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Respiratory disease in swine is a common recurring health problem confronting veterinarians and producers. The cause(s) may be straightforward or complex. Housing, environment, nutrition and infectious agents are commonly interacting contributors to respiratory disease. These factors may also complicate the diagnosis, treatment and prevention of respiratory disease. Standard laboratory diagnostic investigations are predominantly oriented to look for infectious agents. It is the responsibility of the veterinarian and producer to apply the diagnostic test results to the clinical picture in order to help characterize the problem. Communication with the diagnostician is important in difficult cases in order to expand the normal respiratory disease examination.

In order to identify the causative agent(s) involved in pneumonia, the correct pigs need to be identified and the proper samples submitted. Before sampling, it is important to characterize the entire respiratory syndrome as multiple agents may be involved concurrently or over different time periods. Some histories may be straightforward clinical episodes of pneumonia with obvious sampling requirements. Other histories may be chronic/recurring problems requiring sampling of multiple pigs of different ages or multiple pigs over different time periods. The clinical history and sampling requirements may be complicated because the swine population may contain: 1) pigs with varied disease status – both active and resolved, 2) different aged pigs, 3) pigs from gilts and sows, 4) pigs with different maternal antibody levels, and 5) pigs exposed to different levels of endemic nursery pathogens. Also consider the pig you're being asked to look at as the “problem pig” and decide if it is an acute presentation or actually a pig in the subacute or chronic stage of disease. Both types of pigs may be important for identifying the agents involved and their progression/interaction. Thin pigs in poor body condition with muscle atrophy are most likely involved and their progression/interaction. These pigs may not be currently affected by active pneumonia but rather are the end product of prior. Do not interpret pigs without respiratory disease to be unaffected by pneumonia.

For most pneumonia examinations, specifically look for acutely affected pigs that have not had antibiotic treatment. These are the best pigs for defining an acute clinical episode. Chronic/ongoing respiratory disease in a group of pigs or different ages of pigs may need a better defined sampling plan in order to identify the critical stages or ages of infection as well the agents involved. Gross lesions in swine respiratory disease are commonly non-definitive. That is, with a few exceptions, lung lesions in pneumatic pigs have few if any gross lesions specific to a causative agent. Gross lesions will vary with the causative agent, its virulence, portal of entry and host reaction. Many if not most cases of pig pneumonia involve multiple agents. Identification of infectious agents is dependent on laboratory testing. Prior laboratory testing in a herd can help guide therapy in new disease outbreaks as well the value in implementing control programs. There are some important considerations to remember when collecting specimens for testing. 1.) Viral and bacterial disease in the lung may be segmental. That is, pneumatic lung may have different agents in different affected sections. 2.) An affected pig may have different stages of disease present. A chronic lesion in one section may be accompanied by a separate acute lesion. Generally, the older the lesion, the less signs of acute inflammation (heat, redness and swelling) and the more firm the lesion is on palpation. 3.) The “leading edge” of lung lesions – the border of normal tissue and abnormal tissue – rarely represents an area where the primary agent is actively progressing. The “leading edge” most commonly is only a border between lung with inflammation and lung without inflammation. Looking for areas of lung with different types of inflammation is more valuable in assessing the agents present. 4.) Pneumonia as represented by diffuse pulmonary edema may be a secondary event representative of a different disease condition such systemic disease or encephalitis.

Multiple sections (3) of lung should be submitted for histological evaluation. Two or three sections of fresh lung should be submitted for viral and bacterial culture. The number of fresh lung sections may vary depending on the sample size of pigs to choose from – one pig to necropsy as opposed to 5. Although not as susceptible to post mortem decomposition as intestine, lung bacterial flora and lung structure (autolysis) will change post mortem. Post mortem changes may also render some agents non-viable or not detectable. Tissues should be collected in formalin and remaining tissues quickly chilled. Do not forget to evaluate the enteric tract regardless of the current history of diarrhea, especially if the pigs are in poor body condition.
Identification of representative pigs and submission of the appropriate samples are the most important part of diagnosing swine respiratory disease. Swine respiratory disease can be a very complex, multifactorial disease. Characterization of the clinical problem and the group of pigs affected prior to sampling will help minimize the time and effort required for diagnosis and effective treatment.