

Neonatal Lamb Management: Intraperitoneal Injection of Dextrose (Glucose)

Most lamb deaths that occur shortly after birth are due to starvation and/or hypothermia (low body temperature). These losses are most often preventable, and lambs can be saved if problems are identified and treated quickly.

Why is timing important?

- Newborn lambs rely on reserves of brown fat as an energy source until they ingest colostrum. Ideally, lambs will nurse and receive colostrum within two hours of birth. If feeding is delayed, even by a few hours, fat stores will be depleted. Unless the lamb nurses, or receives another source of energy, it will become unconscious and die.
- Long-term survival also depends on receiving colostrum soon after birth, as the ability to absorb antibodies in colostrum quickly decreases. Milk or milk replacer will prevent starvation, but will not protect against infections.
- The sooner an 'at risk' lamb is identified, the easier the treatment and the greater the chance of saving the lamb.

Recognizing 'At Risk' Lambs:

- **Behaviour:** Watch for hunched posture, hollow sides, excessive bleating, lethargy, dehydration (pinch the skin over the spine, if it remains in a 'tent' the lamb is dehydrated), cold to touch (check inside of mouth), lying flat/unconscious.
- **Lambing problems** could delay nursing (e.g. prolonged labour, weak lamb, mismothering).
- **Exposure to cold and/or wet weather**, as the lamb's fat reserves will be depleted more quickly.
- **Body temperature** of starving lambs will drop over time (even in warm conditions) as their ability to produce body heat diminishes. **Low body temperature** is a key indication lambs are suffering from starvation.

Treating Starvation/Hypothermia:

Normal rectal temperature for lambs is **38.5°C to 39.0°C (101°F to 102°F)**. Treat lambs with below normal body temperature immediately depending on the severity of hypothermia and the age of the lamb.

Within a few hours of birth, less affected lambs may only need assistance in nursing from the ewe. Confine the ewe to a small pen and check for potential problems (e.g. blocked teats). If possible, assist the lamb to nurse. **If the lamb does not nurse quickly or if there is any doubt that it has received enough colostrum, follow the steps below.**

TREATMENT FOR:		TREATMENT FOR SEVERE HYPOTHERMIA Rectal Temperature Below 37.5°C (99°F)
MILD HYPOTHERMIA Rectal Temperature 37.5°C to 39.0°C (99°F to 101°F)	SEVERE HYPOTHERMIA Rectal Temperature Below 37.5°C (99°F)	
Any age & able to swallow	Under 5 hours old* & able to swallow	Over 5 hours old* or any age & unable to swallow
<ol style="list-style-type: none"> 1) Remove from ewe and towel dry. 2) Stomach tube with colostrum at 50 ml/kg (20 ml/lb).[†] 3) Place in warming box. 4) Return to ewe when rectal temperature is normal. 5) Be sure the lamb is accepted by the ewe and is able to nurse normally. Stomach tube again in a few hours if lamb is weak or you are uncertain if it has received enough colostrum. 		<ol style="list-style-type: none"> 1) Remove lamb and dry – Do not warm lamb further until following Step 2 or Step 3*. 2) If lamb is conscious/able to swallow, stomach tube colostrum.[†] <p>OR</p> <ol style="list-style-type: none"> 3) If lamb is unconscious or very weak, give an intraperitoneal injection of dextrose. See reverse for details. Stomach tube with colostrum[†] when recovered. <p>Follow steps 3 to 5 to left.</p>
<p>* Give hypothermic lambs that are more than 5 hours old colostrum or dextrose BEFORE warming them. While the lamb stays chilled, its body's energy requirements are relatively low. As the lamb is warmed more energy is needed for the body to function. By 5 hours of age the brown fat reserves are likely depleted. If another energy source (colostrum or dextrose) is not available during warming, the lamb may suffer from fatal seizures.</p>		

Adapted from 'What You Need to Know About Lambing' presentation by Dr. Ileana Wenger.

For more information: Consult with your veterinarian and/or find neonatal management resources, including an information sheet on stomach tubing lambs[†], at www.ablamb.ca (click the 'Resources' tab) or contact the ALP office (403-948-8533).

Neonatal Lamb Management: Intraperitoneal Injection of Dextrose (Glucose)

Directions for giving intraperitoneal (abdominal) injections are given below. Giving injections of dextrose is necessary to treat starving, hypothermic lambs that cannot be safely stomach tubed* (i.e. very weak or unconscious lambs). An energy source **must** be given **before** warming hypothermic lambs in some cases (see reverse for details). This intervention can save lambs, but may also cause complications, including death, unless done correctly.

Please consult with your veterinarian if you have questions or concerns about using this technique.

1) Equipment required:

- 20 gauge x 1 (or 1½) inch sterile needle
- 50% dextrose solution
- 60 ml sterile syringe
- Freshly boiled water
- Antiseptic spray (iodine)

2) Preparation of solution:

Prepare by mixing approximately 10ml/kg body weight (5ml/lb) of a 2:3 solution of dextrose and freshly boiled water.

Example: Mixture for a 10 lb (4.5 kg) lamb:

- Draw 20 ml of 50% dextrose into the syringe.
- Draw 30 ml of freshly boiled water into the syringe and mix gently.
- This mixture will be an appropriate temperature for injecting (approximately 38°C to 40°C).

Solution preparation for lambs of various weights				
Lamb Weight		50% Dextrose (ml)	Freshly boiled water (ml)	Total Injection (ml)
lbs	kg			
5	2.3	10	15	25
7	3.2	14	21	35
10	4.5	20	30	50
13	5.9	26	39	65
15	6.8	30	45	75

Note: The solution figures given above are based on lamb weight in pounds. Values vary slightly if calculated for weight in kilograms due to number rounding during unit conversion. This small variation is not significant and will not affect dosing rate.

3) Administration of solution

- Hold lamb by front legs with body hanging against your legs or side.
- Injection site is 1" below and 1/2" to the side of the navel (Figure 1). Injection can be given either to the right or left of the navel.
- Spray site with antiseptic.
- Insert needle pointing towards the tail head at a 45° angle to the body wall (Figure 2).
- Inject the solution slowly over 10 - 15 seconds. No resistance should be felt.



Figure 1[†]: Injection site (can be either to the right or left of the navel)



Figure 2[‡]: Inject on an angle towards tail head

4) Place lamb in the warming box. Stomach tube with colostrum* as soon as the lamb has sufficiently recovered.

5) Check temperature every 20-30 minutes to ensure the lamb does not overheat.

6) Return lamb to the ewe when body temperature has returned to normal. Ensure the lamb is accepted by the ewe and is able to nurse normally. If the lamb is still weak or you are uncertain if it has received enough colostrum, stomach tube again in a few hours. Lambs should have at least 200ml of colostrum/kg body weight during the first 24 hours of life. If they require supplementing after this time, they may be given milk from the ewe or milk replacer.

Photo credits: [†]'What you need to know about Lambing' Dr. Ileana Wenger. [‡]The Code of Practice for the Care and Handling of Sheep.

For more management resources, including an information sheet on stomach tubing lambs*, visit ablamb.ca or call 403-948-8533.