Biosecurity

• Simple and easy
• Prevent diseases from entering the herd in the first place!

– Keep the herd closed to any new additions, any transport vehicles, all wildlife, and every other avenue a disease pathogen could take
Biosecurity

• Is the cheapest method of disease control in the long term
• Used extensively by the more sophisticated animal management systems
Biosecurity “To Do” List

• Test animals for diseases before purchase.

• **Quarantine all purchased animals on arrival.** Allow no nose to nose contact. The further away they can be, the better it is. The longer they can be isolated the better. 2 weeks is a bare minimum with 2 months being an ideal.

• Vaccinate and deworm all animals **before commingling them with your animals.**

• **Restrict access** to barns and pastures where animals are raised.

• Implement policies to limit pathogens from outsiders such as footbaths, boot covers and disinfect transportation units (trucks, trailers and cages).
Developing a health plan

• Maintain records
• When needed, work with your veterinarian and Extension personnel
• Every operation is unique so there is not a one-size fits all plan
• Antibiotics + vaccines ≠ biosecurity !!!
FDA Ruling
New FDA Ruling

• What is FDA doing?
  – 3 year program
  – Promote judicious use of antimicrobial drugs in food animal

• Voluntary removal of feed through antimicrobials to enhance growth
Ruling

- OTC feed additive antibiotics will become VFD (script) items – 1/1/2017
- Veterinary supervision/script
- Drugs prescribed on basis of treating disease – No longer for production purposes
What drugs are targeted?

• Medically important drugs
  – Used to treat human disease
  – Erythromycin, penicillin,
  – Cephalosporins, tetracycline, florfenicol

• Transitioned over the next 3 years

• [Website Link]
ELDU

• Extralabel Drug Use (ELDU) includes a change in route, dosage, duration, frequency, indication, or *species* from what is on the label
VCPR

• **Veterinary Client Patient Relationship**

• The veterinarian has assumed the responsibility for making clinical judgments.

• Veterinarian has seen the animal within the last 12 months or at least annual visits to the premises where the animals are kept.

• Vet readily available or has arranged for emergency coverage for follow-up evaluation in the event of adverse reactions or the failure of the treatment regimen.
VCPR

• Veterinary Client Patient Relationship
  – Intimate working knowledge

• Veterinary Feed Directive
  – Under supervision and compliance
  – Antibiotics added to feed

• Treatment only

• Not for production
Down the Road

• OTC injectables
• ~ 2018
Won’t Change

• Feed grade antibiotics
  – Treatment, control, prevention
  – Will need “VFD” script
• “Non” Medically important
  – Monensin, Bovatec coccidiostats
• Antibiotics still in “feed stores”
  – Script item
  – Vaccines
Disease

• Any change in the structure or function of an animal’s body which interferes with that animal’s intended purpose.
Disease Diagnosis

• I’m NOT Swami !!!

• Identifying a disease in order to properly treat and/or control it.

• Without a proper diagnosis, treatment and prevention is more likely to fail.
Signs of Disease

• Depression
  – Dull appearance
  – Head lowered
  – Ears drooped
• Lack of appetite
• Isolated from herd
• Abnormal posture
• Diarrhea
• Rapid breathing
• Nasal discharge
• Lowered production

Which animal is sick?
# Normal Physical Parameters of Adult Goats

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>102-104</td>
<td>degrees F</td>
</tr>
<tr>
<td>Ruminations</td>
<td>1-2</td>
<td>per minute</td>
</tr>
<tr>
<td>Pulse</td>
<td>70-90</td>
<td>beats per minute</td>
</tr>
<tr>
<td>Respiration</td>
<td>15-30</td>
<td>breaths per minute</td>
</tr>
</tbody>
</table>
Remember

• The normal values tend to be higher in kids

• Temperature can increase due to stress or environmental conditions

• Assess goat’s behavior when evaluating normal.
  – Ex: breathing hard, coughing, and has a runny nose, and a temperature of 104 F on a cool day
Common diseases

Before discussing common diseases, some points to remember:

– Some diseases look very similar in their clinical presentation

– Some diseases are zoonotic a.k.a we can get them

– Some diseases may require “off-label” or extra-label drug use to treat effectively

– Work with your veterinarian in prevention, diagnosis, and treatment of disease
Common diseases

• Bloat
• Caprine Arthritis – Encephalitis
• Contagious Ecthyma
• Footrot, Foot scald
• Listeriosis
• Overeating Disease
• Pneumonia
• Polioencephalomalacia

C.E Kord diagnostic lab

https://www.tn.gov/assets/entities/agriculture/attachments/AgBusLaboratoryguide.pdf
Bloat signs

- Abdominal distension, left side, but depending on severity, can be on both sides
- Colic signs
- Anxiety
- Stomping their feet
- Urinating frequently
- Respiratory distress
- Recumbency
- Death
Bloat treatments

• Gas bloat:
  – passage of a stomach tube, USING SOME TYPE OF GUARD OR SPECULUM, into the rumen and relieving the gas

• Frothy bloat:
  – Poloxalene (Therabloat)
  – Dioctyl sodium sulfosucinate (DSS)

• Prevention
  – Gradual change of diet
  – Rumensin
Mechanical Relief

• Passing a stomach tube
• **BECAUSE** you may cause:
  – Aspiration pneumonia
  – Trauma to esophagus and/or trachea
  – Administration of large amount of liquids into the lungs which will cause a quick and dramatic death
Caprine Arthritis – Encephalitis

• Viral infection (Lentivirus)
• May affect joints, lungs, brain, and mammary glands
• Transmission is through kid ingesting infected dam’s colostrum
• Once a goat has CAE, it always has CAE
• Signs of infection may not be visible for months to years
CAE treatment

• No specific treatment

• For arthritic form,
  – Treatment goal is to lesson the animal’s discomfort
  – Regular/proper foot trimming
  – Pain relievers
  – Good bedding and pasture management

REMEMBER, the goat you are treating is a source of infection to all other goats in your herd
Prevention/Eradication

• Prevention is complicated
• Eradication is labor intensive
• Prevention
  – Try to purchase goats from known CAE-negative herds
  – Isolate new animals
  – Testing and culling of all positive animals should eradicate the virus from the herd
Caseous Lymphadenitis (CL)

• *Corynebacterium pseudotuberculosis*

• Abscesses: external and internal

• Extremely contagious and resistant organism
  – Environmental contamination from draining abscesses

• Long incubation period
  – Up to 6 months
Caseous Lymphadenitis (CL)

- Clinical Signs
  - Any abscess on small ruminant should be treated as CL until proven otherwise
  - External abscesses-lymph nodes
    - Mandibular
    - Parotid
    - Prescapular
    - Prefemoral
    - Mammary
  - Internal abscesses (“Thin Ewe Syndrome”)
    - Chronic weight loss
    - Respiratory signs
Caseous Lymphadenitis (CL)

- Antibiotic treatment unrewarding
- Isolate animals with abscesses, especially if open and draining
- Surgical removal?
- Formalin injection? – FDA zero tolerance carcinogens
CL treatment

• Drain or surgically remove abscess nodes

• Important points to remember
  – The material survives in the environment for a long time
  – Infective to other goats so make sure D/C is disposed of correctly
  – This disease is zoonotic meaning the material contains bacteria which will infect people so wear gloves!
  – Culling the animal may be the easiest/smartest way to go.
Caseous Lymphadenitis (CL)

• Cull affected animals  
  – Shed in body fluids and open abscesses  
• Test all new additions  
• Vaccines  
  – Commercial (Sheep) Extra-label goats  
  – Fever, edema, lower milk production, death  
  – Autogenous goats
Contagious ecthyma (Orf)

- Contagious ecthyma, sore mouth
- Parapox Virus with secondary bacteria
- Usually commissures of lips
  - Kids won’t nurse
- Face, teats, genitalia, feet
- Pustules then scabs
- Highly contagious
  - Scabs in environment-long term contamination
TREATMENT

- Depends on severity of the lesions, degree of secondary bacterial infection and location of the lesions
- This is a ZOONOTIC disease – WEAR GLOVES!
- Topical application of 3% iodine
  - Antibiotic treatment for secondary bacterial treatment, if needed
- Udder salves
  - Watch for mastitis
Prevention/Control

- Quarantine new additions/ sick animals
- Handle sick animals last
- Incinerate gloves/ tissues
- **DO NOT** consume milk from does with lesions!!
- Vaccination during outbreaks
  – Approved for sheep extra-label goats
Foot rot and foot scald

• Contagious, bacterial infection
  – soft tissue between the toes of the hoof
• Foot scald is a milder form
  – often precedes foot rot
• Common in Tennessee
  – climate and weather
• More common spring /summer
  – can occur any season
Foot Rot

- *Dichelobacter nodosus* and *F. necrophorum*
- Carriers of D. nodosus spread infection
- Mild form
  - Interdigital similar to cattle
- Severe form
  - Breaks down keratinized tissue
Signs

- Depending on severity,
  - slight limp
  - pronounced lameness
  - refusing to walk at all
- Swelling, redness or pus are seen in the interdigital space
- Not uncommon for more than one foot to be infected
Treatment

- Systemic antibiotics
- Topical applications, footbaths
- Proper care and trimming of the hoof:
  - removes dead tissue allowing penetration of antibiotic preparation
  - correct any overgrowth or abnormalities
  - predisposing to injury
Treatment (cont.)

• Environmental control: Once treated, animals should not be kept in a wet or muddy environment
• Re-check animals and re-treat, if necessary
• Vaccination
Common Brain Diseases-Adults

- Listeriosis!
- Polioencephalomalacia!
- Always consider Rabies!
Listeriosis
Listeriosis

• Bacterial disease (Listeria monocytogenes) – infect several species – including humans!
• Hardy organism – survives for years in the environment
• May be shed from apparently healthy goats
• Most commonly seen when feeding improperly stored silage and/or round bales – but can occur on grazing pasture
Listeriosis Signs

- Most common in animals 6 months of age or older
- Simple depression and a failure to eat
- Progresses to dropped jaw, inability to retract tongue and eat
- Move in one direction continuously (circling)
- Recumbency
- +/- Fever
- Discoloration and problems with eyes (nystagmus)

Treatment/Prevention
- **Zoonotic!**
- Antibiotics
Meningeal Worm

- *Parelaphostrongylus tenuis*
- Nematode parasite of white-tailed deer
- Snail intermediate host
- Aberrant migration in other species causes clinical signs
  - llamas/alpacas
  - sheep
  - goats
  - cattle
  - other deer
Polioencephalomalacia  
Lead Toxicity

• Central blindness classic presentation of both diseases
• Seizures can occur with both
• GI signs secondary to lead toxicity, polio secondary to GI diseases
• Both respond to thiamine  
  – lead will usually relapse
• Lead levels may be normal in chronic lead cases
Polioencephalomalacia

• Result of low thiamine levels in the body
• Normal Rumen bacteria
  – produce enough thiamine for the body,
• Rumen is altered
  – production of thiamine decreases
  – uptake of thiamine by the body
DECREASE THIAMINE PRODUCTION/UPTAKE

• Sudden changes in the feed
• Moldy feeds and use of feeds high in molasses
• Excessive concentrate feeding
• Stress of weaning
• High dietary sulfur content
• Medications – Amprolium
PEM Signs

• Weanlings and young adults appear more susceptible
• Elevation of the head while standing
• Staring off into space or blindness, circling
• Excitability and wandering aimlessly
• If not treated, goats usually die in 24-72 hours
Polioencephalomalacia

• Treatment
  – Thiamine (5 mg/lb TID SQ) until improvement has stopped
  – Usually respond within hours if treated early
  – If no response in 1-2 weeks, prognosis is poor
  – Transfaunation
PEM Prevention

• Avoid sudden dietary changes and moldy feeds
• Do not use feeds high in molasses
• Increased roughage and decreased concentrate feeding
• Good quality, free-choice mineral
• Free access to good quality forage
• Supplementation of the grain ration with thiamine or brewer’s yeast / probiotics
• Proper dosing medication
Overeating disease

• Caused by bacterium *Clostridium perfringes*
• Bacteria live in soil and intestinal tract
• These bacteria can cause disease
  – conditions are right for their multiplication
  – the normal movement of the intestines slow down
Conditions

• Not acclimated to green pastures
  – allowed in lush, fast-growing pastures
  – cereal crops

• Heavy grain feeding or heavy milk access

• Any illness that actually slows GI tract
Signs

• In kids
  – Sudden death with no signs of sickness
  – Also
  – High temperatures, signs of colic, watery diarrhea
  – Ataxia (wobbly, acting drunk)
  – Recumbence
  – Convulsions/comas
Signs

• As animals become older,
  – Signs are not as severe.

• May be sick for several days to several weeks
  – These animals are often off feed with severe diarrhea that comes and goes
Treatment

- Antibiotics – Penicillin drug of choice
- Antitoxin
- Supportive care
Prevention

• VACCINATE!
  – CDT
• Good feeding practices
• Always change diet slowly
Pneumonia

- Caused by bacteria, viruses, parasites, fungi, etc.
- Management practices that predispose pneumonia
- Clinical signs
- Treatment
- Prevention
Respiratory Disease

- Mannheimia
- Pasteurella
- Mycoplasma
- Chlamydia
- Adenovirus
- RSV
- IBR
- PI-3
- Herpes
Johne’s Disease

• Similar pathogenesis and epidemiology to cattle
  – Most likely to acquire infection as kids
  – Fecal oral route
  – Inutero possible

• Chronic weight loss
  – Usually no diarrhea
Johne’s Disease

- Diagnosis
  - Serology
  - Fecal Culture
  - PCR
Johne’s Disease

• Control
  – Confirm infection with culture
  – Test and cull/segment adults
  – Cull kids from positive does
  – Hand raise kids
  – Sanitation
Scrapie

- Prion (TSE)
- More common in sheep
- Intense itching
- Neurologic signs
  - Wobbly, twitching muscles, falling, wt loss
- No treatment
- Reportable DZ
Basic Vaccination Program

• Does
  – *Clostridium perfringens* C and D and *Clostridium tetani* ("CD & T") one month pre-kidding

• Kids/lambs
  – If Dam had CD&T one month prior to delivery
  – CD&T 6-8 weeks then booster 3-4 weeks later
  – Dam **NOT** Immunized
  – Anti-toxin @ birth then CD & T at 1 to 3 weeks of age, then every 3-4 weeks for another 2 booster doses

• Bucks and Yearlings
  – CD & T annual
Vaccination

• Other vaccines
  – Chlamydia, Campylobacter, Lepto
  – Rabies
  – Sore mouth
  – CL
  – Respiratory diseases?
Vaccine failure

• The biggest reasons for disease breaks in livestock often have little to do with the vaccine itself, but more to do with how that vaccine is handled and administered

Dale Moore, director of Veterinary Medical Extension at Washington State
Proper Use of Vaccines

• Follow directions **EXACTLY** with respect to:
  – Dosage, route
  – Boosters, etc.
• Take time and use proper technique
• Lot & serial number
• Withdrawal time
Routes of administration

• Subcutaneous (SQ)
• Intramuscular (IM)

Use proper technique
• Refrigeration
• Reconstituting
• Location
• Needle size
• Single use needle

Properly store and administer vaccines according to label directions, adhere to designated meat withdrawal times
Needle Disposal

• http://www.safeneedledisposal.org

• TN - It is currently legal to put used sharps that are in a laundry detergent bottle with a lid into the garbage.
Human Precautions

• Several diseases of goats can be transmitted to humans
• Pregnant women, children, elderly and immunosuppressed people should avoid contact with:
  – Sick goats
  – Kidding goats
  – Aborting goats
  – Diarrheic goats
• ANY person in contact with sick or kidding goats should where gloves and protective clothing
  – Pay attention to sanitation
Questions/Comments ??

NINJA GOAT
you are never safe