1. **PURPOSE**

   1.1. This Standard Operating Procedure (SOP) instructs farm workers and students at the UBC Dairy and Education Centre on how to identify and treat animals suffering from pneumonia.

2. **SCOPE**

   2.1. This SOP will describe how to recognize pneumonia in heifers and cows, and how to treat her if needed.

3. **RESPONSIBILITY**

   3.1. The Operations Manager is responsible for reviewing and updating this procedure as required.

   3.2. The Operations Manager is responsible for ensuring staff are trained in recognizing signs of pneumonia.

   3.3. The Operations Manager is responsible for transferring entries from the dairy day book to the herd management software.

   3.4. Farm worker II’s will be responsible for treating any animals with pneumonia.

4. **DEFINITIONS**

   4.1. **Pneumonia**: inflammation of the lungs, most commonly caused by a bacterial or viral infection.

   4.2. **Drenching**: process of orally administering large volumes of fluids (e.g. electrolytes) or drug solutions (e.g. antibiotics or dewormers) into the stomach of an animal.

5. **TRAINING**

   5.1. Training will include animal handling, how to recognize pneumonia infections, and administering injections and oral medications.
6. SAFETY PRECAUTIONS

6.1. All personnel entering the cattle holding area will wear personal protective equipment - coveralls, disposable latex gloves and dedicated facility footwear.

6.2. Care will be taken when handling sharps. Needles and syringes will be disposed of in appropriate sharps container.

6.3. Always thoroughly wash hands with soap and hot water when leaving the barn.

7. GENERAL

7.1. Animals with pneumonia will usually have a fever. Normal temperature of the cow is 38-39.1°C, but will be higher in animals with pneumonia.

7.2. A cow with pneumonia will be noticeably depressed, off feed and have lowered milk production. The worse the pneumonia, the more noticeable this will be.

7.3. The animal may be coughing, and breathing may be labored or rapid. A normal breathing rate for a cow is ~ 20-30 (15-50 range) breaths per minute. A nasal discharge
PNEUMONIA

may be present (clear to purulent, sometimes with blood). A cow with a severe case of pneumonia may be mouth breathing.

7.4. Calves, heifers and cows all receive vaccinations to boost their immunity against pneumonia (See SOP on Vaccinations).

7.5. Record any observations and treatments in the dairy day book.

8. MATERIALS AND EQUIPMENT

8.1. Disposable latex gloves

8.2. Rectal thermometer

8.3. Antibiotics-Trimidox/Borgal (trimethoprim/sulfadoxine)

8.4. Anti-inflammatory - Flunazine (Flunixin meglumine)

8.5. Combination antibiotic/anti-inflammatory – Resflor (Florfenicol/Flunixin)

8.6. Needles -2” 14G for cows, 1.5” 16G for heifers

8.7. Syringes – variable volumes

8.8. 4x4” sterile gauze

8.9. 70% Isopropanol

8.10. Drenchmate apparatus

8.11. Drenchmate powder

9. PROCEDURES

9.1. Identify animals seen to have signs of pneumonia and that may require treatment. See Flowchart below.

9.2. If necessary, move sick animals to a pen with headlocks and allow them time to lock up. See SOPs on Moving & Chasing Cattle, and Handling Cattle.

9.3. Take the animals’ rectal temperature (See SOP on Handling Cattle). Record temperature in day book.
9.4. Farm worker IIIs will evaluate the sick animal based on above flow chart. If after consulting with the Operations Manager and/or Herd Veterinarian, pneumonia is diagnosed, they will drench animal and start her on an antibiotic and anti-
inflammatory medication. See treatment protocol below and SOPs on giving oral medications and injections.

9.5. Cows with pneumonia will usually respond better to antibiotics when combined with anti-inflammatories (Flunixin) for pain control.

9.6. Young heifers (after weaning) receive a combination antibiotic/anti-inflammatory – Resflor, given subcutaneously into the neck (see treatment protocol below and the SOP on giving subcutaneous injections). They are not drenched.

9.7. Ensure sick animal has access to plenty of fresh water and feed.

9.8. If animal’s condition worsens, or if there is no improvement after 3 days phone the herd veterinarian.

**PNEUMONIA TREATMENT PROTOCOL:**

<table>
<thead>
<tr>
<th>Age of Animal</th>
<th>Trade name</th>
<th>Drug name</th>
<th>Dosage</th>
<th>Route</th>
<th>Frequency</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Heifers (after weaning-1st calving)</td>
<td>Resflor</td>
<td>Florfenicol/ Flunixin</td>
<td>6ml/45 kg</td>
<td>SQ</td>
<td>1x</td>
<td>Once</td>
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Resflor is administered as a single, subcutaneous treatment in the neck. Do not give more than 10 mls at an injection site. If after 3 days there is no improvement in heifer’s condition, or if condition worsens, call the veterinarian.

<table>
<thead>
<tr>
<th>Lactating Cows</th>
<th>Trimidox/Borgal Sulfadoxine</th>
<th>Trimethoprim: Sulfadoxine</th>
<th>3mls/45 kg</th>
<th>IV</th>
<th>1x daily</th>
<th>5d</th>
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<tr>
<td>Lactating Cows</td>
<td>Flunazine</td>
<td>Flunixin meglumin</td>
<td>2mls/45 kg</td>
<td>IV</td>
<td>1x daily</td>
<td>2d</td>
</tr>
<tr>
<td>Lactating Cows</td>
<td>Drench mate powder (cows only)</td>
<td>Electrolyte/ vitamin supplement</td>
<td>40L</td>
<td>Orally</td>
<td>1x daily</td>
<td>Day 1 – and Day 2 and 3 if slow to respond</td>
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Monitor animal temperature and milk production. If no improvement in animal’s condition after 3 days, or if it worsens before then, phone herd veterinarian.

Withdrawal times after last treatment:
- Milk: 96 hrs for Borgal/Trimidox., 36 hrs for IV Flunazine.
- Meat: 10 days for Borgal/Trimidox, 6 days for Flunazine, 60 days for Resflor.
10. REFERENCES

10.1. CCAC Guidelines on the Care and Use of Farm Animals in Research, Teaching and Testing. CCAC. 2009


11. REFERENCED SOPS

11.1. SOP-Cow-006 Moving and Chasing Cattle

11.2. SOP-Cow-011 Giving Vaccinations

11.3. SOP-Cow-012 Giving Injections – Subcutaneous, Intramuscular and Intravenous.

11.4. SOP-Cow-014 Administering Oral Medications

11.5. SOP-Cow-023 Handling Cattle

12. APPROVAL AND REVISION HISTORY

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