

FORENSIC NECROPSY

Q&As: MN ANIMAL LAW

To provide credible evidence as to an animal's cause of death and other related factors, a necropsy can be requested as part of the investigation. Below are answers to basic questions about a forensic necropsy and how to obtain this service.

1. What is a necropsy?

A necropsy is the examination of a dead animal to determine its cause of death. Similarly, a necropsy may be performed on an animal that is euthanized to determine the extent of the animal's disease. A necropsy refers to the medical examination of dead animals. An autopsy refers to the medical examination of deceased humans.

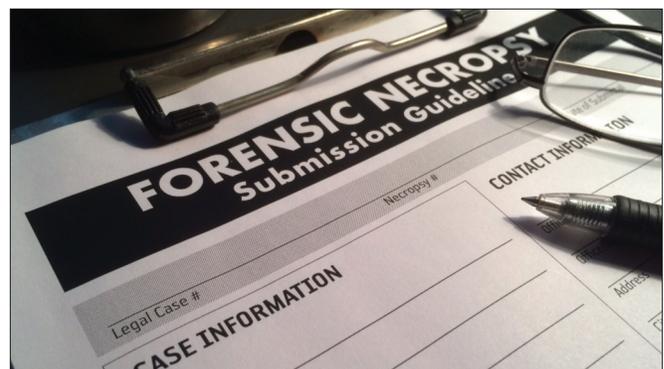
2. What is the difference between a basic necropsy and a forensic necropsy?

Sometimes an animal's death may be accidental, such as if the animal was hit by a car, or it may be due to illness or disease, such as death from cancer or an infection. This is when a basic necropsy might be conducted. At other times, the cause of death may be due to criminal actions (including neglect), such as starvation, heat stroke, a beating, stabbing, drowning, deliberate poisoning, or other means. A forensic necropsy is an examination of the animal to determine the cause of death and to also collect and provide scientific data about this cause, which can then be used as evidence in a court of law. **While the role of the veterinarian is very important, it is important to note that veterinarians are not investigators, judges or a jury.** The veterinarian's role is to thoroughly examine an animal and identify disease and/or injuries sustained by the animal (such as a fracture, laceration, puncture wound) and ultimately try to determine the cause of the injuries or death of the animal. In a forensic necropsy, detailed records of abnormalities are made, including photographs and other forms of imaging. Microscopic and analytical tests may also be performed on body fluids or tissues.

3. Who does necropsies in Minnesota?

Necropsies are performed by a veterinarian; ideally, a veterinary pathologist. A "pathologist" is a veterinarian specializing in postmortem examinations and diagnostics. In Minnesota, the Veterinary Diagnostic Laboratory (VDL) at the University of Minnesota (U of M) is the only accredited necropsy facility for privately owned animals that employs veterinary pathologists. The laboratory is in St. Paul, MN (www.vdl.umn.edu). If the animal cannot be transported to the VDL, the veterinarian performing the necropsy should seek guidance from a pathologist beforehand. There are also accredited veterinary diagnostic laboratories in adjacent states.

Additional Q&As continued on page 2.



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Q&As (continued)

4. What is the cost of a necropsy and who pays?

As of April 6, 2015, the basic necropsies of a companion animal (e.g., cats, dogs, and horses) cost \$160 at the U of M VDL. However, fees can vary based on type of animal, number of animals and additional tests requested. The county is responsible for payment of any medical expenses (Minn. Stat. Sec. 343.23).

5. What does a necropsy typically include?

A necropsy consists of an external and internal gross examination of the entire body and, if deemed necessary by the case pathologist or the investigators, ancillary testing that may include, radiology, histopathology, bacteriology, electron microscopy, immunohistochemistry and selected molecular diagnostics, and virology. Additional tests may be requested at an additional cost (e.g., toxicology). If the necropsy is part of a criminal investigation ("forensic necropsy"), arrangements with the laboratory should be made ahead of time.

6. How quickly should the body be delivered for the necropsy to be conducted?

The animal should be submitted for a necropsy and examined as soon as possible after death. Changes in tissues can occur within minutes after an animal's death, which can impact findings. Even if time has passed, contact the lab for advice. The bones and body could still be used as critical evidence. **NOTE: You can refrigerate the body but ideally do not freeze it; some tissues are compromised or destroyed if the body or body parts are frozen. Take plenty of photographs, especially if the refrigeration or transport are delayed.**

7. What are the submission guidelines?

If you choose the University of Minnesota laboratory, go to their website (www.vdl.umn.edu) and obtain the Necropsy and Sample Submission Form. Complete it or, if a veterinarian is assisting you with the case, ask that they complete and submit it. Treat the body, body parts and samples as evidence. Follow the chain of custody. Be precise when documenting the evidence.

- In addition to items on the submission form, be sure to:
 - **IMPORTANT:** Identify the submission as part of a cruelty investigation;
 - List name of case, identification or case number;
 - Prior to submission, discuss with the pathologist any additional tests (besides a necropsy) needed, such as toxicology;
 - Request that digital photos be taken of all pertinent aspects of the examination/necropsy;
 - Provide description of alleged crime scene, including any weapon (if involved) or position of body
- Place submission form in a sealable plastic bag (e.g., ziplock bag) with your name and contact information.
- If there are body parts or samples, make sure they are packaged properly so there is no leakage. Submit the samples in a sealed, leakproof bag or container. Depending on body condition and crime, remember to include samples such as urine, stomach contents (in bag with frozen cold packs), blood, vomitus, and fecal matter. The webpage of the laboratory has information on how to package biological samples. Contact the laboratory if you have questions about packaging. Refer to Q&A#11 for transport.



Submission of the body and any other pertinent "evidence" in sealed bags/containers is preferred.

Additional Q&As continued on page 3.

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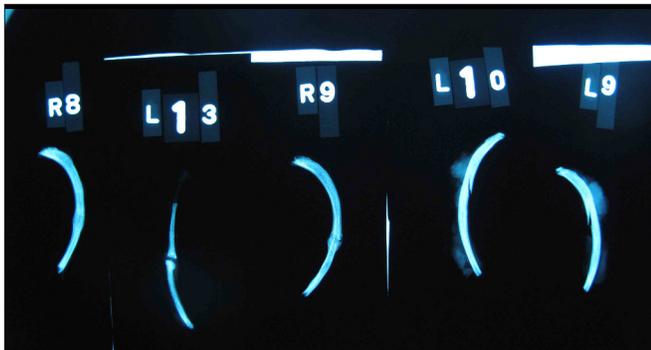
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Q&As (continued)

8. Can a necropsy help in all types of crimes?

The list of possible crimes against an animal that can cause serious injury resulting in euthanasia or death is long. Below is a list of possible scenarios where a necropsy examination may prove useful.

- **Neglect:** malnutrition/starvation, matted hair, embedded collars or halters, lack of veterinary care, overgrown nails, hooves or beaks
- **Blunt force trauma:** bruise, fracture, laceration, avulsion (severe laceration)
- **Sharp force injuries:** incised wound, stab wound, chop wound, bite wound
- **Projectile injuries:** gunshot wound, air gun injury, arrow injury
- **Thermal injuries:** fire-related burn, electrical burn, chemical burn, frostbite, hypothermia, hyperthermia/heat stroke
- **Asphyxia:** manual strangulation, ligature strangulation, hanging, drowning
- **Animal sexual abuse**
- **Poisonings,** with ethylene glycol (anti-freeze), strychnine, anti-coagulant rodenticides and illicit substances



Fractures. Radiographic examination of multiple ribs of this cat revealed that fractures occurred on multiple occasions during the animal's life.



Poisoning. This image depicts the stomach content of a dog. Chemical analysis of the sorghum kernels revealed strychnine.



Lacerations. The liver of this dog has numerous acute lacerations (fissures/fractures) due to blunt force trauma to the abdomen. The cause of death was bleeding into the abdomen from the injured liver.



Fractures. Open thorax of a dog with multiple fractures due to blunt force trauma. The fractures occurred on multiple occasions.

Additional Q&As continued on page 4.

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9. What if the animal is large or there are multiple bodies?

Regarding large animals, consult with the veterinarian who may have contacts for transport (e.g., trucks, flatbeds). If there are multiple bodies in various stages of decomposition or with similar lesions (e.g., all starved, all burned), then a few of the animals may only be necessary for purposes of necropsy — but detailed documentation of how each animal appeared, was treated or died is necessary. Discuss all of this with the field veterinarian (possibly in consultation with the pathologist) prior to selection and transport.



Deceased body at crime scene. Cause of death was starvation.



Long bone from a starved animal showing lack of bone marrow fat.

10. Should the entire body be delivered?

Yes, submitting the entire animal is preferred. **NOTE: Even if only bones remain, collect them. Before submitting any bones to the laboratory, contact the pathologist first and discuss expectations.**

11. Who handles the transport?

In forensic cases, it is preferred that the body/body parts are dropped off by a person familiar with the investigation. If direct transport is not possible, use overnight shipping and a service with tracking capabilities. Law enforcement is ultimately responsible for the evidence and for all directions given to the pathologist. Input from a veterinarian familiar with the case should be sought as well before directions are finalized and the body is transported.

12. Will a report be prepared and in what timeframe?

The case pathologists at the U of M's VDL prepare reports. Typical timeframe for services following receipt of an animal, including necropsy and report, is approximately two to six weeks depending on the complexity of the case. Be sure to request all photographs taken. The investigator is welcome to contact the case pathologist and request a preliminary report. The pathologist is able to testify about the report.

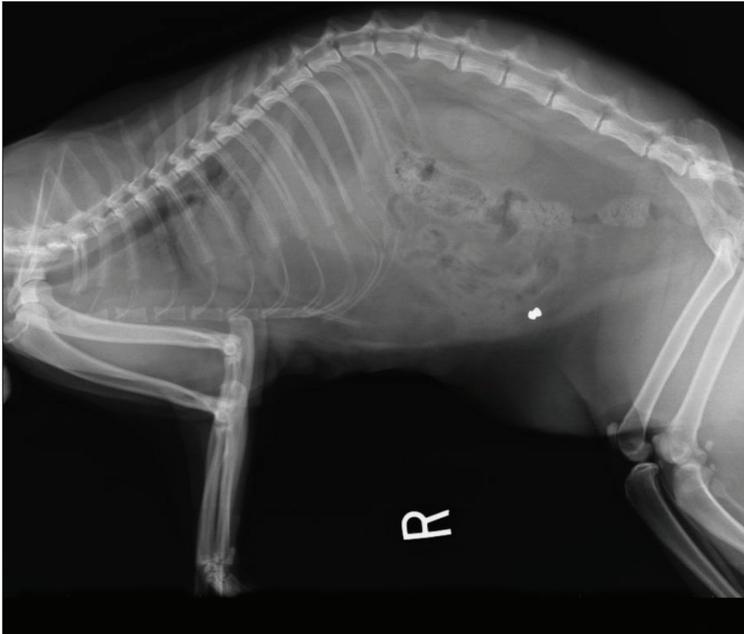
13. Will the laboratory hold the body until the prosecutor confirms release?

State this request on the submission form and discuss by phone. The VDL at the U of M has held bodies of smaller animals (e.g., cats) frozen for longer periods of time in the past. Ultimately, it is the responsibility of the submitter to provide appropriate storage (freezer space) if necessary after consultation with the pathologist. Be certain to also request specific cremation arrangements (individual cremation or mass cremation).

Additional information continued on back page.

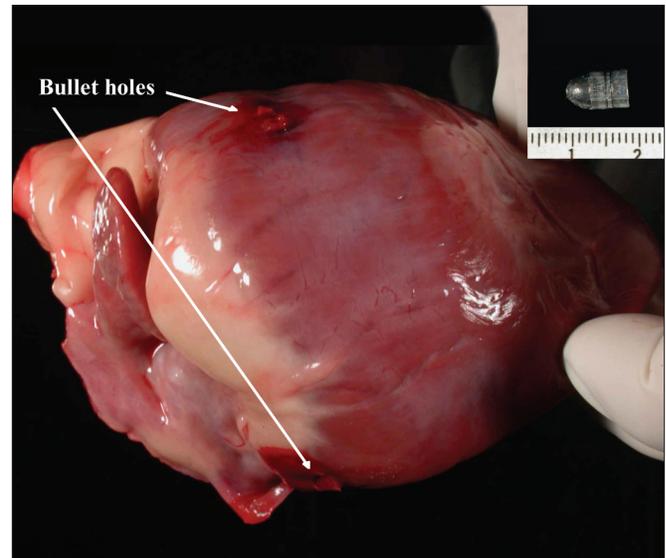
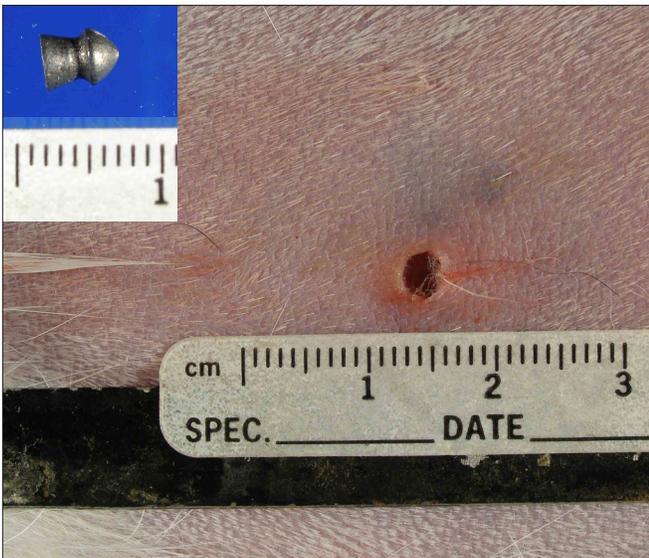
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X-rays. Radiographic examination of victims of alleged crimes are helpful in identifying, locating, and documenting projectiles and fractures. An air rifle pellet was identified in this cat (shown above and at right) and the pellet was subsequently recovered during the necropsy.

Gunshot wounds. The bottom left image depicts the skin of a cat with an entry wound caused by an air rifle pellet. The bottom right image depicts the heart of a dog through which a bullet traveled. Recognition and documentation of wounds and recovery of projectiles in cases of gunshot wounds are credible evidence in an animal cruelty case.



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RESOURCES

Minnesota Statute Chapter 343 (Prevention of Cruelty to Animals): www.revisor.leg.state.mn.us/statutes/?id=343

U of M Veterinary Diagnostic Laboratory (St. Paul): www.vdl.umn.edu

U of M Poultry Diagnostic Laboratory (Willmar): www.vdl.umn.edu/about-us/willmar-facility/index.htm

North Dakota Veterinary Diagnostic Laboratory: www.vdl.ndsu.edu/

Wisconsin Veterinary Diagnostic Laboratory: www.wvdl.wisc.edu/

Iowa Veterinary Diagnostic Laboratory: www.vetmed.iastate.edu/diagnostic-lab

International Veterinary Forensics Sciences Association: www.ivfisa.org

National Fish & Wildlife Service Forensic Laboratory: www.fws.gov/lab/

UC Davis Veterinary Genetics Laboratory Forensics Unit: www.vgl.ucdavis.edu/forensics/index.php

Minnesota Bureau of Criminal Apprehension (BCA): www.dps.mn.gov/divisions/bca/pages/default.aspx

Minnesota Transporters and Renderers: Contact veterinarian on case.

Supplier for medical products (e.g., insulated boxes, blood tubes, collection cups, swabs): www.vdl.umn.edu

Supplier for “animal cruelty investigation kit”:

<http://tritechforensics.com/store/product/animal-cruelty-forensic-kit-for-veterinarians/>

Also on above website: separate links for scales and measurement supplies, evidence collection tubes, insulated specimen shipping box, refrigerant packs, etc.

Supplier for forensics products (e.g., evidence markers, body bags, gloves, scales): www.safariland.com

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Animal Law Resources MN, a program of Animal Folks, provides resources to authorities who enforce Minnesota animal law. The mission of Animal Folks is to help prevent animal cruelty and protect animals by modernizing the animal law enforcement system in Minnesota through systemic reform, education and collaboration.