



University
of Idaho

REPRODUCTIVE DISEASES OF SHEEP AND GOATS

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OBJECTIVES

EWE / GOAT REPRODUCTIVE HEALTH

ABORTION

METABOLIC DISEASES

LAMB / KID MANAGEMENT

LAMB / KID DISEASES



REPRODUCTIVE HEALTH

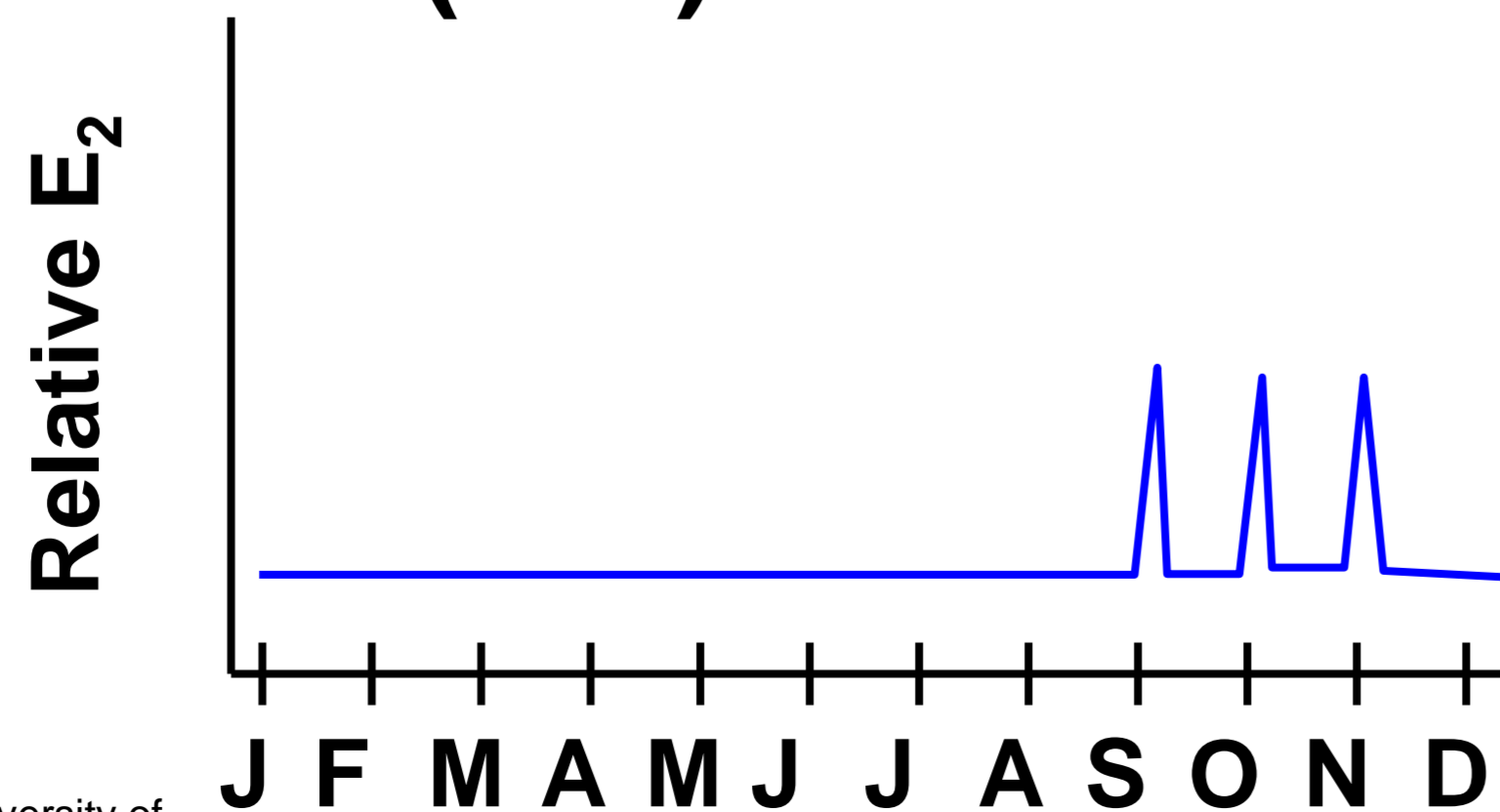
TYPES OF CYCLICITY



Seasonally polyestrus

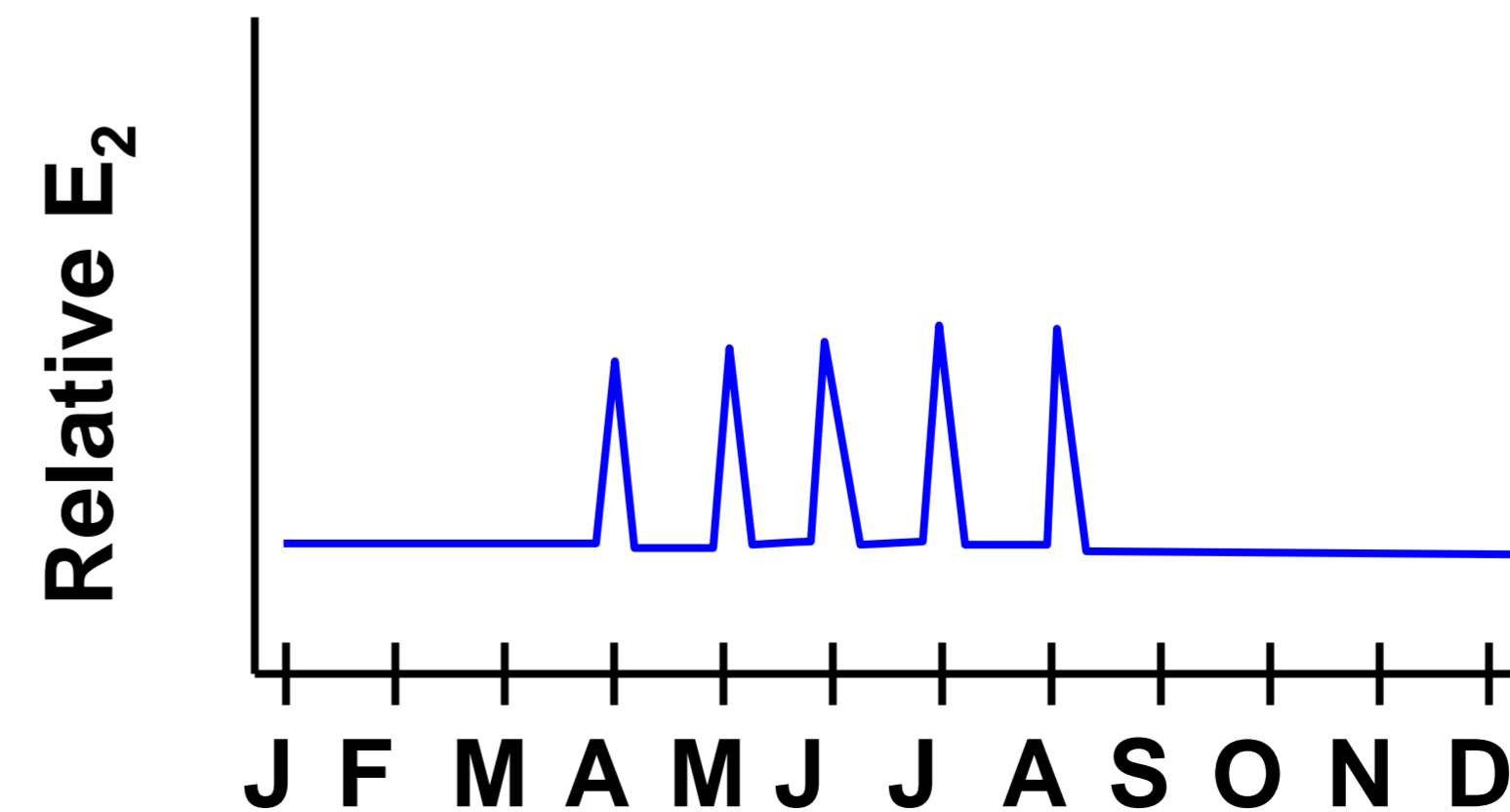


Short day breeders
(Fall)



University of Wisconsin

Long day breeders
(Spring)

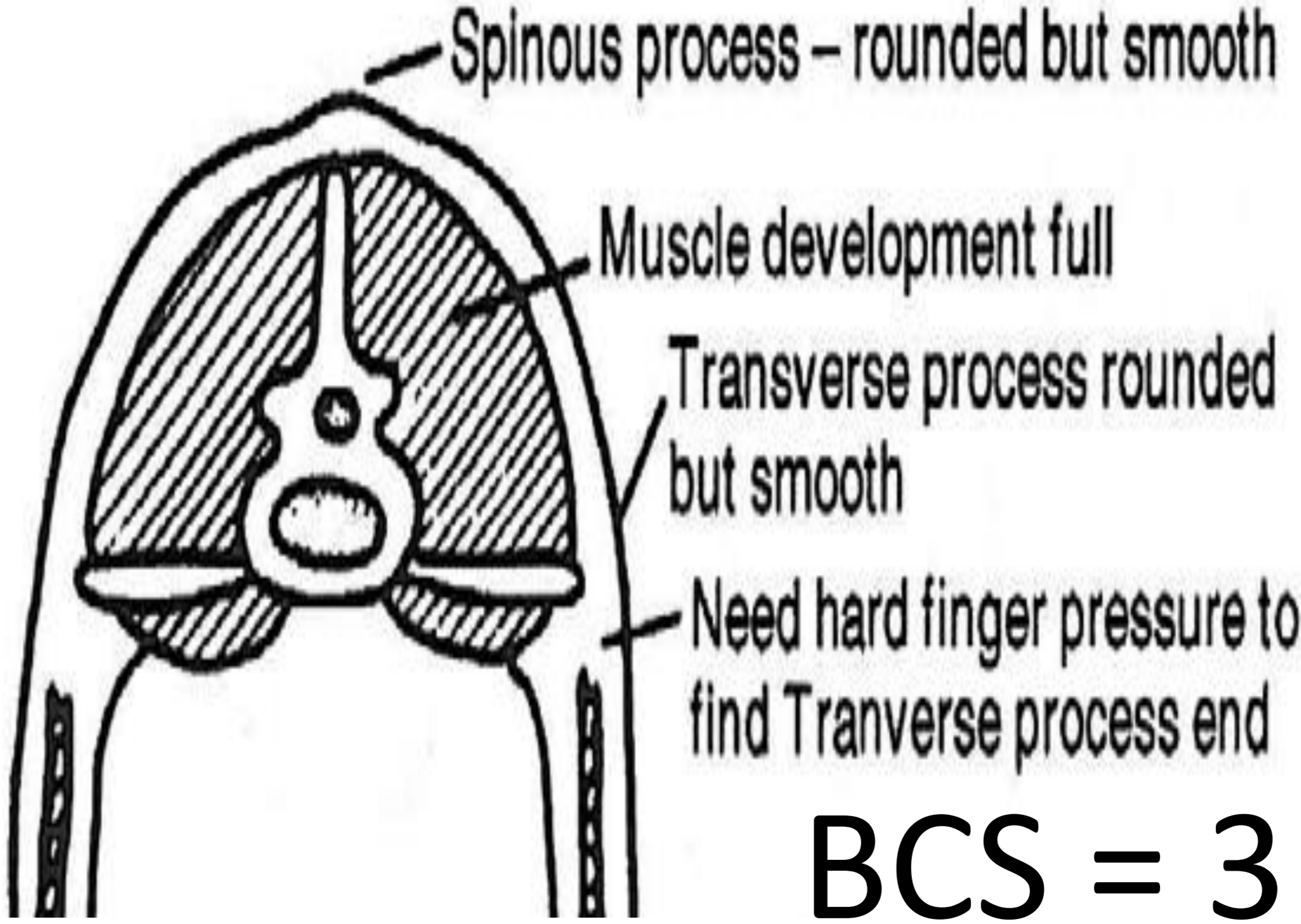
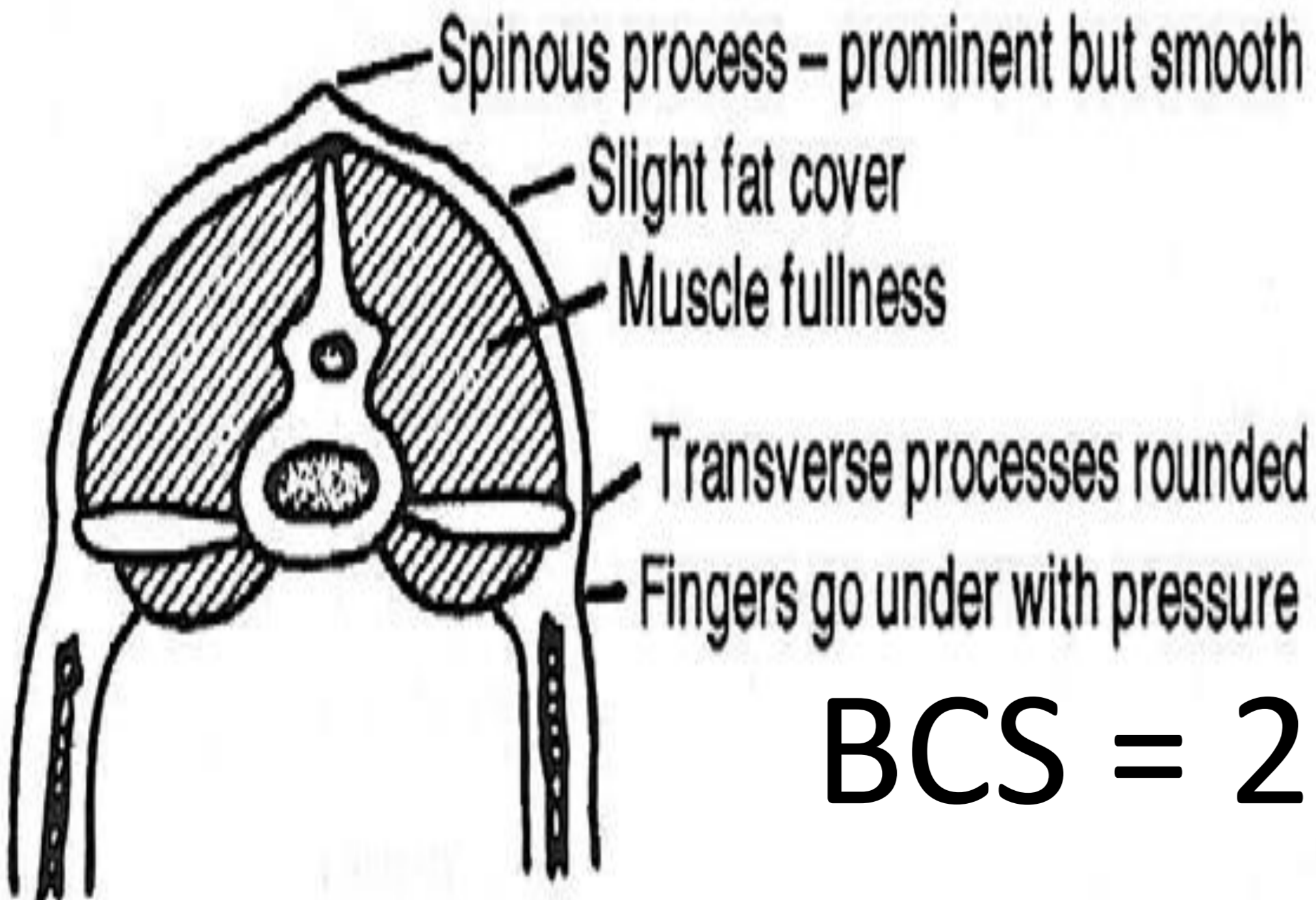


NUTRITION

NUTRITIONAL REQUIREMENTS ONLY SLIGHTLY ABOVE MAINTENANCE

INADEQUATE NUTRITION CAN HAVE AN EFFECT ON EMBRYO IMPLANTATION

IDEALLY MAINTAIN A BODY CONDITION SCORE OF 2.5 – 3 AT BREEDING AND PARTURITION.



EMBRYO DEVELOPMENT

GESTATION= 5 MONTHS (147-155 DAYS)

Twins / triplets more common than single kids.

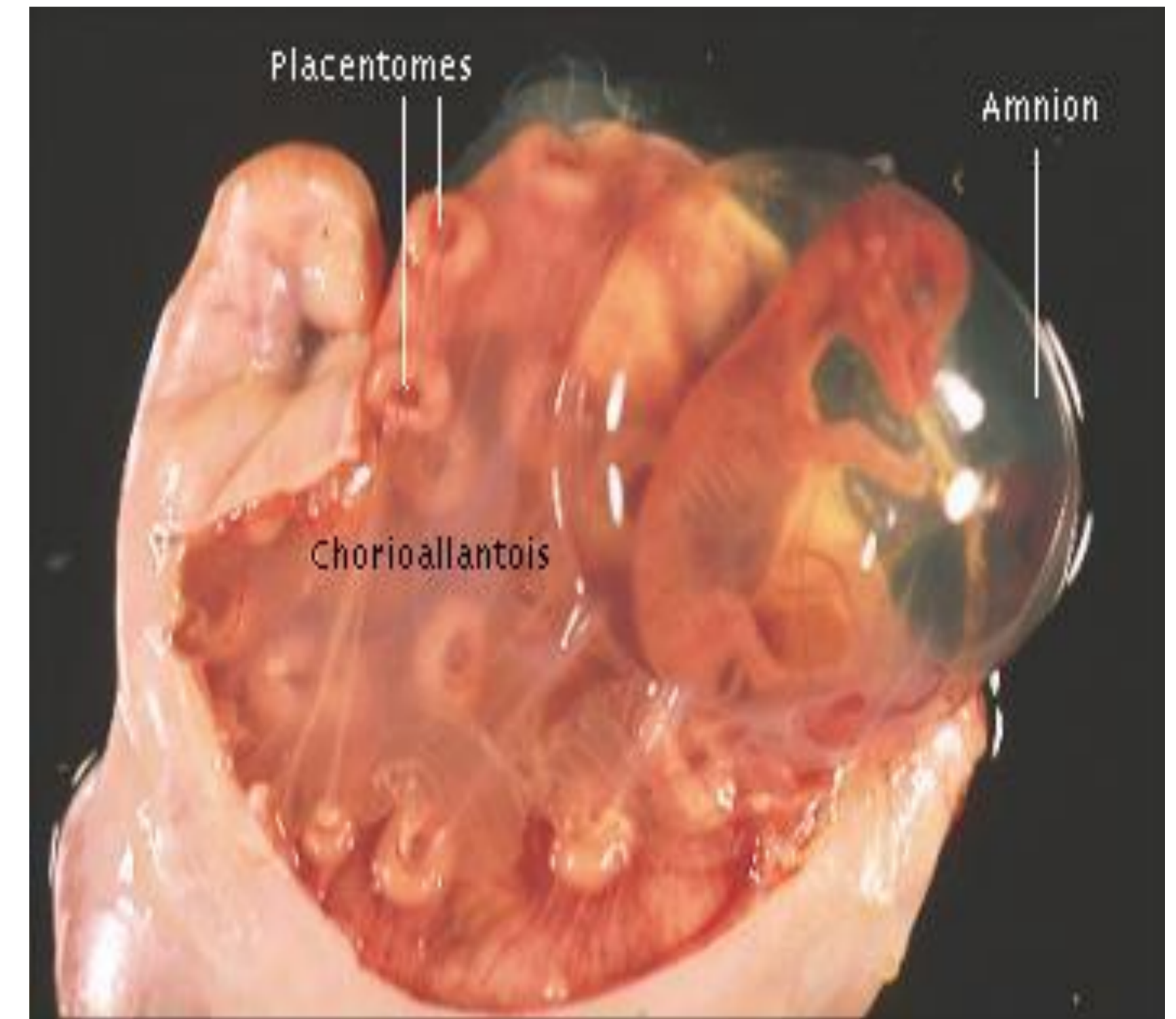
Does carrying quads can kid early (3 days)

EMBRYO – CONCEPTUS – FETUS

FETUS = recognize species

ATTACHMENT OF THE EMBRYO OCCURS 15-18 DAYS
FOLLOWING FERTILIZATION

IMPORTANT SIGNALING BY EMBRYO TROPHECTODERM
PREGNANCY MAINTAINED BY OVARIES (CL) IN DOES
CL OF THE OVARY NOT AS IMPORTANT IN THE SHEEP



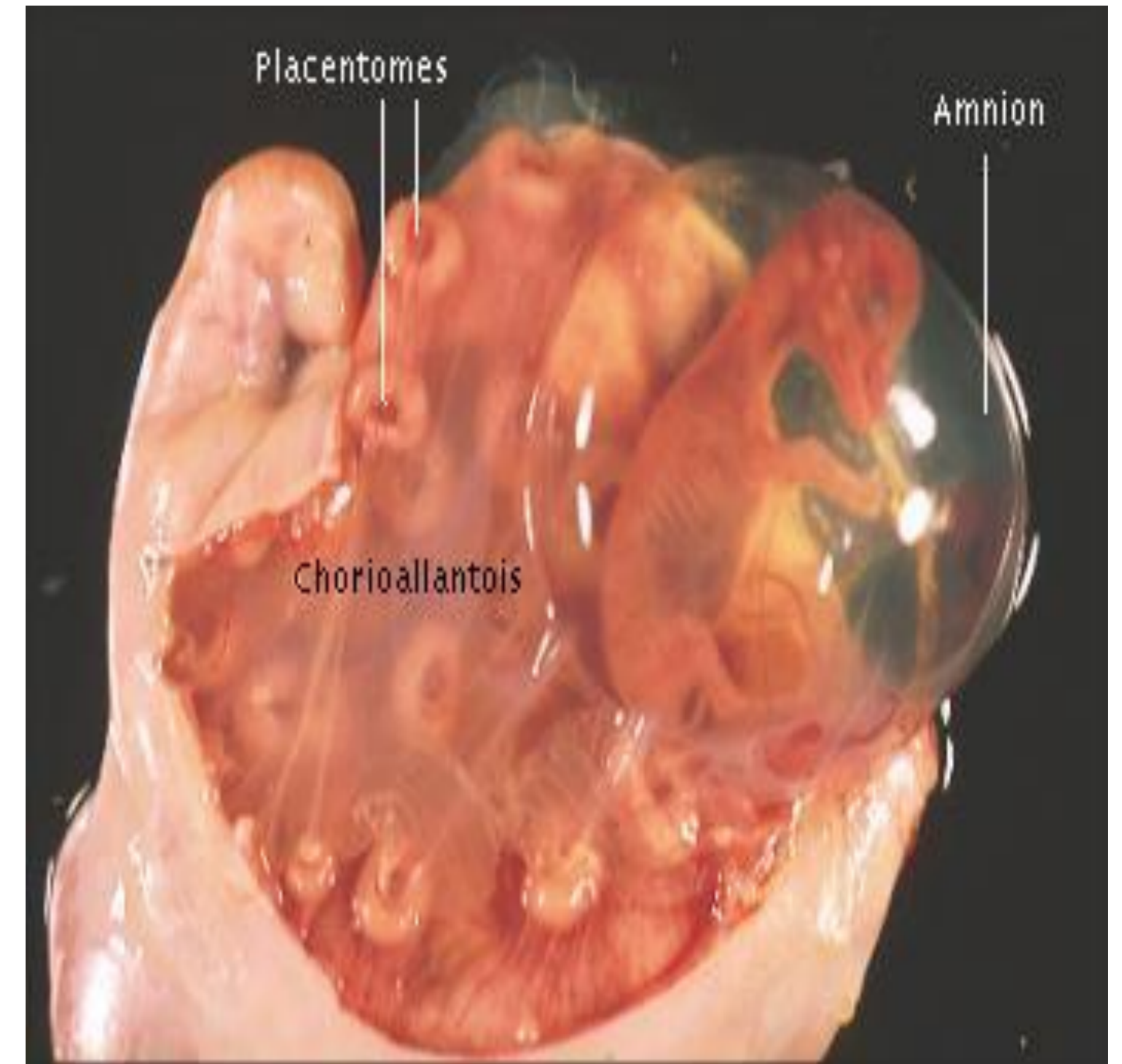
50 day embryo

<http://arbl.cvmbs.colostate.edu/hbooks/pathphys/reprod/placenta/ruminants.html>

EARLY GESTATION

MINIMIZE STRESS FIRST 30-50 DAYS OF GESTATION

- **15-30% of embryonic loss occurs within the first 30 days!**
- **Handling**
- **Heat**
- **Diet changes**
- **Placentation development**



50 day embryo

<http://arbl.cvmb.colostate.edu/hbooks/pathphys/reprod/placenta/ruminants.html>

MID – GESTATION (46-90 DAYS)

PREGNANCY DIAGNOSIS:

Ultrasonography

Rectal (>25 days)

Abdominal (>35 days) 45-80 days ideal

Pregnancy Specific Protein B (PSPB) BioPRYN

>30 days, cheap, false, misdiagnosis

Progesterone

Expensive, need to know breeding dates, Best 20 -24 days after breeding



SEPARATE SINGLES FROM MULTIPLES

Twins require extra supplementation.

LATE GESTATION (91-148 DAYS)

- **APPROXIMATELY 70% OF FETAL GROWTH OCCURS DURING THE LAST 4-6 WEEKS OF PREGNANCY**
- **DOES/EWES SHOULD BE FED TO GAIN 0.25 - 0.5 LB/HEAD/DAY DURING THE LAST 4-6 WEEKS OF GESTATION**
 - **Support kid growth**
 - **Prevent ketosis – pregnancy disease**
- **CAN FEED SUPPLEMENTAL GRAIN TO DOES/EWES IN LATE PREGNANCY CONSUMING HIGH ROUGHAGE RATIONS:**
- **DON'T FORGET CLEAN FRESH WATER AND LOTS OF IT**
- **VACCINATE IF APPROPRIATE**
- **DEWORM IF FECAL COUNTS INDICATE**
- **COCCIDIOSTAT IF NEEDED**

POSTPARTUM CARE OF DOE/EWE

I ASSESS FOR ADDITIONAL FETUSES

I MUSCLE TONE, QUIVERS => HYPOCALCEMIA, KETOSIS

I PALPATE UDDER EXPRESS COLOSTRUM / MILK (COLLECT COLOSTRUM)

I APPROPRIATE MATERNAL RESPONSE

I MONITOR CLOSELY 72 HOURS



EWE / DOE HEALTH

PREGNANCY DISEASES

ABORTION: GENERAL CONSIDERATIONS

ABORTION – IS THE TERMINATION OF PREGNANCY AFTER ORGANOGENESIS IS COMPLETE BUT BEFORE THE EXPELLED FETUS CAN SURVIVE.

EARLY EMBRYONIC DEATH – PREGNANCY ENDS BEFORE ORGANOGENESIS.

STILL BIRTH – DEAD FULL TERM FETUS (LUNGS ARE NOT INFLATED) NO UMBILICAL ARTERY CLOT

NEONATAL DEATH – LUNGS INFLATED, CLOT IN UMBILICAL ARTERY

ZOO NOTIC DISEASES – MANY OF INFECTIOUS ABORTION DISEASES IN SMALL RUMINANTS CAN CAUSE DISEASE IN HUMANS

ABORTION

MOST COMMON CAUSES OF ABORTION

- Campylobacteriosis
- Chlamydiosis
- Toxoplasmosis
- Non infectious (toxic plants, genetic, nutritional)

HOW TO RECOGNIZE ABORTION

- Absence of pregnancy after a positive pregnancy diagnosis (ultrasonography)
- Fetus found
- Vaginal discharge
- Sickness of dam





ABORTION DISEASES

CHLAMYDIA ABORTUS

- **COMMON CAUSE OF ABORTION IN SHEEP AND GOATS**
- **SOURCES OF THE ORGANISMS:**
 - ABORTED FETUS, PLACENTA, UTERINE FLUIDS**
 - CARRIER FEMALES**
 - RAMS CAN BE TEMPORARILY INFECTED**
 - INFECTED THROUGH MUCOUS MEMBRANES OR**
 - EATING CONTAMINATED MATERIALS OR FEEDS**

Chlamydia abortus

- Incubation period = 50 to 90 days
- Individual Scenario
 - infected in early to mid gestation
 - abortion
 - stillbirths and/or weak lambs
 - infected in late gestation or when not pregnant
 - abort during next pregnancy
- Naive Flock Scenario
 - 1st year → replacements abort
 - 2nd year → abortion storm
 - 3rd year → ewe lambs abort

Chlamydia abortus

- Prevention

- separate pregnant ewes from aborting flock
 - manage ewe lambs separately
 - management of environment & contaminated materials
- vaccinate (*Chlamydia psittaci* Bacterin)
 - twice before breeding & booster yearly
 - vaccine does not prevent shedding but will decrease abortions
 - NOTE → cat vaccine does not work (different strain)
- good management → avoid overcrowding
- biosecurity → “buyer beware”

TALK TO
YOUR VET

CHLAMYDIA



- CHLAMYDIOSIS (Ovine enzootic abortion)
 - Bacterial disease caused by *Chlamydia abortus*.
 - Ubiquitous, **obligate intracellular** gram negative bacteria.
 - Disease in sheep tends to be subclinical. Source of infection. Economically more important than outbreak of serious disease.
 - Pregnant animals shed large amounts of *C. abortus* in the placenta and uterine discharges when they abort or give birth.
 - Can cause abortion in women so pregnant women should avoid contact with pregnant or aborting animals.
 - Diagnose via necropsy.
 - Treatment and control – vaccination, antibiotics (tetracyclines).

Campylobacter

Found in the intestinal tract of birds, sheep, cattle and on the surface of raw poultry.

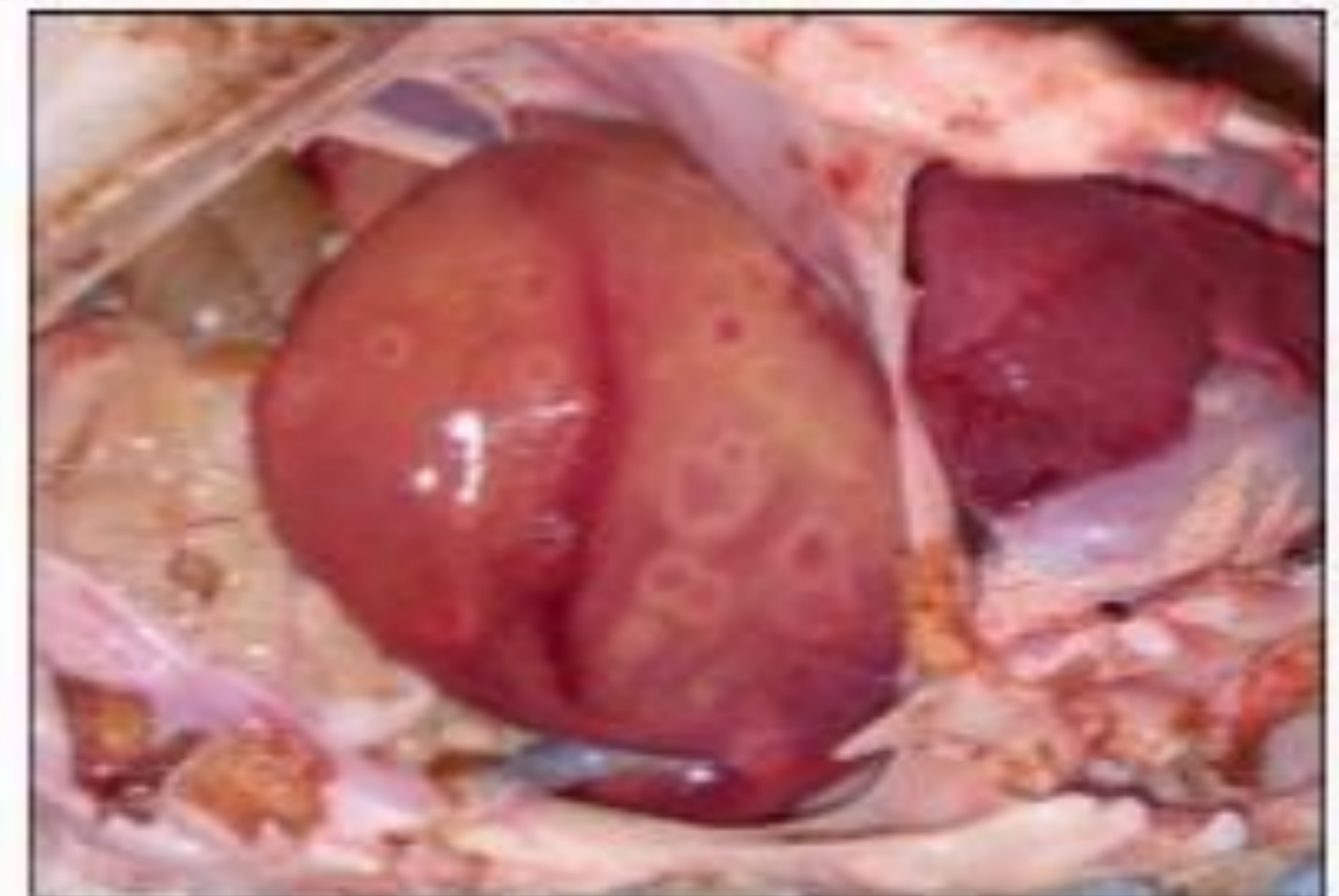


CAMPYLOBACTER

- COMMON CAUSE OF ABORTION IN SHEEP
- *CAMPYLOBACTER JEJUNI*
- SPORADIC ABORTIONS
- *CAMPYLOBACTER FETUS* SUBSPECIES *FETUS*
- LARGE ABORTION STORMS
- INCUBATION PERIOD = 7 TO 60 DAYS

Campylobacter

- Most abortions occur during the 3rd trimester
 - lesions seen on placenta & in fetus
 - ewes are not ill
 - some become immune (at least 3 years)
 - while others become carriers
 - if infected 2 weeks before lambing may see stillbirths and weak lambs



Brucella melitensis*

- Principal hosts - goats and sheep
- Most pathogenic in humans
- Sporadic cases in humans in the U.S. occur related to consumption of unpasteurized dairy products from countries where the disease is present.

Clinical Signs: Sheep and Goats

- *B. melitensis*
 - Late term abortions
 - Retained placenta
 - Birth of dead or weak lambs/kids
- Goats
 - Articular, periarticular hygroma localizations
- *B. ovis*
 - Abortions, fertility problems in sheep
 - Orchitis, epididymitis
 - Abnormal breeding soundness exam



CONT....

- BRUCELLOSIS

- *B. abortus* and *B. melitensis* can be transmitted to people by milk, contact with placenta, fetus, fetal fluids, blood, and vaginal discharges from an infected animal.
- Pregnant women avoid (abortions)
- Human illness



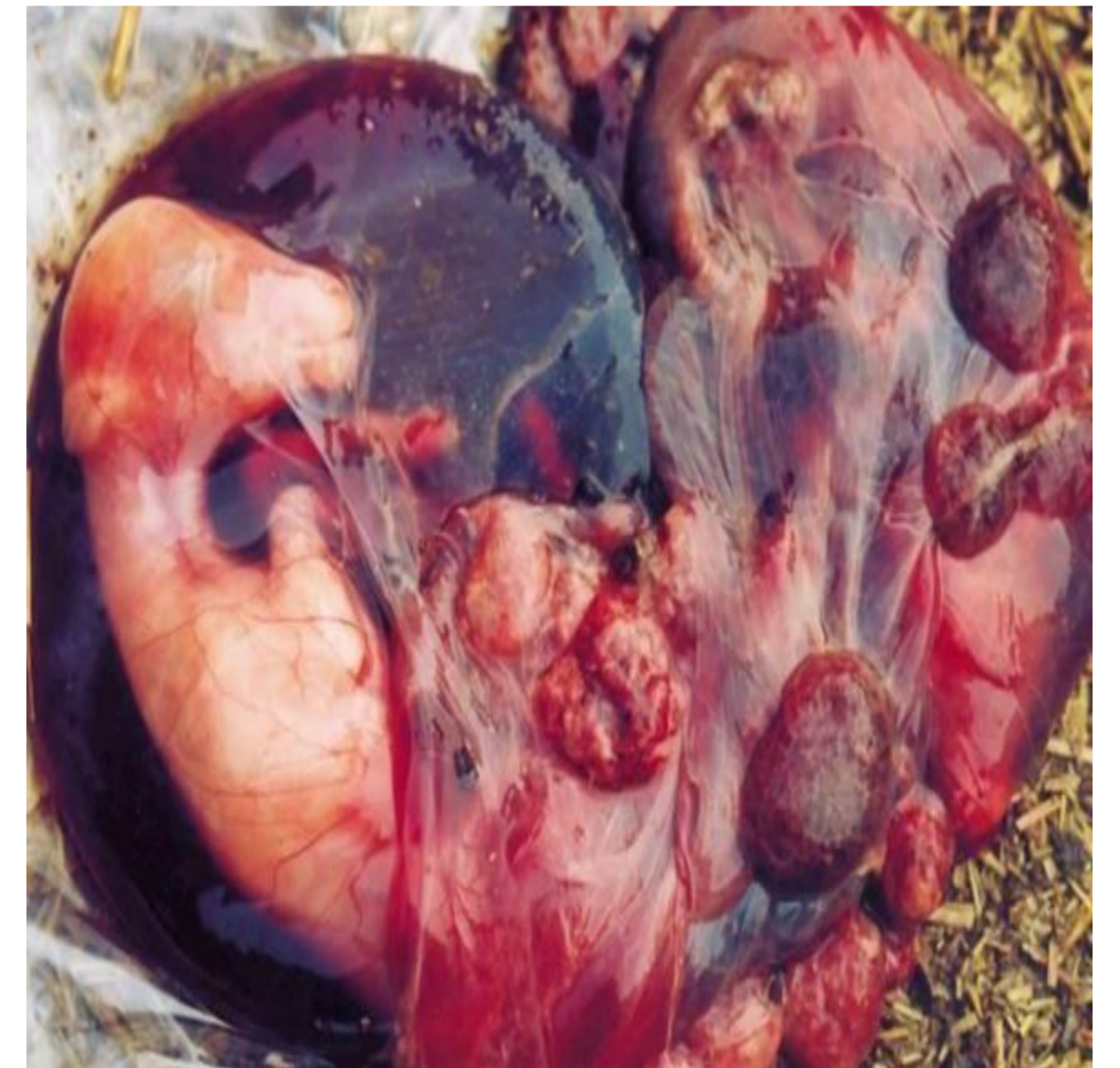
***Coxiella burnetii* (Q fever)**

- Common cause of abortion in sheep & goats
 - organism can survive in dust for years
- Sources of the organism
 - aborted fetus, placenta, uterine fluids
 - cattle, cats, rodents, birds & insects can also be a source of the organism
 - vaginal discharge, milk, manure, urine
 - venereal spread by males
 - “carrier females”
 - immunity is not complete → large proportion of flock may be shedding with few abortions
 - shed organism but deliver normal lambs

ABORTION

WHAT TO DO?

- Wear gloves/sleeves (Risk of transmission to humans)
- Remove fetus
- Submit to diagnostic lab:
 - Fetus and placenta
 - Blood from dam
- Isolate the dam until laboratory results



PREVENTION

- Personal Protection equipment
- Coveralls
- Gloves
- Face masks
- Rubber
- Boots
- Avoidance

Personal Protective Equipment

All items per MIN-0060 Contract



20-2200



20-1310



20-0900



20-1860



20-1263



20-1510



20-1200



METABOLIC DISEASES

KETOSIS/PREGNANCY TOXEMIA

PREGNANCY DISEASE, LAMBING SICKNESS,

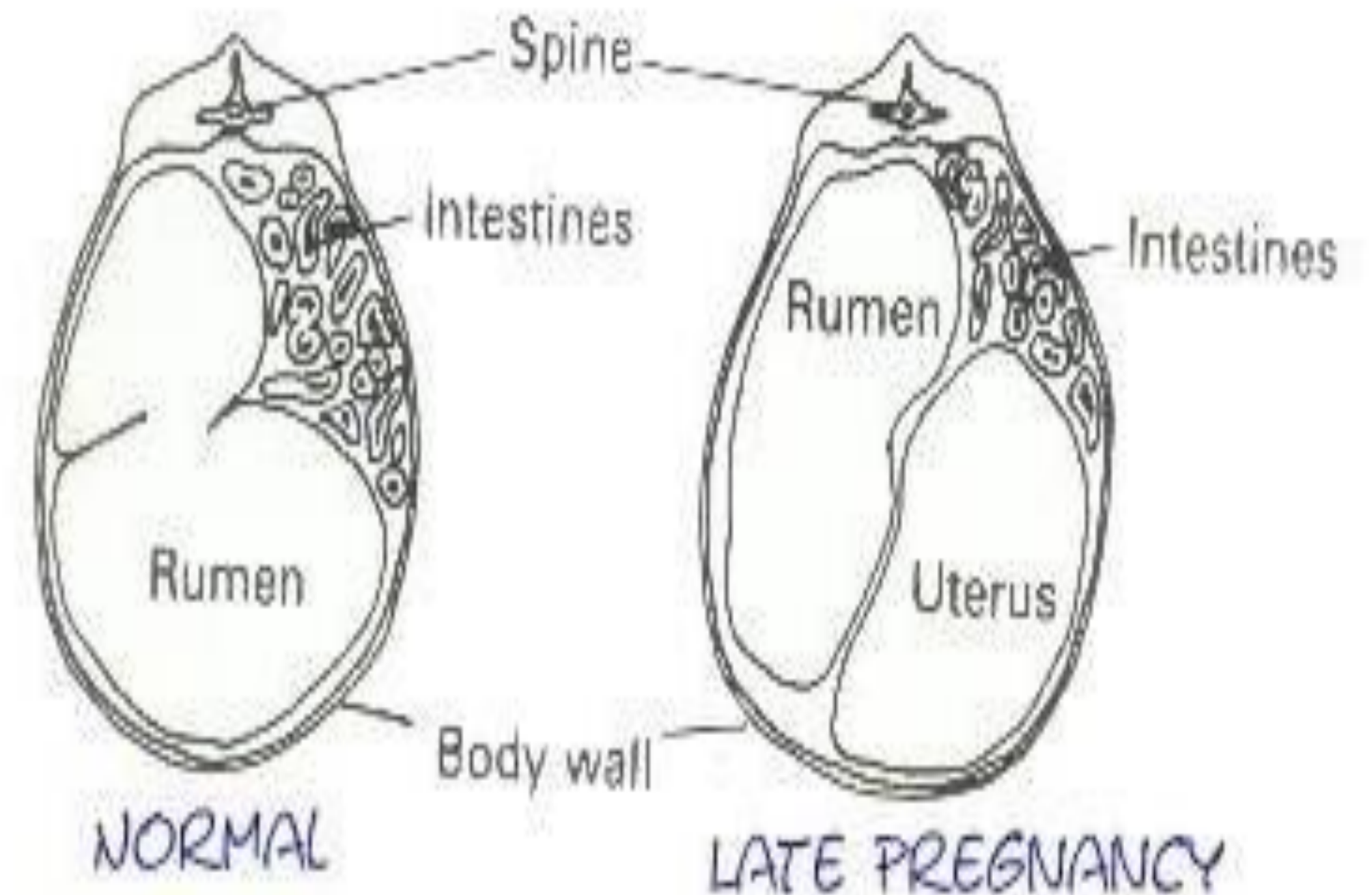
TWIN-LAMB/KID DISEASE

PREGNANCY TOXEMIA = KETOSIS ASSOCIATED WITH:

- **LATE PREGNANCY (LAST MONTH)**
- **INAPPROPRIATE NUTRITION**
- **VERY LOW (2/5) OR VERY HIGH (4/5) BCS**
- **NUMBER OF FETUS (3 OR MORE)**

CLINICAL SIGNS:

- **DULL/DEPRESSION**
- **INAPPETENCE**
- **RECUMBENT**
- **PAIN/DISCOMFORT (GRINDING THE TEETH)**
- **NEUROLOGIC SIGNS (OBTUNDED, PRESS HEAD AGAINST WALL)**



**EFFECT ON THE RUMEN & THE UTERUS
OF A HEAVILY PREGNANT DOE**



PREGNANCY TOXEMIA

WHAT TO DO?

- Offer low volume/high concentration of energy food (grains)
 - 0.5 lbs. grain daily + good quality hay
- Give propylene glycol oral (60-90ml two/three times a day)
- Monitor for progression
- Veterinary evaluation if signs progress
 - More aggressive treatment will be needed (IV fluids, dextrose, antibiotics)
 - Need to assess blood levels of glucose and ketones
 - Need to assess fetal wellbeing

Prevention is the key.



PREGNANCY DISEASE, HYPOCALCEMIA

OCCURS PRE AND POST – PARTUM

Pre – partum – fetal Ca demands

Post – partum – lactational Ca demands

**CLINICAL SIGNS: MUSCULAR WEAKNESS, ANOREXIA, DEPRESSION,
RECUMBENCY, DEATH**

TREATMENT: IV, SQ, PO, CA SUPPLEMENTATION

**PROPER CALCIUM SUPPLEMENTATION AND DIET ARE IMPORTANT IN THE
CONTROL OF THIS SYNDROME**



POST-PARTUM DISORDERS

POST PARTUM DISORDERS

I UTERINE PROLAPSE

I RETAINED FETAL MEMBRANES

I METRITIS / ENDOMETRITIS

I PYOMETRA

I PREGNANCY TOXEMIA (KETOSIS)

I HYPOCALCEMIA

I MASTITIS

RETAINED PLACENTA

RETAINED PLACENTA

Difficult births

Induction

Nutrition low in Mg, Ca, Se

Slow uterine contractions



UTERINE PROLAPSE

Emergency situation

Call your Veterinarian

Cull + / -



PYOMETRA METRITIS



PREGNANCY DISEASE, MASTITIS

- **MAJOR CAUSE OF PREMATURE CULLING**
- **NEW INFECTIONS USUALLY OCCUR AT DRY-OFF OR EARLY IN LACTATION (CHECK TEETH OF LAMBS/KIDS)**
INFECTION ASCENDS FROM TEAT END
- **COMMON BACTERIA, S. AUREUS. PASTEURELLA SP. COLIFORMS**
- **TREATMENT: FREQUENT STRIPPING, INTRAMAMMARY ANTIBIOTICS, ANTI-INFLAMMATORY DRUGS, SYSTEMIC ANTIBIOTICS**
- **DRY TREATMENT USE IN SHEEP AND GOATS**
- **CHRONIC CASES RARELY FULLY RECOVER => CULL**

MASTITIS

MASTITIS (HARD BAG; BLUE BAG)

Injuries, viral or bacterial infections.

Bacteria is most common cause.

Clinical vs subclinical

Culture

Viral cause is most frequently OPPV.

Treat with intramammary and/or injectable antibiotics, anti-inflammatory agents.

Prevention:

Sanitation

Reduce protein levels

Withhold water 24 hours before weaning





LAMB/ KID DISEASES



PREPARATION FOR THE NEWBORN

PREPARE A PEN FOR THE FIRST 1-3 DAYS

- Clean and dry
- Sufficient bedding
- Warm and protected from wind/rain
- Easy access to regular checks







FEEDING THE KIDS / LAMBS

WEIGHT THE KIDS / LAMBS

CALCULATIONS:

Weight (in kilograms) x 0.20 x 1000 = Total volume of milk to feed in 24hs

Total volume of milk to feed in 24hs / 6 (number of intakes during one day) = Volume to give per feeding

WARM (BUT NOT OVERHEAT) COLOSTRUM

CLEAN BOTTLE/NIPPLES

STORE FRESH COLOSTRUM IN FRIDGE

FREEZE (SMALL BAGS) EXTRA COLOSTRUM

BIRTH TO 3 WEEKS

STILL BORN, WEEK OR DEAD LAMBS/ KIDS

Important to be able to determine if born dead or died shortly after death.

Examine lungs

Pink-spongy – did breathe

Deep purple – did not breathe

Non-infectious causes most common.

Hypothermia

Hypoglycemia

Dystocia

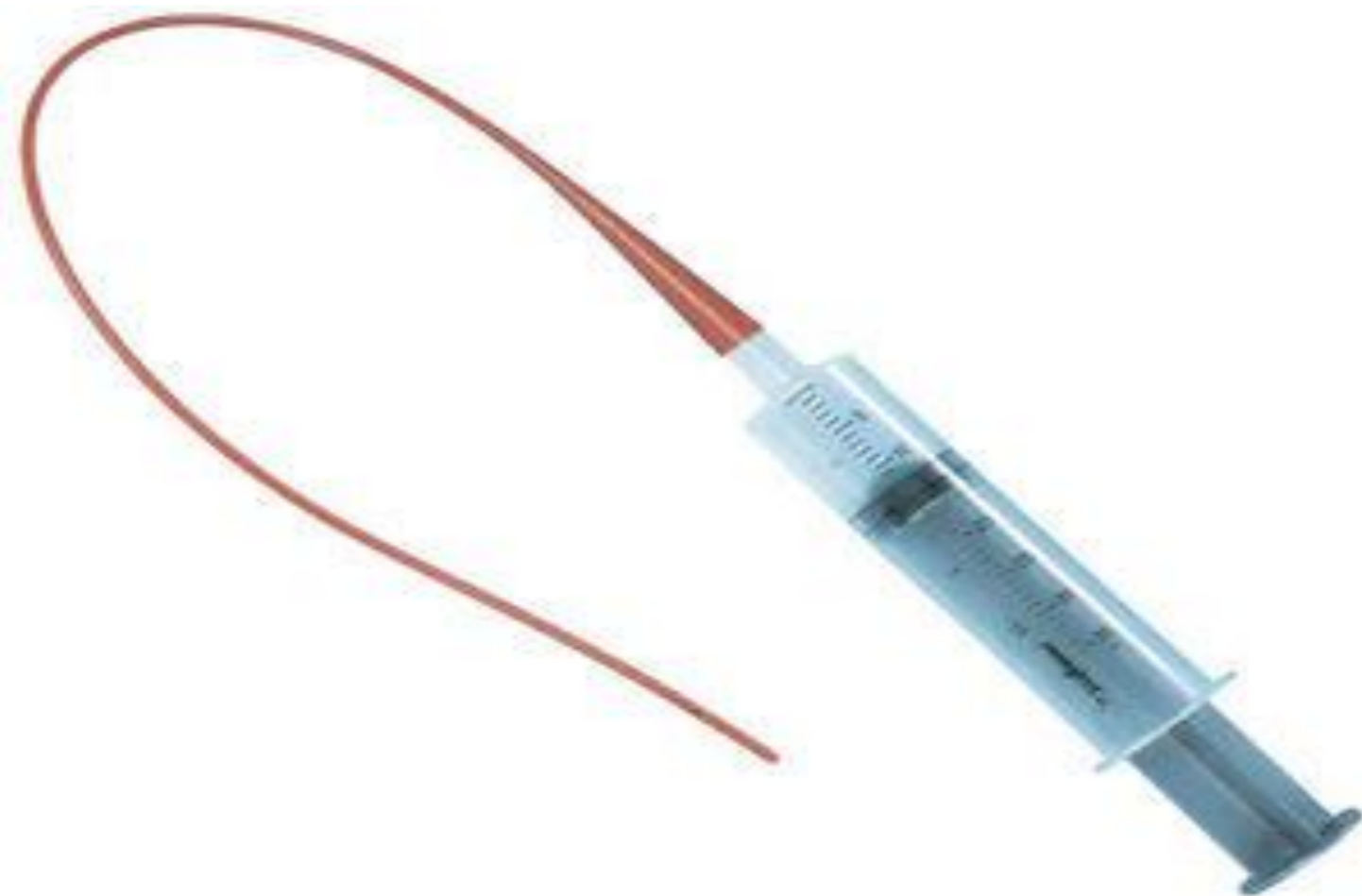
Infectious agents

Chlamydia, Border disease virus, Campylobacter, Toxoplasmosis, Brucella ovis, Coxiella, Cache Valley virus.



HYPOTHERMIC / HYPOGLYCEMIC KIDS / LAMBS

TEMPERATURE BELOW 100 F



EARLY DISEASES

SUDDEN DEATH OF YOUNG LAMBS / KIDS

Bacteria and toxins.

Clostridium, E. coli, Salmonella, Pasteurella

Adequate colostrum intake critical (5% of BW)

Gut closure occurs within 12 hrs of birth

Clean lambing areas

Disinfect navel

Clostridium perfringens Type C and tetani.

EARLY DISEASES

RESPIRATORY

Pneumonia

Bacterial or viral

Pasteurella hemolytica most common

Parainfluenza virus type 3 (PI3)

Parasite

Causes

Inadequate colostrum

Stress/crowding

Unsanitary conditions/poor ventilation

SCOURS (DIARRHEA)

Bacterial, parasitic, viral

E coli

Rota and corona viruses

Primary parasitic causes are cryptosporida and coccidia. (older lambs)

Rehydrate and provide electrolytes

Antibiotic treatment and prophylactically

Clean environment, isolate infected animals, clean equipment/self

EARLY DISEASES

NAVEL AND JOINT ILL

Occurs at birth, docking and castration

Typically bacterial especially *streptococci*

Dip navel, clean environments, aseptic techniques for docking and castration.

Castration before 6 weeks of age, docking before 3 weeks of age.

Prior to 1 week my preference

Healthy lambs only

LATE DISEASES

- Coccidiosis
 - Protozoan (Eimeria).
 - Sheep develop immunity with age.
 - Usually occurs at 4-8 weeks of age.
 - Diarrhea is most common sign.
 - Often signs occur at weaning.
 - Sanitation, coccidiostats (Deccox), reduce stress.



LATE DISEASES

- White muscle disease (stiff lamb disease)
 - Vit E or Selenium def.
 - Two forms of disease
 - Newborn lambs: Vit E/Selenium def in ewes.
 - Older lambs: Selenium def. (esp. important in our area).
 - Supplement ewes and/or lambs with Vit E/Selenium



White muscle disease

Image source: North Carolina State University

LATE DISEASES

- Enterotoxemia: (“overeating”, pulpy kidney).
 - C. perfringens Type D
 - Rapidly fatal.
 - Prevent with good feeding/health management.
 - Vaccinate pregnant ewes 3-4 week prior to birth.
 - Vaccinate lambs 3-4 weeks of age and boost 14-21 days later
 - Anthelmintics/coccidiostats.
 - Gradual diet changes.



LATE DISEASES

- Acidosis: (grain overload, founder)
 - Rapid change to high concentrate diet.
 - Common in feedlots
 - Sudden death.
 - Avoid rapid increases in grain in diet
 - Drench with bicarbonate

LATE DISEASES

- Urolithiasis: (Water belly, urinary calculi)
 - Metabolic disease of male sheep.
 - Wethers at greatest risk
 - Treatment
 - Antispasmodics
 - Removal of ureteral process
 - Surgical intervention
 - Euthanasia
 - Prevention
 - Caused by calcium and phosphorus imbalance.
 - Provide adequate water, 2:1 Ca:P in diet
 - Acidify the urine with suppl. ammonium chloride

LATE DISEASES

- Polio:
(polioencephalomalacia)
 - Lack of Thiamine (B1)
 - Animal is down on side and “paddling”.
 - Treat with thiamine hydrochloride.



Polioencephalomalacia

Image source: TeAra.govt.nz

LATE DISEASES

- Scours and Diarrhea
 - Salmonellosis (*S. typhimurium*)
 - Yellow/green odiferous manure
 - Prevention is Key: Sanitation
 - Transmissible to humans.

LATE DISEASES

- Pneumonia: (Pasteurellosis: shipping fever)
 - Can be viral in nature so antibiotics don't always work (OAV, PI3; RSV), also mycoplasma.
 - Prevent by reducing stress
 - Avoid dusty feeds and pens
 - Adequate ventilation.

LATE DISEASES

- Rectal prolapse:
 - High concentrate feeding
 - Short docking
 - Dusty feed or pens
 - Growth promotant use
 - Virus infection
 - Cull affected animals, can repair if animal is valuable.



LATE DISEASES



- Copper
 - Difference between toxicity and deficiency is narrow.
 - Copper absorption is affected by molybdenum.
 - Cattle formulations of copper will be toxic to sheep.
- Club lamb fungus:
 - Trichophyton Verrucosum or Microspodrum.
 - Circular patches of crusted wool, wet raw surface beneath.
 - Highly contagious.
 - Transmissible to humans.
 - Consult vet for treatment.



4/3/2020



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QUESTIONS?