Calving Management Practices for Dairy Herds

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How Many Calving Stages are There?

1. One stage
2. Two stages
3. Three stages
What Picture Best Shows a Natural Birth?

1. Picture A
2. Picture B
3. I don’t know
Are the Chains Correctly Attached to the Calf’s Feet?

1. Yes
2. No
3. I don’t know
Is this Picture Showing Front or Rear Legs of the Calf?

1. Front legs
2. Rear legs
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How Soon after Birth Should Colostrum be Administered?

1. Within 1-3 hours
2. After 12 hours
3. I don’t know

Within 1-3 hours: 0
After 12 hours: 0
I don’t know: 0

(www.cvmbs.colostate.edu/calves/calves/calfdelivery.htm)
Objectives

▪ Recognize the imminent signs of birth and calving progress
▪ Provide guidelines for calving management practices to reduce the prevalence of stillbirth
▪ Be able to determine when first-calf heifers or cows need assistance at calving
▪ Be able to record calving-related events

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Transition Period: What, How, Why, & When?

Dry Off & Late Gestation
- Overcrowding
- Record-keeping
- Environment
- Protocols/Procedures
- Record-keeping
- Vit & Minerals
- Feed Inventory/Delivery
- Compliance to Protocols

Calving
- Sire
- Dystocia
- Twins/Stillbirth
- BCS
- NS

Early lactation
- Milk Fever
- DA/Ketosis
- NEB
- VWP
- NEB
- RP
- Mastitis/Lameness
- Management
- NEB
- BCS
- TMR
- Economics
- Health
- Immunizations
- Diagnosis
- TMR
- Record-keeping
- Sire Fertility
- Milk Fever
- Environment
- Data management
- People
- Al tech
- Semen Delivery
- Synch protocols
- Genetics
- Diseases

Breeding & Lactation
- Prior lact history
- TMR
- BCS
- Nutrition
- Vit & Minerals
- Genetics
- Health
- Immunizations
- Protocols/Procedures
- Environment
- Record-keeping
- People
- Semen Delivery
- Data management
- Diagnosis
- Sire Fertility
- Nutrition
- Economics

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Frequency of Dystocia

(USDA 2010. USDA:APHIS:VS, CEAH. Fort Collins, CO.)

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Anatomy - Calving

(Source: http://www.cvmbs.colostate.edu/ilm/proinfo/calving/notes/anatomy.htm)
Parturition

Parturition is a process initiated by a cascade of hormonal and physical changes at the end of gestation (~280 days in cattle)

Three stages:
- Stage I (dilation of birth canal)
- Stage II (labor or calf expulsion)
- Stage III (passing fetal membranes)

It progresses gradually from one stage to the next!

(Noakes et al., 2001; Schuenemann et al., 2013)
Stage I

- **Stage I** consists of the dilation of the birth canal (soft tissues and ligaments)

- **Restless behavior**: Walk, transition from laying to standing positions, kick the belly, vocalization, tail raised, urinate, ...

- **Physical changes**: Udder is full, dilation of vulvar ring, ...

- It ends with a fully dilated cervix and the appearance of the amniotic sac (AS) or “water bag” outside the vulva

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Stage II

- **Stage II** begins with a fully dilated cervix, the appearance of the “water bag”, and abdominal contractions are evident.
Stage III

Stage III is the expulsion of the fetal membranes, which occurs around 8-12 hours post calving. If >24 hours, it is considered retained fetal membranes (Kelton et al., 1998)
Calf Delivery

- **Presentation**: It refers to whether the calf is coming forward (anterior), backward (posterior), or transverse

- **Position**: It refers to the calf’s position in relation to the cow

- **Posture**: It refers to how the calf’s head and limbs are in relation with its body

(Noakes et al., 2001; Schuenemann et al., 2013)
Normal Calf Delivery

Estimated values:
- Forward or Anterior = 96%
- Backward or Posterior = 4%
- Multiple calves = 5%
- Breech = 1%

(Hunter et al., 2013)
Early Signs of Calving

Cow with enlarged vulva & mucus plug

Cow with dilated vulva & enlarged udder
Imminent Signs of Calving

Walking, pacing, sniffing, & tail-raised

Lying down & showing feet of the calf outside the vulva

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Imminent Signs of Birth

Membranes outside the vulva & tail-raised

Showing feet/nose of the calf outside the vulva

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Normal Delivery

The rear legs of the calf are still in the vulva of the cow, but birth is completed.

Cow recovers from labor, stand-up, & lick the calf.
How long do you wait before intervention since the appearance of the “water bag”?

1. 30 minutes
2. 1 hour
3. 2 hours
4. >3 hours
Cows: Calving Progress for Unassisted Births

(Schuenemann et al., 2011 JDS 94:5494–5501)
First-Calf Heifers: Calving Progress for Assisted Births

(Schuenemann et al., 2011 JDS 94:5494–5501)
<table>
<thead>
<tr>
<th>Signs of Normal Births</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance of the AS or feet of the calf outside the vulva</td>
<td>Landmark references</td>
<td>Noakes et al., 2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schuenemann et al., 2011a</td>
</tr>
<tr>
<td>Signs of calving progress</td>
<td>Evident every 15-20 minutes</td>
<td>Schuenemann et al., 2011a</td>
</tr>
<tr>
<td>Mean time since the appearance of the AS outside the vulva to birth</td>
<td>70 minutes(*)</td>
<td>Noakes et al., 2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schuenemann et al., 2011a</td>
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<tr>
<td>Mean time since the appearance of the feet of the calf outside the vulva to birth</td>
<td>65 minutes(*)</td>
<td>Schuenemann et al., 2011a</td>
</tr>
<tr>
<td>Time that a cow or first-calf heifer is in labor (abdominal contractions)</td>
<td>≤2 hours</td>
<td>Gundelach et al., 2009</td>
</tr>
<tr>
<td>Frequency of observation</td>
<td>At least every 1 hour</td>
<td>Schuenemann et al., 2011a</td>
</tr>
</tbody>
</table>

(*) The mean times were estimated using the mean + 2 SD (standard deviation)

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Cow Move into Maternity Pen

- For herds that group cows according to expected calving date, periparturient cows should be moved from close-up to maternity pen prior to or at the onset of labor (appearance of AS outside the vulva)
- Frequency of observation and personnel skills

Cow showing “water bag” outside the vulva (Stage II or onset of labor)
Appearance of the “water bag” outside the vulva

Appearance of the feet of the calf outside the vulva

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Front or Rear Leg?
Monitor Calving Progress

- Appearance of the “water bag”
- Showing feet/nose of the calf
- Cow is sniffing the newborn calf
- Birth is completed

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Guidelines for Assisted Births

Parturition Begins

No Calving Progress

Normal presentation, position, and posture

Abnormal presentation, position, and posture

Guidelines for Assisted Extraction

Extraction Possible

Calf Alive/Dead

Assisted Extraction

Extraction Not Possible

Calf Alive/Dead

Call Your Veterinarian

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(Observation)

(Adapted from Schuijt and Ball, 1980)
Calving Instruments

- Bucket and brush
- Chains, lasso, ropes, etc.
- Towels, water, disinfectant, lubricant

(Source: http://www.cvmbs.colostate.edu/ilm/proinfo/calving/notes/calfdelivery.htm)

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But Since When Start Counting?
Correcting Malpositions

(Source: www.drostproject.vetmed.ufl.edu/bovine)

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How Hard to Pull?

(Source: www.drostproject.vetmed.ufl.edu/bovine)

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How Hard to Pull?

*Damage of Nerves:* Excessive force when pulling calf

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Dystocia Management - Techniques

Cow/Heifer

Calf

(Source: www.drostproject.vetmed.ufl.edu/bovine)

(©2015 G.M. Schuenemann)
Dystocia Management - Techniques

Rotate the Calf

(Source: www.drostproject.vetmed.ufl.edu/bovine)  ©2015 G.M. Schuenemann)
Calving-Related Injury

Vulvar or Perineal Laceration
Signs of Stress During Calving

Swollen tongue

Bleeding by rectum of the dam

Yellow staining (meconium)

(www.cvmbs.colostate.edu/.../calfdelivery.htm)

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What Should Be Done After Calving?

- Remove the mucus
- Dry the calf
- Help to stand up
- DO NOT hang the calf upside down
- Disinfect navel (1% Iodine)
- Colostrum within the first 1-3 hours of birth (~1 gallon of quality colostrum)

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Additional Considerations

- For backward presentations, help finish birth!
- For first-calf heifers, once the nose/feet of the calf are outside the vulva, help finish the birth!
- Calving protocols/data should be reviewed and adjusted (if necessary) at least twice a year
## Dairy:

### MATERNITY - CALVING

<table>
<thead>
<tr>
<th>COW_ID</th>
<th>PEN</th>
<th>DATE</th>
<th>BCS</th>
<th>TIME STARTED</th>
<th>TIME BIRTH</th>
<th>ALIVE/DEAD</th>
<th>SEX</th>
<th>DIFFICULTY</th>
<th>PHS</th>
<th>STILLBIRTH</th>
<th>CALF_ID</th>
<th>COMMENTS</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4420</td>
<td>10</td>
<td>4/22/2013</td>
<td>3.75</td>
<td>2:00 pm</td>
<td>3:25 pm</td>
<td>A</td>
<td>M</td>
<td>1 2 3 4</td>
<td>1 2 3</td>
<td>NO</td>
<td>1000</td>
<td>GMS</td>
<td></td>
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<tr>
<td>1987</td>
<td>10</td>
<td>4/25/2013</td>
<td>3</td>
<td>6:15 am</td>
<td>9:00 am</td>
<td>D</td>
<td>M</td>
<td>1 2 3 4</td>
<td>1 2 3</td>
<td>YES</td>
<td></td>
<td>TWIN</td>
<td>GMS</td>
</tr>
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<td>10</td>
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(PHS = Perineum hygiene score (1-3 scale) at calving; BCS = Body condition scored immediately after calving; A = Alive; D = Dead; F = Female; M = Male)

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Degree of Assistance at Calving

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description of Dystocia(*)</th>
<th>References</th>
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</table>
| 1 to 3 scale        | 1 = no assistance  
                       | 2 = slight assistance  
                       | 3 = needed assistance                             | Meyer et al., 2001                                  |
| 1 to 5 scale        | 1 = no assistance  
                       | 2 = assistance by one person without the use of mechanical traction  
                       | 3 = assistance by 2 or more people  
                       | 4 = assistance with mechanical traction  
                       | 5 = surgical procedure                     | Dematawewa and Berger, 1997  
                       | Lombard et al., 2007  
                       | Schuenemann et al., 2011a                   |
| Combination of both | Description is based on calving difficulty        | Mangurkar et al., 1984  
                       |                                                  | Schuenemann et al., 2011a                      |

(*)Description of scales used to determine the degree of dystocia according to the degree of assistance provided during parturition in Holstein herds.

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Acknowledgements

- SARE-NCR Professional Development Program (ENC10-120)
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- Collaborating dairy farms
- Practicing veterinarians
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References


References


9. The Center for Food Security and Public Health at Iowa State University. Link: http://www.cfsph.iastate.edu/Infection_Control/disinfectant-resources-for-veterinarians.php