Forensic Science

Other Forensic Science Services
Forensic Pathology

- This field deals with the investigation of sudden, unnatural, unexplained, or violent death.
- The forensic pathologist in the role of either the coroner or medical examiner has the responsibility to answer the question...
  - Who was the victim?
  - What injuries are present?
  - When did the injuries occur?
  - How or why were the injuries produced?
The primary role of the medical examiner

- Determine the cause of death.
- If a cause cannot be found through observation, an autopsy is normally performed to establish the cause of death.
- The manner in which death occurred is classified into FIVE categories.
  - Natural
  - Homicide
  - Suicide
  - Accident
  - Undetermined
The human body goes through several stages of decomposition.

Time of death can usually be determined by degree of decomposition.

Immediately following death, the muscles relax and become rigid without the shortening of muscle. This condition is known as RIGOR MORTIS, which manifests itself within 24 hours and disappears in 36 hours.
Livor Mortis

- When the human heart stops pumping, blood begins to pool in the lowest position of the body: (Portions of the body closest to the ground).
- The skin will appear dark blue over these areas.
- The onset of this condition occurs immediately at death, and continues for up to twelve hours.
- This information is useful when determining the position of death, or weather the body has been moved.
Algor Mortis

- Algor Mortis is the process in which body temperature continually cools after death until it reaches the ambient room temperature.
- Factors that affect heat loss are:
  - Location
  - Size of the body
  - Victims Clothing
  - Weather Conditions.
- As a general rule, beginning at the hour of death, the body will lose heat at a rate of 1 to 1 ½ degrees Fahrenheit per hour until the body reaches environmental temperature.
Other approaches for determining time of death.

- Potassium Levels in the ocular fluid of the Vitreous Humor.
- Cells inside the eye at the time of death begin releasing Potassium into the “Eyes” fluid. The effect is the increasing cloudiness of the eye.
- Therefore the more cloudy the eye...the longer the victim has been dead!
Other Factors During An Autopsy to help calculate time of death.

- The amount of food in the stomach!
- Typically it takes ~3 hours for a full meal to pass from your stomach into the small intestine.
- Medical Examiners must perform an autopsy in the case of suspicious or questionable deaths.
- The cause of death is not always what it appears at first glance!
Forensic Anthropology is a specialty that is concerned with the identification and examination of human skeletons.

Bones can take decades to centuries to decompose…a lot slower than skin.

Skeletal examination can reveal the gender, age, race, skeletal injuries.

The Forensic Anthropologist can through scientific findings with the assistance of computers create a 3-D images of the bones and perhaps a reconstruction of the face.

Natural Disasters / Tragedy.
Forensic Entomology

- The study of insects and their relation to a criminal investigation in known as Forensic Entomology.
- The techniques can be used to determine the cause of death, when circumstances around the death are unknown.
- The insect of choice is the “Blow Fly”, which characteristically lays its eggs in the dead flesh... The entomological aspect is a simple progression from egg... to adult fly, eating the flesh along the way!
- The knowledge of the Flies life cycle can help identify the time of death for the victim.
Forensic Psychiatry

- Forensic Psychiatry is a specialized area in which the relationship between human behavior and legal proceedings is examined.
- For Civil Cases, Forensic Psychiatrists normally determine whether people are competent preparing wills, settling property, or refusing Medical Treatment. In Criminal Cases they determine whether people are competent for trial.
- Also, help establish criminal profiling of a suspect.
Forensic Odontology

- Provide information about identification of victims when the body is left in an unrecognizable state.
- Teeth are composed of enamel...the hardest surface in the body, so it will outlast other more fragile tissues and organs.
- The use of dental X-rays along with records can help identify the remains of victims.
- Another application is “Bite Mark Analysis”.
Forensic Engineers are concerned with failure analysis, accident reconstruction, and cause and origins of fires and explosions.

These scientists answer the “BIG Questions”.

- How did the accident or structural failure occur?
- Were the parties involved responsible?
- Accident scenes are examined, photographs are reviewed, and any mechanical objects involved are inspected.
Thank you for Your Attention

- I Hope you took notes…you will see this on your up-coming TEST.
- Please refer to your Plan of The Week for your next assignment.