

PRE- AND POST-OP CARE OF FISTULATED COWS**1. PURPOSE**

This Standard Operating Procedure (SOP) outlines the pre- and post-operative procedures and long-term care for dairy cows that have undergone rumen fistulation surgery.

2. RESPONSIBILITY

- 2.1 Trained and qualified personnel
- 2.2 Herd Veterinarian

3. MATERIALS

- 3.1 Antibiotic (Depocillin®)
- 3.2 Anti-inflammatory drugs (e.g. Metacam®, Anafen®)
- 3.3 Disinfectant (e.g., Endure®)
- 3.4 Insecticide (e.g., Vetolice®)
- 3.5 Paper towels
- 3.6 Antibiotic card
- 3.7 Red leg bands
- 3.8 Latex/ Nitrile gloves
- 3.9 4" cannula
- 3.10 Treated cow logbook.
- 3.11 Dairy logbook

4. GENERAL

- 4.1 A fistulated cow is a cow with a passageway (Cannula) connecting the cow's rumen (stomach) to the outside. By creating this opening into the cow's stomach, one can learn, for example, how a cow's stomach works, about the microflora in the cow's stomach, and how fast certain foods are digested.
- 4.2 Immature cows are not ideal candidates because the cannula site expands in size as the cow continues to grow, causing leakage and drainage around the fistula.
- 4.3 The veterinarian will select the best candidates for surgery in consultation with the Herd Manager. Cows selected must be needed for teaching/research, mature, healthy, and have excellent feet, legs, and mammary system. The goal is to keep them in the herd as long as possible.
- 4.4 Animals must be monitored daily for signs of infection (e.g., purulent discharge, necrosis, redness, swelling, foul odor).

5. PROCEDURE

5.1 PRE-OPERATIVE CARE

5.1.1 2 Days pre-op:

- 5.1.1.1 Transfer the cow to a box stall 2 days before the intervention.

- 5.1.1.2 Place a card on the front of the cow's name card (facing the feed aisle) with feeding instructions.

5.1.2 36 hours pre-op: Feed half the regular ration.

5.1.3 24 hours pre-op: Feed Hay only.

5.1.4 12 hours pre-op: Remove all feed.

5.1.5 6 hours pre-op: Remove water.

5.2 PERI-OPERATIVE PROCEDURES: DAY 0:

5.2.1 PRIOR TO SURGERY:

5.2.1.1 Ensure the box stall is properly cleaned.

5.2.1.2 Dust surgical area prior to surgery.

5.2.2 SURGERY:

5.2.2.1 Administer antibiotic (e.g., Depocillin) per veterinarian instructions.

5.2.2.2 Surgical preparation, induction of sedative and anesthesia, and surgical procedure is performed by the herd veterinarian in accordance with Macdonald Campus Animal Use Protocol #5309.

5.2.2.3 Animals must remain in the box stall for at least 3 days post-operatively.

5.3 POST-OPERATIVE CARE

Post-operative procedures apply immediately post-surgery and continue when the animal has returned to a tie stall.

5.3.1 WOUND MANAGEMENT (2 days post-op)

5.3.1.1 Wear clean latex/ nitrile gloves.

5.3.1.2 Clean the surgical wound site daily, for at least 7 days, by wiping with a clean paper towel soaked with Endure and warm water.

5.3.1.3 Pat dry with a clean paper towel.

5.3.1.4 Monitor the wound for signs of infection (e.g., purulent discharge, necrosis, redness, swelling, foul odor).

5.3.1.5 Report any abnormalities to the Lead Technician and advise the veterinarian.

5.3.2 DAY 0

5.3.2.1 Place red leg bands on the cow's hind legs, and the antibiotic card over the cow's name card.

5.3.2.2 Monitor the cow a minimum of 4- 6 times per day.

5.3.2.3 2 hours post-op: Offer water (limited) in a pail Provide ad-lib water on Day1.

5.3.2.4 12 hours post-op: feed 2nd cut hay.

5.3.2.5 Update the "Milker Action Sheet" by adding the cow's name and the number of treated cows.

5.3.2.6 Add treatment instructions to the treatment binder.

5.3.2.7 Record medications with milk withdrawals in the green "Treated Cows" log.

5.3.2.8 Administer antibiotic (e.g., Depocillin), intramuscularly twice daily for 7 days or per veterinarian's instructions.

5.3.2.9 Administer anti-inflammatory treatment in accordance with the approved protocol # 5309. (e.g., Metacam) once daily for 3 days or per the Veterinarian's instructions.

5.3.2.10 Record all medications administered in the Dairy logbook.

*** NOTE:**

Some swelling (1-2 inches) around the cannula edge and superficial purulent discharge and necrosis is expected. The degree of necrosis can be gauged by lifting the edge of the cannula and observing the surgical site.

5.3.2.11 Spray the cow on the back with insecticide (e.g., Vetolice ®) if presence of flies, avoiding the surgical wound.

5.3.2.12 Refer to SOP [DC-612: Milking Antibiotic Treated Cow](#) for milking instructions.

5.3.2.13 Observe the animal daily for signs of abnormal behavior (e.g. depression, restlessness, and inappetence) for at least 14 days. Refer to [SOP DC-310: Cow Health Monitoring](#).

- Take rectal temperature.
- Record observations and temperature in the dairy logbook.
- Notify the herd manager or technician of any abnormalities.

5.3.3 DAY 1:

5.3.3.1 Milk the cow in a box stall. Refer to SOP [DC-609: Milking Pail Cows](#) or [DC-610: Milking Pail Cow with a Box Stall Milker](#).

5.3.3.2 Feed ¼ ration +2nd cut hay.

5.3.3.3 Monitor the cow for abnormal behavior (5.3.1.13) and signs of infection a minimum of 4- 6 times per day.

5.3.3.4 Clean wound (refer to 5.3.1.1)

5.3.3.5 Administer anti-inflammatory treatment in accordance with the approved protocol # 5309. (e.g., Metacam) once daily for 3 days or per the Veterinarian's instructions.

5.3.3.6 Administer antibiotic (e.g., Depocillin), intramuscularly twice daily.

5.3.3.7 Record all medications administered in the Dairy logbook.

5.3.4 DAY 2:

5.3.4.1 Milk the cow in a box stall. Refer to SOP [DC-609: Milking Pail Cows](#) or [DC-610: Milking Pail Cow with a Box Stall Milker](#).

5.3.4.2 Feed: ½ ration + 2nd cut hay

5.3.4.3 Monitor the cow for abnormal behavior (5.3.1.13) and signs of infection a minimum of 4- 6 times per day.

5.3.4.4 Clean wound (refer to 5.3.1.1)

5.3.4.5 Administer anti-inflammatory treatment in accordance with the approved protocol # 5309. (e.g., Metacam) once daily for 3 days or per the Veterinarian's instructions.

5.3.4.6 Administer antibiotic (e.g., Depocillin), intramuscularly twice daily.

5.3.4.7 Record all medications administered in the Dairy logbook.

5.3.5 DAY 3:

5.3.5.1 Return the cow to a tie stall.

5.3.5.2 Feed ¾ ration + 2nd cut hay.

5.3.5.3 Monitor the cow for abnormal behavior (5.3.1.13) and signs of infection a minimum of 4- 6 times per day.

5.3.5.4 Administer antibiotic (e.g., Depocillin), intramuscularly twice daily for 7 days or per veterinarian's instructions.

5.3.5.5 Record all medications administered in the Dairy logbook.

5.3.6 DAY 4:

- 5.3.6.1 Feed full ration + 2nd cut hay.
- 5.3.6.2 Administer antibiotic (e.g., Depocillin), intramuscularly twice daily for 7 days or per veterinarian's instructions.
- 5.3.6.3 Continue antibiotic treatment for the prescribed number of days.
- 5.3.6.4 Record all medications administered in the Dairy logbook.

5.3.7 DAY 5:

- 5.3.7.1 Continue antibiotic treatment (if required).
- 5.3.7.2 Record all medications administered in the Dairy logbook.

5.3.8 DAY 6:

- 5.3.8.1 Continue antibiotic treatment (if required).
- 5.3.8.2 Record all medications administered in the Dairy logbook.

5.3.9 DAY 7 – 14:

- 5.3.9.1 Continue to Observe the animal daily for signs of abnormal behavior (e.g., depression, restlessness, and inappetence). Refer to [SOP DC-310: Cow Health Monitoring](#).
 - Take rectal temperature.
 - Record observations and temperature in the dairy logbook.
 - Notify the herd manager or technician of any abnormalities.

5.4 **CHANGING CANNULA**

- 5.1.1 The veterinarian will determine if and when the cannula will be changed.
 - 5.1.2 Cannula change is performed only by the veterinarian.
 - 5.1.3 Under light sedation, the Herd Veterinarian replaces the 3" cannula with a 4" cannula (the 3" cannula will loosen around the surgical site):
 - 5.1.3.1 Remove the cannula.
 - 5.1.3.2 Remove the necrotic ring that forms around the surgical site.
 - 5.1.3.3 Wash the site with Endure.
 - 5.1.3.4 Insert the new, 4" cannula.
 - 5.1.3.5 Administer a treatment of anti-inflammatory (e.g., Anafen).
 - 5.1.4 Cow can remain in tie stall unless veterinarian recommends transferring her into a box stall.
 - 5.1.5 Continue to feed normally.
 - 5.1.6 Wash and monitor surgical wound as per [section 5.3.8](#).
- 5.5 Once the cow has fully recovered, she can be assigned to an approved research protocol.

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- 5.1.7 House the animal indoors if the flies are problematic.
- 5.1.8 Additional care is not required if the cannula is in good condition and not leaking.
- 5.1.9 If the plastic/ rubber of the cannula becomes cracked, dry or leaks:
 - 5.1.9.1 Contact the Herd Veterinarian to replace the cannula.
 - 5.1.9.2 Keep the fistula clean by wiping off the rumen fluid and washing with Endure until the cannula can be replaced.
 - 5.1.9.3 Heavy leaking requires daily cleaning with Endure to prevent skin irritation.

6. REFERENCES

Bar Diamond, Inc. (2011). *Bovine Surgery for Fistulation of the Rumen and Cannula Placement*.
https://www.drenchmate.com/documents/Rumen_Fistula_Surgery.pdf

Haskel, Scott R.R. (July 15, 2002). *Rumen fistula surgery for the private practitioner*. Retrieved from
<http://www.milkproduction.com/Library/Scientific-articles/Animal-health/Rumen-Fistula-Surgery/>

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