Managing the High Risk Calf

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University of WI
Early Observations and Care
National Dairy Heifer Evaluation Project
Deaths per 1000 Calf-Days at Risk by Week

Number of Deaths

Week of Life
Average Dairy

- Given herd turnover rate, calving interval, stillbirths, deaths and culling -

3-4% surplus heifers
Normal newborn calves

- Uncomplicated vaginal delivery
- Time to stand < 1 hour
- Good mothering
- Body temperature maintenance
- Active suckling < 2 hours
- Attentive, responsive, active
Initial Examination

- Clean mouth and nose
- Make sure it is breathing
  - If not, check heart beat
  - Look at eye
- Check navel
  - Bleeding
  - Hernia
  - Dip
- Check mouth
- Extra teats
Newborn calf adaptation

Organ system changes

- Respiratory
- Cardiovascular
- Metabolic
- Fluid balance
- Thermoregulation
- Musculo-skeletal
- Neurologic
First Stages of Adapting: Warming Up

- Blood circulates through brown fat to increase body temperature
- Shiver to increase body temperature
  - Low oxygen
  - Low blood sugar calves don’t shiver
- Attempt to stand
Abnormal Calf Adaptation

Dystocia

Premature birth

Illness in dam

Other causes
Difficult births = 1/3 to 1/2 of calf losses

Calf is 4 - 5 X more likely to die  (Azzam, 1993)

60 % of total calf loss  (Bellows, 1987)

3.8 X more likely to develop other disease  (Wittum, 1991)
A Basic Care Package

- Colostrum
- Comfort
- Consistency
- Cleanliness
- Calories
Colostrum

• **Tasks**
  - Remove the calf from the cow within 30 min
  - Have 4 quarts of *good* colostrum from one cow
  - Warm colostrum
  - Give it to the calf as soon as it wants to suck but not longer than 4 hours

• **Training**
  - Importance of removing the calf is to avoid manure meals
  - How to use an esophageal feeder
    • Calf position
    • Holding the head
    • Giving the right amount
What is GOOD colostrum?

- From a cow or first calf heifer is healthy
- Donor is vaccinated
- Cow or first calf heifer has been in prefresh group 2 - 3 weeks
- Udder is prepared just like milk was going to the saleable milk tank
- Cow is milked within 4 hours of calving
- If colostrum isn’t fed right away, it is in refrigerator
- If colostrum is older than 5-days, it is thrown out
If there isn’t enough colostrum, we need frozen colostrum or 2 packs of colostrum replacement product.
Colostrum Replacement Products
Using the Esophageal Feeder

Calf standing

Nose below ears
Comparison of Calf Survival Rates by IgG Concentrations

National Dairy Heifer Evaluation Project, 3/93
Comfort

• Straw for newborns
  - Critical temperature range is 55-75 F
  - Use less energy to stay warm and have more to grow and fight disease

• Deep, dry bedding 3” deep
Comfort
Consistency

• Same feed
  - What’s in it
  - How it’s mixed
  - Temperature
  - Way it’s fed

• Same time each day

• Same pattern

• Water given within 20-30 minutes of milk or before sleeping

• Same pen
Cleanliness
Cleanliness

- Maternity pen
- Cows in maternity pen
- Transport cart
- People moving and handling calves
- Warming, holding or drying area
- Calf housing
- Feeding equipment
- Feeds
Communal warming/drying areas: only for calves taken out of calving area immediately!
First Manure Meal
Second Manure Meal
Third manure meal!
Fourth Manure Meal?
Navel Care

• Clean is the primary goal
• If you dip, it must be clean when you dip
• Dip the navel, not the skin
Navel Dipping

- Life after iodine
- Dilute betadine may not be as effective
- Nolvasan
  - 1 part Nolvasan to 4 parts water
Calories
<table>
<thead>
<tr>
<th>Liquid Feed for Calves</th>
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<table>
<thead>
<tr>
<th></th>
<th>Protein</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Milk</td>
<td>26-27%</td>
<td>30%</td>
</tr>
<tr>
<td>Conventional Milk Replacers</td>
<td>20-22%</td>
<td>10-22%</td>
</tr>
<tr>
<td>Intensive Milk Replacers</td>
<td>26-30%</td>
<td>15-20%</td>
</tr>
</tbody>
</table>

Feed to the genetic potential.
Cold Weather Feeding

- Add another meal of the same mix
  - Don’t concentrate powder
  - Added ingredients are not as good as a third meal
  - Calves still need water
- Always have starter in front of the calf
Blankets Help
Feed the sick calves in cold weather

- Don’t hold milk from a calf with diarrhea
- Offer warm water 20-30 minutes after milk
- Small amounts of fresh starter

- Dehydration
- Malnutrition
- Low blood sugar
- Salt toxicity
Find the sick calves!

• Early detection of disease is a challenge, especially respiratory disease
  - Appetite change may be very subtle
  - Fever isn’t reliable
• Watch the calves that don’t lie down after eating
Monitoring Rectal Temperature

• Calves regulate at different levels so learn their normal
  - Increase of 1.5 deg is important if it lasts
  - Decrease in 1 deg is important

• Frequently the temperature change precedes the disease by 12-24 hours
### Calf Health Scoring Criteria

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
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<tbody>
<tr>
<td><strong>Rectal temperature</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>100-100.9</td>
<td>101-101.9</td>
<td>102-102.9</td>
<td>≥103</td>
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<tr>
<td><strong>Cough</strong></td>
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<tr>
<td>None</td>
<td>Induce single cough</td>
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<td><strong>Nasal discharge</strong></td>
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<tr>
<td>Normal serous discharge</td>
<td>Small amount of unilateral cloudy discharge</td>
<td>Bilateral, cloudy or excessive mucus discharge</td>
<td>Copious bilateral mucopurulent discharge</td>
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<td><strong>Eye scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>Small amount of ocular discharge</td>
<td>Moderate amount of bilateral discharge</td>
<td>Heavy ocular discharge</td>
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<td>Ear flick or head shake</td>
<td>Slight unilateral droop</td>
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<tr>
<td>Normal</td>
<td>Semi-formed, pasty</td>
<td>Loose, but stays on top of bedding</td>
<td>Watery, sifts through bedding</td>
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Calf Health Scoring Chart

Form Name: ________________________________________

Date: ____________________

<table>
<thead>
<tr>
<th>Calf Scores</th>
<th>(Total respiratory score: 4 – watch, 5 or more – treat; fecal score: 2 or 3 – treat)</th>
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<tr>
<td>Animal ID</td>
<td>Age</td>
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Know who is most susceptible

- **Septicemia**
  - Birth to 10 days
- **Diarrhea**
  - From birth to 14 days
- **Respiratory**
  - From 3 weeks through weaning
- **Navels**
  - 5 days to 14 days
Find the fecal scores 2, 3 or with blood

Extra feeding of electrolytes

Two extra feedings of electrolytes

Antibiotics if bloody or sick
Fluid Therapy is the Pivotal Component

- Fluid imbalance
  - Diarrhea
  - Decreased intake
  - Increased metabolic rate
- Calves have higher percent total body water but more susceptible to dehydration
Fluid Homeostasis

- What goes out must be replaced
- Fluid balance for metabolism, transport of nutrients, digestion, absorption and elimination of wastes
Daily Water Requirement

- 10% of body weight
- Not met solely by milk intake
- Supplemental water is needed
- 40 kg (88 lb) calf needs 4 L water
- 4 L water ≠ 4 L MR
Sick Calf Fluid Needs

- Reduced intake
- Enhanced metabolic needs
- Increased losses
  - Diarrhea
  - Fever
  - Respiratory losses
- Not uncommon to have 10-15% dehydration with diarrhea
Dehydration in Calves

- Acidosis
- Electrolyte abnormalities
- Hypoglycemia
  - Depression
  - Weakness
  - Hypothermia
  - Shock
  - Organ dysfunction
  - Coma
  - Death
Respiratory Scoring System To Find the Calves

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Best Scoring Results

- Twice weekly from 3 weeks to weaning
- After treating the calf for 5 to 6 days
- Before they go to a group pen
- Colostrum
- Comfort
- Consistency
- Cleanliness
- Calories