



# PROTECTING CALVES

Vaccinating calves is an efficient and cost-effective practice to prevent common calf illnesses

For many calf diseases, treatment costs and the extra labour they cause, such as additional observation, handling, treating, cleaning and disinfection, are often far more than the cost of a vaccine. Vaccines don't just protect against calf diseases, they are an investment in your herd's future health.

## HOW VACCINES WORK

To fight infections, white blood cells in the immune system need to learn to make antibodies to help target bacteria or viruses. Vaccines imitate an infection in advance of an exposure, training the calf's white blood cells to be ready to respond to a real infection. This training can take 14 to 21 days. The difference between a natural infection and a vaccine is the bacteria or viruses in the vaccine lack the virulence (disease-causing) factors and the ability to multiply in the calf's body. After vaccination, special white blood cells and other immune factors remember the infection, which enables the body to respond more quickly the next time it encounters it. This memory is why calves that have been vaccinated or had a certain disease are usually more resistant to becoming sick with the same disease later on.

If an unvaccinated calf encounters disease-causing bacteria or a virus for the first time, taking two or three weeks to launch a full immune response can really set the calf back. By the time the calf's immune system is ready to fight the infection, it may be widespread, reducing the calf's ability to overcome the disease. The sooner a calf can overcome a disease, the sooner it can get back to growing into a productive and healthy herd member.

A calf exposed to disease just before or after vaccination can still become sick since it takes several days to produce a full immune response. Overwhelming exposure to bacteria and viruses can still overcome even a good vaccine. For this reason, limiting exposure to pathogens by using good hygiene and biosecurity is still important even when an effective vaccination program is in place.

## PROTECT CALF HEALTH

For some diseases, another approach to using vaccines to protect calves is to vaccinate a cow or heifer during pregnancy. This allows the cow or heifer to develop a response to a disease and pass the immunity (maternal anti-



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bodies) to its calf via colostrum. Vaccinating calves to supplement their immunity may still be necessary since protection is hard to predict. The level of protection a calf receives from colostrum directly relates to the amount of antibody in the colostrum, the amount of colostrum fed, the colostrum's quality, and the ability of the calf's gut to take in the antibodies. Research has shown calves do not absorb antibodies in colostrum well if the colostrum also has high bacteria. Calves fed colostrum sourced from cows from another farm or fed commercial colostrum replacers may not gain immunity to all the pathogens on your farm.

Maternal antibodies in a calf's system can sometimes interfere with the development of the calf's immune response to a vaccine. Higher levels of antibodies absorbed from colostrum will protect the calf longer, but also block a vaccine for a longer time. Due to this reason, vaccines must be administered to calves at a specific age. Vaccine product labels specifically recommend ages for administering vaccines. Calves will require a booster vaccine if it is given at an age younger than recommended by the manufacturer. The best way to ensure you are following the most effective vaccine protocol is to follow the instructions on the vaccine product label and advice of your herd veterinarian.

## CAREFUL HANDLING IS KEY

Handling and storing vaccines correctly is essential for maintaining their effectiveness. If you feel your vaccination program isn't effectively protecting your calves, improper vaccine storage and handling could be the problem.

Every vaccine has specific handling instructions on the package or package insert. These guidelines must be followed to ensure the vaccines will work. Keeping vaccines at the right temperature all the time is crucial. Some require refrigeration and some do not. When buying vaccines, make sure you're able to

transport them properly; leaving a live vaccine in a hot car for a few hours or allowing it to freeze in the barn may inactivate it. Vaccines exposed to light—as might occur if they are stored in a barn window or on an open shelf in an alley—can also be damaged.


Storing vaccines in a fridge isn't always the best answer either. One study found 76 per cent of barn refrigerators tested were unacceptable for storing animal health products due to incorrect temperatures and temperature fluctuations. Think about the fridge in your barn—a minimum and maximum recording thermometer can help you assess your refrigerator's performance and protect your animal health product investments.

When vaccinating a group of calves, be mindful of where you are setting the vaccine down, the environmental temperature, and how long after mixing up a live vaccine it will remain effective. Oklahoma State University has useful instructions for making a Chute Side Vaccine Cooler, which can be found at <https://tinyurl.com/vaccinecooler>.

## VACCINE PROTOCOL

If you are concerned about the cost of vaccinating, work with your vet to determine the common causes of calf sickness and death on your farm. It may be worthwhile to incorporate a vaccine protocol and later reassess calf health and growth to see if the vaccine has improved growth or reduced treatment costs.

There are a variety of vaccines available to protect against common calf illnesses, such as pneumonia and various scours. Work with your vet to develop a vaccination program as part of regular herd health and management to help calves stay healthy while they grow. After all, vaccinations are an important part of good calf management. 🐄



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