

Health - Healthy Cows are Happy Cows!

Keeping cows and calves healthy is the most important part of running a dairy farm. Young calves need to be kept healthy so they can grow up to be big, strong cows in the future. Heifers and dry cows must remain healthy so they can give birth to live, healthy calves and begin milk production. Cows within the milking herd must remain healthy to maximize high quality milk production and to get pregnant again.

Keeping cows healthy isn't just about giving medicine. Health comes from a proper nutrition, a vaccination program, and having good housing that is clean, dry and well ventilated.

A Healthy Cow or Calf's Vital Signs

One way to help determine if an animal is healthy or sick is to take her temperature, respiration rate and heart rate. The respiration rate refers how many times an animal takes a breath in one minute. Her heart rate (pulse) refers to how many times her heart beats in one minute.

A cow or calf's vital signs can be a range of values. They can change, just like a person's do, due to the time of day, the weather, the animal's excitement and activity level and whether or not she has been out in the sun.

Make sure that you wash your hands before and after you take an animal's vital signs. You can spread diseases from one animal to the next on your hands.

Vital Sign	Ideal	Healthy Range
Temperature	38.6°C	38.1-39.5°C
Respiration Rate	30 per minute	10-30 per minute
Heart	50 per minute	40-70 per minute

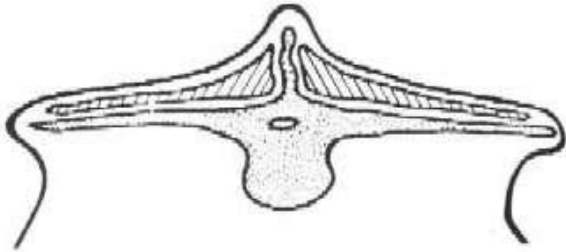
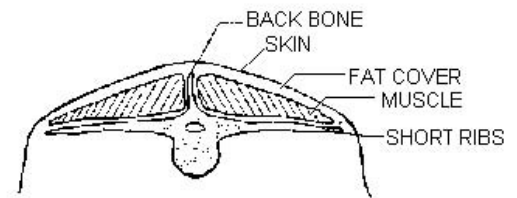
Body Condition Scoring

Since a cow can't step on a scale or mark her height on the barn door, it is important to have another way to measure the body condition of a cow. Body condition is like a secondary vital sign to help determine if she is healthy.

Body condition scoring helps you measure, by look and feel, the amount of body fat on a cow. Fat is an energy reserve for a cow, like the battery in a plug-in alarm clock. The cow only uses it when the "power" goes out. In other words, sometimes cows need this extra 'battery' (fat reserve) when they're using more energy than they're eating their feed. This is called a **negative energy balance**. The most common time a cow is in a negative energy balance state is in early lactation when she's milking more energy out than she's taking in. It takes 1kg of fat to make 7kg of milk. So you have to make sure that the heifer or dry cow's body has enough stored fat to produce milk in early lactation. You can rate on a scale of 1 to 5 how much fat the cow has on her body using body condition scoring. A score of 1 is a very thin cow. A score of 5 is a very fat cow. Dry and calving cows should have a score of 3.5 to 4.0.

Cows with a body condition score higher than 4.0 will usually have more health disorders, such as retained placentas and calving problems. Often, fat cows have a poor appetite right after calving so they eat less and can get ketosis and fat in the liver. Cows that are too fat will go "down" at calving. A "downer" cow is one that lies down and has difficulty or is unable to stand or remain standing. Although "downer" cows remain alert, they may never get back up.

Body condition scoring can be done by pressing fingertips against the **pin bone, hip bone and backbone** of a cow as well as gripping the area below the loin where the short ribs protrude from the cow's body, to feel the amount of fat cover. With a lot of practice, body condition scoring can be done in 10-15 seconds per cow and it provides a lot of information.

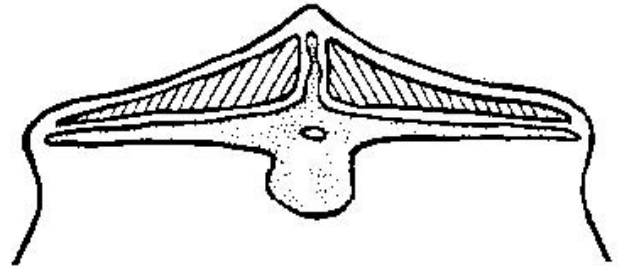


Condition Score 1

This cow is emaciated. The ends of her short ribs are sharp to the touch and together give a prominent, shelf-like appearance to the loin. The individual vertebrae of the backbone are prominent. The hip and pin bones are sharply defined. The thurl region and thighs are sunken and in-curving. The anal area has receded and the vulva appears prominent.

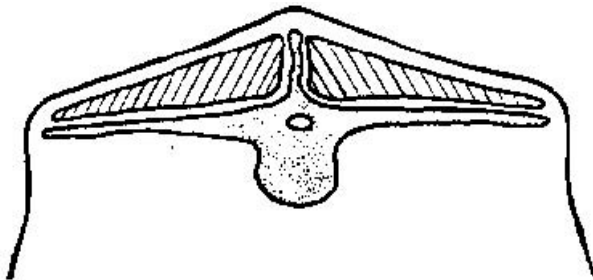
Condition Score 2

This cow is thin. The ends of the short ribs can be felt but they and the individual vertebrae are less visibly prominent. The short ribs do not form as obvious of an overhang or shelf effect. The hip and pin bones are prominent and the depression of the thurl region between them is less severe than in Condition Score 1. The area around the anus is less sunken and the vulva less prominent than in Condition Score 1.



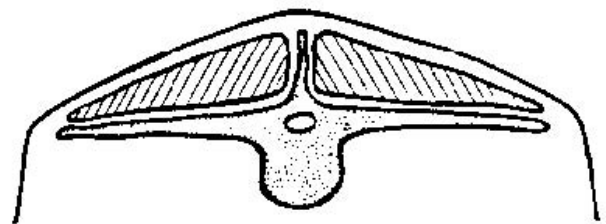
Condition Score 3

A cow in average body condition. The short ribs can be felt by applying slight pressure. The overhanging shelf-like appearance of these bones is gone. The backbone is a rounded ridge and the hip and pin bones are round and smoothed over. The anal area is filled out but there is no evidence of fat deposit.



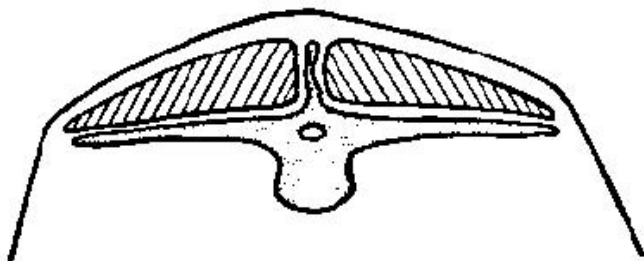
Condition Score 4

A cow in heavy condition. The individual short ribs can be felt only when firm pressure is applied. Together they are rounded over with no shelf effect. The ridge of the backbone is flattening over the loin and rump areas and rounded over the chine. The hip bones are smoothed over and the span between the hip bones over the backbone is flat. The area around the pin bones is beginning to show patches of fat deposit.



Condition Score 5

A fat cow. The bone structure of the topline, hip and pin bones and the short ribs is not visible. Fat deposits around the tailbone and over the ribs are obvious. The thighs curve out, the brisket and flanks are heavy and the chine very round.



Healthy Animals Act...Healthy!

In addition to vital sign and body condition scoring assessments, the most obvious sign of health or disease is obvious by watching the behaviour and general appearance of an animal. There are several physical characteristics of healthy cows and calves:

- Eat and drink well
- Active (energetic)
- Shiny, smooth hair
- Bright eyes
- Normal manure and urine
- Milk production is normal in milking cows
- Older heifers and cows show regular heats

It is important to keep a close eye on your animals all of the time, so that you know when an individual animal's behaviour changes to indicate that it is sick.

Now that you know about the signs of healthy animals, it's time to learn about when animals get sick.



Biosecurity and Animal Health

One aspect of farm management that helps to control the spread of disease is biosecurity. According to the Canadian Food Inspection Agency, “Animal biosecurity refers to measures that prevent the introduction and spread of disease”.

Farms can develop their own biosecurity programs to help prevent diseases. ***There are several aspects of such programs that can be incorporated at the farm level:***

- controlling access to cattle on the farm
- preventing the cattle from coming into contact with other livestock or wild animals
- washing clothing and cleaning and disinfecting footwear and equipment used around cattle
- maintain records regarding the movement of people, cattle and other animals and equipment to and from the farm
- purchase cattle, feed and other supplies from reputable suppliers
- separate new animals from those already on the farm for a few weeks, until you are confident that they are healthy
- identify all animals with Radio Frequency Identification (RFID) tags.
- vaccinate against some diseases after consultation with your veterinarian
- identify signs of illness, treat sick animals as needed, and report any animals that are suspected to have a reportable disease (i.e. tuberculosis or BSE)

Diseases can be spread in several ways:

- Via direct animal to animal contact
- By the wind
- In feed or water
- On contaminated clothing, vehicles, equipment, etc.
- by wildlife, vermin or insects

Beyond the farm gate, similar biosecurity measures are expected at other points in the food chain, such as abattoirs and dairy processing facilities. Beyond Canada’s limits, the Canada Border Services Agency and the CFIA closely monitor animals crossing the border. Animals entering the United States from Canada must be branded or tattooed with “CAN” to indicate their country of origin. Proper identification tags must be in place on the animals, and health papers and testing must be completed. Animals entering the country must also have appropriate documentation to accompany them. This paperwork might be an inconvenience for those transporting animals, but it’s well worth it if it keeps our animals and our food supply safe.

For more information on biosecurity, contact the Canadian Food Inspection Agency at 1-800-442-2342 or www.inspection.gc.ca.



Diseases

Animals get sick for many reasons. They can become ill from infectious diseases or non-infectious diseases. Infectious diseases are those that can be spread from one animal to the next; while non-infectious ones cannot be spread from one animal to the next. That does not mean that only one animal in your herd will have a non-infectious disease though. For example, if one animal has a non-infectious disease from not eating properly, other animals in the herd may have the same disease because they are also not being fed a proper diet. Some diseases caused by bacteria and parasites can spread from animals to humans. Such diseases are referred to as zoonotic diseases.

<i>Infectious diseases are caused by:</i>	<i>Non-infectious diseases are caused by:</i>
<ul style="list-style-type: none"> • Viruses • Bacteria • Parasites 	<ul style="list-style-type: none"> • Poor diet • Stress • Heredity • Toxicity • Tumours • Injury

Preventing Diseases

Preventing both infectious and non-infectious diseases is the best way to keep animals healthy. Preventing diseases before they happen costs less than treating sick animals to make them healthy again. This is because prevention involves no milk losses, medicine costs or animal losses.

Herd health programs are designed to keep cows healthy through different stages of their lives. The largest component of regular herd health visits by a veterinarian is reproductive health, which examines cattle at various stages of their reproductive cycles to check pregnancy or determine problems when reproductive failure occurs. *Reproductive herd health is discussed in more detail in the Reproduction section of this manual.* Herd health visits can also discuss other aspects of health within the herd to maintain animal health. A

- herd health program is one that you shouldn't try to develop on your own. **Veterinarians** play an important part in developing these programs.
- Breed magazines, discussions with other farmers about their successes and challenges, OMAFRA publications, and the internet are also good sources of information.
- One of the goals of herd health is to prevent diseases. ***There are several ways to help do this:***
 - **Feeding a good, nutritious ration.** Consult a feed dealer, nutritionist or veterinarian and test your feeds to create a ration that will keep cows healthy. (*See Nutrition section of this Manual*)
 - **Keeping housing clean and well-ventilated** to ensure cool and dry environments. Ensure that animals are kept comfortable at all ages and stages. (*See Housing and Equipment section of the 4-H Dairy Reference Manual*)
 - **Mastitis control in the milking herd.** Ensure that you have proper milking procedures, use a teat dip after milking, milking equipment is clean and well maintained and a proper dry cow treatment program is followed.
 - **Pay attention to calf health** to increase their growth rate and reduces losses due to disease. When animals start out healthy, it's easier to build on that good start.
 - **Building immunity to diseases** through vaccination protocols and healthy immune systems

Remember the old saying...

'An ounce of prevention is worth a pound of cure.'

In other words, keeping an animal healthy is cheaper and easier than nursing a sick animal back to health.



Building Immunity to Infectious Diseases

Immunity is protection from infectious diseases. It's like a shield that blocks out germs. Animals with immunity can fight off diseases before they get sick, just like you! That's why you get shots to give you immunity against measles and mumps.

Young heifers get immunity from colostrum when they are calves. This protection wears off by the time the heifers are about two months old. To give their immune systems a "boost", farmers vaccinate heifers. Usually, when vaccinations are given before heifers are six months old, they don't have enough protection to fight off diseases as they age. Therefore, they must be vaccinated again (a booster shot).

Vaccinations come in many forms, including injections, nose sprays, and pills.

Shots, shots, shots

Before vaccinating your heifers, you should always talk to your veterinarian. Depending on where you live, your herd might not need to be vaccinated for certain diseases. For example, Ontario was declared brucellosis-free in 1985. This means that good vaccination programs helped to get rid of the disease. Veterinarians can also tell you what the best vaccine is for your animals and how to administer it. Most of the time vaccinations need to be given every year. Maintain good health records so you know when to vaccinate again. The table on the next page shows a few common infectious diseases that animals can be vaccinated against:

Killed vaccine vs modified live vaccine

You should always know what type of vaccine you're giving your heifer. Killed virus is exactly as it sounds. The virus in the vaccine has been killed and doesn't multiply in the blood. Modified live viruses act like the actual disease, multiplying in the body. The cow's body fights back and develops antibodies (germ fighters) to combat the disease.

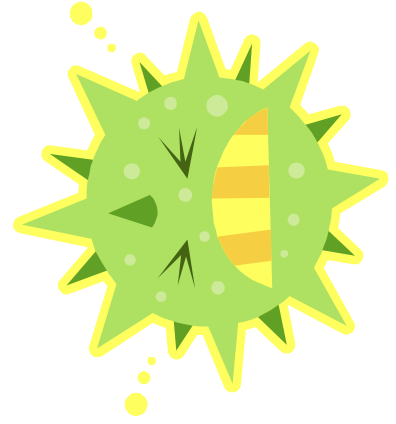


Diseases Cattle Can Be Vaccinated Against (pg. 1)

Disease	Mode of Transmission	Symptoms	Prevention
BVD (bovine viral diarrhoea)	Body fluids, dam to fetus	Abortions, malformed or weak calves, diarrhoea, fever, drop in milk production, respiratory disease	Get carriers out of the herd and vaccinate heifers before breeding to protect the fetus Vaccinate with killed vaccine 7-8 weeks before breeding and 3-4 weeks after the first shot. Give a booster shot each year OR Vaccinate with modified live vaccine 3-4 weeks before breeding, then give a booster each year
IBR (infectious bovine rhinotracheitis) (ry-no-tray-kee-eye-tis) Viral disease common in fall/winter when animals are moved indoors Animals usually recover in 10-14 days if no complications set in	Saliva, nasal discharges Often spread by cattle that appear healthy but carry the virus	Abortion, brain and genital infections, pneumonia and inflamed eyes, red and crusty nose, harsh dry cough, diarrhoea in calves	<ul style="list-style-type: none"> • Vaccinate at 6 months of age (if using a killed vaccine repeat the shots after 3-4 weeks) • Vaccinate again 7-8 weeks before breeding, then annually • Vaccinations are available that are injected either into the muscle or up the nose
Rabies	Infected animal biting another animal (i.e. cows can get it from raccoons or foxes)	Behavioural changes, trouble swallowing and a distinct type of bellowing call	Vaccination
Leptospirosis	Infected animals, mud, water, vegetation and urine	Cattle: abortions, often with retained placentas; drop in milk production; clotted, thick reddish milk but no signs of udder swelling Calves: severe illness with jaundice (yellow skin) and reddish to dark brown urine	Yearly vaccination of breeding cattle in problem areas

Diseases Cattle Can Be Vaccinated Against (pg.2)

Disease	Mode of Transmission	Symptoms	Prevention
<p>Blackleg (a form of myotitis, a muscle disease)</p> <p>bacteria in soil produces toxic gas that becomes trapped in the muscle causing pain, swelling and loss of function</p>	<p>Infected soil eaten by the animal;</p>	<p>High fever, lameness, swelling in the heifer's body and death within 12-48 hours</p>	<ul style="list-style-type: none"> • Vaccination of all cattle under two years of age • There is no treatment for the disease once animals are infected
<p>Bovine Respiratory Disease Complex (BRDC) AKA Shipping Fever Pneumonia</p>	<p>Caused by both bacterial infection and stress. Stress may be due to weaning, shipping long distances, weather changes, castration, dehorning, etc.</p>	<p>Causes severe lung damage. Calves have difficulty breathing, do not eat, and may die if not treated</p>	<ul style="list-style-type: none"> • Vaccine is available • Prevention lies in keeping stresses to a minimum • Treatment with antibiotics is only successful if started early



Infectious Diseases with No Vaccinations

Some infectious diseases do not have effective vaccination protocols but may affect cattle of all ages. A few common ones are listed below:

Meningitis – This often develops in association with a viral or bacterial disease or due to a head injury. It is an inflammation of the membranes covering the brain and spinal cord. To treat this disease, the animal must remain in a quiet area away from other animals, and be under the care of a veterinarian. It can be prevented by promptly treating bacterial infections.

Bovine Leukosis (BL) – Leukosis is caused by the bovine leukosis virus (BLV). 30-70% of carriers of the disease have an increased number of white blood cells, and tumours form in about 5% of infected animals. The disease evolves very slowly, and may take months or years to progress. The clinical form is called enzootic bovine leukosis, and the tumours it causes are called adult bovine lymphosarcoma or as benign lymphocytosis. There is no known cure.

Symptoms: When cows develop lymphosarcoma, they are subject to weight loss, weakness, bloat, and decreased milk production. Enlarged lymph nodes can be felt in the neck, behind the udder and in front of the shoulder. Other signs include congestive heart failure and paralysis.

Cause: The disease is spread by infected animals during contact from one animal to another, from mother to fetus in the womb, from mother to calf via her milk. For one animal to pass it to another, there needs to be a transfer of blood from one to another. This could happen by animal contact with lesions or sharing needles and syringes, examination gloves, dehorning instruments, tattooing, ear tagging equipment, surgical instruments, or other tools that could become contaminated with infected blood.

Prevention: Prevention of spreading the disease includes culling infected animals, ensuring that management tools are kept clean and sterilized after use, and testing animals to determine which ones are carriers of BL. Canwest DHI (Dairy Herd Improvement) now has a milk test that producers can use to test milk to determine if cows are leukosis carriers. Traditional laboratory testing can also be done to determine which cows have the disease, so that those animals can be managed or culled accordingly.

Listeriosis (Circling Disease) – A bacterial infection that causes abscesses of the brainstem, and abortion. Signs may look like rabies. Infection is spread by urine, milk, feces and contaminated tissue. It can be found in feed. Keep diseased animals away from other animals and dispose of aborted fetuses immediately.

Lumpy Jaw (form of osteomyelitis) – A bacteria, *Actinomycesbovis*, causes the jaw bone to swell and sometimes ooze a yellow discharge. Antibiotics or intravenous iodine are used as treatment methods. If antibiotics are unsuccessful, the animal is sent to market for salvage.



Preventing Non-infectious Diseases

You cannot vaccinate against any non-infectious diseases. Many of these diseases can still be prevented by good farm management and an effective herd health program.

Subclinical and Clinical Diseases

In addition to being either infectious or non-infectious, diseases can be categorized as subclinical or clinical:

Subclinical – no obvious outward signs that an animal is sick. For example, parasites are usually subclinical because an cow can have them without showing signs externally for a long time.

Clinical – symptoms of the illness are outwardly evident that the animal is sick. Examples of clinical diseases are calf scours and pneumonia.

Did you know?

About 75% of all calf losses are in the first two weeks of the calf's life on the farm.

Scours is the most common cause of death in calves.

There are many forms of stress:

- Environmental Stress
 - o Humidity
 - o Drafts
 - o Dust
 - o Manure gases (hydrogen sulphide, carbon dioxide, carbon monoxide, methane gas, and ammonia)
 - o Temperature changes
 - o Airborne bacteria, viruses, fungi, etc.
- Behavioral Stress
 - o Overcrowding
 - o Mixing animals from different sources
- Nutrition
 - o Imbalance or deficiency of nutrients
- Production Stress
 - o Heavy production

Any combination of these stresses can suppress an animal's immune system. If an animal is exposed to a disease-causing agent (bacteria, virus) at a time when its immune system is not able to function at its best, it is likely to be infected with the disease and become very sick. Its body may take longer fighting the disease, meaning that the animal takes longer to recover. Keep stress to a minimum!!

Off to a Good Start – *keeping calves healthy*

Preventing calves from getting sick is very important. It means fewer vet bills and less time spent caring for sick calves. It also means that calves spend more time and energy growing than they do fighting germs.

There are 6 main management tips to help you control and prevent calf diseases:

1. Remove the source of the disease
2. Remove the calf from the contaminated environment
3. Feed colostrum
4. Vaccinate the calf
5. Reduce stress
6. Find a high-quality caregiver

Keeping Cattle Healthy – *at all ages and stages!*

Just like people change throughout their lifetime, so do cows. At different ages animals have special needs to ensure that they are kept healthy.

Healthy cattle have little STRESS

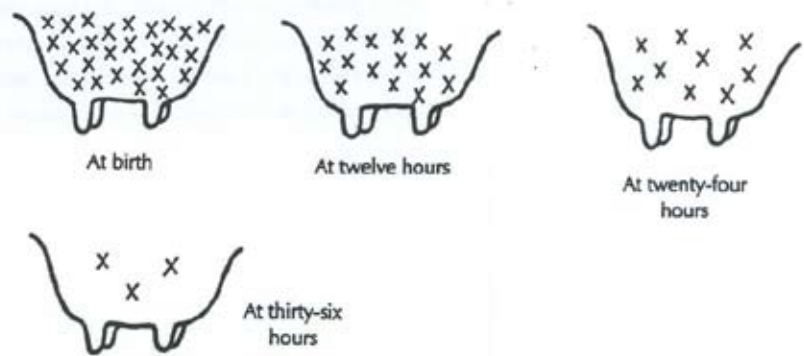
Cattle of all ages are healthier if they are kept in a good environment and fed properly. Reducing sources of animal stress will help to ensure that animals of all ages are more resistant to diseases.

The procedures below will help make sure that all of the 6 management strategies are met:

- **Vaccinate the cow** for *E. coli* and Rotavirus scours and/or other diseases (as advised by your veterinarian) before she calves. Her body will then build disease fighting antibodies that will be passed onto the fetus inside her.
- **Clean calving place** – a calf must be born in a clean place. A newly bedded maternity pen and a shady, grassy area away from other cows are both good places to be born.
 - o Make sure that manure does not come into contact with a calf's nose
 - o Bedding should provide disease control, comfort and footing
 - o There should be 4 to 6 inches of bedding in the calving area
 - o Within half an hour of birth, calves should be removed from the calving area to an area for calves only where no other dairy animals are being housed
 - o Remove soiled bedding and add fresh straw or shavings after each calving
- **Keep cows clean** – Cows and their udders should be clean and free from manure so that the cow is not a source of infection for her calf
- **Navels** – Keep them from becoming infected. Examine navels for swelling and reaction to pain at feeding time until the calf is two weeks old and the umbilical area has healed

- **Feed colostrum** – Feed calves 4 litres (3 litres to small breeds) of high quality colostrum within 30 minutes of birth. Colostrum gives a calf important antibodies to help her fight disease but the calf's body can only absorb these antibodies for a short period of time, with the most antibodies being absorbed during the first two hours of her life. After 24 hours, she gets no antibodies from colostrum.

Changing concentration of antibodies in colostrum



- **Keep calf housing clean and dry** – Don't let germs and dampness find a home in your calf housing. Make sure the pens or hutches are always dry and freshly bedded. Clean old pens with disinfectant to kill germs that could be spread to the next calf.
- **Don't crowd your calves** – When calves are crowded, it is easier for germs to travel. Calves need at least 1.2m x 2.4m of space each.
- **Feed calves well** – Don't overfeed calves or give them bad feed. Also, keep the feeding pails and other equipment clean. Giving your calf a dirty bottle is like you eating off a dirty plate!
- **Be a good care-giver** - Remember to be patient with young calves and be alert to changes in their behaviour. You have to be willing to put in the extra time calves need to thrive.



More Colostrum Cautions

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| <ul style="list-style-type: none"> o Wash your hands to get rid of germs before collecting colostrum from the cow o Prepare the cow's udder just as you would for milking to keep the colostrum clean and the cow's udder healthy o Collect colostrum from the mother within 15 minutes of calving if possible o Disinfect calf bottles and nipples o If the colostrum from the new mother is of poor quality feed the calf good quality colostrum that has been frozen or a high quality | <p>replacement product.</p> <p><i>There are several things that can result in poor quality colostrum:</i></p> <ul style="list-style-type: none"> ▪ The cow was dry less than three or four weeks ▪ The cow was milked or leaked milk before calving ▪ The cow's udder and teats were not cleaned before milking ▪ The cow is new to the herd and hasn't built up antibodies against diseases in the herd ▪ The cow has mastitis or another illness | <ul style="list-style-type: none"> o Feed another 2 litres within 8 hours of birth o For three days, feed calves 3 litres of colostrum two times daily at 12 hour intervals and then switch the calf over to normal milk or milk replacer o Do not feed milk from treated cows as it could contain drug or infectious residues |
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Dehorning and Removing Extra Teats

Two other activities should be part of your calf health program – **dehorning** and **removing extra teats**.

Dehorning

Cows should be dehorned so they're safer to handle and are less likely to cause injuries to other animals or themselves or wear out equipment from rubbing. You should dehorn a calf when she's young because she has less horn tissue than when she is older. This reduces the chance of pain and infection.

The two most common methods of dehorning young calves are chemical and electrical dehorning. Chemical dehorning involves putting a caustic chemical onto the surface of the horn when the calf is less than two weeks old. Electric dehorning involves using a hot iron on calves under three months of age. The hot iron takes 15 to 20 seconds to kill the horn cells at the base of the horn. You may consider using a local anaesthetic with either method. If horns are removed at an older age, they must be cut off close to the base of the horn, which is more traumatic for the animal. If the horn cells are not killed or the horn is not cut close enough to the base, the horn will regrow.

Removing extra teats

Extra teats may eventually interfere with milking. Remove them when the calf is one to two months old. Before removing the extra teats, make sure that the teat you're cutting off isn't going to be a milk producing one. That would be a major "OOPS" you couldn't fix. To determine which is which, consult a vet who can remove the extra teats.

Common Calf Diseases

Calves commonly become sick due to calf scours (diarrhea) or pneumonia or parasites. In fact, calf scours is the biggest cause of death for dairy calves in Ontario. Both calf scours and pneumonia are clinical diseases, so there are obvious signs that a calf is suffering from disease. Parasites are often subclinical so a calf may have them before you can tell she is infected.

Calf Scours

This is a disorder of the digestive tract, caused by infectious or non-infectious sources. **Symptoms** typically include thin, watery, and sometimes bloody, manure. Non-infectious scours are **caused** by poor nutrition resulting from poor-quality feed, a change in diet, unclean feeding equipment, or feeding too much milk. The most common and most serious type is infectious scours, which cost more money to treat and are more likely to result in mortality. Infectious scours are caused by germs and bacteria, such as:

- ***Escherichia coli (E. coli)*** – affects calves up to one week old. It is very common and will kill a calf quickly
- ***Salmonella*** – affects calves between one and four weeks of age. Caused by contaminated feed and infected animals
- ***Rotavirus*** – affects calves between one and two weeks of age. Causes mild to moderate scours and the calf will usually get better
- ***Coronavirus*** – more likely to kill calves. Infects calves from two days to three weeks of age. The virus causes watery scours and the calf dehydrates quickly

Treatment for calf scours is done by following several steps:

- Separate the sick calf so no other calves can be infected
- Replace lost fluids with electrolytes. Electrolytes are minerals that the calf's body needs to replace the water her body is losing. You can buy electrolyte solutions from your veterinarian

or feed supplier

- Give milk in alternate feedings – milk, then electrolytes, then milk, and so on...
- With the help of your vet, figure out the cause of the scours. Use this knowledge to prevent future outbreaks

Pneumonia

Pneumonia is a lung infection. Its **symptoms** include a hacking cough, rapid breathing, and sometimes a fever or refusal to eat. While it sounds like the flu that people get, calf pneumonia can kill an infected animal in 3 or 4 days if she is not looked after.

Enzootic Pneumonia (en-zu-aht-ik nu-mo-nee-ah) is the most common type of infectious pneumonia and can occur in calves up to six months of age when they are housed in a damp drafty environment.

Pneumonia is **caused** by germs from calves and older cattle. Since adult cattle are often carriers, moving calves to a calf barn or hutches immediately after birth offers some protection. Calves that are weak due to poor feed, wet and draughty housing, or another illness are more likely to get pneumonia. Also, if the calf didn't get enough colostrum at the right time, she will be more susceptible to pneumonia. Enzootic pneumonia damages the lungs, allowing bacteria to get in. The calf gets much sicker, goes off feed, coughs more and grows very poorly.

The best **prevention** is a clean and dry environment that is free from draughts.

Treatment involves keeping sick calves in separate stalls or pens (away from healthy ones) that are dry and well-ventilated. They also need antibiotics, so consult your veterinarian. Keep track of the calf's temperature to see if she's getting better or worse. Finally, figure out what's causing the pneumonia, especially if there are several sick calves. Once you know the cause, you can work to prevent further outbreaks.



Parasites

A parasite is a tiny bug that lives off of another animal. The parasite uses its host animal as a source of food to create more parasites. In severe cases, the parasite makes the animal sick, or causes clinical signs of disease in the animal. But usually, there are not obvious signs of parasites (subclinical). The animal just doesn't grow as well as expected. Here are some examples of parasites that are common in calves, heifers and cows:

- **Coccidia/Coccidiosis** (also known as bloody scours) – this parasite usually affects calves older than four weeks of age, and while it is more common in younger animals, older heifers and cows may be affected as well. Animals that eat infected bedding or manure can get the disease. The parasites that cause the disease are protozoa called coccidia, and they enter the body through the food and water supply. When they reach the intestines in large enough numbers they invade the walls. The walls thicken and can no longer digest and absorb food properly. Inflammation and pinpoint bleeding of the mucus membrane occurs. The larger the number of coccidia the more severe the infection.

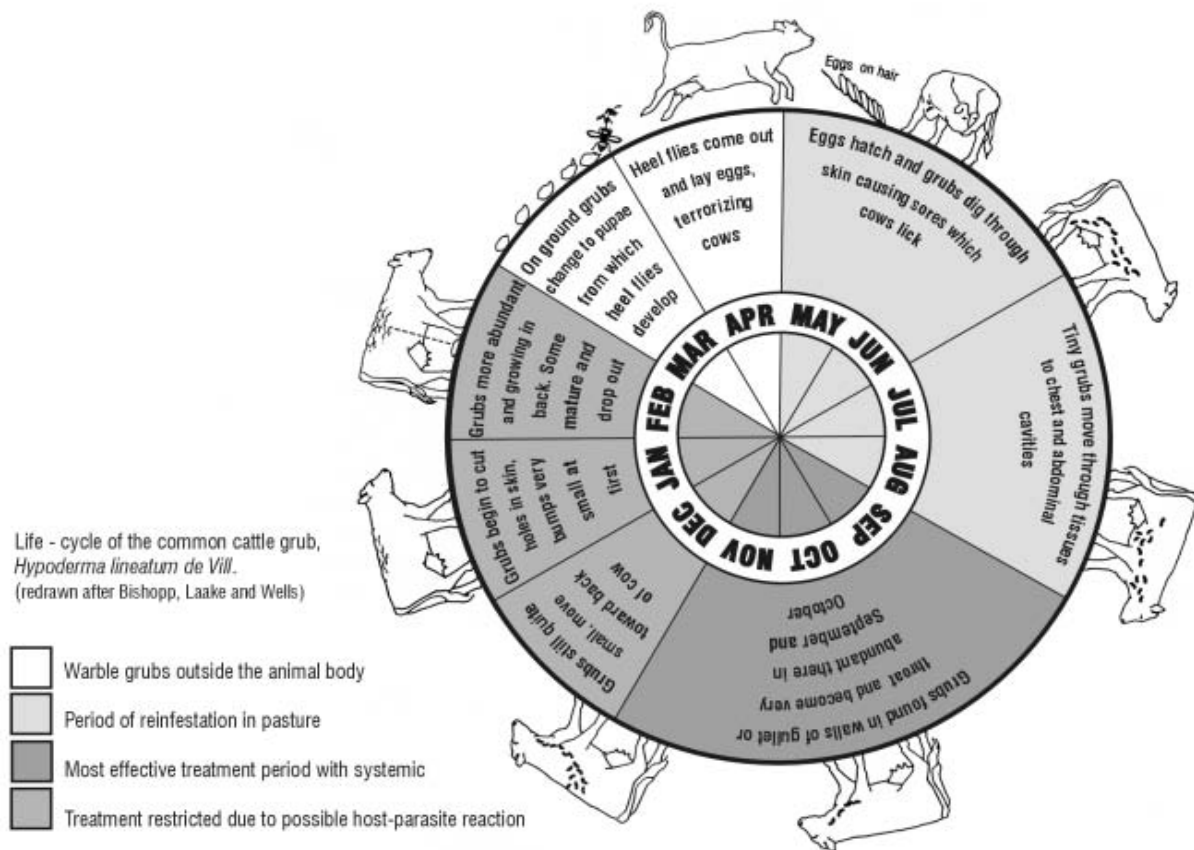
Symptoms – bloody diarrhea, anemia, weight loss, general weakness, severe straining accompanies excretion, stringy feces that are full of mucus, delirium and nervous twitching (appear near the end of fatal attacks). Animals that do not die in the first two weeks of the illness can be expected to recover.

Treatment - Treatment to control the diarrhea should be initiated. Commercial preparations are available to help restore the electrolyte (sodium and chloride) balance lost during the disease in the animal. Consult your veterinarian.

Prevention - Cleanliness is very important in preventing the disease, as this keeps down the number of coccidia in the environment. Ensure that the animals have sanitary living conditions and are not overcrowded. Watch for signs of infection after the stresses of weaning, shipping and sudden changes of feed. Proper animal management should be practiced to ensure that such conditions do not occur.

- **Crypto sporidium** – This parasite causes scours in two to three week old calves. After four weeks, the calf becomes immune to the parasite. Infected calves clear up in five to ten days.
- **Lice** – These are external parasites. They live on the hides of calves and heifers of all ages and can be treated using a topical pesticide.
- **Warbles** – A small fly larva causes inflammation around the spinal cord. Cattle eventually become uncoordinated and eventually cannot get up. Treatment occurs by administering an insecticide before December 1st so that the larva is killed within the animal before it has the opportunity to migrate to the spinal cord.





Source: Alberta Agriculture and Rural Development [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex979](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex979), Accessed April 28, 2008.

Treatment depends on the parasite. If the parasite causes scours, you need to treat the scours first. Drugs are also available in injectable, pour on and feed-added forms to control other parasites such as worms and lice. The best approach to parasites is to prevent them by keeping calf areas and feed clean. Check manure samples for coccidiosis and worms. Also, some calf starters contain medicine to prevent coccidiosis.

Keeping Heifers and Dry Cows Healthy

Healthy heifers and dry cows means that they will have healthy calves and start milking well. Aspects of managing heifer and dry cow health include:

- Properly vaccinating for the right diseases at the right time
- Paying close attention to nutrition, especially close to calving
- Housing in a dry, well-ventilated environment
- Keeping clean and dry
- Effective dry cow treatment



Drying off Cows – the Healthy Way

On a dairy farm, “drying off” means drying up a cow’s udder so that she stops giving milk. The cow’s cycle of giving milk is called lactation. The lactation starts when a cow has a calf and ends when the cow is dried off. The cow must be dried off before she calves again. She should be dried off no less than **40 days** before her next lactation, to give her udder a chance to rest, and her body the chance to use more of its energy for her growing fetus.

To dry a cow off, **give her less feed and water for three or four days** to help lower her milk production and help her body get ready to stop giving milk. Then, **stop milking her** and give her **dry cow therapy**. Dry cow therapy is an antibiotic treatment that helps prevent mastitis, both during the dry period and during her next lactation. Since mastitis is the most common disease affecting milk quality and quantity on dairy farms in Ontario, preventing it is very important. Dry cows have the biggest risk of contracting mastitis in the first three weeks after drying off when the udder is collapsing and the last two weeks before calving when the udder is swelling and starting to produce milk in preparation for calving. Dry cows are easier to treat than milking ones because there is no lost milk production during this medicated period. There are also additional treatments available that seal the teats to further prevent infection, especially as the cow gets closer to calving.

It is recommended that you **‘blanket dry cow treat’** your herd, which means that all animals are given the therapy. The treatments are injected into the udder via the teat canal and are meant to be long-lasting. This means that you need to keep careful records of when cows are treated. These records help prevent accidents, like putting a cow’s milk into the bulk tank before the dry cow medication has completely left her body. Accidents like this are most likely to happen if the cow has a very short dry period because she is dried off too close to her due date, or because she gives birth to a premature calf.

Heifer and Dry Cow Nutritional Disorders

There are some non-infectious diseases that are directly related to nutrition in the dry period before they calve. **Milk fever** and **ketosis**, two such diseases, have been identified as common diseases affecting profitability that are components of the Canadian National Health Project and are discussed with other

Procedure for administering a dry cow treatment:

1. Milk the udder out completely.
2. Immediately following teat cup removal, dip all teats in an effective teat dip.
3. Allow the teat dip to dry, then clean excess dip from teat ends with a clean, single-service paper towel.
4. Starting with the teats on the far side of the udder, disinfect the teat ends by scrubbing each for a few seconds with a separate, alcohol-soaked, cotton swab.
5. Starting with the teats on the close side of the udder, insert the cannula (needle) only six millimetres into the teat end. Then, inject each quarter with a single dose syringe of the recommended treatment. Massage the treatment up into each quarter. Single dose syringes are recommended for dry cow therapy rather than bulk containers because bulk containers may become contaminated with antibiotic-resistant organisms and become a source of infection.
6. Immediately following treatment, dip all teats in an effective teat dip.
7. When practical, teat dip all treated cows at least once a day for two weeks after drying off and for two weeks before calving.

diseases in that section. Udder edema, another problem affecting cows at calving time, is outlined below.

Udder Edema – this is swelling in the udder that is caused by too much sodium or potassium, or a lack of Vitamin E, which makes the udder fill with fluids. It increases chances of udder infection and damage to the udder that causes udder breakdown.

Treatment – normal cases of edema are treated by rubbing the cow’s udder gently with a suitable oil or cream, to promote blood flow and soothe the udder. Severe cases can be treated with medications as prescribed by your veterinarian.

Prevention – limit the salt (sodium) fed to dry cows and heifers to 30-40 grams per day. Balance the ration for Vitamin E and limit grain to heifers to a maximum of 4kg per day before calving. Avoid feeding forages high in potassium during the last few weeks before calving.

Keeping Milk Cows Healthy

Making sure that milk cows don’t get sick prevents milk production losses, veterinary bills, wear and tear on the cows, and stress on the farmer. If you stop diseases such as mastitis before they happen, your cows will feel better and milk more.

When it comes to facilities, dairy farms focus on **four key areas** to keep their cows healthy (these areas are important to calves and heifers as well):

1. New farm animals
2. Farm visitors
3. Housing
4. Cleanliness

New Farm Animals

New cows, often purchased from sales and other farms, can bring diseases to your farm. There are several ways that you can keep new cows from getting other animals sick on your farm:

- **Isolate new cows** - Isolating cows means keeping them apart from the herd. House, feed and calve new animals in separate areas from the rest of the herd. Animals should be isolated for 21-30 days. Watch any new animal and test her for diseases.
- **Know where the new cow came from** - You can buy cattle from herds that are free from diseases. Examples are those that are tested to be Johne’s Free and Leukosis Free herds that are certified as CHAH (Canadian Health Accredited Herds). Know the health of the animal you are buying. Transfer cows to your farm in your own truck. Avoid purchasing animals from sale barns where diseases can freely and easily be passed from cow to cow.
- **Use lab tests** - You can take blood and milk samples from new animals and allow them to enter your herd only after their tests come back negative for the disease in question.
- **Use vaccinations** - Vaccines protect animals from getting sick. Ask your vet what vaccines the new animals should have. Prior vaccinations will also help prevent existing animals in the herd from contracting diseases from the new animal.

Farm Visitors

Visitors to your farm can bring diseases with them. Visitors are not just people, but also cars, trucks, and wild animals.



- **Birds** – Birds can spread diseases. To control them, try to keep them out of your barns and feed storage by putting up screens. You should also cover areas that would make good nests.
- **Rodents** – Rats and mice carry diseases. They also destroy feed and equipment. To control these pesky creatures, set traps, poison them, and 'rodent-proof' your buildings.

Did you know...

One rat deposits 25,000 droppings in one year and one mouse deposits 17,000 in one year. These droppings can mix with feed and spread diseases.

- **People** – People can spread diseases from their work boots, clothing, hands after treating sick cows and from their farm vehicles. Have a foot bath for boots and/or ask people to wear single use plastic boots that can be discarded when they leave. Ensure that people wash their hands before milking and after touching sick animals. Finally, make sure that vehicles traveling between farms are clean and stay away from livestock. As a 4-H member, remember to wear clean clothing and wash your hands before visiting a farm for a 4-H meeting.

Biosecurity=
measures
that prevent the
introduction and spread of
disease.

For more information on farm visitors, see the Biosecurity information earlier in this section of the 4-H Dairy Resource Manual.

Housing

For milk cows to have healthy housing, you must:

- Give cows their own rooms by keeping **different age groups apart**
- Give them **S P A C E!** Each animal needs to eat and move around freely. Crowded animals easily get sick
- Focus on **cow comfort**

For more information on milk cow housing, refer to Housing and Equipment section of the 4-H Dairy Reference Manual.

Cleanliness

Keeping your farm clean helps to keep your herd healthy and prevent the spread of disease. In addition to keeping your farm neat and tidy, with walkways swept and clean, you should:

- **Get rid of dead animals** – Dead animals are unhealthy for people and animals. Bury them within two days under at least 0.6m of soil or call a deadstock service to take the animal away quickly
- **Control flies and manure** – Many diseases are spread through manure, urine and flies. Thus, you need good manure and fly control systems. Manure removal will also help reduce fly populations.
- **Use disinfectants** – Disinfectants are cleaning products with a 'kick'. The cleaner has germ killer. Find a disinfectant by reading its label. Use disinfectants especially in maternity pens, calf pens, foot baths and on equipment.



Canadian National Health Project

In 2007, the Canadian National Health Project was launched by several Canadian dairy industry partners, including the Canadian Dairy Network, Canadian Dairy Herd Improvement Partners, Breed Associations, AI Organizations, and Veterinarian Groups.

This project has several objectives that will benefit farmers:

- Create a national dairy health and disease database that can be used by dairy farmers and their veterinarians to develop herd health programs
- Develop a national genetic evaluation system for all dairy breeds so that producers can use genetic selection to reduce the incidence of common diseases
- Help the dairy industry meet the expectations of consumers who demand healthy milk products. Consumers not only want to know that milk is healthy and nutritious, but also that it came from a healthy cow who was raised in a good environment

What diseases are included in the Project?

While the database will have the opportunity to include data on a wide variety of calf, heifer, and cow diseases, in the beginning the program is going to start with the eight most common diseases that are known to affect profitability in milk cows, as seen in the table below.

Primary Diseases for Recording in Canadian Dairy Herds		
Disease	Lactation Incidence	Estimated Disease Cost
Clinical Mastitis	14.2%	\$360
Lameness	7.0%	\$315
Cystic Ovarian Disease	8.0%	\$137
Displaced Abomasum	1.7%	\$340
Ketosis	4.8%	\$450 (subclinical ketosis: \$236)
Metritis	10.1%	\$150
Milk Fever	6.5%	\$340
Retained Placenta	8.6%	\$285

Source: Top 10 Questions about the National Health Project – Produced by Canadian Dairy Industry Partners, as adapted from Dr. David Kelton et al., Journal of Dairy Science, 1998.

How will information be obtained?

Producers will be able to provide records of these diseases to their DHI field staff for input. The Canadian Quality Milk Program will be requiring that producers keep track of diseases, so providing information for this database will not be extra work for the farmer.

Creation of Genetic Evaluations for improved disease resistance

Once enough data has been collected, official bull proofs will begin to contain a disease related component for each of the eight core diseases. These proofs should be quite valuable as some of these diseases are known to be linked to heredity. Diseases with higher heritabilities mean that daughters are more likely to get the trait from their sire or dam than those with lower heritabilities.



Heritability Estimates for Various Diseases in Dairy Cattle	
Disease	Heritability
Clinical Mastitis	9%
Lameness	4%
Cystic Ovarian Disease	4%
Displaced Abomasum	14%
Ketosis	6%
Metritis	6%

Source: *Top 10 Questions about the National Health Project – Produced by Canadian Dairy Industry Partners, as adapted from Dr. David Kelton et al., Journal of Dairy Science, 1998.*

Overview of Definitions for Diseases Identified by the Canadian National Health Project

1. Mastitis – visual abnormal milk (ie. clots, flakes or watery) from one or more quarters that may also include inflammation of the udder (ie. heat, swelling, discolouration) and systemic illness of the cow. *(For detailed information – see appropriate section on following pages)*
2. Lameness – abnormal gait attributed to either the foot or leg *(For detailed information – see appropriate section on following pages)*
3. Cystic Ovarian Disease – In cows greater than 30 days in milk who are not yet pregnant, this disease is characterized by the presence of follicles greater than 25mm in diameter on one or both ovaries in the absence of a corpus luteum and uterine tone. *(For detailed information – see Reproduction section of 4-H Dairy Manual)*
4. Displaced Abomasum – Cow has decreased appetite with an audible, high pitched ping produced by tapping the left abdominal wall between the 9th and 12th ribs for left displaced abomasums *(For detailed information – see appropriate section on following pages)*
5. Ketosis – Depressed appetite with evidence of elevated milk, urine or breath ketones, after exclusion of other clinical disease *(For detailed information – see appropriate section on following pages)*
6. Metritis – In a fresh cow up to 20 days in milk, the presence of an abnormally enlarged uterus containing watery red-brown fluid, signs of systemic illness or fever. Cows greater than 20 days in milk may also have the disease if they have an abnormal cervical or vaginal discharge unrelated to a heat *(For detailed information – see Reproduction section of 4-H Dairy Resource Guide)*
7. Milk Fever – Cows within 72 before or after calving showing one of the stages of milk fever *(For detailed information – see appropriate section on following pages)*
8. Retained Placenta – Failure to eliminate afterbirth within 24 hours of calving *(For detailed information – see Breeding & Reproduction section of 4-H Dairy Resource Guide)*



Canadian National Health Project Disease - Mastitis

It is very important for dairy farms to focus on mastitis prevention and treatment, since it is the number one cause of decreased milk quantity and quality from Ontario farms.

Mastitis is an udder infection. Bacteria enter the udder through the teat end and infect the udder. Often, the cow can fight the infection by herself. In this case, there are no visible signs of mastitis, just a drop in milk production. This is called 'subclinical' mastitis.

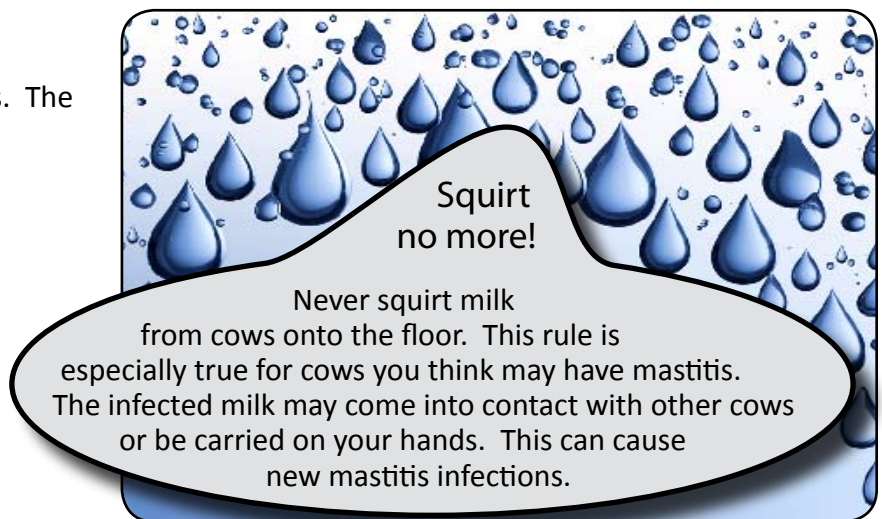
If the bacteria get the upper hand and grow rapidly, the result is swelling, pain and hardness in the udder. The cow's milk can be lumpy, watery, stringy or flaky. This is called 'clinical' mastitis.

Mastitis infections can destroy milk secreting cells. The cow will not get the milk-producing ability back from those cells. So, mastitis lowers milk production while the cow is infected, and can have a permanent effect on milk production. It's kind of like a bruise that never heals.

Methods of Testing for Mastitis

There are a few ways to test for mastitis. The chart comparing environmental and contagious mastitis tells you which methods work best for different types of infections:

- **Examine the udder** – Feel the udder to see if it's swollen, painful to the cow, or feels warm. Squirt a small amount of milk from the quarters into a strip cup to see if the milk is lumpy, flaky or watery.
- **Use the California Mastitis Test (CMT).** A CMT is a quick, easy way to test for a high somatic cell count, a sign that a cow is trying to fight an infection. Squirt some milk from the quarters (or the quarter you think is infected) into the four sections of the paddle. The paddle has four sections so you can keep the milk from the four quarters separate. Then, squirt a little bit of purple CMT solution into the milk. Swirl the mixture around in the paddle, allowing the CMT solution and milk to mix. If the cow is infected, the milk has more somatic cells than normal and the mixture will thicken to a gel and/or have whitish clumps in it. The higher the somatic cell count, the more the milk thickens into a gel. Normal milk will remain the same consistency, turning purple because of the solution.
- **Culture the milk.** By sending a milk sample to the lab, you can find out exactly what type of organism is infecting the cow, and whether it's contagious or environmental.
- **Test Somatic Cell Counts (SCC).** Somatic cell counts are a cow's response to an infection. When the cow's SCC is higher than normal it may mean that she has an udder infection.



Somatic Cell Counts (SCC)

Somatic cells are white blood cells. These cells can destroy bacteria, prevent or get rid of infections, and repair damaged tissue. If a cow has a high SCC, then her somatic cells are working overtime to get rid of an infection. SCCs are good management tools. Your cows can be tested for SCCs when they are tested for milk production. From these tests, you can spot cows that have mastitis infections.

Generally, SCCs are a good indication of contagious mastitis. Environmental mastitis tends to last only a few days and the chances of missing a high SCC are high compared to contagious mastitis.

What do high SCCs mean for your herd's milk production? The table below shows milk production losses for varying herd somatic cell counts:

Somatic Cell Count	Production loss per herd (%)
100,000	0
200,000	.8
300,000	2.3
400,000	3.8
500,000	5.3

Adapted from: "Economics of mastitis control worksheet" by The Upjohn Company.

Treatment of Mastitis

Even with a good prevention program, some cows will still get mastitis. Sometimes, a cow will fight environmental mastitis on her own, with a comfortable place and supportive therapy. Milking the cow often may be enough to remove toxins produced by the bacteria. Another option for contagious mastitis, or more severe cases of environmental mastitis, is to infuse or inject antibiotics directly up the teat canal of the cow's infected quarter.

The steps to follow to treat with antibiotics are:

1. Milk the udder out completely
2. Rub the teat end with an alcohol swab to disinfect it
3. Warm the mastitis medicine to body temperature and shake well
4. Infuse the right dose into the teat canal using a single-dose, individual, disposable syringe. Don't insert the needle too far. About 6mm is far enough or you can damage the teat.
5. Massage the udder to move the medicine into it.
6. Dip all the teats with an approved teat dip.



Mastitis 101

There are two forms of mastitis, **contagious and environmental**. The table below compares the differences between the two types of mastitis:

Characteristic	Contagious	Environmental
Source of new infections	<ul style="list-style-type: none"> Bacteria on skin or udder Source is always other infected cows 	<ul style="list-style-type: none"> Bacteria in bedding, manure or mud Source is the environment
How infection spreads	<ul style="list-style-type: none"> Contact with machine and milker's hands and wash cloths that have been in contact with an infected cow 	<ul style="list-style-type: none"> Contact with a dirty environment Milking wet udders
Most common organisms	<ul style="list-style-type: none"> Streptococcus agalactiae Staphylococcus aureus 	<ul style="list-style-type: none"> Coliform (i.e. <i>E.coli</i>) Streptococcus nonagalactiae
Infection Dynamics	<ul style="list-style-type: none"> Usually persistent subclinical infection, with repeated clinical flare ups Seldom cured without antibiotics 	<ul style="list-style-type: none"> Infection is less persistent, usually starts with a clinical case Often cured by the cow without antibiotic therapy
Somatic Cell Count of infected cows	<ul style="list-style-type: none"> Always high but quite variable 	<ul style="list-style-type: none"> Highly variable
Clinical symptoms	<ul style="list-style-type: none"> Swelling and abnormal milk with <ul style="list-style-type: none"> No fever – Strep. Agalactiae Mild to moderate fever – Staph. aureus 	<ul style="list-style-type: none"> Swelling and abnormal milk with <ul style="list-style-type: none"> No fever to moderate fever – Strep. Nonagalactiae More severe fever and off-feed cows – Coliform
Detection (you can never be sure from the symptoms, only a culture can correctly identify the organism)	<ul style="list-style-type: none"> Somatic Cell Count, California Mastitis Test, Culture Clinical signs are less helpful because many cases are subclinical 	<ul style="list-style-type: none"> Clinical signs, culture Somatic Cell Count and California Mastitis Test are less helpful because most infections start with a clinical case
Treatment	<ul style="list-style-type: none"> Follow veterinary advice Use antibiotics at dry off Use antibiotic in lactation (Strep. ag and clinical Staph only) Staph infections are very difficult to cure and may result in culling the cow 	<ul style="list-style-type: none"> Follow veterinary advice Strip the quarter frequently throughout the day and night Treat systemic symptoms
Prevention	<ul style="list-style-type: none"> Teat dipping Good milking hygiene and technique Stress free living – reduce flies that bother cattle, prevent teat injuries, increase cow comfort Dry cow treatment 	<ul style="list-style-type: none"> Clean, comfortable stalls, fresh bedding Good milking hygiene and technique (sanitary, use teat dip, proper equipment) Stress free living – reduce flies that bother cattle, prevent teat injuries, increase cow comfort Dry cow treatment

Source: Adapted from Jack Rodenburg, OMAFRA Dairy Specialist, 1997



Canadian National Health Project Disease - Lameness

Those Aching Feet!

Sore feet may be an inconvenience for you, but they can be a serious health problem for your cows. Lameness is a very common health problem. You can lose money from a cow's lameness due to a loss of body weight, lower milk production, premature culling and the cost of treatment.

Lameness may be assessed using the scorecard below:

Score		Description	Assessment Criteria
Non-Lame	1	Normal	Walks rapidly and confidently making long strides with a level back
	2	Mildly Lame	Walks more slowly, making shorter strides with an arched back. Stands with a level back and does not appear to favour a limb
Lame	3	Moderately Lame	Walks slowly, making deliberate short steps with an arched back; may favour a limb. Stands with an arched back and frequently lifts affected foot. Cow discomfort when standing and long periods of resting. Visible signs of swelling and pain.
	4	Severely Lame	Moves slowly, making frequent stops to rest affected limb. Only partially weight bearing. Stands and walks with a pronounced arched back.

Source: Canadian National Health Project 'Dairy Cattle Health Definitions'

Causes of Lameness

A number of factors may cause lameness, including stressful environments, poor nutrition, and poor conformation.

Stressful Environments – slatted floors, slippery free-stall housing and abrasive surfaces such as stones, stubble or frozen ground all put stress on an animal's feet and legs. Warm, wet housing breeds diseases such as foot rot.

Poor Nutrition – Feeding too much high energy feed or a sudden change in diet leads to acidosis, a ruminant disease. Acidosis in turn causes laminitis, a crippling hoof condition. Once a cow gets laminitis, her feet will never develop properly again. Lameness can also be caused by a lack of calcium, phosphorus, magnesium, manganese, zinc and Vitamin E, or an excess of calcium and fluorine, and a lack or excess of Vitamin D.

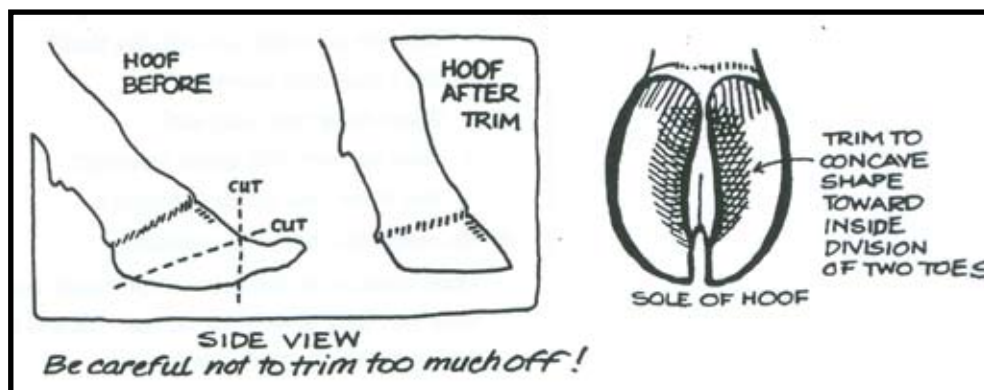
Poor Foot Conformation – Cattle born with bad feet, abnormally straight hocks, sickle hocks, cow hocks, weak pasterns, flexed pasterns, overlapping toes, or soft hooves are more susceptible to lameness.



Prevention

There are several management techniques on the farm that can help to reduce lameness.

- Breed cows to bulls with better conformation scores for feet and legs
- Follow proper nutrition guidelines, feeding balanced rations
- Allow cows to stand on well-drained dirt and grass. The grass cleans their feet and the dirt keeps away organisms
- Groove slippery concrete floors and smooth concrete that is too rough. Slippery concrete doesn't naturally wear down a cow's feet and makes her tend to walk on her heels, giving her overgrown toes. Rough concrete injures a cow's feet.
- Install a foot bath. Foot baths remove irritants, harden the hoof and prevent infections. In parlours install the bath so the cows walk through it as they leave. The foot bath solution should be selected based on the foot problems in the herd.
- Keep free stalls clean, dry and comfortable. Cows that lay down rest their feet and let them dry.
- Trim feet at regular intervals. Many farmers hire a professional hoof trimmer to do this. When animals live in soft well bedded areas, their hooves grow too long and they can't stand properly.



Hoof Diseases

DISORDER	CAUSE	EFFECT	TREATMENT/ RECOVERY
Foot Rot (interdigital dermatitis)	Bacteria- <i>Fusiformis Necrophorus</i> -by small stones, frozen ground, mud, urine, and manure.	Lameness, swelling, and inflammation of the skin of the coronary band and the skin between the claws. It is painful. There is an odour released resembling sour milk. The hoof may ooze a white or grey puss.	Keep cattle on paved surfaces; keep them as dry as possible. Have cattle walk through copper sulphate foot baths. Treat with injectable antibiotics and local treatment of the foot lesions. If treated right away a full recovery is possible.
Strawberry Foot Rot (digital dermatitis)	Bacteria – <i>Dermatophilis congolensis</i> -by contact with infected animals or equipment, may be dormant in soil; high temperatures, humidity and wet environments cause outbreaks.	Appears as a reddened patch just above the cleft of the hoof. The lesion will develop into a raised patch that has pointy projections with hair-like structures sticking out. This is very painful and causes lameness.	This is hard to clear up. Footbaths may help. Topical dressings and antibiotic sprays are the usual treatments in Ontario. Usually cleaning and spraying for 7 or 8 days will start healing process.
Club Foot	Can be hereditary. Can be a result of foot rot.	The toe forms an angle of more than sixty degrees to the ground. Soon the wall of the toe is about twice as high as that of the heels.	If it is hereditary you may want to consider culling that bloodline. Otherwise do not overwork the animal, and get a hoof specialist to look at the animal.
Brittle Hoof (Cracked Hoof)	The condition is often hereditary. Animals that have their hooves in wet areas for a long time and then are transferred to constant dryness of stable bedding. Also caused by excessive wound dressing.	The horn of the animal suffers from an abnormally dry state. May appear as being baked hard and stony. The hoof may start cracking.	Have a balance if wet and dry areas. Make sure that the animals feet are tended to regularly.

Source: Adapted from 4-H Ontario Veterinary Manual



Canadian National Health Project Disease: Displaced Abomasum (Twisted Stomach, or D.A.)

This is a common problem in dairy cattle. Its specific causes are unknown, although a high grain or silage diet or other sudden changes in diet and ketosis are thought to be involved. Ketosis is an accumulation in the blood of ketone bodies produced when fatty acids are broken down. The abomasum loses muscle activity, slows down and becomes full of fluid and gas. As gas accumulates, the distended abomasum acts like a balloon. When this happens, the abomasum either moves up and to the left, or up and forward. In severe cases, abomasal torsion or twisting can occur.

Symptoms - Going off feed, decreased milk production, dehydration, reduction in manure passage. When twisting happens: pain, kicks at stomach, gets up and down frequently, rapid dehydration, over 100 heart beats per minute, shock. Twisted stomachs can be detected by tapping the body wall of the cow near her stomach and listening with a stethoscope between the 9th and 12th ribs (left D.A.). Normally, the cow's stomach region will sound hollow, or you may hear some rumination noises. When a cow has a displaced stomach, the tapping will sound like pinging a tin can.

Treatment - Treatment can vary from doing nothing to shipping the animal for slaughter. Putting the cow on a grass hay diet and removing any grain or silage will sometimes make a difference and the cow's stomach may return to its normal configuration. In some cases, rolling a cow over, with the help of someone experienced, will be enough to move her abomasum back into place. In more severe cases, surgery may be required to fix the abomasum to the abdominal wall to prevent further movement. In cases of twisting, surgery may only be partly successful, and it may be necessary for the cow to be destroyed. Consult your veterinarian.

Prevention - When a cow goes off feed, remove silage and grain, and do not reintroduce these foods until the cow has returned to normal feeding. If metritis or ketosis is also suspected it should be treated. Once an animal has already suffered an episode of displaced abomasum it may be necessary

to surgically tie the stomach in place to prevent subsequent displacements.

Canadian National Health Project Disease – Milk Fever

Milk fever occurs when the cow has a sudden need for calcium at calving when milk production begins. The cow's blood calcium level drops. This causes the cow to weaken, go down and possibly die.

Symptoms – Within 72 hours before or after calving, sick cows will show signs of one of the following stages of milk fever. **Each stage indicates an increasing level of severity of the disease:**

Stage 1:	Mild excitement or stiffness, weakness or weight shifting, increased rectal temperature (above 39°C)
Stage 2:	Lies down and cannot get up, cold extremities, decreased rectal temperature (less than 38°C)
Stage 3:	Cow lies on side with legs stretched out, pulse difficult to detect

Treatment – Administering calcium by oral, subcutaneous or intravenous injection is usually sufficient to treat the disease. Especially in more serious cases, intravenous injection acts more quickly, enabling the cow to recover more quickly. However, when administering calcium intravenously, it must be done very slowly. Putting too much calcium into the bloodstream of a cow at once will cause her heart beat to become more rapid and could result in a heart attack. Listening to the heart beat with a stethoscope while administering calcium intravenously is a good idea.

Prevention - Feeding a proper ration to the cow two weeks prior to calving teaches her body to get extra calcium from her bones when needed.



Canadian National Health Project Disease - Ketosis

This is caused by chemical changes in the cow's body in the month that she has a calf. The disorder occurs when a cow doesn't eat enough to keep up with her own milk production, creating a **negative energy balance** (or negative nutritional balance).

Symptoms – Decreased milk production, general poor health, possible liver damage, more susceptible to *E. coli* mastitis.

Treatment – Drench the cow with glycol and administer sugar (dextrose) intravenously to increase energy levels. Injections of vitamins will help to maintain healthy blood cells.

Prevention – Change the feeding program just before drying off to ensure proper body conditioning. Change it again just before calving. This can increase a dry cow's appetite. Then, she eats more of the energy she needs to produce milk. The fresh cow ration should also be high in energy. Good feeding will help the cow switch to high energy feed after she calves. This helps to prevent the **negative nutritional balance** that results in ketosis. In addition to nutritional prevention, ketosis can also be prevented by calving in a clean, dry and comfortable location that is not crowded.

Digestive Disorders

There are several disorders that can affect the digestive systems of dairy cattle. Rations should be designed to minimize problems, but there are several complications that can occur. Note that displaced abomasums are a digestive disease but are discussed in previous sections with the other main diseases affecting dairy cattle.

Stomatitis

Inflammation of the mouth caused by bruising or chemical irritation

Symptoms – Excessive salivation, evident pain in the mouth, bad breath

Treatment – Often, you simply need to remove the cause of irritation, such as a plant lying in the barn. Antibiotics may sometimes be used.

Prevention – Keep animals away from pastures with sharp plants or grasses. Buttercups, crocus, and cowslips can cause chemical damage as can medicines containing arsenics, mercurials and iodides. Such medicines should not be applied to skin where the animal might lick them. Do not give animals hot foods.

Choke

Occurs when foreign objects clog the esophagus

Symptoms - Coughing, retching, slobbering, forced swallowing, may appear anxious, bloated

Treatment - It may be possible to work the object up with your hand by feeling through the throat. Lower objects may be gently pushed into the stomach with a probing (rubber tube with wooden plug at one end)

Prevention – Do not feed large pieces of food to animals. Keep foreign objects that can be swallowed away from animals



Abscess of the Liver

Caused by a disorder of the rumen resulting from heavy grain feeding. It could be the result of parasitism or an infection from the gut.

Symptoms – Usually no visual signs.

Treatment – Determine and treat the primary disorder that is resulting in the liver abscess.

Prevention – Conditions usually indicate some other disease and prevention lies in treating the primary disorder.

Bloat

Occurs when the rumen and reticulum become filled with gases. It often results from eating lush pasture when the rumen overloads with gas that cannot escape. The gas mixes with food to form foam – frothy bloat.

Symptoms - This is a serious condition that can result in death within hours. It begins with pronounced swelling in left flank. In severe cases, the upper part of the flank rises above the level of the backbone. The animal moves uneasily and has difficulty breathing.

Treatment - WORK FAST! Release the gas as quickly as possible. Pass a stomach tube into the rumen until the gas pocket is reached. If much froth is present it means gas has mixed with the food and won't be easily released.

Pass a pint of defoaming agent such as vegetable oil through the tube. If it won't go down the stomach tube, inject it into the paunch with a syringe and extra long needle.

As a last resort, the rumen can be punctured with a knife or trocar (pointed instrument with a tube that stays in the loin to allow gas to escape). This is called tapping and should be done by someone experienced. A cow should be tapped halfway between the last rib and the point of the hip bone and four inches down from the side of the vertebrae to the short ribs.

Prevention - Gradually introduce animals to lush legume pastures and never let them overeat that type of feed. Feed high grain diets carefully. Commercial anti-foaming agents can be added to the feed concentrate to guard against frothy bloat.

Gastric Impaction or Indigestion

Indigestion occurs when the first two compartments of the stomach are packed with food that won't digest. In rare cases, the third and even fourth compartments are overfilled. Improper feeding, bad feeds or gorging are usually the cause.

Symptoms - going off feed, stops chewing cud, constipation, moaning, arches her back and kicks at her belly, in severe cases, the animal may go down and become paralyzed as if in a stupor

Treatment - if bloat accompanies indigestion treat bloat first. Animals often recover suddenly without treatment. The animal should not be put back on feed until the rumen has again become active. In very severe cases, it may be necessary to operate to remove the undigested food.

Prevention - as with bloat, overeating of grain or green foods should be avoided. Sudden changes from pasture feeding to dry feeds are also dangerous as they can lead to impaction.

Johne's Disease (yo-nees)

This disease is becoming a big cause for concern on dairy farms due to losses in milk production. The disease is spread via the manure of infected animals and gets into the food and water supply. When the organism arrives in the intestines it attacks the walls and sets up such an infection that food can no longer be absorbed into the blood. Though young animals are usually attacked, death may not follow until years after the infection has set in.

Symptoms - general loss of conditioning in the animal, diarrhoea, rough coat, dry skin, loss of appetite (appearing towards the end of the disease)

Treatment - there is no known cure. Practically all animals die within one month to two years after symptoms appear. Therefore the best treatment is prevention.

Prevention - prevention is aimed at halting the spread of the disease. It is especially important to protect young animals since they are most susceptible to infection. Good sanitation to reduce the exposure of animals to the manure of infected cattle is essential. When introducing new animals to the herd, they can be tested for the disease. CanWest DHI is now offering optional tests from production milk samples to determine whether



cattle are carriers of Johne's. Infected animals should be culled from the herd to prevent further losses from those infected animals, and also to prevent further spread of the disease within the herd.

Hardware Disease

Occurs when foreign objects such as nails, wire or machinery parts are eaten. They are swallowed into the rumen where they often do little or no harm. However, once pushed into the smaller reticulum they puncture the wall and from there can damage the diaphragm, liver, heart or lungs. Most heavy metal objects will probably fall directly into the reticulum.

Symptoms - Going off feed, weakness, showing obvious pain when moving, may stand with her back feet lower than its front to relieve pressure on the abdomen

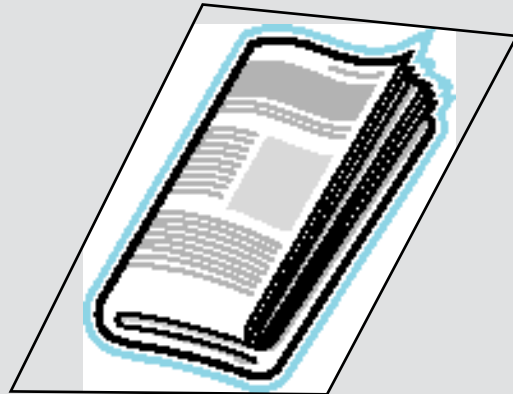
Treatment - Surgery may be required to remove the object. Antibiotics should be used to control infection. Never give laxatives to an animal suspected of having hardware disease.

There is a special magnet made in the shape of a bolus that can be given to the animal. The animal eats it, and it remains in the reticulum to collect and immobilize any magnetic material. The magnet can remain in the stomach of the cow for the rest of her life and will not cause her harm.

Prevention - The most logical preventive measure is to keep metal objects out of reach of cattle. Cow magnets are also practical and inexpensive tools to help prevent ingested objects from moving through the system.

Diseases making headlines...

As the public becomes more concerned about the health of the animals producing their food, outbreaks of animal diseases have become popular news items in recent years. For farmers, such outbreaks confirm the need for biosecurity measures on the farm, to ensure that their animals don't get sick.



Two diseases that have reconfirmed the importance of effective biosecurity in recent years are Foot and Mouth Disease and Bovine Spongiform Encephalitis.

Foot and Mouth Disease (FMD)

- Is a highly contagious, viral disease.
- In 2001 an outbreak had resulted in the slaughtering of 4,190,000 sheep, cattle, pigs, goats, and deer.
- It affects cloven-hoofed animals including cattle, sheep, pigs, goats, deer, elk, and buffalo; very rarely does it affect humans.
- Infected animals may develop blisters in the mouth (snout), on the feet, in teats and udder.
- Most commonly spread by direct contact between animals, but can be spread by indirect contact.
 - Direct: blisters, nasal discharge, saliva, milk, semen, manure, and urine.
 - Indirect: contaminated vehicles, people, frozen semen, contaminated feed, and drinking water.

KEEPING FMD OUT!

Vaccines exist, but only to protect animals for a relatively short period of time. They would only be used in an emergency.

Instead we must use what we have learned about bio-security to protect Canadian farms from FMD.

What should I do?

- Control traffic!
 - No visitors who have been in countries affected by FMD in the last 14 days.
 - Do not use semen or embryos from imported from FMD-positive countries.
- Isolate!
 - Animals showing symptoms of FMD from the rest of the herd.
- Separate!
 - Young and old animals to prevent spreading.
- Report any suspected cases of FMD to your veterinarian.

What is Canada Doing?

Canada's strict border policy has kept the country free from FMD since 1952:



- Used farm equipment and all live ruminant animals (cows, sheep, etc) and their products cannot be imported into Canada from a country that has had an FMD outbreak.
- Travelers are educated about the spread of the disease and are advised not to visit Canadian farms within 14 days of being in a country with FMD.
- Disinfectant is provided for travelers' shoes.
- Beagles are used to "sniff out" food products carried by travelers.

Bovine Spongiform Encephalopathy (BSE) **(Mad Cow Disease, Bovine TSE (transmissible spongiform encephalopathy))**

- Caused by an abnormal prion protein that can convert normal prion proteins to abnormal ones, but the specific cause of this protein occurrence is unknown
- It is a disease that attacks the nervous system of cattle, slowly progresses and is eventually fatal
- This is a reportable disease in Canada, so veterinarians and laboratories are required to report it when they find an animal that has the disease. Canada's first reported case of BSE occurred in May 2003, with a handful of cases being reported after that. The presence of this disease resulted in the United States closing its borders to Canadian cattle from May 2003 to November 2007. Since the two countries are major trading partners, this caused great economic devastation to the Canadian agricultural industry.
- Infection results from eating infected brain or spinal cord material of an infected animal.
- Symptoms of the disease usually are not evident for four or five years. When they do progress, symptoms may include nervous or aggressive behaviour, abnormal posture, lack of coordination, trouble getting up, an increased appetite but lost weight, and decreased milk production. Usually the animal dies within two to six months after the onset of symptoms.
- Diagnosis may tentatively be made based on symptoms, but the only way to ensure an accurate diagnosis is to examine the animal's brain after it dies.
- There is no known vaccine or treatment for the disease. The best way to dispose of infected animals is incineration so that the disease cannot be passed on via the animal's carcass.

Did you know?

Canadian regulations strive to protect animals and food from BSE and other diseases. Since 1997, there has been a ban in Canada from feeding rendered protein products from ruminant animals to other ruminants. This ban, coupled with mandatory animal identification, required reporting of the presence of the disease, and controlling imported products are aimed at ensuring a safe food supply from healthy animals. In addition, before meat from animals is used for human consumption, the SRM (specified risk material) such as the brain and spinal cord is removed from slaughtered animals.

Commonly Used Antibiotics in Lactating Dairy Cows

	Route	Milk Withdrawal (hours)	Meat Withdrawal (days)	Dose (mL /100 lbs or mL/45 kg)	Example mL per 1500 lbs cow	Indication
Penicillin	IM	96	10	3	45	Metritis, foot rot, wound infections
Tetracycline	IM / IV	72	18	3	45	Pneumonia, mastitis, metritis, foot rot, navel ill, calf diptheria
Trivettrin	IM / IV	96	10	3	45	Pneumonia, mastitis, metritis, foot rot
Excenel RTU	IM / SQ	0	3	1	15	Pneumonia, foot rot
Excenel RTU	IM / SQ	0	3	2	30	Metritis
Excenel Sterile Powder	IM	0	0	1	15	Pneumonia, foot rot

This information is required as part of CQM (Canadian Quality Milk) certification.

Note: The use of Excenel RTU for the treatment of metritis is a new label claim made in the fall of 2007. For all injections, the maximum volume per site should not exceed 15 mL. Injections in the muscle (IM) use 1 - 1 1/2 inch needles 16 or 18 gauge. Injections under the skin (SQ) use 3/4 - 1 inch needles 16 or 18 gauge.

Source: Ferguson Veterinary Services newsletter, 2007.

Using Medicines on the Dairy Farm

While the most important way to maintain herd health is to manage your farm to prevent diseases, it is impossible to prevent your cows from ever getting sick. Medicines used to treat animals on the farm must be handled carefully – just like medicines for people! In fact, there are several reasons why medicines might be used on farms:

- Prevent and treat disease
- Promote or enhance growth
- Control parasites
- Enhance breeding
- Milk letdown

You cannot treat diseases properly unless you know how to **store and use medicines safely**. For example, some medications need to be stored in the refrigerator and would be useless if kept in a warm barn.

To make sure that medication is administered safely on farms, it is required that all Ontario dairy farms have someone on them who has successfully completed the **Livestock Medicine Education Program Course**.

Purchasing Medication

There are three ways to obtain medication on the dairy farm:

1. Veterinarian – sells over the counter drugs as well as prescription drugs
2. Livestock Medicine Outlets – Companies that are approved to sell over the counter medicines only
3. Feed Dealers – Some medications may be provided in feed rations, with prescriptions required from your veterinarian

NEVER purchase medication off the back of a truck or from your neighbour – this is illegal!

Storing Medication

Medicines should be stored according to the directions on their labels. Labels include expiration dates as well as the temperature at which the drug should be stored.

Medication should be stored in a closed cupboard or area that is not accessible to animals, children, or people other than those providing treatments.

Using Medication Safely

There are several steps you must take to properly and safely use medication on your farm:

- **Read the label.** Labels tell you the 5 W's and the H:
 - o **Who** the medicine is for
 - o **What** the medicine is for
 - o **Where** the medicine should be stored
 - o **When** the medicine should be used and when it expires
 - o **Why** the medicine works (the ingredients)
 - o The label also tells you **how**: how much, how long, how often
- **Use the right dose and equipment.** Figure out the dose according to the animal's weight and the label's instructions. Always use the right equipment. For example, use disposable needles on one cow only.
- **Stop milk contamination.** Medicine travels into a cow's milk. Some medicines do not affect the milk, but others do, so you must keep a treated cow's milk out of the bulk tank. Otherwise, you can be fined for selling contaminated milk that contains inhibitors (drug residues). Make sure you keep milk from all quarters of a cow out of the bulk tank, even if you only treat one quarter. If you're unsure whether or not milk is safe to put back in the bulk tank, test it. You can use a home test kit for antibiotics. The label on the antibiotics will also tell you the withdrawal time during which milk or meat from treated animals cannot be used for human consumption.
- **Keep records.** Records will help you prevent milk contamination. You should always keep treatment records and properly identify treated cows. You can use spray paint, tags or leg bands to identify animals. Keep the label information from the medicine for your records too. Records should also be kept for calves and heifers because it can be helpful to know their medical history.



Sample Drug Treatment Record:

COW ID	Diagnosis	Treatment	Quarter Treated	Dose	Length of Treatment	Label Withdrawal (hours, # of milkings)	Date Tested	Milk Returned to Tank

Techniques for Administering Medicine

There are several ways that medication can be administered to animals. Reading the label on the medication will tell you how it should be given to the animal.

Giving Pills (i.e. aspirin, scour pills, etc.)

Steps involved:

1. Tie the animal in a stall or secure in a head gate. Grab the animal by the side of its mouth and turn its head to open its jaws. Don't raise the head too high or the calf/cow won't be able to swallow.
2. Force the balling gun containing a pill or capsule into the side of the mouth, over the back of the tongue and far enough so that the cow can't cough up the pill. Push the plunger on the balling gun so the pill goes into the cow's throat.

**Drenching** (i.e. glycol)

Drenching involves trying to give a cow a liquid drug. The steps to do this are:

1. Tie up the animal with its head to the stall or head gate so that its nose forms a straight line with its neck. Don't raise the head too high or the cow won't be able to swallow.
2. Give the animal a small amount of the liquid. The animal must swallow so that the liquid does not enter the lungs and cause more problems. It may be helpful to use a milker inflation over a pop bottle to get the liquid down far enough into the throat so that the cow can't spit it out. A plastic bottle is better than a glass one because it won't break. If the animal starts to cough, lower its head at once so that the liquid doesn't get into her lungs.
3. Continue to give the liquid in small amounts, allowing the animal time to swallow and breathe.

Paste medications

Pastes can be administered using a large disposable syringe by following a couple of steps:

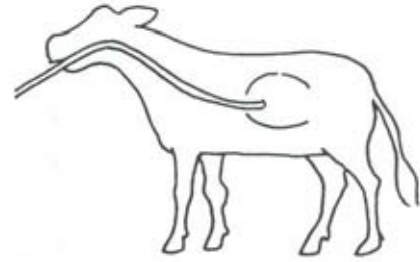
1. Restrain the animal in a stall or headgate
2. Place the tip of the syringe between the cow's lips at the corner of the mouth. Eject the paste well back onto the cow's tongue so that she can't spit it back out



Stomach tubing

Stomach tubes are sometimes used to deliver large quantities of liquid medications or nutrients into the stomach of the cow. They are often used to give electrolyte solutions to sick calves. It can also be used to relieve pressure from gas when a cow has bloat.

For calves, an esophageal feeder can be used for this purpose. For older animals a portion of a garden hose may be used. Stomach tubing should only be performed by people who are familiar with the procedure, as it is important to insert the liquid into the esophagus and not to get liquid into the lungs.



Giving a Needle

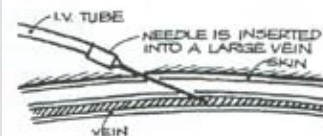
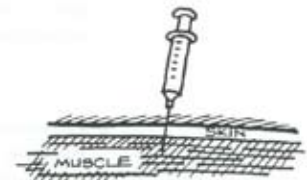
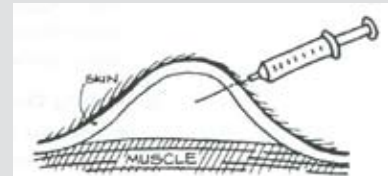
Needling is a very common way to treat an animal. There are three ways to administer medications via a needle:

1. subcutaneous
2. intramuscular
3. intravenous

Subcutaneous injection (SC, Sub-Q) – Given under the skin. Insert the needle into the loose tented skin in the neck in front of the shoulder. Do not inject more than 10mL per site.

Intramuscular (IM) – Into the muscle. To reduce scar tissue or abscesses in meat, give IM injections into the neck, ahead of the shoulder point. Do not inject more than 10mL per site.

Intravenous (IV) – An IV injection is made into the vein on some area of the animal. IVs are most often given in the neck, but sometimes may be given in a vein under the tail or into the mammary vein. These injections are more difficult to give and should not be attempted by someone who isn't experienced. The medication must be administered very slowly and any air bubbles must be removed.



There are several steps to giving a needle:

1. Ensure that needles and syringes are clean and sterile. Needles should be disposable. Choose the right size needle:

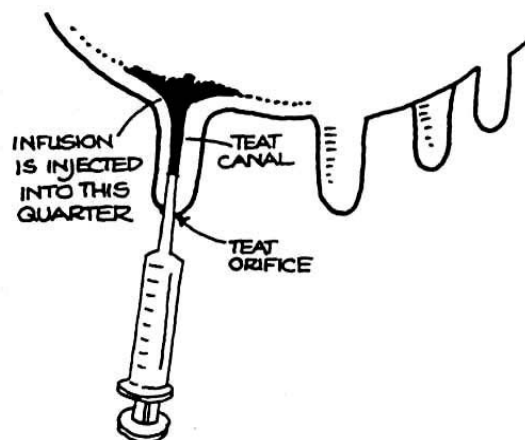
Size of Animal	Route	Gauge	Length
Calf	Intramuscular	16-18	1 inch
Cow	Intramuscular	16-18	1.5 inch
Cow	Subcutaneous	16-18	½ - ¾ inch

The size of needle may also depend on the substance. More watery drugs can be administered with smaller needles than more viscous ones can.

2. Tie up the animal or secure in a head gate
3. Shake the drug if the directions call for it. Disinfect the stopper. Hold the drug bottle upside down and push the needle through the rubber stopper. Inject some air into the drug bottle. Pull out the plunger until the syringe is filled to the correct level. Remove the drug bottle and hold the syringe upright. Force the air out of the syringe.
4. Disinfect a clean area on the animal where the injection is to be made. Choose different injection sites if needling the animal over a long period of time or when dividing doses. Intramuscular needling should be done in the neck, not the hindquarters, to avoid bruising meat & tissue.
5. Insert the needle and make the injection. You can pull back on the needle to check for blood to ensure that a subcutaneous or intramuscular injection is not going to go into a blood vessel. Conversely, you should pull back on the needle if making an intravenous injection to ensure that the injection will be made into the blood vessel. An intramuscular injection may require a little rubbing after the needle is removed.

Intramammary Treatment (Udder infusion)

Udder infusions are very similar to giving other needles, but instead of piercing the animal, the cannula of the syringe is inserted in the teat opening of the cow. When using a cannula to insert intramammary drugs, partial insertion is recommended to reduce the chance of forcing microorganisms into the teat cistern.



Disposal of Medications and Needles

Safe disposal of unwanted medicines and used needles is very important for several reasons:

- Prevent illness or injury resulting from handling
- If needles are not disposed of properly, someone could use them for another purpose
- Unwanted medicines could be used inappropriately by others or lead to antimicrobial resistant infections
- Waste can enter water and impact the farm water supply, creeks, rivers, lakes, municipal water supplies

There are a few places that unwanted medicines and sharps can be disposed of:

- Municipal landfills – some landfills will accept them and target them for special disposal
- Veterinarian – some vets will accept these wastes according to biosecurity protocols
- Commercial disposal companies – companies that provide free service for waste disposal in safe storage containers. They autoclave unwanted needles and incinerate medicines.

Medicinal wastes should never be disposed of in:

- Long-term storage on the farm due to deterioration of containers and labels
- Buried on the farm because they could pollute soil and water
- Burn barrels because some medications can explode when heated
- Manure piles because someone or something could get hurt. Deterioration of needles takes a long time
- On public property because this is pollution
- In household garbage or recycling bins because this causes environmental contamination or can injure municipal workers or spread disease and because these substances are not recyclable
- On other farms because this promotes irresponsible use of medicines in livestock



VO-COW-BULARY*A Glossary of Health Terms*

Antibodies	Blood proteins that are produced in response to toxins (antigens) and then work to counteract the foreign toxin. Plural is alveoli.
Biosecurity	Measures that prevent the introduction and spread of disease.
Clinical disease	Symptoms of the disease are outwardly evident that an animal is sick.
Colostrum	The first milk that a cow gives after calving that has high levels of antibodies to help the calf build gain immunity to diseases.
Immunity	Protection from infectious diseases caused by antibodies in the body that fight the disease.
Infectious disease	Diseases that can be spread from one animal to another animal.
Inhibitors	Substances other than bacterial culture that do not occur naturally in milk and inhibit the growth of bacteria (drug residues in milk).
Intramuscular	Into the muscle, as in an injection.
Intravenous (IV)	An IV injection is one made directly into the bloodstream of an animal.
Negative Energy	A state when a cow's body is using up more energy than it is consuming Balance in its feed. Body fat reserves are used to obtain necessary energy.
Non-infectious disease	Diseases that cannot be spread from one animal to another.
Parasite	An organism that lives in or on another animal and benefits (housing/food) at the expense of its host.
Respiration Rate	Number of breaths in one minute.
Somatic Cells	Somatic cells are white blood cells that destroy bacteria, fight infection and repair damaged tissue in the udder.
Subclinical disease	An animal is sick but has no obvious outward signs of her illness.
Subcutaneous	Under the skin.
Trocar	Pointed instrument with a tube that stays in the loin when inserted to allow gas to escape from the rumen - a procedure used as treatment for bloat
Vital signs	Clinical measurements that indicate the state of essential body functions.
Zoonotic disease	A disease that can be passed between humans and animals.



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Related Activities (See Activity Guide)

Internet Activities	General	All ages
Symptom Game	Health	All ages
Taking a Calf's Vital Signs*	Health	All ages
Complete Calf Health Examination	Health	All ages
Designing a Calf Health Program	Health	Senior members
Mastitis Demonstration	Health	All ages
Culture Sample Demonstration	Health	All ages
Herd Health Analysis	Health	All ages
Using Medicine Safely	Health	All ages
Administering Needles Safely	Health	Senior members
Evaluating Health Problems	Health	Senior members
Body Condition Scoring	Health	All ages
Body Condition Scoring at Different Stages of Lactation	Health	All ages
Belching Demonstration	Health	All ages

