# Investigation of Death: Autopsy

# When is an Autopsy Performed?

## Whenever the cause of death is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Generally speaking, the following circumstances require investigation by law:

### 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Within 24 hours of entering a hospital or as a result of surgery

### A natural death when a doctor is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or the patient is not under the care of a medical facility

### Occurs in police custody or in a correctional facility

### Results from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that may pose a threat to public health

# *In Colorado, counties determine when autopsies are performed. Example from Weld county*

### Where no physician is in attendance, or where though in attendance, the physician is unable (or unwilling) to certify the cause of death.

### All cases in which the attending physician has not been in actual attendance within 30 days prior to death.

### All cases in which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may be associated with the death (i.e., falls, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ industrial accidents.)

### Any patient who has sustained a fracture; no matter how long ago

### Deaths by poison or suspected poisoning, chemicals or bacteria, industrial hazardous materials, or radiation.

### Known or suspected \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

### Deaths where the deceased has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

### All operating room deaths and deaths which occurring during a medical procedure.

### All \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ deaths due to suspicious circumstances.

### Deaths which occur within 24 hours of admission to hospital

## Autopsy: “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”

### A post-mortem examination of the body, including \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the corpse.

### Performed by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (medical doctor)

# *3 Steps of a Death Investigation*

## Preliminary investigation is conducted at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## The body is transported to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where the medical examiner examines the body and performs an autopsy

## The medical examiner/coroner \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on biological evidence collected during the autopsy

# *At the Death Scene*

## The death investigator-Employed by the coroner’s/medical examiner’s office

## Responsible for;

### Initial assessment

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the body on scene

#### Position of the body, face (for identification), underside of the body (for lividity, blood, and trace evidence)

### Document signs of trauma

### Collect information regarding livor and rigor mortis, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to help establish time of death

## Investigators look for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; any non-biological evidence that provides clues about time of death, (unopened mail, newspaper near the body, etc)

## Any evidence collected is properly stored and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is established

## Once victim is identified, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and witnesses and the victim’s family are interviewed

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are placed over the victims \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to protect trace evidence from being lost or preventing cross contamination

# *Medical Examination*

## The medical examination is to determine the manner, cause and mechanism of death

## 2 stages:

### 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Examination

### 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Examination/Autopsy

# *External Examination*

## What is examined?

### Clothing, boots/shoes, belongings in pockets should be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carefully for storage/packaging

### Surface of body

#### Signs of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/x-ray 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ scrapings

#### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ samples 4. Fingerprints

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ evidence collection: Hairs, blood, plant debris, etc.

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_evidence collection: Glass, soil, artificial fibers, etc

# *Internal Examination/Autopsy*

## Estimation of time of death:

### Algor, Livor and Rigor Mortis

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contents

### \_\_\_\_\_\_\_\_\_\_\_\_ (from death scene investigation)

### Stages of Decomposition

#### Fresh 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Decay

#### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. Dry/remains

#### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Decay

# Fluids Collected

## \_\_\_\_\_\_\_\_\_\_\_\_\_: Collected from femoral artery

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_: Collected from bladder

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Humor: Collected from inside of eye

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-Spinal Fluid

## Stomach/Intestinal contents

# Stages of Decomposition

## Fresh: Livor, algor, rigor mortis, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, stoppage, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arrive

## Bloat: accumulation of \_\_\_\_\_\_\_\_\_\_\_ from microbes, hemoglobin breaks down to form other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (marbling), maggots hatch, distinctive odors

## Active Decay: loss of mass (maggots feeding/purging of fluids, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, strong odors

## Advanced Decay: reduced insect activity, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Dry/remains: resurgence of plant growth, remains=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Types of Autopsy

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: determine cause and manner of death and identify the decedent

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: diagnose a particular disease or for research.

### Can clarify or confirm medical diagnoses

## Male%20Body%20with%20Y%20Incision%20Sketch%20Colored\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: performed by students of anatomy for study

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: performed using MRI’s and CT scans

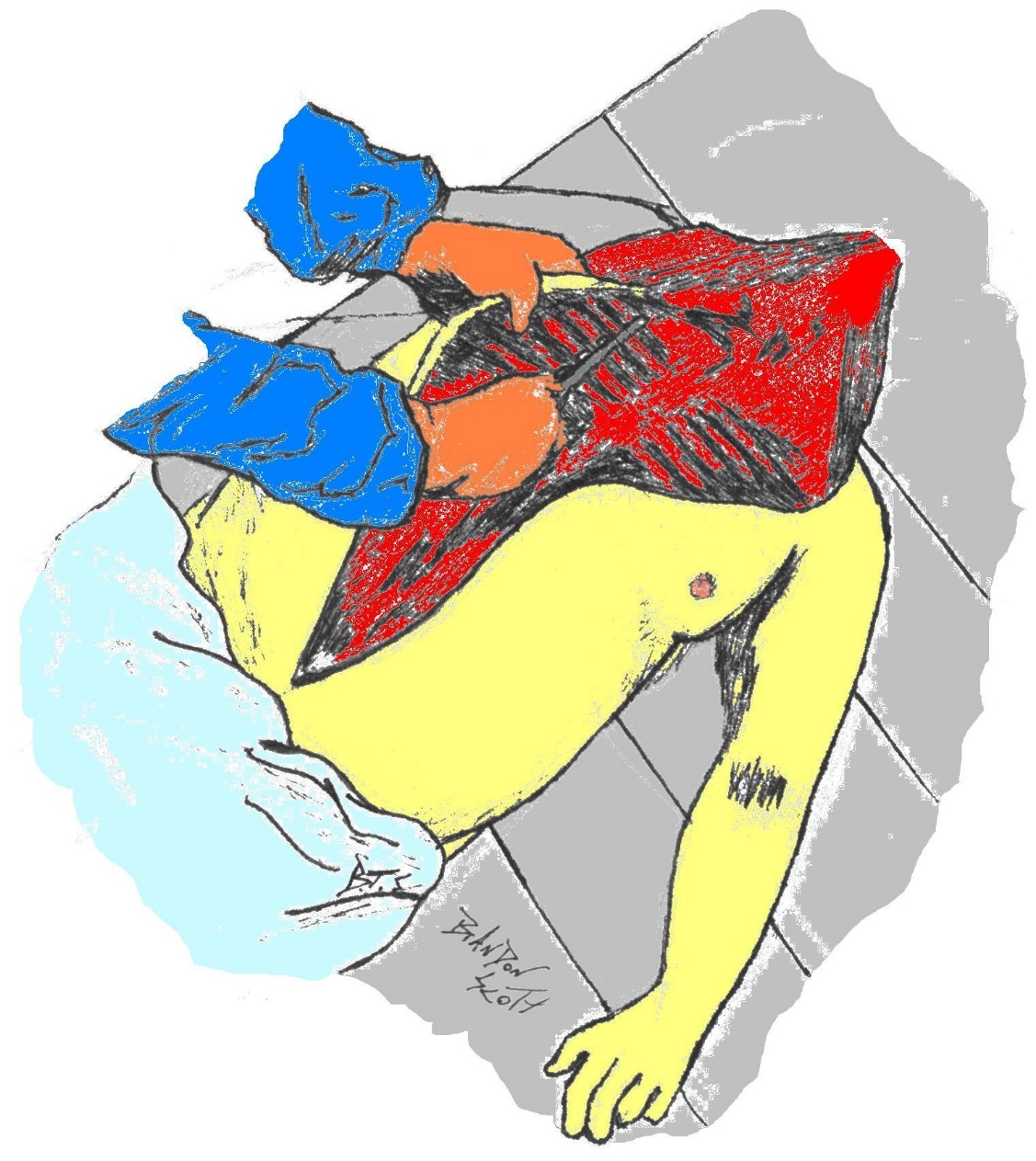
# *Autopsy*

## Trunk dissection;

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ incision

### From the shoulders to the pelvic bone

### This incision is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



# *Opening the Chest*

## Skin & muscle, are pulled from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Chest Plate is extracted

# *Removal and Dissection of the Organs*

## Many methods of removal serve different purposes

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ method is an in-situ and en bloc examination of organs intact (still connected to one another)

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ method is an organ by organ removal.

#### Not great for forensic autopsy-connections are lost between organs

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ method is the En Masse removal of all the viscera (thoracic, cervical, abdominal, pelvic organs) then dissected in organ blocks

#### Preserves vascular supply and connections between organs.

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ method is “En Bloc” removal of organs that are physiologically connected to another, (thoracic, coeliac, urogenital)

# *After Organ Removal*

## Upon removal each organ is:

### \_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Examined

### \_\_\_\_\_\_\_\_\_\_\_ in cross sections - Sampled for microscopic & chemical analysis

# *“Running the Gut”*

## The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the stomach, intestines, and bowels must be inspected as well

# *Removing the Brain*

## The Scalp is cut \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

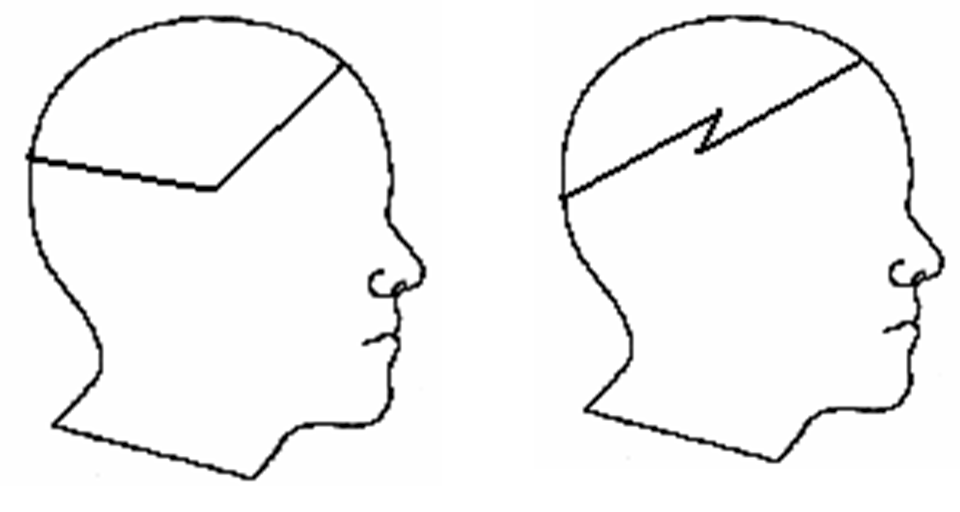
## across the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the head

# Skull%20Exposed%20Sketch%20Colored

# *Exposing the Skull*

## Next the scalp is pulled forward and back to

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Exposing the Brain*

## Two methods of cutting the skull cap

# *Brain%20Exposed%20Sketch%20ColoredRemoval of the Brain*

## Spinal Cord is cut - The soft \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is removed

## Brain is so \_\_\_\_\_\_\_\_\_\_ it must be placed

## In formaldehyde for about a

## \_\_\_\_\_\_\_\_\_\_\_\_ before an in depth examination

## *Body%20with%20Y%20Incision%20&%20Baseball%20Stitch%20Sketch%20ColoredClose Up*

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is replaced

## Skin pulled back in place

## Body Organs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ be replaced

## Incisions are sown up with the use of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stitch

# *Laboratory Analysis*

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the science related to the detection of drugs, alcohol, and poisons using bodily fluids such as blood, vitreous humor, and urine.

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Slides are made of organ tissue to analyze using a microscope. Disease/abnormalities can be detected.

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ associated with the nervous system

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the study of blood, semen, and other body fluids with reference to legal matters

# *The Autopsy Report*

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Case number, victim info, date/time of death, etc

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Examination : Full description of body & clothing, evidence of disease/trauma

### Evidence of Injury: Description of any injuries and record of all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Internal Examination: Weights and descriptions of all major organ systems and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, findings from toxicology/histology

### Medical Examiner’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Cause and manner or death, results and outcomes of tests and examinations