

# TREATING HYPOTHERMIA (CHILLING) AND HYPOGLYCEMIA (STARVATION) IN VERY YOUNG LAMBS

## Items to Have on Hand BEFORE Lambing Begins:

- ☑ Digital rectal thermometer to measure subnormal body temperatures (as low as 20°C).
- ☑ Frozen colostrum in small batches (150-250 mL or 5-8 oz).
- ☑ Lamb stomach tube and feeding syringe (60mL) or squeeze bottle (250 mL).
- ☑ Warming box with heater and thermostat.
- ☑ Aftercare unit: draft free pens that are warm, dry and well-bedded.
- ☑ Bottle of sterile 50% dextrose (500 mL bottle).
- ☑ Kettle for boiling water.
- ☑ Sterile 60 mL syringe with 20 gauge (pink) 1 inch needles.

## Recognizing and Treating Hypothermia

The best way to recognize hypothermia is by taking the lamb's rectal temperature and observing its behaviour. The normal temperature of a lamb is 39°C-40°C.

The rectal temperature of any dull, weak lamb that seems unable or unwilling to suckle, should be checked. The SOONER action is taken, the better the lamb's chances of survival.



The basis of treatment of the hypothermic lamb is to warm it up and provide a source of energy to start heat production again.

Symbol definitions: ≤ less than or equal to  
> greater than  
< less than

## Mild Hypothermia – Any Age

### Temperature between 37°C – 39°C

Lamb is weak, depressed, appears empty but can stand.

#### ACTIONS

- Move lamb into shelter and dry off if wet.
- Feed colostrum by stomach tube (within the first hour of birth is best). Feed 50 mL/kg of bodyweight slowly over 5-10 minutes.
- Additionally feed 200 mL/kg bodyweight spread over three more feedings within the first 24 hours.
- Keep lamb with dam provided she is in a sheltered area.
- ENSURE lamb is nursing.
- Lamb is recovered once rectal temperature returns to normal; lamb and ewe can return to flock.

Small lambs < 1.5 kg (3 lbs) at birth, may not have sufficient fat reserves to initiate heat production, even with colostrum.



#### ACTIONS

- In addition to colostrum, feed these small lambs an extra 50 mL/kg of a 20% dextrose solution by stomach tube 1 hour after the colostrum feeding.
- For small lambs (under 2 kg), wool pullovers worn for 2 to 4 days, helps to maintain body temperature. These very small lambs may do better in the orphan lamb pen.

## Moderate to Severe Hypothermia

### Temperature ≤ 37°C

#### How old is the lamb?

Lambs over 5 hours old should be considered hypoglycemic (starved) as well as hypothermic. Do not warm before administering colostrum or glucose.



## Can the lamb suckle and swallow?

Lambs with a suckle reflex can be tube fed. Lambs without a suckle reflex will need to be revived using intraperitoneal dextrose and then warmed prior to being tube fed.

### If ≤ 37°C; < 5 Hrs Old and Suckle Reflex (Able to Swallow)

Lamb is weak, empty, depressed and may be unable to stand.

#### ACTIONS

- Remove lamb from ewe and dry off if wet.
- Place in warming box until rectal temperature is >37°C.
- Administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight.
- Additionally feed 200 mL/kg body weight spread over three more feedings within the first 24 hours.
- Move to hospital pen with heat source and feed until strong and maintaining normal temperature of 39°C.
- Once strong, return to dam but make sure lamb is nursing (identify using livestock paint or marker).

### If ≤ 37°C; > 5 Hrs Old and Suckle Reflex (Able to Swallow)

Assume that lamb has no fat stores and is hypoglycemic (starved). You must provide an energy source before warming. Lamb is tucked up, empty appearing and depressed.

#### ACTIONS

- Remove lamb from dam and dry off if wet.
- Administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight prior to warming!
- If you warm the lamb first, it will convulse and die.
- Place in warming box until rectal temperature is > 37°C.
- Again administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight. Additionally feed 200 mL/kg bodyweight spread over three more feedings within the first 24 hours.

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## If ≤ 37°C; > 5 Hrs Old and Suckle Reflex Continued

- Move to hospital pen with heat source (e.g. box in warm environment) and feed until strong and maintaining normal temperature (39°C).
- Once strong, return to dam but make sure lamb is nursing (identify using livestock paint or marker).

### If ≤ 37°C; > 5 Hrs Old and No Suckle Reflex (Not Able to Swallow)

Do not attempt to stomach tube as this will result in the milk / colostrum being deposited in the lungs, which will kill the lamb. Lamb is often unable to stand.

#### ACTIONS

**Reverse the hypoglycemia first before warming or lamb will convulse and die!**

- The lamb must first be injected with a sterile solution of warm 20% dextrose at a dose rate of 10 mL/kg body weight into the abdominal cavity (intraperitoneal). **See techniques used to revive hypothermic and hypoglycaemic lambs below.**
- Place in warming box until rectal temperature is > 37°C.
- Once revived and with a suckle reflex, administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight.
- Additionally feed 200 mL/kg bodyweight spread over three more feedings within the first 24 hours.
- Move to hospital pen with heat source (e.g. box in warm environment) and feed until strong and maintaining normal temperature (39°C)
- Once strong, return to dam but make sure lamb is nursing (identify using livestock paint or marker)

**As in all conditions, prevention is the best cure for hypothermia. Good nutrition during gestation, good lambing environment, an awareness of weather conditions, observation of the ewe and lamb at lambing, and assisting where necessary, will go a long way to preventing lamb losses from hypothermia.**

## Techniques Used to Revive Hypothermic and Hypoglycemic Lambs

### Using a Stomach Tube to Administer Warm Colostrum

- Sit with the lamb restrained on your lap. Measure the tube.
- The tube is passed into the side of the mouth in the space between the front and side teeth.
- Using gentle pressure, the tube is slid into the esophagus and down to the stomach.
- The tube will move easily. ANY resistance or COUGHING indicates that the tube has entered the windpipe and it should be removed immediately.
- The accidental passing of colostrum into the lungs will result in aspiration pneumonia and the death of the lamb.
- The esophagus is behind/beside the windpipe on the lamb's left. By placing your fingers on each side of the lamb's throat, you should be able to feel two tubes while sliding the stomach tube in; you will feel the windpipe and the tube passing down the esophagus.
- Slowly administer the warm colostrum either using a 60 mL feeding syringe or a 250 mL squeeze bottle.
- Colostrum should be administered over five minutes.
- Crimp the end of the tube over prior to removing to prevent aspiration.



### Sourcing and Warming Colostrum to Feed to Hypothermic Lambs

Colostrum from a lamb's dam is best, other options listed in order of preference:

1. Individual healthy ewe colostrum from the same flock.
2. Pooled ewe colostrum from the same flock.
3. Pooled ewe colostrum from another flock (same disease status or better).
4. Pooled cow colostrum (use 30% more; feed every five hours in the first 24 hour period).
5. Any combination of the above.
6. Commercial colostrum replacement product.



Johne's Disease can be spread from infected cows and ewes through their colostrum. Use cows from a Johne's tested herd only. Occasionally lambs may develop severe anaemia from cow colostrum. Always identify source of colostrum so problem colostrum can be discarded.



Thaw frozen colostrum in a water bath at 35°C. Never microwave colostrum; it will destroy the proteins, destroying the antibodies in the colostrum.

### Administering Dextrose Solution Using an Intraperitoneal (IP) Injection

- With a sterile 60 mL syringe, draw up 20 mL of sterile 50% dextrose using a sterile needle.
- Boil clean water and draw up 30 mL of this water into the same syringe.
- This will provide 50 mL of warm (38°C-40°C) 20% dextrose solution.
- The dose is 10 mL per kg bodyweight; 50 mL is sufficient for a 5 kg lamb.
- The lamb is suspended vertically by the forelimbs.
- The injection site is 2.5 cm (1 in.) below and to the side of the navel.
- Use a 20 gauge (pink) 1 inch needle.
- The needle is inserted at a 45 degree angle to the body wall (the needle is pointed in the direction of the lamb's pelvis). Ask your veterinarian to show you how to do it.
- The internal organs will be pushed away by the needle and not damaged.
- Both the **conscious** and **comatose** lamb can be injected in this manner.



### Warming a Hypothermic Lamb Continued

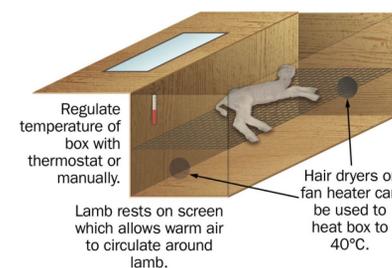
1. A warming box which allows circulation of warm air around the lamb (see diagram below).
2. A water bath warms most quickly but requires holding the lamb to prevent drowning, and immediate drying (towels and hair dryer) to prevent chilling again. This requires the most labour.
3. Heating pad and radiant heat. Both will warm the lamb but there is a risk of burning if used improperly.
4. Heat lamp alone is not recommended as it only warms one side.



Do not warm before administering an energy source (i.p. dextrose or warm colostrum).

Check rectal temperature every 30 minutes to avoid over heating.

A warm air heater is the preferred method.



A warming box can be constructed from cement board and wire mesh. Preferred heat source is a fan heater with thermostat, ideally a ceramic heater (must monitor temperature). A piece of plexiglass in the lid allows for lamb's condition to be monitored.

### If temperature 37°C to 39°C

1. A heat lamp can be used to warm the lamb along with warm colostrum.
2. Keep separate from the dam until strong.
3. Suitable containers are disposable cardboard boxes, washable tubs or small pens made with square straw bales.
4. Make sure that can disinfect area if a disease outbreak occurs (e.g. scours)
5. Return to the dam once lamb is strong enough to nurse unaided.
6. Identify the lamb with livestock marker and keep in a small area so can observe easily. Watch for signs of rejection.
7. Lamb may need to be reared artificially if fails to thrive on the ewe.

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