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Mucosal Fly strike is also known as *Myiasis*. All animals get fly strike but sheep get it worst and most often. Humans are sometimes affected with fly

Anaplasmosis strike.

Babesiosis Signs of Fly strike

Fever Animals are irritated and scratch and rub at a wound with fly larvae in it.

The larvae can destroy a lot of flesh. Bacteria often infect the wound.

Foot and Mouth

How animals get fly strike

Diseases
(FMD)
eggs in very small wounds, such as tick bites and on larger wounds,
such as castration wounds or any other injury that cause wound on the
skin of the animal. The eggs become larvae that eat the animal's flesh.

Liver Flukes (Some people call these larvae maggots.) Screwworm fly larvae cause

Plant one severe kind of fly strike

poisoning

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Skin Photosensitization

<u>diseases</u>

Fodder Photoser Production plant poi

Photosensitization is a skin problem associated to plant poisons, which make the skin of animals;

Conservation Products

especially cattle and sheep very sensitive to sunlight. Animals get it when they eat poisons that the liver cannot destroy and which make the skin very sensitive to sunlight. The poisons usually come from plants, or fungi that live on the plants.

Phylloerythrin is a breakdown product of plant chlorophyll in the fore stomachs of ruminants, which in healthy animals is excreted into the bile by the liver. In animals with impaired liver function, however, phylloerythrin accumulates in the blood and is transported to the skin, which is sensitized to the ultraviolet rays of the sun as a consequence, resulting in photosensitization in lightly pigmented areas of skin. A number of plants contain liver poisons that may result in photosensitization if eaten in sufficient quantities, including:



2. Tribulus terrestris/devil's thorn is a ground creeping



Kari Naivasii

plant with yellow flowers widespread throughout the tropics; it is regularly eaten by stock without causing problems, but is also suspected to cause photosensitization.

Signs of photosensitization



Photosensitization

© William Ayako, Kari Naivasha

- The pale colored parts of the skin become red and inflamed and the skin cracks open. This often happens on the back and around the nose but can happen anywhere on the body. Sometimes the skin dries up and large pieces of skin fall off leaving a sore patch underneath.
- The mucous membranes sometimes become yellow.
- Most animals do not become sick but a few of them become very sick.

Prevention and Control

• Put the animals into the shade and keep them away from bright sunlight for a few days.

- Move the animals to a different pasture away from the plants you suspect poisoned them. Some plants are only poisonous at certain times and the pasture may be safe to return to later in the year.
- Remove by digging or burning out known poisonous plants in pastures.

Recommended treatment

- Put a wound dressing on the cracks and sore places.
- Give an antibiotic by injection to treat infection if the skin is much damaged.

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Elephant skin disease

Elephant skin disease is a disease affecting cattle, horses and donkeys. Goats occasionally get the disease. It is spread by besnoitia spp of protozoa, which occurs probably worldwide. Besnoitia besnoiti infection in cattle has been recorded in Africa, southern Europe and Asia. B.bennetiinfection occurs in Equids (horses) in Africa, Europe, and the Americas. An unidentified Besnoiti infection of goats is found in Kenya. The disease is spread by biting flies but infection may also come from

cats, which are suspected as the final host of *Benonoitia besnoiti*. Cats are known to excrete *Besnoitia oocysts* in their feces.

Signs of Elephant skin disease

Bovine besnoitiosis occurs in cattle over six months old. About a week after infection, affected animals may have high fever, photophobia (avoidance of direct sunlight), and oedema of the skin, diarrhoea and enlargement of superficial lymph nodes. Up to 10% of affected animals die in the early stage. Survivors develop a chronic disease in which the parasites localize in cysts underneath the skin.

- Some animals have clear discharge from the nose and the eyes. Sometimes there are white patches on the eye.
- Some animals die in about 10 days. Animals that recover have their skin thickened and they lose some hair.
- Goats have lumps in their ears and around the genitals. They have white patches on their eyes. Pregnant goats abort and many become infertile. New borne goats are weak and some die.

Other diseases that look like this are: dermatophilosis, lumpy skin disease, mange and malignant catarrhal fever.

Prevention and Control

- 1. Separate sick animals from healthy ones.
- 2. There is an effective vaccine in southern Africa.

Recommended treatment

There is no good treatment but skilled workers can give medicines to help animals recover.

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Horn cancer

The disease is a cancer of the base of the horn of zebu cattle, mainly in castrated adult males, and occasionally in cows and bulls. The disease primarily affects short-horned Hariana cattle of India, but the condition has been reported in other zebu breeds in other parts of the world. The exact cause of horn cancer is not known, but may be partly hormonal. Affected animals commonly have a previous history of mechanical injury to the horn, or persistent rubbing of the tissues round the base of the horn from head ropes. It is not an infection, but castrated males get it more often.

Signs of Horn Cancer

- The horn becomes loose and comes away from the skin.
- You can see a grey/yellow lump at the base of the horn. It is covered

with blood and mucus; it smells bad and is often infected.

- The cancer has cauliflower-like growths covered in foul-smelling bloodstained exudates, and may invade the frontal sinuses causing purulent discharges from the nose.
- The cancer spreads inside the animal to other parts of the body. If left untreated, the animal becomes distressed and loses condition. Secondary bacterial infection or blowfly strike may be complications.

Recommended treatment

Skilled workers can cut out the cancer. This often works if they do it before the cancer spreads to other parts of the body.

Sometimes they use special medicines to control but they do not always work.

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Lumpy skin disease

Lumpy skin disease (LSD) and pseudo-lumpy skin disease

LSD is a viral infection of cattle only transmitted by biting flies and is caused by a poxvirus, whereas pseudo-lumpy skin disease (PLSD), a benign and harmless but completely separate disease, is caused by a herpes virus.

The disease is endemic in sub-Saharan Africa and Madagascar and has recently spread to Egypt and Israel. The PLSD virus also causes *mammillitis*, an infection of the teats, in newly calved dairy heifers in Europe, North America and Australia. The animals get the disease when insects that suck blood, such as mosquitoes, bite them. The disease occurs most when there are many insects at the start of wet season. Imported breeds of cattle get the disease more easily than the local cattle. The disease may be confused with the following diseases besnoitosis; dermatophilosis; ringworm

Signs of Lumpy skin disease

- The animals have much saliva coming from the mouth. A clear discharge comes from the eyes and nose. Later the discharge from the nose becomes grey/white.
- The cattle are weak and tired and stop eating. They have a fever that sometimes goes down after 1 2 days but it goes up again. Animals produce little milk and pregnant cattle often abort.
- Lumps appear on the body, usually around the head and neck, under the abdomen, on the legs, or around the genitals and the udder.
- The lumps are hard and usually all about the same size. The hair on the lumps stands up. Softer, yellow/grey lumps may appear on the mouth. They rub off easily leaving sore red patches.
- Many of the lumps on the skin turn into sores that get infected and

become deep wounds. Most of these dry up and heal after a few weeks but they leave scars that damage the hide. Some lumps become hard and do not go away.

- Cattle do not usually die but they take months to recover and a few of them become very thin.
- Occasionally the disease is very mild, animals only have a low fever and lumps on the skin that heal in about six weeks.

Prevention and control

Vaccination for lumpy skin disease is effective. Vaccinate all animals in contact with the disease. PLSD is of no importance other than that it can confuse the diagnosis of the much more significant LSD.

Recommended treatment

There is no treatment for lumpy skin disease. Give an antibiotic injection to stop the damaged skin getting infected by bacteria.

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Cattle pox

Most pox diseases happen in Africa and Asia. Sheep and goat pox

happens in Africa north of the equator and in Asia. Most animals can get pox diseases but each animal gets a different type of pox disease. Viruses cause all pox diseases: sheep and goat pox (*Capri pox*), pig pox (*suipox*), camel pox (*orthopox*) and cattle pox (*parapox*). The disease can be confused with the following diseases: Bluetongue; foot and mouth disease; mange and contagious pustular dermatitis.

The disease is spread by direct contact between animals and on contaminated things. Many animals get infection from people who have touched infected animals. Infection comes from blisters and scabs of infected animals. Infection can live for a long time in dry scabs that fall off.

Cattle; calves get pox from infected mothers. They are infected for life and may become sick when they are adults.

Camels; pox spreads quickly through a group of camels, especially in or just after wet seasons.

Pigs, they usually only get pig pox when they are 3 - 6 weeks old. They get it from touching infected pigs or when lice bite them or stable flies that carry infection.

Signs of Cattle pox

Cattle become sick 5 - 10 days after they get infected.

• They have small red sores on the teats at places where there are

small injuries. The sores soon have scabs over them. When the scabs fall off they leave a crescent of smaller scabs.

- Sometimes the disease goes on for a long time. The teats become rough with many greyish/yellowish scabs.
- Animals usually recover in 2 8 weeks.

Prevention and Control

- Isolate infected animals by moving healthy animals away from them. Avoid moving infected animals to areas without the disease.
- Vaccinate healthy animals that have been near infected animals.
- Avoid using, or disinfect things that have touched infected animals.
- Make sure that newborn animals drink enough colostrums, this gives them some immunity to pox diseases from their mothers.
- Those people who milk infected animals should not milk healthy ones. It is best not to drink milk from infected animals.

Recommended treatment

There is no treatment for pox diseases but you can help animals to recover:

• If the sores are bad or deep put antibiotic or antiseptic on them. Be careful not to spread the disease further. Use wound dressings that dry

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Ring worms

Ringworm is a fungal, and not a worm, infection of the skin of all domestic animals (cattle, horses, mules, donkeys, pigs, and camels) and humans. It is caused by *Trichophyton* and *Microsporum* spp. The disease occurs worldwide. The infection is spread by direct contact. Spores of the fungi can survive for prolonged periods off the host, however, and infection can arise from contact with contaminated stalls, ropes, utensils, and etc. spores can also survive on animals without necessarily causing disease and such "carrier" animals are another source of infection.

Sings of Ring worms

Animals become sick of ringworm 7 - 28 days after they get infected. It becomes a problem in animals housed or kept in close proximity to each other. Zero grazed animals are at more risk. Care should therefore, be taken when handling animals as a high proportion of human cases are derived from animals. Sensible hygiene precautions should minimize this risk.

- Animals have a circular scab on the skin about 3 cm across. Scabs usually happen first around the nose, above the eyes, on the ears or under the tail. The skin under the dry scab is wet. Scabs soon join together and become thicker.
- After several days the scabs fall off. The skin underneath becomes dry and grey/white.
- Animals do not scratch much when they have ringworm. But they sometimes scratch a lot if bacteria infect the scabs.
- The scabs fall off after a few weeks and leave patches with no hair.
- Animals slowly recover even without treatment. The hair grows back in about three months.

Prevention and control

- Isolate and treat animals with ringworm.
- Use disinfectant to clean contaminated places and equipment before using them for healthy animals. Direct sunlight kills ringworm microbes.
- Vaccinating for ringworm is expensive. It is rarely worth using a vaccine. Animals that recover from ringworm do not usually get the disease again.

Recommended treatment

Animals usually recover from ringworm with no treatment but it may take

- 2 3 months. They recover sooner when it is dry and sunny. To help recovery:
 - Shave the hair around the place with ringworm. Burn the hair you have shaved off because it is infected.
 - Scrape the scabs off gently. Use soapy water and a brush.
 - Put antiseptic on the sore area. Animals treated like this can recover in 2 3 weeks.
 - Give griseofulvin by mouth or put it directly on the sore area. This medicine is expensive but animals treated with it start to recover in about ten days.

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Skin tumors

All domestic animals can get skin tumors. Humans are not affected by skin tumors from animals. Some viruses (papavovirus) may also cause skin tumors.

There are two types of skin tumors: benign and malign tumors. The types that spread are more often on younger animals. Animals get the type of tumor that can spread from direct contact with animals with skin tumors. They often get skin tumors after they mate with an infected animal. Infection with these types of tumor usually gets in to the body through small wounds. Some families of animals seem to get skin tumors more often than others.

Benign tumors © William Avako, Kari Naivasha

Signs of Skin tumors

- Hard lumps on the skin that are not hot are often tumors. These lumps usually grow slowly. Sometimes the skin over a tumor is injured and the lump has open sores on it.
- These skin tumors often appear 3 12 weeks after animals get infected.
- They often grow on the genitals and on the teats. These tumors do not harm but they sometimes interfere with milking. Sometimes they make mating difficult.
- Horses, mules and donkeys sometimes get skin tumors called sarcoids. They

grow at the base of the ear and low on the legs of horses. They do not spread through the body but they sometimes grow back after they are cut off. Horses often get small tumors around the nose and mouth. These usually disappear after 1 - 6 months with no treatment.

• Camels about a year get small skin tumors around the lips and nose. Older camels get tumors, especially on the teats. The tumors go away after a few months with no treatment.

Prevention - Control - Treatment

There is no known treatment for most tumors. Some tumors do not spread to other parts of the body (these are called benign tumors). Skilled workers sometimes remove these tumors. Some tumors spread to other parts of the body (these are called malign tumors). It is not worth operating to remove these because they come back in other parts of the body.

• Skilled workers can make vaccines for some skin tumors from the tumors themselves. They usually inject the vaccine into or under the skin and give other injection two weeks later. These vaccines often

work. Other medicines are not very effective.

- Some people cut or pull skin tumors off or tie a thread around the base of the tumor. These treatments do not work well. They can cause more tumors to grow.
- If a tumor has open sores on it, treat it with an antibiotic to stop infection. Use antibiotic powder or wound dressing.
- Note: many tumors fall off after 3 18 months with no treatment.

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Worm nodules disease

Worm nodules disease is an infection of the skin of cattle, equids and camels with small slender *Onchocerca* worms. The disease occurs worldwide, but is mainly common in the tropics and sub-tropics. In livestock infections are rarely a problem but it may be necessary to differentiate them from other more serious skin diseases such as mange and skin tuberculosis. The lesions on the skin contain microscopic larvae of worms called microfilariae. Midges and small biting black flies ingest the microfilariae, which develop to infectious larvae in the flies, which pass the infection to another host when feeding. The infectious larvae migrate to the predilection sites where nodules develop and adult females

produce microfilariae.

Signs of Worm nodules disease

Clinical signs are minimal, consisting of nodules up to 3 cm in diameter under the skin and internally. In cattle skin nodules are found in the brisket, lower limbs and ligaments of the neck whereas in horses they are found in the ligaments of the neck and lower limbs.

Other symptoms are;

- Animals have small lumps (called nodules) just under the skin. The lumps are full of worms and worm larvae.
- Cattle usually have lumps on the legs, around the genitals, on the neck and between the front legs.

Skilled workers can check a piece from one of the lumps for these worms with a microscope.

Diagnosis

The microfilariae can be readily demonstrated in biopsies of nodules examined under the microscope.

Prevention - Control - Treatment

- Ivermectin works well, other medicines are less effective.
- Control of the vectors is usually impracticable.

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Foot rot **Bloat**

Animals often live where there are poisonous plants available. They usually do not eat enough of them to get poisoned; they seem to avoid the poisonous plants. When animals go to a strange pasture they need to "learn" to avoid the poisonous plants there.

 To let animals "learn" about a strange pasture without being poisoned, only put them on the new pasture for a short time each day. Than gradually increase the time they spend on it.

After very dry times, fires or when the pastures have been overgrazed, often the only plants that survive are poisonous plants with deep roots. The animals have than no other choice but to eat these plants which they normally avoid and they get poisoned.

• To avoid this, take extra forage to the animals if you can, while the pasture recovers.

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Some common poisonous plants

Lantana

There are various species of this plant which have poisonous effects to different species of livestock, the most common among them being the Lantana camara. It is a shrub with coarse. branched stems having small curved prickles, rough toothed leaves and flower heads of various colors which range from red, yellow and white. It is common in most tropical countries where it has been wide used as ornamental plant in gardens. It flourishes in grasslands and is not palatable to



Lantana plant © William Ayako, Kari Naivasha



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Lantana plant © William Ayako, Kari Naivasha

livestock. However it is sometimes ingested accidentally. Signs of poisoning Affected animals will show:

- Severe jaundice and photosensitization in the form of severe dermatitis on the light colored areas of the skin.
- Death from hemorrhagic gastroenteritis may occur if animals consume it in large quantities.

Castor oil plant

This is a blood poisoning plant occurring in most tropical areas. It is also called palma Christi. The shrub grows up to 3 meters high and has large palmate 3 or 5 pointed leaves. It has small yellowish flower and the seeds resembling engorged ticks with various markings on them.

The seeds which are toxic if not treated are eaten by some tribes in Africa after special treatment i.e. soaking and boiling. Castor boil as them suggests is removed by pressing the seeds and the remaining cake is rich in ricin (a toxalbumen) which is the toxic principle. The cake sometimes gets mixed in animal feeds by accident thereby causing poisoning.



Signs of poisoning

There is profuse watery diarrhea in all affected animals and cattle may die in convulsions

Tribulus

It is a prostrate vine with yellow flowers having small spine fruits and burrs. It occurs through out the tropics mainly Australia, Asia, South America and Africa. It favors bush paths and is troublesome to pedestrians due to the fruits and burrs.

Signs of poisoning

Photosentisation, animals refuse to eat and drink, fever, edema of the limbs, blindness, jaundice, a purulent dermatitis and in the advanced stages asphyxiation and death. In South Africa it causes a condition called geeldikop (yellow thick head) with photosensitization. In West Africa it appears most toxic during the humid season especially at the beginning of rains.

Oleander

Other names: Nerium oleander, Nerium Indicum, Ceylon rose, lovers' poisoin

This is a common shrub which grows up to 4 meters high and occurs throughout the tropics. It has numerous long stems growing from a common root. It has red compound flowers, and the leaves are dark green and are highly toxic.

Signs of poisoning

Vomiting, convulsions, diarrhea, colic and acute gastro enteritis

The solanines

These are a group of the solanaceae family all likely to contain alkaloid which is toxic if taken in sufficient quantities. Members of the solanaceae family include: thorn apples, *Datura* species, *Solanum* species including the potato *Solanum tuberosum*, *Solanum torvum*, *Solanum Incanum* and *Solanum nigrum* (dealy night shade) among others.

Signs of poisoning

Dullness, depression, increased pulse rate and respiration, nervousness, muscular tremors often followed by paralysis, drop in temperature, slowed pulse and respiration, relaxation of the sphincters, recumbency and death.



Datura plant
© William Ayako,
Kari Naiyasha

The mimosine group

A number of legumes such as *Leucaena leucocephala* are known to contain a toxic

substance called mimosine which when eaten in large quantities may cause hair loss and may also affect the normal reproductive behavior.



Naivasha

Mexican poppy-Argemone mexicana

This plant is widespread in the tropics and is known to be rich in toxic alkaloids. The seeds are particularly toxic and when mixed in grains and fed to animals will cause mortality. During drought, animals especially may feed on the plant and get poisoned.

Signs of poisoning

In all animals, there is intense capillary dilation leading to loss of fluid from the body tissues.

Milk weeds-Asclepias species

These plants are widespread in tropics and sub-tropical countries. Most species of the plant have large pods filled with floss. There toxic principle is a mixture of glycosides. When ingested by animals, they suffer gastro enteritis and heart conditions.

Signs of poisoning

Weakness, paraplegia, labored breathing, convulsions and death normally arising from respiratory failure.

Selenium accumulators or converters

These groups of plants are capable of taking up inorganic selenium and converting it into organic selenium thus making them available to other plants which are toxic when ingested by animals. They are of various genera some of them being: *Astragalus, Neptunia, Oonopsis, Xylorrhiza*, and *Stanleya* They thrive on soils that are rich in selenium and therefore are called selenium indicators.

Signs of poisoning

• In chronic selenosis they animals are dull, listless, lack appetite, emaciated and have rough coat.

• In acute form, they animals grind their teeth, salivate, show abdominal pain, some degree of paralysis and become bind condition called blind staggers.

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General diagnosis of plant poisoning

- Careful examination of the whole of the contents of the alimentary canal to see if any parts of the plant can be seen may be indicative.
- Evidence of acute gastro enteritis coupled with parts of known poison plant can be conclusive.
- Death of animals recently introduced into an area where known poison plants exist can be considered as suspicious.
- Sporadic death at a particular time of the season in successive years when suspected poison plants are in bloom may arouse suspicion.
- Inspection of grazing areas will often show that poison plants have been grazed.
- In places where a good diagnostic laboratory is available, specimens from the alimentary tract of dead animals can be taken fore analysis.

Prevention - Control - Treatment

Prevention and control of plant poisoning

This involves removing the animals from the plants or the plants from the animals.

- In areas where animal husbandry is settled, the poison plants can be physically removed from the pastures.
- Do not graze animals where you know there are poisonous plants
- Feed animals well and healthy. They are much less likely to eat poisonous plants or scavenge for food and eat poisonous by mistake
- In pastoral and nomadic areas, rerouting of the animals away from the routes with known poison plants is a good control method.

Recommended treatment

Treatment of plant poisoning is never straight forward and is often symptomatic.

- Where toxins is a depressant, stimulants may be used and vice versa.
- Timely administration of purgatives is good in removing the poison from the alimentary canal and when treatment is delayed, it is better to

treat symptomatically with sedatives and pain relieving drugs.

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Checking temperature using a thermometer

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Ruptured oral vesicle in a cow with foot and mouth disease

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Coronary band vesicles on the feet of a pig with foot and mouth disease.

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Bacillus anthracis[/] bacteria using Gram-stain technique

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Mycobacterium tuberculosis[/]

Milk fever **Mastitis**

Diarrhea

Janice Carr

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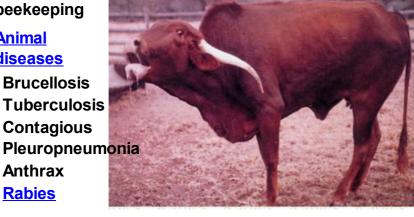
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> **Brucellosis Tuberculosis Contagious**

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University, Egypt.

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Dog with rabies

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Application of aerosol spray to cure fot rot

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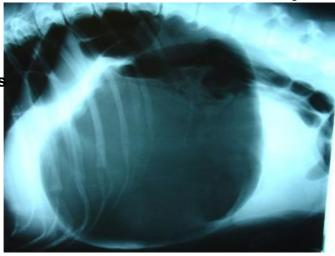
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Mild case of milk fever, the head remains in normal position.

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A cow with mastitis undergoing treatment

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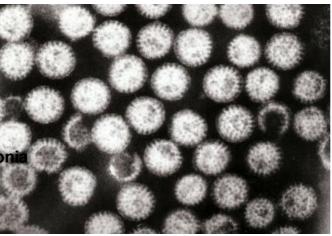
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Transmission electron micrograph of multiple rotavirus particles. Each one is about 70 nanometers in meter

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Tongue lesions on confirmed mucosal disease form

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Adult of Fasciola hepatica.

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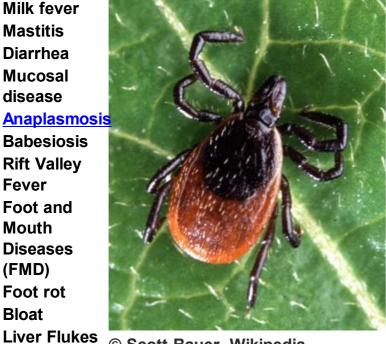
Milk fever **Mastitis** Diarrhea Mucosal disease

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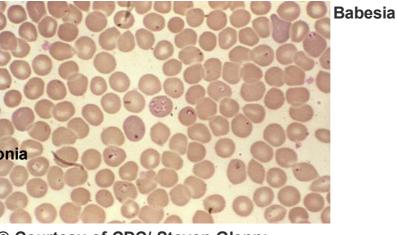
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