 University of British Columbia Centre for Dairy Education and Research	Document Number	SOP-Cow-011
	Revision Number	001
	Effective Date	June 24, 2020
GIVING VACCINATIONS		

1. PURPOSE

- 1.1. This Standard Operating Procedure (SOP) instructs farm workers on the methods used to vaccinate calves, heifers and cows at the UBC Dairy Education and Research Centre.

2. SCOPE

- 2.1. This SOP will describe the methods used to safely vaccinate calves, heifers and cows.
- 2.2. It will also describe the various vaccines available, and what they are used for.
- 2.3. This document will also provide a general overview of important points to remember which impact the welfare of the animal.

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 all staff are trained in this procedure.
- 3.3. The Operations Manager is responsible for transferring the daybook entries into the herd management software.
- 3.4. Personnel are responsible for learning and following the techniques for moving cattle and giving injections.

4. TRAINING

- 4.1. Training will include animal handling and how to perform injections. See SOPs on student training and giving injections.

5. DEFINITIONS

- 5.1. **Vaccination:** Injection of a vaccine in order to stimulate the immune system, thereby producing, or increasing immunity against disease from the causative

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agent in the vaccine. Vaccines can be either inactivated or modified-live (to make them harmless) bacteria or viruses.


- 5.2. **DIM:** Days in Milk of a lactation cycle. The day following calving is considered day 1.
- 5.3. **Closeup cow** – a cow that is within 3 weeks of calving
- 5.4. **Dryoff cow** – a cow that is not producing milk as she is getting close to calving.

6. SAFETY PRECAUTIONS

- 6.1. All personnel entering any cattle holding area will wear personal protective equipment -coveralls and dedicated facility footwear.
- 6.2. Disposable gloves are to be worn when giving vaccinations to the animals.
- 6.3. All personnel giving vaccinations must know how to safely move the cattle between pens, and how to safely administer the appropriate vaccination.
- 6.4. Care will be taken when handling sharps. Needles and syringes will be disposed of in appropriate sharps container. Needles should be recapped only when placed on a level surface.
- 6.5. Thoroughly wash hands with soap and water when leaving the barn.

7. GENERAL

- 7.1. All vaccinations are to be recorded in the Dairy day book, and added to the Herd Management Software).
- 7.2. Calves are vaccinated around 5 days of age while housed in the calf barn.
- 7.3. Heifers and cows are vaccinated at pre-determined ages or stage of gestation in order to safeguard their health, and the health of their unborn calves. See Table 1.
- 7.4. Use a fresh needle for each injection.
- 7.5. No animal shall be held in headlocks any longer than is necessary to complete the required vaccinations.

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8. MATERIALS AND EQUIPMENT

- 8.1. Needles: Sized according to the product being used. Either 16 or 18 gauge, 1.5” in length for cows and heifers ; 18-20 G, 1” in length for calves (See Table 1)
- 8.2. Sharps container
- 8.3. Syringes of appropriate size: 3 or 6 mls (see Table 1)
- 8.4. 4x4” sterile gauze pads
- 8.5. 70% isopropyl alcohol
- 8.6. Disposable latex gloves
- 8.7. Appropriate Vaccine (See 5 Vaccines listed below):

1. **Pyramid FP10:** an aid in the prevention of viral abortion, viral pneumonia and leptospirosis caused by the following: Bovine Rhinotracheitis, Viral diarrhea, Parainfluenza 13 and Respiratory syncytial viruses, and Leptospirosis bacteria
 - contains modified live viruses
2. **Covexin Plus:** for active immunization of healthy cattle, 3 months or older as an aid in the prevention of Clostridial diseases.
 - inactivated 9-way clostridium bacteria
3. **Enviracor J5:** in an aid in the prevention of Coliform mastitis.
 - inactivated *E. coli* bacterin
4. **Scourguard 4KC:** is for healthy pregnant cows and heifers as an aid in preventing viral and bacterial diarrhea in their calves caused by the following: bovine rotavirus, coronavirus, enterotoxigenic strains of *Escherichia coli*, and *Clostridium perfringens* type C.
 - Inactivated bacterium
5. **Inforce 3:** is for healthy calves as a preventative for respiratory disease caused by the following: bovine respiratory syncytial virus (BRSV), and as an aid in preventing respiratory disease caused by infectious bovine rhinotracheitis (IBR) and parainfluenza₃ (PI₃) viruses.
 - Contains modified live viruses

9. PROCEDURES

9.1. *Calf Vaccination*

- 9.1.1. Verify the identity of calf.



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- 9.1.2. Collect Inforce 3 vaccine from the main barn vet room refrigerator.
- 9.1.3. Using the needle and the syringe, remove the sterile diluent from the bottle.
- 9.1.4. Add sterile diluent to the dried vaccine bottle.
- 9.1.5. Once the dried vaccine has been dissolved by the diluent, draw up all of liquid vaccine into the syringe.
- 9.1.6. Replace the needle with the nasal cannula. Place the needle in the sharps container. This vaccine is given intranasally and not as an injection.
- 9.1.7. After gently securing the calf's head, administer half of the vaccine dosage into each nostril.
- 9.1.8. Discard cannula after use.

9.2. *Heifer and Cow Vaccination*

- 9.2.1. Identify animal(s) that need to be vaccinated.
- 9.2.2. Ensure the animals are in an area equipped with headlocks. See SOPs on Moving & Chasing Cattle, and Handling Cattle.
- 9.2.3. Encourage animals to 'lock up' by placing feed on the far side of the available head locks.
- 9.2.4. While the animals are locking up, retrieve the supplies and appropriate vaccine from the fridge in the vet room (see Table 1).
- 9.2.5. Determine the correct area for the injection. See SOP on IV, SC and IM injections.
- 9.2.6. Clean the injection area with the alcohol and sterile gauze pad until the gauze comes away clean.
- 9.2.7. Draw up the recommended amount of vaccine into the syringe and inject the animal as per Table 1 below. Reswab the injection area with a gauze wetted with isopropanol.
- 9.2.8. When finished giving the vaccinations, go outside of the holding area and release the headlocks. Do not release them from inside the pen as the cows may back up quickly and knock you over.




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9.2.9. Clean hands thoroughly with soap and hot water when leaving the barn.

Table 1. Guide to calf, heifer, and cow vaccinations.

Calf, Heifer or Cow	Vaccine	Age/Stage of Lactation	Needle Gauge	Needle Length (inches)	Syringe Vol. (cc)	Injection Vol (cc)	Injection method
Calves	Inforce 3	5 days old	20-18	1.0	3	2	Intranasal
Heifers	Covexin Plus	8-10 months, Booster 1 month later	18	1.5	3	2	SQ
Heifers	Pyramid FP10	6-8 months of age	16	1.5	3	2	IM,SQ
Close up heifers and cows	Scourguard 4KC	3 weeks prior to calving	18	1.5	3	2	IM
Close up heifers and cows	Enviracor J5	3 weeks prior to calving	16	1.5	6	5	SQ
Fresh heifers & healthy cows >21 DIM	Covexin plus	Annual booster @ >21 DIM	18	1.5	3	2	SQ
Fresh heifers & healthy cows >21 DIM	Enviracor J5	<21DIM	16	1.5	6	5	SQ
Fresh heifers & healthy cows	Pyramid FP10	Annual booster @21-42 DIM	18	1.5	3	2	IM, SQ
Dry off cows	Scourguard 4KC	@ dry off	18	1.5	3	2	IM
Dry off cows	Enviracor J5	@ dry off	16	1.5	6	5	SQ

NB. Covexin Plus: all cattle 6 months and older are vaccinated annually. Heifers older than 6 months who haven't been previously vaccinated with Covexin are given a booster 1 month after their initial vaccination

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10. REFERENCES

- 10.1. CCAC Guidelines on the Care and Use of Farm Animals in Research, Teaching and Testing. CCAC. 2009.
- 10.2. Code of Practice for the Care and Use of Dairy Cattle. National Farm Animal Care Council. 2009
- 10.3. Drugs.com. Online source for information on vaccines. Accessed Jan 2020.
<https://www.drugs.com/vet/>
- 10.4. Merck Veterinary Manual. Online source. Accessed Jan 2020.
<https://www.merckvetmanual.com/SearchResults?query=cattle+diseases>

11. RELATED SOPs

- 11.1. SOP-General-001 Student Training
- 11.2. SOP-Calf-002 Calf Disbudding
- 11.3. SOP-Cow-006 Moving & Chasing Cattle
- 11.4. SOP Cow-012 Giving intravenous (IV), subcutaneous (SC) and intramuscular (IM) injections
- 11.5. SOP-Cow-023 Handling Cattle

12. APPROVAL AND REVISION HISTORY

Author/Approver	Date	Signature
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