



Davis-Thompson
Foundation



Workshop on Pathology of Ruminant Diseases, including Wildlife

University of Veterinary and Agricultural Sciences
Lahore, Pakistan
March 21-23, 2022

Executive Summary

Over the course of three days, 60 veterinarians gathered together to participate in group interactive and practical sessions on pathology. Participants came from several academic institutions, governorate directorates, and private sector. Each morning they reviewed diseases of ruminants using case-based learning – respiratory diseases; clostridial diseases, and hemoparasitic diseases. Afternoons were spent doing necropsies on submitted domestic ruminants and wildlife. Corrie Brown, Patty Gaffney, and Ishtiaq Ahmed facilitated the workshop. All instruction was provided using adult learning theory. Evaluations were very positive.

See page 7 for evaluations.

See page 8 for a full list of participants.

See page 9 for Concluding thoughts and path forward



Learning Objectives:

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

1. Explain mechanisms of disease for selected diseases of concern in ruminants in Pakistan
2. Perform a necropsy on a small ruminant
3. Use history, clinical signs, and gross lesions observed to create a list of differential diagnoses

Monday, March 21

Opening Ceremony

Dr. Aslam, Chair of the Department of Pathology, welcomed the participants to the third national pathology workshop. Dr. Ishtiaq discussed his involvement with the GHPN, and mentioned the telepathology sessions which are run jointly with US and Pakistani pathologists. Dr. Corrie also welcomed everyone.

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.

We reviewed the learning objectives.

Morning practical session – Respiratory Diseases of Ruminants

Class was divided into six groups and each group reviewed nine previously prepared cases of respiratory problems in ruminants – hemorrhagic septicemia, pulmonary pasteurellosis, manheimiosis, CBPP, CCPP, mycoplasma, PPR, and fog fever. Facilitators for helping guiding the groups through all scenarios included the 2 US instructors, Dr. Ishtiaq, and three anatomic pathology professors from UVAS Lahore – Drs. Muti, Tipu, and Mustafa. Having these 6 available for questions was a tremendous help for the groups as they worked through each scenario and the pathogenesis of the particular disease.



Afternoon –

Half of the class went to necropsy where they participated in a necropsy of a calf that had been submitted. Corrie reviewed the 6 steps of necropsy and then all had a chance to take part in the necropsy, at various steps.

At the same time, back in the classroom, Patty Gaffney gave an overview of the important role of the pathologist in conservation efforts.



Tuesday, March 22

Review of Respiratory Diseases

Cases done yesterday were discussed, with an emphasis on pathogenesis and morphologic diagnosis. We used the system S-T-E-E-T (Severity; Time; Extent; Exudate; Tissue). We practiced with lesions from every case. Corrie also used a flip chart to diagram the differences (geographically and etiologically) among the three major categories of pneumonia – bronchopneumonia, interstitial pneumonia, and granulomatous pneumonia.

Clostridial Diseases

Group learning continued with case-based discussions. Cases included: *Clostridium perfringens* Type A with abomasal ulceration; *Clostridium perfringens* Type D; bacillary hemoglobinuria; botulism, blackleg, malignant edema, and Tyzzer's disease.

Afternoon –

There were two spotted deer submitted for necropsy so the entire class went to the necropsy room and worked on the two deer.



Wednesday, March 23

Review of Necropsy

Pathogenesis of each of the two necropsies from yesterday were discussed. Morphologic diagnosis for each lesion seen were developed. Corrie gave a review of hypovolemic vs. cardiogenic shock. Also, there was a general discussion of shock, and its causes. We also clarified cause of death, as there was some pre-existing belief that three body systems had to fail before death could occur.

Case scenarios

Hemoparasitic diseases were the focus of the case discussions for this morning – all are problematic in Pakistan and diagnosis is difficult. The three severe diseases in Pakistan are *Anaplasma*, *Babesia*, and *Theileria annulata*. In addition, it seems that dogs and other species, especially zoo animals suffer from *Trypanosoma evansi*.

Control is problematic as ticks are very prevalent and treatments are few.

	<u>Anaplasma</u>	<u>Babesia</u>	<u>Theileria</u>
organism	bact.	prot.	prot
cells	RBCs	RBCs	RBCs - WBC
damage	hemolysis	hemolysis clogs brain capillaries	cytokine
pathol	anemia, jaundice, Hb'uria	Hb'uria CNS signs	Sick large l.in. Pulm edema

After lunch, participants filled out evaluations.

Closing ceremony

Ceremony began with a reading of the Koran. Selected participants gave their impressions of the course. They were thankful for the interactive nature of the learning, and felt that their own teaching methods could be adapted to be more learner-friendly. Dr. Ishtiaq thanked everyone and discussed the recently re-invigorated Pakistan Society of Veterinary Pathology, and hoped that many universities would join. He also invited all to the monthly GHPN-administered telepathology sessions. Dr. Aslam thanked all for their participation and expressed that the University at Lahore would begin to adopt more participatory learning techniques for their veterinary and post-graduate students. The workshop closed.



Buffalos and donkeys



Ishtiaq, Corrie, Muti – at Jahangir hunting lodge



Goat market on the side of the road



Donkeys in the road



Sufi dancers at Alumni Reunion



4 on a motorcycle

Appendix 1 - Evaluations:

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

INSTRUCTION	
Learning objectives were accomplished	4.7
Instruction was of high quality	4.7
Necropsy exercise was valuable	4.5
Interactive group exercises were valuable	4.8
FACILITIES AND ORGANIZATION	
The UVAS facilities met my needs	4.3
The pre-course organization was excellent	4.4

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

- Group discussions of case scenarios (X28)
- Hands-on training in necropsy (X8)
- Resource persons were excellent (Drs. Brown and Gaffney) (X5)
- Morphologic diagnoses practice very useful (X2)

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

- Make the course longer (X6)
- Poultry and pets next time (X4)
- We want more histopathology (X3)
- Equine pathology next time (X2)
- More animals in necropsy
- Clinical pathology next time
- Lab diagnosis after necropsy

Appendix 2. Participants

Name	Institution
Hanif Ur Rahman	Veterinary Research Institute Peshawar Bacha Khan Chowk Peshawar
Zahra Zaman	University of Veterinary and Animal Sciences Lahore
Zaib ul Hassan	Uvas
Irtaza Hussain	University of Veterinary & Animal Sciences Lahore
Al-Hafizah Shafia TEHSEEN Gul	University of Agriculture, Faisalabad
Tayyab Khurshid	University of Veterinary and Animal sciences Lahore
Dr. Aisha Khatoon	University of Agriculture Faisalabad
Muhammad Adeel Manzoor	University of Veterinary and Animal Sciences Lahore
Waqar azeem	UVAS main campus
Wafa Akram	UVAS Lahore
HASNAIN RAZA	University of veterinary and Animal Sciences Lahore
Muhammad Usman	UAF
QAMAR ULLAH	University of Veterinary and Animal Sciences, Lahore
Muhammad Avais	UVAS Lahore
Dr. Said Sajjad Ali Shah	Veterinary Research Institute Peshawar
Dr Muhammad Zishan Ahmad	PMAS ARID AGRICULTURE UNIVERSITY RAWALPINDI
Hafiz Muhammad Anwar-ul-Haq	University of Veterinary and Animal Sciences Lahore
Muhammad Faisal Akbar	University of Veterinary and Animal Sciences Lahore
Aziz ur Rehman	UVAS
Syeda Fakhra Waheed	UVAS
Muhammad Umer Farooq	FVAS Gomal University Dera Ismail khan
Usman Rashid	PMAS- Arid Agriculture University Rawalpindi
Mishal Lawrance	University of agriculture faisalabad
Muhammad Kamran Rafique	College of Veterinary and Animal Sciences, jhang
SYED MUHAMMAD ADEEL ARSHAD	College of Veterinary and Animal Sciences, Jhang
Muhammad Mujeeb Abid	College of Veterinary and Animal Sciences
Humza Khurshid	Riphah College of Veterinary Sciences, Lahore
Muhammad Tahir Meraj	University of Veterinary and Animal Sciences (Jhang Campus)
Bilal Ahmad Makki	CVAS, jhang
Muhammad saadullah	university of veterinary and animal sciences jhang campusang campus
M.Farhan Siddiqui	University of Veterinary and Animal sciences Lahore
Muhammad Ali	BZU
Nouman Ali	University of veterinary and animal sciences lahore
Muhammad Zeeshan	UVAS, Lahore
Muneeb ur Rahman	UVAS
Dr. Muhammad Sohaib Aslam	Riphah College of Veterinary Science, Lahore
Dr. Nouman Amjad	The Islamia University of Bahawalpur
Muhammad Younas	university of veterinary and animal science
Ghulam Yasein	UVAS,Lahore
Zainab binte Shahid	University of veterinary and animal sciences uvas lahore
Shahtaj Qureshi	University of veterinary and animal sciences lahore
Irfan Irshad	ICE&E, UVAS
Kissa Zahra	University of veterinary and Animal sciences Lahore

Muhammad Abdullah Nabeel	College of Veterinary and Animal Sciences, Jhang
Muhammad Faran	FVS UVAS
Danish Durrani	Uvas Lahore
Rizwana sultan	CUVAS
Madiha Ashraf	Lahore zoo,lahore
Kamal Shah	gomal universty
Muhammad Shahid	vri peshawar
Naveed Sabir	azadkashmir uni of poonch
gulzar ahmed	azadkashmir uni of poonch
shahzad akbar khan	azadkashmir uni of poonch
ajab khan	university of agriculture dik
Muhammad Zeeshan	university of veterinary and animal sciences
usman ali	uvas lahore
Muhammad Nouman Azam	pmas arid agriculture university rawalpindi
Ayesha Qadry	uvas lahore

Concluding thoughts and possible path forward:

There is great enthusiasm in Pakistan for improving capacity in the teaching of pathology. Discussions with faculty from various universities revealed that the teaching methods used may not have enough practical relevance. They all rely heavily on didactic delivery and also histopathology in their teaching curricula.

UVAS Lahore has hosted all three GHPN workshops. University of Agriculture Faisalabad has indicated they would like to host the next one. Also, universities in KPK are interested in hosting. We will rely on Dr. Ishtiaq to guide us on how to organize the next workshop.

There has been good sponsorship of the last two workshops. The previous workshop (2020) was sponsored by a poultry company and also Forward Solutions. This workshop was partially sponsored by Forward Solutions and the majority by CADx. Both of these organizations are very positive about promoting animal health and diagnostics in Pakistan.

It was very helpful to bring the three anatomic pathology instructors (Drs. Muti, Mustafa, and Tipu) into the facilitation of the case scenarios. They were extremely helpful and also, it gave them some practice in doing facilitated case-based learning.

The GHPN is fortunate to have Dr. Ishtiaq as part of its core group. He is highly respected by his peers and has great vision for how to improve the discipline of veterinary pathology in his country.