



Herd Health Management 1

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Signs of Good Health

Before you can read the signs of disease in a sick animal, you need to be familiar with signs of good health. These include:

- an aggressive appetite – a strong desire to eat when fresh feed is offered;
- active cud chewing in ruminant animals – calves become ruminants by about 3 months of age;
- normal proximity to herdmates – not abnormally separated from the rest of the herd;
- maintenance of body condition – no indication of rapid body weight loss other than during the first 2 months of lactation;
- maintenance of milk production in lactating cows – no evidence of a decline exceeding that normally expected for stage of lactation;
- the ability to rise from a lying position quickly and without difficulty when provoked;
- standing calm and alert, bearing weight evenly on all 4 hooves with the back relatively flat;
- normal abdominal shape – neither gaunt nor bloated;
- a smooth, shiny haircoat;
- passage of feces and urine with no evidence of straining;
- manure of normal consistency – not too fluid or too firm;
- no evidence of abnormal discharge from mouth, nose, rectum or vagina;
- no evidence of inflamed eyes or eyelids;
- a rectal temperature near 38.5-39°C – a temperature over 39.5°C indicates a fever;
- a heart rate of 60-80 beats per minute, felt under the tail-head or under the left front limb where it joins the body;
- a respiratory rate of 10-30 breaths per minute;
- rumen motility is 1-2 rolls/min.



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Herd Records

Well-organized herd health and production records are an invaluable aid when diagnosing health problems in a herd. Most dairy herds are enrolled in a Dairy Herd Improvement program and many will maintain more extensive records using herd management computer programs such as VAMPP®, DairyChamp® or DairyComp 305®. Although few herds monitor performance of their growing heifers, periodic weighing (with scale or tape) and measurement of wither heights can provide useful baseline data.

Production records provide historical data which can be compared with current production levels. Declining milk yields or growth rates in the absence of obvious signs of disease may indicate a **chronic, subclinical** condition. The timing of changes in productivity may point to changes in management, weather or other aspects of the environment.

Health records allow the herd manager to check previous histories of cows currently suspected to have problems. For example, recurring previous cases of **mastitis** may help to confirm a current infection. Likewise, a previous infection may help explain low milk production.



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Effects of Environment on Health

The 4 most important aspects of the animals' environment which influence health are ventilation, sanitation, safety and cow comfort.

Since most dairy animals are housed in confinement, ventilation is required to introduce fresh air while removing:

- the products of respiration (carbon dioxide, water vapour, and other gases), and;
- the volatile products from animal waste (water vapour, ammonia, methane and other compounds);
- heat produced by the animals.

The actual amount of air exchange required is dependent upon animal size, animal density, their level of activity, the volume of air in the building and the temperature and relative humidity of the fresh air entering the building. Stale air is an irritant to animal tissues and high humidity provides a vehicle for the spread of infection.

Sanitation implies the maintenance of an environment with minimum contamination by **pathogenic** (disease-causing) organisms. Warm, humid environments favour their growth and without routine cleaning and disinfection these organisms will multiply, increasing the risk of spread to susceptible animals. While cleaning removes contaminated waste, disinfection is designed to kill pathogens. Because disinfectants are generally inactivated by organic matter, it is important to clean thoroughly before disinfecting:

- remove all organic matter (dirt, manure, bedding) using shovel, brush and/or power sprayer;
- wash surfaces with detergent to remove organic residues which are not water soluble;
- apply disinfectant allowing several hours contact time.

...continued

Effects of Environment on Health (continued)

Manure piles, puddles and waterers provide reservoirs for pathogens. Make sure manure accumulations are routinely removed from animal and traffic areas, that yards and lanes are free of contaminated standing water and that waterers are cleaned at least twice per week.

Environmental safety is also important in minimizing animal injuries and maintaining productivity:

- passageways must be wide enough to allow the largest animals to pass without difficulty;
- floors must be grooved to prevent animals from slipping;
- protrusions which can cause abrasions and puncture wounds must be removed;
- housing areas (particularly feeders) must be kept free of junk which might cause injury or be ingested;
- electrical installations must be properly grounded to prevent exposure to stray voltage .

Cow comfort is important in reducing the incidence of disease and injury to the animal. In order to ensure comfort the following needs must be met:

- adequate stall size and attention to design;
 - Large cows (1500+ lbs) — 8 ft x 4 ft
 - Medium cows (1100 - 1500 lbs) — 7½ ft x 3¾ ft
 - Small cows (less than 1100 lbs) — 7 ft x 3½ ft
 - Heifers (700 - 1100 lbs) — 6 ft x 3 ft
 - Calves (less than 700 lbs) — 5 ft x 2½ ft
- feeders should be specific to head lock size and provide adequate spaces for the size of the herd. If there are too few spaces, the animals are less likely to try and eat at the bunk and intake may be restricted;
- bedding should be clean, dry and changed on a regular basis to prevent the buildup of contaminants;
- alleys and chutes should be designed for efficient flow so that there are no blind corners causing the animals to resist movement in that area.



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Effects of Nutrition on Health

The maintenance of good health requires adequate intake of a well-balanced diet. Refer to the Dairy Production Primer Feeds & Feeding module for details describing requirements for each nutrient. Here is a quick summary of the roles played by specific nutrients in common health problems:

Energy – When energy intake is lower than energy demand (negative energy balance) the animal mobilizes body fat. When this occurs in late pregnancy or early lactation, **mobilized fat may accumulate in the liver** and result in the production of ketone bodies, leading to **ketosis**. Excess energy in the form of rapidly-fermentable carbohydrates (e.g. starch) can lead to **acidosis**, the result of high levels of acid produced during rumen fermentation.

Protein – Adequate degradable protein is required to support an active population of rumen microbes (**bacteria** and **protozoa**). These microbes are responsible for digesting the carbohydrates which provide most of the animal's energy. The combination of dietary and microbial protein digested in the small intestine must satisfy the animal's requirements for maintenance, production and the synthesis of new proteins needed to fight infection. Excess protein places an extra load on the liver where surplus nitrogen must be converted to urea before being excreted.

Fibre – Physical fibre (roughage) requires the ruminant to chew and salivate, releasing buffers which help to prevent acidosis. Rumen microbes digest fibre more slowly than starch and other non-fibre carbohydrates, resulting in lower and more stable acid levels and less risk of acidosis. Excess fibre limits intake, which may result in deficiencies of other nutrients.

...continued

Effects of Nutrition on Health (continued)

Calcium – At calving, calcium requirements increase dramatically due to the new demand for milk synthesis. Initially, most of this increased requirement is derived from bone. When the mechanism involved in mobilizing bone calcium fails to ‘turn on’ properly, blood calcium concentration may fall below the level required to maintain muscle tone, causing the cow to go down with **milk fever**.

Magnesium - **Grass tetany** is a result of a low blood magnesium concentration, caused by low magnesium or high potassium intakes.

Trace minerals and vitamins - *Copper* and *zinc* are important in the maintenance of hoof health, both because they are required in the synthesis of hoof tissue and because they act as antioxidants in support of the immune response to infection. Other nutrients important to immune function are the minerals: *selenium*, *manganese*, and *iron*.

The following vitamins are essential to proper immune function:

The role of *vitamin A* in a functioning immune system is to maintain the integrity of the epithelial lining of the body which blocks the entrance of **pathogens**. *Vitamin E* is essential in increasing **antibody** production in response to the presence of a pathogen, and *vitamin C* is believed to benefit immune function possibly via improved **neutrophil** function, however this is only seen in **non-ruminant calves**.



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Biosecurity

Biosecurity refers to herd management practices aimed at preventing the introduction and spread of **infectious disease**, including:

- **control of new arrivals** – reducing the risk of introducing new diseases into the herd when cattle are brought on to the farm;
- **control of farm traffic** – minimizing the introduction and spread of disease by farm visitors, vehicles, equipment, pets, birds and wild animals;
- **reduction of environmental contamination** – sanitation and disinfection of facilities and equipment;
- maximizing disease resistance through **vaccination** and good **nutrition**.



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Minimizing Disease Introduction by Cattle Entering the Herd

A closed herd is one where no cattle are ever introduced from premises outside the farm. Although maintaining a closed herd is ideal, many herds find it necessary to bring in replacement cattle at times, exposing the herd to risk of infection. Show cattle, returning to the farm after mixing with others, are also a source of risk as are bulls brought on farm for natural service. Risk of introducing new diseases can be minimized by:

- using artificial insemination;
- checking the **health records** of cattle being introduced into the herd, including heifers that have been raised off-farm;
- isolating cattle brought onto the farm for 21 days, periodically running them through a medicated footbath and **taking their temperature** during this time – cattle returning home from shows should be handled in the same way;
- milking new arrivals last – if possible, heifers and cows should be brought onto the farm at least 3 weeks before calving to allow for a period of isolation and feeding of a transition diet to minimize risk of **metabolic disorders**;
- testing for **Brucellosis** and **Tuberculosis** 30 days after introduction;
- testing for low prevalence diseases that have not been identified or are under control in the herd including **John's** (pronounced Yoh-nee-z) **Disease, Bovine Leukosis, Streptococcus agalactiae Mastitis** and **Staphylococcus aureus Mastitis**;
- **vaccinating** new arrivals after 10 to 14 days with the same vaccines used for the rest of the herd.



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Minimizing Disease Introduction and Spread by Farm Traffic

Vehicle and equipment traffic and farm visitors are potential carriers of disease onto the farm. Risk of introducing disease can be reduced by:

- confining off-farm vehicle traffic to an area some distance away from animal facilities – this should include provision of an animal loading facility in this area;
- power washing farm vehicles and their tires before returning to the farm after visiting other farms, auctions or other facilities where **pathogens** might be picked up;
- limiting access to animal facilities by off-farm visitors;
- providing those entering animal facilities with clean boots (disposable plastic boots are an alternative) and coveralls that remain on the farm;
- maintaining disinfectant boot washes for all personnel at entry points to animal facilities (clean dirt off boots before stepping through the bath).

Farm equipment and personnel can also spread disease as they move around the farm. For example, if a feed mixer travels through manure, fecal pathogens (e.g. the **bacteria** that cause **Johne's Disease**) may enter the feed as the mixer dispenses feed in a drive-through feed alley. Farm personnel can spread disease if they fail to disinfect their hands, boots and clothing after caring for sick or quarantined animals. Procedures and paths should be established to minimize these risks.

Pets, birds and wild animals can spread pathogens both within the farm and from neighbouring farms. For example, dogs and coyotes are important carriers in the spread of **Neospora**. Where possible, birds, pets and rodents should be prevented from entering animal and feed storage facilities.



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Vaccination

Vaccination is designed to stimulate an immune response by exposing the animal to **antigens** derived from pathogenic organisms. This **actively acquired immunity** (immunization) improves the effectiveness of the response to future challenges by the same pathogen.

Vaccination may fail to provide protection from a specific disease if:

- the **vaccine is stored improperly** (e.g. too warm or in direct sunlight) or its **expiry date** has passed;
- the route and/or **timing of vaccination** is incorrect (e.g. boosters not given within 3 weeks of first shot);
- the **dose** administered is too low or vaccine leaks from the injection site;
- the vaccine becomes contaminated either in the bottle or in the syringe used to deliver it;
- the vaccine **antibodies** are from an organism of a **serotype** which is different from that of the infecting organism;
- the animal is incubating the disease when the vaccine is administered;
- the vaccine is neutralized by antibodies obtained by the calf through **passive immunity** from its dam;
- the immune system is suppressed by **malnutrition, parasites** or due to the life cycle of the animal (e.g. calving is not a good time to give vaccines);
- the vaccine is mixed with another vaccine or a drug; adjuvants, which suspend the antibodies, may not be compatible (e.g. oil and water);
- several vaccines are delivered at one time – if this is the case be sure that each vaccine given is injected at a different spot on the animal.



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Vaccine Types

There are two broad types of vaccines:

Modified live vaccines – preparations of live organisms having similar **antigenic** activity to a known **pathogen** while being ineffective in causing serious disease.

Non-infectious or killed vaccines including:

- *Bacterial extracts* – preparations of bacterial cell walls or other external structures having high antigenic activity;
- *Bacterins* – suspensions of killed **bacteria**;
- *Toxoids* – modified forms of bacterial toxins which stimulate antitoxin production;
- *Inactivated viruses* – preparations of killed **virus** particles.

Modified live vaccines in general produce the best **immune response**. However, there are some disadvantages to this type of vaccine including:

- they can't be administered to pregnant animals or cattle in contact with pregnant animals (except for **IBR-PI3** intranasal vaccine);
- they may cause a mild disease, **elevated temperature**, or drop in appetite;
- they should only be given to healthy animals which are not exposed to stress;
- there is always a remote possibility that the vaccine strain could become increasingly infective since it is a live organism.

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Vaccine Types (continued)

Non-infectious or killed vaccines are often considered to be safer because they do not contain live organisms – they can be used on pregnant cows. However, vaccines of this type also have some disadvantages:

- they contain a large amount of viral and/or bacterial extract and therefore are much more likely to cause hypersensitivity reactions;
- adjuvants are required in killed vaccines in order to stimulate **immunity** and they may also lead to hypersensitivity reactions;
- they are less effective in producing an immune response;
- they induce an immune response that is of shorter duration than would be induced by a modified live vaccine;
- they require **booster vaccinations** at precise intervals or no protective immunity will be established.

Non-infectious vaccines require multiple doses of vaccine to immunize and the vaccinations should be given two or three weeks apart. Even when given at precise intervals, the immunity is not as good as with modified live vaccines. Non-infectious vaccines given only once and then followed by yearly boosters are ineffective in producing protective immunity.



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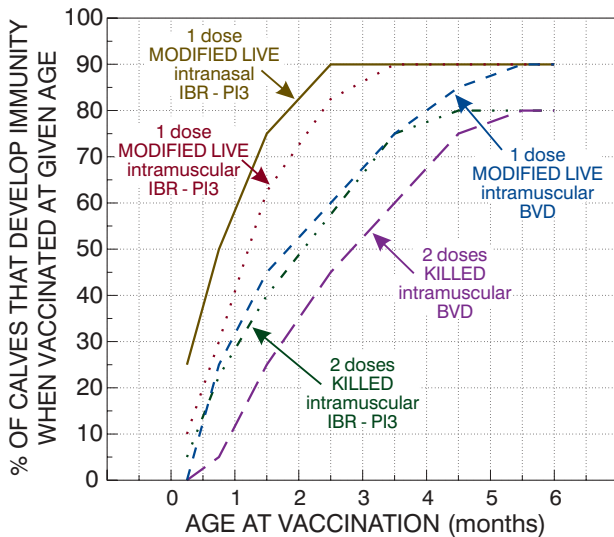
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Vaccination Programs

In Western Canada, dairy herds should be vaccinated for **IBR, PI3, BRSV, BVD, *Hemophilus somnus*, Calf Diarrhea, Coliform Mastitis** and Clostridial diseases (e.g. **Black Leg**). General recommendations for a **vaccination protocol** are as follows:



Effect of calf age on response to vaccines.

- the first vaccination given to calves must be either a single dose of **modified live vaccine** or repeat vaccinations of the **non-infectious vaccine** at the precise **label recommended intervals**;
- to reduce possible interaction with **passive immunity** acquired through **colostrum**, vaccination for most pathogens is relatively ineffective before 4 months of age (BRSV is the exception – see figure on left), although in recent trials modified live vaccines have been shown to be effective in calves considerably younger than 4 months;
- modified live vaccine can only be used in young calves on most dairy farms as this is the only group which is not in contact with pregnant cattle (IBR-PI3 intranasal vaccine is the exception to this rule);
- one vaccination per year of non-infectious vaccine is of no value unless the animal was initially vaccinated with either modified live vaccine or multiple doses of non-infectious vaccine at the proper intervals;
- modified live vaccine produces a better immunity than 2 doses of non-infectious vaccine when used as the first immunization in a young animal;



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Vaccination Programs (continued)

- non-infectious vaccines are generally more effective in stimulating a secondary immune response due to the increased content of **antigen** in the vaccine;
- modified live vaccine will not produce an optimum **immune response** if it is used following non-infectious vaccine;
- modified live vaccine should be used carefully and only on **healthy animals** and each user must be aware that the vaccine contains live organisms.

Many different vaccination programs can be developed from the general recommendations given above. A program which best fulfils the needs of a particular farm should be developed in consultation with the herd veterinarian. An example vaccination program using modified live vaccine is suggested on the **next page**.



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Animals	Vaccines
<p><i>Calves at 2 months of age</i> – just prior to moving from hutches or individual pens to larger group pens</p>	<p>Modified Live BRSV Killed Hemophilus, <i>Pasteurella hemolytica</i></p>
<p><i>Heifers 4-12 months of age</i> – open heifers older than 4 months of age and being vaccinated for the first time (except BRSV)</p>	<p>Modified Live IBR, PI3, BVD, BRSV Killed <i>Hemophilus</i>, 7-way Clostridial • <i>cannot be given to pregnant animals or cattle exposed to pregnant animals</i></p>
<p><i>Heifers 12-18 months of age</i> – open or pregnant heifers vaccinated at least once with modified live virus vaccine</p>	<p>Killed IBR, PI3, BVD, BRSV, Hemophilus, 7-way Clostridial • <i>can be given to pregnant animals and cattle exposed to pregnant animals</i></p>
<p><i>Heifers 18-24 months of age</i> – open or pregnant heifers vaccinated once with both modified live and killed virus vaccine</p>	<p>Killed IBR, PI3, BVD, BRSV, <i>Hemophilus</i>, 7-way Clostridial • <i>can be given to pregnant animals and cattle exposed to pregnant animals</i></p>
<p><i>Lactating Cows</i> – open or pregnant cows which have been vaccinated at least once with modified live virus vaccine followed by regular boosters of killed vaccine</p>	<p>Killed IBR, PI3, BVD, BRSV • <i>may reduce milk production, give at dry-off</i> • <i>cows with unknown vaccination history should be vaccinated twice, 3-4 weeks apart</i></p>
<p><i>Dry Cows</i> – 6 and 3 weeks before first calving then 3 weeks before subsequent calvings</p>	<p>E. Coli, Rotavirus, Coronavirus calf scours • <i>calves must receive adequate colostrum containing maternal antibodies</i></p>
<p><i>Dry cows</i> – 6 and 3 weeks before calving</p>	<p>J5 Bacterin-Toxoid for Coliform Mastitis • <i>may be given to lactating cows but a small drop in production can be expected</i></p>



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Drug Residues in Milk

The presence of drug residues in individual and bulk tank milk can compromise milk quality and public health. Each time the milk truck makes a delivery to the processor, the entire tanker load of milk will be tested for inhibitors (antibiotics). If residues are found, the milk will be discarded. The individual farm samples are then checked to determine the source of the contamination. A positive result indicates the presence of an inhibitor and results in a loss of income and a suspension until the next sample testing negative.

Drug residues will decrease your bulk milk quality by interfering with its processing. Antibiotics, if present in sufficient quantities, will interfere with the making of cheese, yogurt and other cultured milk products.

There is also the concern that the presence of inhibitors in milk will increase **antibiotic resistance** in bacteria which cause both animal and human diseases. The health risk to humans also includes allergic reactions to the medications.

Drug residues in milk can be a result of:

- insufficient **withdrawal time**;
- improper **dosage**;
- extra-label use of drugs (e.g. using a drug on a lactating cow that is not labelled for use in lactating cows);
- improper application (e.g. wrong **injection site**);
- human error;
- poor identification of treated animals;
- topical treatments (i.e. skin creams);
- medicated feeds;
- **new cows** in the herd which have not been tested.



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Antibiotic Resistance

Antibiotic resistance is the ability of bacteria to continue to grow and reproduce in the presence of one or more **antibiotics**. The danger of this resistance is that it will make some treatments unsuccessful and reduce the effectiveness of others. Excessive use of antibiotics will only serve to increase the virulence (ability to produce disease) of some diseases as they become increasingly resistant to treatment.

There are three ways in which the **bacteria** can become more resistant to antibiotics:

- *naturally* – in its normal state exposure to antibiotics will not result in its death;
- *mutation* – a change in the bacteria's DNA sequence due to a spontaneous event or incorporation of another sequence from a different cell;
- *transferred* – DNA can be exchanged between unrelated bacterial cells;

Any medications you administer should be done so at the correct **dosage** and approved for use by your veterinarian. The use of antibiotics on the dairy farm is important to production, disease control and animal welfare. However they will only continue to be useful as long as they are used with caution.



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Bovine Respiratory Syncytial Virus

Also Called: BRSV; viral interstitial pneumonia

Affecting: Calves 6-8 months of age; adult dairy cattle

Occurrence: outbreaks are characteristic

Signs: **fever**; coughing; abnormal lung sounds; death in those with severe respiratory distress; depression; lack of appetite; drooling; nasal and eye discharge; **dyspnea**; emphysema over the thorax (one of the first signs in young calves); sudden death with no prior symptoms

Cause: Bovine Respiratory Syncytial Virus

Diagnosis: signs; **virus isolation**; **acute bronchiolitis** and **alveolitis**; emphysema of the lungs represented by large tissue lesions

Remedy: treat secondary infections with **antibiotics** for 3-5 days

Prevention: **colostrum** offers inadequate protection; **vaccinate** at 2-8 months of age

Also Consider: **Bovine Viral Diarrhea, Infectious Bovine Rhinotracheitis, Parainfluenza-3, Shipping Fever, Tuberculosis,**



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Bovine Virus Diarrhea

Also Called: BVD; BVDV; mucosal disease (MD); bovine pestivirus disease complex



Affecting: young cattle (8 months - 2 years),

Occurrence: 5% incidence of **acute clinical** disease; rare in cattle over 2 years of age; sporadic incidence of **chronic** form

Signs: **Acute:** moderate **fever**; depression; lack of appetite; nasal discharge; increased salivation; erosions and ulcers of the muzzle, lips and interior mouth; lesions of the coronets and interdigital clefts; watery, bloody diarrhea; dehydration; **Chronic:**

lameness; rough, dull coat; weight loss; soft feces; normal temperature; smaller rumen; occasional bloat; **chronic** lesions



Cause: Bovine pestivirus; non cytopathic and **cytopathic** types

Diagnosis: signs; **leukopenia, neutropenia, lymphopenia**; usually **seronegative**; blood samples for **virus isolation**; tissue samples for PCR (polymerase chain reaction); nasal and fecal swabs; erosions of the gastro-intestinal tract (postmortem)

Remedy: no treatment

Prevention: ensure calves receive adequate **colostrum**; **vaccinate** all animals prior to puberty; routine vaccination for all ages; use **killed vaccines** for pregnant cattle

Also Consider: **rinderpest, malignant catarrhal fever, foot and mouth disease, vesicular stomatitis**

Erosion of the gums (top) and palate (below) due to Bovine Virus Diarrhea.



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Infectious Bovine Rhinothracheitis

Also Called: IBR; rednose

Affecting: all age groups are susceptible

Occurrence: unpredictable outbreaks especially in unvaccinated herds

Signs: decreased milk production; **high temperature** (for 3-5 days); difficulty breathing; snotty nose; increased salivation; lesions in oral and nasal cavity linings; excessive coughing; conjunctivitis (tearing, reddened tissues and ulcers of the eye); abortion in latter trimesters; whitish ulcers and pus in vaginal canal and vulva; evidence of pain in the recto-vaginal area (tail is raised and held up for long periods of time)

Cause: Bovine Herpes Virus-1 (BHV-1) with three subtypes: respiratory (BHV-1.1), genital (BHV-1.2a and b), and **encephalitic** (BHV-5), as well as a conjunctival form; death may result from a secondary infection which the animal's immune system cannot fight off.

Diagnosis: signs; **detection of virus** from nasal swabs

Remedy: eventual recovery in 3-5 days regardless of treatment; animals with respiratory form may die; **antivirals** to treat secondary infections

Prevention: ensure adequate **colostrum** is given to calves as soon as possible after calving; **vaccinate** calves after 4 months and 1 month prior to breeding

Also consider: all other diseases associated with bovine respiratory tract disease



Conjunctivitis may be a sign of IBR.



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Parainfluenza-3 (PI-3)

Also Called: viral interstitial pneumonia

Affecting: yearlings and adult cattle (housed indoors and outdoors); young cows in closed dairy herds

Occurrence: mostly due to **recent additions to the herd**

Signs: sudden onset of **acute** pneumonia; **toxemia**; laboured breathing and wheezing (**bronchiolitis**); moist crackles denoting secondary pneumonia; fever (duration 1-2 days); nasal discharge; coughing; watery eyes; poor appetite; mild depression; reddened mucous membranes (i.e. eyes and nose lining)

Cause: Para-influenza-3 paramyxovirus

Diagnosis: signs; **leukopenia** and **lymphopenia**

Remedy: treat secondary infections with **antimicrobials**; recovery within 3-5 days of onset

Prevention: adequate **colostrum** after calving; **vaccine** is usually given at same time as IBR and BVD

Also Consider: other respiratory diseases



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Zoonosis

Pasteurellosis

Also Called: pasteurella; bovine septicemic pasteurellosis



Lungs from a calf which died from Pasteurellosis.

Affecting: all age groups are susceptible

Occurrence: low, wet areas with cold weather patterns; exhausted animals are more susceptible

Signs: sudden, **high fever**; extreme depression; increased salivation; submucosal blood spots; warm, painful swelling at throat, dewlap, brisket and **perineum**; **dyspnea** from swelling; death within 24 hours; recovering animals may suffer from diarrhea and **pneumonia**

Cause: the **bacteria** *Pasteurella multocida* types 1(B), 4(D) or E

Diagnosis: signs; **cultivated organism** from nasal swab; **serotype** identification; edema of the lungs and lymph nodes; **enteritis**; organism in blood and spleen

Remedy: **antibacterials** will work well but many are not labelled for use in lactating animals

Prevention: **killed vaccines**

Also Consider: **anthrax, blackleg, leptospirosis**



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Shipping Fever

Also Called: pneumonic pasteurellosis; stockyard pneumonia; undifferentiated bovine respiratory disease

Affecting: young, stressed cattle (e.g. recently weaned or transported)

Occurrence: epidemics seen 7-10 days after **new additions**; more frequent when there are abrupt changes in temperature; increased stress as a result of overcrowding, **poor nutrition** and **poor housing**

Signs: decreased milk production; **fever**; swelling around the throat; **rapid, strained breathing**; mucous nasal discharge (pus, in more severe cases); coughing; moist crackles; depression; lack of appetite; constipation; diarrhea

Causes: pasteurella organisms (e.g. *Pasteurella haemolytica*); **PI-3** or **IBR** contaminated with **bacterial agents**

Diagnosis: signs; **cultured organism** from nasal swabs; **hemogram** indicates severe infection and increased **fibrinogen**; **leukopenia** and **neutropenia**; **acute** toxemic bronchopneumonia

Remedy: good response to **antimicrobials** in early stages

Prevention: preconditioning including **vaccination**; reduction of stress; mass medication with antimicrobials for **new arrivals** on farm

Also Consider: **acute** interstitial pneumonia (due to **BRSV**), **bovine pleuropneumonia**, enzootic pneumonia of calves, **pasteurellosis**



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Zoonosis

Reportable

Tuberculosis

Also Called: TB

Affecting: all age groups are susceptible

Occurrence: **open herds** purchasing untested, infected animals; feces, urine, vaginal or uterine discharge, milk, inhalation of infected airborne droplets and dust particles will spread the disease between animals. Alberta is tuberculosis-free

Signs: emaciation; **temperature fluctuations**; signs of respiratory disease, obstruction, reproductive disorder, mastitis; **Chronic** cough; variable appetite; rough coat; cows are sluggish; lymph nodes of the head enlarged; small, pus filled, nodules on or under the skin; lesions connected by thin tissue cords

Causes: the three types of **tubercle bacilli** can infect practically every species of animal: *Mycobacterium bovis* (specific to cattle); *Mycobacterium avium* (specific to birds); *Mycobacterium tuberculosis* (specific to humans)

Diagnosis: signs; injection of small amount of tuberculin into the caudal tail fold – swelling identifies infected animals; tuberculous **granulomas** found in lymph nodes (post mortem); culture of organism

Remedy: test and slaughter

Prevention: quarantine and test new arrivals

Also Consider: lung abscess, **pleurisy, pericarditis, bovine pleuropneumonia**, upper respiratory disease, **wooden tongue, bovine leukosis, lymphadenopathy**



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Glossary of Terms

abomasitis: inflammation of the abomasum.

acute: refers to a disease with severe symptoms lasting only a short time. (Peracute: very acute).

agglutination test: a reaction which causes clumping of bacteria due to the actions of antitoxins.

allergic dermatitis: allergic reaction resulting in inflammation of the skin.

alveolitis: inflammation of the chambers of the lung.

amyloidosis: intracellular deposit of a starch-like compound in the tissue.

anabolic: initiating constructive metabolism.

anaphylaxis: an exaggerated immune reaction to a foreign body.

antibody: an immune defence which responds to the presence of an antigen.

antigen: a foreign body (usually a protein), found in the blood, that stimulates construction of an antibody.

arthrogryposis: persistent flexure of a joint; spasm.

arthropathy: joint disease.

atrophy: decrease in the size of a normally developed organ or tissue.

Glossary (continued)

- bacillary hemoglobinuria*: disease caused by necrotic and hemolytic bacterium (*Clostridium haemolyticum*).
- bronchiolitis*: inflammation of the bronchioles of the lung.
- chronic*: refers to a disease that persists for a long time.
- clinical*: refers to a disease showing obvious signs and symptoms.
- coenurosis*: a disease caused by invasion of the brain and spinal cord by the larvae of *Taenia multiceps*.
- corticosteroid*: an anti-inflammatory hormone.
- complement fixation test*: the lysis of cells and destruction of bacteria as a result of reactions with a complement in the blood serum and a receptor.
- coxofemoral joint*: hip and thigh joint.
- cytopathic*: development of disease causing changes to the host.
- diabetes mellitus*: a disease caused by lesions in the pancreas
- diuretic*: a drug which stimulates urine flow
- dyspnea*: laboured or difficult breathing.
- ecbolic*: stimulating the excretion or passing of contents like those of a gland or the contents of the uterus.
- ELISA*: enzyme-linked immunosorbent assay.
- encephalitic*: causing inflammation of the brain.
- endemic*: constantly present in a community but occurring only in a small number of individuals.
- endocarditis*: inflammation of the endocardium (the membrane lining the chambers and valve cusps of the heart).

Glossary (continued)

enteritis: inflammation of the intestine.

eosinophilia: excess numbers of eosinophils (a type of white blood cell).

epididymitis: inflammation of the epididymis.

epiphysitis: inflammation of the cartilage of the epiphysis (part of the bone)

epizootic: occurring in a large number of individuals in a community, at the same time.

fibrinogen: a plasma protein needed in a reaction in blood clotting.

follicle stimulating hormone: stimulates follicular growth and production.

goitre: enlargement of the thyroid.

gonadotropin hormone: a substance stimulating the gonads.

granulomas: a mass formed in a reaction to foreign bodies in the system.

hematomas: a mass resulting from the coagulation of blood in a tissue or cavity where the vessels have been ruptured.

hematuria: blood in the urine.

hemoglobinuria: presence of hemoglobin in the urine.

hemogram: a graph of a count of the different blood cells.

hemolytic anemia: a deficiency in the hemoglobin due to destruction of the blood cells from infection, medication or other chemicals.

hepatitis: inflammation of the liver.

hypo-albuminemia: deficiency of albumin (a simple water soluble protein) in the blood.

Glossary (continued)

hypochloremia: decreased chlorine in the blood (a sign of **Right Displaced Abomasum** and **Volvulus**) usually HCl produced in the abomasum, the source of chlorine in the body, will pass to the small intestine to be absorbed, however displacement will block the passage).

hypoglycemia: deficiency of sugar in the blood.

hypovitaminosis: lack of an essential vitamin.

hypoxia: an abnormally decreased supply of oxygen.

involution: a process in the uterus which returns this organ to its non-pregnant status. The caruncles deteriorate, tissues are discarded and uterus lining is repaired.

ionophores: growth promotants.

ischemic myopathy: deficient blood supply to the muscle due to constriction or obstruction of the blood vessels.

isoniazid: an antibacterial compound.

ketonemia: ketone bodies in the blood.

ketonuria: excessive numbers of ketone bodies in the urine.

laparotomy: incision of the abdominal wall.

leukopenia: deficient number of leukocytes (a type of white blood cell).

luteinizing hormone: stimulates maturation of follicle, ovulation, and corpus luteum (CL) formation.

lymphadenopathy: disease of the lymph nodes.

lymphoma: primary tumour of the lymphoid tissue.

lymphopenia: decreased number of lymphocytes (white blood cells).

lymphosarcoma: malignant tumours in the lymphoid tissue.

Glossary (continued)

- malignant catarrhal fever*: a disease associated with contact with sheep or in Africa where there may be contact with wildebeest calves. There are two malignant catarrhal fever viruses: alcelaphine herpesvirus-1 and ovine herpesvirus-2.
- meningitis*: inflammation of the membranes covering the brain and spinal cord.
- metatarsus*: the bones composing the anterior foot.
- maternal obstetrical paralysis*: swelling and tissue damage in the birth canal due to excessive traction when assisting delivery; nerves become bruised and cannot pass impulses to the legs so the animal is unable to move.
- methemoglobinemia*: methemoglobin (a compound formed by the oxidation of the iron in hemoglobin) in the blood.
- milk ring test*: a test for milk purity; a test solution is mixed with a milk sample and a yellow ring will form around impure milk.
- mycoses*: diseases caused by fungi.
- mycotic dermatitis*: a disease caused by the bacterium *Dermatophilus congolensis*. Signs include rough crusted skin.
- myocarditis*: inflammation of the heart muscle (the myocardium).
- necrotic*: refers to cell death resulting from disease or injury.
- nephrectomy*: removal of the kidney.
- nephritis*: inflammation of the kidney.
- neutropenia*: deficient number of neutrophils (a type of white blood cell).
- nystagmus*: continuous rolling of the eyeball.
- omphalitis*: inflammation of the external umbilical cord.

Glossary (continued)

- omphaloarteritis*: inflammation of the umbilical arteries.
- omphalophlebitis*: inflammation of the umbilical veins.
- oocyst*: a membrane surrounding a zygote.
- ophthalmia*: severe inflammation of the eye.
- orchitis*: inflammation of the testes.
- osteodystrophy*: abnormal development of the bone.
- osteotagiosis*: a parasitic disease caused by nematodes resulting in inflammation of the stomach and intestines.
- otitis*: inflammation of the inner ear.
- panophthalmitis*: inflammation of all the eye structures.
- parakeratosis*: a disorder of the horny layer of the skin.
- pathogen*: a disease-causing organism.
- pathogenic*: disease-causing.
- pericarditis*: inflammation of the sac enclosing the heart.
- perineum*: the floor of the pelvis.
- peritonitis*: inflammation of the lining of the walls of the abdomen and pelvic cavities.
- phalanges*: the bones of the feet.
- pleurisy*: inflammation of the membrane of the lungs and the lining of the thoracic cavity.
- pleuropneumonia*: pneumonia and pleurisy (see above).
- pneumococcus*: a small elongated coccus (a type of bacteria) with a pointed end.
- polioencephalomalacia*: causing a lesion in the grey matter of the brain.

Glossary (continued)

proteinuria: protein in the urine.

prostaglandin: a hormone that causes the deterioration of the corpus luteum.

pseudocowpox: the agent is the virus *Paropoxivirus*. It causes nodules and lesions of the tissue and affects cows mainly in early lactation.

pulmonary emphysema: excessive air trapped in the lung tissue

pyuria: excretion of urine with pus.

rinderpest: a morbillivirus causing fever, discharge of the nose and eyes and death.

rose bengal test: a serological test for brucellosis.

rumenotomy: an incision into the rumen wall.

septicemic: a blood condition caused by the reproduction and presence of pathogenic bacteria.

seronegative: negative results in reaction test between an antibody and an antigen.

serotypes: a type of organism identified by its antigens.

subclinical: refers to a mild form of disease with no obvious signs or symptoms.

sulfonamides: a general name for an antibacterial substance originating from para-amino benzene sulfonamide.

synovitis: inflammation of the synovial membrane of the joint.

thelaziasis: or eyeworm is a nematode from the genus *Thelazia*. The parasites are found in the tear ducts.

toxemia: toxins in the blood formed by body cells or bacteria.

urachitis: inflammation of the urachus: a canal in the fetus from the bladder to the umbilical cord, which is destroyed after birth.

Glossary (continued)

vagus indigestion: failure of passage from reticulorumen and the abomasum (can be caused by hardware disease).

verocytotoxic: 'vero' refers to the cell type on which bacteria are tested for their damaging effects. Cytotoxic means damaging to the cell ('cyto'=cell).

villus: a small absorptive protrusion which is a component of the digestive system.

winter dysentery: viral diarrhea caused by the Bovine coronavirus and seen only in older cattle mainly in northern climates.

zoonosis: a disease which may be transmitted from animals to humans.



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