KEY Control of Reproductive Functions (Part 2)

1. What is Apparent Anestrus?

The erroneous interpretation that a female is in anestrus because of failure to detect pregnancy or observe estrus

2. What is True Anestrus?

A condition where a female does not cycle due insufficient hormonal stimuli

3. What are the causes of True Anestrus?

- Physiological
  - Gestational
  - Lactation
- Nutritional
  - Negative Energy Balance
- Environmental
  - Photoperiod
  - Temperature
  - Moisture

4. What causes Gestational Estrus?

- Female is pregnant
- Elevated progesterone (P4) from CL and Placenta
  - (-) Feedback to hypothalamus

    ⬇⬇

    Reduces GnRH release from surge center

    ⬇⬇

    Reduces gonadotropin release from AP

    ⬇⬇

    No follicle maturation, No standing heat, and No LH surge

5. How does Gestational Estrus end?

- Progesterone drops rapidly prior to parturition
  - Estrogen increases
- Postpartum cyclicity resumes

6. What causes Lactational Anestrus?

Female is nursing her young, causing anestrus

7. How are the following species impacted by Lactational Anestrus?

Cattle: Cyclicity is delayed ➡ influenced by degree of suckling

- Suckling 2x or less per day ➡ cyclicity returns

Sow: Cyclicity is completely suppressed

Mare and Alpaca: EXCEPTIONS (they still cycle during lactation)

8. What other factors would cause anestrus besides lactation?
   Visual, Olfactory, or Auditory encounters with offspring

9. What causes Nutritional Anestrus?
   - Negative Energy Balance
     - Lack of GnRH pulses
       ⬇⬇
       Inadequate secretion of Gonadotropins
       ⬇⬇
       Inactive ovaries
   - Adequate nutrition = estrous cycle resumes

10. What kind of female commonly experiences Nutritional Anestrus?
   - Young females giving birth for the first time
     - Young, still growing
     - Growth + Lactation = big energy demands

11. What is Photoperiod and how does it impact estrus in certain species?
   - Period of time during the day when there is daylight
     - Mare: Long day breeders (Spring) ➡ Increasing day length
     - Sheep, Goats, Deer: Short day breeders (Fall) ➡ Decreasing day length

12. How is Melatonin impacted by long days and short days?
Long days = short nights = low melatonin
Short days = long nights = high melatonin

13. How does Temperature and Moisture impact females?
Temperature: Low and High temps require the body to expend energy
Moisture: Controls nutrients - seasonal changes can cause changes in feed availability and quality

14. What percentage of the Follicular Phase and Luteal Phase take up the Estrous and Menstrual Cycle?
Estrous: Luteal (80%), Follicular (20%)
Menstrual: Luteal (50%), Follicular (50%)