# Beef Calf Management
# Birth to Weaning

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# Why is this stage so important?

Calves, especially newborns, are highly susceptible to many stressors which may have lasting impacts

- Disease (bacterial, viral)
- Parasites
- Thermal (temperature) stress

Events that occur during calf-hood set the stage for the rest of the animal's life

# The First 24 Hours

# Colostrum, Colostrum, Colostrum!

- Colostrum is the first milk from the cow that is rich in antibodies, proteins, and growth factors
- Development of the immune system relies on passive transfer of immunity
- Calf's ability to absorb antibodies begins to decrease after birth
  - Completely lost after 24 hours
- Inadequate colostrum consumption can lead to a poorly developed immune system
  - calf scours (diarrhea)
  - respiratory disease
  - unthriftiness (poor health)

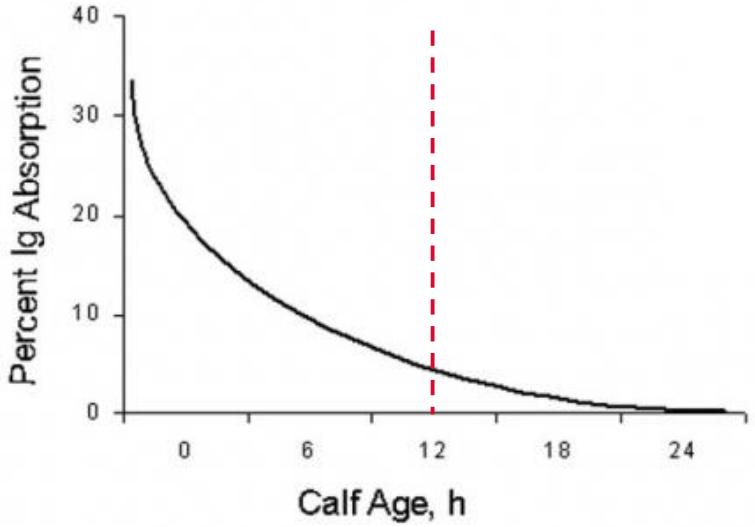
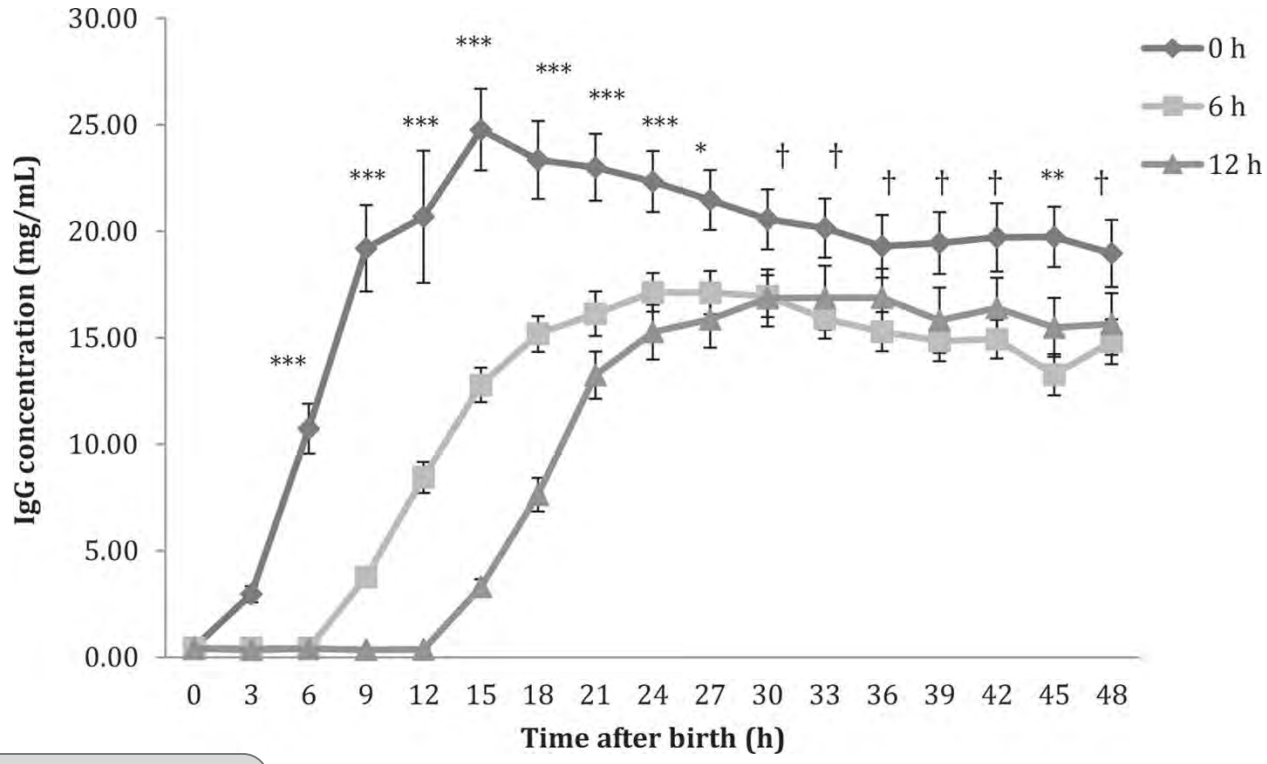



Figure adapted from Michigan State University Extension

# Colostrum, Colostrum, Colostrum!




Early colostrum consumption is critical!

Figure from Fischer et al., 2018. J. Dairy Sci. 101:3099-3103

# Ensure Sufficient Colostrum Intake

- Closely monitor cows that are close to calving
  - Once in the morning, once in the evening
- Calves should be up and nursing within 4 hours of birth
- Look for signs of nursing:
  - Active nursing
  - Clean, slick teats; matted hair and saliva around the teat; one or two teats smaller than the others
  - Vigorous, active calf
- A calf that appears lethargic or weak around 4-6 hours after birth probably has not nursed well → At this point, you should step in to help
- Calves that have endured a difficult calving, whose dams are thin, or whose dams are first-calf heifers may require assistance or supplemental colostrum

# What if the cow won't let the calf nurse?

Restrain the cow and help the calf nurse

- Use a chute or headgate to restrain the cow
  - Securing the cow's back leg(s) can be helpful to prevent kicking
- Keep the pair separate from the rest of the herd for a few days to encourage bonding
- Monitor closely to ensure calf is nursing
  - Keep assisting several times per day if necessary

If a successful feeding isn't established by 4-6 hours after birth, step in and feed the calf colostrum or colostrum replacer – remember, optimal antibody absorption occurs before 6 hours!

# What if the calf can't nurse?

Reasons: difficult birth, lethargic calf, cow refuses calf, cow has died

**Feed colostrum using a bottle or esophageal (tube) feeder**

# The Esophageal (tube) Feeder

- Goal: deliver nutrients to a calf
- When to use: calf can't or won't nurse cow or bottle nipple
  - Can result in inadequate colostrum consumption
  - Prolonged will result in dehydration
- What to give: colostrum or colostrum replacer (first 24 hours); electrolytes (for dehydration)
- Types of tube feeders:
  - Metal or plastic probe
  - Bag or bottle

Image credits: ValleyVet.com

# The Esophageal (tube) Feeder: Step by Step

- Step 1: Inspect feeder to be sure it is clean and free of damage**
  - Damage can prevent proper delivery
  - If not clean, can introduce harmful bacteria
- Step 2: Prepare the solution
  - Colostrum or colostrum replacer – 2 quarts
  - Electrolytes (dehydrated calf over 24 hours old)
- Step 3: Secure the calf
  - ***Make sure it is a safe environment for you***
  - Calf should be standing (ideal) or at least sitting up
    - If possible, back the calf into a corner to keep it from moving around

# The Esophageal (tube) Feeder: Step by Step

- Step 4: Insert the probe
  - Keep the nose in a natural position (below the ears)
  - Insert the probe slowly and gently, the calf should swallow and the probe should pass easily
  - Ensure proper placement by feeling on the side of the neck for the end of the probe
    - If you can't feel it, you're likely in the trachea; try again
    - *Keep the tube to the bottle/bag kinked or below the end of the probe to prevent liquid flow before proper placement is checked*

# The Esophageal (tube) Feeder: Step by Step

- Step 5: Deliver the colostrum
  - Unkink the tube and raise the bag/bottle above the probe to allow flow
  - Don't worry if the calf fights, as long as proper placement has been checked – it is going into the right place!
  - Deliver the entire contents of the bag/bottle
- Step 6: Remove the probe
  - Keep the calf's head in a natural position (nose below ears) when removing the probe
- Step 7: Clean the probe and bag/bottle

# Sources of Colostrum

Always have a plan!

1. Obtain directly from the cow
   - Must have ability to restrain and milk the cow
2. Use stored (frozen) colostrum from another cow
   - Ideally one from your herd
   - Dairy or beef
3. Use a colostrum replacer
   - This is different than milk replacer
   - Not as effective as natural colostrum

# How much colostrum should be fed?

**For Fresh/Frozen Colostrum**

| Birthweight | Amount per Feeding (Quarts) |
|---|---|
| 70 | 2.1 |
| 80 | 2.4 |
| 90 | 2.7 |
| 100 | 3.0 |
| 110 | 3.3 |
| 120 | 3.6 |
| 130 | 3.9 |

**Feed 5-6% of calf's birth weight.**
**Note: A quart is ~2 lbs.**

1st Feeding: within 4-6 hours
2nd Feeding: within 12 hours

If using colostrum replacer, follow instructions on the bag.

# Ensure Calf is Clean and Dry

- Cow should lick the calf clean after birth
  - Stimulates calf activity
  - Helps to dry the calf and reduces cold stress
- If cow cannot or will not clean the calf, or if it is very cold weather
  - Dry the calf with clean towels
  - Keep calf in a dry, clean area protected from wind
- Heat lamps are also useful in cold weather
  - Make sure they are not touching the calf or bedding
  - Turn them off when you aren't present

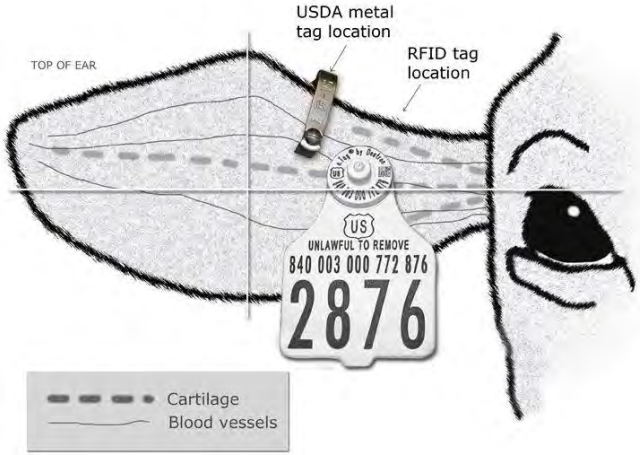

# Disinfect the Navel

- Prevents bacteria from entering the blood stream
- Especially important if you calve indoors or in a dirt lot

  → Likelihood of pathogen exposure is higher
- Use a 7% tincture of iodine within 24 hours

# Identify Animals Soon After Birth

- Important for record keeping!!
  - Options: ear tag (most common), tattoo, freeze or hot brand




# Supplies to Have On-hand

Bottle (at least 2 quart)

Esophageal Feeder

Ear Tag & Tagger

Bottle Nipple

Acceptable

Unacceptable

Colostrum

Fresh/Frozen

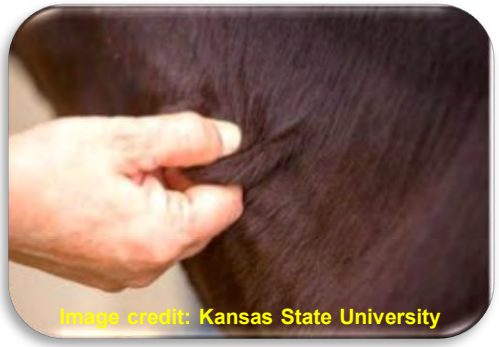

Replacer

Navel Dip

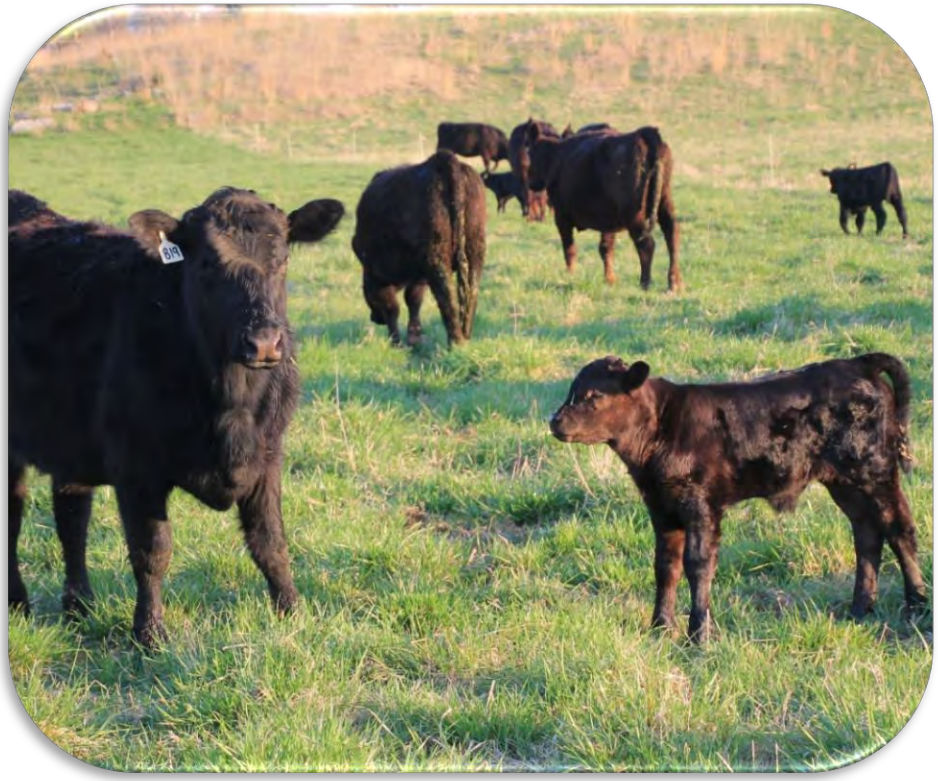
Clean towels

# Things to Look for During the First Weeks

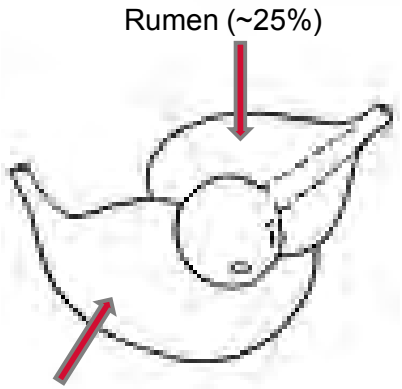
- Behavior:
  - Calves should appear vigorous, responsive, and alert
  - Calves that are lethargic or isolate themselves should be examined
- Signs of Scours (diarrhea):
  - Loose, watery manure
  - Manure may cake the backside of the calf
- Signs of Dehydration:
  - Calves that aren't nursing well can become dehydrated
    - Sunken eyes
    - Skin pinch test: >5 seconds for skin to return to normal

# Nutrition & Feeding



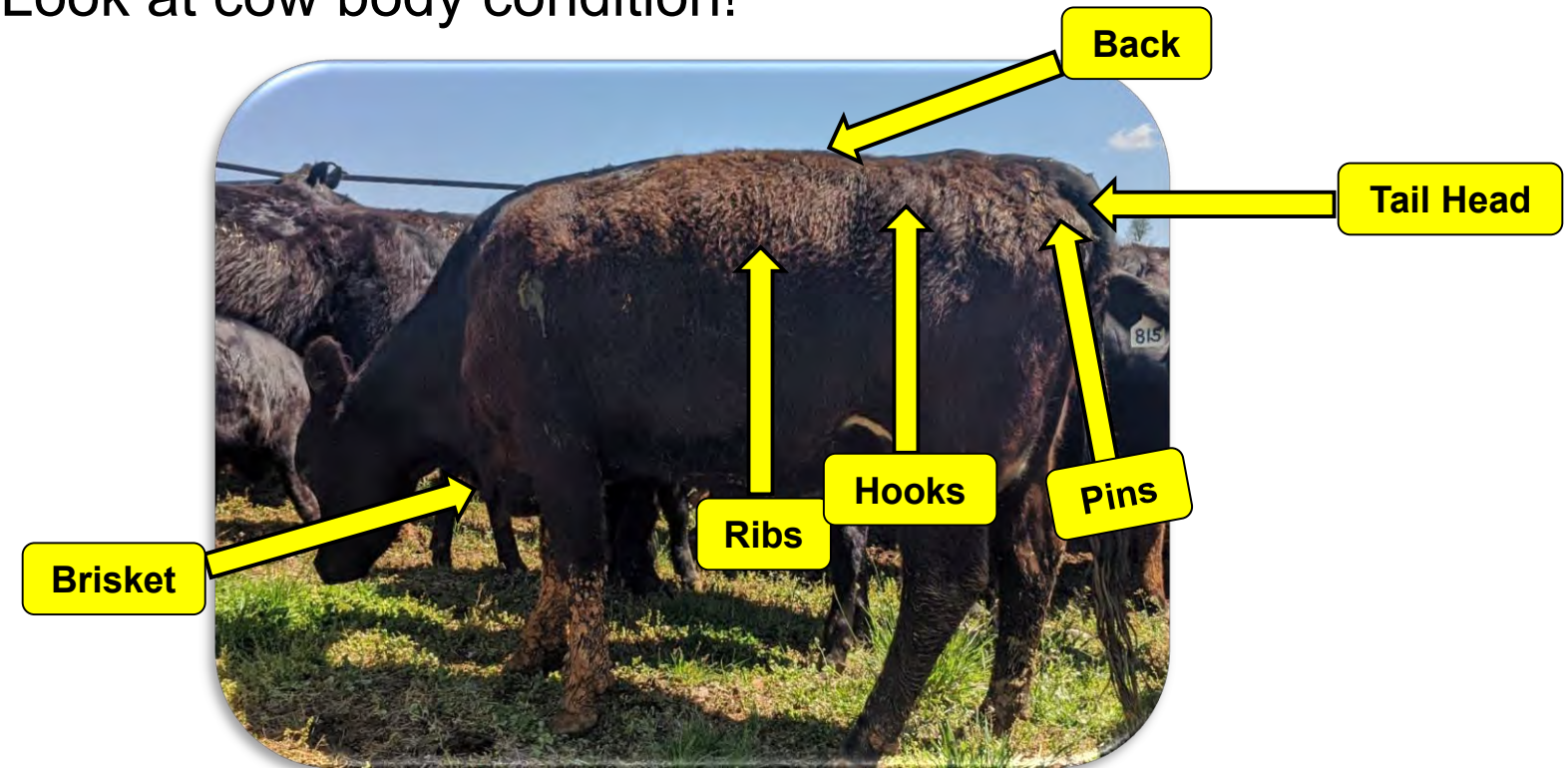
# Calf Rumen Development




**Week 1**

# First Two Months

- Calves receive most of their nutrients from milk
- Be sure cows have adequate nutrition
  - Look at cow body condition!



# Body Condition

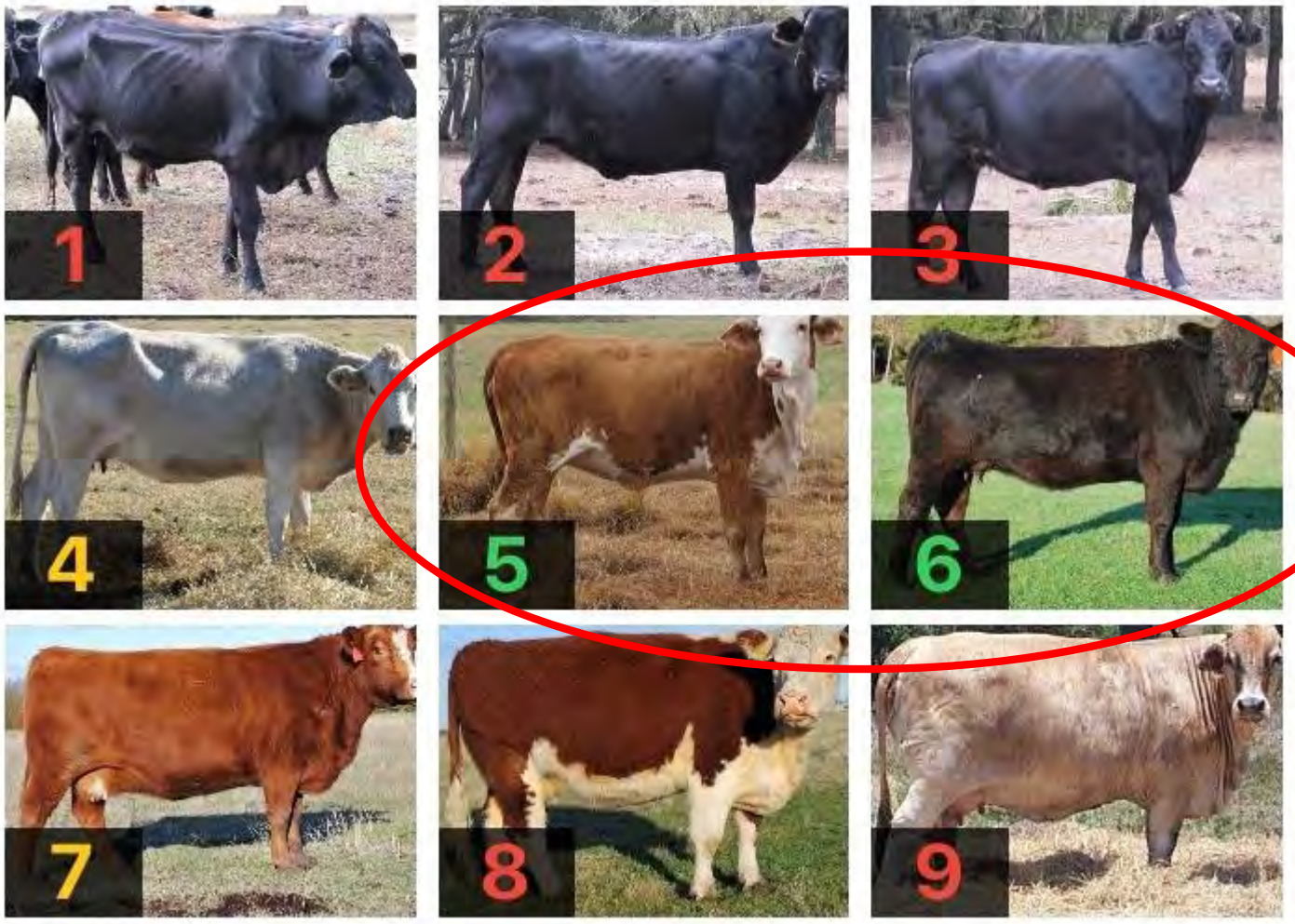



Image credit: Crystalyx

# First Two Months

- Calves will start to nibble available feed (pasture, hay, etc.) within a few weeks of birth
  - Herd behavior encourages feed “exploration”
  - Initiates rumen development
  - Introduces bacteria to the gut
- Check calves daily to be sure they are active
  - Poor vigor or growth could indicate illness or poor milk production by the cow

# Three Months to Weaning

- Calves continue to nurse but should have access to quality pasture or forage
  - Supplementation only necessary when pastures are in poor condition
- By 3 months, should consume around 1% of body weight as solid feed (often, this is pasture)
  - Reliance on milk decreases as they get older

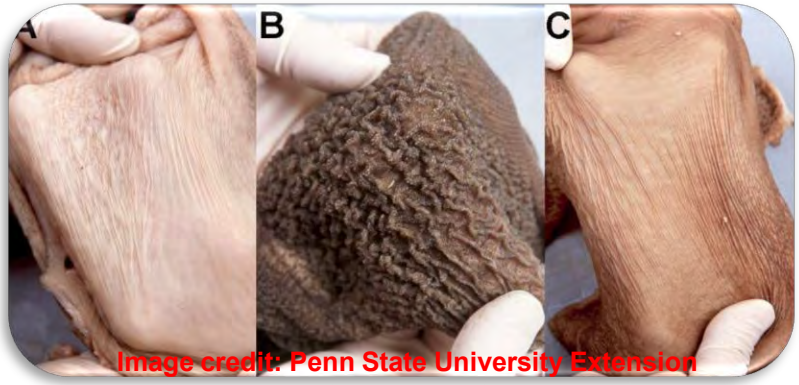
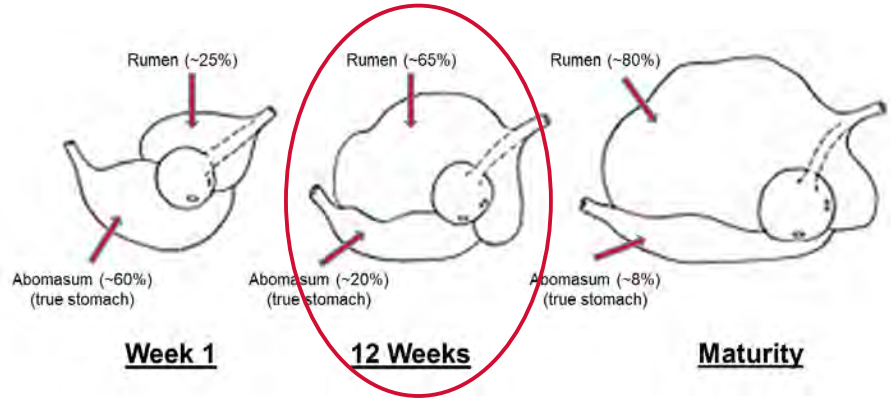


Image credit: Penn State University Extension



# Creep Feeding

- Helps provide supplemental nutrition before weaning (~60 days before weaning)
  - High energy or protein supplements
  - Creep mixes
  - High quality forage

- Higher weaning weights
- Helps compensate for poor milk production

Image Credit: North Carolina Cooperative Extension

# Should you creep feed?

- It depends!
- Comes down to economics
  - Cost of the feed**
  - Forage quality and availability
  - Value of additional gain
  - Feed conversion/feed efficiency
  - Calf prices
    - How soon after weaning calves are marketed

# Should you creep feed?

## Maybe…

- Pastures in poor condition
- Cows in poor condition
- Calf prices are high
- Feed prices are low
- Calves are being sold shortly after weaning

## Maybe Not…

- Pastures in good condition
- Cows in good condition
- Calf prices are low
- Feed prices are high
- Replacement heifers
- Calves retained for backgrounding

The decision really should come down to the potential for economic return. Knowing feed costs vs. value of gain is critical to making this decision!

# Preconditioning

- Involves preparing calves for the “next” stage of life
  - Usually, this means preparing calves for the feedlot
- Retain calves for a period of time after weaning (at least 45 days) before sale
  - Bunk-training
  - Adaptation to solid feed and water troughs
  - Vaccinations
  - Dehorning
  - Castration
- Benefits: heavier calves, additional premium at sale

# Should you precondition calves?

- It depends!
  - Economics
    - Do you have a market for preconditioned calves?
    - Do you keep good records?
    - Are your calves relatively uniform?
    - What will be your cost of gain vs. price received?
    - Can you afford the additional feed (grain)?
  - Facility constraints
    - Do you have the appropriate facilities to accommodate the calves?
  - Labor constraints
    - Do you have the time for keeping additional records, observing animals, and managing the feeding?
    - Can you afford the extra labor?

# Don't Forget About Water!

- Water is the first essential nutrient
  - ~60% of the body is made up of water
- Access to clean water is important, regardless of age
  - Water and feed intake are positively related
- Early exposure to water troughs can help calves learn to use them during/after weaning
- Be sure calves can physically access water
  - Calves are shorter than cows!

# Health

# Veterinary Client Patient Relationship (VCPR)

- VCPR is “the basis for interaction among veterinarians, their clients, and their patients and is critical to the health of your animal” – American Veterinary Medical Association
  - You should have a veterinarian (or vet practice) who is familiar with you, your animals, and your farm and serves as the primary contact for your animals’ health care
- Develop a good relationship with your local veterinarian
  - When there are issues
    - Difficult calving, sick calf, severe injury, etc.
  - Routine care (castration, dehorning, vaccination)

# Processing Calves: Dehorning

- Why?
  - Horned cattle pose a safety risk to humans and animals
  - Sale barn discounts
- When?
  - Before 2 months of age
    - Earlier is better!
- How?
  - Caustic paste (by 3 weeks of age)
  - Hot-iron cautery (by 4 months of age)
  - Scoops
  - Use a polled bull**

# Processing Calves: Castration

- Why?
  - Bulls can be difficult to manage (behavioral)
  - Limited ability to intermingle with heifers
  - Bull calves often incur discounts at sale
- How?
  - Banding
  - Burdizzo/Emasculatome
  - Knife or emasculator
- When?
  - Earlier is better!
  - Banding – within 1 week
  - Other methods – by 6 months

If you wish to learn these procedures yourself, work with your veterinarian to learn proper technique.

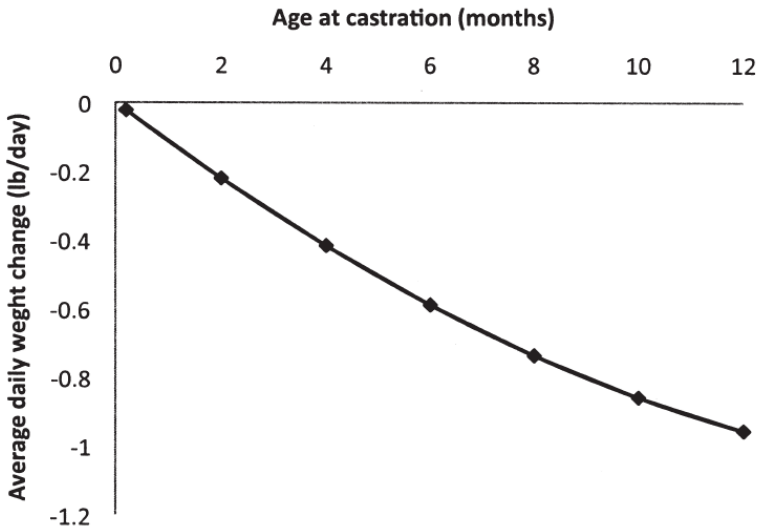



Figure By New Mexico State University Extension

# Processing Calves: Recommended Vaccinations

| Vaccine | Timing |
|---|---|
| **Recommended Vaccines** | |
| 7-way Clostridial (Blackleg) | Pre-weaning, booster at or after weaning |
| BRSV | Pre-weaning, booster at or after weaning |
| IBR-BVD-PI3 | Pre-weaning, booster at or after weaning |
| Mannheimia/Pasteurella | Pre-weaning, booster at or after weaning |
| **Optional Vaccines** | |
| Pinkeye | As needed |
| Anaplasmosis | As directed |

Adapted from University of Arkansas Extension https://www.uaex.edu/publications/pdf/FSA-3009.pdf and New Mexico State University https://aces.nmsu.edu/pubs/_b/B223.pdf

# Processing Calves: Vaccination Schedule

- Vaccinations
  - Work with your veterinarian to develop a schedule

**Example Vaccination Schedule**

| Timing | Vaccines | Notes |
|---|---|---|
| 2-3 months | IBR, BVD, PI3, BRSV<br>7-way Clostridia<br>Mannheimia/Pasteurella | Check label for use of MLV vaccines if dam is pregnant |
| 4-8 weeks pre-weaning | IBR, BVD, PI3, BRSV (booster)<br>7-way Clostridia<br>Mannheimia/Pasteurella | Check label for use of MLV vaccines if dam is pregnant |
| Weaning | IBR, BVD, PI3, BRSV (booster) | |

Table adapted from University of Nebraska, Lincoln NebGuide: Management, Health, and Nutritional Considerations for Weaning Calves. Publication G2057. http://extensionpublications.unl.edu/assets/pdf/g2057.pdf

# Weaning


Image credit: New Mexico State University


Image credit: Michigan State University

# Weaning Considerations

- Weaning involves two major stressors:
  - Removal of milk
  - Removal of dam
- Avoid combining weaning with other stressful procedures (new environment, shipping, etc.)
- Ensure ample access to high quality, palatable feed & water
- Observe daily for normal behavior (eating, drinking, social behaviors) and signs of dehydration

# Before Weaning…

- Administer pre-weaning vaccines (4-8 weeks before)
- Try to familiarize calves to feeders, waterers, and their post-weaning environment
  - Move cow-calf pairs into the field/facility a few days before
  - Remove cows from calves, not vice-versa
- Ensure access to minerals and vitamins to support immunity

# Weaning Strategies

- Traditional weaning
  - Complete, abrupt separation of cow and calf
  - Vocalization and fence-line walking for up to 3 days
  - Sometimes combined with shipping (not recommended if you can avoid it)

Image credit: University of Nebraska

# Weaning Strategies

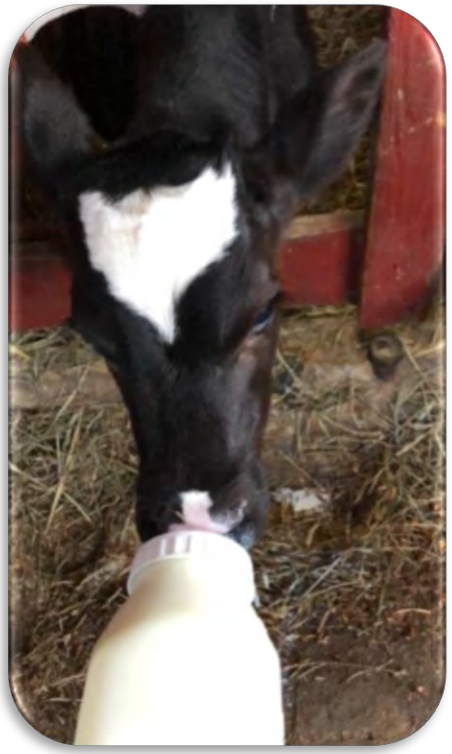
- Fence-line weaning
  - Calves are separated from their dams by a fence (5-7 days) while fence is shifted gradually or complete separation
  - Compared with traditional weaning:
    - Less vocalization
    - Less fence-line walking
    - Better gains
  - Extra time & labor required
  - Need a permeant fence structure for separation

# Weaning Strategies

- Two-step weaning
  - Use a plastic nose-piece to prevent nursing
  - Allow calves to remain with their dams for 7-14 more days, then complete separation
  - Compared with traditional weaning:
    - Less vocalization
    - Less fence-line walking
    - No consistent advantage related to growth
  - Added cost for nose-pieces
    - Must check daily to ensure placement
  - Extra handling required

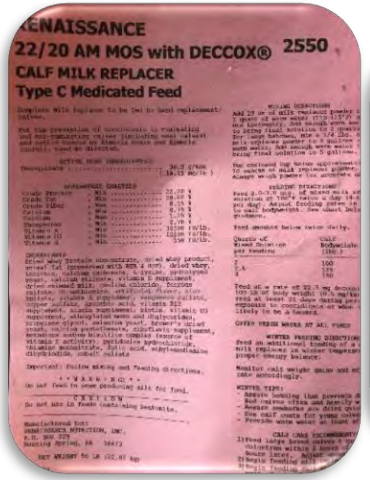

Image credit: New Mexico State University

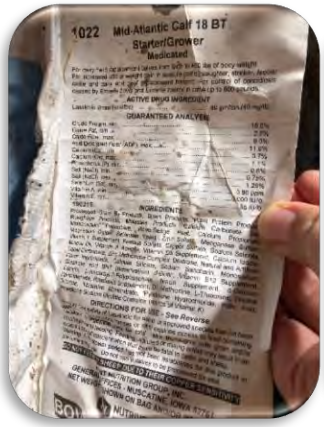
# Caring for Orphan Calves



# Feeding the Orphan Calf

- Generally, feed milk replacer (20:20) twice daily from 1-2 days old until 6 to 8 weeks (or longer)
- Provide daily access to fresh water and starter grain (~16-20% CP)
- Goal: calf should be eating at least 1.5 to 2 pounds solid feed (grain) per day before weaning
    - Grain consumption is needed to support rumen development so weaning can take place by 6-8 weeks




# Feeding the Orphan Calf

- Feed calf using a bottle or bucket*
- Follow instructions on the bag for feeding rates
  - Use warm (~100°F) water to mix
- Clean anything that touches milk replacer after each use
- If a calf doesn't drink all or most of its milk, check for signs of illness

# Weaning a Bottle Calf

- Usually around 6 to 8 weeks of age
  - Calf is eating 1.5 to 2 pounds of grain a day
- Decrease to one milk feeding a day for a week then remove all milk feedings
- After weaning, may co-mingle with other calves of similar size or with the cow-calf herd
  - Acclimate to new feed, water source, and environment gradually
  - Observe closely during following weeks

# Final Thoughts

- No one-size-fits-all management system

- Critical times in a calf's life:
  - First 24 hours
  - Weaning

- Be sure to check calves and cows at least once daily
  - Eating and drinking
  - Behavior

# Questions?

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