Bovine Brucellosis and RB51

What is Bovine Brucellosis?

Bovine brucellosis is a serious and contagious livestock disease that has significant animal health and public health consequences. The bacteria that causes this disease, *Brucella abortus*, is known to cause abortions in cattle worldwide. Brucellosis usually spreads through contact with infected birthing tissues and fluids (e.g., placenta, aborted fetuses, fetal fluids, vaginal discharges). The bacteria can also be found in the milk, blood, urine and semen of infected animals. In humans, brucellosis causes symptoms including fatigue, recurrent fevers and arthritis, which can be serious and debilitating. If left untreated, its effects may become chronic. Farmers, ranchers, veterinarians and others that may come in close contact with infected animals during the birthing process or individuals who consume unpasteurized milk from infected animals are more vulnerable to getting this disease.

Brucellosis Eradication

USDA and its partners established a cooperative State/Federal Brucellosis Eradication Program more than 50 years ago to eliminate the disease from the United States.

When the program began, brucellosis was widespread throughout U.S. livestock, but the eradication program offered dramatic results. In 1956, there were 124,000 affected herds in the United States. By 1992, this number had dropped to 700 herds. Today, the number of affected herds is in the single digits, with all 50 states, Puerto Rico and the U.S. Virgin Islands considered Brucellosis Class Free since July 2009.

Because of their Class-Free status, States are not required to vaccinate against brucellosis. Each State decides whether vaccination is needed in their state although APHIS does encourage it in States with affected wildlife populations.

Before the eradication program began, thousands of people each year became sick with brucellosis primarily through occupational exposure or those working directly with animals. Together with increased pasteurization of dairy products, the brucellosis eradication program greatly reduced the number of human cases. Renewed interest in consuming unpasteurized milk and milk products has led to an increase of human infections.
**Vaccination**

Vaccination was an important tool in the control, management and elimination of brucellosis, and is still used today as needed to manage the disease. In February 1996, APHIS licensed the *Brucella abortus* strain RB51 vaccine for use in cattle as part of the eradication effort, a safer replacement to the *Brucella abortus* strain 19 vaccine previously used.

USDA does not require vaccination and it is voluntary. Strain RB51 vaccine must be administered by an accredited veterinarian or by a State or Federal animal health official. When animal health officials decide to vaccinate female calves, the calves must be vaccinated according to the label directions. This vaccine should not be given to pregnant animals.

All vaccinated animals must be identified with the standard official USDA vaccination eartag and a vaccination tattoo identifying them as vaccinated with the RB51 vaccine and indicating the year that the animal was vaccinated. Animals are rarely vaccinated more than once.

RB51 vaccine is considered safe and helps protect about 70-80 % of vaccinated cattle from becoming infected with brucellosis. The vaccine produces an immune response that increases the animal’s resistance to the disease. Vaccinated cattle can shed the vaccine-strain of the bacteria in their milk for a short period of time after vaccination, and in rare cases prolonged shedding has been detected.

During the time when the vaccine is being shed, rare cases of human infection with RB51 have been associated with drinking unpasteurized (raw) milk in the United States. Pasteurization kills the bacteria and keeps people from getting sick. To protect yourself and your family, consume only pasteurized milk and milk products. This is especially important for people with weakened immune systems or who are pregnant. RB51 can cause severe illness or miscarriages in humans. Doctors can treat patients infected by brucellosis with antibiotics, but it is resistant to rifampin and penicillin.

There is no way to test for animals actively shedding the vaccine at either the herd or individual level. RB51 can be identified through Brucella milk culturing, a process that can take several days. Raw milk products do not have a long shelf life that allows for this kind of testing prior to sale or consumption. Pasteurization-- which kills RB51, other types of *Brucella*, and a variety of other disease-causing bacteria -- remains the best way to avoid illness.

**For More Information**

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Information Sheet: [Brucella abortus Strain RB51 Vaccine](http://www.aphis.usda.gov)
