What causes ewes to abort?

- The exact cause of abortion requires the knowledge of clinical signs, flock history and, in some cases, laboratory diagnostics.
- Samples (fetus, placenta) can be submitted to your veterinarian for diagnosis.

What are the different types of abortions?

- **Enzootic Abortion:**
  - Caused by *Chlamydia psittaci*.
  - Spreads through infected (aborted) fetuses, placentas, vaginal discharges and feces of carriers.
  - Enters a non-pregnant ewe and lays dormant, accumulating in the placenta until the ewe conceives.
  - The organism does not initiate an immune response during the dormant stage.
  - During pregnancy, the organism enters the uterus and causes inflammation of the placenta and death of the fetus.
  - Placenta is often severely damaged and may be retained; membranes are opaque, reddened and thick.
  - If infection occurs before conception, the ewe will abort during mid-pregnancy.
  - If infection occurs during early pregnancy, abortion will occur 60 to 90 days thereafter.
  - If infection occurs during mid or late pregnancy, stillbirths and weak lambs at birth may result.
  - Newly purchased ewes and ewe lambs are most susceptible in contaminated farms.
  - Recovered ewes are usually resistant for two to three years.
  - Ewe usually only aborts once in her lifetime; but may remain a carrier.
  - Infected ewe may have a normal lamb, but spread the bacteria when stressed.
  - A vaccine is available and generally considered to be effective in sheep.
Crowding at lambing increases the risk of abortion in the same or subsequent lambing season.

No effective way to identify infected or carrier animals.

Control measures:
- Accurate diagnosis.
- Good hygiene (e.g. isolation of aborting ewes and disinfecting infected pens).

**Vibriosis Abortion:**
- *Campylobacter, Campylobacter jejuni.*
- Ewes become infected by ingesting infected membranes or fluids or through consumption of feeds contaminated with *Campylobacter sp.*
- If infection occurs during early pregnancy, the ewe likely will reabsorb the fetus.
- If infection occurs during mid-pregnancy, abortion will occur 10 to 20 days later.
- Abortion rates may reach 80-90% in a previously unexposed flock.
- A late-pregnancy infection will result in stillbirths and weak lambs at birth.
- Infected ewes generally recover following abortion and can be expected to be immune to re-infection for several years.
- Some ewes die of complications such as infected uterus or fetal/placental retentions.
- New and young ewes most likely to abort in flocks with a history of vibrio.
- Clean flocks should be vaccinated if replacement ewes are purchased from other flocks.
- Replacements should be vaccinated when brought into a flock of vibrio carriers.
- Vaccinate just prior to flushing, breeding or at weaning time.

**Toxoplasmosis Abortion:**
- Caused by *Toxoplasma gondii*, a protozoa that causes coccidiosis in cats.
- Ewes become infected by ingesting feed or water that has been contaminated with oocyst-laden cat feces.
- In healthy, non-pregnant ewes, toxoplasmosis will not cause clinical symptoms or detrimental effects.
- If infection occurs during early pregnancy, the embryo or fetus generally will be reabsorbed.
If infection occurs during mid-pregnancy, abortion will occur and the ewe may be susceptible to a secondary infection.

During late pregnancy, infection will lead to abortion, stillbirths, mummified fetuses or weak lambs at birth.

In stressed and immune-suppressed ewes, neurological signs and death occur on rare occasions.

Risk of infection is greatly reduced by preventing contamination of sheep feed with cat feces.

Keeping cats out of the sheep barns to prevent toxoplasmosis must be weighed against the benefits of rodent control.

Salmonella Abortion:

- Occurrence is rare.
- Caused by various salmonella organisms.
- Stress and the number of ingested salmonella bacteria will determine whether the pregnant ewe aborts.
- If abortion does occur, it usually is during the final month of pregnancy.
- Most of the ewes will exhibit diarrhea.
- Some will die from metritis, peritonitis and/or septicemia.
- Healthy, young lambs also may contract the disease and die.
- Ewes that have aborted are immune but can carry and shed bacteria for up to four months.

What is vaginal prolapse (VP)?

In the last two to three weeks prior to lambing, a producer may notice a pink to reddish swelling just below the anus, sometimes only when the ewe is recumbent but eventually at all times.

This swelling is inflamed vaginal tissue which, if the ewe continues to strain, will prolapse.

In severe cases, the bladder will be contained inside the swelling preventing the ewe from urinating properly, and the cervix may be visible as a red knot centrally and low on the mass.

In very severe cases, the rectum may also prolapse.

Ewes with even a mild VP one year are almost certain to re-prolapse the following year and so should be culled after weaning their lambs.
What factors contribute to vaginal prolapse?

- Age may be a factor of VP, but this is somewhat complicated by the flock level risk factors.
- Outbreaks of VP are often more common in ewe lambs – possibly due to their small size and body capacity compared to adults, but older ewes may be more at risk because of “wear and tear.”
- Body condition has been associated with a higher risk, with fat ewes or ewes being overfed having a higher risk.
- Fetal numbers has been implicated with ewes bearing twins more at risk than ewes bearing singles – but this may be again related to body capacity and size of the ewe.
- Ewes with even a mild VP one year are almost certain to re-prolapse the following year and so should be culled after weaning their lambs.
- Genetics has been suspected but very little research has been published in this regard and only in a few breeds.
- Outbreaks of VP are strongly associated with diet and feeding management.
- Forages that are of poor digestibility is the most common cause of VP.
- Over-conditioned sheep offered free-choice forage will increase their dry matter intake in late pregnancy. When they lie down, there is a lack of room from the enlarged rumen and uterus containing the fetuses. Once the vaginal tissue becomes irritated due to exposure to the air or environment, the ewe will strain and eventually prolapse.
- Feeds containing estrogenic compounds (phytoestrogens) are also postulated as contributing to outbreaks of VP. These compounds cause a softening of the ligaments and swelling of the tissues in the vulvar area. When the ewe is recumbent, again the vaginal tissue protrudes and is irritated. Feeds associated with phytoestrogens include red clover hay or haylage, disease stressed alfalfa and grains affected by the mycotoxin zearalenone. More research is needed to confirm this association.
- Diets that contain a high percentage of the forage source as alfalfa or red clover, or in which the forage is of poor quality should be avoided. A source of energy, i.e. grain should be offered to also avoid pregnancy toxaemia.
- Animals kept in confinement and unable to exercise may also be more susceptible.
- Feeder design and management is also important. Crowding at the feeders or ewes forced to stand on their hind legs to feed out of
elevated hay racks during late gestation may have a higher incidence of prolapsed vagina.

**How should I treat a VP?**

- VPs should not be ignored.
- Early cases may only appear when the animal is lying down and these should be monitored for progression.
- It is advisable to have prolapses corrected within 24 hours of their appearance so as to prevent excessive straining and permanent damage to the vagina.
- A veterinarian can be called to replace the prolapse and suture the vulva closed.
- Once this has been done, the female must be watched closely for signs of birthing and the suture untied when lambing is imminent.
- If the female does not lamb when expected the suture can often be retied and close observation should be continued.
- Control of prolapsed vaginas should be based on culling affected ewes after weaning and not keeping any of their offspring as replacements.

**What is pregnancy toxaemia?**

- Pregnancy toxemia (pregnancy ketosis) usually occurs in the last few weeks of pregnancy when the fetal growth and nutritional needs of the ewe is at a maximum.
- The cause is very simple – affected sheep are not consuming enough energy to meet the growing needs of the fetus(es).
- Pregnant ewes carrying multiple fetuses require more than double the feed energy as those carrying singletons.
- Ewes that are already thin when entering late gestation are at increased risk than ewes in good body condition. Ewes that are over-conditioned are also at risk of pregnancy toxaemia, although they do not respond well to treatment and are more likely to die than thin ewes.
- Initially, the signs are subtle – ewes are still eating forage but not grain, and will separate from the group but may still appear bright. They will quickly become more depressed and if left untreated will progress to a coma and death.
HEALTH PROBLEMS RELATED TO BREEDING

• Because glucose levels are low in the blood and the brain, the ewe may show neurological signs which are: walking with her head held abnormally high, stumbling, having a fine head tremor and appearing blind. She has a severe headache and may grind her teeth and press her head against the wall. At this point, she is not eating at all.

• Normally, the ewe obtains energy mostly from the ration and much less from her fat stores. If that energy is not coming from the feed, she will mobilize fat and process it through her liver. This process produces by-products called ketones of which the most common is β-hydroxybutyrate, which can be measured in the blood and urine. The fat clogs up the liver and causes liver failure – causing more depression. Brain damage eventually becomes irreversible and she slips into a coma. The fetuses die, decompose and the ewe also becomes toxic. All of these factors contribute to her death.

• Animals displaying any of these signs should be examined by a veterinarian. Once a ewe enters a coma, it is unlikely she will respond to any treatment as the liver and brain are severely damaged. It is important to intervene when she still has some appetite and is treated appropriately.

• Similar signs may occur with other diseases including hypocalcemia, polioencephalomalacia and some other toxicities such as lead poisoning.

• Prevention of pregnancy toxoaemia is based on proper feeding of ewes in late pregnancy and also controlling any diseases or management issues that will cause a ewe not to be able to eat properly or will increase her energy needs (e.g. footrot, bad teeth, inclement weather, shearing, crowded feeders, mixing of ages and sizes).

• Efforts should be made to ensure that all pregnant females have adequate body condition as they enter late gestation (3 to 4 on a 5-point scale).

What is hypocalcaemia?

• Calcium is in great demand by the ewe in late pregnancy because the fetal skeletons are being formed.

• If the diet is low in calcium (e.g. cereal hays such as oat hay have almost no calcium), or if the diet is very high in phosphorus (e.g. high grain diet with very poor quality “first cut” grassy hay), then the ewe will not have enough calcium in the diet to stay healthy.

• Any other stress (e.g. shearing, transportation, inclement weather) will tip her over the edge.
HEALTH PROBLEMS RELATED TO BREEDING

• The muscles need calcium to contract. Low calcium causes the ewe to be unsteady on her feet and eventually she cannot rise. She is cold, bloated, salivating and her hind legs are most often out behind her rather than tucked up.
• Untreated she will die due to heart failure or aspiration of rumen contents from bloating.
• The disease can look very much like pregnancy toxaemia but the onset is often more rapid.
• This is a medical emergency; a veterinarian can administer calcium salts into the blood stream to save her life. But a misdiagnosis, or if the calcium is given to a sheep with another disease, it can stop her heart.
• Make sure that the forage is of good quality (a balance of legumes and grasses) and digestible.

What health problems may impact a ram’s ability to breed?

• Ram epididymitis is the name given to a disease syndrome in which specific bacteria cause inflammation of the epididymis or tube which connects the testicles to the urethra and is responsible for sperm transport.
• One type is caused by a group of organisms that include Histophilus and Actinobacillus. They are opportunistic bacteria and often called lamb epididymitis as it is more common in young rams.
• The other is Brucella ovis and is more problematic as the ewes can be a reservoir of infection. Both causes result in reduced fertility in both the ram and ewe and are spread by veneral transmission.
• Fortunately B. ovis is rare in western Canada and likely absent in central and eastern Canada.
• Chronic infections with B. ovis – not related to brucellosis in cattle and bison – causes damage to the epididymis so that sperm cannot be ejaculated properly. Fertility is reduced or is absent.
• Signs within a flock include non-pregnant ewes, a decreased number of lambs born per ewe, abortions, the birth of weak lambs and a longer lambing season.
• Typical signs of an infected ram include lumps or swellings within the epididymis, but often there is nothing detected on examination and a blood test must be used to absolutely rule this disease out.
• There is no treatment and control is achieved by culling all infected rams.

Hypocalcaemia is a medical emergency; a veterinarian can administer calcium salts into the blood stream to save her life.
What is balanoposthitis (pizzle rot, sheath rot)?

- Balanoposthitis is a painful inflammation involving the prepuce and penis and is most commonly seen in rams being fitted for show or sale.
- Affected rams rarely want to breed because of the discomfort.
- The tissue is inflamed with a yellowish purulent exudate which without treatment will lead to scarring and the inability to breed.
- The cause is feeding too much protein (> 14%), which leads to excretion of high amounts of urea in the urine. The bacteria *Corynebacterium renale* grows in the urea leading to severe infection.
- Treatment is changing the diet and washing the penis and prepuce with mild astringents and applying antibiotic salves. If scarring is severe, surgery is required to correct this – leading to a long recovery time.
- Feeding more grass hay verses high protein legume hay will prevent the problem from occurring.

What is testicular hypoplasia?

- Testicular hypoplasia means that the testes are much smaller in size than what is expected for a normal breeding age ram.
- This can be congenital, i.e. the ram never has normal-sized testicles, or can be acquired from injury or disease.
- Hypoplastic testes have reduced sperm production capacity or may not be capable of producing sperm at all.
- Sperm morphology is often abnormal in affected males.
- Rams with only one testicle are not desirable for breeding purposes. Selection for rams with adequate testicular size will go a long way toward establishing a fertile flock.

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