Veterinary Forensic Postmortem Examination Standards

Foreword

These minimum standards are designed to guide veterinarians who perform forensic postmortem examinations. An ad hoc committee was struck after the need for veterinary forensic postmortem examination standards was identified and voted upon at the 2019 International Veterinary Forensic Sciences Association business meeting.

This document provides minimum standards for veterinarians who perform forensic postmortem examinations. Included standards cover preliminary procedures, evidence documentation, external and internal postmortem examination and documentation, lesion and injury descriptions, ancillary tests, and the postmortem examination report. Opinions and interpretations of a forensic case made by the veterinarian must be formulated after consideration of all available information; this document lists all the information the veterinarian should consider.

Keywords: veterinary forensics, veterinary pathology, veterinary forensic postmortem examination, standards

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Veterinary Forensic Postmortem Examination
Standards

1 Scope

This document is the collaborative product of the Veterinary Forensic Postmortem Standards Committee of the International Veterinary Forensic Sciences Association. The text herein outlines minimum standards of practice for veterinarians who perform forensic postmortem examinations. The primary objectives of this document are to provide a framework that defines the fundamental services rendered by a veterinarian acting in a forensic capacity, and to provide reference for legal or law enforcement professionals.

2 Normative References

The document contains no normative references. See Annex A, Bibliography for other references.

3 Terms and Definitions

For the purposes of this document, the following definitions apply.

3.1 Cause of death: A medical opinion stating which disease, injury, or physiological derangement was responsible for initiating the lethal sequence of events that resulted in an animal’s death.

3.2 Chain of custody: The procedures and documents that account for the possession of an item of evidence by tracking its handling and storage from its point of collection to its final disposition.

3.3 Veterinarian’s “designate”: Any individual who carries out duties under the direction or authority of the veterinarian. Individuals performing these various duties may be technicians, other veterinarians, veterinary medical students or law enforcement personnel.

3.4 Forensic postmortem examination: A postmortem examination performed for the documentation of legal cases.

3.5 Postmortem examination: A diagnostic procedure consisting of the dissection of a deceased animal by a veterinarian for the purpose of determining the cause of death. Synonyms include necropsy and autopsy.

3.6 Shall¹: Used to indicate that a provision is mandatory.

3.7 Should²: Used to indicate that a provision is not mandatory, but recommended good practice.

¹ ASB Manual for Standards, Best Practice Recommendations, and Technical Reports, 2018
² ASB Manual for Standards, Best Practice Recommendations, and Technical Reports, 2010
3.8 Standard: Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

4 Responsibilities. The veterinarian shall:

4.1 Investigate cooperatively with, but independent from, law enforcement and prosecutors.

4.2 Operate without any undue influence from law enforcement agencies and prosecutors.

4.3 Evaluate the circumstances of the reported death.

4.4 Determine the order of examination and sample collection based on the individual case.

5 Receipt of the Body

5.1 The veterinarian shall review the circumstances of the death or clinical history prior to the postmortem examination.

5.2 The veterinarian or designate shall document who submitted the animal.

5.3 The veterinarian or designate shall document how the animal was received.

5.4 The veterinarian or designate shall document packaging and contents of the package received if the submission is designated as a medico-legal case by the submitter.

5.5 The veterinarian or designate shall document if a chain of custody form was received.

5.6 The veterinarian or designate shall begin a chain of custody form at their facility if a chain of custody form was not received with the body.

5.7 The veterinarian or designate shall photograph the packaging and contents of the package with a unique case number.

5.8 The veterinarian or designate shall establish and document the intended and final disposition of the remains with the submitter.

6 External Postmortem Examination

6.1 Animal Identification. The veterinarian or designate shall:

6.1.1 Record the date the animal was received.

6.1.2 Scan the body for the presence of an implanted microchip, using an appropriate microchip reader(s) in animals that are likely to be micro-chipped or if a microchip has been identified with

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3 ASB Manual for Standards, Best Practice Recommendations, and Technical Reports, 2018
diagnostic imaging. The veterinarian shall document the findings of the microchip scan and the microchip number if found. If unreadable, the microchip shall be saved as evidence.

6.1.3 Document anything not native to the body including, but not limited to: tattoos, collars, halters, radio collars, medical devices, leg bands or tags attached to the animal.

6.1.4 Record the body weight.

6.1.5 Record the sex.

6.1.6 Document the species of animal and breed, or breed-type if known.

6.1.7 Document the approximate age.

6.1.8 Retrieve and document trace evidence on the body or items that accompanied the body if indicated.

6.1.9 Take documentary photographs of the animal in right and left lateral recumbency, dorsal, ventral, cranial and caudal views with the case number and date.

6.1.10 Document if diagnostic imaging was done and the date and place of diagnostic imaging.

6.1.11 Document if samples for DNA analysis were collected for animal identification purposes and the source of those samples.

6.2 Photo-documentation of Injuries. The veterinarian or designate shall:

6.2.1 Photograph major injuries and wounds with a reference scale in at least one photograph.

6.2.2 Photograph external injuries prior to removing hair or feathers.

6.2.3 Photograph injuries unobstructed by blood, foreign matter, hair or feathers.

6.3 Postmortem Changes. The veterinarian shall:

6.3.1 Describe livor mortis if visible.

6.3.2 Describe presence or absence of rigor mortis if the body was not frozen.

6.3.3 Describe decompositional changes.

6.3.4 Document if the animal was frozen prior to postmortem examination.

6.3.5 Document presence of insects and if insects were collected at postmortem examination.

6.3.6 Document postmortem scavenging of the body.

6.3.7 Document other postmortem changes.

6.4 General Condition of the Body. The veterinarian shall:
6.4.1 Describe the muscle mass and fat stores.

6.4.2 Document if a species-specific body condition scoring system was used and the name of the scoring system.

6.4.3 Document the condition of the integument including ears.

6.4.4 Examine the condition of the nails, claws, hooves or beak.

6.4.5 Document the presence of ectoparasites.

6.4.6 Document the condition of the dentition.

6.5 General Documentation of Injuries. The veterinarian shall:

6.5.1 Describe injury by type.

6.5.2 Describe injury by location.

6.5.3 Describe injury by size.

6.5.4 Describe injury by shape.

6.5.5 Describe injury by pattern.

6.5.6 Describe other features of the injury.

6.6 Firearm and Projectile Injuries. The veterinarian shall:

6.6.1 Describe injuries.

6.6.2 Measure wound size.

6.6.3 Locate cutaneous wounds of the head, neck, thorax, abdomen, and limbs by measuring from 2 fixed anatomic reference points.

6.6.4 Descriptively locate wounds in an anatomic region.

6.6.5 Describe the presence of soot, burns and stippling of the hair or skin.

6.6.6 Describe the presence of abrasion ring, searing, muzzle imprint, or lacerations.

6.6.7 The veterinarian or designate shall photograph recovered projectiles with a scale.

6.7 Sharp Force Injuries. The veterinarian shall:

6.7.1 Describe the wound.

6.7.2 Locate cutaneous wounds of the head, neck, thorax, abdomen, and limbs by measuring from 2 fixed anatomic reference points.
6.7.3 Measure wound size.
6.7.4 Estimate the depth of the wound.
6.7.5 Determine organs and structures involved.
6.7.6 Estimate the direction of stab wound tracks.

6.8 **Burn Injuries. The veterinarian shall:**
6.8.1 Describe the appearance of the burn.
6.8.2 Describe the distribution and extent of the burn.

6.9 **Patterned Injuries. The veterinarian shall:**
6.9.1 Measure the injury size.
6.9.2 Describe the location of the injury.
6.9.3 Describe the injury pattern.
6.9.4 Document if samples for DNA analysis were collected from bite marks and the location of the bite marks sampled.

6.10 **Suspected Sexual Abuse. Prior to cleaning the body, the veterinarian or designate shall:**
6.10.1 Collect swabs and/or flushes from the oral, vaginal, preputial, rectal, and/or cloacal cavities.
6.10.2 Collect nail scrapings or clippings.
6.10.3 Utilize an alternate light source to search for foreign fibers and/or biological stains, and preserve discovered evidence.

7 **Internal Postmortem Examination**

7.1 **Examination of the Subcutis. The veterinarian shall:**
7.1.1 Document and describe injuries to the subcutis.

7.2 **Examination of the Oral Cavity. The veterinarian shall:**
7.2.1 Document dental abnormalities.
7.2.2 Document lesions in the oral cavity.
7.2.3 Document foreign material in the oral cavity.

7.3 **Examination of the Neck. The veterinarian shall:**
7.3.1 Examine *in situ* muscles and soft tissues of the ventral neck.

7.3.2 Ensure proper removal of the neck organs and airways.

7.3.3 Examine the neck organs and airways.

7.3.4 Palpate the hyoid bone and larynx in mammals.

7.3.5 Dissect the dorsal neck in cases of suspected occult neck injury.

7.3.6 Perform ventral neck dissection in neck trauma cases.

**7.4 Examination of the Thoracic and Abdominal cavities. The veterinarian shall:**

7.4.1 Examine internal organs *in situ*.

7.4.2 Describe adhesions and abnormal fluids.

7.4.3 Describe evidence of surgery.

7.4.4 Remove organs from the thoracic, abdominal and pelvic cavities.

7.4.5 Dissect organs.

7.4.6 Describe abnormalities of examined organs.

7.4.7 List examined organs with no gross abnormalities.

**7.5. Examination of the Head. The veterinarian shall:**

7.5.1 Examine the eyes including palpebra, conjunctiva, sclera and globe.

7.5.2 Document any epidural, subdural or subarachnoid hemorrhage.

7.5.3 Examine the brain *in situ*.

7.5.4 Document abnormal fluids.

7.5.5 Remove and examine the brain.

**7.6 Penetrating Injuries Including Projectile and Sharp Force Injuries. The veterinarian shall:**

7.6.1 Correlate internal injury to external injury.

7.6.2 Describe and document the track of the wound.

7.6.3 Describe and document the direction of the wound.

7.6.4 Recover foreign bodies of evidentiary value.
7.6.5 Describe and document recovered foreign body.

7.7 **Blunt Impact Injuries. The veterinarian shall:**

7.7.1 Describe internal and external injuries with appropriate correlations.

7.7.2 Describe and document injuries to the skeletal system.

7.7.3 Describe and document injuries to internal organs, structures and soft tissues.

7.8 **Examination of the Bone marrow. The veterinarian shall:**

7.8.1 Examine bone marrow in all emaciated animals.

8 **Ancillary Testing and Support Services**

8.1 **Diagnostic Imaging**

8.1.1 Diagnostic imaging shall be performed in all cases of gunshot injuries in animals ≤ 70kg.

8.1.2 Diagnostic imaging shall be performed in all charred remains in animals ≤ 70kg.

8.1.3 Diagnostic imaging shall be performed when decomposition obscures or causes loss of identifying features and/or evidence of trauma in animals ≤ 70kg.

8.1.4 Diagnostic imaging should be performed in cases of gunshot injuries in animals >70kg.

8.1.5 Diagnostic imaging of charred remains should be performed in animals >70kg.

8.1.6 Diagnostic imaging of decomposed remains should be performed in animals >70kg.

8.2 **Specimens for Laboratory Testing Including Histopathology.**

8.2.1 The veterinarian or designate shall collect, package, label and preserve biological specimens.

8.2.2 The veterinarian or designate shall document if collected blood is central, peripheral or from a cavity.

8.2.3 The veterinarian or designate shall collect samples for bacteriology, parasitology, molecular biology, virology, clinical pathology, forensic entomology, bone marrow fat analysis, and/or toxicology, if deemed necessary.

8.2.4 Histopathology shall be performed in cases having no reasonable explanation of death following gross postmortem examination, ancillary diagnostic testing, and scene/circumstance evaluation, unless the remains are skeletonized or severely decomposed.

8.2.5 Histopathology shall be performed if the age of the injuries has evidentiary value.

8.3 **Access to Scientific Services and Equipment. The veterinarian shall have access to:**

8.3.1 A histology laboratory.
8.3.2 A radiologist.

8.3.3 Toxicology testing.

8.3.4 Diagnostic imaging.

8.3.5 On-site body and organ scales.

8.4 Content of Toxicology Laboratory Report. The veterinarian shall require the toxicologist or toxicology report to provide the:

8.4.1 Source of the sample.

8.4.2 Type of screen.

8.4.3 Test results.

8.4.4 Method of analysis.

9 Evidence Processing. The veterinarian or designate shall:

9.1 Collect, package, label, and preserve all evidentiary items.

9.2 Document the chain of custody of all evidentiary items.

10 Documentation. The following shall be documented:

10.1 Those attending the forensic postmortem examination.

10.2 Medical history, if available.

10.3 Crime scene findings, if available, and the source of the findings (law enforcement agent, personal observation).

10.4 Chain of custody form.

10.5 Photographs.

10.6 Communication history with external parties.

10.7 Communication history of consultations.

10.8 Disposition of the body.

10.9 Justification of itemized deviation(s) from elements within this standard.

11 The Forensic Postmortem Report. The veterinarian shall:

11.1 Prepare a written narrative report for each forensic postmortem examination.

11.2 Indicate if the animal was euthanized and the method of euthanasia.
11.3 Include the case number.

11.4 Include the date, place, and time of the examination.

11.5 Include the investigating agency, lead officer, the agency’s case number and animal identification number, if applicable.

11.6 Include the name and affiliation of the veterinarian.

11.7 Include documentation of identity of the animal (e.g. microchip, tattoo).

11.8 Include age (if known, or estimate), sex, species, breed or breed-type.

11.9 Include postmortem changes.

11.10 Include observations of the body condition.

11.11 Include observations of the coat condition.

11.12 Include observations of the external examination.

11.13 Include observations of the internal examination.

11.14 Include a description of internal and external injuries.

11.15 Include descriptions of findings in sufficient detail to support diagnoses, opinions and conclusions.

11.16 Include a copy of any ancillary test reports with the forensic postmortem report.

11.17 Include a list of the diagnoses and interpretations in the forensic postmortem report.

11.18 Include cause of death.

11.19 Include the name and title of the veterinarian.

12 Interpretation and Opinions.

12.1 The veterinarian shall review and interpret all requested laboratory results.

12.2 The veterinarian shall review all requested ancillary and consultative reports.

12.3 The veterinarian shall review the investigative reports, medical records, medications (where applicable) and scene imagery that the veterinarian deems relevant in his/her professional opinion.

12.4 The veterinarian shall determine the cause of death.
Annex A

(informative)

Bibliography

Annex A (informative) Bibliography. The references listed here include the key materials upon which these standards are based, and some additional references for context or specific issues covered. This is not intended to be an exhaustive list of relevant literature.


