

INFECTIOUS DISEASES OF GOATS

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DISCLAIMER

The purpose of this presentation is to inform producers about some of the diseases they may encounter and is not meant to diagnose or impart treatment information. Please consult a veterinarian if you suspect any of the conditions seen in this presentation.



SIGNS OF ILLNESS

- ◉ Change in eating habits
- ◉ Not ruminating
- ◉ Lameness/difficulty walking
- ◉ Grinding teeth
- ◉ Change in breathing
- ◉ Coughing, runny nose, runny eyes
- ◉ Diarrhea/abnormal feces
- ◉ Roughened coat
- ◉ Separating from herd
- ◉ Evidence of “colic”

INFECTIOUS VS. COMMUNICABLE VS. CONTAGIOUS

INFECTIOUS

- Disease transmitted from one individual to another.
- Living organisms that enter the hosts.
- Most infectious disease are contagious and can be transmitted from one source to another by infectious bacteria or viral organisms.

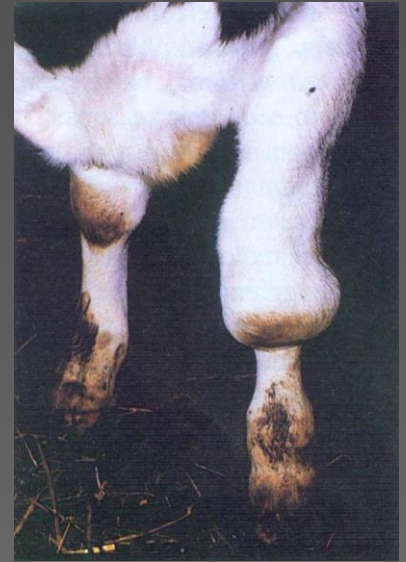
COMMUNICABLE

- Diseases transmitted from one individual to another.
- An example of a noncommunicable, infectious disease is a disease caused by toxins produced by the organisms, e.g., food poisoning (*Clostridium botulinum*) or tetanus (*C. tetani*).
- Some noninfectious diseases are communicable (e.g., chemical contamination passed to offspring while nursing).

CONTAGIOUS

- Spread from one individual to another in several ways:
 - > Direct
 - > Aerial
 - > Indirect
 - Mechanical
 - Vector
- Malaria is contagious but not communicable.

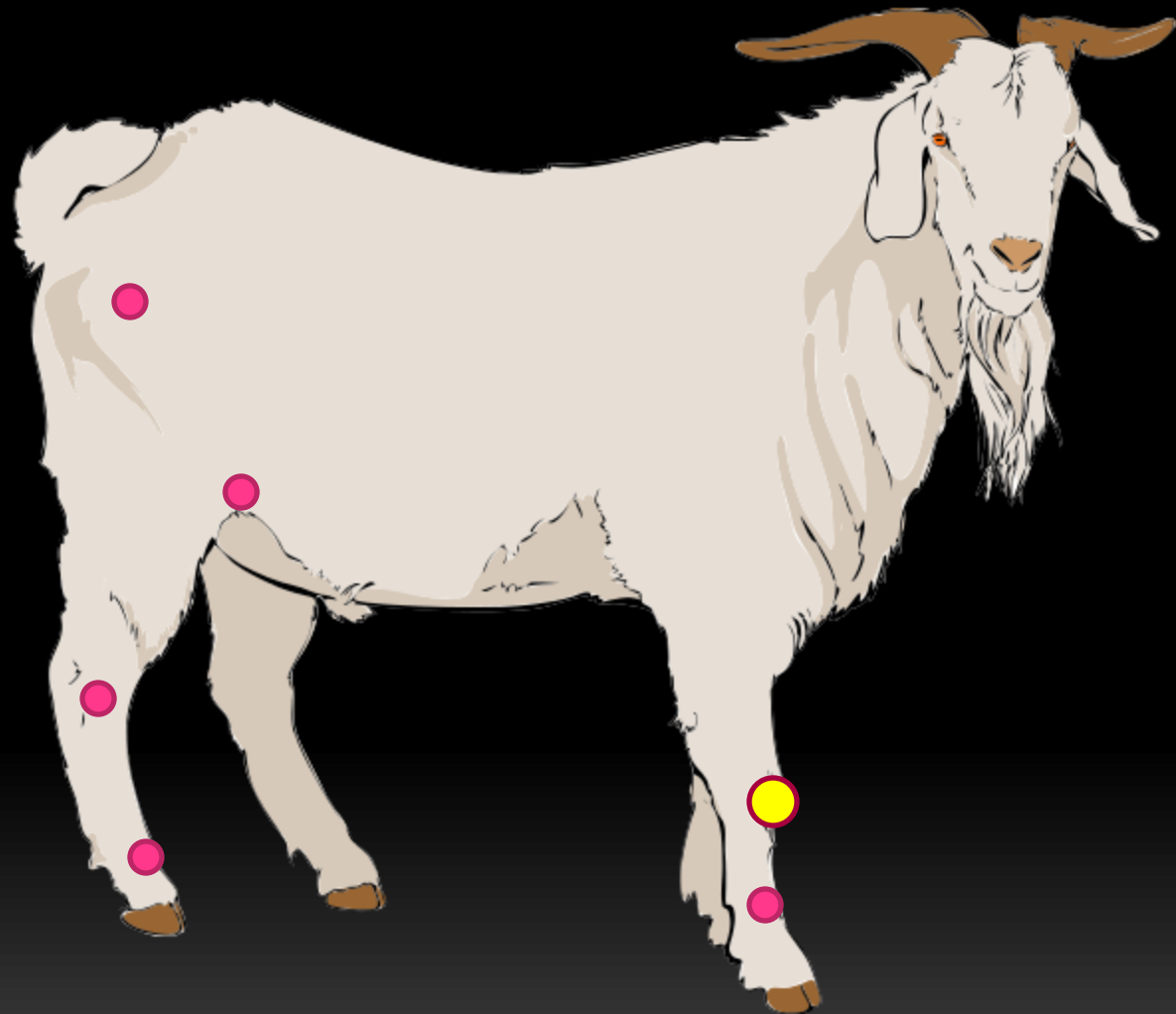
CAPRINE ARTHRITIS ENCEPHALITIS



- ◉ A viral disease for which there is no vaccine or treatment.
In dairy goats, seroprevalence of the virus in the U.S. may be as high as 65%.
- ◉ The primary route of the virus is the colostrum or milk. Some research has shown transmission via direct contact, milking machines or other equipment, and contaminated hands. It is also transmitted via saliva or nasal secretions from does to kids early in life.
A blood test can diagnose the condition. (Recommend testing new goats every six months until the herd is clean because there may be a delay in antibodies showing in the blood).
- ◉ Differential diagnosis: Traumatic arthritis (noninfectious), *Mycoplasma* arthritis, Polioencephalomalacia (noninfectious), Listeriosis, Rabies.

CLINICAL SIGNS

- ◉ There is a high percentage of animals asymptomatic during their lifetime.
- ◉ Young kids (≤ 5 months) develop weakness in the hind legs, stumble, and finally lay down; otherwise, they appear normal. The rear legs atrophy, the affected kid is unable to nurse and soon dies from malnutrition.
 - > Circling
 - > Head twitch and tilt
 - > Muscle tremors
 - > Head pressing
- ◉ Arthritis is generally seen in older goats ($\geq 1-2$ years). The condition is presented as swollen leg joints (stifle, hock) that are painful and warm, inability to walk, cartilage erosion, and inflammation of the synovial joint. Animals will eventually be unable to walk or will walk on their knees.
- ◉ Difficulty breathing (pneumonia) may be a sign in both mature goats and kids.
- ◉ Mastitis in older animals presents as a “hard udder.”
Udder firm and swollen (deposition of extra connective tissue as part of the immune response).



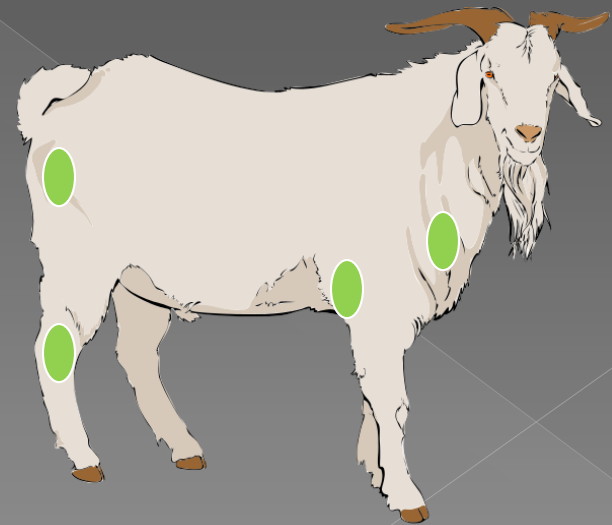
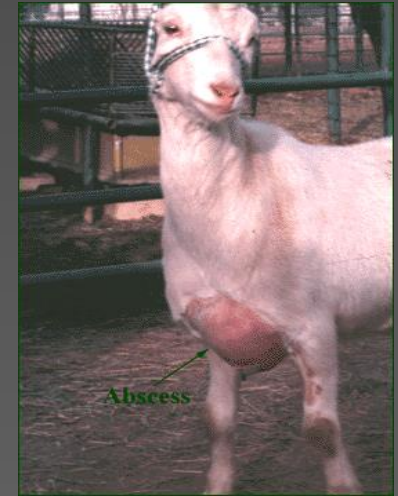
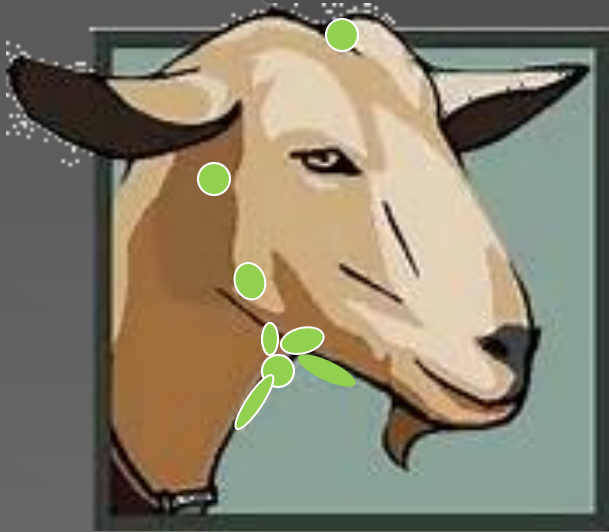
Slow, progressive, thickening in and around the joint. The carpus is the most common location.



PREVENTION

- Prevent kids from nursing infected does.
Heat colostrum and milk (45°C for 60 minutes)
- Biosecurity
 - Test and cull
 - Milk negative does before positive
 - Milk young does before older does
 - Don't share needles
 - Clean tattoo equipment, shears, and dehorers
 - Avoid feeding pooled colostrum or milk
 - Separate seropositive and seronegative animals by a minimum of six feet

CASEOUS LYMPHADENITIS

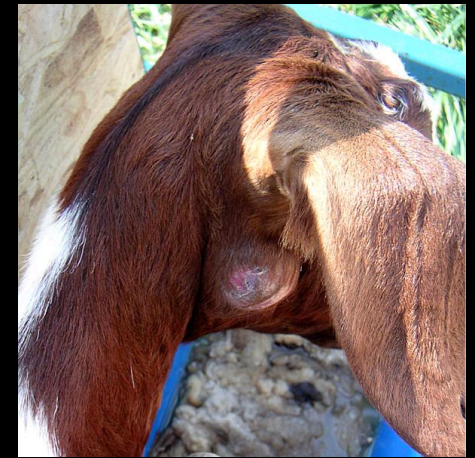


- ⊙ Chronic, contagious disease caused by *Corynebacterium pseudotuberculosis*.
 - > Can survive in harsh conditions.
 - > Lack of biosecurity and preventative measures.
 - > Occurs occasionally in horses, cattle, swine, fowl, and people.
- ⊙ External (goats) and internal (sheep – “thin ewe syndrome”) forms.
- ⊙ Once established on a farm, it can become endemic by contamination of the environment through draining lesions, nasal discharge, or coughing.
- ⊙ Once drainage occurs, the lesion heals with scarring. Lesions can reoccur.
 - Incidence increases with age.
- ⊙ Chronic weight loss may be the only sign of the internal form.

◉ Diagnosis: Bacterial culture

Differential diagnosis: Localized, subcutaneous abscess unrelated to CL, tuberculosis, ovine pulmonary adenocarcinoma (OPA), poor nutrition, and bruising.





Abscesses can be seen internally and in places other than the jawline.



Caseous lymphadenitis abscesses



PREVENTION

- ⦿ Not a “curable disease”.
Center on cleaning the herd.
- ⦿ Lancing, draining, or excision of abscess.
 - > Flush with iodine solution.
 - > Isolate
- ⦿ Dispose of all organic matter.
- ⦿ Divide herd into “clean” and “infected”.

MANAGEMENT PRACTICES

- ⦿ Avoid giving injections in the shoulder.
- ⦿ Use clean needles for each animal.
- ⦿ Disinfect equipment between animals.
- ⦿ Cull persistent CL animals.
- ⦿ Always check animals before purchasing.
- ⦿ Know the herd's history.

◎ Vaccination

- > A vaccine is available and should be considered if your previously described eradication methods have failed; however, its effectiveness is suspect for already infected animals.

Colorado Serum Company is marketing Caseous-DT, an immunoprophylactic product composed of formalin-killed organisms and toxoid culture supernatant fluid. It also contains toxoids for *Clostridium perfringens* type D and tetanus toxin, which have an efficiency of 70-80% in preventing the clinical manifestations of the disease.

- This is not recommended in herds with no history.
- This product interferes with serologic testing for CL.

FOOT ROT



- Infectious pododermatitis is caused by bacteria that live in the soil and easily carried onto a farm on the feet of infected animals or on shoe soles.
- Foot rot is linked to two bacteria, *Dichelobacter (Fusiformis) nodosus* and *Fusobacterium necrophorum*, which grow well in moist soil and is difficult to control or eliminate once the soil is contaminated and sheep and goats are kept on the property.
- Foot rot usually infects one foot by inflammation between the toes.
 - Lameness is the first sign.
 - The foot's sole and sidewall appear rotten and has a bad odor.



Normal hoof



1



2



3a



3a



3c



4



5

Occurs when both bacteria cause a dual infection of the tissues of the foot. The foot will become very pink to red; the skin between the toes will be slimy and foul smelling. A moist, raw infection of the skin between the toes becomes painful. Foot rot can occur in one or more feet causing severe lameness. Animals can be seen grazing on their knees.

PREVENTION

- ◉ Do not purchase lame animals.
 - Thoroughly inspect feet before purchase.
 - Observe the flock of origin for lameness in other animals.
- ◉ Quarantine all herd additions for at least 30 days.
Practice good biosecurity.
- ◉ All show animals or animals that have left the farm and possibly have been exposed to contaminated soil should be quarantined.
- ◉ Avoid buying animals from sale barns, where most animals with failed treatment are taken.

- Provide good drainage to all areas in pastures and paddocks where water tends to pool, or fence these areas off. This is where the bacteria often collect.
- Keep barns dry and clean. Practice good manure and pasture management.
- Use gutters and drainage systems to prevent development of muddy areas around housing structures.
- Practice good hoof care and management. Check the feet each time the herd is worked.
 - > Remove dead, rotten foot tissue with shears or knife and clean the shears or knife between animals. Trim down to healthy tissue.
 - > Spray with 10% formalin or use a footbath of formalin or drying agents such as copper sulfate (toxic to animals if ingested), or 10 % zinc sulphate.
 - > While there is a vaccine for cattle and sheep, there is no vaccine for goats.

JOHNE'S DISEASE

- Called the “Wasting disease” or “Paratuberculosis”.
Caused by the bacteria *Mycobacterium paratuberculosis (johne)*.
- Johne's Disease is spread through feed contamination with the organism.
- Animals may get the organism when very young through fecal contamination from an infected mother or udder.
- Signs generally begin when goats are 2-5 years of age and can be triggered by stress.
- Johne's Disease is diagnosed by culturing feces (six or more pellets) and can be cross-infected with cattle.
- Differential diagnosis: Poor flock nutrition, chronic parasitism due to poor management, parasitism due to anthelmintic-resistant strains, poor dentition, chronic pneumonia, mastitis, or chronic severe lameness.

CLINICAL SIGNS

- ⦿ Weight loss, emaciation, anemia, and hypoproteinemia. Watery diarrhea is rarely seen, and may be due concurrent parasitism.
- ⦿ At the terminal stages, animals are too weak to stand.
- ⦿ Kids born have low birth weights.



Johne's in a goat and sheep showing signs of emaciation and poor wool. Diarrhea may be found in animals that also have parasitic infections.

PREVENTION

- ◎ Good sanitation and management practices aimed at limiting young animal exposure.
 - > Birth in areas free of manure.
 - > Bottle-fed, pasteurized colostrum or obtained from negative does.
 - > Rear young away from adults and their manure until > one year of age, if possible.
 - > Use milk replacer or pasteurized milk.
- ◎ Test adults annually until herd is clean.
- ◎ Avoid stress, heat, overcrowding, handling, transportation, and inclement weather.

LISTERIOSIS

- ⊙ Caused by the bacteria *Listeria monocytogenes*.
 - > More common in cooler climates and in winter or early spring.
 - > Found in soil, silage, manure, milk, and urine.
 - > All ages affected but it's most common in animals < three years of age.
 - > Inactivated via pasteurization.
- ⊙ Nervous or encephalitic form.
 - > Most often in older animals.
 - > Rapid course with death in 4-48 hours after signs.
- ⊙ Transmission via fecal/oral route.

Transmission to humans through direct contact or via aborted material, milk, cheese, meat, and eggs.
- ⊙ Differential diagnosis: Pregnancy toxemia, rabies, CAE, poisoning, Polioencephalomalacia.

CLINICAL SIGNS

◉ Nervous (encephalitic) form

- > Circling, stargazing
- > High fever
- > Depression and anorexia
- > Red conjunctiva
- > Paralysis on one side of the face (drooping ear and eyelid, and saliva running from the lips)
- > Convulsions (in encephalitic form), depression
- > Leaning against objects, propelling into corners, fences, or under gates

◉ Abortion form

- > Abortion (at any stage of pregnancy), uterine infection
- > Stillbirth

◉ Septicemic form

- > Diarrhea
- > Death due to bacteremia



Photo Dr. Maria Browning



Photo Dr. Phillip Scott



Photo Dr. Phillip Scott



Photo National Animal Disease Information Service (NADIS)

Goat in convulsions.

Drooping ear, deviated muzzle, flaccid lip, profuse salivation.

Sheep propelled into a corner.





PREVENTION AND CONTROL

- ⦿ Avoid feeding spoiled silage
- ⦿ Isolate sick animals
- ⦿ Practice biosecurity



Photo Dr. Thomas Lane

Paralysis on left side

MASTITIS

- Often associated with poor hygiene practices that may bruise the mammary tissue or abrasions from nursing.
- Can be caused by skin wounds.
- Several bacteria can cause the condition:
 - > *Staphylococcus aureus* – persistent infection
 - > *Streptococcus* – subclinical and clinical
 - > *S. dysgalactia*, *S. caprae*
 - > *Mycoplasma mycoides* and *M. putrefaciens* – Contagious agalactia
 - > Yeast infection
 - > *E. coli*
- Young animals can be infected while nursing.
- Can occur via a milker's hands or by milking machines.

CLINICAL SIGNS

- ⊙ A hot, painful, or swollen udder.
- ⊙ Depression, anorexia.
- ⊙ A color change in the milk, or the milk may contain flecks, blood, or be thick or watery.
Chronic - agalactia
- ⊙ A color change in the udder from slightly pink to bright red.
A black, cold udder is indicative of a gangrenous mastitis, which can lead to loss of the udder (after the tissue dies) and the death of the animal.
- ⊙ With a subclinical mastitis, there may be no signs, but milk production can drop at least 25%.



Gangrenous mastitis, hard bag, severe inflammation.

PREVENTION

- ⦿ Proper milking procedures
- ⦿ Proper sanitation
 - Regular cleaning and changing bedding
 - Clean and dry udders
- ⦿ Reduce heat stress
- ⦿ Prevent teat trauma
- ⦿ Cull chronically infected animals

ENTEROTOXEMIA

- ⦿ Also known as overeating or pulpy kidney disease.
- ⦿ Caused by the bacteria *Clostridium perfringens* types C & D.
 - It's found in the soil.
 - It's part of the normal gastrointestinal microflora.
 - Under stress or other conditions, the bacteria multiplies and produces toxins which enter the bloodstream and promotes swelling of the lungs and kidneys.
- ⦿ Young animals are most susceptible; older animals may develop immunity due to exposure.

CLINICAL SIGNS

- Peracute

Sudden death (within 12 hours after initial signs)

- Excitement
- Convulsions

- Off feed

Abdominal discomfort (arching back, kicking belly)

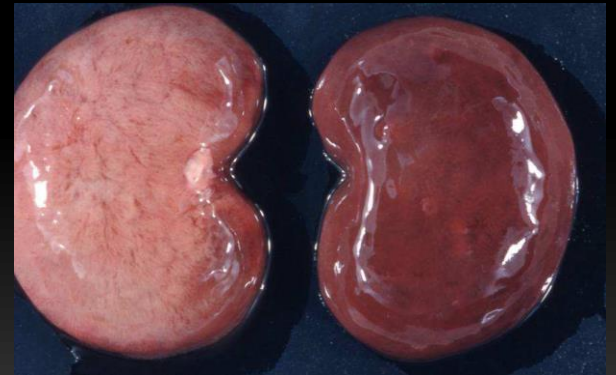
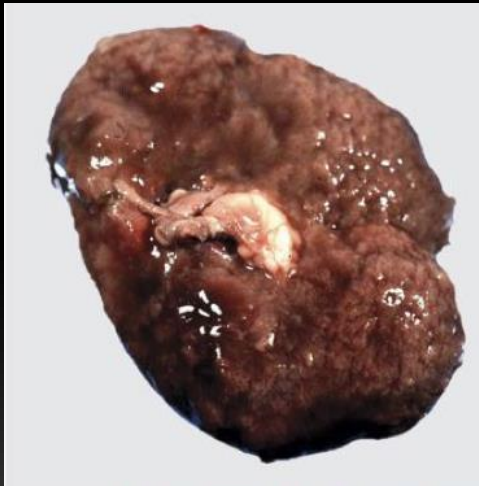
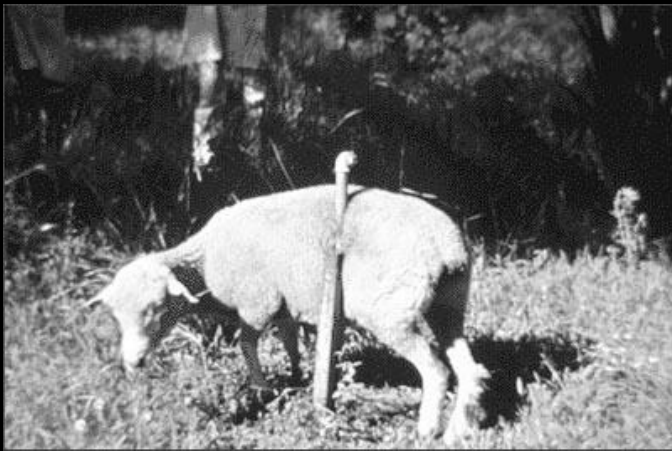
- Sluggishness and watery (with or without blood) diarrhea

- Staggering, convulsions

- **Treatment:** Give a Clostridium antitoxin

- > Supportive therapy (antacid, anti-bloat medication, probiotics, replace fluids, reduce pain)
- > Antibiotic





Animals showing signs of disease (staggering, stargazing, recumbancy), mushy kidneys.



⦿ **Predisposing conditions:**

- Consuming too much milk or grain.
- Natural immunity compromised due to other illness or stress.
Heavy parasite load
- Diet rich in grain but low in fiber.
- Any disease that decreases gut motility.

⦿ **Differential diagnosis:** Listeriosis, Salmonellosis, and intestinal torsion

⦿ **Prevention:**

- Vaccinate ewes in the fourth month of pregnancy.
- Vaccinate pregnant animals at 2-6 weeks of age and follow up 30 days later.
- Vaccinate bucks and female adults once each year.

INFECTIOUS KERATOCONJUNCTIVITIS

- ⦿ Also called “Pinkeye,” it is an inflammation of the eye.
- ⦿ Can be caused by bacterial or viral agents (*Mycoplasma*, *Listeria*). It spreads quickly throughout the herd and can lead to blindness (anterior uveitis).
- ⦿ In some case, the signs resolve themselves without any treatment.
- ⦿ **Differential diagnosis:** Foreign body irritation, parasites (e.g., Eyeworms), entropion, or ocular changes due to another disease.

CLINICAL SIGNS

- ⊙ Affects animals of any age but young animals more frequently.
- ⊙ Affects one or both eyes.
 - > Conjunctivitis
 - > Photophobia
 - > Blepharospasm (involuntary closure of eyelids)
 - > Ocular discharge
- ⊙ Anorexia
- ⊙ Can last for a few days to several weeks.
- ⊙ Prevention
 - > Good management practices to reduce spread.
 - > Avoid using tools between animals without cleaning first and work on sick animals last.



Blepharospasm



Tearing



Conjunctivitis



Tearing and conjunctivitis



Corneal opacity



Signs of Pinkeye

Q FEVER

- ◉ Also known as Query or Queensland fever.
- ◉ An acute or chronic disease caused by the bacteria *Coxiella burnetii*.
 - The organism may persist in the environment for a long time.
- ◉ Transmission is through contact with bodily fluids or secretions from infected animals (ingestion, fomites, aerosol, or vectors).
 - Infected animals shed the organism without signs
 - Bacteria can be aerosolized and spread in dust
- ◉ Diagnosis is by serology and testing aborted fetuses and the placenta.



Goat placenta - the intercotyledonary placenta is thickened, opaque, and multifocally covered by tan clumps of exudate. Margins of several cotyledons are tan (necrosis), and centers are mottled red-brown (congestion and exudation).

CLINICAL SIGNS

GOATS

- ◉ No signs in most animals.
The organism is shed in birth fluids, milk, and feces.
- ◉ Late-term abortion.
- ◉ Stillbirths
- ◉ Differential diagnosis.
Infectious and noninfectious causes of abortion.

HUMANS

- ◉ Fever
- ◉ Chills
- ◉ Night sweats
- ◉ Headache
- ◉ Fatigue
- ◉ Chest pains
- ◉ Pneumonia, heart and liver disease (rare)
- ◉ Pregnant women
 - > Premature delivery
 - > Abortion
 - > Infection of placenta
- ◉ Responsive to antibiotics

PREVENTION

- ◎ Biosecurity is the best way to prevent spread.
 - > Proper sanitation – good hygiene, especially when working with parturient animals.
 - > Segregated kidding areas.
 - > Removal of risk material from birthing areas (birthing products/fluids/contaminated bedding/manure).
 - > Good manure management.
 - > Control of ticks on livestock.
 - > Restriction of moving peri-parturient animals (close to birthing or giving birth within the past two weeks) off the farm.

SORE MOUTH

- Highly contagious, infectious dermatitis. Also known as Contagious ecthyma, Orf, Scabby mouth, or Contagious pustular dermatitis.
- Caused by the Parapox virus.
- Animals that recover develop an immunity.
- Differential diagnosis: Bluetongue, Pox, Peste des Petits ruminants, or mange.
- Softening ointment on the lesions may help but treatment is usually ineffective. Antibiotics can be effective in treating secondary infections.



CLINICAL SIGNS

- ◉ Lesions begin as small bumps that progress into blisters and pustules before they burst and scab.
- ◉ Seen on the gums and lips but may also be on the hairless areas of the udders or the feet (between the toes).
- ◉ Udder lesions are painful and may lead to a mastitis; the doe may not allow the kid to nurse.
- ◉ Kids may show lesions on the rear legs. The disease lasts 1-4 weeks.



MG_6906Optimized.JPG



Vesicles, pustules, and scabby lesions on mouth and teats



PREVENTION

- ◎ There is a vaccine but it is most advisable to use in an open herd.
 - > Use the vaccine according to the product label directions and after consultation with a veterinarian or animal health expert .
 - > Live virus vaccine so vaccinating a clean herd will introduce the disease to the herd.
 - > Scabs appearing at the vaccination site in 1-3 days indicate that the vaccine is “taking”.

- For goats that are shown regularly, vaccination prevents the occurrence of an outbreak during the show season.
 - ✓ Vaccinate animals at least six weeks before the show season so that vaccine scabs will have disappeared before the first show.
 - ✓ Following vaccination, at least two to three weeks are necessary for adequate immunity to take place .
- Animals are vaccinated in a hairless, protected area. Sites for vaccination include the inside of the ear, the underside of the tail, and other areas.

HUMAN INFECTION

- ◉ Transmitted when bottle feeding, shearing, petting, handling infected equipment, or by a bite wound.
- ◉ Ulcerative lesions on hands are the most common sign.
- ◉ It is not transmitted from person to person.
- ◉ There is no immunity after infection.
Subsequent infections are less severe and heal faster
- ◉ Supportive care is the best treatment.
- ◉ Differential diagnosis: Anthrax.



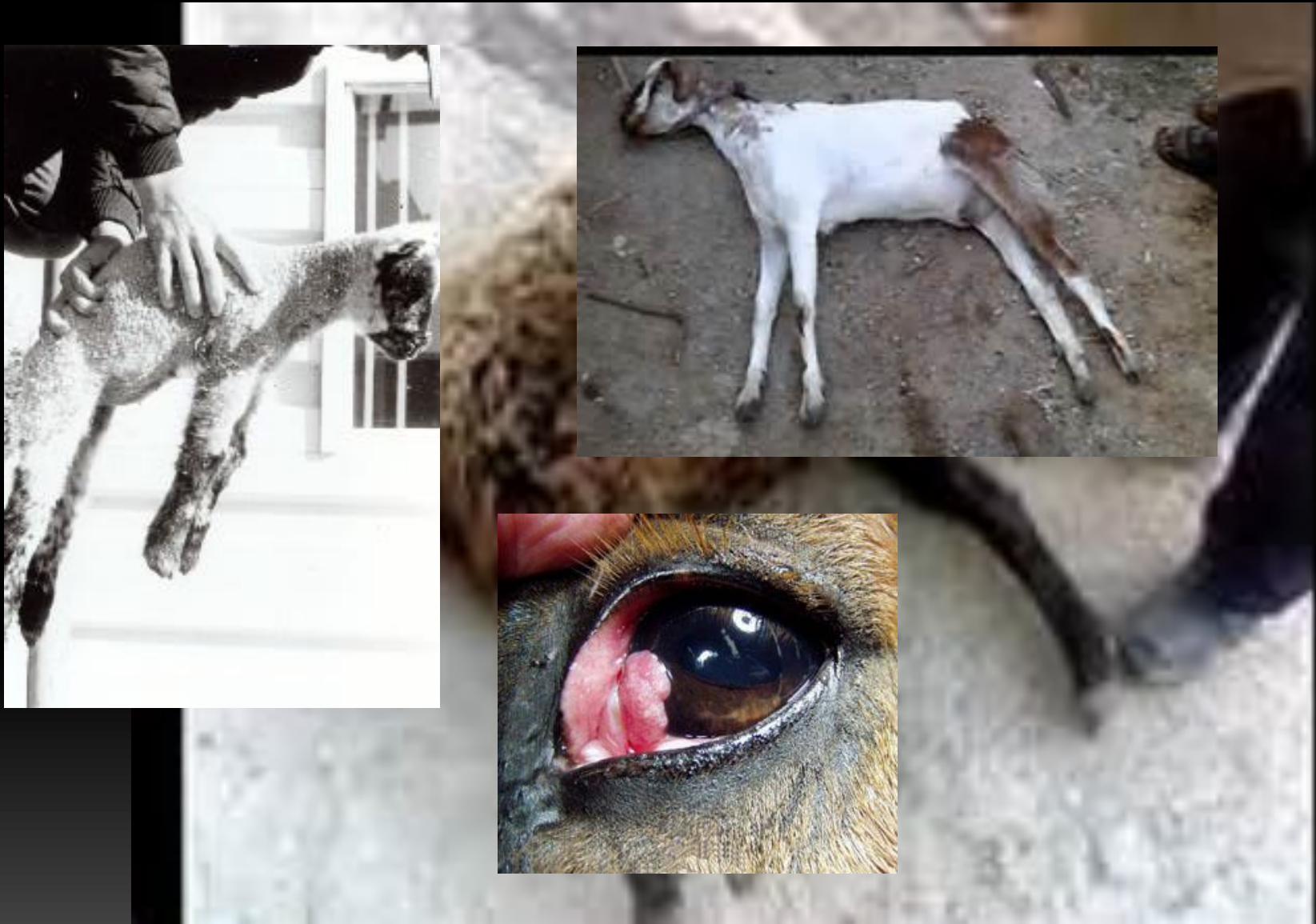
Lesions on hands and fingers

TETANUS

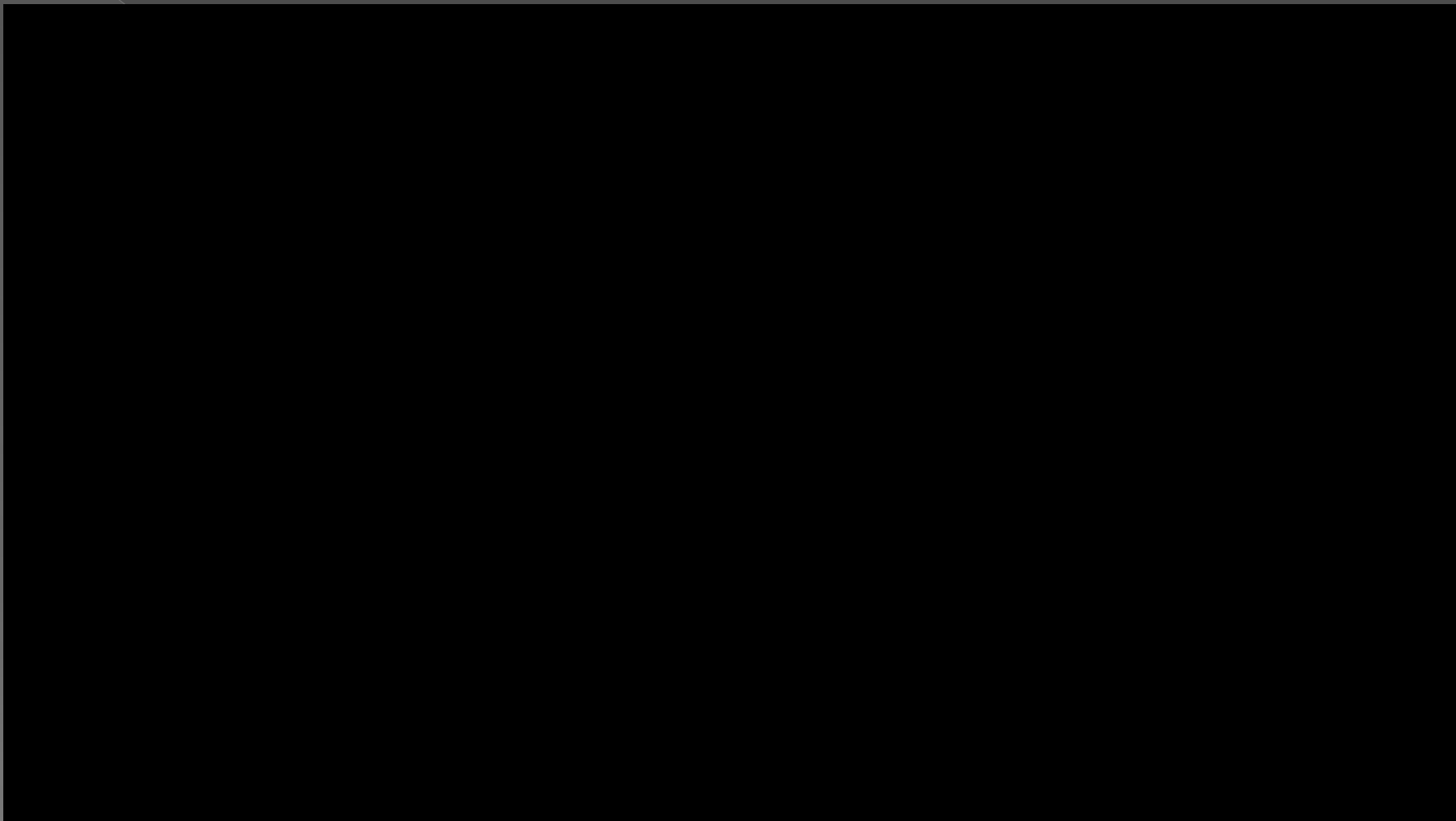
- ◉ Common name is “lockjaw” because of its affect on the muscles of the mouth.
- ◉ Caused by a *Clostridium tetani*.
 - > Found in the soil and the intestinal tract.
 - > Introduced through wounds.
 - > Caused by a production of toxin.
- ◉ Diagnosis is by clinical signs, history, and presence of the toxin in the serum.
- ◉ Differential diagnosis: Rabies, Polioencephalomalacia, or Scrapie.
- ◉ Administer antitoxin, tranquilizers, sedatives, or high doses of antibiotics.
 - Vaccinate to prevent the occurrence of tetanus.

CLINICAL SIGNS

- Stiffness of the muscles of the jaw, neck, tail, and ears, hind limbs and in the region of the infected wound.
- 24-48 hours later, the animal is totally stiff with spasms and abnormal sensitivity to stimuli.
 - > Spasms of the muscles of the neck causing backward arching of the head, neck, and spine.
 - > High pulse rate.
 - > Seizures.
 - > Saliva drooling from mouth.
 - > Third eyelid prolapse.
- A wobbly, “sawhorse” stance, the neck and head are extended, and the tail is erect.
- Death is actually due to asphyxiation because of paralysis of the respiratory system.



Sawhorse stance, third eye prolapsed



WARTS

- ⊙ Caused by a Papillomavirus.
 - > Affects all ages.
 - > Highly contagious.
 - > Older animals usually exhibit a single wart.
- ⊙ A frequent problem in white goats .
- ⊙ The lesions are visible as flat and scaly or “horn-like” in appearance.
 - > Lesions are found on the udder, muzzle, lips, or eyelid. Infection leads to immunity.
 - > Warts can be cut off, burned off, frozen, or they can be treated with salicylic acid and acetic acid ointments.

TREATMENT AND PREVENTION

- ⊙ Can be removed surgically.
 - > If surgery is done too early, the surgery can stimulate an increased number or more growth.
 - > Surgery must be done on mature or regressing lesions.
- ⊙ A cattle vaccine can be given after infection.

The vaccine can be given to animals as young as four weeks of age and then annually.
- ⊙ Isolate infected animals.

A long incubation period means that some animals may have been exposed before the lesions appeared.



Wart lesions

REPORTABLE DISEASES



ANTHRAX



- Caused by the *Bacillus anthracis*. It can kill an animal in 2-6 hours or take up to 48 hours after symptoms appear. There is the skin form (malignant carbuncle or pustule), the pneumonic form (from inhaling spores), and the intestinal form (from eating infected meat) in humans.
- Clinical signs: High fever (107°F), depression, dark, red-purple lining of the mouth and eyes, bloody diarrhea, rapid breathing (shallow), and a rapid and weak heartbeat. The milk or urine is blood-tinged, the tongue, throat, flanks, and area around the anus and vulva are swollen. If the animal dies, blood will seep from body openings and there will be a lack of stiffness to the carcass.

- After symptoms appear, treatment is useless. Vaccination after an outbreak is the only way to stop the spread. Treatment with penicillin or tetracycline before symptoms appear (for five days) may help.
- If this is prevalent in your area, consider vaccination, consult your veterinarian, and contact state health officials to determine the best method of disposing of carcasses.
- **NEVER OPEN A CARCASS IF YOU SUSPECT ANTHRAX.**



BRUCELLOSIS

- Some classify this as a STD. The symptoms can be unapparent (less than 50% show signs)(mastitis, lameness, slightly loose stool), or there can be an abortion in the final stages of pregnancy (4-6 weeks before kidding). The male may have swollen joints or testicles. If symptoms not apparent look for a high number of open ewes or premature and weak lambs.
- Doe might harbor the infection longer than thought, keeping it in the herd.
- Check new animals, a blood test can diagnose the condition.
- Differential diagnosis:** Chlamydiosis, Coxiellosis

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Western College of Veterinary Medicine



Swollen carpal, aborted fetus, swollen testicle

RABIES

- Confusion, depression, loss of milk production, loss of appetite, chewing on foreign objects, inability to swallow, drooling, excessive bleating, and dilated pupils.
- Because there are no licensed rabies vaccines for goats, off-label products must be used. Veterinarians may refuse to vaccinate species for which there is no labeled product in order to avoid personal liability claims that might be levied against them. Moreover, livestock vaccinated off-label are not recognized as rabies vaccinated by public health officials. If exposed to a rabid animal, off-label vaccinated goats may be required to be euthanized immediately or placed under quarantine for up to six months.
- **Differential diagnosis:** Listeriosis.





● Rabdomun TM (*Schering Plough*).

For vaccination of cattle, sheep, dogs, and cats as an aid to prevent rabies and provides one year of protection.

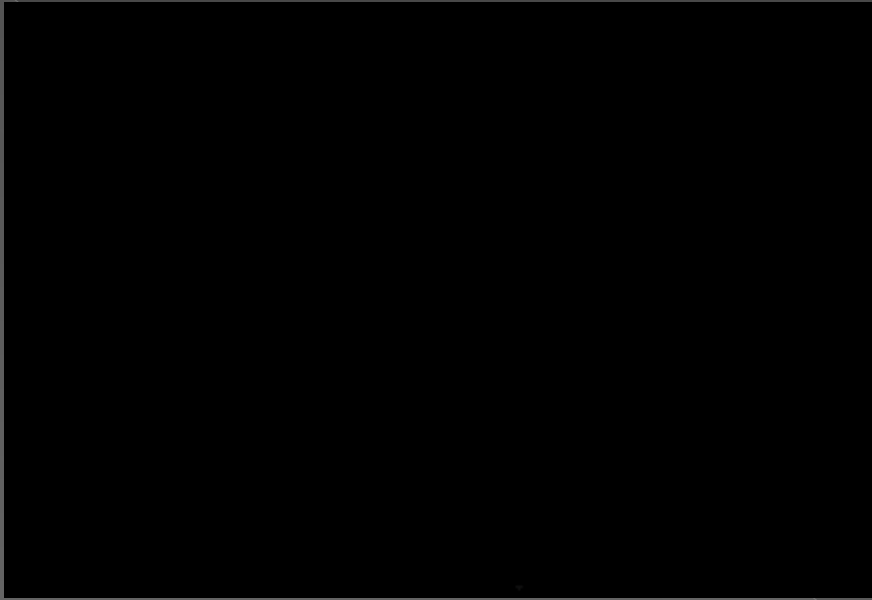
SCRAPIE

- ◉ Fatal, degenerative disease of sheep and goats.
- ◉ Infectious and transmissible. Direct transmission from mother to offspring via placental fluids.
- ◉ Scrapie-infected animals appear normal for several years before they develop signs and die.
- ◉ Scrapie was first described over 250 years ago in Europe.
- ◉ The first case of Scrapie in the U.S. was in 1947.
1952 – A Scrapie eradication program was initiated.
- ◉ Caused by a Prion.
 - Misfolded protein.
 - It is not known what causes the normal prion protein to misfold.

CLINICAL SIGNS

- Mild at first.
 - > Slight behavioral changes
 - > Increase in chewing motion
- Ataxia (lack of muscle control) and other neurological signs.
- Excessive scratching.
- Chronic disease.
 - > Weight loss
 - > Anorexia
 - > Lethargy
 - > Death





- Four year old goat collapses during play. Euthanized and diagnosed with Scrapie.



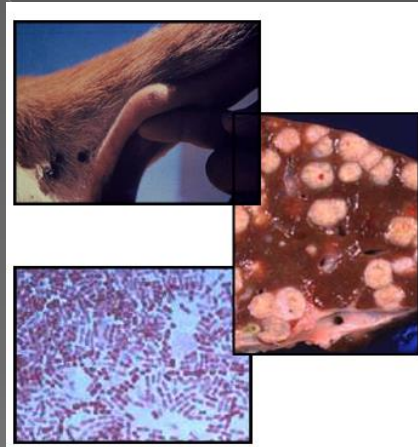
TUBERCULOSIS

- ◉ A contagious, infectious, communicable disease caused by *Mycobacterium bovis*.
- ◉ Commonly, a chronic disease can present as an acute rapidly progressing condition.
- ◉ Spread by direct contact via aerosol from infected animals, and ingestion of contaminated feed or milk. Considered a zoonotic disease.
- ◉ A positive diagnosis is when two or more of the following criteria are met:
 - > Positive response to skin test.
False negatives can occur.
 - > Necropsy or slaughter inspection.
 - > Histopathology confirmation of bacteria.
 - > Positive culture from select tissues.
 - > Based on herd and other epidemiological data.

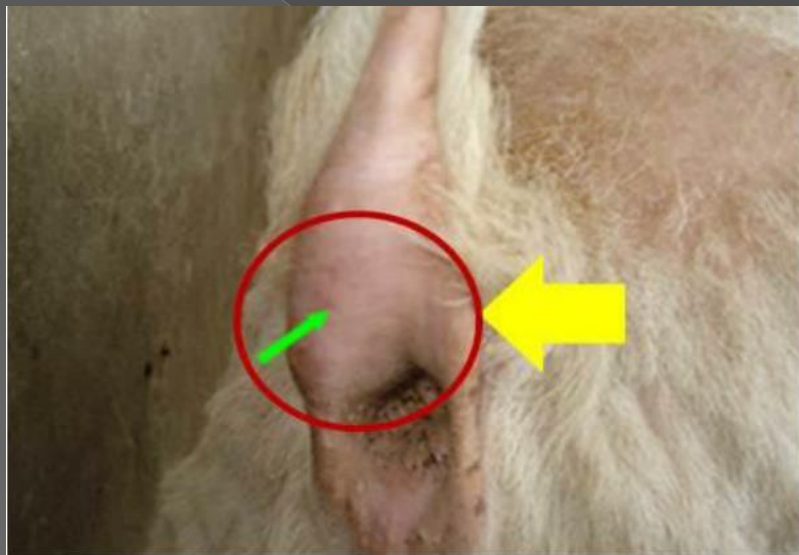
CLINICAL SIGNS

- Progressive emaciation, weakness, anorexia, low-grade fluctuating fever.

Bronchopneumonia, superficial lymph node enlargement.



Any swelling or increased firmness, either focal or diffuse, heat at the injection site, or erythema (reddening of skin) must be considered a positive response.



Reaction (48-72 hours)



No reaction on Caudal Fold test

Comparative cervical tuberculin (CCT) skin test is the official test for retesting and diagnosis confirmation for those suspects that reacted to the caudal fold tuberculin skin test. The CCT test differentiates animals infected with *M. bovis* from other *mycobacterium*. This test is administered only by State or Federal animal health officials specifically trained in the application of the test.



PREVENTION

◎ Test and slaughter.

- > Reactors to test.
- > In affected herd, testing every two months.
- > Biosecurity measures.

Contaminated food and water troughs.

◎ Test and segregation.

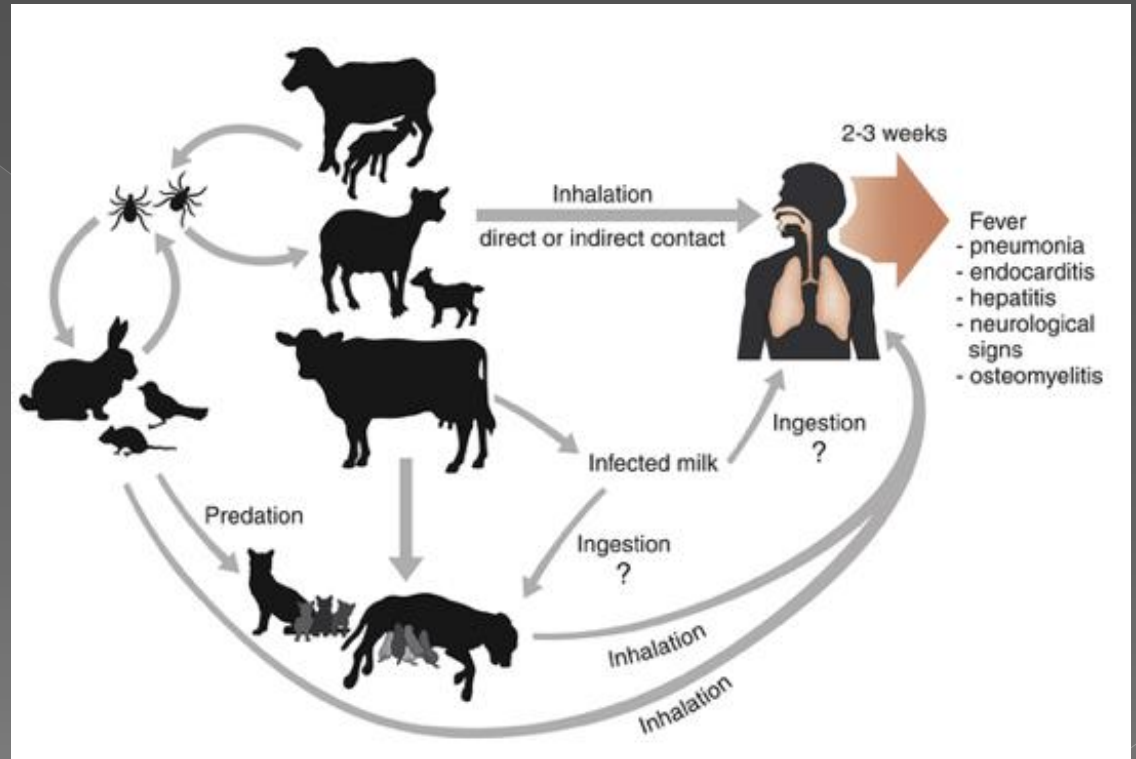
Slaughter in final stages of eradication.

◎ Chemotherapy.

Vaccinated animals will give a positive skin test reaction.

ZOONOTIC DISEASES

- ◉ Anthrax
- ◉ Brucellosis
- ◉ Tuberculosis
- ◉ Leptospirosis
- ◉ Orf
- ◉ Q fever
- ◉ Rabies



FOREIGN ANIMAL DISEASES



FOOT AND MOUTH DISEASE

- Highly contagious disease caused by a virus affecting cloven-hooved animals. Transmission is by direct or indirect contact with secretions and excretions, vectors, and air currents. Endemic in Africa, Asia, the Middle East and South America
- Goats can be asymptomatic.
- **Clinical signs:** Animals are depressed, have a fever, and small blisters will break out on the mouth and tongue; popped blisters will leave small ulcers. Blisters will also appear between the toes and on the feet. Those turn pale and peel off, leaving erosions and sores. The animal will be lame; they will secrete excessive saliva and stop eating. Ewes may abort during heavy outbreaks. Young animals will have fever, rapid heart rate, and heavy breathing.
- You should differentiate FMD from Goat Pox and Soremouth. A definitive diagnosis is in a laboratory. FMD rarely affects humans.



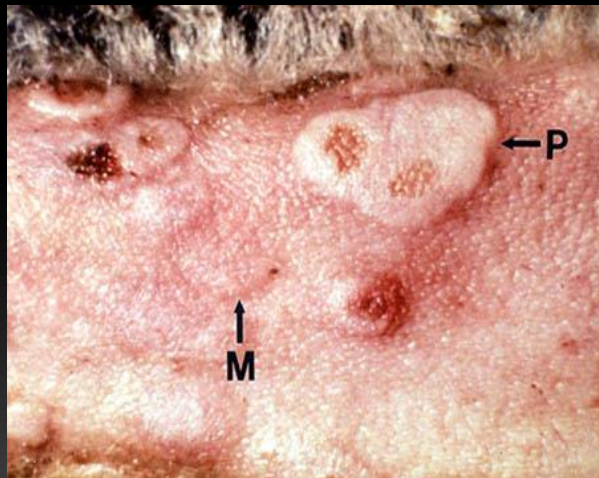
PESTE DE PESTIS

- Highly contagious viral disease of the Middle East, Africa, and Asia of sheep, goats, camels, antelope, and water buffalo. Transmission is via close contact and fomites (for a short time).
- Sudden rise in temperature with restlessness. The muzzle is dry but has a clear discharge and reddening around the eyes. Diarrhea, dehydration, and anorexia sometimes are seen. Pneumonia develops; most animals die within 10 days.
- A vaccine is available but is used in areas of the world where the disease exists (vaccinate at two years of age with a one year follow-up).



SHEEP AND GOAT POX

- Initially, there may be fever, depression, and inflammation of the conjunctiva, and tearing and inflammation of the nasal cavity. After a few days, pox lesions appear (they feel like a nodule) mostly on the hair-free parts of the body. These lesions start out as small, reddened papules, with the center becoming depressed and gray (necrosis). Within a month of the appearance of the first signs, the lesions dry up and a scab forms.
- In endemic areas, vaccination is the only effective means of prevention. Control is through confirmation, quarantine and culling of affected animals followed by disinfection of the premises.



Pox lesions

WHICH ONE IS FMD?



A



B



C



D



E



F

A-Peste de pestis

B-CCPP

C-FMD

D-Goat Pox

E-Orf

F-Warts

A



B



C



D



A-FMD

B-CODD

C-FMD

D-Foot rot



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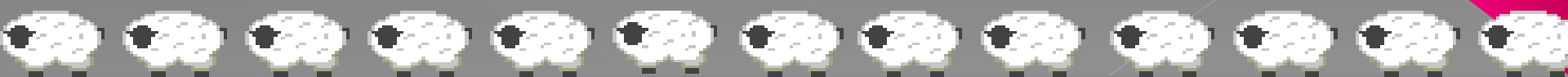
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**HAPPY AND
HEALTHY
TOGETHER!!**

