

WHY USE A VETERINARY DIAGNOSTIC LABORATORY?

by Michelle Arnold, DVM

Unexpected or unexplained illnesses and deaths of farm animals are unavoidable occurrences for all producers at some point. Whether it is one animal affected suddenly or perhaps many animals developing symptoms of disease in a short span of time, producers are understandably concerned about the cause, finding the best effective treatment and preventing this in the future. The local veterinarian is by far the best resource for this information and should be the first person contacted to examine any affected animals and will select an appropriate treatment. However, in cases where death is rapid or disease seems to be spreading or in cases where treatment is not working, veterinarians often turn to a diagnostic laboratory for help confirming a diagnosis and assisting in development of a plan for treatment and control based on test results.

Much useful information about an individual animal and health issues in the herd can be gleaned by performing a necropsy (the animal equivalent of a human “autopsy”) on animals that die on the farm. The UK Veterinary Diagnostic Laboratory in Lexington (Website: vdl.uky.edu) and the Breathitt Veterinary Center in Hopkinsville (Website: <https://breathitt.murraystate.edu/>) are both full service laboratories serving the veterinarians and producers across the Commonwealth of Kentucky. Both labs have excellent facilities for all types of testing, receiving and handling deceased animals, and competent pathologists to perform complete necropsies.

During the necropsy, the pathologist will first look for abnormalities they can see with their eyes; this is called “gross necropsy” and may give an initial indication



of the cause of death. Samples are then taken from all of the organs as well as blood and other body fluids and submitted to different laboratory sections for specific testing. In addition, sections of each organ (liver, lung, heart, kidney, brain, etc.) are cut into thin slices that are processed and placed on glass slides for examination under the microscope (histopathology). It is under the scope, at the cellular level, that pathologists most often identify the cause of death by recognizing the characteristic patterns of tissue damage caused by a certain disease. Then, with the aid of confirmatory tests, a diagnosis can be made and a plan can be formulated to control and hopefully prevent the problem in the remainder of the herd.

An example of the usefulness of a veterinary diagnostic lab is when a farm experiences multiple reproductive failures. Reproductive loss due to abortion, stillbirth, mummification, resorption of a fetus or the birth of live but weak offspring can occur on a herd/flock basis and affect many susceptible animals in the same season. Investigating these disease outbreaks is important in order to halt the spread of the problem but also to make future management decisions such as vaccination choices, antibiotic usage, and how to handle new additions to the herd. The following illustrates the steps involved in gathering samples and the information needed in an abortion outbreak to maximize the chances of a diagnosis.

In the event of an abortion, ideally every aborted fetus should be submitted

It is important to understand that autolysis (rotting) begins immediately after death and progresses rapidly which makes interpretation of tests and other findings very difficult if not impossible. Dead animals should be in the lab no more than 12-24 hours after death, the sooner the better especially when the weather is hot. If timely submission to a diagnostic laboratory is not possible the herd veterinarian can examine the body and take the necessary samples to send to the lab (a “field necropsy”).

to a diagnostic laboratory but realistically it needs to be done when the incidence is greater than 2% over the lambing/kidding period and/or clusters of abortions occur. The aborted fetus and placenta should be double-bagged, kept cool (not frozen), and taken to a diagnostic laboratory as quickly as possible—the fresher, the better. Remember many of the organisms that cause abortion in sheep and goats are “zoonotic” which means they have the ability to cause disease in people. These organisms are present in all types of abortion material (fetus + placenta +

fluids) so always wear gloves when handling samples. Pregnant women should not, under any circumstances, come in contact with aborting ewes or does, or the clothes worn by those working with them. Blood should be drawn from the ewe or doe experiencing the abortion and half of it placed in a blood tube (purple top tube) and half in a serum tube (red top tube). Both tubes should be labeled with the individual identification of the dam then submitted with the abortion material. A second serum (blood in a red top tube) sample is often needed 3-4 weeks after the original serum sample in order to compare the results of the two tests and look for an increase in antibodies against a specific disease organism. Unfortunately, many samples sent to the laboratory yield no results due to decomposition (unrefrigerated tissues greater than 24 hours old-especially in warm weather) or when incorrect/contaminated/insufficient samples are submitted. If you cannot get the fetus and placenta to a diagnostic laboratory, your veterinarian can collect and ship the necessary representative samples. After handling the abortion samples, thoroughly wash hands before eating or drinking.

Always send a complete history containing the following information:

1. A description of the herd or flock. How many ewes/does on the farm, how many in this specific group and how many abortions have occurred? Include the ewe or doe's age and her lambing/kidding history. If multiple abortions in the herd or flock, are all ages of dams affected or just young females?
2. A list of all vaccines, dewormers, and medications given and when they were administered, at least in the last year.
3. The date and stage of pregnancy the abortion occurred and include the expected due date. Was there anything abnormal or unusual noticed on the placenta or fetus?
4. Is there any history of previous abortions in the herd or flock, including previous seasons?
5. Has the dam shown any signs of illness during the pregnancy or at the time of the abortion? Have there been problems with sickness or weakness in newborns?
6. Summarize the diet currently being fed. Include a best approximation of how much and what type of feed (grain) is offered, forage (hay/pasture/


silage), and trace mineral the affected animals are actually consuming daily. It is exceptionally important to note any recent changes to the diet and when the changes were made. Is water from a pond, creek or stock tank? Is it city water, well water or pond/creek water?

7. Note when any new additions joined the herd or flock, including purchased replacement females, bucks/rams, or sale barn animals. Also note if any animals have been on the show circuit and, if so, when they returned to the farm.
8. Is there recent history of contact with other animals? Fenceline contact with neighbors' animals? Are there cats, dogs, rats, and/or wildlife in contact with your herd/flock or their feed?
9. Are there any junk piles, burn piles or old barns accessible to the herd or flock?

At the diagnostic laboratory, the necropsy will be performed and tests ordered based upon the initial findings and the history submitted with the animal. Test results will come out as they are completed and are typically shared with the referring veterinarian until a final report is issued. It can take as long as 2 weeks or longer to generate the final report if tests need to be sent to outside laboratories but most are finished quickly. Questions about the report can be addressed by the local veterinarian or by the staff at the diagnostic laboratory. Ultimately, the goal is to understand what caused the problem and formulate a plan to prevent it from ever returning to the farm. Sickness and death loss are an unfortunate but unavoidable occurrence on all farming operations. Submission to a veterinary diagnostic lab for disease diagnosis allows producers to make adjustments in management when possible to improve overall flock or herd health.

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