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New Mexico ALIRT and Syndromic Surveillance

by Dr. John Wenzel
Extension Veterinarian
New Mexico State University

Agriculture in the U.S. is one of the major components of the national economy, contributing an estimated one-sixth of the Gross Domestic Product, or well over one trillion dollars.

In addition to the economic importance of agriculture, the success of the industry provides Americans with a readily available source of safe, wholesome and inexpensive food due to the development of efficient production systems. As both the standard of living and the population of the world increases, the demand for more safe, wholesome and inexpensive food increases, providing expanded export markets for the products of American agriculture. Given the economic importance and reputation of our safe, reliable and plentiful food system, protecting our agricultural industry becomes an area of national security concern.

The complexity of the infrastructure behind filling our grocery store shelves is invisible to most people who live and work outside the agricultural industry. For those in it, be they a farmer or feeder, middle man to meat packer, transporter to sales, the challenge of developing a system to protect animal agriculture is daunting because each stakeholder has a different perspective on the important elements needed to keep the industry intact.

Threats to food safety and supply include animal and plant disease, contamination, disruption of harvest and distribution, and closure or loss of markets. Plans to protect the various aspects of food production and distribution have been developing locally

and nationally over the last decade.

Prevention, containment and eradication of infectious disease outbreaks in production animals are important areas of the food supply security challenge. Outbreaks of Foot and Mouth disease in the United Kingdom in 2001, Bovine Spongiform Encephalopathy (Mad Cow Disease) in the U.K. and Europe in the 1990s, and more recently Avian Influenza A (H5N1) in Asia have provided case studies from which to learn how to develop better ways to prevent and contain infectious animal diseases that impact our livestock and food supply.

Two programs involved . . .

The state of New Mexico has developed two programs in response to the threat of disease introduction to livestock rearing facilities. The first is the Syndromic Surveillance program that monitors the location and existence of animal disease. The other is the New Mexico Ag/Livestock Incident Response Team (NM-ALIRT), which coordi-

livestock and poultry populations. Timely response to outbreaks will minimize animal suffering, protect the food supply and public health, and mitigate potentially devastating effects on the national economy due to loss of important food markets.

The program is based on central reporting by local veterinarians of the infectious and zoonotic diseases that they encounter in the field on a daily basis. The accumulation of information by many individual veterinarians provides a composite picture of disease occurrence. This combined information reveals the development of patterns earlier than an individual might recognize.

The NM-ALIRT program began in 2007 as a cooperative effort between many federal and state agencies. Modeled after the Arizona Livestock Incident Response Team, it was organized as an emergency response effort using veterinary practitioners as first responders, with support and training from the N.M. Department of Agriculture, N.M. State University, USDA-Veterinary Ser-

vices, N.M. Department of Health, N.M. Livestock Board, N.M. Department of Homeland Security, and the Southwest Border Food Safety and Defense Center. This program has equipped and trained food supply veterinarians so they can respond to a large or suspicious livestock loss that occurs in New Mexico.

In 2008 the Syndromic Surveillance component was added so that NM-ALIRT veterinarians could report certain disease syndromes of importance while in the normal course of daily practice. In 2009 the Syndromic Surveillance program began using web-based reporting of the observed syndromes. In 2010 the reporting system was

(continued on next page)

Table 1: New Mexico Syndromic Surveillance data from second quarter 2010 (statewide totals).

	total animals seen	respiratory disease or syndrome	digestive disease	toxicity (plant or other)	CNS/musculoskeletal	vesicular disease	repro. disease/abortion	sudden death
bovine	10,360	63	67	19	4	0	42	32
caprine	88	2	2	0	1	0	5	1
equine	1,020	22	58	7	19	3	17	4
ovine	90	3	5	0	0	14	2	1
porcine	50	20	4	0	1	0	0	0

nates response of the livestock community to emergencies. The NM Syndromic Surveillance Program is being considered as a model for a national surveillance program.

The Syndromic Surveillance program was developed to quickly recognize disease outbreaks caused by either naturally occurring or intentionally introduced pathogens and, thus, prevent their rapid spread across

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New Mexico ALIRT program . . .

(continued from previous page)

enhanced so geographic and syndrome specific searches could be made while viewing the monthly reports. The importance of a surveillance program cannot be stressed enough. The earlier a syndrome is detected the quicker and more effective the response team can act.

The NM-ALIRT and Syndromic Surveillance system is allowing veterinarians and public health officials to recognize and report initial outbreaks of highly infectious epidemics in livestock and avian populations, thus allowing local, state, regional, and national animal health, emergency preparedness, and public health officials to respond to their full capabilities.

Key objectives . . .

The system is fully transposable, allowing for easy addition or exchange, as appropriate, of other animal species and syndromes having either direct economic importance or value as sentinels for biothreats and epidemics. This program will raise the level of protection we can offer the New Mexico livestock industry. The basic tenants under which the NM-ALIRT program developed are:

- Develop and organize a program that will provide a timely response to an agricultural emergency that focuses on rapid containment and diagnosis in the event of a possible foreign animal disease outbreak, bioterrorism attack, or just an unknown large or suspicious livestock loss.
- Develop and train a network of practicing veterinarians geographically located around the state so that a timely response can be initiated wherever a livestock loss event occurs.
- Provide a program to livestock producers and practicing veterinarians at minimal cost to the producer to assist in the event of a large or suspicious livestock loss.
- Training to include incident command system training, foreign animal disease recognition, emergency response training, personal protective equipment training, and other training as needed.
- Purchase equipment necessary to equip emergency response teams for a variety of possible emergencies.
- Train support personnel such as brand inspectors, Extension specialists and agents, animal health technicians, and laboratory personnel as needed to assist in the event of an agricultural emergency.
- Conduct training and practice exercises with other state agencies so a swift and coordinated response can be expected in the event of an agricultural emergency.
- Train veterinarians to use uniform necropsy, specimen collection, and specimen preparation techniques.
- Conduct frequent high quality continuing education meetings that can be expanded to include any interested veterinarians.
- Compensate veterinarians for their time and expertise when responding to a program request.
- Begin to compile a syndrome-based database that will form a baseline of disease incidence in NM.

NMALIRT Regions May 1-July 31, 2010 Bovine Totals

NW Region
population: 120,000
total animals seen: 74 (0.0006%) *
total syndromes detected: 23 (0.0002%) **

NE Region
population: 291,000
total animals seen: 7,397 (0.025%) *
total syndromes detected: 85 (0.0003%) **

Central Region
population: 127,000
total animals seen: 769 (0.0006%) *
total syndromes detected: 18 (0.0001%) **

SW Region
population: 293,000
total animals seen: 3,035 (0.01%) *
total syndromes detected: 94 (0.0003%) **

SE Region
population: 719,000
total animals seen: 427 (0.0006%) *
total syndromes detected: 11 (0.00002%) **

*: Percent total animals seen of Region population.

**: Percent total syndromes detected of Region population.

Syndromes seen:

56 respiratory, 60 digestive, 21 toxicity, 4 CNS,
0 vesicular, 54 repro/abortion, 26 sudden death

We are convinced that augmenting the vigilance of first observers and helping them understand the importance of rapid and coordinated response to suspected foreign, regulatory, or emerging animal disease are paramount in the success of a disease containment process. New Mexico currently has 22 private veterinarians participating in the program. We are proposing to expand this group regionally to include veterinarians who are participating in the program through the University of Arizona (ALIRT). Many of these veterinarians practice near the Arizona/New Mexico state line and have clients in both states.

Scope of program may reach Texas . . .

The program is also looking forward to expansion into Texas by having Texas veterinarians who practice in close proximity to New Mexico begin syndromic reporting. With the proximity to the U.S./Mexico border, creating a database of livestock syndromes and their trends will be helpful in surveillance of foreign and domestic animal diseases entering from Central and South America. The program is also exploring ex-

pansion of the reporting to include diagnostic laboratory specimen submissions, slaughter surveillance data, and livestock market surveillance. Table 1 on the previous page shows an example of Syndromic Surveillance data.

The backbone of this system is the veterinary practitioner. He or she is aware of the incidence of disease in their practice area, and with increased training can add surveillance in a daily practice routine.

Dairy veterinarians are the most qualified to report syndromes in dairy cattle, just as beef, poultry, swine, small ruminant, and equine veterinarians are the most qualified to report syndromes in their respective disciplines. The information obtained from surveillance may be of local, state or national importance. This data can also help veterinary practitioners prepare for possible disease outbreaks when Syndromic Surveillance data suggests an outbreak is possible.

Training of veterinarians can be tailored to meet specific needs, such as preparing for spread of a disease after introduction, such as West Nile Virus, or to increase vigilance when a disease threat has been identified, such as Equine Piroplasmiasis. Syndromic surveillance data can also be used to identify local or regional problems such as pneumonia outbreaks in a certain area.

Program's value is immeasurable . . .

When this data is coupled with livestock market, diagnostic lab, and slaughter surveillance, a very complete disease incidence picture can be drawn. By having a low disease incidence in an area, trade sanctions may be more difficult to impose if you can document the absence of disease. The value of an early warning system to veterinary practitioners, livestock producers, animal and human health officials, and the consuming public cannot be measured.

Along with the NM-ALIRT veterinarians, brand inspectors from the N.M. Livestock Board, county Extension agents, and other agency personnel have been involved in training and foreign animal disease exercises. By forming a coordinated response network and then exercising that network, a more efficient response can be expected in the event of a needed response. By including different agencies and people in response planning, many areas of expertise can be used in both the planning process and in an actual response. The process of training with agency personnel who would be involved in a response has created response teams with defined roles and responsibilities that can be enhanced with additional training.

The NM-ALIRT and Syndromic Surveillance program is evolving into a program that will allow for additional surveillance data to be incorporated into the database. This will result in a more precise disease incidence picture being formed. By including training and exercising of early response teams with a surveillance database, an enhanced program for protecting agriculture can be formed. Protecting American agriculture from disease threats, whether foreign or domestic, must be a priority if we are to continue to help feed the world.

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For further information contact:
Dr. Ragan Adams, Editor
ILM, CSU-VTH
300 W. Drake Road
Fort Collins, CO 80523
970-297-0371
radams@lamar.colostate.edu

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