UNIVERSITY OF ILLINOIS

Routine examination and care of the newborn foal

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Equine Primary Care

The Sick Foal

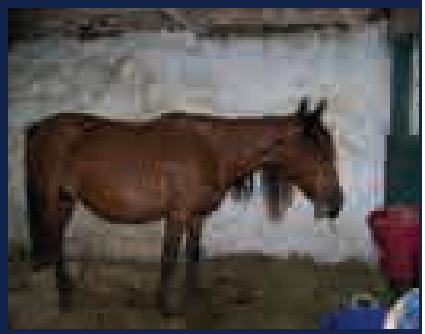
- History = Risk Assessment
- Special Needs
- Referral or Treat on the Farm
  - Economics
  - Value of the Foal
  - Client Wishes
  - Availability of Hospital
  - Availability of expertise and equipment

RISK ASSESSMENT

Maternal
Parturition
Management
Foal

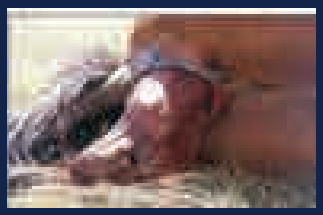
MATERNAL RISK FACTORS

- History
- Vaginal discharge
- Colic
- Malnutrition
- Concurrent disease
- Prolonged gestation
- Dripping Colostrum



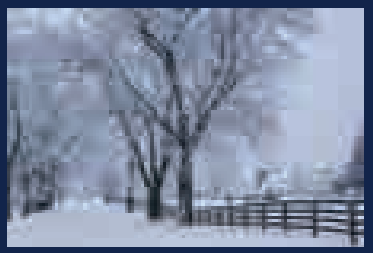
Peripartorient Risk Factors

- Dystocia
- Red Bag Presentation
- Placental Disease
- Blood Loss
- Premature Cord Breakage



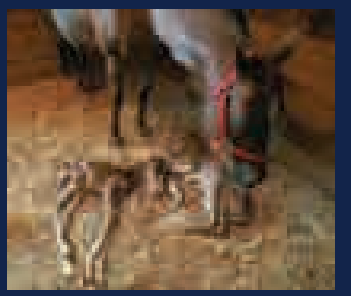
Management Risk Factors

- Dirty, wet stall
- Weather
- Experience of attendant
- Transport during late pregnancy



Foal Risk Factors

- Prematurity: < 320 days gestation
- Slow adaptation
- Inadequate colostrum absorption
- Congenital abnormalities
- Meconium staining
- Trauma
- Twinning



History

- Gestational age
  - Mean 341 (320-365)
  - Premature < 320 days
  - Dysmature
  - Small for gestational age
- Behavior
  - Suckle reflux by 20 minutes
  - Stand by 1 hour
  - Nurse by 2 hours

INITIAL VISIT

- Low risk
  - 1-2-3 rule
  - Physical examination and IgG test at 12 to 24 hours of age
- Medium risk
  - At foaling
- High risk
  - Attended foaling
  - Referral

Initial Visit

- Detailed physical examination
  - Evaluate mare
  - Evaluate placenta
  - Evaluate foal
- Identify congenital abnormalities
- Identify potential problems
- Collect appropriate diagnostic tests
- Initiate treatment
- Navel care

Signs of a Sick Foal

- Nonspecific
- Decreased activity
- Loss of suckle
- Loss of maternal recognition
- Increased sleepiness
- Altered temperature

Observe Mare and Foal

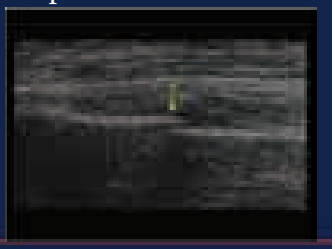
- Foal's respiratory rate
- Observe mare and foals interaction
  - Is mare attentive, protective, or aggressive?
  - Is foal nursing?
    - *Full udder*
    - *Streaming milk*
    - *Milk on foal's head*
  - Foal hungry?
  - Foal coughing or milk in nostrils?

Examination of Neonate

- TPR
  - Normal temperature is 99 to 101.5°F
  - Heart rate 70 to 100 bpm
  - Respirations at 60 to 80/min at birth and decrease to 20 to 40/min
- Heart and lungs
  - May hear murmur for 48 hours
  - Must be standing or sternal to listen to lungs
  - Breath sounds are louder than adults
  - Observe effort

Signs of Respiratory Distress

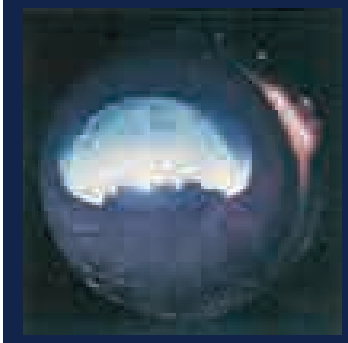
- Nostril flaring, exaggerated chest movement
- Grunting
- Snoring on inspiration
- Inward chest movement with expansion of abdomen on inspiration
- Evaluate for rib fractures



Assess Hydration

- Tenting of eyelid
- Watch for entropion
- Gums should be moist
- Urine specific gravity
  - Be prepared to catch sample at all times
  - Should be check 2 to 3 times daily
  - S.G> < 1.010 if hydration is adequate

Eye Abnormalities



Examine Mucous Membranes and CRT

- Normal color is similar to adults – pink
- CRT is less than 2 seconds
- Signs of trouble
  - Petechial hemorrhages
  - Injected – bright red
  - Jaundice
  - Cyanosis

Mucous Membranes

- Pink
- Congested
- Hemorrhagic
- Pale
- Icteric
- Cyanotic

Signs of Shock

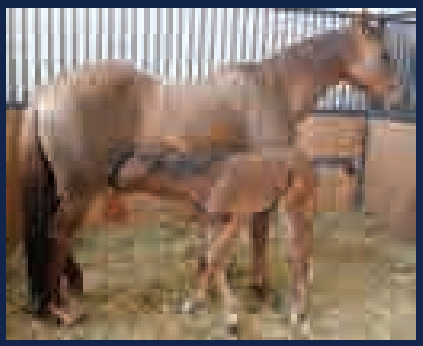
- Recumbent
- Increased heart rate
- Prolonged capillary refill time
- Cool extremities

Listen to GI Sounds

- Sounds are louder and more fluid than adults
- Monitor size of abdomen
  - Measure at last rib
  - Record measurement
- Frequency and character of feces
- Straining, tail flagging, rolling on back, grinding of teeth

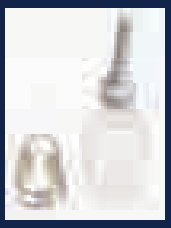
Meconium Retention

- Arched posture
- Tail flagging
- Weak nursing
- Colic
- Abdominal distention



Treatment of Meconium Impaction

- Commercial phosphate enema
  - Do not repeat
    - *Irritating*
    - *Possibility of hyperphosphatemia*
- Warm, soapy water
  - Gravity flow
  - 500 ml



Persistent Meconium Impaction

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-
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Palpate Joints

- Lameness
- Heat, pain or swelling
- Check all joints

Palpate umbilicus

- Source of bacterial entrance into body
- Dip 2 - 3 times daily for first few days
- Palpate entire stump
  - Moisture - urine
  - Bleeding
  - Discharge
- Presence of hernias

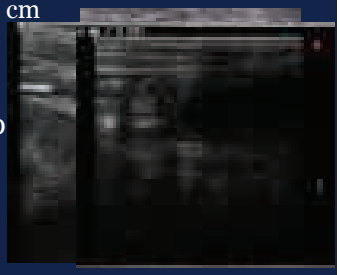
Navel Dipping

- Chlorhexidine 0.5%
  - 1 part concentrate to 3 parts water
  - Kills more bacteria than povidone iodine or tincture of iodine
  - Effects persist longer than other dips
  - Less irritating
  - Dip 3 times daily
- Do not use tinctures!

Umbilical Problems

Umbilical Structures

- Umbilical vein
  - Caudal to umbilicus: 0.61 ± 0.20 cm
  - Mid Abdomen: 0.52 ± 0.19 cm
  - At liver: 0.60 ± 0.19 cm
- Urachus: 1.75 ± 0.37 cm
- Umbilical Arteries: 0.85 + 0



Umbilical Ultrasound

Examination of Neonate

- Eyes
- Urogenital
- Musculoskeletal
  - Laxity or contracted
  - Angulation
  - Joints
  - Ribs
- Neurological system - mentation

Laboratory Testing

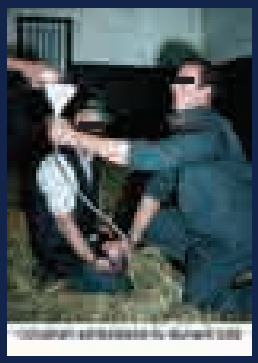
IgG
Lactate
Serum Amyloid A
Glucose

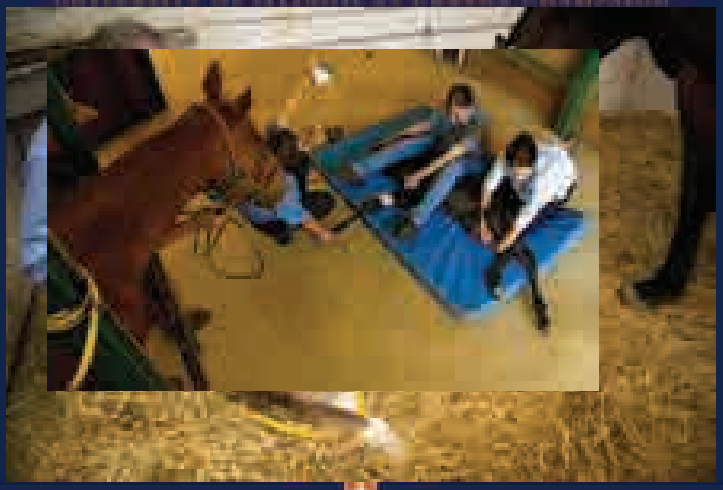
IgG Testing

- Should be done at 12 to 16 hours of age
- Diagnosis:
  - Complete FPT: IgG <200
  - Partial FPT: IgG > 400 but < 800 mg/dl
- Available tests:
  - RID “gold standard”
  - Densimeter
  - SNAP test: an ELISA based test
  - Zinc sulfate, glutaraldehyde

Correction of FPT

- < 18 hours-of-age
  - Administer colostrum
  - S. G. greater than 1.060
- > 18 hours-of age
  - Intravenous plasma
    - *Thaw slowly*
    - *Use in-line filter*





Plasma Administration

- 20 to 40 ml/kg for complete FPT
- Begin at 1 drop/sec for 5 to 10 minutes
- Increase rate to bolus over 30 to 60 minutes
- Monitor for reactions
  - Fever
  - Tachycardia
  - Apnea
  - Muscle fasciculations
  - Urticaria
  - Facial edema

Treatment of Severe Reactions

- Epinephrine: 0.01 to 0.02 mg/kg
- Dexamethasone: 0.04 mg/kg

Other Testing

- Stall-side
  - Serum amyloid A
    - *Acute phase protein*
    - *Normal value in foals is 0-27 mg/l*
    - *Values > 100 mg/l are associated with infection]*
  - Lactate
    - *Blood lactate may be elevated at birth*
    - *Stabilizes at 2.1 mmol/l by 24 hours*
    - *Persistent hyperlactatemia - poorer prognosis*
  - Glucose

Laboratory Testing

- CBC
- Fibrinogen
- Serum chemistry
- Blood gas

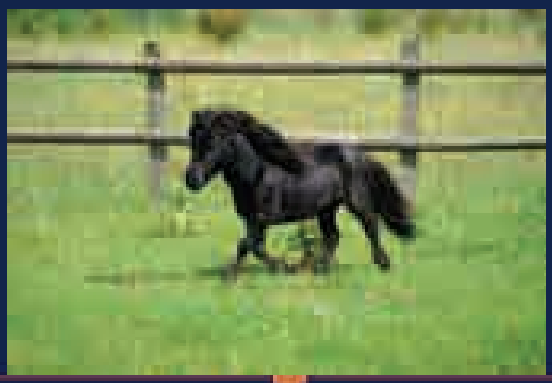
Systemic Inflammatory Response

- Alteration in at least 3 of the following:
  - Body temperature >39.2° C or < 37.2° C
  - Heart rate > 115 beats/min
  - Respiratory rate > 56 breathe/min
  - WBC > 14.4 of < 6.9 x 10^9/l
  - Band neutrophils > 5%
  - Venous blood lactate . 5.0 mmol/l
  - Venous blood glucose < 2.8 mmol/l

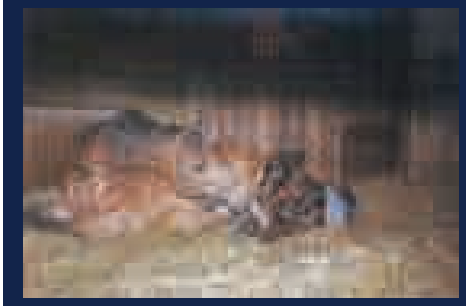
Foals are not just small horses!!!!

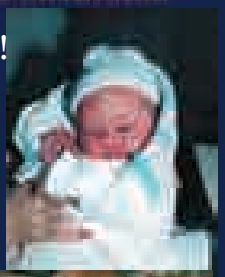
Unique Physiology

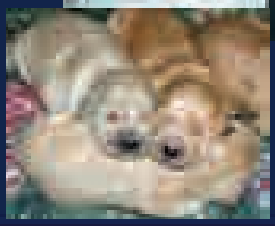
This is a little horse!



These are neonates!







Special Requirements of Neonates

- Poor ability to regulate body temperature
- Limited energy stores
- No antibodies
- Large volume of distribution
- Decreased renal function
- Learned responses are absent