

# River View Veterinary Service Newsletter

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215 N Main Street  
PO Box 250  
Port Byron, IL 61275  
Office: 309.848.9093  
Fax: 309.848.9094  
www.riverviewvets.com



## News and Upcoming Events:

- Ask Dr. Sarah what she's learned while attending CVC-Kansas City!
- Weaning soon? Ask us about implanting calves!

*Welcome to the River View Veterinary Service Newsletter!*

*This newsletter is designed to provide cattle producers with timely information and education on a variety of topics. Got a topic? Let us know!*

*Sarah Foust, DVM and Terry Foust, DVM*

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## Cattle Vaccination and Immunity

(Adapted from Wenzel, John; NMSU Guide B-222)

Developing immunity in cattle requires an effective herd health program. Vaccinations are not a silver bullet cure all for disease in a cowherd, but are a primary component of a complete herd health program. Vaccines contain antigens of disease-causing agents, and are used to stimulate cattle's immune systems and create an immune response before significant natural exposure to disease-causing agents. It is important to understand that vaccination does not equal immunization. Many factors influence the immune response to vaccinations, including stress, vitamin and mineral balance, nutrition, and overall health of the animal being vaccinated. A basic understanding of how the immune system responds to a vaccine is important to understanding how vaccines function.

The first time a cow's immune system encounters a pathogen (disease-causing agent), it often cannot respond quickly enough to prevent disease. After an animal recovers from an infection, memory cells that have been produced by the immune system remain for months to years. Memory cells are programmed to recognize parts of specific pathogens called antigens. If they are encountered again, and facilitate a response before the pathogen can cause disease. Antigens are molecules unique to each pathogen, and memory cells use antigens to recognize specific pathogens.

Vaccines work by exposing the immune system to antigens from a specific pathogen, tricking the body into thinking it has encountered the actual pathogen. Exposure to an antigen stimulates an immune response, which creates memory cells for that pathogen without causing the negative effects of an actual first infection.

Secondary exposure to a pathogen or its vaccine makes the immune system stronger and better prepared for future exposure. A booster vaccination creates a stronger immune response of longer duration because the concentration of memory cells and their effectiveness increase with repeated exposure to an antigen. This is why one vaccination usually does not provide sufficient protection. Most vaccines require a booster two to four weeks after the initial vaccination and annually thereafter. The goal is to stimulate the immune system by repeated exposure to an antigen so antibodies are present in the body at a level that is highly protective if exposure to the actual pathogen occurs. However, disease may still occur in cases where pathogen exposure exceeds the animal's protective level for that disease.

While it does not provide perfect protection, vaccination is the most effective tool available to prepare an animal's immune system to respond to disease challenges. A sound vaccination program developed with your veterinarian and carried out using proper timing and technique is critically important for maintaining the health and profitability of your herd.