1. PURPOSE

To facilitate comfort and ease of calving and to identify and address any complications which may arise.

2. RESPONSIBILITY

2.1 All permanent, casual and student staff
2.2 Dairy Manager and Technician
2.3 Herd Veterinarian

3. MATERIALS

3.1 Halter
3.2 Chains and handles
3.3 Pail with Endure® and warm water
3.4 Lubricating gel
3.5 Insemination gloves
3.6 Paper towel
3.7 Calf puller
3.8 Iodine

4. GENERAL

4.1 3 general stages of Calving:

<table>
<thead>
<tr>
<th>Stage and Time</th>
<th>Events</th>
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<tbody>
<tr>
<td>I – Preparatory</td>
<td>Calf rotates to upright position</td>
</tr>
<tr>
<td>(2 to 6 hours)</td>
<td>Uterine contraction begins (15 minute intervals)</td>
</tr>
<tr>
<td></td>
<td>Water sac expelled</td>
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<tr>
<td>II – Delivery</td>
<td>Cow usually lying down</td>
</tr>
<tr>
<td>(30 minutes – 4 hours)</td>
<td>Fetus enters birth canal</td>
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<tr>
<td></td>
<td>Uterine contractions: (2-minute intervals)</td>
</tr>
<tr>
<td></td>
<td>Expulsion and delivery of the calf</td>
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<tr>
<td>III – Cleaning</td>
<td>Expulsion of the fetal membrane or placenta</td>
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<tr>
<td>(2 to 8 hours)</td>
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</table>

4.2 Normal delivery should be completed within 2 to 3 hours after the water sac appears in the heifers, and 1 to 2 hours in cow/heifers. If prolonged, the calf may be born dead or weak.

4.3 Most calf fatalities are caused by injuries or suffocation resulting from difficult or delayed parturition. (See Table 2: Factors Contributing to Calving Problems).

4.4 Any abnormal fetal positions must be corrected in the early stages of delivery.

4.5 Heifers and cows with small pelvic areas will likely need assistance.

4.6 If a cow has had more than one calf, the calving time may be considerably shorter.
4.7 Abnormal presentation requires the assistance of the veterinarian or an experienced herdsman to position the fetus correctly prior to delivery. If unable to position to allow for vaginal delivery, a veterinarian should be consulted.

5. **PROCEDURE**

5.1 Ensure the preparation of equipment in case of assisted delivery is required. (Refer to SOP DC-405: Pre Partum Preparation of Dairy Cattle)

5.1.1 Prepare pulling chains and handles in a pail of warm water and Endure.

5.1.2 Prepare lubricating gel, gloves and insemination gloves in plastic caddy.

5.1.3 Leave materials near the box stall.

5.2 The amniotic sack or water bag should appear first followed by BOTH front hooves then the nose and the head on top of the front legs (Fig. 1). At this point it is difficult to tell if it is the front or back legs showing.

5.3 DO NOT assume the 2 legs you see are the front legs, when they first appear they are very similar to the hind hooves

5.4 Notify the Dairy Manager or Lead Technician if the water has broken and record the time.

5.5 First Calf cows/heifers will often try to push the calf out lying down with her rear end pressed against the wall;

5.5.1 Put a halter on, and get her up and moved to a position where she has room behind her.

5.5.2 To avoid her repeating the same thing it may be necessary to tie the halter (Using a quick release knot) to a low position in the stall, allowing her to lie or fall without restraint.

5.5.3 **NEVER** leave a tethered heifer unattended.

5.6 If the presentation is normal, allow the cow/heifer to deliver on her own.

5.7 If the presentation is normal but the cow/heifer is having trouble after pushing for more than half an hour the calf may need to be pulled. (Refer to Section 5.9 and 5.10)

5.8 **CALVING ASSISTANCE:**

5.8.1 If the calf is in an abnormal position, **IMMEDIATELY** inform the Lead Technician or Dairy Manager. If unavailable, contact the Herd Veterinarian.

5.8.2 If no progress has been made in the delivery after giving assistance for 30 minutes, contact the veterinarian.
5.8.3 Don clean lubricated gloves.

5.8.4 Hold the calf’s legs and pull hard as the dam is pushing.

5.8.5 Add copious amounts of lubricant around the vulva and in the vagina.

5.8.6 Keep hold of the calf while the dam relaxes between contractions.

5.8.7 Attach the pulling chains to the front legs of the calf:
   5.8.7.1 Place the loop of each chain around each leg.
   5.8.7.2 Slide the chains 2 to 3 inches above the ankle joints and dew claws.
   5.8.7.3 Place a second loop below the ankle joint (Figure 3).
   5.8.7.4 Make sure the chain pulls from either the top of the leg over the fetlocks or the bottom of the leg (dew claw side). Be careful to avoid the dewclaws.

5.8.8 Lubricate the vagina.

5.8.9 If arm strength is not enough to pull the calf out, then a calf puller may be required;
   5.8.9.1 Attach the obstetrical handles and apply gradual traction, making sure the chains have not slipped.
   5.8.9.2 Maintain the butt plate of the puller just below the vulva opening and the jack end of the puller at or below the level of the calf’s hocks.

5.8.10 If all the guidelines to determine if the calf can pass through the pelvic canal are met, continue to deliver the head and shoulders.

5.8.11 Once the head and shoulders are exposed, pull the calf downward at a 45-degree angle.

5.9 Assuming labor has continued for 30 minutes with no progress, refer to Table 1: Signs of Dystocia and Table 2: Factors Causing Dystocia. Make all decisions based on an actual pelvic examination.
5.9.1 Restrain the cow/ heifer with a halter if she is standing and nervous.

5.9.2 Wash the vulva and rectum with diluted Endure and paper towel.

5.9.3 Don and lubricate insemination gloves.

5.9.4 Lubricate the vagina.

5.9.5 Examine the cervix for dilation:
   5.9.5.1 Admission of 2 to 3 fingers:
      5.9.5.1.1 Non-dilation of cervix: Interfering too soon
      5.9.5.1.2 Possible uterine torsion: One must have an idea of how long the cow has been in active labor. If labor has been going on for 2-3 hours without progress, contact the veterinarian.

   5.9.5.2 Cervix is 6-7 inches wide: Full dilation

5.9.6 Check for life of the unborn calf:
   5.9.6.1 Pull or pinch the foot to cause movement of the leg.
   5.9.6.2 Pinching the eyes causes movement of the head.
   5.9.6.3 Place fingers in the calf's mouth to elicit sucking or movement of the tongue.
   5.9.6.4 Absence of vital signs, sloughing of the hair or foul odor may indicate the calf is dead.

5.9.7 Determine the presentation (direction of delivery), position (how the calf is lying) and posture (location of legs, head and neck) of the fetus (Figures 1 and 2). The normal presentation of the calf is front feet and head first and the normal position is backside up.

• IMPORTANT:

   NEVER pull a calf in any other position because the chances of killing the cow and the calf are great.

   5.9.7.1 If the position is normal (Fig. 1.) and the placenta has not broken as the calf is coming out, break it by tearing with fingers.

   5.9.7.2 If the position is abnormal (Fig.2.), it will be necessary to reposition the calf. Contact the Dairy Manager or Lead Technician for assessment.

5.9.8 Examine the size of the calf relative to the birth canal. (See Table 1: Guidelines to Determine If Calf Can Pass Through the Pelvic Canal).

• IMPORTANT:

   Forcing a large calf through a small pelvic opening almost invariably results in death of the calf as well as injury, paralysis or even death of the cow.

   5.9.8.1 If all three of these guidelines cannot be accomplished, you should be concerned that the calf is too large to successfully pass through the pelvic canal and a caesarean section may be needed. Contact the herd veterinarian.

   5.9.8.2 If all the guidelines to determine if the calf can pass through the pelvic canal are met, allow the cow/heifer to deliver on her own.

Table 1: SIGNS OF DYSTOCIA

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<th>Sign</th>
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<td>Bloody discharge - may be signaling an abortion.</td>
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<tr>
<td>Cow/heifer was pushing but has stopped.</td>
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</table>
Water has broken and she has stopped pushing after ½ an hour and/or there is no sign of the hooves.

One hoof showing or hind hooves showing, both look very similar at this stage.

Pushing for a while with no progress.

First thing in the morning finding bedding pushed up the walls, she’s exhausted and/or eyes sunken in.

### Table 2: FACTORS CAUSING DYSTOCIA

<table>
<thead>
<tr>
<th>Calf Effects</th>
<th>Birth weights are influenced by genetics of the sire and dam, sex of the calf, age of the cow/heifer, environmental temperature conditions and nutrition of the cow/heifer. Shape of the calf may also have a small effect.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow/heifer Effects</td>
<td>Age and pelvic size are the major factors to influence dystocia.</td>
</tr>
<tr>
<td>Age</td>
<td>2-year old heifers require more assistance at calving than do cow/heifers because these females usually have smaller pelvic areas.</td>
</tr>
<tr>
<td>Pelvic Area</td>
<td>The calf’s birth weight and cow/heifer’s pelvic area have a combined effect on dystocia. The degree of dystocia is determined primarily by the size of the calf in relation to the size of the cow/heifer’s pelvic area. A large calf forced through a small pelvic opening may result in death to the calf and injury (including paralysis) to the cow/heifer.</td>
</tr>
<tr>
<td>Fetal Position at Birth</td>
<td>About 5% of calves at birth are in abnormal positions (foreleg or head turned back, breech, sideways or rotated (Fig.4).</td>
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### Table 3: GUIDELINES TO DETERMINE IF THE CALF CAN PASS THROUGH THE PELVIC CANAL

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>1</td>
<td>By pulling on the legs, the entire head of the calf should enter the bony pelvic canal.</td>
</tr>
<tr>
<td>2</td>
<td>Continue to pull on one front leg. The first joint (fetlock) of that leg should extend at least one hand’s width past the vulva of the cow/heifer.</td>
</tr>
<tr>
<td>3</td>
<td>Pull on the opposing leg. The fetlock of this leg should also extend at least one hand’s width past the vulva of the cow/heifer.</td>
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</table>

**5.10 POST DELIVERY CARE FOR THE CALF:** refer to SOPs:

- DC-501: Colostrum Management
- DC-504: Newborn Calf Care
- DC-505: Calf Feeding

**5.11 POST-DELIVERY CARE FOR THE COW/ HEIFER:** refer to SOP DC-405: Post-Partum Care of Dairy Cattle
6. REFERENCES

6.1 Randle, R.F., Berger, A.L.; Assisting the Beef Cow at Calving Time; The Board of Regents of the University of Nebraska. http://extensionpublications.unl.edu/assets/pdf/ec1907.pdf


Document Status and Revision History

<table>
<thead>
<tr>
<th>DATE</th>
<th>PREVIOUS VERSION</th>
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<tr>
<td>11-June-2019</td>
<td></td>
<td>Full Revision 2. MAC Campus FACC Approved</td>
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