New Mexico ALIRT and Syndromic Surveillance

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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 coordinates 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 Services, 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

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New Mexico ALIRT program . . .  
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enhanced so geographic and syndrome spe-
cific searches could be made while viewing
the monthly reports. The importance of a sur-
veillance 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 Surveil-
lance system is allowing veterinarians and
public health officials to recognize and re-
port initial outbreaks of highly infectious
epidemics in livestock and avian popula-
tions, thus allowing local, state, regional,
and national animal health, emergency pre-
paredness, and public health officials to re-

Key objectives . . .

- The system is fully transposable, allow-
for easy addition or exchange, as appro-
riate, of other animal species and syn-
dromes having either direct economic im-
portance or value as sentinels for bio-
threats and epidemics. This program will
raise the level of protection we can offer the
New Mexico livestock industry. The basic ten-
tatives are that the NM-ALIRT pro-
gram developed are:

- Develop and organize a program that
will provide a timely response to an agricul-
tural emergency that focuses on rapid con-
tainment and diagnosis in the event of a possible disease outbreak or a bioterrorism
attack, or an unknown large or suspicious livestock loss.

- Develop and train a network of practic-
ing veterinarians geographically located
around the state so that a timely response
can be initiated whenever a livestock loss
event occurs.

- Provide a program to livestock produc-
ers 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 vari-
ety of possible emergencies.

- Train support personnel such as brand
inspectors, Extension specialists and
agents, animal health technicians, and lab-
oration personnel as needed to assist in the
in the event of an agricultural emergency.

- Conduct training and practice exercis-
es with other state agencies so a swift and
coordinated response can be expected in the
in the event of an agricultural emergency.

- Train veterinarians to use uniform
necropsy, specimen collection, and specimen
preparation techniques.

- Conduct frequent high quality continu-
ing education meetings that can be expand-
ed to include any interested veterinarians.

- Coordinate veterinarians for their
work and expertise when responding to a
program request.

- Begin to compile a syndrome-based
database that will form a baseline of dis-
case incidence in NM.  

NM-ALIRT Regions
May 1-July 31, 2010 Bovine Totals

<table>
<thead>
<tr>
<th>Region</th>
<th>Population</th>
<th>Total Animals Seen</th>
<th>Total Syndromes Detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>120,000</td>
<td>200,000</td>
<td>15 (0.0075%)</td>
</tr>
<tr>
<td>NE</td>
<td>291,000</td>
<td>3,035 (0.01%)</td>
<td>11 (0.00034%)</td>
</tr>
<tr>
<td>Central</td>
<td>127,000</td>
<td>769 (0.0008%)</td>
<td>9 (0.00034%)</td>
</tr>
<tr>
<td>SW</td>
<td>719,000</td>
<td>427 (0.0062%)</td>
<td>11 (0.00034%)</td>
</tr>
<tr>
<td>SE</td>
<td>769,000</td>
<td>3,035 (0.01%)</td>
<td>23 (0.0007%)</td>
</tr>
</tbody>
</table>

We are convinced that augmenting the vigilance of first observers and helping
them understand the importance of rapid and coordinated response to suspected for-
eign, regulatory, or emerging animal dis-
 ease are paramount in the success of a dis-
ease containment process. New Mexico cur-
cently has 22 private veterinarians partici-
 pating in the program. We are proposing to
expand this group regionally to include vet-
 erinarians who are participating in the pro-
gram through the University of Arizona (ALIRT). Many of these veterinarians prac-
tice 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 vet-
erinarians who practice in close proximity
to New Mexico begin syndromic reporting.
With the proximity to the U.S./Mexico bor-
der, creating a database of livestock syn-
dromes 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 diagnos-
tic laboratory specimen submissions,
slaughter surveillance data, and livestock
market surveillance. Table 1 on the previ-
ous page shows an example of Syndromic
Surveillance data.

The backbone of this system is the vet-
erinary 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 quali-
fied 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 re-
spective disciplines. The information ob-
tained from surveillance may be of local,
state or national importance. This data can
t also help veterinary practitioners prepare
for possible disease outbreaks when Syn-
dromic Surveillance data suggests an out-
break 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 vigi-
lance when a disease threat has been iden-
tified, such as Equine Piroplasmosis. Syn-
dromic surveillance data can also be used
to identify local or regional problems such
d as pneumonia outbreaks in a certain area.

Program’s value is immeasurable . . .

When this data is coupled with livestock market, diagnostic laboratory spec-
m samling, slaughter surveillance, a very complete disease inci-
dence 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 produc-
ers, animal and human health officials, and
the consuming public cannot be measured.

Along with the NM-ALIRT veterinari-
 ans, or other inspectors from the N.M. Live-
 stock Board, county Extension agents,
and other agency personnel have been involved
in training and foreign animal disease exer-
cises. 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 includ-
ing different agencies and people in re-

tro plan ning, 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 re-
sponse teams with defined roles and re-
sponsibilities that can be enhanced with
additional training.

The NM-ALIRT and Syndromic Surveil-
ance 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 includ-
ing training and exercising of early re-
sponse teams with a surveillance database,
an enhanced program for protecting agri-
culture 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.