Maternity Pen Training with Welfare as the Priority
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Praedium

Welfare issues of calving

• Welfare aspects of calving
• Physiology
• Behavior
• Pain
• Anxiety
• What the cow needs
• What the calf needs

Goal: a healthy cow and a healthy calf

Physiology of parturition

• Initiated by cortisol from the fetus
• Progesterone production changed to estrogen production in the uterus
• Estrogen
  – Drives behavior of parturition
  – Decreases appetite
  – Recruits oxytocin receptors in endometrium
• Endorphins released
• Relaxin allows ligaments to relax
Stages of parturition

Stage 1 – dilation of cervix
  – Calf introduced into birth canal
Stage 2 – active contractions to deliver the calf
  – Calf delivered
Stage 3 – delivery of the placenta

Physiology and Behavior of Parturition

Stage 1 – uterine contractions present fetus into birth canal
  • Cow may appear restless, uncomfortable, raising tail, looking at rear end
  • Often separates from other cows
  • May last from 1 to 24 hours
  • Calf feet and head act as a wedge

Teach:
• Recognition of signs of cow in Stage 1
• Need for calm environment
• Clean and dry housing
• Move cows calmly to calving area

Stage 2 – Calf delivered
  • Abdominal muscles force calf through pelvis
    – Active contractions with cow pushing
  • Mature cow: 30 minutes – 1 hour
  • Heifer: 1-4 hours
  • Cattle give birth lying down
  • Calf becomes conscious from increased oxygen with first breaths

Teach:
• Recognition of cow in stage 2
• Signs of normal and abnormal delivery
• Understanding of normal parturition
• How to correct mal-presentations
Look for signs of distress

Stage 3 – expulsion of the placenta or membranes
- Membranes should be delivered within 2-8 hours after the calf is born
- Placenta has endorphins

Stage 2
Cows give birth lying down
Behavior after parturition

- Dam licks calf
  - Cleans nose, dries hair
  - Stimulates neuromuscular system of calf
  - Gets calf to stand and nurse
  - Important to cow and calf

How to help

- Examination of cow
- Determine dilation of
  - Vulva
  - Vagina
  - Cervix
- Determine position of calf
  - Normal
  - Abnormal

Lubrication

Sanitation

Dilation

Equipment Needed for Delivery

- Plastic sleeves, gloves
- Mild detergent or disinfectant
- Bucket
- PLENTY OF LUBRICATION!!
- Calf chains with handles
- Calving straps
- Head snare
- Fetal extractor
Wash, glove, lubricate, examine

- First wash yourself and cow with plenty of soap and water – Betadine/Prepodyne
- Glove up
- Lubricate calf and birth canal
- Manually dilate vulva and vagina
- Examine position of calf and dilation of birth canal

Slowly dilate vulva

- When head and feet are present
- Place hands on either side of head
- Move in and out to stretch vulva
- Take as long as needed if no signs of stress in calf

Dilatation of Vagina and Cervix

- Check to see that the vagina and cervix is fully open before trying to pull the calf
- **Manually dilate vagina and cervix**
- No need to break chorioallantoic sac
- If cervix is still closed, may need to have vet do C-section?
  - legs and head through cervix = vaginal delivery
When delivering the calf

- Let the cow help you – take up slack when she pushes – rest when she rests
- Don’t be in a big hurry
- **Once the shoulders are out**, pull in a downward arc toward the cow’s feet
- Not too much force

Take your time…let the cow do most of the work

Pull in arc toward feet once shoulders are out

Catch the calf – **DO NOT** let the calf fall to the floor

Big calves

- Rotate shoulders
- Pull one shoulder through at a time
- Twist calf
Care of cow after calving:

- Check for another calf
- Check vagina, cervix and uterus for damage
  - If vaginal mucosal tears present consider antimicrobial therapy
- Consider giving oxytocin after calving to aid in contraction of uterus
- Best to milk first time in the maternity area
- Watch for delivery of the placenta

Care of cow after calving:

Consider pain management

- A difficult delivery probably requires pain management
  - Inflammation in the pelvis
- Signs of calving pain:
  - Anxiety, arched back, tail up, rear legs apart, ataxia, vocalization
- Calving ease scores: 1 2 3 4 5

Pain and parturition in cattle

Cows given analgesic within 6 hours post-partum (carboprophen / meloxicam)

- more animals from the analgesia group were observed eating during the first hours after calving.
- No changes in health outcomes
- suggests that pain management after parturition leads to earlier feed intake after calving and that this may lead to higher milk yield in first-lactation animals.


Post-partum pain management

Anti-inflammatory drugs

• labeled for cattle in US:
  – Flunixin (1.1 to 2.2 mg/kg IV; WDT meat 4 days, milk 36 hours
    • Do not give flunixin prepartum
  – Meloxicam (0.5 to 1 mg/kg PO; WDT meat 21 days, milk 96 hours)

• not-labeled in US:
  – Meloxicam (0.5 to 1 mg/kg PO; WDT meat 21 days, milk 96 hours)


Cortisol response during calving

“...hormonal changes during labor are related to the phase of labor and the degree of difficulty encountered. Hormonal peaks were reached around the time of expulsion, indicating that they were associated with muscle work, stress and pain rather than metabolic effects.”

Vannucchi CI, Rodrigues JA, Silva LC, Lúcio CF, Veiga GA, Furtado PV, Oliveira CA, Nichi M.
Combination of stress and pain could be the reason for the high plasma cortisol concentrations during Expulsion.

Physiology and behavior of neonatal calves

- Neuromuscular functions initiated
  - Dam licking, standing, moving; stimulation
- Digestive enzymes initiated by colostrum
- Active transport of IgG’s functional until about 12 hours after first meal

- Precocious enough to stand and nurse
- Lay still for first 3 to 4 days
- Cortisol and endorphins on-board from parturition

Care of new born calf

- Calves MUST have colostrum
  - 10% of body weight
  - *Including bull calves*
- Colostrum has
  - ↑ Energy (fat)
  - ↑ Protein
  - ↑ Antibodies
  - ↓ Lactose
- Nipple vs intubation
Care of neonatal calf
Put calf in clean dry place; give plenty colostrum right away

Early separation of calf from dam
• Practical in contemporary dairying to achieve high milk production
• Considered necessary to control post-partum diseases
  – Mastitis, hypocalcemia
• Maternal bond does develop
  – Cows and calves anxious when separated
  • May be able to alleviate some anxiety by nursing calf and providing stimulation

Questions?