, Humane Voters Oregon, the Animal Legal Defense Fund, Center for Food Safety, Center for Biological Diversity and Eileen Laramore, a resident of Hermiston.

Nitrate is found in most fertilizers and manure, which are frequently applied to cropland in the area. The activists’ petition claims CAFOs are a primary contributor to elevated groundwater nitrates.

Ten CAFOs are currently permitted in the basin with a combined 148,000 animals, according to the petition. Easterday Farms Dairy would add 28,300 cattle if approved by the state.

“Mega-dairies externalize their significant public health and environmental costs to the people of Oregon, and if our

state legislators cannot protect Oregonians, we must enforce our federal laws to protect community drinking water,” said Amy van Saun, an attorney with the Center for Food Safety.

Critics, however, say the groups used generalized and cherry-picked data to target one specific industry.

While Cook acknowledges there are “hot spots” of elevated nitrates in the basin, he said there is no “smoking gun” that suggests dairies or farms are entirely to blame. Contamination comes from multiple sources, he said, including legacy pollution from past land uses dating back to the 1940s and 1950s.

“Some of these areas have shown significant improvement, if you localize the data under best management practices and voluntary measures,” Cook said.

The goal now should be fixing the problem, Cook said, not arguing over whose fault it is.

“If you get rid of CAFOs, the nitrate problem is not going to magically go away,” Cook said. “If you get rid of irrigated agriculture, it’s not going to magically go away.”

WOTUS: ‘Farmers are dependent on protecting our natural resources’

Continued from Page 1

need regulatory certainty and clarity as well as a commonsense framework for how the rules will work,” he said.

National Corn Growers Association said the 2015 WOTUS rule would have increased regulatory burdens and costs for farmers.

“Farmers are committed to protecting the environment and implementing on-farm soil health practices like planting cover crops, reducing tillage and more carefully managing crop residue,” Kevin Ross, NCGA president, said.

“This new rule gives the flexibility and clarity needed to implement stewardship practices without the threat of government action,” he said.

The American Soybean Association said the 2015 rule was cumbersome and confusing, and the new regulation will better provide certainty and clear direction for farmers.

“We have long rallied for a replacement rule that protects our waterways

while still offering a workable solution for farmers and that does not impose undue burden on agriculture,” Bill Gordon, ASA president, said.

National Cattlemen’s Beef Association said the 2015 WOTUS rule was an “illegal” effort to assert control over private property.

“NCBA relentlessly fought WOTUS on Capitol Hill, at the agencies and in the courts. Today, we can rest a little easier knowing that some power has been put back in the hands of landowners,” Jennifer Houston, NCBA president, said.

National Pork Producers Council said the new rule gives farmers greater certainty while also protecting water quality and the environment.

“The previous WOTUS rule was a dramatic government overreach and an unprecedented expansion of federal authority over private lands,” David Hering, NPPC president, said.

“We’re pleased EPA has finalized a common-sense

rule, the Navigable Waters Protection Rule, that works with — not against — farmers to protect our nation’s waterways,” he said.

National Milk Producers Federation said the new rule puts an end to years of contentious rule-making and will provide a common-sense approach to regulating waters of the U.S.

National Association of State Departments of Agriculture said the new rule will provide farmers with certainty and a clear view of how water will be regulated on their land.

“As leading state agriculture officials, NASDA members are responsible for protecting natural resources in conjunction with the Clean Water Act,” Barbara Glenn, CEO of NASDA, said.

“We have been functioning under a tangled patchwork of water regulation for far too long. We look forward to working with the EPA to implement the rule and eliminate ambiguity while safeguarding our nation’s water resources,” she said.