Contagious Bovine Pleuropneumonia

Contagious bovine pleuropneumonia (CBPP) is a slow–spreading, infectious disease of cattle, primarily affecting the lungs and joints. Other than occasional infection in Asian buffalo, no other animals or humans are susceptible to this disease.

CBPP is endemic in most of Africa, is a problem in parts of Asia, especially India and China, and has occurred in Europe. CBPP was eradicated from the United States in 1892. The Bureau of Animal Industry, which was the forerunner of the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), was formed in 1884 specifically to eradicate CBPP. Currently, CBPP is not present in the Western Hemisphere.

How it Spreads

Under natural conditions, CBPP spreads directly from infected to susceptible cattle in close contact with each other. Infected cattle breathe and cough out droplets of moisture containing Mycoplasma *mycoides*. The bacteria are then inhaled by nearby cattle. Exposed cattle, if susceptible, may develop CBPP and are considered infectious for at least 6 months after exposure to cattle with the disease.

Cattle vary greatly in their susceptibility to CBPP. Cattle in closely confined quarters have higher rates of infection than cattle on the open range due to their close proximity to each other and the increased chance to breathe in contaminated air droplets exhaled by herdmates. In typical outbreaks, about 40 percent of exposed cattle get the disease, and mortality among diseased cattle can range from 10 percent to 70 percent. In one African outbreak, 100,000 cattle died of CBPP in 2 years.

The disease spreads slowly. CBPP is most easily spread in the early stages of infection. Infected cattle begin to breathe out bacteria during the incubation period—even before signs develop. Although not yet substantiated experimentally, it is thought that cattle that recover from CBPP may harbor a walled–off infection in their lungs; if stressed, the walls around the infection break down and the animal may become an active shedder of the organism again, and a source of infection, potentially showing no signs of disease.

Some cattle can be carriers—infected animals that never develop typical signs of the disease. Carriers are dangerous because they frequently introduce the disease into previously uninfected areas. In fact, most new outbreaks can be traced to a carrier or to a healthy–looking animal in the incubation stage of CBPP that was moved into a susceptible population.

Clinical Signs

Cattle are the only animals naturally infected by CBPP. Susceptible cattle usually develop signs 3 to 6 weeks after they are exposed, but in highly susceptible cattle, signs may develop within 10 to 14 days. There are three forms of the disease: acute, peracute, and mild.

Acute form. The acute form of CBPP is the most common and it is frequently fatal. Surviving animals recover slowly. An infected animal's temperature rises suddenly, accompanied by loss of appetite. There is a drop in milk production in cows.

Breathing becomes rapid and shallow. After exercise, the animal coughs frequently. At first, the cough is dry, but later becomes moist. As the disease progresses, the animal shows obvious pain while inhaling and exhaling. The animal assumes a characteristic stance, with head lowered, back arched, elbows pointed outward to allow the chest to maximally expand, and mouth open to ease its breathing.

Usually, the bacteria invade only one lung. As pneumonia and pleurisy develop, the lung becomes inflamed and enlarged. In fatal cases, air passages fill up with fluid, the body of the lung becomes firm with fibrous connective tissue, and is followed by the death of lung tissues. The animal suffers from lack of air. Fibrous tissues connect the normally unattached outer surface of the lung to the inner chest wall. Great quantities of fluid may fill the chest cavity as lung tissues break down. Then, cattle lose weight, become distressed, and stop chewing their cud. Edema, or swelling may develop in the throat and dewlap. Cattle may "go down," refusing to stand up before they die. In fatal cases, death comes 2 to 5 weeks after first signs of disease.

Peracute form. The peracute—or severe—form of CBPP is uncommon. Cattle with this form of the disease develop many of the signs described for acute infection, or they may develop a severe form of pneumonia. Death usually comes 1 to 3 weeks after signs appear.

Mild form. A mild—or subclinical—form of CBPP also occurs. Although cattle do not show signs of disease, they become carriers and continue

AUTHENTICATED U.S. GOVERNMENT INFORMATION GPO

to spread CBPP. Normally, this form is not fatal for several years. Any time an animal with the mild form is under stress, it may develop signs of the acute form.

Detection

Laboratory and field diagnostic tests have been perfected to detect CBPP. In countries where the disease exists, diagnosis is based on the combination of an examination of suspect cattle by a veterinarian, review of the history of the herd, and a postmortem examination including submission of samples for essential laboratory tests.

The necropsy examination often reveals characteristic prominent fibrous tissue in a "marbled" pattern in the affected lung. Large areas of damaged lung tissue will feel as firm as liver. In some of the walled–off areas of the lung, tissue will begin to die. A large quantity of straw–colored fluid is often found in the chest cavity.

One or more joints of the infected animal may be swollen. The joint fluid in the affected joint will have lost its normal viscosity and have a watery consistency.

Prevention and Control

APHIS continues to prohibit imports of live cattle from countries where CBPP exists. In addition, USDA works closely with U.S. Department of Homeland Security (USDHS) inspectors stationed at U.S. ports of entry to ensure that import restrictions are enforced. These measures are designed to prevent the accidental introduction of a carrier or infected animal and are described in further detail below.

If CBPP should enter the United States, in spite of the established safeguarding measures, it would be a major threat to the U.S. cattle industry.

The following disease–fighting measures have been used against CBPP:

- On–farm quarantine of suspicious and contact animals
- Slaughter of infected and exposed/contact cattle with proper disposal of animals and contaminated material
- Extensive cleaning and disinfection of the infected premises, equipment, and facilities
- Restrictions on the movement of all livestock in the affected area
- Vaccination (only in countries with endemic CBPP)

The Animal and Plant Health Inspection Service's Role

USDA has emergency response plans in place to deal quickly with the accidental or intentional introduction of this and other foreign animal diseases.

As mentioned above, APHIS prohibits the importation of cattle from countries with known CBPP. Serologic testing of susceptible animals prior to importation is required. As a further precaution, the United States requires that every imported animal have an official veterinary certificate of health from its native country. Imported cattle are inspected at U.S. ports of entry, where they are further examined, treated, and quarantined as necessary.

Through cooperation with USDHS, APHIS maintains a constant alert status to protect American livestock from foreign animal diseases such as CBPP.

What the U.S. Livestock Owner Can Do

Livestock owners can help to protect the U.S. livestock industry by knowing the signs of CBPP and immediately reporting anything suspicious to their veterinarian or to an animal disease control official.

Additional Information

For more information contact:
USDA–APHIS
Veterinary Services Emergency Programs
4700 River Road, Unit 41
Riverdale, MD 20737
Phone: (301) 734–8073
Fax: (301) 734–7817
or visit the APHIS Web site at
www.aphis.usda.gov.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720–2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326–W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250–9410 or call (202) 720–5964 (voice and TDD). USDA is an equal opportunity provider and employer.