



Workshop on Pathology and Avian Diseases

University of Veterinary and Agricultural Sciences
Lahore, Pakistan
November 13-15, 2018

Executive Summary

Over the course of three days, approximately 50 veterinarians gathered together to participate in group interactive and practical sessions involving pertinent diseases of poultry in Pakistan. Five universities were represented and several private companies. All instruction was provided using adult learning theory. There were didactic, interactive, and case based sessions in the classroom and each afternoon featured necropsy laboratories. Evaluations were overwhelmingly positive (see page 7).



Learning Objectives

At the end of the workshop, participants will be able to:

1. Explain basic mechanisms of disease for the major diseases of concern in poultry in Pakistan
2. Perform a necropsy on a bird, with collection and packaging of tissues in an appropriate manner for use in the laboratory
3. Use history, clinical signs, and gross lesions observed to create a list of differential diagnoses

Monday, November 13

Background about the workshop –

Dr. Ishtiaq Ahmed, of UVAS, had been in contact with Dr. Bruce Williams, CEO of the CL Davis SW Thompson Foundation for Veterinary Pathology, regarding possibilities for conducting a training session for poultry pathologists and clinicians in Pakistan. Dr. Williams two trainers from the Global Health Pathology Network, a subgroup within Davis-Thompson, with Dr. Ishtiaq and colleagues. Together they devised learning objectives and a tentative agenda. Davis-Thompson Foundation funded travel for the two GHPN members (Dr. Corrie Brown and Dr. Tony Alves) and Dr. Ishtiaq and his organization, with some support from Boehringer-Ingelheim, organized and supported all activities within Pakistan.

Introductions

Corrie and Tony gave some background about the workshop and reviewed the learning objectives.

For participant introductions, they counted around the room, 1 to 7, in Urdu, with subsequent organization into 7 tables. Then a leader from each table introduced everyone at his/her table, to the larger group.

Adult Learning Theory

Corrie discussed pertinent aspects of how to facilitate learning in adults. The basic tenets of adult learning theory are: material must have relevance to participants; group/social learning is especially effective for adults; full trust between learner and presenter is paramount; problem solving helps to solidify core concepts; frequent breaks with activities to allow transfer to long-term memory.

Necropsy procedure

Tony used a powerpoint to review the “Six Steps to a Successful Necropsy”. Most participants had performed necropsies on chickens before, but did not have a systematic procedure for ensuring that all body systems are assessed. They described how they open the body to find a diagnosis, and do not always assess all body systems. Corrie discussed a common problem among pathologists globally in doing “wallpaper pathology” and how lesions are compared to pre-existing mental images of a disease and a diagnosis rendered. She described how this does not adequately utilize our scientific skills, and that performing a full necropsy systematically, complete with descriptions of every body system and morphologic diagnoses can help us to more thoroughly and accurately connect with laboratorians and will eventually help inform producers regarding most effective control measures.

Diseases in Pakistan – Dr. Mohammed Aleem

Dr. Aleem, from the GP Company (a supplier of grandparent stock for much of Pakistan) described how Pakistan now rates as #7 in production of poultry globally. The industry is a major economic driver for the country and control of diseases is very important. He reviewed the major diseases, as seen in his private laboratory, and continually emphasized that disease must be considered in light of history, environment and the possible presence of multiple pathogens.

Afternoon – Necropsy Laboratory

The area surrounding Lahore has numerous broiler operations. Some of the participants are the attending veterinarians at these facilities and were asked to bring in any “deads” for necropsy. As a result, we had approximately 50 25-day old birds for necropsy, on both Tuesday and Wednesday. Participants worked in pairs, and were encouraged to follow the systematic “six steps” and to collect samples and write a full report.



At the end of necropsy, we did a wrap-up in the conference room. Participants brought their necropsy report and tissue samples. Corrie and Tony acted as laboratorians reviewing the submissions. One of the participants was asked to be the “messenger” and collected reports and samples for Corrie and Tony to assess. They gave feedback to the participants about size of samples, completeness of report form, and morphologic diagnoses.

There was considerable discussion surrounding morphologic diagnosis so Corrie gave a review of S-T-D-E-T (Severity; Time; Distribution; Exudate; Tissue). We practiced with multiple lesions seen that day and Corrie explained how this morphologic diagnosis is important in communicating between pathologists and between clinicians/pathologists and the laboratory. It was repeatedly emphasized that “animal health is a team effort” and the laboratory needs a full appreciation of what was seen by the pathologist.

Tuesday, November 14

The morning was filled with case scenarios.

Transboundary Animal Diseases

Each table received laminated powerpoint sheets detailing history, clinical appearance, gross lesions, and a sheet of questions on either highly pathogenic avian influenza or Newcastle disease. Participants were able to discuss in their native language and share information, posit ideas about pathogenesis, diagnosis and control. After all had reviewed the two scenarios, Corrie presented a powerpoint with animation demonstrating pathogenesis of each disease.



Intestinal Diseases

After tea break, we repeated this exercise, with intestinal diseases – coccidiosis, runting-stunting syndrome, necrotic enteritis, pullorum/fowl typhoid. Format was the same, with each table discussing all four scenarios, and a final powerpoint demonstrating pathogenesis. During the powerpoint, participants were asked to give experiences with these various diseases.

Again, necropsy was done in the afternoon. Because numerous participants had completed necropsies very quickly the previous day, without adequate attention to all body systems, or report writing, Tony again reviewed the importance of thorough examination grossly. He emphasized that “this is not a race” and that having a regular systematic approach is essential. He compared doing a necropsy to “tying your shoes” – you learn how to do it and then every time you do it, you do it the same way. As a result, participants took much more time in necropsy, were more thorough in their reports, and found more lesions.



We had multiple cases of hypertension syndrome and colibacillosis on this afternoon, and instead of just diagnosing the disease and stopping, they looked for predisposing causes, which are prominent in these diseases, and so their assessments could be more useful for both laboratory and producers.



Fibrinous perihepatitis, suggestive of colibacillosis



Dilated right ventricle, suggestive of pulmonary hypertension syndrome



Mucus accumulation in trachea, suggestive of infectious bronchitis virus

At the wrap-up at the end of the day, we had pairs transfer their report and samples to others, who acted as laboratorians to assess if there was sufficient information and samples. They gave feedback to their peers.

Thursday, November 15

Case scenarios

We began the day with case scenarios involving two complicated diseases that usually are precipitated by predisposing disorders – pulmonary hypertension syndrome and colibacillosis. This was followed by a powerpoint to explain the pathogenesis. There was lively discussion surrounding both of these diseases. Also, because both of these syndromes are usually precipitated by some compromise, these underlying factors were emphasized.

Respiratory Problems

The second set of scenarios consisted of six respiratory diseases. Because respiratory problems in poultry are often co-infections, and because many occur due to a problem with pulmonary defenses, we created a human “mucociliary escalator” and Tony played the bacteria, invading where the escalator was damaged. The diseases covered included: infectious bronchitis, infectious laryngotracheitis, mycoplasma, aspergillosis, and avian metapneumovirus.

After lunch, participants filled out evaluations.

Closing ceremony

Two participants were selected by the group to relate their impressions of the course. Dr. Muzafar, a private company veterinarian, relayed how they will no longer use “wallpaper pathology” to rely on a diagnosis, and now that they understand more about the pathogenesis of these diseases, their work will be more accurate. Dr. Zahra, a postgraduate student at UVAS, commended the workshop organizers for the “very fun way of teaching” and how all participants will remember the core concepts because of how they were presented. Tony thanked “my new brother Dr. Ishtiaq” for hosting, said he was very honored to be colleagues will all present. He emphasized how science builds bridges, so he hopes that collaborations will continue. Corrie gave three sentences in pidgin Urdu thanking participants for their friendship and hard work. Dr. Rabbani, Dean of the Veterinary School thanked the instructors for coming to Pakistan despite travel advisories, and acknowledged the hard work of everyone in the Pathology Department for working to make the logistics smooth. He relayed that as a result of a self-assessment done with help of OIE, the college curriculum is now changing, and will move to more problem-based and case-based learning. He believes that this workshop was a great start to that and hopes that this type of instruction will take hold among the faculty.

Certificates were awarded, and each participant received a copy of the field manual, *Syndromic Surveillance for Animal Diseases, with Emphasis on the Transboundary Animal Diseases*.



Appendix 1 - Evaluations:

Each score based on Likert scale (1, strongly disagree, to 5, strongly agree)

INSTRUCTION	
Learning objectives were accomplished	4.6
Instruction was of high quality	4.7
Laboratory exercises were valuable	4.8
Interactive group exercises were valuable	4.8
FACILITIES AND ORGANIZATION	
The UVAS facilities met my needs	4.5
The pre-course organization was excellent	4.3

If this course were changed, what is ONE thing you would NOT like to see changed?

Interactive group exercises using case studies (X18)
Necropsy (X11)
Presenters (X4)
Teaching method (X3)
Conducive environment for learning
Presenters have great style and knowledge

If this course is given again, what is one thing you WOULD change?

Don't change anything (X9)
Increase the course, 3 days not enough (X5)
Do this again and include even more poultry veterinarians (X5)
Nothing (X4)
Add histopathology (X4)
Find birds with the disease to show in necropsy (X3)
Even more group discussions and interactive activities (X2)
Increase the length of the course AND decrease the number of participants
More focus on differential diagnosis
Dr. Aleem's lecture was too long
Encourage participants to all arrive on time
Food
Add physical exercise every 1 hour
Add information about species other than poultry
Add more diseases
Add some Pakistani speakers
More non-infectious diseases to cover
Give an exam at the end

Please give us your ideas as to how the Davis-Thompson Foundation could further support veterinary pathology activities in Pakistan:

More workshops (X5)
Do this type of workshop in different cities and universities around Pakistan (X2)
We want some histopathology also (X2)
Provide opportunities for postgrad students to study in US (X2)
Online seminars

Involving more students in the Foundation
Provide training like this every 3-6 months
Tell us how we can differentiate the respiratory diseases, and provide a good vaccine program advice
Use more online systems
Provide internship opportunities for students
Do this twice per year
Help Pakistan to eradicate serious diseases
Develop software with lesion algorithm so we can come to a diagnosis
Do research on antibiotic resistance in poultry

“We all learned a lot; this course was fantastic”

“By the way of this Davis-Thompson Foundation workshop, we learned so many things. Dr. Corrie Brown and Dr. Tony Alves are good trainers, great pathologists, and both are awesome humans.”