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Anthrax Guidance Documents and Investigation Protocol

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Anthrax Recommendations

These recommendations are intended to educate the public and prevent cases of anthrax from occurring, and if they do occur offer recommendations to protect public and animal health. This document is **NOT** intended to be an all-inclusive reference for anthrax in livestock. Local authorities, including but not limited to, the Wyoming Livestock Board (WLSB), veterinarians, Wyoming Department of Public Health, and Wyoming Game and Fish Department, should be contacted for further consultation.

Anthrax awareness messages will be sent to producers and veterinarians through routine social media messaging (email, website) from WLSB when indicated. Educational messaging may start at least 30 days prior to cattle being turned out for the grazing season. Messaging shall include reminders for veterinarians regarding sample collection, submission, vaccination, and antibiotic treatment protocols.

Spores are the primary concern in controlling the spread of anthrax. Spores remain viable in the soil for many years. There are three key areas to consider when preventing future anthrax outbreaks;

- Vaccination of livestock in endemic areas.
- Minimizing spore production and spread by burning anthrax carcasses and blood contaminated soil as quickly as possible whenever possible.
- Extra effort in identifying sporadic cases to reduce soil contamination.

Vaccination

Currently, one anthrax vaccine is licensed in the United States. This nonencapsulated live anthrax spore vaccine is manufactured by the Colorado Serum Company (www.coloradoserum.com). Administration of this vaccine is regulated by the Wyoming State Veterinarian or designee.

As a preventative measure, animals in anthrax endemic areas should be vaccinated approximately four weeks prior to the time the disease usually appears. Immunity from vaccination appears to wane after approximately 6 months, with a booster and annual vaccination recommended where indicated.

Colorado Serum's recommended dose is one ml injected subcutaneously in the neck. Anecdotal evidence indicates that immunity can develop in five days. It is usually protective by 8-10 days. Colorado Serum also recommends a booster vaccination two to three weeks after the first dose in heavily contaminated areas. Llamas and goats should get an initial half dose, repeated three weeks later by a full dose.

Colorado Serum Company has a package insert which mentions vaccinating horses in the brisket (pectorals) as an alternative, to help minimize the potential of an adverse local reaction. Anecdotal evidence from the field indicates that dividing the dose in half and giving a half dose on each side of the neck may also help minimize local injection site reactions in horses. The insert also states “Adverse reactions have been reported in young and miniature horses. Consult your veterinarian when considering vaccination of exotic or sensitive species, e.g., llamas and other American Camelidae, and immunologically immature or stressed animals.” Miniature horses and American camelids should be considered as “vaccinate at your own risk”. If the risk of an adverse reaction in an animal is greater than the risk of contracting anthrax, it may be wise to recommend that the animal(s) be confined to an area where they are fed off the ground or on concrete to decrease the probability of ingesting anthrax spores from contaminated soil.

All herds with a history of anthrax infection within the past 10 years and herds within six miles of the affected herds should be vaccinated or revaccinated for the prevention of anthrax for two primary reasons:

- Not all herds affected with anthrax in the past may have been reported or dealt with properly. Viable anthrax spores may still be present to cause disease.
- Delayed reporting of anthrax cases allows contamination of insects’ mouth parts with anthrax organisms, allowing transport of anthrax spores to unvaccinated susceptible animals.

All susceptible animals in these herds should be vaccinated. Susceptible animals include cattle, horses, mules, sheep, goats, and pigs. Per label, vaccinated animals should not be slaughtered for 42 days after the last dose of anthrax vaccine. There is no withdrawal time for milk from vaccinated cows.

Revaccination

If anthrax is detected in a herd, the herd should be promptly moved to a new pasture away from the site(s) of the dead animals to prevent additional infections from the primary source in the pasture, and to prevent secondary cases due to animals’ curiosity exhibited by nuzzling the dead animals and licking any contaminated blood and fluids.

If animals have been previously vaccinated, revaccination options should be discussed with your veterinarian. If animals are unvaccinated, all susceptible animals must be vaccinated. A booster dose in two to three weeks is highly recommended.

During severe outbreak conditions in addition to vaccination, exposed susceptible animals may be treated first with antibiotics, and then vaccinated. This will help to stop any incubating infections. The decision to use antibiotics in conjunction with vaccination must be made in consultation with the owner, their veterinary practitioner and regulatory authorities.

Adjacent herds within six miles of a prior case of anthrax should be strongly encouraged to vaccinate, especially in years with wet spring weather and/or flooding. This recommendation is based on the likelihood that the soil type, topography and other associated ecological factors may be similar and therefore conducive to the propagation of anthrax. Anthrax can skip neighboring herds and spread to other more distant areas via sporadic unseen wildlife cases, portions of infected carcasses spread by scavengers, and on the mouthparts of biting flies.

Suspect cases

Any unexplained deaths of susceptible domestic and wild animals should be investigated promptly by the respective private or regulatory veterinarian. Anthrax is a public health risk. If possible, carcasses should not be moved. Measures should be taken to prevent opening of the carcass (do not overlook scavengers). Anthrax is facultative anaerobe that will grow under both

anaerobic and aerobic conditions, but will form spores when outside the carcass in the presence of oxygen.

Suspected cases of anthrax must be reported to your local veterinarian and/or the Wyoming Livestock Board. The risk of a person contracting anthrax from an animal or animal carcass is low. Veterinarians have the highest risk of contracting the disease because of their contact with carcasses, especially if performing a necropsy. Blood should be washed off using soap and water.

Diagnosis of Anthrax

Veterinarians should contact their local veterinary diagnostic laboratory for assistance when submitting samples. **Samples should only be collected by a veterinarian.** If anthrax is suspected, a necropsy should NOT be performed. The preferred biological sample for anthrax is a blood sample. Using aseptic technique, the veterinarian may collect a jugular sample of venous blood for submission to the diagnostic laboratory. If whole blood is not available, there are a few other samples that may be taken following consultation with diagnostic laboratory personnel. Extreme care must be taken when submitting any sample that might potentially contain anthrax.

Isolation of the anthrax organism becomes very difficult if the animal has been dead for 48 hours or more. Saprophytic bacteria may overgrow *Bacillus anthracis*. Having a negative diagnosis from an animal that has died from anthrax is possible.

Disposal

The carcass and all materials associated with the carcass should be destroyed and the ground disinfected to the extent possible. The preferred method of destruction is incineration of the carcass. If incineration or cremation is not possible, burying the carcass at least 6 feet deep is acceptable.

Quarantine

WLSB regulates quarantine of suspected and confirmed anthrax affected herds.

WLSB Anthrax Investigation Protocol

Suspicious anthrax report

Veterinarian, laboratory, or producer will:

1. Contact Wyoming State Veterinarian or designee immediately.
2. Complete a WLSB Reportable Disease Notification Form and email to state veterinarian's office as soon as possible.

Upon report from a veterinarian or laboratory of suspected anthrax, the state veterinarian will:

1. Notify USDA APHIS AVIC of the disease report.
2. Notify the State Public Health Veterinarian.
3. Notify Wyoming Game and Fish Department
4. Contact the owner of affected livestock and advise that an initial investigation will be forthcoming. The state veterinarian will also advise owner of likely response actions if the disease is confirmed.
5. Assign a WLSB staff veterinarian to complete a disease investigation.
 - a. Quarantine susceptible animals on the premises pending confirmation of diagnosis. Advise of extended quarantine following confirmation of disease.
 - b. Inform the owner about zoonotic risk and refer them to the Wyoming Department of Public Health.
 - c. Provide guidance regarding carcass disposal and disinfection, including clothing and equipment.
 - d. Review biosecurity recommendations.

Negative Anthrax Diagnosis

WLSB staff veterinarian will:

1. Confirm with state veterinarian.
2. Notify reporting veterinarian.
3. Notify owner.
4. Release Quarantine.
5. Close the case and notify the State Veterinarian.

Positive Anthrax Diagnosis

WLSB State Veterinarian will:

1. Issue quarantine of all susceptible animals on affected and/or exposed premises.
 - a. Quarantine for 30 days after last vaccination date of affected herd, OR 30 days following disposal of most recently deceased carcass, whichever is last.
2. Notify the following:
 - a. Assistant State Veterinarian and WLSB Staff Veterinarians
 - b. Animal owner
 - c. WLSB board members and staff
 - d. Attending/reporting veterinarian
 - e. AVIC
 - f. Governor's office
 - g. Wyoming Department of Agriculture Director
 - h. Other state agencies as appropriate
 - i. Livestock industry groups as appropriate
 - j. Licensed veterinarians
 - k. Neighboring producers – on a need-to-know basis
3. State Veterinarian will maintain confidentiality of information pertaining to the case as appropriate.

4. State Veterinarian will direct a staff veterinarian to:
 - a. Advise quarantined premises of the disposal method preferred for carcasses, bodily fluids, and contaminated soil.
 - b. Advise owner to clean and disinfect all equipment, clothing, and utensils.
 - c. Recommend personnel obtain medical advice from their physician
 - d. Updated State Veterinarian immediately on all issues.
 - e. Contact all adjacent livestock owners per state veterinarian's guidance
 - f. Notify all slaughter facilities in the area
 - g. Evaluate all possible animal exposures, feeds and ingredients fed, water sources and waterways, excavations and dirt delivery, and any vehicle traffic containing live or dead animals on the premises.
 - h. Inform quarantined premises owner/manager and/or their veterinarian to immediately report any additional deaths or actions to the State Veterinarian.
5. WLSB Staff Veterinarian will conduct an epidemiologic investigation, compile records of people contacted, issues discussed, and other information relating to the investigation(s), and submit a case report to the state veterinarian following release of quarantine.
6. State Veterinarian will maintain communication with animal owner(s) to keep them informed of regulatory action plan and provide appropriate assistance and cooperation through quarantine release in conjunction with staff veterinarian.
7. State Veterinarian will ensure all quarantines are released.

ANTHRAX

What is Anthrax?

Anthrax is a zoonotic disease caused by the spore-forming bacteria *Bacillus anthracis*. Many people associate the term “anthrax” with a bioterrorism agent. However, *anthrax is naturally present in soil across the United States and the world*. Ideal weather conditions and specific soil types create a favorable environment for the bacteria. *In these areas, anthrax outbreaks are not uncommon*.

What animals are susceptible to anthrax?

Livestock (cattle, sheep, goats, bison, horses) and wild herbivores (elk, pronghorn, deer, and occasionally moose) are the main animals affected by anthrax. They are exposed orally or through inhalation while grazing on pastures or landscapes where anthrax spores are present in the soil. Carnivores, including dogs and cats, are rarely infected with anthrax.

What are the signs of anthrax in animals?

The most common sign of anthrax in livestock and wildlife is sudden death. Prior to death, infected animals may have a fever, stagger, tremble, and have difficulty breathing. Animals often die within 24-72 hours. Blood may ooze from the nose, mouth, and rectum after death.

How is anthrax diagnosed?

A diagnosis is made by testing the blood of infected animals and identifying DNA of the anthrax bacteria in the blood (PCR assay). This sample should be collected by a veterinarian with appropriate personal protective equipment.

Can anthrax infected animals spread the disease to humans?

Yes. Handling sick or dead animals, or ingesting undercooked meat from an animal that has been infected with anthrax can spread the disease to humans. Spread of anthrax from person-to-person is unlikely.

What should be done with the carcasses of animals that die of anthrax?

If not managed properly, animals that die of anthrax contaminate the soil with anthrax spores. Infected carcasses should be burned completely and buried.

Is an anthrax vaccine available for livestock?

Yes. A vaccine for livestock is routinely used in areas where anthrax naturally occurs. It is only available through a veterinarian.

What steps can I take to protect my animals and myself from anthrax?

- Avoid contact with dead animals. Call your veterinarian immediately if you have unexplained livestock deaths.
- Wear a mask, gloves, boots and coveralls when handling sick or dead animals.
- Vaccinate livestock as recommended in regions where anthrax naturally occurs.
- Dispose of livestock carcasses properly.



Who should I contact if I suspect anthrax?

Livestock:

Contact your veterinarian immediately.

Anthrax is a reportable disease.

Immediately report suspect or confirmed anthrax cases in livestock to the Wyoming Livestock Board
307.777.7515

Humans:

Contact your physician immediately and Wyoming Public Health
307.777.7656

Wildlife:

Contact Wyoming Game and Fish
307.777.4600

