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Calving Management and Newborn Calf Care: An Interactive Textbook for Cattle Medicine and Obstetrics

Chapter 1 Generalities/Introduction

- 1.1. Reproduction in cattle (definitions, implications with production ...)
 - 1.1.1. Dairy herds
 - 1.1.2. Beef herds
- 1.2. Reproduction management
- 1.3. Embryonic, fetal losses and abortion
- 1.4. Calving
 - 1.4.1. Eua (definition)
 - 1.4.2. Dysia (definitions, incidence, significances, ...)
- 1.5. The offspring (vitality, mortality,...)
- 1.6. The challenges and new insights for the care of the dam and calf

Chapter 2 Anatomy of the reproductive system

- Short introduction regarding the uterus/ovaries and concept of pelvimetry
- 2.1. Internal genitalia (Uterus, cervix and vagina/vestibular zone, ovaries)
 - 2.2. External genitalia (vulva, perineum, defects, ...)
 - 2.3. The pelvis
 - Concept of birth canal, applications of pelvimetry
 - 2.3.1. The osseous constituents (sacrum, ischium, ilium, pelvic inlet and outlet...)
 - 2.3.2. Soft tissues (ligaments, articulations, blood vessels, nerfs, pelvic diaphragm, ...)
 - 2.3.3. Conformation and inclination
 - 2.4. Pelvic mensuration (techniques and uses)
 - 2.5. Genetic and nutritional improvement for an adequate pelvis in heifers.
 - 2.6. Most common genetic and congenital defects

Learning objectives/key points and Q&A

Chapter 3 Reproductive physiology

- Introduction/puberty/others
- 3.1. Oestrus cycle (characterization; hormones; main reasons for length variation, ...)
 - 3.2. Conception (fertilization, embryonic development, maternal recognition, embryo implantation; hormonal changes, placental development, Is the bovine uterus a sterile environment?, ...)
 - 3.3. Pregnancy length (related factors; claws, infections and discomfort, myometrium contractility during late pregnancy, ...)
 - 3.4. Effect of pregnancy stage on milk composition
 - 3.5. Anoestrus – causes and consequences

3.6. Factors affecting reproductive physiology and fertility (virus, genetic, malnutrition).

Chapter 4 Non-pregnant and pregnant cow's management

- 4.1. Management of timed fertilization/insemination (Genomic evaluation of age at first calving, determination of optimal time in heifers and in adult cows, ...)
- 4.2. Twins (incidence, implications, potential reduction, ...)
- 4.3. Management of the pregnant cow (diagnosis, rectal palpation and pregnancy loss, nutritional management during lactating period, vaccinations, serum metabolites during pregnancy...)
- 4.4. Management of the pregnant heifer
- 4.5. Transition period
 - 4.5.1. Implications of dry period length
 - 4.5.2. Changes in the mammary gland
 - 4.5.3. Nutritional management (negative energy balance, minerals, BCS, feed intake,...)
- 4.6. Colostrum (characterization, nutritional value, immunoglobulin G1, G2 and M concentrations, preservation...)

Learning objectives/key points and Q&A

Chapter 5 Normal birth (eua)

- 5.1. Parturition induction and hormonal changes (physiologic induction, artificial induction)
- 5.2. Fetal static (classification, assessment,...)
- 5.3. Prodromal external signs of parturition
- 5.4. Stages of labor
 - 5.4.1. Stage I or dilatation stage (signs, duration, changes...)
 - 5.4.2. Stage II or fetal expulsion stage (signs, duration, changes...)
 - 5.4.2.1. Prediction and management (Body/rectal/vaginal/ear temperature; Rumination and feeding behavior; Combined pelvic ligament relaxation and teat filling measurement; Behavioral changes; Steroid assays, use of automated monitoring devices and electronic data loggers to predict the calving)
 - 5.4.3. Stage III or placental expulsion (signs, duration, changes...)
- 5.5. Fetal physiology during parturition
 - 5.5.1. Respiratory changes
 - 5.5.2. Cardiovascular changes

Learning objectives/key points and Q&A

Chapter 6 Abnormal occurrences during calving

- 6.1. Causes of dysia (Fetal and/or maternal; new tentatives of classification,...)
- 6.2. Fetopelvic disproportion and absolute fetal improved size
- 6.3. Fault dispositions (abnormal fetal static)
- 6.4. Inadequate size of birth canal
- 6.5. Inadequate forces
- 6.6. Fetal congenital defects affecting calving
- 6.6. Signs of fetal stress (how to identify, how to avoid, how to correct)
- 6.7. Human intervention in dysia (lubrification, epidural, sedation, episiotomy, pulling...)

Learning objectives/key points and Q&A

Chapter 7 Assisted vaginal delivery

- 7.1. Obstetrical examination
- 7.2. Appropriate time for obstetrical intervention
- 7.3. Scales to measure the need for assistance
- 7.4. Appropriate installations for calving (maternity features...)
- 7.7. Post-calving assistance

Learning objectives/key points and Q&A

Chapter 8 Obstetric manoeuvres

- 8.1. Definitions and classification of obstetric manoeuvres

All procedures with scientific illustration

Learning objectives/key points and Q&A

Chapter 9 Fetotomy

- 9.1 Indications and contraindications
- 9.2 Dam preparation
- 9.3 Material for different types of fetotomy (percutaneous)
- 9.4 Procedures (parcial and total fetotomy)
- 9.5 Post-intervention care

Learning objectives/key points and Q&A

Chapter 10 Caesarean Section 10.1. Indications and contraindications (including the surgical approach)

- 10.2. When to go for a C-section
- 10.3. Dam restraint methods
- 10.4. Anesthetic pools
- 10.5. Different surgical procedures
- 10.6. Postoperative care

Learning objectives/key points and Q&A

Chapter 11 Obstetric problems before or during calving

- 11.1. Uterine torsion
 - 11.1.1. Etiopathophysiology
 - 11.1.2. Diagnosis
 - 11.1.3. Treatment
 - 11.1.4 Post-intervention care
- 11.2. Vaginal prolapse
 - 11.2.1. Etiopathophysiology
 - 11.2.2. Diagnosis
 - 11.2.3. Treatment
 - 11.2.4 Post-intervention care
- 11.3. Hydrops (Hydrallantois/Hydramnios)
 - 11.3.1. Etiopathophysiology
 - 11.3.2. Diagnosis
 - 11.3.3. Treatment
 - 11.3.4 Post-intervention care

11.4. Lacerations, hemorrhages and organ rupture

11.4.1. Etiopathophysiology

11.4.2. Diagnosis

11.4.3. Treatment 11.4.4 Post-intervention care

Learning objectives/key points and Q&A

Chapter 12 Post-partum management

12.1. Pain management after calving

12.2. Uterine involution (including factor which affect cervix closure, ...)

12.2. Resumption of estrous cyclicity (Dairy and beef cows,...)

12.3. Influence of calving events and post-partum health on fertility.

Learning objectives/key points and Q&A

Chapter 13 Post-partum diseases

13.1. Uterine prolapse 13.2. Hypocalcaemia (milk fever)

13.3. Downer cow

13.2. Retained placenta

13.3. Puerperal metritis

13.4. Endometritis and pyometra

13.5. Other diseases and their relation with calving – ketosis, fatty-liver, mastitis

Chapter 14 Care and management of the newly born calf

14.1. Newborn calf vitality: Risk factors, characteristics and assessment

15.1.1. Fetal resuscitation

15.1.2. Clinical examination of the newborn (reflexes, pain,)

15.1.3. Hypoxia and acidosis

15.1.4. Trauma and pain

15.1.5. Genetic and congenital defects

15.1.6. Euthanasia

14.2. Colostrum management

15.2.1. Quality assessment

15.2.2. Time, quantity and ways to provide colostrum

15.2.3. Evaluation of failure of passive transmission

14.3. Environmental comfort and hygiene

14.4. Neonatal diseases (onfalitis, hernia, diarrhea...)

14.5. Calf growth (milk replacers, development of rumen, ...)

14.6. Weaning

Learning objectives/key points and Q&A.