Cattle Health Handbook

FOR YUKON FARMERS

Yukon Government

The Yukon Livestock Health Program

The Yukon Livestock Health Program is a collaboration between the Government of Yukon's Animal Health Unit (AHU) and Agriculture Branch and local Yukon veterinarians. The program provides support to Yukon farmers by producing educational publications and workshops on livestock health, biosecurity and food safety. The program will also support access to livestock health services through private veterinarians.

Yukon farmers with livestock health and disease concerns can contact the AHU for advice, and are encouraged to get in touch any time there is an unexpected change in the health of their cattle.

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All Paws Veterinary Clinic

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Alpine Veterinary Medical Center

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Whitehorse, YT
(867) 633-5700

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Whitehorse, YT
(867) 633-5184

Dawson Veterinary Clinic

Dawson City, YT
(867) 993-5205

Oakley Vet Services

Haines Junction, YT
(867) 335-5894

Useful References

Beef Cattle Research Council
http://www.beefresearch.ca/

Beef Code of Practice
http://www.nfacc.ca/codes-of-practice/beef-cattle

The Beef Site
www.thebeefsite.com

Alberta Agriculture – Ropin' The Web
http://www.agriculture.alberta.ca/app21/infopage?cat1=Livestock&cat2=Beef

Ontario Ministry of Agriculture, Food, and Rural Affairs
http://www.omafra.gov.on.ca/english/livestock/index.html#dairy

Government of Saskatchewan Ministry of Agriculture
http://www.agriculture.gov.sk.ca/Livestock

Verified Beef
http://www.verifiedbeef.org/

Biosecurity specific information
http://www.cattle.ca/resources/production-practices/verified-beef-production/

The Merck Veterinary Manual
www.merckvetmanual.com

Body Condition Scoring
http://www.beefresearch.ca/research/body-condition-scoring.cfm

Extension sites from American Universities
(note: information is usually excellent but be cautious if health issue is affected by weather, environment or nutrition)
http://beefextension.com/
http://www.iowabeefcenter.org/health.html

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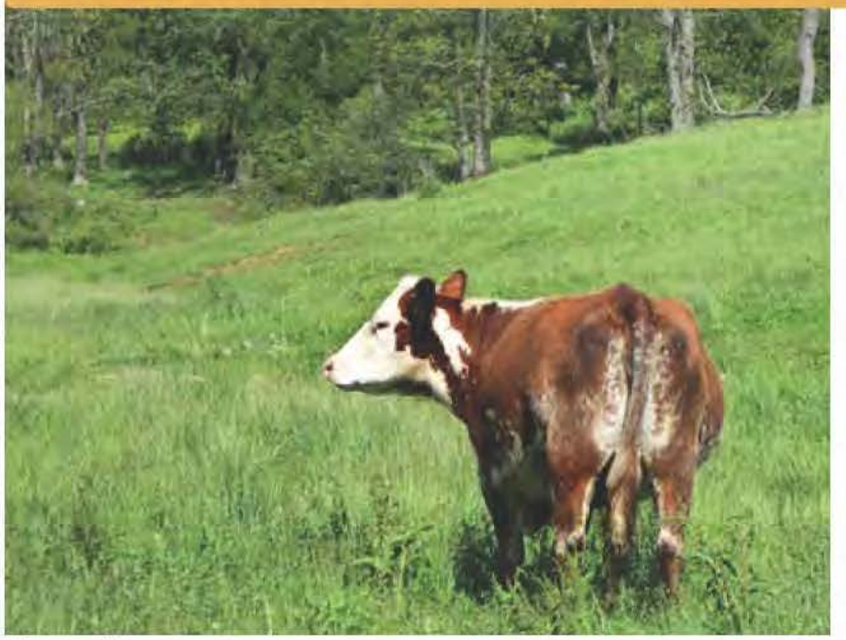


Photo credit: open source.

A Note About Icons

Each condition in this book will include an icon that indicates the severity of a disease and an icon that indicates the contagiousness of a disease.

Severity means "how sick will my cattle get?"

- **Life-threatening:** Systemic disease that affects multiple body systems.
- **Moderate:** Often localized to a single body system and responds to appropriate treatment.
- **Production limiting:** Evident through decreased growth and productivity.

Cattle type icons are found along the edge of each page, indicating which type(s) of cattle are most commonly affected by a specific condition or disease.

Contagiousness means "how many cattle will get sick?"

In these icons, brown cattle represent healthy animals and grey cattle represent sick animals.

- **Highly contagious:** These diseases spread easily between animals. These diseases are best prevented by separating affected cattle as soon as symptoms are noticed and maintaining strict biosecurity between affected and unaffected cattle.

- **Moderately contagious:** Some diseases only spread given the right timing and/or environmental conditions. Diseases described as "triggered by stress" usually fall into this category. Affected cattle should be separated but this is as much for their own welfare as to protect the other cattle. It is still good practice to handle affected cattle at the end of the day after caring for the main herd.

- **Non-contagious:** These diseases include management, environmental and nutritional diseases that are not spread from animal to animal.

Top Cattle Management Tips

Provide adequate shelter

- Cattle housed outdoors require shelter from wind in winter.
- Natural bush, windbreak fences or open front sheds can provide appropriate shelter.
- Wet (including newborn calves) and thin animals are less able to cope with cold weather. Provide additional feed, bedding and shelter.

Cattle need access to fresh water daily

- Cattle can consume snow to meet their water needs. Snow should be loose, clean and untrampled. It cannot be hard and crusted over.
- Animals consuming snow must be on good quality feed to avoid the risk of abomasal impaction.
- Milking cows and growing cattle (under 18-24 months) cannot eat enough snow to meet their needs and require an additional water source.

Winter feeding

- Feed testing is inexpensive relative to the cost of winter feeding. Always feed test your hay. The quality of the roughage affects the amount of grain and supplements that will be necessary.
- Cattle require between 1.75 – 2.25% of their body weight per day in roughage.
- Roughage that is more digestible allows cattle to easily consume more to meet their needs.
- When it is colder than -20°C (-4°F), cattle require more energy. Increase grain by 1 kg (2 lbs) per head for every 5°C drop below -20°C (-4°F). Increase more when wet or windy. If grain is not available, feed high-quality roughage.

Top Cattle Management Tips

Photo credit: open source.

Summer feeding

- Monitor pastures for overgrazing. Rotate grazing to allow for pasture rest and regrowth. In the case of poor quality pastures or drought conditions, creep feeding calves, early weaning or other supplementation may be economical options.

Check animals regularly

- Monitor animals closely during severe weather, at calving, post-weaning and after transport or mixing.
- Plan ahead for how you will handle sick or injured animals, and deal with sick or injured animals promptly.
- Animals that are unlikely to recover or who fail to respond to treatment should be culled or euthanized.

Create a health plan

- Sick animals show depression as drooping head or ears, slow movements and lagging behind rest of herd. Sick animals are usually off feed. In grazing animals, off feed shows as decreased gut-fill (sunken or slab-sided).
- Use a thermometer! Cattle with a rectal temperature > 40°C (104°F) have a fever and may require veterinary care.
- Pain is an important component of disease. Pain medications are available through a veterinarian. Learn about your options. This is important both for an animal's welfare and to improve its chance of getting better.

Keep disease from spreading

- Have a sick pen or segregate sick animals to minimize disease spread to healthy stock. Clean waterbowls, feed troughs, etc. after sick animals return to their group.
- Dispose of dead stock in a location where no animals can contact the carcass. Be aware of the potential for a carcass to contaminate your water source. Dead stock can attract wildlife to your farm. Prevent wildlife attraction by using deterrents such as electric fencing.

Processing

- Work with your veterinarian to develop a vaccination and anti-parasite plan. The entire herd should receive a topical parasiticide to eliminate internal and external parasites at least annually. All animals that enter the herd must be treated.
- Castrate calves as young as possible. Calves castrated after nine months of age require pain control.
- Horns are a threat to the welfare of other animals and to handler safety. Use a polled bull to eliminate the need to dehorn cattle or dehorn calves at birth. Cattle dehorned after two months need pain control because the horn becomes attached to the skull.

Top Cattle Management Tips

Give injections properly

- Securely restrain animals for all injections to prevent needles from breaking off.
- Use a sharp needle. Never straighten a bent needle as it is likely to break where it was bent.
- Inject **only** in the neck (behind the base of the ear and ahead of the point of the shoulder) to avoid damage to muscles that produce high value meat cuts (hind legs).
- Identify animals that have been treated (marking) and keep records.

Body Condition scoring (see www.bodyconditionscoring.ca)

- Body condition scoring is a hands-on method to determine the fat-cover of cattle.
- Cows are body conditioned by feeling body parts that have only hide and fat: short ribs, spine, pin bones, hook bones and tail head. It is important to **feel** not just **look**.
- Cows should be kept at 2.5 to 3 out of 5. Growing animals should be >2.5.
- Body condition score cows in the fall and spring.
- Separate thin animals from the herd and provide additional or higher quality feed.

Keep records

- Keep a cow calendar – record treatments, body condition, breeding and calving dates.
- All treatments should be recorded along with the date that it is safe to consume meat or milk following treatment.
- A Canadian Cattle Identification Agency (CCIA) identification tag is required for all animals that leave the farm of origin and/or for animals that are born in the Yukon and are slaughtered in a territorially inspected abattoir.

Tips for Safe Slaughter of Beef

- Withdraw feed for 24 hours prior to slaughter to reduce gut-fill and help prevent contamination of the meat. Continue to allow access to water.
- Avoid stress, fighting and prolonged exhaustion to prevent dark cutting beef.

Slaughter only healthy animals

- Cattle with life-threatening injuries may be suitable for slaughter but must be killed humanely as soon as possible. Discard injured areas.
- Ill animals should not be consumed. If in doubt take the rectal temperature before or immediately after death and do not consume if animal had a fever ≥40°C (104°F).
- Animals treated with a veterinary medication must not be sold or used for food until the withdrawal time has passed.

On-farm slaughter must be humane

- Acceptable methods, including the appropriate size of firearm, are described in Canada's Beef Code of Practice (section 6).
- The person responsible must be experienced and confident to ensure a humane death.
- The animal must be made unconscious quickly and effectively. Bleed out immediately after shooting or stunning and elevate the carcass.

Keep it clean

- The outside of the hide must not come into contact with the skinned surface and the carcass must not come into contact with the floor or ground.
- Use potable water (i.e. acceptable for drinking) in all steps.
- All equipment should be stainless steel or plastic, rust resistant and easily cleaned and sanitized.
- Clean equipment regularly throughout the process. Remove all blood and visible contamination using warm water (≥82°C or 180°F). Sanitize with a bleach solution; mix 15 ml (1 tbsp) of bleach into 4 liters (1 gallon) of cool potable water.
- Wear aprons, boots and gloves that can be washed and disinfected.

Avoid contamination with feces, gut content or dirty environment

- Any meat contaminated during evisceration must be trimmed and discarded.
- Any knife that cuts into the guts must be cleaned and sanitized before re-using.
- Skinning and evisceration should be done in a separate area from cutting and wrapping, or if the same area is used it should be thoroughly disinfected prior to it being used for cutting and wrapping.

Carcasses with internal pathology or disease must not be sold or used for human consumption

- Be careful when eviscerating carcasses with adhesions to avoid contaminating the carcass.
- The whole carcass should be condemned it any of these are present:
  - multiple swollen or infected joints,
  - multiple abscesses,
  - multiple swollen lymph nodes,
  - evidence of cancer (not confined to external tissues),
  - meat with an unusual colour, odour or texture,
  - extensive hemorrhages in multiple organs or very dark colour of multiple organs.

- If the following are seen, the affected area can be trimmed and discarded (with a margin of normal tissue):
  - single swollen or infected joint,
  - single or small number of abscesses,
  - adhesions in chest or abdominal cavity,
  - white scars or spots on liver.

- Prevent bacterial growth
  - Hang carcass in a cool area so it does not touch other carcasses, the walls or floor.
  - Internal muscle temperature should reach 4°C (39°F) within 24-36 hours.
  - Hang between 0-4°C (32-39°F). Carcasses with poor fat cover spoil faster and should not be hung longer than five days.
- Label meat with the date slaughtered and the cut of meat. If it will be sold off farm, label with your name and contact information.

Food Safety

Foodborne pathogens are bacteria, viruses or parasites that can cause disease when eaten. Pathogens can be present on meat from healthy cattle. Foodborne illness usually causes a combination of stomach pain, vomiting, diarrhea, fever, chills and aches. Contact your physician if these symptoms occur after eating beef products.

Foodborne illness can be prevented! Food safety begins with good slaughter and meat processing techniques to avoid contamination of the carcass with gut contents. In the kitchen, handwashing and proper food handling are critical to minimize cross-contamination of other food – especially ingredients that will not be cooked.

Thorough cooking of beef to an internal temperature >60°C (>145°F) for whole cuts of meat controls these hazards. Ground beef poses a greater risk and should be cooked to >70°C (>160°F). Drinking raw (unpasteurized) milk and eating cheeses made from raw milk can cause illness.

The major foodborne hazards for Canada's beef industry include:

- *Escherichia coli* are very common bacteria. Most strains are harmless but some strains, including E. coli O:157:H7, can cause foodborne illness. Meat is contaminated when there is contact with intestinal content from infected cattle. Illness occurs one to ten days after exposure and most people are ill for five to ten days. Around 5-10% of sick people, often children, will develop serious complications including kidney failure.
- *Listeria monocytogenes* are bacteria that can survive on foods stored in the fridge and are linked to raw milk, raw cheese and processed meat like salami and smoked sausage. Contamination is typically from the surfaces where cheese or meat are processed, so cleanliness during processing is essential. Pregnant women and the elderly are at higher risk. Serious cases can involve the nervous system in addition to gastrointestinal illness.

- *Clostridium perfringens* are bacteria that grow just above room temperature (20-60°C/68-140°F). Slow cooked meals or meals prepared in advance and held at warm temperatures pose more risk. Symptoms usually occur within a day of exposure and generally last for one day.
- *Salmonella* are bacteria that can live in the guts of all warm blooded animals and birds. Beef is not a major source of *Salmonella* infections in people but control of *Salmonella* is a priority for all meat producers. Unpasteurized dairy products are also linked to *Salmonella* infections. Symptoms usually occur within three days of consuming the contaminated food and usually last for a week or less but in some cases the bloody diarrhea can be severe.
- *Campylobacter* are another bacteria that can live in the guts of cattle. Like *Salmonella*, beef is not a major cause of *Campylobacter* infections in people but it can happen. The onset of symptoms can vary from a day to a month with illness lasting days to weeks. In rare cases, long term complications can occur.

Considerations for Breeding Cattle

Bulls

- Bulls represent half of the herd's genetics so selection is important. Use healthy bulls and don't rely on a single bull if possible.
- Bulls are responsible for many fertility problems. Semen testing is a useful tool in herds with low calving rates.
- Consider the bull's past performance and birth weight for calving ease.

Cows

- Cows nursing a calf require good nutrition to re-breed and should have a body condition of at least 2.5 out of 5.
- Cows should be culled based on being open (not pregnant after breeding), thin, having a poor disposition, unsound feet and legs, or a poor udder.
- Do not retain a female twin to a bull calf because there is a good chance it will be infertile (free-martin).

Calving

- Most cows will calve unassisted. Check cows 3-4 times per day when calves are expected.
- Most cows will produce a calf within 24 hours of when they first show signs of calving (restless, tail flicking, clear vaginal discharge). First calf heifers may take longer.
- Provide a well bedded and sheltered area for calving. Cows may prefer to separate from the herd to mother-up.

Neonatal Calves

- All calves need colostrum (mother's first milk) within 8-12 hours. If a cow cannot nurse her calf, commercial colostrum can be substituted.

- It is very important to supplement or help calves suck after a difficult or assisted birth.
- Closely watch for mothering-up with twins and first calf heifers.

Vaccination of breeding animals

- Vaccines are **preventative**. They must be administered before the animal is sick. Vaccines are not 100% effective at preventing disease. Vaccination will minimize disease spread between animals and reduce the severity of the illness.
- A **minimum** vaccination plan is provided below. Other vaccines are available and may be appropriate for your farm. This is a starting point for a custom-tailored plan made with your veterinarian.

VACCINE TARGETS

BVD, IBR, PI3, BRSV combination

STRONGLY RECOMMENDED

- Do annually.
- Use a killed vaccine if vaccinating pregnant, not previously exposed animals.
- BVD virus poses a health threat to an unborn calf. The other components prevent pneumonia and abortion.

Multi-valent Clostridial

STRONGLY RECOMMENDED

- Not required annually.
- First calf heifers and every three to five years for entire herd.

Considerations for Backgrounding Cattle

Purchasing

- Purchasing direct avoids the stress of an auction market and allows you to ask about health and vaccination status.
- Yearling cattle are at lower risk for disease than weaned calves. If buying weaned calves, purchase calves that have been weaned and vaccinated at least a week before transport.

Transport

- Cattle arriving in Yukon will have had a long transport.
- Arriving animals should immediately receive good feed and access to fresh water.

Shipping fever pneumonia

- Three pathogens (*Manheimia haemolytica, Pasturella multocida, and Histophilus somnus*) are responsible for most of the respiratory disease in feeder calves. Calves with BVD may be at increased risk for getting sick with these pathogens.
- Watch closely for depression, off feed and respiratory distress. If there is **any** sign an animal is sick – take its temperature. If febrile (40°C/>104°F) treat with antibiotics.
- Proper vaccination can minimize the threat from shipping fever.

Feeding cattle

- The lower the energy density of feed, the longer cattle take to finish.
- Rapid changes in diet should be avoided to prevent digestive upsets (bloat, acidosis, overload) that can be fatal. Introduce high energy feed gradually.
- Grass-based diets may be deficient in energy, protein or micronutrients. Mild deficiency in any of these factors will slow growth. Severe deficiency will lead to health problems.

Vaccination

- All purchased calves should be vaccinated. If you are unsure if they are vaccinated – do it again! Vaccine is inexpensive and saves lives.
- Vaccines are **preventative**. They must be administered before the animal is sick. Vaccines are not 100% effective at preventing disease. Vaccination will minimize disease spread between animals and the severity of the illness.
- A **minimum** vaccination plan is provided below. Other vaccines are available and may be appropriate for your farm. This is a starting point for a custom-tailored plan made with your veterinarian.

VACCINE TARGETS

Modified live BVD, IBR, PI3, BRSV combination

STRONGLY RECOMMENDED

- BVD poses a health threat to calves and to pregnant animals. The other components prevent pneumonia.

Multi-valent Clostridial

STRONGLY RECOMMENDED

- Clostridial organisms are in the environment and can cause rapid death. These diseases are much easier to prevent than treat.

Tetanus

SITUATION SPECIFIC

- This is not included in all Clostridial vaccines. It is necessary if castrating, dehorning or other open wounds are anticipated.

Shipping fever pathogens *(Histophilus somni, Manheimia haemolytica)*

STRONGLY RECOMMENDED

- Buy vaccinated calves or vaccinate before transport.
- Will require a booster if not vaccinated at branding.

Vaccine Acronyms

MLV — Modified Live Virus

A type of vaccine with a live but non-disease causing form of the pathogen.

IBR — Infectious Bovine Rhinotracheitis*

BVD — Bovine Viral Diarrhea virus*

PI3 — Para-Influenza 3 virus

BRSV — Bovine Respiratory Syncytial virus

These viruses cause pneumonia.
Those with asterisks also cause abortions.
They are the common components in multivalent (combination) vaccines.

Reportable Diseases

Reportable diseases are among the most important diseases affecting livestock. If these diseases are suspected, it is your legal responsibility to report them to your veterinarian and the Animal Health Unit. There are many reportable diseases but several that may be pertinent to cattle producers in the Yukon include:

Bovine Tuberculosis

This contagious bacterial disease can affect cattle, wildlife and people. The disease is chronic and cattle can be infected for years before showing signs or symptoms. Once ill, cattle have non-descript signs such as fever, weight-loss and weakness. At slaughter, there are discoloured lumps in the lymph nodes, spleen, liver, head or chest. If such lesions are seen at slaughter, the meat should not be consumed and you should contact the Animal Health Unit. While bovine tuberculosis is extremely rare in Canada, it is important to test any suspected cases to be sure this is not the cause. People can be infected by bovine tuberculosis through drinking unpasteurized milk or through direct contact with infected animals.

Brucellosis

Like bovine tuberculosis, this disease is caused by contagious bacteria that can cause chronic disease in cattle, wildlife and people. Infection occurs via direct contact with an infected animal or drinking unpasteurized milk from an infected animal. In cattle, symptoms include abortions and infertility. Brucellosis is very rare in Canada but if you suspect it, you should contact the Animal Health Unit for advice.

Rabies

Rabies is caused by a virus that can infect many different mammals. In northern Canada, bats and foxes act as the reservoir species. Rabies is relatively uncommon in cattle. When it occurs, usually only one or two animals will be infected. Clinical signs include salivation, being unnaturally alert, aggression and bellowing. Cattle may show difficulty swallowing and it may appear that they are choking. Severity progresses to incoordination, seizures and a down animal. Infection is always fatal once clinical signs have appeared. Rabies can be transmitted to people through contact with the saliva from infected cattle. Contact the Animal Health Unit if you think rabies may be affecting one of your animals. If the animal dies, it is possible to perform tests to be sure rabies was not the cause and this will be done at no cost.

Anthrax

Anthrax is a life-threatening disease that affects cattle as well as sheep, goats, bison, elk, deer and moose. Anthrax often presents as sudden death in cattle. If animals are seen ill they will have difficulty breathing with swelling under the jaw, neck and abdomen and may have bloody discharge from the nose and/or rectum. DO NOT open the carcass of an animal that has bloody discharge from the nose or rectum. Anthrax is contagious to people and the spores will contaminate the environment. Animals contract anthrax after being exposed to spores in the soil. The spores are extremely hardy and can remain infective for many years. Contact the Animal Health Unit for advice on diagnosis, carcass disposal and how to protect other stock. Penicillin antibiotics are highly effective and vaccines are available.

External parasites

HIGHLY CONTAGIOUS

PRODUCTION LIMITING

SYSTEMS: SKIN

COURSE: SUBACUTE TO CHRONIC

What will I see?

- External parasites include warble flies (grubs), lice, mites, ticks and flies. Ringworm is a fungal infection.
- Some parasites are microscopic (invisible to the naked eye).
- Affected animals show irritation, itchiness and hair loss.
- Cattle infested with external parasites may lose grazing time due to irritation by the parasite and not gain weight as rapidly as unaffected cattle.

- Lice
  - Lice are the most common external parasite causing winter hair loss in cattle.
  - Cattle with lice infestation are itchy and rub and scratch.
  - Hair loss and scabs are most noticeable over the neck, shoulders and tail head.
  - Lice may be seen on close inspection of the skin and hair.

- Mites (Scabies)
  - Infected cattle rub causing hair loss, crusts and scabs.
  - The back end, udder, underside of the neck and brisket are affected first. The crusts can extend to the back of the legs, rump and base of the tail in severe cases.

Lice infestation with hair loss and scabs over the shoulder and side.

Warble fly grubs under the skin.

Numerous horn flies.

  - Heaviest infestations occur in late winter and early spring.
  - Mites are microscopic and cannot be seen with the naked eye.

- Warble flies
  - Female flies dart in and out to lay eggs on the lower leg of cattle. This may disturb the animal which runs away with their tail high in the air (gadding).
  - Grubs appear on the back between mid-December and mid-January and will peak late March. This appears as a cyst with a small hole through the skin.

- Ticks
  - Winter ticks can cause excessive grooming and rubbing which results in hair loss and skin irritation especially over the neck and shoulders.

- High numbers of ticks can cause significant blood loss and death.
- Winter tick larvae infest the host starting in September but may not be evident until they become adults in January or February.

- Ringworm
  - Ringworm is a fungal infection of the hair and surface layers of the skin.
  - Affected areas have a crusty grey-white scab that will leave a hairless area in the center.
  - Ringworm does not cause permanent damage.

Commonly affected ages?

- All ages of cattle can be affected.
- Signs can be more severe in young cattle.
- Parasites and ringworm can spread more easily among animals closely confined in winter.

What should I do?

- Treat all animals in the herd at the same time with an anti-parasite drug that is effective against the parasite.
- The two major classes of chemicals used in external parasite control are broad spectrum avermectins and classical insecticides. There are several different methods for applying insecticides including ear tags, pour-ons, back rubs and spray applicators.
- Consult a veterinarian to help you select the optimal treatment program.
- Ringworm will resolve without treatment.

Calf with ringworm infection causing a grey hairless scab around the eye.

Engorged winter ticks with some areas of hair loss.

How can I prevent it?

- Treat newly purchased cattle with the appropriate parasite control product before they are introduced to the rest of the herd.
- Ensure bedding is from a clean source.
- Treat all cattle in the fall with an external anti-parasite. Some herds need to be retreated mid-winter.

What else should I know?

- The external parasites of cattle do not affect people.
- Ringworm can spread to people and children are most at risk. Do not allow children to handle ringworm-infected cattle, or their grooming equipment or halters.
- Although blackflies are not parasites, they can be a significant irritant to cattle when they bite near the eyes or nose. While there may be a minor effect from avermectin drugs when flies bite cattle, it remains important to provide for fly control with direct means such as smudges if the blackfly population is high enough to severely disturb cattle.

Internal parasites

What will I see?

- Internal parasites include roundworms, tapeworms and flukes.
- Signs are variable and can range from no clinical signs, to reduced weight gain, decreased milk production, low pregnancy rates, scouring and/or depression.
- Death is possible in calves.

Commonly affected ages?

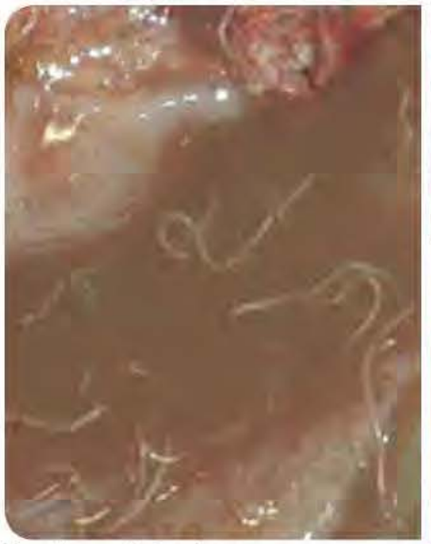
- All ages of cattle can be affected.
- Signs can be more severe in young cattle.

What should I do?

- Deworming medications can be used for both treatment and control.

How can I prevent it?

- Cows should be dewormed for internal parasites at calving. Cows, fall calves and yearlings should be dewormed before summer pasture turnout.
- All cattle should be dewormed in the fall.



Roundworms in the abomasum.

Swollen, pale liver with tracts from liver flukes.

Monezia sp. tapeworm, a common tapeworm of cattle.

- Avermectin pour-on products are adequate for internal parasite control in most herds. Resistance is becoming an issue, so if ineffective, contact your veterinarian for alternatives.

What else should I know?

- Lesions from flukes may be seen on the liver at slaughter so should not be consumed. However, the meat from affected animals is safe to eat.
- People can acquire liver flukes by drinking water contaminated with the early stages of the parasite.
- The roundworms and tapeworms that affect cattle do not affect people.

Wooden tongue

What will I see?

- Affected cattle are unable to eat or drink and will be drooling.
- Rapidly lose body condition.
- Early in the disease the tongue is swollen and painful and may protrude from the mouth.
- There may be an ulcer filled with plant awns or stems at the base of the tongue.
- As the disease becomes chronic, scar tissue is deposited and the tongue becomes shrunken, very firm and immobile.

Commonly affected ages?

- Any age but older cattle are more frequently affected.

What should I do?

- Early treatment is important as chronic cases may not respond.
- Contact your veterinarian for advice on an iodine treatment protocol.
- Observe treated animals regularly for relapses.

GENERAL

A cow with wooden tongue showing a swollen tongue protruding from the mouth.

How can I prevent it?

- There are no preventive measures.
- Control is best achieved by early recognition and prompt treatment.

What else should I know?

- The bacterium that causes Wooden Tongue (*Actinobacillus lignierisii*) is commonly found in the mouth and rumen of cattle. Small puncture wounds from coarse feed may push the bacteria into the tongue muscle resulting in infection.

Hardware disease

What will I see?

- Animal may have a poor appetite, be depressed and reluctant to move.
- Animals may also appear bloated and/or show signs of pain when defecating.
- In some cases, the animal is found dead.
- Condition is caused by a wire or other sharp object piercing the wall of the stomach - often into the heart sac or chest cavity.
- If the heart sac is pierced, the brisket may have a large amount of fluid accumulating in it and will appear swollen.

Commonly affected ages?

- Any age but older cattle are more frequently affected.
- Cows may first show signs after calving, because the foreign object is moved out of the abdomen and toward the heart from the pressure of calving.

Steer with hardware disease showing a swollen brisket due to fluid accumulation.

Typical peritonitis with internal organs coated with yellow exudate.

What should I do?

- Slaughter is recommended to salvage the carcass if this condition is suspected.
- Be careful of adhesions and infection when processing carcass.
- Trim affected areas if possible but the entire carcass may be condemned in severe cases.

How can I prevent it?

- Keep feed bunks, pens and pastures free of potentially hazardous materials such as wire, fence staples and nails.
- Place magnets in feed processing equipment to remove metal fragments.
- A stomach magnet administered to the cow with a balling gun keeps metallic objects together in a ball in the stomach and reduces the chances of penetrating the stomach wall.

Feedlot (free-gas) bloat

What will I see?

- Upper left abdomen is distended.
- Occurs much faster and is more dramatic than abomasal impaction.
- Affected animal is uncomfortable and restless, shifting between standing and laying down, kicking at belly, rolling and defecating often.
- Bloated animals may die suddenly.

Commonly affected ages?

- Cattle fed a high grain ration.
- A different kind of bloat (frothy) occurs in cattle on lush legume pasture.

What should I do?

- Pass a stomach tube.
- If gas is released it is a free gas (feedlot) bloat. Tube with one package of Oxamin® powder in a pail of water and place the animal on a roughage diet (remove grain).

Bloat causing severe distention of the abdomen, especially the left side.

- If the animal is found down, extremely bloated and barely able to breathe, it may be necessary to trocharize the rumen to try and release the gas. Stab the trochar into the distended stomach on the upper left side behind the last rib. This should only be done as a last resort. The animal will require three days of treatment with an antibiotic after it has been trocharized.

How can I prevent it?

- Introduce grain or highly concentrated feed gradually into the diet.
- Avoid irregular feeding of grain.
- Avoid feeding finely ground grain or screenings. Feeding coarsely rolled grain with adequate dietary roughage has been shown to lower the incidence of bloat.

Grain overload +/- liver abscess

What will I see?

- In acute cases, animals may be off feed and depressed, and may have bloat over the left side of the abdomen, diarrhea, drooling, panting, kicking at the belly, and/or general signs of discomfort and distress.
- Can progress to staggering, staying down and death.
- Survivors may be chronic poor-doers because of damage to the rumen wall, reduced absorption of nutrients, and liver abscesses.
- Survivors may also become lame due to laminitis (damage to the wall of the hoof).

Commonly affected ages?

- Animals on high grain rations.
- Any cattle that have sudden, increased access to grain.
- Less commonly, can also occur in cattle suddenly fed highly digestible by-products (i.e. baking products, brewery by-products).

What should I do?

- Treatments vary with the severity of the disease.
- Slaughter for salvage of the carcass may be recommended in severe cases when recovery is unlikely.
- Consult your veterinarian for a treatment plan.

Diarrhea containing grain from an animal with acute grain overload.

Numerous abscesses in the liver.

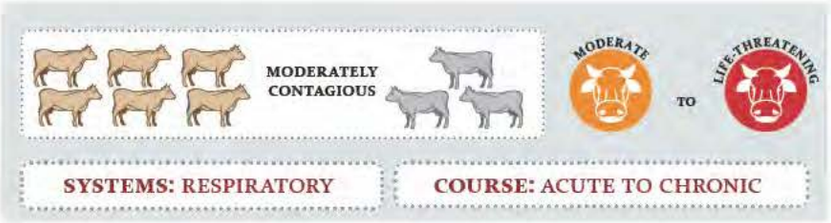
How can I prevent it?

- Gradually introduce animals to grain, pellets or by-products.
- Ensure good quality hay or silage are always available. It can take 50-70 days for the rumen to adapt to high grain rations.
- Hay or silage should make up at least 20% of the diet.
- Monitor the herd for signs of diarrhea and depression which can indicate that the amount of grain is being increased too fast.

What else should I know?

- The meat from cattle with liver abscesses is safe for human consumption.
- If there are one or two abscesses or abscess scars it is possible to trim the affected liver and the remaining liver is also safe to eat.

Pneumonia



What will I see?

- Depressed with drooping ears, an extended head and bowed back.
- May isolate themselves and go off feed (particularly weaned and yearling calves).
- Increased respiratory rate and a fever (rectal temperature > 40.0°C or 104°F).
- Yearlings may have nasal and eye discharge, cough, a crusty muzzle and walk with a stiff gait.

Commonly affected ages?

- All ages can be affected but more common in younger or unvaccinated animals.
- Stressful situations predispose cattle to pneumonia.
- Nursing calves: stress from poor weather, scours or navel ill. Also see if the calf has not had adequate colostrum.
- Older calves: stress from weaning, transportation, mixing, rough handling, overcrowding, poorly bedded (wet and muddy) pens.

What should I do?

- Early detection and treatment is important for recovery.
- Separate affected animals.

Normal bovine lung.

A lung from an animal with bacterial pneumonia. The lung is swollen and reddened and covered in yellow exudate.

- Provide a sheltered area with access to fresh food and clean water.
- Affected animals require antibiotics and you should contact your veterinarian for advice.

How can I prevent it?

- Minimize stress.
- Provide adequate shelter and bedding especially in poor weather.
- Ensure calves receive adequate amount of colostrum within eight hours of birth.
- Vaccines are available for prevention of common infections.

What else should I know?

- When cattle are exposed to common respiratory viruses, the viruses infect the upper respiratory tract. Secondary infections with bacteria such as *Mannheimia hemolytica* and *Pasteurella multocida* can then infect the lungs and cause severe tissue damage. This is especially true for young animals that have encountered multiple stresses.
- Pneumonia is a disease complex and there is no one answer for treatment. Consult a veterinarian to determine the best prevention and treatment protocols for your cattle.

Foot rot

What will I see?

- Sudden lameness, usually only in one foot.
- Very painful, will often only touch the toes to the ground.
- May be a moderate fever (39°-40°C/103°-104°F) early in the disease.
- Foot will be swollen with a break in the skin between the claws.
- There will be a foul odour and a small amount of pus may be present.

Commonly affected ages?

- All ages of cattle may be affected but most commonly occurs in adults.

What should I do?

- Affected cattle require antibiotics. Consult your veterinarian for advice.
- Provide dry and clean bedding. Ensure water and feed are close to affected cattle to minimize walking.
- Flossing between the toes with a clean rope or twine can help to remove some of the dead tissue.

Swollen, bleeding, painful foot caused by footrot.

GENERAL

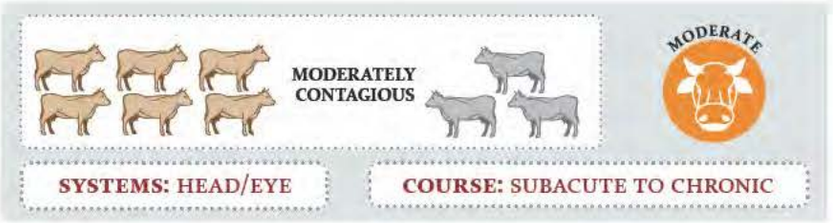
How can I prevent it?

- Foot rot is caused by bacteria (usually *Fusobacterium necrophorum*) that enter the foot through an injury especially between the toes.
- Wet muddy conditions predispose animals to foot rot.
- The injury can be from walking on abrasive surfaces, sharp stones or gravel, or hardened mud.
- Provide comfortable and dry footing if possible.
- A vaccine against the bacteria is available.

What else should I know?

- Foot rot responds well to treatment. Animals that do not respond to treatment may have another condition. Two other conditions that commonly cause lameness in cattle are injury and septic arthritis.
- In septic arthritis the infection in the foot has spread to the joints of the toes or fetlock. A veterinarian should be consulted.

Pink eye



What will I see?

- Clinical signs change over the progression of the disease.
- Early: excessive tearing with redness along the eyelids. Increased sensitivity to light causes frequent blinking.
- Mid-stage: progresses to a white spot (ulcer) in center of the cornea. The eye will appear gray or cloudy. Over time, blood vessels will grow from the edge making the eye look pink.
- Late: the eye will fill with scar tissue so it appears yellow. The eye may be swollen or shrunken.
- The animal will become progressively blind which is permanent in the later stages.

Commonly affected ages?

- All ages of cattle may be affected.
- Usually occurs during summer.

What should I do?

- Early treatment is essential for a successful outcome and to reduce shedding of the bacteria to other cattle.
- Can cover the affected eye with a patch to reduce exposure to ultraviolet light.

Eye affected by pink eye showing excessive tearing with redness along the eyelids and an ulcer in the cornea.

- Affected cattle require antibiotics. Consult your veterinarian for advice.

How can I prevent it?

- Flies are important for spreading the bacteria and the disease so control of face flies is essential. Fly tags and pour-on insecticides are helpful.
- A vaccine is available.

What else should I know?

- Cancer eye (a tumor of the eye) can appear similar but tends to occur in older cattle and gets progressively worse despite treatment.

Neurologic disease and blindness

What will I see?

- Signs of blindness:
  - Does not move away when people approach.
  - Does not have a menace response (animal should blink when you wave or point quickly toward the eye).
  - Uncoordinated and may run into objects.
  - Some animals are more anxious, nervous and easily startled when approached.
- Neurological signs include staggering, seizures, head-pressing, down animals and death.
- There are many causes of blindness and neurological symptoms. Three common causes are:
  - Polioencephalomalacia (PEM, Polio)
    - Cattle are depressed, uncoordinated and blind.
    - Severely affected cattle are unable to rise and may have seizures.

Blind calf "stargazing".

    - Polio is caused by thiamine (vitamin B1) deficiency or a sulphate toxicity. It occurs in cattle that have consumed toxic plants that destroy thiamine or are confined and fed a diet high in sulfur. High sulfur diets generally are without adequate roughage and are low in protein. Water can also be a source of sulfur.
  - Vitamin A deficiency
    - Night blindness is an early sign which can be recognized by placing an obstacle in the animal's path at dusk and observing if it stumbles over the obstacle.

- Cattle show loss of appetite, poor hair coat and slow weight gains.
- In more advanced cases there is diarrhea, pneumonia, staggering gait and stiffness or swelling in the joints.
- Vitamin A deficiency occurs in cattle fed insufficient roughage or feed that has been stored for an extended period.

- Lead poisoning
  - Early signs are depression, loss of appetite and diarrhea.
  - This will progress to blindness, staggering and death.
  - Lead poisoning occurs when animals have access to dumps or rubbish piles. Younger animals are curious and are more likely to consume materials containing lead because they like the salty taste. On-farm sources include lead batteries, painted surfaces, paint tins, sump oil, grease and oil filters, oil on old machinery, caulking and putty.

Commonly affected ages?

- All ages of cattle may be affected but younger animals will show signs sooner.

What should I do?

- Early diagnosis and treatment is essential before brain damage is irreversible. Your veterinarian will make a diagnosis based on clinical signs and laboratory analysis.
- Provide supportive care to prevent injury and easy access to feed and water.
- Injectable thiamine for animals with PEM may be prescribed by your veterinarian.
- Injectable vitamin A for animals with deficiencies may be prescribed by your veterinarian.

- If you suspect your cattle have consumed a source of lead, contact the Animal Health Unit veterinarians immediately.
- **Never** consume meat or milk from animals diagnosed with lead poisoning.
- While treatment for lead poisoning may be unsuccessful when animals are showing signs of illness, other animals may have been exposed. They can be tested to determine when the lead has been cleared and milk or meat are safe for consumption.

How can I prevent it?

- Feed adequate amount and quality of grass and hay.
- Test feed and water for sulfate levels.
- Supplement vitamin A to mix with the ration or with salt.
- Discard potential sources of lead in locations where livestock will not have access to them.

Mastitis

What will I see?

- Peracute (very sudden) cases: cow will be very sick, have a fever and a hot swollen udder. This is life threatening and requires immediate veterinary attention.
- Acute to chronic: swollen udder (one or multiple quarters) that may or may not be hot and red.
- Thick stringy milk or flakes in the milk.
- Cow may or may not appear ill.

Commonly affected ages?

- Mastitis can be seen in all ages but older cows are more commonly affected.
- In beef cows, acute cases are most common shortly after calving.

What should I do?

- Strip milk out of the infected gland and infuse with a mastitis antibiotic three times at 12 hour intervals.
- Bacteria from infected glands can be spread during milking so strip the infected gland last and wash your hands and equipment between cows.

Severely swollen front quarter in a cow with mastitis.

MATURE

- Sick cows with a fever (> 40°C/104°F) require antibiotics by injection. Consult your veterinarian for advice because there are different types of bacteria that cause mastitis and the treatment is specific to the type of bacteria suspected, clinical signs and laboratory analysis.

How can I prevent it?

- Injury to the teat causes it to be more susceptible to bacterial invasion and infection so ensure the environment is safe for cows.
- Poor udder and teat conformation will predispose the udder to injury so select cows with udders held tight to the body and teats suspended perpendicular to the udder.
- Keep nursing cows in a clean, dry environment.
- Keep milking clean - hands, teats and equipment should be kept clean. Milk in a clean, stress-free environment.

What else should I know?

- Mastitis reduces milk production, affects milk quality and will reduce milk shelf life.
- Drinking raw milk carries the risk of infection with bacteria and other germs that can make people, especially children and the elderly, very sick. Milk from cattle with mastitis will be more contaminated and carries a greater risk.
- Milk from cows treated with veterinary drugs cannot be consumed until the drug withdrawal period has passed.

Down cows (milk fever)

What will I see?

- Early in the disease, the cow may be able to walk but might shake, appear unsteady or stiff, and be excitable.
- As condition progresses cow, will go down and be unable to rise.
- The animal may look bright and alert, resting quietly with her head turned into her flank.
- If untreated, she will eventually be lying flat on her side with legs extended and breathing rapidly. She will not survive for more than a few hours without treatment at this stage.

Commonly affected ages?

- Typically occurs shortly before or after calving. More common in cows consuming poor quality diets.
- Older cows are more commonly affected.
- Cause is related to nutrition so even though disease is non-contagious multiple animals may be affected.

What should I do?

- A down cow is a medical emergency – contact a veterinarian immediately.

Cow with milk fever that is unable to rise.

MATURE

- Veterinary care with calcium-magnesium is often effective if provided early.
- Cows that do not rise within a few hours will develop muscle compartmentalization and this will prevent them from getting up. This is life-threatening.
- Non-responders should be well bedded, rolled every few hours, and provided assistance to try and rise. Provide water and high-quality forage within reach.

How can I prevent it?

- Consult a nutritionist and/or veterinarian to evaluate the ration fed to the cows and feeding practices.
- Provide a mineral supplement feed as recommended by your veterinarian.

What else should I know?

- Over supplementation as well as under supplementation of calcium, phosphorus or vitamin D can increase an animal's risk of developing milk fever. Diet changes are best made using the information from a feed analysis.
- Other problems associated with calving such as mastitis, retained placenta and metritis can predispose a cow to going down and being unable to rise. These require specific treatment, so obtaining a diagnosis is essential to recovery.

Dystocia (calving problems)

What will I see?

- Prolonged birth without normal progress.
- Presentation of fetal calf in abnormal position - anything **other than** two feet pointed down.

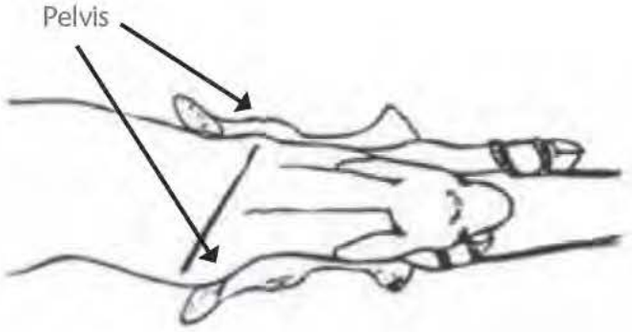
BIRTH STAGE	IT IS NORMAL WHEN...	INTERVENE WHEN...
I	▸ Lasts up to 72 hours ▸ Animal is restless, elevated tail +/- straining ▸ Separates from herd	▸ Cow is notably anxious for >6 hours ▸ Calf may be in a position that does not allow head or feet to enter birth canal
II	▸ 30 minutes – 3 hours ▸ Starts with water bag and ends with birth	▸ Hard straining >40 minutes without progress ▸ More than 90 minutes since water bag without calving ▸ Presentation of anything other than two hooves pointed down
III	▸ 8 – 12 hours ▸ Ends when afterbirth (placenta) is expelled	▸ Cow is sick with fever and placenta not fully expelled ▸ If afterbirth is present but cow it not sick, just monitor

Commonly affected ages?

- Dystocia can occur in any cow but is most common in first calf heifers or cows with twins.

What should I do?

- Intervening on farm
  - Wash cow's vulva as well as your arms and hands well. Use a mild disinfectant (not soap).
  - Apply calving chains as shown in figure below. Failing to put two loops on each leg over the fetlock joint can cause trauma to the legs.
  - Alternate pulling on each leg rather than equal traction on both because this helps the shoulders pass through the birth canal.
  - Pull slightly down toward the cow's hocks rather than straight backwards.



- When to call the vet
  - If two front legs and head are presented in the birth canal and one strong person cannot get head and feet engaged into pelvis by pulling on calving chains (i.e. **not** using a calf-puller or calf-jack).
  - If calf is in backwards and two strong people cannot get hips engaged into pelvis by pulling on calving chains (i.e. **not** using a calf-puller).
  - If calf or twins are in wrong position and you cannot rearrange into the correct position in less than 20 minutes of effort.

- Post-calving complications
  - **Prolapse**
    Following a hard birth a cow may prolapse her uterus - i.e. push the calf bed out after the calf. Prolapse is a medical emergency. Do not move the cow beyond what is necessary to restrain her. Contact your veterinarian immediately.
  - **Downer cow**
    Cows may go down shortly before or soon after calving. This is a medical emergency. Contact your vet as treatment differs for injuries versus metabolic reasons. Provide soft bedding, shelter, feed and water within her reach. Roll side to side every three hours. Downer cows that do not get up quickly are at risk of secondary damage (muscle compartmentalization) regardless of the initial problem. Euthanasia should be considered if the animal is down for >12 hours and is not improving.

Calf being pulled using chains.

How can I prevent it?

- Preventing calving problems starts with heifer and bull selection. Heifers should be 85% of mature weight at first calving. Select bulls with lower birth weights to be bred to heifers.
- Nutrition is key to providing cows with enough energy to calve and nurse. Cows that are too thin or too fat are more likely to have difficulty. See body condition scoring.

Retained placenta - uterine infections

What will I see?

- Afterbirth (placenta) should be expelled within 24 hours of calving.
- Membranes may hang from the vulva and there may be a foul smelling vaginal discharge.
- In other cases, nothing is visible externally but cows often stand with their tail raised and strain periodically.
- Cow may be depressed, off feed and febrile >40°C (104°F).

Commonly affected ages?

- Retained placenta can occur in cows of any age.
- More common after abortions, difficult birth or twins.

What should I do?

- If the cow is eating normally, does not have a fever, and no foul odour from the uterus, then no treatment is necessary. Just watch closely.
- Do not pull on membranes as you may tear the lining of the uterus. Do not put antibiotics in the uterus.
- A fever indicates a uterine infection that requires injectable antibiotics; consult with your veterinarian.

MATURE

Afterbirth membranes and discharge hanging from the vulva of a cow with retained fetal membranes.

How can I prevent it?

- Minimize calving problems with appropriate selection of bulls and replacement heifers, maintain your cows at a healthy weight, and provide a stress-free calving area.
- A good trace mineral and vitamin supplementation program is important for prevention.

Infertility/Abortion

CONTAGIOUSNESS: DISEASE DEPENDENT

SYSTEMS: REPRODUCTIVE

COURSE: PERACUTE AT THE INDIVIDUAL LEVEL.
MAY BE ABORTION OUTBREAKS AT HERD LEVEL.

What will I see?

- Early stage abortions (within the first 60 days of pregnancy) are resorbed by the uterus and will appear as though the animal did not conceive.
- Cows with mid to late-term abortions deliver unviable or dead calves. The aborted fetus may appear normal or diseased.
- Premature calves will have a thin or reduced hair coat and their incisor teeth will still be covered by the gums. They may be covered in fetal fecal material.
- If the calf is near term and found dead it can be hard to distinguish between an abortion and a calf that died soon after birth.

Commonly affected ages?

- All ages of cows can be affected.
- A higher rate may be seen in heifers and in unvaccinated herds.

What should I do?

- Most herds have a 1-2% abortion rate so a single abortion is not cause for alarm.
- Humanely euthanize unviable calves.

MATURE

Four-month-old aborted bovine fetus.

- If several cows are aborting, identify and isolate the aborting cows from the rest of the herd to prevent the spread of the disease.
- If the cow appears depressed and ill, provide supportive care and consult your veterinarian.
- Save the aborted fetus and placenta in a plastic bag and refrigerate. Do not wash the tissues and do not freeze. It can be submitted to the Animal Health Unit or your veterinarian to try to determine the cause. It is critical to retain the placenta because it can be the most valuable tissue for confirming a diagnosis.

How can I prevent it?

- The most common cause of infertility in beef cattle is poor cow nutrition. Assess the body condition of your cows and review feeding practices.
- Fungal infections are one of the more common causes of abortion and may affect multiple cows in a herd and are related to moldy feed.
- Several infectious diseases can cause abortion including:
  - Bovine virus diarrhea virus (BVD virus)
  - *Campylobacter* bacteria
  - Infectious bovine rhinotracheitis (IBR, caused by bovine herpesvirus-1)
  - *Leptospira* bacteria
  - *Brucella* bacteria
  - *Neospora* protozoa.
- Vaccinations are available against some infectious diseases that cause abortion.

What else should I know?

- Records are needed to understand reproductive performance and determine the cause of abortion or stillborn calves.
- Record all health practices including vaccinations, cattle movements, origin of new cattle brought into the herd, and results of bull semen evaluations and other diagnostic tests.
- Record reproductive results on your herd including dates when cows are exposed to bulls, conception rate, calving rate and weaning rate.
- Some infectious causes of abortion may be transmitted by wildlife.

Lumpy jaw

What will I see?

- Immovable, hard swellings in the upper and lower jawbones.
- The swellings develop slowly so it takes months before they reach a noticeable size.
- In advanced cases draining tracts develop and discharge sticky pus with gritty yellow granules.
- Chewing becomes progressively more painful and difficult and the animal will lose condition.

Commonly affected ages?

- Lumpy jaw usually affects mature cattle.

What should I do?

- There are treatments described but they are usually ineffective.
- If early in the disease, slaughter for salvage should be considered.
- Humanely euthanize animals in poor condition.

MATURE

Cow with lumpy jaw showing large swellings in the lower jawbone.

How can I prevent it?

- There are no preventive measures.
- The disease is caused by the bacterium *Actinomyces bovis* invading tissues of the mouth through breaks in the lining of the mouth. The most common cause of the wounds in the mouth is eating rough forage.

Johne's Disease

What will I see?

- Chronic diarrhea, weight loss and reduced milk production.

Commonly affected ages?

- Calves are at greatest risk of infection but it will take 15-18 months before clinical signs appear.
- Any age of animal is susceptible if the exposure to the organism (*Mycobacterium paratuberculosis*) is high enough.

What should I do?

- Testing the feces of suspect animals may confirm Johne's disease, but tests are not highly reliable.
- There is no effective treatment.
- Cull animals showing signs suggestive of Johne's disease and try to confirm the diagnosis by post mortem examination and tissue samples.
- Cull all offspring, dams and siblings of confirmed cases.
- Do not sell animals for breeding purposes if you have confirmed a diagnosis of Johne's disease in your herd.

MATURE

Cow in poor body condition with diarrhea due to Johne's disease.

How can I prevent it?

- There is no vaccine to prevent this disease.
- Attempt to maintain a disease-free herd by purchasing replacements from clean herds.
- Avoid overcrowding at calving to reduce the risk of transmission.

What else should I know?

- The association between Johne's disease and Crohn's disease in people has been suggested but not established. Drinking milk from infected animals is not advised.

Abomasal impaction

What will I see?

- Off feed and moderately bloated. The rumen (left side) feels hard, doughy and distended.
- Affected cattle pass little to no manure.
- Longer term cases lose weight, don't have much appetite and appear weak.
- The body temperature may be below normal (normal = 38°-39°C/100-102°F).

Commonly affected ages?

- Any age, but pregnant beef cows are most commonly affected.
- Fall calves and yearlings in feedlots can also be affected.
- Occurs in cold, winter months.

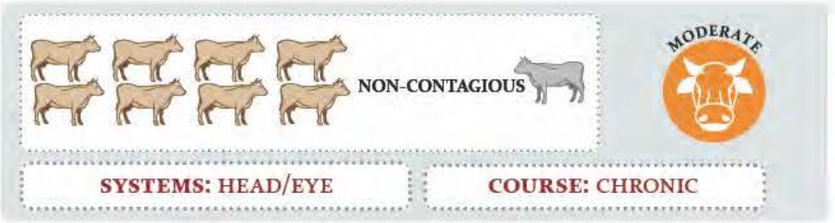
What should I do?

- Immediate slaughter for salvage should be considered.
- Consult a veterinarian for medical and surgical options.

How can I prevent it?

- Provide the necessary nutritional requirements for wintering cattle (ie. good quality roughage and adequate water).
- Occurs in animals fed poor quality feedstuffs. Animals increase feed consumption to compensate for cold, but if the dietary protein in the ration is too low and rumen microbes cannot adequately ferment the roughage (i.e. feeding straw), impaction can occur.
- Analyze feed for protein levels to determine the appropriate amount of grain to add to the ration.
- Adequate fresh drinking water should be available at all times. Cattle on snow are at higher risk.

Cancer eye



What will I see?

- A whitish-pink growth that usually begins on the inner eyelid or less commonly on the eyeball.
- Cancer eye can be confused with pink eye.
- Unlike pink eye, the eye does not become cloudy and is not painful (animal does not hold eye shut and is not sensitive to light) in the early stages.
- As the cancer spreads, affected animals will suffer severely.

Commonly affected ages?

- Cancer eye affects cattle older than five years of age.
- White-faced cattle that lack pigment around the eye appear to be more at risk.

What should I do?

- Early treatment is essential to retain economic value of the animal.
- Treatment of cancer eye is a veterinary procedure so consult your veterinarian as soon as possible.
- Early cases can be slaughtered. If lymph nodes in neck or other parts of body are affected, the carcass should be condemned.

Animal with whitish-pink growth (cancer eye) on the surface of the eyeball.

MATURE

- Animals with advanced cancer eye should not be sent to slaughter or auction; this is an animal welfare issue. Severe cases should be humanely euthanized on the farm.

How can I prevent it?

- Select breeding stock with dark pigmentation around the eyes. Cull affected animals and their offspring from the breeding herd.

Frostbite

What will I see?

- Affected areas are cold to the touch and swollen. This will be followed by sloughing of the affected tissues.
- The extremities of calves are most at risk of frostbite including ears, tail and distal part of the limbs (especially the hooves).
- Frostbite of teats is more difficult to detect. You may notice a thin calf because the cow won't allow it to nurse.
- Frostbite of testicles in bulls can cause temporary or permanent infertility so a poor conception rate may be the first evidence of frostbite on a bull's scrotum and testicles.

Commonly affected ages?

- Newborn calves are at greatest risk.
- Teats and testicles of mature cattle can also be affected in severe weather.

What should I do?

- Newborn calves should be placed in a warm environment to dry when born in extreme cold.
- The thawing process increases the damage so thaw tissues quickly in a small warm room or a warm water bath. The tissues are fragile; do not rub.

Frostbitten ear with the tip sloughed.

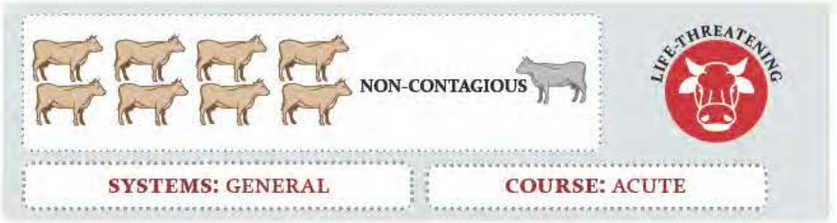
CALVES

- The animal will be experiencing pain. Don't let it rub the affected areas.
- Discuss pain relief options with your veterinarian.
- Calves with frozen feet should be humanely euthanized.

How can I prevent it?

- Detect frostbite early. Examine newborns carefully when conditions create a risk. If ear tips are frozen then the feet may be damaged as well.
- Provide sufficient dry bedding and windbreak. Wet tissues freeze more quickly so ensure animals can stay dry.
- Provide newborns born in cold weather with shelter to get warm and dry before they become frostbitten. If a barn is not available a small heated box (calf hot-box) can be built to temporarily hold calves until they are warm and dry.
- Animals in poor body condition are more susceptible to frostbite.
- Animals with pre-existing conditions such as being underweight, dehydrated or scouring are at greater risk and will need protection sooner.

Failure to receive colostrum



What will I see?

- Total failure to receive colostrum will lead to death within days. Calves will go down, develop multiple joint infections and may have white precipitate in eye.
- Partial failure causes increased rates of sickness and death in young calves.
- Common conditions seen are navel ill, joint ill, scours and pneumonia.

Commonly affected ages?

- Newborn calves must receive colostrum (mother's first milk) in the first 8-12 hours after birth.
- Partial failure to receive colostrum affects the immune competence of calves until two to four months of age.

What should I do?

- Supportive care with fluids, antibiotics and a clean, warm environment.
- Treatment is usually unrewarding so prevention is extremely important.

Calves that failed to receive colostrum with white precipitate in eyes.

How can I prevent it?

- Watch newborn calves to ensure they nurse within 8-12 hours of birth.
- Provide two to four litres of fresh colostrum or a commercial supplement within eight hours of birth for any calf that experienced a difficult birth or is slow to stand and nurse for any reason.
- Calves that will suck should be bottle fed. Those that do not suck can be tube fed.
- Proper nutrition for cows in late gestation will help ensure that they produce good quality colostrum.
- Vaccinating cows and heifers for diseases of concern will ensure their colostrum will offer the best protection to their calves.

Neonatal scours

HIGHLY CONTAGIOUS

MODERATE TO LIFE-THREATENING

SYSTEMS: GASTROINTESTINAL

COURSE: ACUTE

What will I see?

- Watery stools that may be brown, green, yellow or gray. There may be flecks of blood and mucous in the stools.
- Calves are weak and depressed and may stop nursing. As dehydration and acidosis progress, calf will become progressively weaker.
- Dehydrated calves look sunken-eyed and the gums feel dry. More severe cases have cool extremities and skin stays tented when pinched.
- Calves that develop acidosis appear unsteady and act as though they are drunk.

Commonly affected ages?

- Most cases occur in calves under one month of age.
- Calves from first calf heifers are most susceptible.

What should I do?

- Electrolytes or oral rehydration fluids can be administered by bottle to calves that will suck or by stomach tube to those that will not.
- Ensure calf is in a warm, dry, well-bedded area. Separate from other calves. Leave with cow if still able to nurse.
- Intravenous fluids to correct dehydration and acidosis may be required for severe cases.

Calf with yellowish fecal staining on hind end due to scours.

- Most cases are initially caused by viruses but secondary bacterial infection may be a concern so antibiotics may be indicated. Consult your veterinarian to discuss treatment programs.

How can I prevent it?

- Ensure calves nurse within 8-12 hours of birth.
- Keep calving pens clean, dry and uncrowded.
- Scours vaccines administered to the cow before calving can provide protection for the calf against common bacterial and viral causes of scours through the colostrum.

What else should I know?

- Some of the infectious agents that make calves ill such as *Salmonella, E. coli,* and Cryptosporidium can also make people sick.
- People vulnerable to infections (children, seniors, pregnant women and those with immune system disorders) should not handle sick calves or their feed and bedding.
- People working with scouring calves should wear clothes and boots dedicated for their care. Wash hands and clean equipment thoroughly.

Navel ill

What will I see?

- Swollen navel - may not dry up.
- Painful when you squeeze/touch the navel.
- Affected calves usually have a fever (>40°C/104°F).
- May have a reduced appetite.

Commonly affected ages?

- Calves; a few days to a few weeks old.

What should I do?

- Early antibiotic treatment is important to limit the infection spreading to the joints or other parts of the body.
- Treatment should continue for 7-10 days to completely control the infection.
- Once an abscess forms, surgical drainage by a veterinarian may be necessary.
- Provide a clean, sheltered area for the calf and its dam.

Calf with swollen painful joints due to progression of navel ill infection.

How can I prevent it?

- Ensure cows calve in a clean environment.
- It is essential the calf consumes sufficient colostrum.
- Applying iodine to the navel shortly after birth can reduce the risk of bacteria entering the navel but is not sufficient in a very dirty or wet environment.

What else should I know?

- If the navel ill infection spreads, the most commonly affected sites are the joints (joint ill).
- Signs of joint ill are swollen, stiff and painful joints. The joints will often feel hot.
- If more than one joint is affected the prognosis for recovery is poor. Consider euthanasia.

White muscle disease

What will I see?

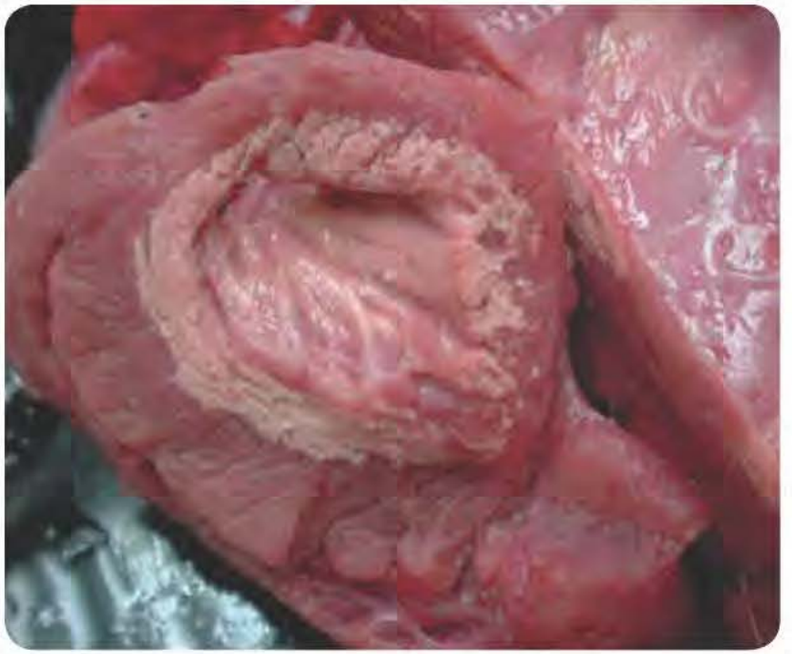
- Calves born with selenium deficiency may be stillborn or too weak to nurse.
- Older calves will be stiff, weak and trembling. They may cough or have milk run out of their nose when the swallowing muscles are affected.
- Older animals will appear unthrifty, develop diarrhea and have a rough hair coat.
- Death is possible if left untreated.

Commonly affected ages?

- All ages of cattle are affected but clinical signs are most evident in young calves.

What should I do?

- Calves should be given an injection of selenium and vitamin E following the recommendations of your veterinarian.
- Cows and older animals can be provided a selenium supplement provided as a feed mix or in salt blocks.



Cut surface of a calf heart showing white color of the muscle due to selenium/vitamin E deficiency.

How can I prevent it?

- White muscle disease occurs in areas with selenium-deficient soils. Supplement animals if feed is from a selenium-deficient area.
- A general recommendation for selenium supplementation during pregnancy is 3 mg/head/day.
- Excessive amounts of selenium can be toxic to animals. Feed all supplements by following the manufacturer's recommendations.
- Treat all calves at birth with a selenium/vitamin E injection. Calculate the dose exactly because overdose is toxic.

Colic in calves

- There are many causes of colic symptoms in calves including the following:

Abomasal bloat

- May present as sudden death.
- Affects calves under three weeks of age. They refuse to drink milk and there is a rapid onset of a distended abdomen along the right side or both sides.
- Affected calves grind their teeth, salivate and are depressed.
- Death occurs within a couple of hours.
- Treatment of abdominal distension in calves is usually not successful.
- The cause of bloat in calves is not fully understood. Some management practices that have been identified as being helpful are to ensure calves get adequate colostrum, not allow any interruptions of normal nursing patterns, and maintain good hygiene for bucket-fed calves.
- Intestinal obstruction such as torsion of the intestine will also cause abdominal distension, pain and rapid death.

Photo credit: Open Source.

Abomasal ulcers

- Range from a mild ulcer to a hole in the abomasum (stomach) that causes severe infection in abdomen.
- Corresponding signs range from mild pain and poor appetite to bloat, severe pain, tarry black feces, weakness and death.
- The cause of abomasal ulcers in calves is not fully understood although bacteria may play a role.
- Correct any dietary problems such as a poor quality milk replacer, remove stressors, and provide a clean, comfortable environment.
- Due to the potential role of bacteria, antibiotics may be indicated as prescribed by your veterinarian.

Bovine viral diarrhea (BVD) – Postnatal infections

What will I see?

- Infection with BVD virus causes a wide range of clinical signs depending on the age of the animal and its previous exposure to the virus. This section focuses on acute infections but you should be aware there are other forms of the disease.
- Acute infections range from:
  - Mild: immune suppression resulting in increased susceptibility to other diseases.
  - Moderate: depression, fever, decreased appetite and mild diarrhea with recovery over few days.
  - Severe: severe diarrheal disease, respiratory disease outbreaks in weaned calves and a high mortality rate. May see erosions and ulcers in mouth and on nose +/- on margin of hoof.
- Chronic infections result in a poor doing animal.

Commonly affected ages?

- All ages of cattle can be affected.
- Infection in weaned cattle is often more severe.
- Carrier animals (persistently infected) are often small and unthrifty. They produce large quantities of virus and are an important source of infection for the rest of the herd. Suspected animals should be tested and culled if confirmed positive.

Thin, stunted calf with BVD infection.

What should I do?

- If you suspect BVD in your herd, consult your veterinarian to test animals for the virus.
- If you see blisters or ulcers on the nose, mouth or hooves you **must** contact the Animal Health Unit to make sure this is not a reportable disease such as foot and mouth disease.
- BVD is caused by a virus so there are no treatments. Antibiotics may be indicated if secondary infections develop.

FEEDERS

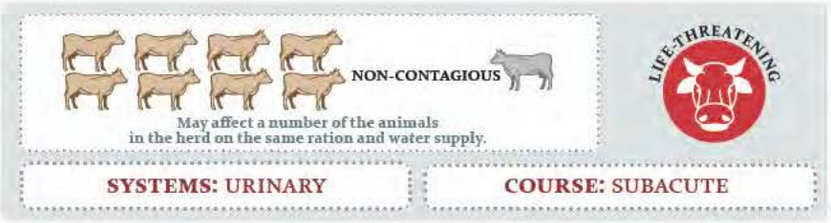
How can I prevent it?

- Vaccination of breeding females is effective in reducing disease associated with acute infections, fetal infection and abortion, and will prevent the development of persistently infected animals.
- Vaccinate all calves at purchase.

What else should I know?

- BVD affects pregnant cows. Infection during early pregnancy can cause open cows (early resorption), abortions, stillbirths or dummy calves.
- Infection between 120–180 days of pregnancy can lead to calves that appear normal but are persistently infected. These animals will become the source of future infections in the herd.
- For these reasons it is important to keep the cow herd vaccinated in addition to vaccinating any incoming grassers.

Urolithiasis (Water belly)



What will I see?

- Urinary stones that remain in the bladder cause no signs.
- When the stones move into the urethra within the penis and block urine flow, the animal will be in pain.
- Affected animals go off feed, repeatedly posture to urinate without success and show a wide-based stance.
- The bladder or urethra may rupture within 24 hours and the animal will develop a urine filled belly or swelling along the sheath. It will die within a few days.

Commonly affected ages?

- Urinary obstruction occurs in male animals with steers at greater risk than bulls.
- Animals raised in areas with high silica in the soil are at increased risk.

What should I do?

- Urolithiasis requires veterinary intervention to remove the stones and repair a ruptured urethra or bladder.

Stone (white mass) in the lower loop of the penile urethra of a steer that died due to water belly.

How can I prevent it?

- Rations high in grains and concentrates may cause a phosphorus: calcium imbalance and calculi formation. A feed analysis and a mineral supplement recommended by your veterinarian can be preventive.
- Feed good quality forages, provide a mineral-supplemented salt block and ensure access to fresh water at all times.

Haemophilus somnus

What will I see?

- Infection with this bacteria can cause several different disease types:
  - Nervous form in feeder cattle (thromboembolic meningoencephalitis): presents as fever, incoordination, head pressing, appearing blind, convulsions and progresses to death.
  - Pneumonia: this pathogen is an important component of shipping fever in feeder cattle.
  - Lameness or sudden death: the bacteria can spread through the bloodstream causing damage to the heart muscle, skeletal muscles and joints. These animals may be found lame with stiff and swollen joints, or dead.

Commonly affected ages?

- Weaned and feeder cattle are at greatest risk.

What should I do?

- Early treatment with antibiotics is necessary to prevent disease progression. Consult your veterinarian.

Multiple areas of inflammation and necrosis in the heart muscle of an animal infected with *Haemophilus somnus*.

How can I prevent it?

- Can be prevented with two doses of commercial vaccine before the animal is exposed to the bacteria.

Coccidiosis

What will I see?

- Subclinical: many animals do not develop symptoms. These animals can infect others in the herd.
- Severe: depressed and dehydrated, straining with bloody staining around the anus and tail and weight loss. Rectal prolapse is a possible consequence of diarrhea and straining due to coccidiosis.
- Acute: foul smelling, dark and watery diarrhea with or without blood. Affected cattle will also show decreased appetite and mild depression.
- Chronic: reduced growth rates and increased susceptibility to other infections.
- Less commonly, cattle can also have tremors and convulsions from the parasite invading the brain. Death may occur even with treatment.

Commonly affected ages?

- All ages of cattle may be affected but young animals are more susceptible.
- Occurs when there are large numbers of the cyst forms of this parasite in the environment and the exposed animals are stressed or their immune system is compromised.

Animal with severe coccidiosis causing bloody diarrhea.

Heifer with convulsions due to nervous coccidiosis.

What should I do?

- Supportive care with a clean and comfortable environment.
- Consult your veterinarian for prevention and treatment options including ionophores, sulfonamides and amprolium.

How can I prevent it?

- The parasite is difficult to control with hygiene alone.
- Avoid overcrowding. Dispersing cattle on pasture rather than holding in pens may reduce the risk. Ensure manure does not accumulate where younger and susceptible animals are exposed. Remove and compost manure regularly.
- Parasite loads can become heavy when cattle eat and drink from sources contaminated with manure. Consider using feeders and water troughs.
- Continuous medication of the drinking water or providing medicated feed may be necessary to manage the disease.

Clostridial diseases

Clostridia are bacteria that can be found in the soil and in the intestinal tracts of normal animals. Under the right conditions the bacteria grow and/or produce a toxin which damages the tissues. Clostridial diseases are common and usually cause sudden death, so vaccination is recommended. The vaccines for clostridial diseases are available in various combinations from two to eight agents. The diseases that the vaccines protect against include:

- **Blackleg** *(C. chauvoei)*
  Usually affects cattle four months to two years old. Cattle most often are found dead. If they are found alive they are very lame with muscle swelling in the upper part of a leg.

- **Malignant edema** *(C. septicum)*
  Infection occurs through contamination of wounds. Signs are loss of appetite, high fever and soft swellings on the skin which drain and may slough. Death occurs within 48 hours.

- **Redwater, aka Bacillary hemoglobinuria** *(C. hemolyticum)*
  Organism multiplies in areas of liver necrosis. There is a sudden onset of severe depression, fever, abdominal pain, bloody diarrhea and bloody urine. Affected animals may be found dead with no previous signs.

Clostridium chauvoei infection (blackleg) causing areas of dark discolouration in the muscles.

- **Tetanus, aka Lockjaw** *(C. tetani)*
  Infection occurs through contamination of wounds or surgical sites such as castration. Stiffness of the muscles of the jaw and neck and the hind limbs which becomes more generalized and spasms become evident. Cattle have high mortality rates. Treatment early in the disease is possible but is challenging and reserved for very valuable animals.

- **Infectious necrotic hepatitis, aka Black disease** (*C. novyi* Types B,C)
  Animals two to four years old. Organism multiplies in areas of liver necrosis caused by migration of liver flukes and causes sudden sudden death without well-defined clinical signs.

- **Enterotoxemias** (*C. perfringens* Types C, D)
  Occurs in calves within the first two months of age. Conditions that favour the growth of the organism include sudden changes in feeding patterns, stress, nutritional deficiencies and infections that cause diarrhea in calves. Calves may be seen with abdominal discomfort, profuse bloody diarrhea and depression followed shortly by death. They may die before any signs are noted.

Index

My Important Contact Information

Veterinarian:

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Feed supplier:

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Other contacts:

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