Medical Xpress

Survey shows increase in resistance to drug therapies among bovine respiratory disease cases

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A survey of records of bovine respiratory disease cases at the Kansas State Veterinary Diagnostic Laboratory showed that drug resistance in one of the primary pathogens that cause BRD, Mannheimia haemolytica, increased over a three-year period.

"We have been seeing an increase in the number of antibiotic resistant bacteria that cause pneumonia (also called BRD) in cattle," said Brian Lubbers, assistant professor in the diagnostic lab, based at Kansas State University. "Many of these bacteria are resistant to, not one, but almost all of the antibiotics that we use to treat pneumonia in cattle."

BRD is one of the most important diseases of feedlot cattle, particularly, said Lubbers, adding that the economic toll from the disease has been estimated to approach $1 billion annually in the United States alone, if one takes into account drug and labor costs, decreased production, and animal death losses.

Until now, one of the aspects that has not been studied very well is the cost linked to antimicrobial resistance in BRD cases, he said. To take a closer look, he and colleague Gregg Hanzlicek, also an assistant professor in the diagnostic lab, examined records of cases in which specimens of bovine lung tissue were submitted to the diagnostic lab over the three years, 2009 to 2011. Most of the cattle were from Kansas and Nebraska.

They found that over that period, a high percentage of M. haemolytica bacteria recovered from cattle lungs were resistant to several of the drugs typically used to treat that pathogen. The researchers also found, however, that no specimens were resistant to all six antimicrobial drugs.

The study was funded internally by the diagnostic lab.

Using resistance to three or more antimicrobials as the definition of multi-drug resistance, 63 percent of the bacteria would be classified as multidrug resistant in 2011, compared with 46 percent in 2010 and 42 percent in 2009.

The results of the study were published by the *Journal of Veterinary Diagnostic Investigation*.

"Antimicrobial resistance in veterinary medicine has received a considerable amount of recognition as a potential factor leading to antimicrobial resistance in human medicine," Lubbers said. "However, the contribution of multidrug resistance to limited or failed therapy in veterinary patients has received much less attention."

Because there are a limited number of antimicrobial drugs that can be used for treatment of BRD pathogens, Lubbers said, multidrug resistance in those pathogens poses a severe threat to the livestock industry.

"We (KSVDL) consider this type of information to be part of our active ongoing disease surveillance and will continue this work," Lubbers said. "The questions of how these bacteria develop or where they come from, how widespread they are, and what is the impact on cattle production are still unanswered. We are actively seeking industry partners to investigate these questions."

More information: vdi.sagepub.com/content/25/3/413.full.pdf+html

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