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Congressional Briefing on December 2, 2009 Antibiotic Resistance: A Multi-Billion Dollar Healthcare Crisis

Presenters:

Rep. Louise Slaughter (D-NY) – PAMTA sponsor

Dr. Robert Lawrence – Director, Center for a Livable Future

Dr. Ramanan Laxminarayan – Senior Fellow, Center for Disease Dynamics, Economics, and Policy; Resources for the Future

Dr. Lance Price – Director, Center for Metagenomics and Human Health; Translational Genomics Research Institute

Dr. Michael Blackwell – Vice Chair, Pew Commission on Industrial Farm Animal Production; veterinarian

Robert Martin – Executive Director, Pew Commission on Industrial Farm Animal Production

Rep. Slaughter explained that PAMTA would be saving seven classes of antibiotics for human use, all of which are critically important for human health and are currently used in animal feed, including penicillins and tetracyclines. She cited that 70 percent of antibiotics used in the U.S. are used in farm animals for growth promotion and disease prevention, which compensates for unsanitary conditions. There is data conclusively linking this use to antimicrobial resistance in humans and to contaminated groundwater. Two million Americans get bacterial infections in hospitals every year, and 70 percent of these are resistant. Meanwhile, farmers can buy antibiotics in 50 lb bags. As other countries ban the use of antibiotics for growth promotion, U.S. trade will suffer if we do not as well. Nations that have bans can refuse imports from countries that do not, and pork accounts for 15 percent of U.S. total production and is sensitive to international markets. PAMTA would phase out the use of these seven classes of antibiotics for non-therapeutic use in animals and stop farm animals from being used as incubators for resistance.

Dr. Laxminarayan argued that evidence specifically linking use of antibiotics in farm animals to resistance in humans is not necessary for action to be taken to ban the use of growth promoters. It's self-evident, he said, that resistance will occur whenever antibiotics are used, and using them in farm animals creates a huge selection pressure. There is the same amount of science connecting farm use to human resistance, he said, as

there is connecting smoking to lung cancer. We need to think of antibiotics as a shared resource and different from all other classes of drugs, but there are disincentives for this mentality.

A paper from Dr. Laxminarayan coming out next month shows that gram negative resistant bacteria are increasing, and the U.S. has one of the highest MRSA rates in the world, behind only Japan and Korea. There were three times as many MRSA infections in 2004 than in 1995, and MRSA infections are twice as deadly as non-resistant infections. In 2005, 19,000 people died from MRSA, and 48,000 from sepsis and pneumonia related to resistance. When resistance to a drug begins to develop, doctors shift all of their patients to a new antibiotic, rather than testing specific cases for sensitivity. This means that all patients are using more expensive antibiotics. The annual cost of increased resistance may be anywhere from \$378 million to \$30 billion. It's difficult to measure resistant bacteria in hospitals, since there is no DRG for this, he said. Antibiotic use isn't always inappropriate, and it's much easier to target growth promotion than hospital use. No one in a hospital setting – doctors, patients, insurance companies – has incentives for using antibiotics well. But antibiotic resistance is a more immediate problem than climate change, and we need to think of these drugs as a natural resource. All types of use select for resistance, so we need to stop antibiotics from being used where they don't need to be used – for non-therapeutic purposes in farm animals.

Dr. Price gave some of the basic science behind antibiotic resistance, explaining how applying antibiotics to a mixed community of bacteria selects for the resistant ones to survive and multiply. Most of the antibiotics used in agriculture are also used in humans, which selects for cross-resistant bacteria. A farm system that requires us to use as much antibiotics as we do to prevent production disease, he said, is broken. There are 9 billion food animals in the U.S., and most are raised in CAFOs. Resistant bacteria are selected for and colonize the guts of farm animals, then contaminate the carcasses at slaughter. He cited that 90 percent of chicken breasts are contaminated with *E. Coli*, up to 50 percent of which are resistant to some antibiotics. He also cited a 2007 study that showed that resistant and sensitive bacteria in chickens look similar, but that resistant bacteria in humans looks like poultry bacteria, arguing for the link between food source contamination and human resistant infections. He said that data from the EU shows a proportional decrease in resistance in animals and humans when antibiotics stopped being used for growth promotion, and showed CIPARS data on the decrease in cephalosporin resistance in human infections after the 2005 Canadian voluntary ban. We have to eliminate all unnecessary uses of antibiotics, he said, and this starts with growth promotion.

Dr. Blackwell wanted to give the veterinary perspective on the issue, and is upset that the U.S. farm system has evolved not to take advantage of veterinary training. More than 60 percent of human infections are found in the animal world, he said, and while veterinarians have the broadest prescription authority of all medical professionals, they can't control the drugs that are used in the food supply. He explained the different uses of antibiotics in animals: necessary therapeutic use that is targeted to individual animals, prophylactic use that occurs after exposure or before an expected exposure, and non

therapeutic/routine use, for example as growth promotion, a technique we still don't fully understand.

Many drugs used in the food supply are available to laypeople, and veterinarians are not required to oversee their use. To strengthen this point, he cited that pet owners have less access to antibiotics than lay people involved in producing our food supply, because food animals are classified as "unprocessed food." This needs to change. He wants a stop in non-therapeutic use and a requirement for veterinary oversight of all antimicrobials used in animals. In 1977, he said, this requirement was proposed, but Congress blocked any action. Currently, a layperson has the same ability as a vet when it comes to administering antibiotics. He said that options other than antimicrobial use need to be employed to prevent disease – for example, improved animal husbandry practices. We need better surveillance, monitoring and reporting to obtain drug use data and conduct risk assessments. We also need more public financing of resistance research to reduce the bias and conflict of interest involved.

Mr. Martin said that the CDC has recognized that antibiotic resistance is at an epidemic level and has settled the link between antibiotic use in animals and resistance in humans. The Pew Commission has reported that the food production system is unsustainable for public health and for the economies of the communities where big farms are located, but there is resistance to change from the agro/industrial complex, academics that get their funding from them, and from their supporters on Capitol Hill. Pew's report, "Putting Meat on the Table: Industrial Farm Animal Production in America" gives 24 recommendations for solving the problems created by CAFOs, five of which involve the use of antibiotics in food animal production. The #1 recommendation was to ban the non-therapeutic use of antibiotics in animals. There are some times where prophylaxis is okay for short periods of time, for example when animals are being shipped to slaughter. He echoed previous arguments that we need more monitoring and oversight of antibiotic use. Americans die at a higher rate from resistant infections than from HIV/AIDS, he said. He cited APUA's data that resistance costs us \$26 billion a year. This is a societal cost for all people. In addition, the costs around operations include more asthma and more antibiotics in groundwater. Industrial operations are incubators for the flu, he said, and the Commission predicted a flu outbreak before it occurred.

In Denmark, the Pew team talked to farmers and public health officials. Since the ban on non-therapeutic use in 1998, there has been a 50 percent decrease in antibiotic use, while production has increased 47 percent, and only minor changes in production were required. The most important change in production, he said, was a system of later weaning for swine, from three weeks to four or five. People that oppose the ban do so for reasons other than science, he said. PAMTA now has 86 co-sponsors in the House, and 10 in the Senate.

Questions

Q from the National Farmers Union: The Danes found that small farmers couldn't compete when they instituted their ban; will a U.S. ban lead to more concentration here?

A from Mr. Martin: in the U.S. there is already less concentration, and the Danish system is more management-intensive than ours is. When the ban is instituted with other

Commission recommendations, more people would actually need to be involved in production.

Q: Is there a poultry counterpart to moving away from crowded facilities in swine operations?

A from Dr. Price: There are the same trends for poultry as in pork production, with a decreasing number of operations despite more animals being raised. The Danes found that banning the non-therapeutic use of antibiotics meant a necessary change in the way animals are raised to give them more space.

Q: What are the arguments made by pharma and big ag against the ban?

A from Dr. Price: They pitch it as an animal rights issue.

From Dr. Laxminarayan: Antibiotics are a resource that is not being controlled; someone else will sell antibiotics if they don't. This is the rationale for government involvement.

From Dr. Lawrence: A cost effective analysis of the ban shows that the time to market for pork is a day longer and mortality is slightly higher without non-therapeutic antibiotics, but using antibiotics is more costly when their price is included.

Comment from representative from the pharma antibiotic task force: he is in support of PAMTA, and so are all of his colleagues that he knows of.

Q: Resistant pathogens move between countries – how can we protect our food supply from antibiotics used elsewhere? Where will antibiotics that are being produced go if we don't use them in farm animal production?

A from Mr. Martin: PAMTA is only a U.S. bill, but the U.S. is behind most other countries. We are the largest user of antibiotics in food animal production; all of the EU will line up with Sweden and Denmark. The U.S./EU Transatlantic task force is not dealing with antibiotics in food animals, and our use will become a trade issue.

From Dr. Price: Until we enact these laws in our country, we can't protect our food supply or become a global leader on this issue.

From Dr. Blackwell: There is harm originating outside the U.S. especially in the seafood industry, which has been called organized crime. The FDA inspects less than five percent of what's coming in to the country. We need better surveillance.

Q from National Farmers Union to Blackwell: Has he served in a large animal vet clinic? The farmer is a layperson who gives antibiotics in consultation with a veterinarian, but his area doesn't have enough vets for them to administer the drugs.

A from Blackwell: Yes, he has. He has found that the claimed shortage of veterinarians is actually not the case. He is asking for codified oversight from veterinarians of all antibiotic use.

From Mr. Martin: There is also a bill that's been introduced in the Senate (from Stabenow) that would help relieve veterinary shortages.