(Foreign Animal Disease Diagnostician)

- Any unusual or unexplained illness
- Severe respiratory conditions
- Pox or lumpy skin conditions
- Any nervous system signs
- Sudden lameness
- Ulcers or blisters around the animal’s mouth or feet
- Increased illness, death, or abortion rates
- Any significant drops in production
- Ulcers or blisters on or around the mouth or feet, sudden lameness
- Any nervous system signs
- Any pox or lumpy skin condition, and any severe respiratory conditions.

Diseases are detected at the local level, either by the producer or the local veterinarian. In some cases, the diagnostic laboratory or slaughter facility may make initial detection. Veterinarians are required to report animal diseases of high consequence (listed in the Iowa Code, USDA or OIE lists) to the State Veterinarian or Federal AVIC. Once detected, the incident is typically handled at the State/Federal level first working with the local level. State Veterinarian has authority for and directs all response and treatment actions (in partnership with their Federal counterpart-AVIC). Once the animals are euthanized and disposed of, then the site or sites must be cleaned and disinfected. Likewise, some compensation (indemnity) may be provided to the owners of the animals. The state or federal indemnity funds will need to be made available. During and after an animal disease emergency, businesses must attempt to continue function. Recovery takes time.

The report of an ill or suspicious animal usually occurs at the producer level. The producer should call their local veterinarian upon seeing any unusual or unexplained illness. Although many high consequence diseases can have signs similar to commonly seen diseases, some indicators to be alert for include any increases in illness, deaths or abortion, any significant drops in production, ulcers or blisters on or around the mouth or feet, sudden lameness, any neurological signs, any pox or lumpy skin condition, and any severe respiratory conditions.

Upon suspecting a disease of high consequence, the local veterinarian is required to contact the State veterinarian or the Federal AVIC. At this point a FADD (foreign animal disease diagnostician) is sent out to investigate. A FADD, is a state or federal veterinarian who is specially trained to conduct investigations of high consequence animal diseases. Each year in the U.S. over 500 FADD investigations are conducted; most of which turn out to be negative for high consequence animal diseases. Here in Iowa, about 25-50 investigations are conducted each year. The FADD will investigate within 24 hours of the local veterinarians initial call. The FADD will assess the situation and examine the animal(s). Working in close collaboration with the State Veterinarian and the Federal AVIC, the FADD will obtain the appropriate samples and forward them to the appropriate National laboratory for testing.
Depending on the level of suspicion of an FAD, the sample may be shipped overnight or hand carried to the laboratory. While the sample is being processed, the affected farm may be placed under a hold order to prevent the movement of animals off of or onto the premises. The level of response needed will vary on a number of factors. The disease suspected or confirmed, the number of animals or premises affected, the animal health and public health impact from the disease, the economic or trade implications of the disease. Actions taken will be made by the State Veterinarian (or in the case of a national emergency – in conjunction with the Federal AVIC). Some diseases may potentially bring a Presidential or a USDA declaration of emergency.

These are the various case priorities the FADD can assign a situation based on their investigation. NVSL stands for the National Veterinary Services Laboratories which are the labs used to diagnose foreign animal diseases.

Animal disease diagnostic testing in Iowa is done routinely by the Iowa State University College of Veterinary Medicine Diagnostic Laboratory as well as other private laboratory facilities or those in the National Animal Health Laboratory Network (NAHLN). In the event of suspicion of a high consequence disease pathogen, samples would be sent to one of two National Animal Disease Diagnostic Laboratories. The FADDL (Foreign Animal Disease Diagnostic Laboratory) in Plum Island, NY, conducts testing of sample from cattle, sheep, goats and swine. The National Veterinary Services Laboratories in Ames, Iowa, conducts testing on poultry, equine and fish disease agents.

Once samples are submitted by the FADD, initial testing results for the high consequence disease pathogen will be conducted within 12-24 hours. Based on the initial tests, a designation of presumptive positive or negative will be designated. If a presumptive positive results are obtained, further testing is conducted to confirm the diagnosis. A designation of presumptive positive starts the chain of response events. The State Veterinarian will notify the Secretary of Agriculture who will notify the Governor. Veterinary counterparts in other states, the media, extension offices, state commodity and industry groups, and other stakeholders will be notified. Either the local, State or USDA-APHIS Emergency Operations Center (EOC) will be activated depending on the scope. Once an emergency declaration is issued by the Governor and/or the State Veterinarian, quarantine zones will be established around the farm (index farm). The State Response Plan will be activated, mobilizing State and possibly local or Federal resources, depending on the scale, urgency and need for the response. Additionally, surveillance will be initiated to investigate surrounding farms as well as tracing any animal movement onto or off of the farm, in efforts to locate any additionally exposed animals. Once the test results are confirmed positive, international notification as well as a initiation of the National Response Framework (NRF) will begin. In some instances a Presidential declaration of emergency may be issued.
Response is crucial for an emergency incident, including an animal health emergency. The goal is to put your preparedness plan into action expeditiously, safely and effectively. The level of response needed will vary on a number of factors, such as the following: the disease suspected or confirmed, the number of animals or premises affected, the animal health and public health impact from the disease, the economic or trade implications of the disease. Actions taken will be made by the State Veterinarian (or in the case of a national emergency – in conjunction with the Federal AVIC). Some diseases may potentially bring a Presidential or a USDA declaration of emergency. Should the disease be one that spreads quickly, or can be transmitted to humans, other State or Federal agencies may be requested for assistance.

Once an Infected Premise (IP) with a high consequence animal disease is identified, the area surrounding that farm will be quarantined (Infected zone ~ approximately 6.2 miles in diameter). Neighboring farms, Contiguous Premises, may also be quarantined as would any farms that had received animals from the IP or were sources of animals to the IP (until surveillance is conducted). For some severely contagious diseases, such as foot-and-mouth disease, movement of animals and possibly traffic will be stopped. This will involve the implementation of various road block and entry and exit points in the Infected Zone. Depending on the location and number of roadways feeding into the area, this may be a high resource (personnel) demanding function. (Graphic by Andrew Kingsbury, CFSPH, ISU)

Single premises responses consist of one location where the FADD is called out to investigate the clinical signs or cause of death in animals. Once a diagnosis of a foreign animal disease is received, the State Veterinarian will put a quarantine on that premises. If the history and clinical signs are cause for concern, the FADD can discuss their findings with the State Veterinarian first and the quarantine can actually be put in place prior to definitive diagnosis as a safety measure. A single premises FAD will most likely be handled by State. They will decide to treat the animals or depopulate (euthanize and dispose of carcasses) depending on the disease diagnosis. The Federal authorities will handle the issues related to international concerns as a result of the disease diagnosis (OIE communication, embargos from other countries).

This is the worst case scenario. All of the previous response type actions are in place and now a State level emergency is declared. The U.S. Secretary of Agriculture will request assistance from Department of Homeland Security (DHS), thus turning on the National Response Framework, specifically Emergency Support Function (ESF) 11: Agriculture and Natural Resource. APHIS will be the lead Agency and will support the States in their response efforts.
Euthansia

- Humane method
- Determined by State or Federal Veterinarian
- May include:
  - Cervical dislocation
  - Carbon dioxide
  - Captive bolt
  - Anesthetic overdose

Control of a diagnosed foreign animal disease on a livestock operation usually involves depopulation of all animals on the farm. This decision will be made by the State or Federal Veterinarian. Many different humane options exist for euthanizing animals and the method is determined by species. If animals are euthanized, then a disposal plan should be in place. (The photo shows carbon dioxide foam used to humanely euthanize floor reared poultry.)

Disposal Options

- Burial on-site
- Composting
- Incineration
- Rendering
- Landfill
  - Biosecurity concerns
  - Disease characteristics
  - Quarantine zones
- Open burning (not allowed in Iowa)

Burial on-site and composting are the current options the Iowa Department of Natural Resources (IDNR) has in their plan for livestock disposal. Protocols have been developed to ensure proper composting or burial. One big advantage of these methods is that animal carcasses are not moved off the premises thereby decreasing the risk of disease spread. Rendering may be a consideration depending on proximity to one of five rendering businesses in Iowa. Landfill of dead animals raises biosecurity concerns depending on the disease and where the quarantine zone is located. Open burning of carcasses is not allowed in Iowa; incineration methods may be allowed. In some cases alkaline hydrolysis may also be used.

Disposal Options

- Disposal restricted by:
  - Disease characteristics
  - Ease of transmission
  - Method of transmission
  - Zoonotic potential
  - Quarantine zones
  - Other restrictions per the State Veterinarian

Some of the considerations that go into determining a disposal option include the characteristics of the disease pathogen (e.g. ability to spread or infect people), the establishment and breach of quarantine zone designations.

IDNR: Carcass Disposal Maps

- www.iowadnr.gov
  - Site considerations of burial locations
  - Environmental: Water tables
  - Proximity to habitation
  - Disease transmission
- GIS Mapping - Interactive
  - Mapping (GIS interactive)
  - 3 tiered approach
  - Red – restricted zones
  - Multiple colors – cautionary zones
  - Green – No known restrictions

The Iowa Department of Natural Resources (IDNR) has developed Carcass Disposal Maps using GIS technology. These maps are online and interactive. Site considerations for livestock burial include proximity to water tables, habitation and the possibility of disease transmission. A 3-tiered approach is used for the maps with red indicating burial restricted zones, multiple colors are cautionary and green are no known restrictions (see next slide).

This is a sample livestock burial map from the Iowa DNR website. Red – restricted zones, Multiple colors – cautionary zones, Green – No known restrictions.
Recovery involves restoring confidence that the situation is contained and the danger is over. A great deal of time, money, and effort is required to recover from an agricultural incident. Once the animals are disposed of, then the site(s) must be cleaned and disinfected. Following an animal disease emergency, Federal and State governments would work together on a possible compensation plan (indemnity) for producers for some or all of the loss of value of animals destroyed, dependent upon availability of State or Federal indemnity funds. Typically a farm will not be allowed to restock for a set period of time, dependant on the disease (e.g., for avian influenza the wait time is a minimum of 30 days). Finally, business continuity is an important consideration in recovery efforts. Recovery is smoother if a business or county has a continuity plan to implement. These plans are developed to keep people safe and employed during a disaster and to keep the business running during and after a disaster, which history tells us requires planning. More details related to business continuity are discussed next.