

CAUSE OF DEATH IN VIOLENT, UNEXPLAINED AND UNSUSPECTED DEATHS



Coroner vs. Medical Examiner

Coroner – an elected official that **may or may not** possess a medical degree.

- Established hundreds of years ago during the ruling of King Richard I of England – used to collect money and personal possessions of people who had died.



- They work with law enforcement during a death investigation.

Medical Examiner – almost always an **appointed official** and is usually a physician who is a board certified forensic pathologist. **Responsible for** certifying the manner and cause of death and recording it on a death certificate.

*Only a pathologist is trained to perform an autopsy.



Forensic pathologist cannot personally attend every death scene, therefore scene investigation delegated to **trained investigators (ie. Deputy Coroners)**.

- witness statements
- Relevant medical records
- Any scene investigation

Scene Investigation

The Death Investigation Involves:

- Documenting and photographing the undisturbed scene.
- Collecting relevant physical evidence.
- Attempting to determine the cause of death.
- Determining postmortem locations of the body.
- Was there any postmortem movement of the body?
- Examination of the body.



Scene Investigation

- A critical phase of the death investigation will be a **preliminary reconstruction of events** that preceded the onset of death, so all significant details of the scene must be recorded.....
 - Blood spatter and blood flow patterns must be documented.
 - Any tire marks or shoe prints must be documented.
 - Fingerprints must be processed and collected.
 - Evidence discarded, dropped, or cast off by a perpetrator must be collected.

- Weapons, fired bullets, and casings are collected and documented.
- Photographs must always be taken before the scene is altered in any way. This plays a large role in reconstruction of events later. Photo injures AND areas w/NO injuries.
- Paper bags around the hands and secured at the wrist can preserve trace evidence.
- Remove clothing/jewelry/personal effects from body.

Identifying the Decedent

Visual examination and identification is easy if.....

- The decedent has **identification** with him/her.
- A family member can identify the person.

Difficult if.....

- There is extensive decomposition or trauma....



Identifying the Decedent

In difficult situations you can apply more sophisticated technology such as:

- DNA
- Fingerprinting
- Dental Examination and Records
- Facial Reconstruction



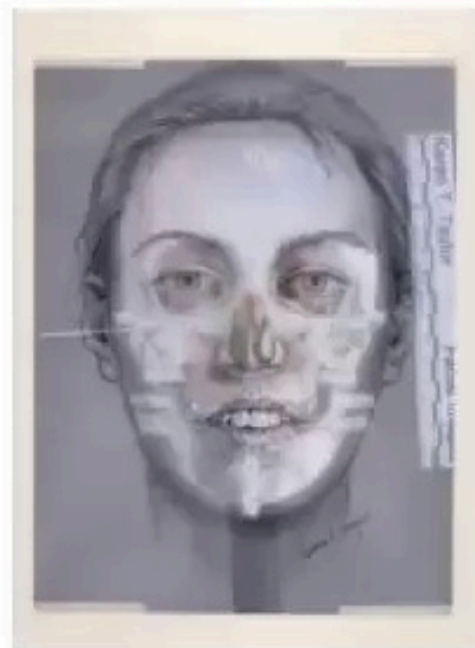
On Jan. 21, 2007, two homeless men in Chicago found a decomposed body in an alleyway wrapped in a shower curtain and stuffed inside this Casio Keyboard box.

The face was unrecognizable but the clothes and hairstyle was still intact.



CASE STUDY

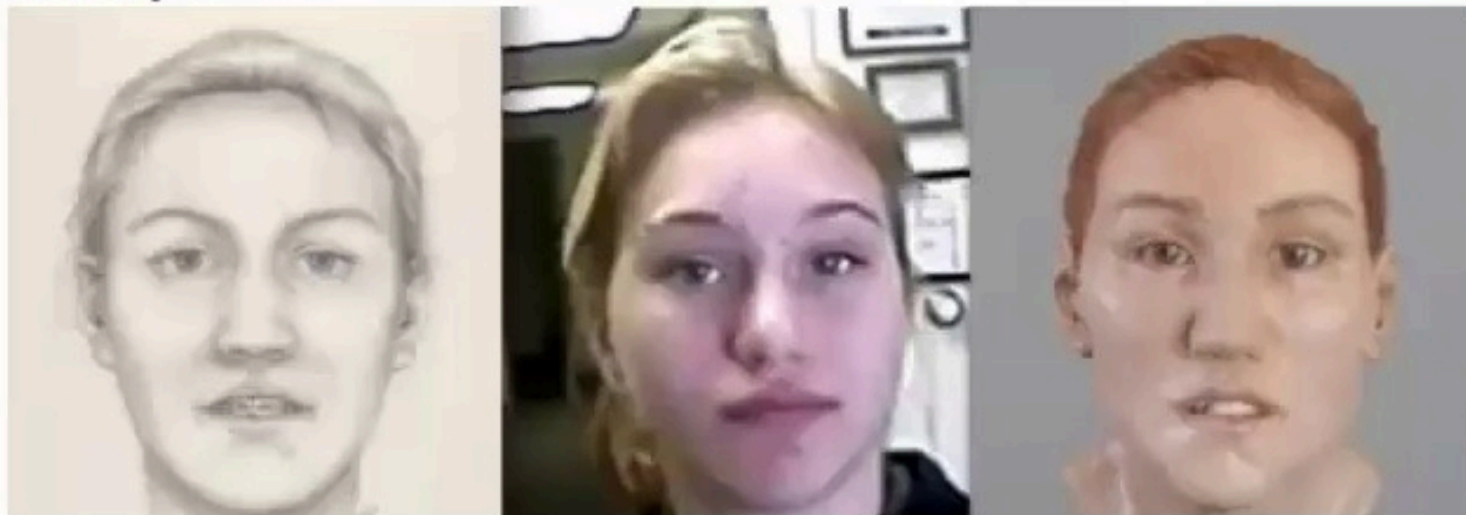
- She went unidentified for a year before the cleaned skull was submitted to a forensic artist/facial identification specialist.
- She developed 2D reconstruction drawings based on info from the pathologist and anthropologist.



CASE STUDY

- An employee at a dental office saw the reconstructions and contacted authorities which ultimately led to her identification.

17 year old Marlaina "Niki" Reed, ward of the state and a runaway.



CASE STUDY

William MacIntosh, 51, was charged in 2010 for the murder.

- Detectives submitted a piece of denim cloth used to bind the legs of the victim.

The Autopsy



- An autopsy in its broadest **definition** is simply the examination of a body after death (i.e., a postmortem examination).
- **Clinical/hospital autopsy** focuses on the internal organs findings and medical conditions.
- The goal of a **forensic/medicolegal autopsy** is to determine the cause of death and confirm the manner of death, often to be used in criminal proceedings.

Documentation and Photography

Documentation – should include date, time, place, by whom the autopsy was performed, and who attended.

Photographs – photo injuries, with scale, and each photograph's location (log).

- **Negative photographs** depicting areas with NO injury are also important.
- **Correlate** external wounds with internal damage.

Evidence from the Autopsy

- The medical examiner or coroner will **carefully examine the victim** (internal and external) and develop meaningful correlations between the sustained injuries and the crime scene.
- Tissues and organs will be **retained** for pathological and toxicological examination.
- At the same time, arrangements must be made between the examiner and investigator to secure a **variety of items** that may be obtainable from the body for laboratory examination.....

Evidence from the Autopsy

- The following are to be collected and sent to the forensic laboratory:
 1. Victim's clothing
 2. Fingernail scrapings/clippings
 3. Combing from head and pubic hairs
 4. Buccal swab (for DNA typing purposes)
 5. Vaginal, anal, and oral swabs (in sex-related crimes)
 6. Recovered bullets from the body
 7. Hand swabs from shooting victims (for gunshot residue analysis)
 8. Swabs of body areas suspected of being in contact with DNA arising from touching or saliva

External Examination

- The **first steps** taken for the external examination include a broad overview of the condition of the body and the clothing.
- Damage to the clothing should be **matched up** to the injuries.
- **Note** presence of tattoos, scars, track marks, medical intervention.
- Paper bags are put on hands to preserve trace evidence.

External Examination

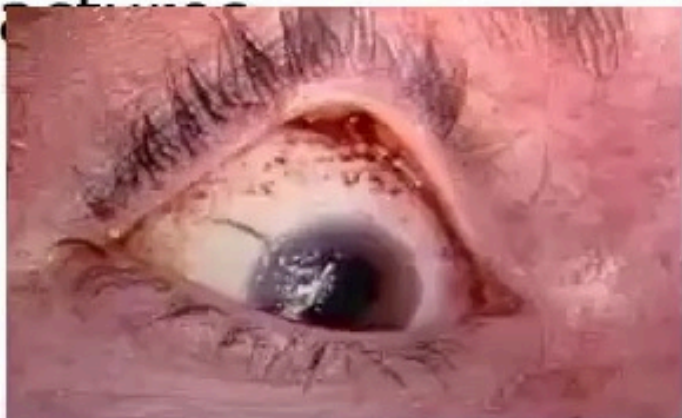
- The external examination also consists of **classifying the injuries**. This includes distinguishing between different types of wounds:
 1. Stab wounds (sharp-injury wounds)
 2. Gunshot wounds
 3. Abrasions
 4. Contusions (bruises)
 5. Lacerations (BFT)



External Examination

- Look for **other injuries** to the body that can give you information....for example
 1. Petechiae – hemorrhages in the eyelids - strangulation
 2. Damage to genital area – signs of sexual abuse
 3. Stippling or tattooing around a bullet hole - distance

X-rays are used to locate bullets, bullet fragments, knife fragments, shot pellets, etc. Can also identify bone fractures



External Examination

Gunshot wound



**Stellate
Tearing**



Shaved wound



Close-up of Bullet

**Nose of bullet
with trace**



Base of bullet

Stippling/Tattooing

Skin must be primary contact – will not see this if the bullet went through clothing first.



Internal Examination

- The dissection of the human body generally entails the **removal of all internal organs** through a Y-shaped incision beginning at the top of each shoulder and extending down to the pubic bone.
- Performing the internal examination **entails** weighing, dissecting, and sectioning each organ of the body.
- Portions of the internal organs are retained for microscopic examination.



**Healthy
Liver**

**Unhealthy
Liver**



Toxicology

- The internal examination is also where toxicological specimens are taken. These **include** samples of **blood**, stomach content, bile, urine, brain, liver, and vitreous humor.
- Blood is often **routinely tested** to determine the presence and levels of **alcohol and drugs**. Never collect blood from the body cavity, may be contaminated.



Stomach Contents



Toxicology

- **Substance abuse is so common**, that a forensic pathologist will routinely order toxicological tests for the presence of drugs in nearly all autopsies.
- **Postmortem Redistribution** - Some drugs redistribute or reenter the blood after death and thus may complicate the interpretation of postmortem blood levels of these drugs.
- Toxicology results can help determine if the levels present in the body are therapeutic, toxic or fatal.



Cause of Death

- A **primary objective** of the autopsy is to determine the cause of death.

Definition: Identifies the injury or disease that led to the chain of events resulting in death.

In the case of prolonged death:

- The decedent may have actually suffered from **adverse medical conditions** brought on by the initial injury then die as a result of those conditions.
- Pathologists job is to **determine** if the underlying cause of death was the initial injury inflicted.

Cause of Death

Common causes of death:

1. Blunt force injury
2. Sharp force injury
3. Asphyxia
4. Gunshot wound
5. Substance abuse

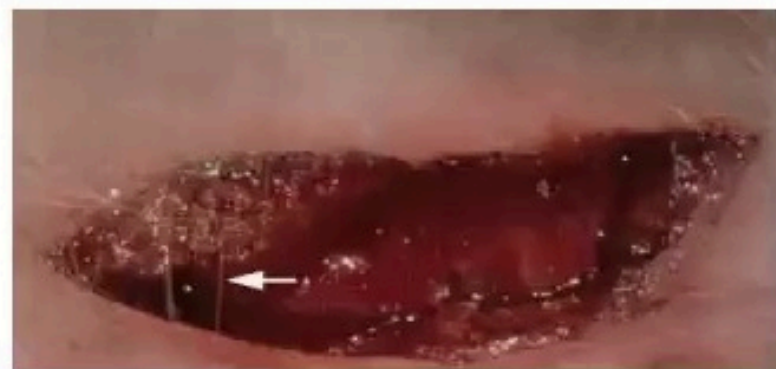


Cause of Death

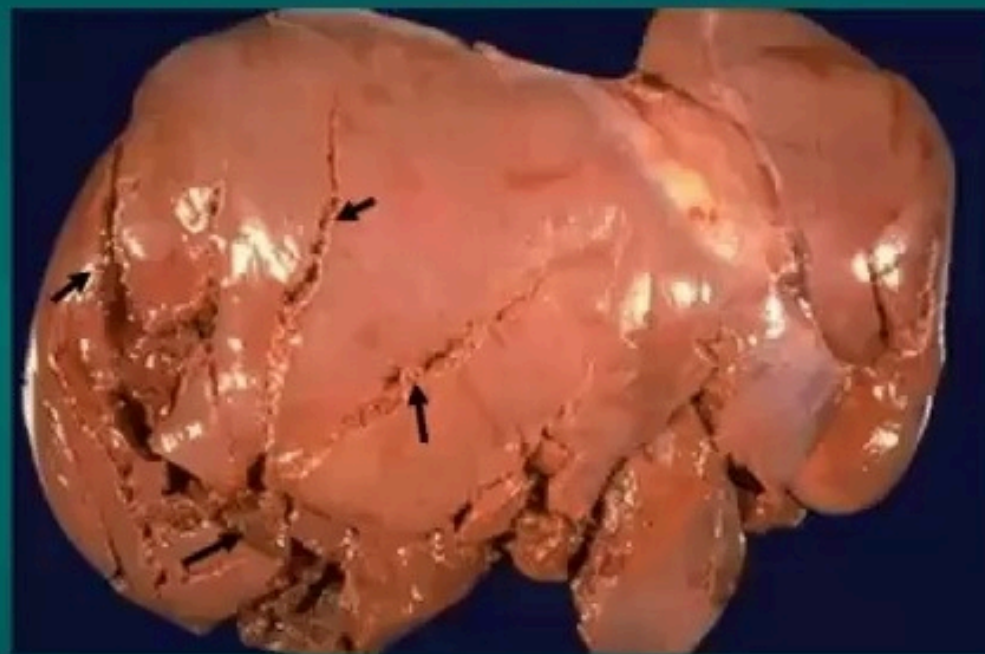
- **Blunt force injuries:**

- Are caused by a **non-sharpened object** such a bat or pipe.
- Can cause **lacerations** (skin splitting and tearing).
- Can crush tissue and cause bleeding from tiny ruptured blood vessels within and beneath the skin, known as a **contusion (bruise)**.
- Exhibit abrasions around the open wound, tissue bridging within the open wound, and torn or disturbed tissue beneath the skin surrounding the open portion of the wound.
- Bruises can sometimes exhibit the pattern of the weapon used.

- **Blunt force injuries:**

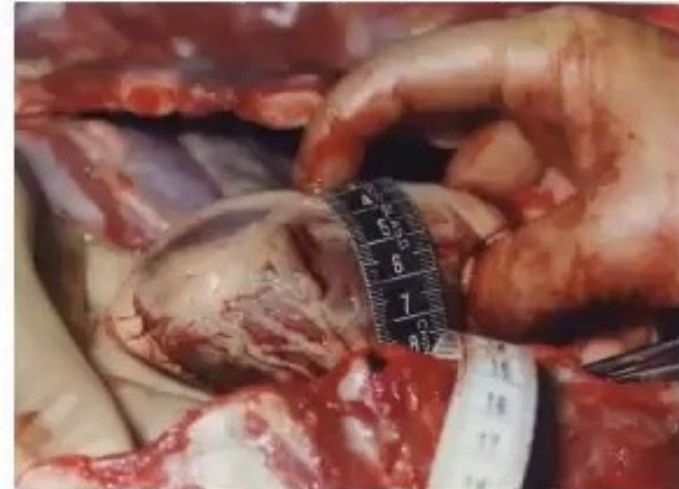


**Fractured Liver:
Blunt Force Injury**



Cause of Death

- **Sharp force injuries** occur from weapons with sharp edges, such as knives, blades or glass.
 1. Cut – is longer than it is deep
 2. Stab – is deeper than its length
- Tissue is not torn or crushed but **sliced**.
- The scene is usually very bloody.



Note: presence or absence of defensive wounds on the victim. Usually occurs on the forearms and hands as the victims fights off the attacker.

What do the lack of defense wounds tell you???

Victim tied up or unconscious during the assault.