

**Dan Kalb, Union of Concerned Scientists
Testifying on behalf of the Keep Antibiotics Working Coalition**

**Presented to California Senate Committee on Food & Agriculture
Addressing the Public Health Impacts Resulting From the Non-Therapeutic Use of
Antibiotics in Our Food Supply: Are We Creating a Superbug'?**

Tuesday, March 17th, 2009

Chairman Florez, Vice Chairman Maldonado, and other committee members,

My name is Dan Kalb and I am presenting this testimony today on behalf of Keep Antibiotics Working, a coalition of health, consumer, agricultural, environmental, humane and other advocacy groups with more than ten million members dedicated to eliminating a major cause of antibiotic resistance: the inappropriate use of antibiotics in food animals.

We are here today because the overuse and misuse of antibiotics is a major threat to public health, one of the “top concerns” of the country’s premier public health agency, the Centers for Disease Control and Prevention. Antibiotic use selects for microorganisms resistant to antibiotics, thereby rendering the drugs ineffective in treating disease. Antibiotic use occurs predominantly in human medicine and agriculture. Unnecessary use in both venues needs to be curtailed to prolong the effectiveness of vital human medicines.

California citizens, like many other Americans, have had experience with antibiotics that did not work. Sometimes resistance means several days of unnecessary pain and suffering while doctors figure out that another drug is needed. But increasingly resistance leads to more serious consequences. Treating a patient with a drug that proves not to work can give an infection a chance to progress to a more serious illness.

Not only are antibiotic resistant diseases more difficult to treat, evidence shows that resistant bacteria are more likely than susceptible bacteria to cause systemic blood infections and require hospitalization. The bottom line is more human suffering, more days out of work, and higher medical and drug costs. At risk are the miracle drugs of the 20th century.

Human medicine has stepped up to the plate and implemented programs to reduce antibiotic use, but agriculture has not. Yet agriculture uses the lion’s share of the antibiotics in the United States—an estimated 13 million pounds of antibiotics every year, about 70 percent of total. These antibiotics used in agriculture are the very same as those used in human medicine—penicillin, tetracycline, erythromycin, and others. Why does agriculture use such huge quantities of antibiotics? Surprisingly most of the antibiotics are not used to treat disease. Instead they are often used to promote growth and compensate for crowded, stressful conditions. Large concentrated feeding operations are responsible for most of the overuse.

For many years, agriculture has justified its continued reliance on human use antibiotics by questioning the strength of the link between agricultural antibiotic use and the compromised effectiveness of human drugs. Whatever its strength in the past, that argument will not fly any longer. The scientific evidence is in and it is clear, convincing—and mounting.

In 2001, the prestigious *New England Journal of Medicine* published a special editorial whose title sums it up well—“Antimicrobial Use in Animal Feed—Time to Stop.”

In 2002, the Alliance for the Prudent Use of Antibiotics reviewed over 300 papers and produced a peer-reviewed report concluding, “The elimination of the non-therapeutic use of antimicrobials in food animals and agriculture will lower the burden of antimicrobial resistance...with consequent benefits to human and animal health.”

In 2003, the World Health Organization concluded, “There is clear evidence of the human health consequences [from agricultural use of antibiotics, including] infections that would not have otherwise occurred, increased frequency of treatment failures (in some cases death) and increased severity of infections.”

In 2003, National Academy of Sciences’ Institute of Medicine came to the same conclusion, stating, “Clearly, a decrease in antimicrobial use in human medicine alone will have little effect on the current situation. Substantial efforts must be made to decrease inappropriate overuse in animals and agriculture as well.”

Resistance is not an abstract issue. According to the CDC there were 28 culture confirmed cases of *Campylobacter* and 14 cases of *Salmonella* for each 100,000 people in California in 2007. National surveys show that about half of the *Campylobacter* and one fifth of the *Salmonella* infections were resistant to drugs. Just these two foodborne pathogens lead to thousands of culture confirmed resistant infections in California each year. Given that for each culture confirmed case there are many more cases the actual number of resistant infections to just these two pathogens is likely in the tens of thousands and probably over 100,000 resistant infections in California each year.

This is the tip of the iceberg. Because *Salmonella* and *Campylobacter* are known to have farm reservoirs and to cause foodborne illness the connection to the farm in resistant illness for these bacteria is clear, but FDA data show that meat is even more likely to be contaminated with resistant *Escherichia coli* or *Enterococci* than *Salmonella* or *Campylobacter*. Both *Escherichia* and *Enterococci* are known to cause foodborne illness. Other resistant pathogens which are responsible for serious human illness have been found on farm and on meat including MRSA, *Clostridium difficile* and *Klebsiella pneumoniae*. California recently passed legislation requiring that hospitals screen high risk patients for MRSA. Farm workers and veterinarians should probably be added to the high risk category. Evidence is emerging that workers on farms and veterinarians are at increased risk for MRSA which they contract from animals.

The literature is voluminous and diverse, but the overall point is clear. Antibiotic overuse in agriculture, just as in human medicine, is undercutting the efficacy of important human therapies and in some cases generating even more virulent pathogens. This conclusion is supported by

medical and public health communities alike. As proof, virtually every mainstream medical association—American Medical Association, American Academy of Pediatrics, American Nurses Association, American Public Health Association, and other medical organizations across the country endorse federal legislation curtailing the use of medically important drugs in animal agriculture. I'm not aware of a single medical organization that has taken the position that non-therapeutic antibiotic use is needed in some way to protect human health.

The federal legislation I referred to above is the Preservation of Antibiotics for Medical Treatment Act (PAMTA) which requires the FDA to review antibiotics used in animal agriculture determine whether they put public health at risk by leading to increased resistance and to withdraw from market drugs that cannot be shown to be safe. Despite bipartisan support in Congress, PAMTA has a long uphill road ahead of it. Meanwhile it is important that states creatively encourage reduced antibiotic use in agriculture in other ways.

We know from experience that moving towards responsible use of antibiotics in animal agriculture is possible. In 1999, Denmark, the world's leading pork exporter, ended all use of antimicrobial growth promoters. A World Health Organization analysis of the Danish experience has shown that the nontherapeutic uses of antibiotics can be ended with little or no impact on agricultural productivity and animal welfare. The comprehensive analysis, published in 2003, showed that there were no appreciable impacts from the antibiotic ban in broiler chickens or older, so-called "finisher" pigs. There was a modest increase in the number of pigs requiring antibiotics for the treatment of diarrhea at weaning time, but the increase was completely offset by the overall decrease in antibiotic use. According to the World Health Organization report, the overall drop in antibiotic use was 54 percent.

The USDA Economic Research Service looking at changes in U.S. agriculture came to a similar conclusion in a report issued early this year (<http://www.ers.usda.gov/Publications/EIB43/EIB43e.pdf>). The USDA found that large farms are more likely to use antibiotics in feed but that the benefits of this use is limited to certain stages of production particularly pig nurseries. The USDA also found that other practices such as increased sanitation and vaccination could be substituted for antibiotics.

Sometimes you hear that routine antibiotic use has benefits for human health. There is simply no evidence that that is the case. Healthy flocks or herds fed medicated feed may or may not harbor organisms that cause human disease. European studies have shown that levels of food-borne pathogens go up or down independently of antibiotic use in food agriculture. Antibiotic use in healthy animals is simply unrelated to rates of food-borne illness.

Consistent with the PAMTA legislation mentioned above we recommend that legislation focus on antibiotic uses that provide the least benefit to animals and have the potential for the greatest harm to humans. We recommend that you focus on the non-therapeutic use of medically important antibiotics.

Thank you for the opportunity to present this testimony.