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XL Vets

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ABORTION AND ABORTION WORK-UPS

Fetal calf loss is an important cause of economic loss in dairy cattle. The significance of a cow aborting a calf, however, is not always clear. An aborted calf could be part of a normal background reproductive loss (~1% is normal for the average herd), a sporadic case of disease or the start of an abortion outbreak or storm. There are many causes of abortion in dairy cattle: non-infectious and infectious. We will briefly describe a few of the most common causes and then how to approach determining what the cause(s) might be in your herd.

CAUSES OF ABORTION

- Non-infectious
    - **Genetics** can cause abortion, but these abortions generally occur early in pregnancy.
    - **Heat stress** can also cause sporadic or multiple abortions by causing fetal hypotension, hypoxia and acidosis. High maternal temperature due to fever may be more important than environmentally induced heat stress. This is why it is not uncommon to see a cow abort after a severe case of watery mastitis.
    - **Toxins** can also cause abortion and, depending on the type, can be seen at various stages throughout gestation.
    - **Trauma** (the cow "got bumped") has been indicated by producers as a cause for abortions, but the fetus is actually well-protected by the amniotic fluid and so this is a rare *cause.*
- Infectious
    - ***Neospora caninum*** is the most common cause of abortion in dairy cattle worldwide. *Neospora* can be associated with sporadic abortions or abortion storms and repeat abortions have been noted. Dog and coyote feces are the source of contamination.
    - **Bovine viral diarrhea (BVD)** is one of the most common viral causes of abortion in bovine cases with abortion rates from 5-40%. The pathology of BVD in the developing fetus is complex and will be highlighted in detail in the chart following this section.
    - **Infectious bovine rhinotracheitis (IBR)** is another major cause of viral abortion in the world with abortion rates of 5-60% in non-vaccinated herds. IBR virus can be isolated from ~50% of infected fetuses and, most successfully, from the placenta. In most cases, maternal titres have peaked by the time of abortion.
    - **Leptospirosis** is caused by a bacterium and has many different serovars causing slightly different variations of the disease. Leptospirosis is transmitted either directly between animals or indirectly through the environment (water or soil contamination by the urine of infected animals).
    - **Others:** Brucellosis, Fungal, *Trueperella pyogenes*, Trichomoniasis, Campylobacteriosis, Listeriosis, Chlamydiosis, Ureaplasma diversum, Epizootic Bovine Abortion, PI-3, *Salmonella* spp, *Mycoplasma* spp, *Histophilus somni*

Causative Agent	Date of Gestation Affected	Clinical Signs Seen	Control or Prevention
Neospora caninum	Any time after 3 months, but most common between 4-6 months	- Infected calves born with paralysis or motor deficits - Fetus is autolyzed or mummified	- No treatment - Prevent fecal contamination of feed by dog or coyotes
BVD	Before insemination or first 40 days of pregnancy	Infertility or embryonic death	- No treatment - Prevent by removal of PI cattle and herd vaccination
	Between 40-125 days of pregnancy	Birth of persistently infected (PI) calves if fetus survives	
	Between 100-150 days of pregnancy	Congenital malformations of the central nervous system or ocular defects	
	After 125 days	Abortion or the virus might be cleared by the immune system	
IBR	Abortion can occur at any time, but usually from 4 months to term	- Fetus is autolyzed - Necrotizing vasculitis in placenta	- No treatment - Control by herd vaccination
Leptospira serovar Grippotyphosa	Last trimester (~2-6 weeks after maternal infection)	- Fetus is autolyzed - Placenta will be pale with yellow areas in between buttons (cotyledons) - If calves are born alive, they are usually weak - Pomona calves will be icteric (jaundiced)	- Treatment – Antibiotic therapy as per veterinary recommendation - Control by herd vaccination (should be boostered every 6 months)
Leptospira serovar Pomona			
Leptospira serovar Canicola			
Leptospira serovar Icterohaemorrhagiae			
Leptospira serovar Hardjo	Third trimester abortions and reduced conception rates in carrier cows and cows bred to carrier bulls		- Affected cows can shed organism for life and should be culled - Vaccines prevent new infections, but do not cure existing infections

ABORTION WORK-UPS

Identifying the cause of abortion in cattle is important, but can be very frustrating as the chance of diagnosing a *single* abortion is relatively low (25-50%). The thoroughness of tissue sampling and diagnostic testing has a significant impact on the success rate of abortion diagnosis. According to a 2018 newsletter published by the University of Guelph Animal Health Lab, the frequency of a definitive or suspected diagnosis was higher for postmortem samples collected at AHL compared to those collected by the veterinarian in the field or in the clinic. If possible, consider driving the fetus and placenta directly to AHL, especially if it is a late term abortion (due to the size of the fetus). **To increase the diagnostic success rate for abortion cases, fetuses should always be submitted with placentas**.

<u>How a Producer Can Increase Chances of Diagnostic Success:</u>

- Aborted fetus and placenta should be bagged and refrigerated. Only freeze if absolutely necessary as freezing can negatively impact results.
- Collect the following information for the vet: vaccination history, age of affected cows, percentage of pregnant cows that have aborted, were affected cows clinically ill, any new introductions to the herd, were cows/heifers bred naturally or by AI and have congenital defects been seen in the herd before?

There is a justifiable concern about the cost of carrying out a set panel of diagnostic tests on every abortion case. Producers and veterinarians, however, must also consider the financial cost of not reaching a diagnostic conclusion. The chance of achieving a specific diagnosis is decreased if: 1) the abortion is a single case rather than an outbreak, 2) its cause is non-infectious, or 3) incorrect samples are submitted to the diagnostic lab. The converse is also true – the chance of successfully obtaining a specific diagnosis is increased in an outbreak situation caused by an infectious agent and where appropriate diagnostic samples are collected and submitted. Discuss each case with your veterinarian to determine if diagnostics should be pursued and which vaccines might be beneficial for your particular herd's needs.