



Western Beef Development Centre

Division of PAMI

The Cost of Herd Health – Vaccination

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Introduction

We can all think of examples in our lives where we opted to not purchase extended warranty or extra insurance in order to save a buck. Sometimes it pays off and sometimes it comes back to bite us. A recent example where insurance paid off for me was when my computer crashed. Thankfully I had purchased warranty for an extra \$157 when I initially bought the computer. I had my computer repaired free of charge.

Vaccinating your herd is like paying an insurance premium. The cost of the vaccinations is the annual premium to avoid costly losses from death, illness, reduced fertility, etc.

In recent years, low prices have forced cattle ranchers to look for ways to operate “leaner” than they already do. Cutting vaccinations may seem like a good idea to save money in the short-run, but the potential losses from disease, illness, or infertility can quickly outweigh the cost of vaccination.

Producers who opt to not vaccinate may go years without a disease outbreak making the choice to not vaccinate seem like a wise one because of the dollars saved, but it only takes one outbreak to make that insurance premium (vaccination) a wise investment.

Western Beef’s herd veterinarian, Dr. Steve Hendrick, has provided some guidelines on a minimum herd health regimen. Western Beef follows this regimen for its own 300-cow herd. The cost of providing these minimum vaccination requirements is \$15.60 per cow-calf pair.

The veterinary and medicine expense calculated from WBDC’s Cost of Production benchmark study has typically been about \$20.00 per cow. This expense would include vaccinations, treatment, preg checking, RFID tags, etc.

Closed Herd Argument

To the argument that “my herd is a closed herd, so I don’t need to vaccinate,” a completely closed herd means:

- all heifer replacements are selected from within the herd
- all bulls are produced from the herd or from AI
- there is no fence-line contact with any other herd
- cattle are not taken to shows (4-H, Agribition, etc), auction marts, vet clinics, or assembled with other cattle (community pasture)
- strict biosecurity is adhered to for feed delivery persons, nutritionists, and vets
- no visiting neighbouring farms, auction marts, cattle shows, or sales due to the risk of bringing disease back to the farm on your boots or clothing

All these requirements mean that there are likely no totally closed herds, but varying degrees of open herds. (Lewis 2008)



If you do not vaccinate, over time your herd’s resistance to disease erodes, which can lead to large outbreaks of diseases like anthrax and blackleg, which are not carried in from another animal but from spores that are in the soil. BVD can be passed to a calf before it is even born, resulting in a PI (persistently-infected) calf that will wreak havoc in a feedlot by shedding the virus in its feces, saliva, and mucous, thereby infecting pen mates. PI calves also cause problems on your breeding pastures as the virus circulates through the herd resulting in infertility and the production of future PI calves.

Minimum Vaccination Recommendations

As a minimum cow-calf producers should vaccinate cows, bulls, and calves for Blackleg (Clostridial vaccine, 7 or 8-way) and BVD (vaccines often cover IBR, BRSV, PI₃ as well). Provided the replacement heifers have been vaccinated well and risk of exposure on pasture is low, some producers will only vaccinate their herd every two or three years for blackleg.

Vaccinating calves for bacterial pneumonia (Mannhemia/Pasteurella and Histophilus) is also a good idea, especially if you are retaining ownership of your calves.

Vaccinating for anthrax or footrot is dependent upon your location and anticipated pasture conditions. If your farm or area has had anthrax cases, it is recommended that you vaccinate every year for several years.

Community Pasture Requirements

If you are a community pasture patron, you are required to treat all cattle under two years of age with a blackleg vaccine (SK Ministry of Agriculture 2008). Anthrax vaccination may also be required. There is the expectation that your cattle are free of infectious and contagious disease or parasites, which may mean pour-on dewormer is part of your herd health protocol. Additionally, cows and bulls going to community pasture should consider vaccination for vibrio.

What are the costs?

Table 1 below, contains per-dose costs of recommended vaccines for your herd. All prices have been sourced from a local vet clinic with whom WBDC conducts business. If you were going to treat each cow-calf pair with all the vaccines indicated below, the cost would work out to approximately \$33.00 per pair. The cost of providing minimum vaccination requirements – blackleg, BVD, and bacterial pneumonia – is \$15.60 per cow-calf pair.

Table 1. Typical herd diseases to vaccinate against & per dose cost

Disease	Example Vaccine	Vaccine Protocol	\$/dose
Blackleg	Covexin-8 (Clostridial, 7 or 8-way)	Spring – cows, bulls, calves Fall - calves	\$0.50
IBR/BVD/PI3/BRSV	Express 5	Spring – cows, bulls, calves Fall – calves	\$2.37
Anthrax	Anthrax vaccine	Spring - treat herds in outbreak areas and former outbreak herds	\$1.53
Bacterial Pneumonia (H. somnus and P. haemolytica)	Somnu-Star Ph	Spring – calves Fall - calves	\$3.50
Vibriosis	Vibrin or get coverage with Express 3 VL5 or Bovishield FP VL5	Treat cows going to community pasture	\$1.76
Footrot	Fusoguard	Spring – 2 shots, 3 wks apart	\$5.04
Parasites	Ivomec, Dectomax, Vetomectin	Fall/Winter – cows, bulls	\$0.70-\$2.00 ^a
Scours	Scourguard	Pre-calving – cows, heifers Booster shot – 1 st calf heifers	\$4.18

^a Pour-on rate 1 mL per 22 lb; based on 5 L pour-on for 1200 lb cows. Range based on four available products – Ivermectin, Vetomectin, Dectomax and Ivomec (listed in order from lowest to highest cost). Source: Prices for the vaccinations have been sourced from a local vet clinic.



Example

Let's assume Producer A vaccinates his 100-cow herd each spring for blackleg and BVD/BRSV/PI3/IBR. Calves receive the same shots in spring as their mothers, but they also get something for pneumonia, and all shots are repeated in the fall just before weaning time. The total annual costs for vaccinating the herd is \$1575.

$$(100 \text{ cows} \times \$2.87) + (5 \text{ bulls} \times \$2.87) + (100 \text{ calves} \times \$6.37 \times 2 \text{ treatments}) = \$1575.35$$

Producer B opts not to vaccinate his 100-cow herd, thereby saving \$1575 each year. He is outbreak and disease-free for five years ($5 \times \$1575 = \7875 in avoided vaccine costs), when all of a sudden a dry spring results in 20 calves dying from blackleg. These calves could have been sold in the fall for over \$11,000 ($20 \text{ hd} \times 550 \text{ lb} \times \$1.05/\text{lb} = \$11,550$). Had Producer B been vaccinating each year he would have incurred vaccination expenses of \$9450 (6 years \times \$1575), which is \$2100 less than the lost calf revenue from the disease outbreak.

$$(6 \text{ years} \times \$1575/\text{yr}) - \$11,550 = \mathbf{\$2100} \text{ difference}$$

Quickly do the math and you will determine that if Producer B had been outbreak-free for eight years ($8 \times \$1575 = \$12,600$), the cost of vaccinations outweighs the loss of 20 calves.

Is the gamble worth it? What if Producer B would have lost more than 20% of his calves? What if his herd had a BVD outbreak and 50% of his cows were open in the fall? These risks make vaccination your safest bet by ensuring your herd's health and reproductive efficiency.

References

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Note: A motivator for this Fact Sheet was discovering some of WBDC's Cost of Production participants did not vaccinate their animals. Herd health is a key component to having your cows produce calves each year for you to market. Please consider following a minimum herd health regimen. Talk with your local vet to come up with a vaccination program suitable for your herd and location.



Disease 101

What is blackleg?

Blackleg is a highly fatal disease that is most frequently seen in young cattle between six months and two years of age. Calves eat spores, which can live in the soil for many years and are absorbed from the intestines. Once in the blood stream, the spores then lodge in various muscles in the body. If oxygen in the muscle gets reduced due to injury or fast growth, the spores become active bacteria that produce toxins and gas. Death usually results in 12 to 48 hours. Blackleg is almost entirely preventable by vaccinating with 7- or 8-way Clostridial vaccine.

What is BVD?

BVD stands for bovine viral diarrhoea. As discussed above, PI calves are mainly responsible for maintaining the virus in cattle herds. When BVD first enters a herd there may be an outbreak of acute diarrhoea. Other short and long-term effects include: infertility, abortion, early pregnancy loss, birth defects, and PI (persistently infected) calves. PI animals often die of mucosal disease before two years of age. BVD infection in a healthy cow or calf can weaken their immunity and allow them to develop pneumonia, salmonellosis, footrot and mastitis. Vaccination of breeding stock and removal of PI animals are viewed as acceptable approaches to controlling BVD ([Brownlie et al 2000](#)).

What is IBR?

IBR stands for infectious bovine rhinotracheitis. It is an easily spread viral disease occurring in the nasal air passages and wind pipes of cattle. Infected females have been known to abort 20 to 45 days after infection.

What is anthrax?

Anthrax is caused by a spore-forming bacterium and is highly fatal. Spores can be disturbed from the soil in years of high winds or heavy rain and cattle will ingest the spore when grazing close to the ground. Wet springs, followed by dry weather (such as 2006) can result in spores making their way to soil surfaces and increasing anthrax outbreaks.

What is vibrio?

Vibrio is a sexually transmitted infection that causes fertility problems in cattle. Spread by infected bulls, infected cows will cycle irregularly, and experience inflammation of their reproductive tract causing early pregnancy loss, and sometimes abortion. It is spread by infected bulls. While most cattle can recover within a year, disease carriers are common. Vaccination is the best prevention available at this time, as testing for vibrio is challenging and should ideally be completed four weeks before breeding (or community pasture turnout).

What is footrot?

Footrot is a bacterial disease of adult cattle. It can be seen year-round, but is most common in wet summer and fall months. Bacteria gain entrance to the foot through tiny breaks in the skin between the toes. Wet manure and mud can soften skin between hooves and further increase the chances of infection. Dried or frozen mud, stones and stubble can also contribute to the disease. Signs of the infection include: lameness (usually only one foot is affected); a break in the skin between the claws of the hoof with the foot swollen just above the hoof.