

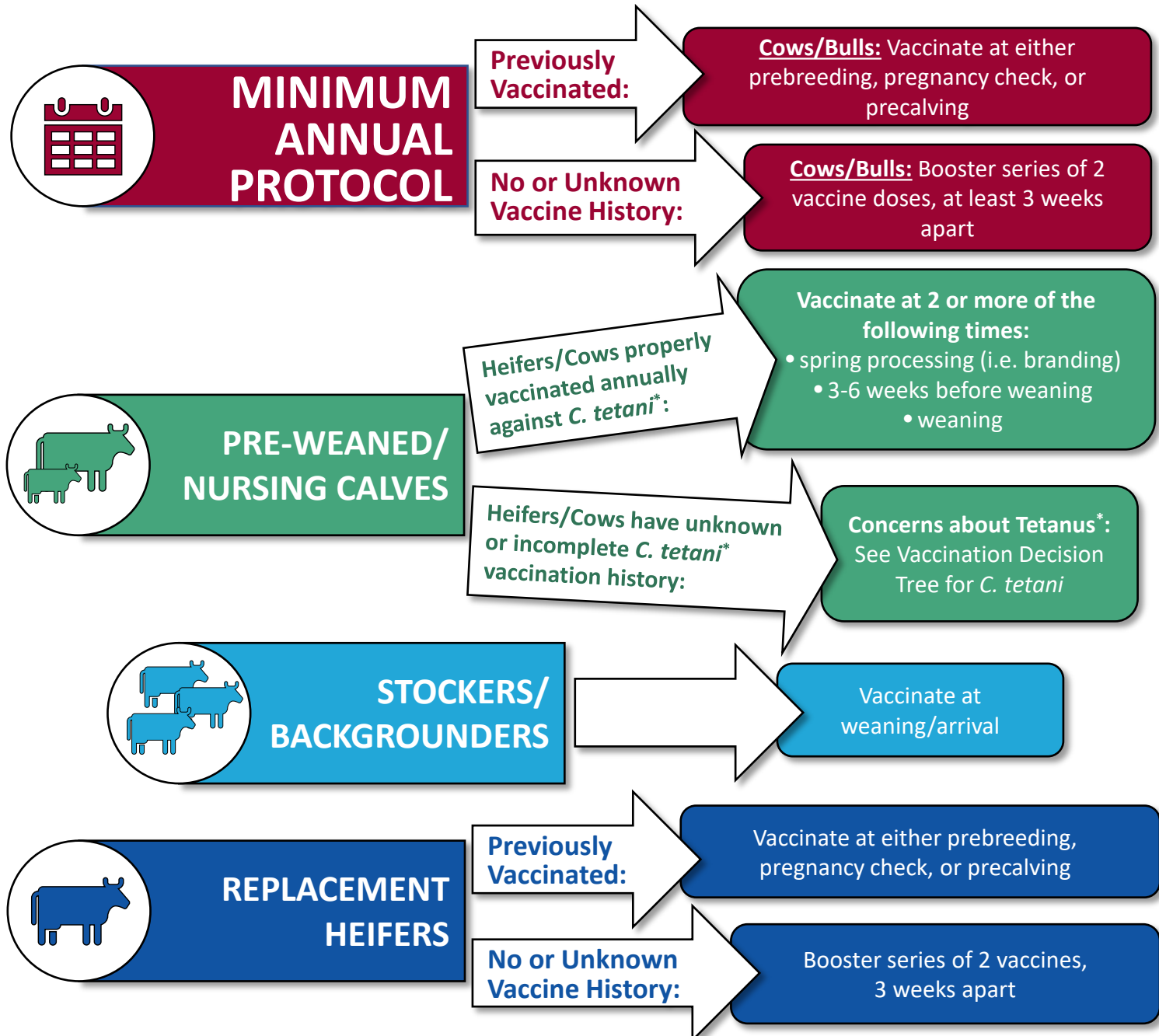
Core Vaccination Guidelines

CLOSTRIDIAL BACTERIA

(*Clostridium chauvoei*, *C. septicum*, *C. novyi*,
C. sordelli, and *C. perfringens* Type B, C, & D)

(*C. hemolyticum* and *C. tetani** are considered risk-based vaccines)

Vaccines should always be given according to label instructions.



This document provides **general guidelines** for vaccine use in cow-calf herds.

Specific recommendations for your operation should be discussed with **your veterinarian**.



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CORE VACCINE LIST

Core vaccines are those that provide protection from diseases endemic in beef cow-calf herds, which are virulent or highly infectious, pose a severe disease risk to either cows, bulls, replacement heifers, and/or calves, and to which there is an efficacious commercial vaccine available.

ALL cow-calf operations should vaccinate their herd against the following:

-  **Bovine Viral Diarrhea Virus (BVDV Type 1 & 2)**
-  **Bovine Herpesvirus Type 1 (BHV1)**
-  **Bovine Respiratory Syncytial Virus (BRSV)**
-  **Clostridial bacteria** (*Clostridium chauvoei*, *C. septicum*, *C. novyi*, *C. sordelli*, and *C. perfringens* Type B, C, & D)

This list is similar to the American Association of Bovine Practitioners' [Vaccination Guidelines](#) (Oct 2021).



Vaccines should always be given according to **label directions**.

A tailored vaccination protocol for your herd should be developed with the **help of your veterinarian**.



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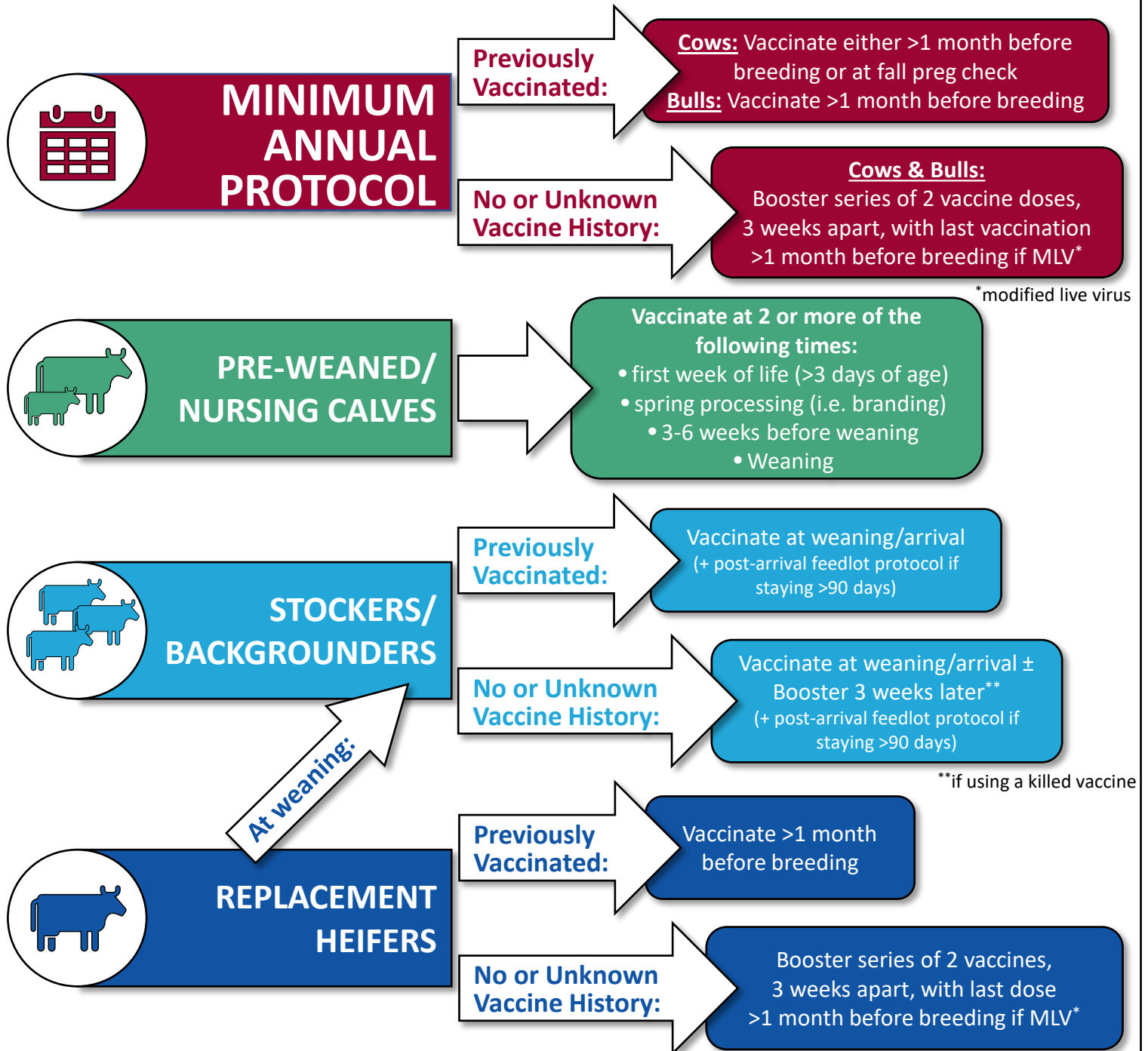


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Core Vaccination Guidelines

BOVINE HERPESVIRUS TYPE 1 (Infectious Bovine Rhinotracheitis)

Vaccines should always be given according to label instructions.



This document provides **general guidelines** for vaccine use in cow-calf herds.

Specific recommendations for your operation should be discussed with **your veterinarian**.



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BLACKLEG (CLOSTRIDIUM CHAUVOEI)



Source: Jowel et al., 2016

CAUSES

The *C. chauvoei* bacteria produces spores, which cause severe and often fatal muscle damage.

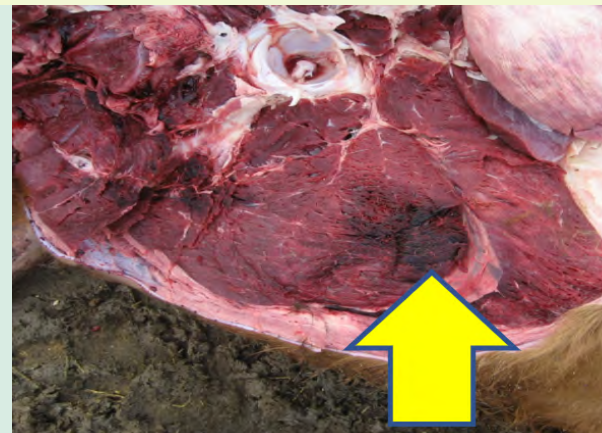
Inactive spores are common in the environment and can exist within the intestines of cattle. They convert to active bacteria and multiply in the muscles of affected animals, often after muscle injury.

Disease tends to occur seasonally, especially in warm, wet months.

BLACKLEG, CAUSED BY *C. CHAUVOEI*, OCCURS MOST OFTEN IN YOUNG FAST-GROWING ANIMALS AT 3 -24 MONTHS OF AGE.

CLINICAL SIGNS

- Causes swelling and gas accumulation in muscles.
- Large muscles of the legs, back, and neck often affected, resulting in lameness.
- Difficulty breathing if tongue and throat muscles affected.
- Sudden death if heart or diaphragm muscles affected.
- Mortality rate is high.
- Post-mortem findings: visible muscle damage that has a metallic, dry reddish-black. May have a sweet smell.



***C. CHAUVOEI* IS CONSIDERED A CORE VACCINE AND SHOULD BE INCLUDED IN YOUR HERD'S VACCINATION PROGRAM.**

TREATMENT

Treatment is only successful in the very early stages of disease, with high doses of antimicrobials, supportive care, and surgical removal of damaged muscle, if possible.

VACCINATION

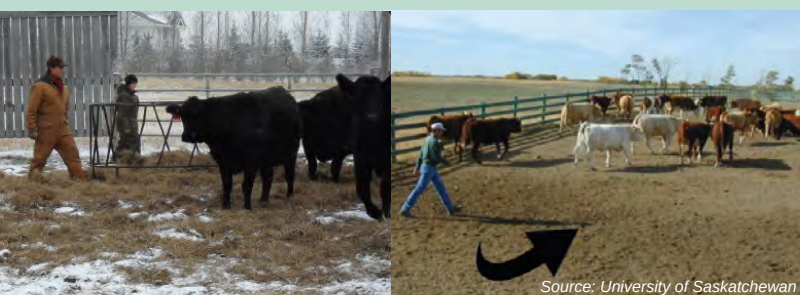
C. chauvoei is considered a **core vaccine**, so it should be included in every herd's vaccination program ([See Core Vaccine Guidelines - Clostridial Vaccines](#)).

Cattle that have not been previously vaccinated or have unknown vaccine history should be given a booster series (i.e., 2 vaccines, 3-6 weeks apart), as per label directions. Cattle that have been previously vaccinated should be re-vaccinated annually.

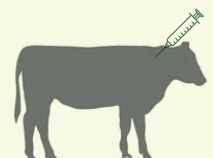
Calves should be vaccinated at 2 or more of the following times: spring processing (or. branding), 3-6 weeks before weaning, and/or weaning, as per label directions. Two vaccines should be given 3-6 weeks apart.

PREVENTATIVE MANAGEMENT

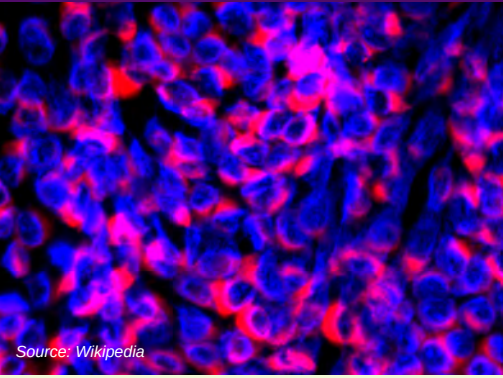
Low-stress cattle handling, to reduce the risk of bruising and muscle injury, is important.



Source: University of Saskatchewan



BOVINE VIRAL DIARRHEA (BVD)



Source: Wikipedia

CAUSES

Bovine Viral Diarrhea Virus (BVDV), the cause of BVD, has many different strains that cause varying severity and types of disease.

The main source of infection is calves infected during the first trimester of gestation, who shed the virus for life (**Persistently Infected, PI**).

Animals get infected by direct contact, through the placenta, and by indirect contact (e.g., airborne, flies, rectal sleeves, needles, stomach tubes, nose tongs).

BVD VIRUS IS COMMON IN WESTERN CANADIAN BEEF HERDS AND FEEDLOTS. INFECTION SPREADS QUICKLY WITHIN AND AMONGST GROUPS OF CATTLE.

CLINICAL SIGNS

- **Reproductive Disease:** infertility, low conception and pregnancy rates, abortions, stillbirths, weak calves, congenital defects.
- **Diarrhea:** mild diarrhea, fever, off feed, quick recovery, high numbers of animals affected.
- **Peracute Diarrhea:** severe diarrhea, fever, high numbers of sick animals, frequent and rapid death.
- **Unthrifty PI calves:** may be smaller than rest, grow poorly, curly hair.
- **Acute Mucosal Disease** (PI calves 6-24 months of age): depressed, off feed, salivation, profuse watery diarrhea with mucus and/or blood, straining, fever; may have erosions in mouth and nose, dirty nasal discharge, or lameness; rapid death.
- **Chronic Mucosal Disease** (PI cattle): unthrifty, chronic diarrhea and bloat, weight loss, chronic skin lesions, hoof deformities, chronic erosions in mouth, pneumonia; high death loss.
- **Hemorrhagic Disease:** bloody diarrhea, hemorrhages in eyes, bleed from injection sites, nose bleeds.

BVDV causes immunosuppression so it increases the risk of other diseases (e.g. BRD).



Source: NADIS Animal Health Skills

BVD IS A VIRAL DISEASE SO IT DOES NOT RESPOND TO ANTIMICROBIALS.

TREATMENT

This is a viral disease so it does not respond to antimicrobials. Discuss treatment options, including addressing potential secondary bacteria infection, with your veterinarian.

PREVENTATIVE MANAGEMENT

Segregate new stock from existing herd for a few weeks and ensure proper vaccination before mixing.

Ensure calves get sufficient colostrum from vaccinated dams. In a BVDV outbreak, contact your veterinarian on how to control and reduce disease losses, and discuss value of testing and culling BVD PI cattle.

VACCINATION

BVDV is considered a **core vaccine**, so it should be included in every herd's vaccination program ([See Core Vaccine Guidelines - BVD Vaccines](#)).

Cattle that have not been previously vaccinated or have unknown vaccine history should be given a booster series (i.e., 2 vaccines, 3-6 weeks apart), as per label directions. Cattle that have been previously vaccinated should be re-vaccinated annually.

Calves should be vaccinated 2 or more times at either 1) spring processing, 2) preweaning, or 3) weaning, as per label directions.

If exporting breeding stock, some countries have restrictions on BVDV vaccination.

Modified Live BVDV vaccine should never be used in pregnant animals of unknown vaccination history and should always be given no less than 1 month before breeding.

BOVINE RESPIRATORY SYNCYTIAL VIRUS (BRSV)



CAUSES

BRSV is a pneumovirus and is specific to cattle. There are 2 subtypes called **A and B**, with different virulence amongst different isolates. The largest source of virus is other cattle shedding the virus through coughing and aerosol transmission or direct contact.

Disease occurs most commonly in nursing calves on pasture but can occur in older cattle as well.

Other points on BRSV:

- Reinfection is common.
- Natural infection and vaccination do not prevent reinfection because immunity is short-lived, but vaccination may reduce the severity of clinical disease.
- Persistent infection is possible.
- Outbreaks may occur with weather changes.

BRSV INFECTIONS ARE COMMON IN WESTERN CANADIAN BEEF HERDS AND FEEDLOTS.

CLINICAL SIGNS

BRSV causes **upper and lower respiratory disease** and can be part of the BRD complex. Infections are common and most animals have mild clinical disease and recover in a week.

A small percentage will develop a fatal viral interstitial pneumonia, with severe respiratory distress, abdominal breathing, mouth breathing, frothy foam around mouth, fever, reluctance to move, and unable to eat and drink due to severe respiratory distress, with death in 2-5 days.

Sudden outbreaks can occasionally occur in a susceptible herd, with high morbidity (30-50%) and mortality (3-5%).

Typical clinical signs include:

- Mild, moderate to severe respiratory distress.
- Dry non-productive cough.
- Nasal discharge.
- Fever (40-42°C).
- Reduced milk production.
- Decreased feed/water consumption.



BRSV IS A VIRAL DISEASE AND DOES NOT RESPOND TO ANTIMICROBIALS.



TREATMENT

BRSV is a viral disease; thus, it does not respond to antimicrobials. Your veterinarian may recommend antimicrobials to prevent or treat secondary bacterial infections in the lung i.e., Bovine Respiratory Disease (BRD).

BOVINE RESPIRATORY SYNCYTIAL VIRUS (BRSV)



PREVENTATIVE MANAGEMENT

- Minimize stressors on cattle.
- **Vaccinate cattle prior to disease risk**, as per your veterinarian's vaccination protocol, using good vaccination techniques ([Watch videos here](#)).
- Segregate new stock for a few weeks from existing herd and ensure vaccinated against BRSV before mixing.
- **Ensure calves get sufficient colostrum from vaccinated dams.**
- Keep good vaccination records.



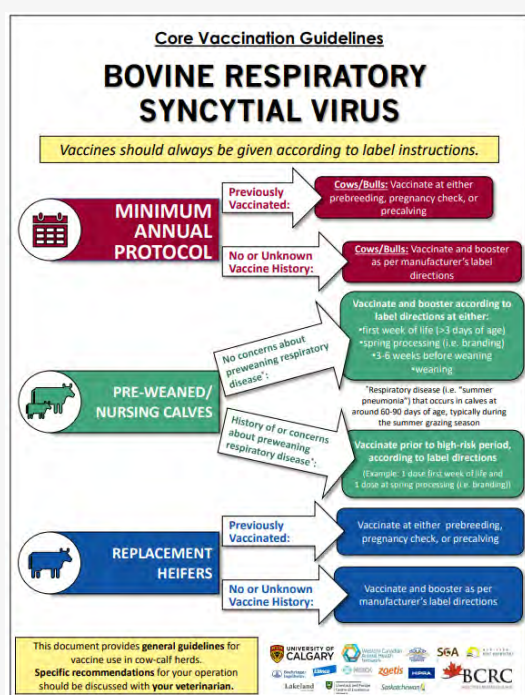
IN A BRSV OUTBREAK, CONTACT YOUR VETERINARIAN ON HOW TO CONTROL AND REDUCE DISEASE LOSSES.

RECOMMENDED VACCINATION SCHEDULE (CORE VACCINE):

Replacement heifers: vaccinate with a BRSV vaccine, and revaccinate as per manufacturer's label directions.

Cows and Bulls: vaccinate annually with a BRSV vaccine, and revaccinate as per manufacturer's label directions.

Calves: vaccinate with a BRSV vaccine at either 1) >3 days of age, 2) spring processing, 3) preweaning, or 4) weaning, and revaccinate as per manufacturer's label directions. If vaccinating in first week of life or at spring processing, use an intranasal BRSV vaccine to reduce immune response interference from maternal antibodies.



CONSULT THE CORE VACCINE GUIDELINES - BRSV VACCINES



Core Vaccination Guidelines

BOVINE RESPIRATORY SYNCYTIAL VIRUS

Vaccines should always be given according to label instructions.



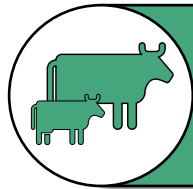
MINIMUM ANNUAL PROTOCOL

**Previously
Vaccinated:**

Cows/Bulls: Vaccinate at either prebreeding, pregnancy check, or precalving

**No or Unknown
Vaccine History:**

Cows/Bulls: Vaccinate and booster as per manufacturer's label directions



PRE-WEANED/ NURSING CALVES

**No concerns about
preweaning respiratory
disease*:**

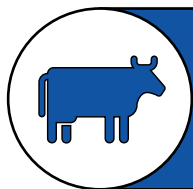
Vaccinate and booster according to label directions at either:

- first week of life (>3 days of age)
- spring processing (i.e. branding)
- 3-6 weeks before weaning
- weaning

*Respiratory disease (i.e. "summer pneumonia") that occurs in calves at around 60-90 days of age, typically during the summer grazing season

**History of or concerns
about preweaning
respiratory disease*:**

Vaccinate prior to high-risk period, according to label directions
(Example: 1 dose first week of life and 1 dose at spring processing (i.e. branding))



REPLACEMENT HEIFERS

**Previously
Vaccinated:**

Vaccinate at either prebreeding, pregnancy check, or precalving

**No or Unknown
Vaccine History:**

Vaccinate and booster as per manufacturer's label directions

This document provides **general guidelines** for vaccine use in cow-calf herds.

Specific recommendations for your operation should be discussed with **your veterinarian**.



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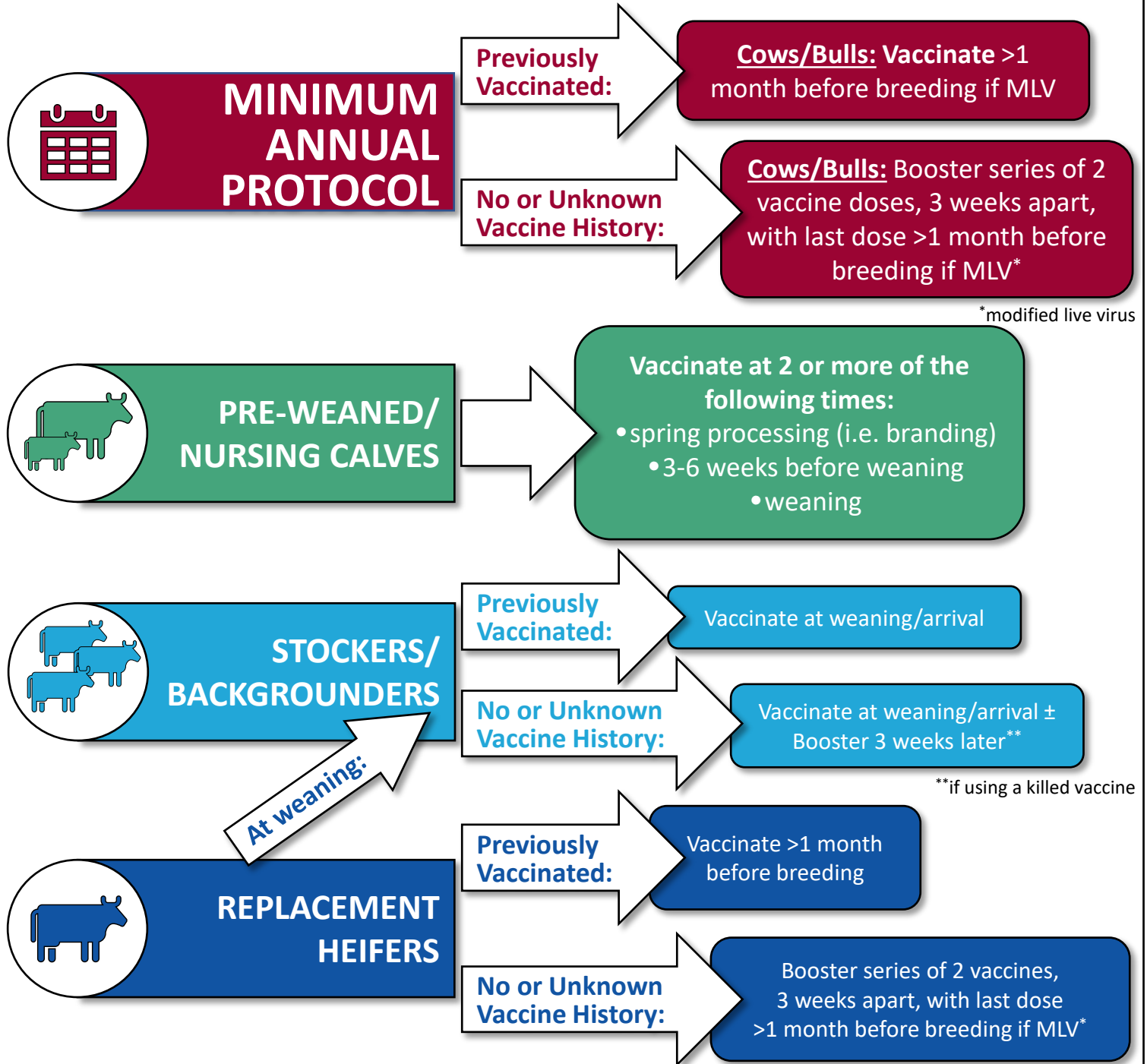
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Core Vaccination Guidelines

BOVINE VIRAL DIARRHEA VIRUS (TYPE 1 & 2)

Vaccines should always be given according to label instructions.



This document provides **general guidelines** for vaccine use in cow-calf herds.

Specific recommendations for your operation should be discussed with **your veterinarian**.



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SAMPLE OF A COW-CALF VACCINATION PROTOCOL FROM SOUTH WEST ANIMAL HEALTH CENTRE

Animal group	Timing	Recommended vaccines
Calves	Branding	MLV BVDV, IBR, BRSV, PI3/Mannheimia Clostridial/Somnus Non-steroidal anti-inflammatory Growth implant (steers and non-replacement heifers)
Cows	Branding	MLV BVDV, IBR, BRSV, PI3 (FP) Vibrio +/- Lepto
Cows	Preg check	Ivermectin Clostridial
Retained calves	Weaning	MLV BVDV, IBR, BRSV, PI3/Mannheimia Clostridial/Somnus Fenbendazole Ivermectin
Yearling replacement heifers	Spring	MLV BVDV, IBR, BRSV, PI3 (FP) Clostridial Vibrio +/- Lepto
Bulls	Fall	Ivermectin
Bulls	Semen test	MLV BVDV, IBR, BRSV, PI3 (FP) Vibrio +/- Lepto Clostridial

*Please check with your local veterinarian regarding disease issues specific to your region or operation that should be covered by a vaccination protocol.

(FP) = Fetal protection

MLV = Modified live virus

HISTOPHILOSIS



CAUSES

Histophilosis is caused by the bacteria, *Histophilus somni* (previously called *Hemophilus somnus*).

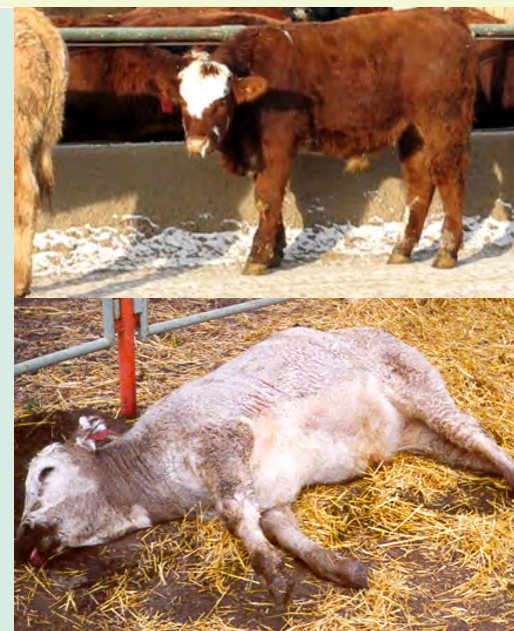
This bacteria can be found in the upper respiratory and reproductive tracts of healthy cattle. The bacteria is shed in nasal and vaginal secretions and urine. It can evade normal immune mechanisms that normally kill bacteria.

HISTOPHILUS SOMNI BACTERIA ARE A SIGNIFICANT CAUSE OF RESPIRATORY DISEASE IN PRE-WEANED CALVES AND A SIGNIFICANT CAUSE OF MORTALITY IN FEEDLOT CALVES.

CLINICAL SIGNS

Histophilosis may appear with various symptoms, such as:

- **Pneumonia:** depression, off feed, nasal discharge, coughing, fever
- **Laryngitis (Wheezer):** snore when breathing in
- **Ear infections:** ear droop, head tilt, discharge from ear
- **Heart disease and pleuritis:** depressed, froth at mouth, mouth breathing, or sudden death
- **Nervous disease:** depressed and knuckle on back feet in early stages; typically found down in pen; may star gaze or are unable to get up, with involuntary circular movement of eyes
- **Joint infections:** lame, swellings over large joints (e.g., stifle, hock); usually affecting multiple joints; may also have respiratory signs.
- **Abortions:** possible but not common



HISTOPHILUS SOMNI ARE CONSIDERED RISK-BASED VACCINES. DISCUSS WITH YOUR VETERINARIAN ABOUT WHETHER YOUR HERD SHOULD BE VACCINATED AGAINST THIS DISEASE.

TREATMENT

Usually treated with antimicrobials and if given early, animals may respond. Heart disease is not easy to diagnose until after irreversible heart damage has occurred.

Always consult your veterinarian about treatment strategies.

PREVENTATIVE MANAGEMENT

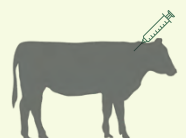
Reduce stress on cattle. Ensure good biosecurity. Use antimicrobials for metaphylaxis only when necessary. Prudent antimicrobial use is necessary to reduce antimicrobial resistance against *H. somni* in in-coming feeder cattle, so antimicrobials will be effective in these animals, which are at greatest risk of this serious fatal disease. In a Histophilosis outbreak, contact your veterinarian on how to control and reduce disease losses.

VACCINATION

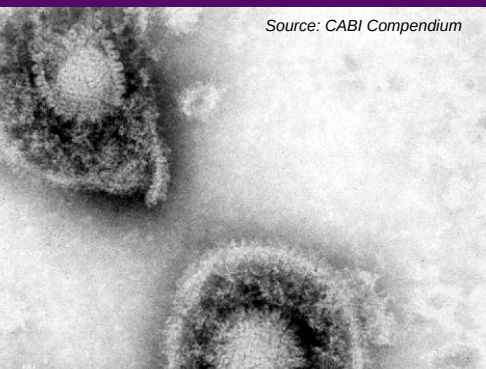
***Histophilus somni* is considered a risk-based vaccine.**

A few killed whole cell vaccines are available commercially in Canada. However, there is little evidence from controlled field trials to show that existing vaccines effectively reduce the multiple forms of Histophilosis in commercial beef herds.

Discuss with your veterinarian whether to use existing vaccines and their potential cost:benefit in your herd.



INFECTIOUS BOVINE RHINOTRACHEITIS (IBR) OR RED NOSE



Source: CABI Compendium

CAUSES

IBR is caused by a virus called **Bovine Herpes Virus type 1 (BHV-1)**, which has several subtypes that are associated with different disease syndromes (i.e. respiratory, reproductive, neurologic).

Virus is transmitted by nasal secretions, coughing, genital secretions, semen, and fetal tissues and fluids.

Animals can become infected for life (i.e. **carriers**). When stressed, carriers shed virus to susceptible animals. Infection spreads quickly within and amongst groups of cattle.

IBR IS COMMON IN WESTERN CANADIAN BEEF HERDS AND FEEDLOTS.

CLINICAL SIGNS

Respiratory form: Animals are usually bright and alert and eating unless they get a secondary bacterial pneumonia.

- Upper respiratory tract infection of sinuses and trachea, leading to frequent dry cough
- Red nose with pimples
- Runny red eyes
- Drooling
- Fever

Reproductive form:

- Abortion storms in third trimester of pregnancy, with mummified fetuses
- May also cause infertility

Neurologic form: This form can cause a high death rate in animals.

- Infection of the brain as well as the rest of the body
- Off feed
- Dehydration
- Respiratory distress
- Depression
- Drool
- Red gums covered in mucus
- Diarrhea



Red nose with nasal discharge

Source: University of Saskatchewan



Abortion storms



Weakness and depression

Source: NADIS Animal Health Skills

IBR IS A VIRAL DISEASE SO IT DOES NOT RESPOND TO ANTIMICROBIALS.

TREATMENT

Discuss treatment options, including addressing potential secondary bacteria infection, with your veterinarian.

PREVENTATIVE MANAGEMENT

Segregate new animals from existing herd for a few weeks and ensure proper vaccination before mixing. **Ensure calves get sufficient colostrum from vaccinated dams.** In an IBR outbreak, contact your veterinarian about how to control and reduce disease losses.



VACCINATION

BHV1 (i.e. IBR) is considered a CORE VACCINE, so it should be included in every herd's vaccination program (See Core Vaccine Guidelines).

- Cattle that have not been previously vaccinated or have unknown vaccine history should be given a booster series (i.e., 2 vaccines, 3-6 weeks apart), as per label directions.
- Cattle that have been previously vaccinated should be re-vaccinated annually.
- Calves should be vaccinated 2 or more times at either: 1) first week of life (>3 days of age), 2) spring processing, 3) preweaning, or 4) weaning, as per label directions.
- If exporting breeding stock, some countries have restrictions on BHV1 vaccination.

Modified Live BHV1 vaccine should never be used in pregnant animals of unknown vaccination history and should always be given no less than 1 month before breeding.

PREWEANING BOVINE RESPIRATORY DISEASE



CAUSES

BRD is commonly caused by a combination of pathogens, often starting with a virus, like BRSV or herpesvirus (i.e. IBR).

Then, bacteria like *Mannheimia*, *Pasturella*, *Histophilus*, or *Mycoplasma bovis* invade and take over.

APPROXIMATELY 3% OF BEEF CALVES IN WESTERN CANADA ARE TREATED FOR RESPIRATORY DISEASE BEFORE WEANING!

CLINICAL SIGNS

Also known as pneumonia, summer pneumonia, or BRD.

Clinical signs include:

- Dullness or lethargy
- Runny nose
- Crusty eyes
- Droopy ears
- Fever
- Difficulty breathing
- Lack of appetite
- Weight loss
- Rough haircoat



Typically occurs at one of two ages:

- <1 month of age in calves who did not get enough colostrum
- 2-4 months when previously high levels of maternal antibodies from colostrum drop below protective levels



ALWAYS TALK TO YOUR VETERINARIAN ABOUT ANTIMICROBIAL TREATMENT CHOICES.

TREATMENT

Antimicrobials can be used to treat BRD. An early, accurate diagnosis is critical for a good treatment response. **Follow your veterinarian's treatment protocol to ensure the right drug is used for the right bug.**



PREVENTATIVE MANAGEMENT

Preventing respiratory disease in calves starts with good colostrum management.

Minimizing co-mingling of age groups and ensuring proper biosecurity of newly introduced animals are also important management strategies.

Contact your veterinarian on how to control the disease if you observe an unusually high number of sick calves.

VACCINATION

Cows and/or calves can be vaccinated to help prevent BRD in calves.

Cow vaccines are generally against the viruses (i.e. BRSV, BHV1, PI3, and BVD) and are usually given before breeding or at preg check.

Calf vaccines are given intranasally either at birth or spring processing (i.e. branding) and include either viral or bacterial agents.

See Core Vaccine Program Guidelines.