[redacted]

Examinations

Created 11/18/2010
Revised 10/31/2023

Purpose

To identify the reportable cases that shall have either an external examination or a full autopsy.

Policy

It is the policy of the [redacted] to perform external examinations and full autopsies on cases in which it is deemed necessary, and in accordance with national standards. See **Appendix C** for examples of examination worksheets.

Procedures

A postmortem examination includes either inspection or viewing of the body without internal examination, designated an "External Examination", or with internal examination, referred to as an "Autopsy". In any death where the Coroner's representative has determined that the case will be terminated back to the physician of record (a jurisdiction terminated or "coroner OK" case) for death certification, neither an internal or external examination is required.

Once the [redacted] has determined that a case comes under its jurisdiction, it has the statutory duty to certify the cause and manner of death. In order to have sufficient information to fulfill that statutory mandate, the [redacted] conducts an investigation into the circumstances of death and may do studies of the body, such as an autopsy, toxicological analysis, X-ray studies, and ancillary laboratory testing.

The decision whether to conduct an autopsy rests with the Coroner or forensic pathologist. The decision whether to do an autopsy is made on an individual case by case basis.

Forensic Autopsy

By statute, the [redacted] has jurisdiction in any death which is sudden, unexpected, or unnatural. A death may be attended or unattended, and it may appear natural, accidental, suicidal, homicidal, or undetermined; however, the decision to conduct a full autopsy depends on the circumstances surrounding each individual case with consideration of the findings of the medical investigator. The decision to perform an autopsy is concrete only in a few cases, and is determined by circumstances in all others. In general, autopsies are performed in the following situations: homicides, sudden or unexpected infant and child deaths, or any case where the cause of death is not apparent at the time of external examination or upon review of medical history. In all cases, the decision to perform an autopsy is made by the coroner or the pathologist in charge of the case.

Autopsies conducted by the [redacted] under statutory authority require no permit. Further, they are referred to as full forensic autopsies, and involve examination of the brain as well as the thoracic and abdominal organ blocks. Partial autopsies (brain-only) are only performed in rare cases meeting specific criteria.

LEGAL AUTHORITY FOR AUTOPSY: Under the authority of Colorado Revised Statutes,

30-10-606, the Coroner's Office of [redacted] may, when a death is suspected of being caused by a criminal act or omission or if the cause of the death is unclear, order an autopsy performed by a forensic pathologist. An autopsy or postmortem examination may be performed by a pathologist at the written direction of the district attorney or his authorized representative in any case in which the district attorney is conducting a criminal investigation.

The autopsy is an external and internal examination of the body after death using dissection techniques, microscopy, and laboratory analysis, and should include review of medical records or other investigative material when available. An autopsy determines the cause of death, extent or nature of disease or injury, and includes the retention of tissues for evidentiary, identification, diagnostic, scientific, or therapeutic purposes.

The reasons for which medicolegal autopsies are conducted include, but are not limited to:

- Determination of the cause and manner of death.
- Establishment of the identity of the deceased.
- To aid in the discovery of crime.
- Protection of innocent persons accused of crime.
- Disclosure of possible hazards to public health such as:
    - Dangerous drugs, chemicals, foods.
    - Communicable, contagious, or infectious disease
    - Occupational disease.
    - Environmental hazards.

The Colorado Revised Statutes delineate when an autopsy is to be performed under coroner jurisdiction in accordance with the National Association of Medical Examiners forensic autopsy performance standards:
30-10-606.5 (1) (a) The coroner shall perform a forensic autopsy or have a forensic autopsy performed in accordance with the circumstances in the most recent version of the "forensic autopsy performance standards" adopted by the National Association of Medical Examiners, when the death is apparently non-natural and occurs in a facility or during services regulated by the department of human services, and when the death is the result of an automobile accident and a hospital physician has not documented the extent of the injuries.
(b) If a person is involved in an incident that requires the person to be transported to a medical facility outside the county where the incident occurred and the person dies en route to or at the medical facility outside the county where the incident occurred, the coroner for the county where the incident occurred shall take possession of the body and shall comply with the provisions of this section.
(2) (a) Except as provided in paragraphs (b) and (c) of this subsection (2), all forensic autopsies required to be performed pursuant to subsection (1) of this section shall be performed by a board-certified forensic pathologist.

Deaths usually considered for autopsy:

- All homicide cases.
- Sudden Unexplained or Unexpected Deaths in Infants or Children (SUDI or SUDC) cases.
- In-custody deaths - this includes all deaths in which law enforcement is present at the time of death (pre- or post-apprehension) or cases where individuals are incarcerated or kept for observation by law enforcement authorities. This includes all inmates who are taken to a hospital but still remain in "custody."
- Drug-related deaths, which includes those deaths where drugs are presumed to be a factor in the death (licit and illicit drugs inclusive).

- Suicidal deaths or deaths suspected to be suicide. Factors for autopsy are varied, and include not only the clarity of the facts and pattern of injury, but the response of family members and investigating law enforcement officials.
- Work-related deaths, especially those in which the circumstances are unclear or where insufficient documentation of injury exists.
- Accidental deaths: This is a broad category of death, and involves all traffic fatalities as well as accidents due to other means. Evaluation criteria includes how clear the cause and manner of the death appear, and whether there are criminal liability questions that need to be answered. The autopsy can also be performed to gather evidence, both physical and medical. Accidents covered under the National Transportation Safety Board, Federal Aviation Administration, etc. take into consideration the needs of the specialized agency.
- Unexpected natural deaths. Factors involve age, medical history, lifestyle, and circumstances under which the death occurs.
- Certain fetal deaths due to injury to the mother and deaths of viable fetuses which occur in an unattended environment where complications are undocumented.
- Certain identification-problem deaths including badly decomposed, skeletonized, dismembered, burned and other disfigured bodies where identification is uncertain.
- Maternal deaths due to complications of pregnancy or delivery.

The forensic autopsy is performed by a forensic pathologist, a medical doctor specially trained in conducting death investigations, interpreting injuries in both fatal and non-fatal cases, performing medicolegal examinations, determining disease/injury causation to an appropriate degree of medical certainty, and determining cause and manner of death. All available investigative information, including scene narratives and photographs, as well as any other available records, will be reviewed prior to autopsy. Autopsy assistants aid in performing the external examination (photography, removal of clothing and medical therapy, etc.) and internal evisceration in the presence and under the supervision of the forensic pathologist. All autopsy examinations will be conducted using universal precautions. The forensic pathologist performing the autopsy will prepare a written report of examination in accordance with accepted standards of the medical specialty. A majority of reports must be completed within 60 days of the date of autopsy, with greater than 90% of reports required to be complete within 90 days of the autopsy.

For all autopsies, certain material will be procured as available and applicable to facilitate routine and non-routine analyses (toxicology, serology, vitreous electrolytes, DNA/genetic testing, and histology) including: blood samples (one red top and one gray top tube, preferably drawn from the femoral vein; and one tiger top tube centrifuged at the time of collection), vitreous and urine samples (red top tubes), fresh frozen samples of heart, liver, kidney and skeletal muscle, a blood spot card, formalin fixed tissue buckets with representative tissue samples, and tissue cassettes/histology. Additional samples may be necessary based on case type and may include appropriate specimens (and specialized containers or transport media) for microbiology, carboxyhemoglobin testing (all suspected CO deaths, fire victims, and motor vehicle drivers); metabolic screening (SUID/infant cases), other clinical laboratory tests, and smear preparations on oral, rectal, and vaginal swabs (homicides and suspected sexual assaults). All collected specimens will be appropriately labeled to include decedent's name, case number, collection date and time, collecting technician and supervising pathologist, as well as tissue/specimen type and collection site as applicable. These procedures apply to all material retained at autopsy, whether for testing by outside laboratories or on-site storage.

The type of evidence collected at the autopsy is dependent on the type of case and is done at the discretion of the pathologist performing the exam. All evidence collected from the remains will be returned to the law enforcement agency of jurisdiction for processing. Evidence that may be collected at autopsy may include (but is not limited to):

- Hair - axilla, pubic (plucked and combed), and scalp
- Swabs - oral, anal, vaginal, and gastric
- Fingernail clippings & clippers - both hands
- Fingerprints and/or palm prints- both hands
- Clothing - from the body or turned over by law enforcement from the scene
- Trace evidence in the form of paint chips, glass, hair, etc.
- Bullet fragments from within the body
- Blood spot - dry sample
- Blood - specimen tube(s)
- Swabs of fluids found on or in the body
- Photographs of all patterned and other injuries (routine and upon request from law enforcement)
- Bite mark documentation and processing using ABFO procedures (Appendix F)

Fingerprints are collected in all cases, including homicides and unidentified remains, if at all possible. Palm prints and footprints may also be taken at the request of the law enforcement agency.

Toxicology Samples:

The toxicology specimens drawn form the basis for some very vital information about the case. Samples are drawn using the specific procedures described, and sealing, holding, and shipping must not deviate from those procedures. The samples must be sealed in the appropriate manner.

Specimens collected include: Two (2) blood sample in containers with preservative (gray-top tube) and one (1) blood samples in a container without preservatives (red- or white-top tube); One (1) vitreous sample in a container without preservative (red- or white-top tube); and One (1) urine sample in a container without preservative. Be sure to secure the tops to the containers firmly to prevent spillage. Labels should be placed on each specimen with the following information: name of decedent and case number; date collected; who collected (initials); specimen type; and source. The tubes should then be placed in a zip-loc type plastic bag (to prevent spillage). Specimens should be placed in a sealed plastic bag with accompanying toxicology request form documenting decedent name and case number, pathologist and autopsy assistant of record, specimen type and source, case information and suspected substance, and then placed in a toxicology mailer.

The order of preference for blood to be used for toxicology is:

1. Femoral vessels
2. Subclavian vessels
3. Heart
4. Pulmonary artery
5. Root of the aorta
6. Superior vena cava

If an individual dies while in the hospital, either in the emergency department or as an in-patient, the medical investigator shall attempt to obtain the earliest available specimen from the hospital.

Transporters will sign for toxicology specimens to preserve the "Chain of Custody," and the toxicology processing clerk will open and verify toxicology specimen mailers adding his/her name to the "chain."

Toxicology specimens shall be retained by the [redacted] and our contracted toxicology

services provider for no less than one (1) year after receipt of the report by our office.

Organ and Tissue Retention

Organs and tissues that are not needed for further testing should be placed inside of the decedent's abdominal cavity and sewn shut when the autopsy is completed. The following show the normal schedule for retention and disposition of organ and tissue specimens taken at autopsy:

Organ and tissue buckets: Formalin-fixed tissue samples are retained in the tissue storage room for one year with the exception of homicides and undetermined cases, which shall be retained indefinitely. This is considered a routine part of an autopsy and the next-of-kin is not notified regarding these tissue sections.

Frozen tissue, slides and paraffin blocks: retained indefinitely in the appropriate storage areas. This is considered a routine part of an autopsy and the next-of-kin is not notified regarding these tissue sections.

Entire organs for further studies: If retaining an entire organ for further studies is deemed necessary by the forensic pathologist in charge of the case, the forensic pathologist or medical investigator should make every effort to contact the next-of-kin. The option should be posed to the family if they would like us to handle disposition or release the organ to the funeral home upon completion of diagnostic testing. Organs removed during autopsy with the intention of retaining for further studies shall be fixed in formalin consistent with best practices.

Autopsy Photography:

Photography allows for permanent documentation of the autopsy findings and accurate autopsy photographs retain evidentiary value and authenticity. Autopsy photographs will be obtained by the autopsy assistants under the direction of the forensic pathologist. In all autopsies, photographs will be taken documenting the clothed and unclothed body from both the right and left supine views, the unclothed back of the body, and the face (cleaned and on a blue background) for identification. When applicable, external photographs will be obtained of all significant injuries (uncleaned and cleaned) and of all tattoos, scars, or other identifying features. When photographing detailed views of specific features, an overall view of the body area will be obtained to spatially locate the specific detail. Photographs of internal findings will also be obtained either in-situ or placed on a blue background. For all photographs, a placard with ruler, case number, date and red-green-blue scale will be used. Photographs should not include personnel performing or in attendance at the autopsy or portions of decedents undergoing autopsy at adjacent autopsy stations. Law enforcement and crime lab personnel, when present, are also permitted to obtain their own photographs necessary for their investigation. If evidence has been moved prior to photography it should be noted, however evidence should not be reintroduced onto the body in order to take photographs.

All photographs taken by the forensic pathologist, autopsy assistant or designated representative are the property of the [redacted] and are considered legal evidence. No original photographs are to leave [redacted] at any time. All original photographic material must be downloaded to the electronic case record system.

Family Objections:

In cases where the next-of-kin has extreme religious or personal objections to having a full autopsy performed, the forensic pathologist must be notified of these concerns prior to the examination. In such cases, the coroner, forensic pathologist, or medical investigator will discuss with the family the reasons for autopsy and ramifications for forgoing a full autopsy. If the coroner or forensic pathologist approves, the next-of-kin may sign an admonition form **(Appendix E)**, which becomes part of the official case record, and only an external examination will be performed, with presumptive death certification based on the available information. If the coroner or forensic pathologist

maintains that an autopsy must be performed under statutory authority, the next-of-kin will be given a 24 hour period in which to obtain a court order preventing the autopsy from occurring. If no legally binding documents are presented after this 24 hour period, a full autopsy will be performed.

External Examinations

If a death is determined to be included on the list of reportable deaths and is assumed for full jurisdiction, but an autopsy is not deemed necessary, an external examination may be conducted by the pathologist. By definition, all cases which are attended or unattended and the manner of death is accident, suicide, homicide, or undetermined fall under the [redacted] jurisdiction; additionally many apparently natural deaths also fall under the coroner's jurisdiction, and an external examination may be conducted under the authorization of the coroner. Deaths considered for external examination include deaths from presumed or documented natural disease, traumatic deaths with externally apparent injury with no outstanding objections from law enforcement or family and no pending charges, and in-hospital deaths that fall under coroner's jurisdiction with hospital documentation of disease processes or extent of injury.

When the death is reported to the [redacted] the results of the investigation will be given to the forensic pathologist on service. The forensic pathologist, based on the facts presented, may opt to conduct an external examination on the remains in lieu of a full autopsy. Once the external examination is completed, the body is then released to the funeral home chosen by the family.

An external examination will be performed as outlined on all remains transported to the [redacted] morgue. Until the time that an external examination is conducted, it is assumed that the body is left in exactly the same condition in which it was found. Completion of an appropriate external examination, obtaining body fluid specimens and permanent recording of the observations is the minimum requirement for certification of death. In addition, all available medical records should be obtained and reviewed.

The external examination should follow the same procedures as an external exam performed during the course of a full autopsy, including:

- Protective garments as required. Minimally, this will be gloves, a face mask, apron, foot covers, sleeves, and protective eyewear.
- Documentation: If the body is in a sealed body bag, note the condition of the seal (broken or intact). Observe the body outside of the body bag, as received.
- Remove and document all clothing and jewelry items. Clothes and personal effects will be receipted to the next-of-kin or funeral home. Nothing is to be discarded; it is opinion only that a family would or would not want a particular item.
- Document all identifying marks such as scars, tattoos, and piercings.
- Process and document all suspected bite marks consistent with current American Board of Forensic Odontology standards (Appendix F)
- Document all external injuries or evidence of natural disease. Clean the body and shave hair around injuries as appropriate.
- Appropriate forensic photography as detailed above.
- Body fluids drawn for toxicology, ancillary testing, and/or storage, including blood (preferably drawn from the femoral vein as possible), urine, and vitreous.

Although the External Examination is the formal process by which the condition of the body will be documented, the medical investigator has actually started his/her examination upon arrival at the scene of death. The groundwork for the subsequent

formal external examination initiates when a body is viewed at the scene. Observations at this time will include, but are not limited to, the extent of livor mortis, rigor mortis, putrefaction, discolorations, skin slippage, drying, draining from orifices, odors, and insect infestations. Although the formal external examination will call for a description of such phenomena, the time lapse between initial observations and those made during the formal external examination are important to note. This is particularly pertinent where a body may not be held in refrigerated storage prior to the examination. All such observations are to be recorded in the narrative or scene description of the official report. Please note that on cases where the medical investigator may view and take legal custody of the body, but where no external examination will be done by a pathologist, the same observations should be made and recorded in either the narrative report or the body exam report.

The significance of the forensic pathologist doing an external examination is that it provides the documentation, either through disclosure of conditions and/or injury, or by exclusion of the condition or injury, required by the coroner/pathologist to certify both a cause and manner of death in [redacted] jurisdiction cases. In rare cases the medical investigator may be asked to complete a field external examination in lieu of the body being transported to the [redacted] morgue. The external examination by the medical investigator may be conducted at the scene, a hospital morgue, or funeral home. The responsibility placed upon the medical investigator in this task is enormous due to the fact that he/she will be seeing, touching and recording details on behalf of the forensic pathologist, who will use those details, plus all other information gathered about the circumstances of the death, to sign a certificate of death.

Policy/Procedure Violations

Violations of this policy are grounds for disciplinary action, up to and including termination.

Revised Effective: 10/18/2015
Revised Effective: 10/24/2017
Revised Effective: 09/28/2019
Revised Effective: 10/06/2021
Revised Effective: 10/31/2023

Approved by: [redacted]