Indian College of Veterinary Pathologists

Model Training Document: 2020

SYLLABUS

1. Training syllabus:

1.1. The ICVP-training shall cover all aspects of Veterinary Pathology practice including anatomic pathology, clinical pathology and comparative pathology as applicable to India, on a professional quality platform acceptable to the global Veterinary Pathology fraternity. The training shall foster the ability to perform disease diagnosis and conduct an accurate assessment of patient health, by ascertaining the stage of pathogenesis of infectious, metabolic and genetic diseases at the time of investigation.

1.2. The training committee identifies six Veterinary Pathology practice segments, at least for the training purposes incorporating both anatomic and clinical pathology. It may be noted that, unlike the identification of Anatomic Pathology and Clinical Pathology (including Surgical Pathology) as distinct practice disciplines by several reputed Veterinary Pathology personnel accreditation systems across the world, this committee feels that integration of these skills makes the training programme more fruitful.

1.2.1. Pathology of farm animals

1.2.2. Pathology of companion animals

1.2.3. Poultry pathology

1.2.4. Pathology of wild animals and birds

1.2.5. Pathology of non-mammalian and non-avian species

1.2.6. Comparative (experimental and toxicologic) pathology and pathology of laboratory animals

1.3. The trainee should have adequate exposure to each and every practice segments. However, the emphasis on different segments may differ (Table 2).

Table 2. Guidelines for defining functional areas for Veterinary Pathology training/ practice (*Note: the percentage proposed is not absolute*)

Sl. No.	Functional area	Explanation	Relative weightage
1	Pathology of farm animals	All species of animals reared in farm conditions for economic purposes: cattle, buffalo, equines, sheep, goat, pig, rabbit	30-35%
2	Pathology of companion animals	All species reared as pets: dog, cat	10-25%
3	Poultry pathology	All species of birds reared under farm conditions	10-20%
4	Comparative (experimental and toxicologic) pathology and pathology of laboratory animals	Spontaneous and experimental diseases in all species of animals kept under laboratory settings for conducting experiments (e.g.: mouse, rat, rabbit, Guinea pig, hamster, non-human primates, farm animal/birds, reptiles, frog, fish *etc*)	5-10%
5	Pathology of wild animals and birds	• All species of terrestrial vertebrate animals existing in the wild which has a bearing on the ecosystem not considered as farm/ domestic/ laboratory animals • Such animals kept under captivity or zoo: (e.g.: elephant, lion, snakes)	5-10%
6	Pathology of non-mammalian and non-avian species	• All species of invertebrates • All species of animals living in marine and aquatic conditions: marine and fresh water species	5-10%

2. **The Thousand Components ICVP-Training**

2.1. The focus of the training shall be to develop proficiency in skills related to all segments of each of the functional area of Veterinary Pathology practice. These are identified as training components:

2.1.1. Descriptive pathology of gross lesions

2.1.2. Descriptive pathology of histomorphology

2.1.3. Descriptive pathology of cytology and blood smears

2.1.4. Interpretation of results of analytical/clinical tests

2.1.5. Interpretation of molecular pathology investigations

2.1.6. Report preparation and development of communication skills with professional (e.g.: doctors, policy makers, legal establishments) and social clients (farmers, pet owners).

2.1.7. Capability to articulate the concepts in animal health for advancing livestock economy, maintaining ecology balance and promoting the concept of 'one-health'

2.1.8. Awareness and use of opportunities for quality control and continued professional advancement in respective areas

2.2. The important professional skills and the activities required for accomplishing these skills are listed in Table 3. These classified as 'Core Activities and Skills' and 'Additional Core Activities' and 'Specialised Professional Skills'.

2.3. These activities will have to be performed certain number of times to gain basic skills of a practicing veterinary pathologist. The Table 3 gives the minimum number times of repetitions recommended for acquiring these skills but can be altered at the discretion of the Supervisor/Trainer.

2.4. These are named as "The Thousand Components of ICVP-Training"

Table 3: The Thousand Components of ICVP-Training

(List of basic professional skills desirable of a practicing veterinary pathologist)

List of skills and activities	**Minimum number of times an activity that has to be performed by a trainee during the period of training**			
	Total for the	**Major-**	**Minor**	**Specific**

	group	head of activity	head of activity	activity
Core Activities and Skills CAS)	**875**			
CAS 1. Conducting a post-mortem examination		135		
CAS 1.1. Farm animals			35	
CAS 1.1.1.Bovine				10
CAS 1.1.2.Ovine/caprine				10
CAS 1.1.3. Swine				5
CAS 1.1.4. Rabbit				5
CAS 1.1.5.Equine				3
CAS 1.1.6.Others				2
CAS 1.2.Companion animals			25	
CAS 1.2.1.Canine and Feline				20
CAS 1.2.2.Others				5
CAS 1.3. Avian			50	
CAS 1.3.1.Chicken (layers)				20
CAS 1.3.2.Chicken (broiler)				20
CAS 1.3.3.Duck and/or quail				5
CAS 1.3.4.Others				5

CAS 1.4.Non-domestic animals			25	
CAS 1.4.1.Laboratory animals				
CAS 1.4.2. Laboratory animals (Rat and mouse)				10
CAS 1.4.3. Laboratory animals (Rabbit, Guinea pig, hamster)				3
CAS 1.4.4. Laboratory animals (Non-human primates and Large animal species used in research)				2
CAS 1.4.5.Wild animals				5
CAS 1.4.6. Aquatic animals & invertebrates				5
CAS 2.Descriptive pathology of gross lesions		250-260		
CAS 2.1.On various parts/regions of the body			130	
CAS 2.1.1.Head and neck				20
CAS 2.1.2.Thorax				20
CAS 2.1.3.Abdomen				20
CAS 2.1.4.Pelvis				20

CAS 2.1.5. Fore limbs				20
CAS 2.1.6. Hind limbs				10
CAS 2.1.7.Others (e.g.: tail)				10
CAS 2.1.8. Skin and adnexa				10
CAS 2.2. Systemic Pathology			130	
CAS 2.2.1.Respiratory system				10
CAS 2.2.2. Cardiovascular system				10
CAS 2.2.3. Gastrointestinal system				10
CAS 2.2.4.Hepatobiliary system				10
CAS 2.2.5. Excretory system				10
CAS 2.2.6.Endocrine system				10
CAS 2.2.7. Musculoskeletal systems				10
CAS 2.2.8.Male reproductive system				10
CAS 2.2.9. Female reproductive system				10
CAS 2.2.10. Nervous system				10
CAS 2.2.11.Organs of special senses (eye, ear)				10
CAS 2.2.12. Hematopoetic system				10
CAS 2.2.13. Skin and adenexa				10
CAS 3. Histotechnology		60	60	

CAS 3.1.Tissue processing				5
CAS 3.2. Block making				5
CAS 3.3.Microtomy including cryotomy				5
CAS 3.4. Haematoxylin and eosin staining				15
CAS 3.5. Special stains for infectious agents (bacteria, fungi, parasites & viral inclusions)				9
CAS 3.6. Special stains for non-infectious agents (muscle, fibrous tissue, glycogen, amyloid, minerals and salts)				10
CAS 3.7.Immunohistochemistry				5
CAS 3.8. Hybridization				1
CAS 3.9.Other technique or any of the above technique				5
CAS 4.Descriptive pathology of histomorphology based on haematoxylin and eosin stain(s)		150 (Max. up to 200)	150	
CAS 4.1.Respiratory system – nasal passage, nasopharynx, larynx, trachea, bronchi, alveoli				15
CAS 4.2. Cardiovascular system – atria, ventricles, blood vessels & lymphatics				15

CAS 4.3.Gastrointestinal system: buccal cavity, teeth, salivary glands, oropharynx, esophagus, rumen, reticulum, omasum, abomasum, true stomach, duodenum, jejunum, ileum, ceacum, colon, rectum and associated glands.				15
CAS 4.4. Hepatobiliary system and pancreas: exocrine pancreas, liver, bile duct and gall bladder				20
CAS 4.5.Excretory system- kidneys, ureters and urinary bladder and urethra				10
CAS 4.6.Endocrine system- hypothalamus, pituitary, thyroid, endocrine pancreas, adrenal, testis, ovary				10
CAS 4.7. Musculoskeletal systems: skeletal muscle, bones, cartilage joints, tendons and ligaments				10
CAS 4.8. Male reproductive system- testis, epididymis, efferent ductules, vas deferens, spermatic cord, penis , prostate, bulbouretheral glands and seminal vesicles				10

CAS 4.9. Female reproductive system- vulva, vagina, cervix, uterus, fallopian tube, ovary and mammary glands				10
CAS 4.10. Nervous system- CNS- Brain (meninges, cerebrum, hypothalamus, thalamus, medulla oblongata, pons and cerebellum) and spinal cord, peripheral nervous system (cranial/spinal nerves, ganglion)				10
CAS 4.11.Organs of special senses: eye- lacrimal, infraorbital, extraorbital, harderian and zymbal glands and ear				6
CAS 4.12. Skin and adnexa				9
CAS 4.13. Haemopoietic system: bone marrow, spleen, thymus and lymph nodes and mucosal associated lymphoid tissue				10
CAS 5. Descriptive pathology of cytology and blood smears		150-205		
CAS 5.1 Haematology			60	
CAS 5.1.1 Preparation of blood smears				8

CAS 5.1.2 Staining of blood smears: Giemsa's, Leishman's, Wright's and supra vital stains)				9
CAS 5.1.3 Interpretation of differential leucocyte count				10
CAS 5.1.4 Interpretation of erythrocytic abnormalities				10
CAS 5.1.5 Interpretation of leucocytic abnormalities				10
CAS 5.1.6 Interpretation of platelet abnormalities				5
CAS 5.1.7 Haemoprotozoa and other infectious agents				8
CAS 5.2 Cytology			45	
CAS 5.2.1 Collection of materials for cytology : FNAC, impression smear, swabs, scrapping and body fluids				10
CAS 5.2.2 Preparation of cytological smears				10
CAS 5.2.3 Staining of cytological smears				10
CAS 5.2.4 Cytopathological interpretation of neoplastic lesions				10

CAS 5.2.5 Cytopathological interpretation of non-neoplastic lesions				5
CAS 5.3 Urine sediment evaluation			20	
CAS 5.3.1 Preparation of urine sediment				5
CAS 5.3.2 Smear preparation from urine sediment				5
CAS 5.3.3 Staining and interpretation of urine sediment smears				5
CAS 5.3.4 Interpretation of nasal washing/ smears				5
CAS 5.4 Cytopathology of body fluids (pericardial, peritoneal, thoracic, CSF and synovial fluids.)			40	
CAS 5.4.1 Collection of sample				5
CAS 5.4.2 Smear preparation				5
CAS 5.4.3 Staining of body fluid smears				5
CAS 5.4.4 Interpretation of neoplastic and non-neoplastic changes				10
CAS 5.5 Vaginal exfoliative				3

cytology				
CAS 5.5.1 Preparation of vaginal cytology smears				2
CAS 5.5.2 Staining of vaginal cytology smears				3
CAS 5.5.3 Interpretation of estrous				7
CAS 5.6 Milk sample cell count and cytology			10	
CAS 5.6.1 Collection of milk samples				2
CAS 5.6.2 Preparation of milk smears				2
CAS 5.6.3 Interpretation of milk smears				6
CAS 5.7 Nasal washings and transtracheal washing			15	
CAS 5.7.1 Collection of nasal and transtracheal washings				2
CAS 5.7.2 Preparation of nasal smears				3
CAS 5.7.3 Interpretation of nasal washings for parasites and tumours				5
CAS 5.7.4 Interpretation of transtracheal washings for neoplastic and non-neoplastic conditions				5
CAS 5.8 Clinical Microbiology			15	

CAS 5.8.1 Preparation of sample smears				1
CAS 5.8.2 Staining – Gram's , Ziehl-Neelsen PAS and Lactophenol cotton blue stain				4
CAS 5.8.3 Interpretation of bacterial morphology				5
CAS 5.8.4 Interpretation of fungal morphology				5
CAS 6. Descriptive Ultrastructural pathology		10-15	10	
CAS 6.1. Transmission electron microscopy				5
CAS 6.2. Scanning electron microscopy				3
CAS 6.3. Advanced light microscopy				2
CAS 7. Interpretation of molecular pathology results		5 - 10	5	
CAS 7.1. Blotting techniques				1
CAS 7.2. Genomics				1
CAS 7.3. Microarray				1
CAS 7.4. Proteomics				1
CAS 7.5. Flow cytometry				1

CAS 8. Interpretation of serum biochemistry and organ function tests		50	50	
CAS 8.1. Clinical hematology				20
CAS 8.2. Clinical biochemistry				10
CAS 8.3.Body fluids: urine				5
CAS 8.4.Body fluids: milk				5
CAS 8.5 Analytical chemistry of body fluids: synovial fluid, rumen fluid and CSF				5
Additional Core Skills (ACS)	50			
ACS 1. Pre post-mortem examination procedures		25	25	
ACS 1.1. Assessment of common documentary requirements				15
ACS 1.2. Assessment of legal requirements				4
ACS 1.3. Assessment of availability of instrumentation requirements for different kinds of necropsy				3
ACS 1.4. Assessment of availability of infrastructure requirements for				3

different kinds of necropsy				
ACS 2. Gross/Micro photography		25	25	25
Specialised Professional Skills (SPS)	75			
SPS 1. Report preparation and development of communication skills with professional (e.g.: doctors, policy makers, legal establishments) and social clients (farmers, pet owners).		70	70	
SPS 1.1.Preparation of technical reports: post mortem examination				30
SPS 1.2. Preparation of technical reports: histopathology and clinical Pathology				25
SPS 1.3. Preparation of technical reports: ultrastructural and molecular pathology				10
SPS 1.4. Preparation of scientific reports for indexed scientific journals				2
SPS 1.5.Preparation of case reports for ICVP competitions				2

SPS 1.6. Preparation of popular articles				1
SPS 2. Capability to articulate the concepts in animal health for advancing livestock economy, maintaining ecology balance and promoting the concept of 'one-health'		2	2	2
SPS 2.1.Participation in IAVP award competitions				
SPS 2.2. Participation in annual conferences of non-Veterinary Pathology organisations				
SPS 3. Awareness and use of opportunities for continued professional advancement and quality control in respective areas		3	3	3
SPS 3.1. Participation in veterinary continuing education programmes				
SPS 3.2. Participation in non-pathology continuing education programmes				
SPS 3.3. Conducting/ organising continuing education programmes for farmers and/or				

professionals				
SPS 3.4. Documentary evidence of awareness of personal accreditation systems				
SPS 3.5. Documentary evidence of awareness of quality system platforms: ISO, GLP, OECD, NABL				
SPS 3.6. Any other relevant activity				