**Unit 2: Time of Death**

Meaning of Death: End of life where an “irreversible cessation of circulation of blood” occurs and brain activity stopped.

Manner of Death: Means by which they died

* Natural
* Accidental
* Suicidal
* Homicidal
* Undetermined

Cause of Death: Reason they died

* Ex. Natural
	+ Heart attack
	+ Stroke
	+ Respiratory failure
* Ex. Homicide/Suicide
	+ Hanging
	+ Drowning
	+ Asphyxiation
	+ Poison
	+ Gunshot wound
		- Stippling (powder burns) indicating gun was a few inches away
		- Starring indicating barrel touching skin
	+ Strangulation
		- Petechial hemorrhage as a result of strangulation

Mechanism of death: is the specific change in the body that brought about the end of life

* Cause: Shooting Mechanism: Loss of blood

Time of Death: When they died. Examples:

* **Livor Mortis**: pooling of blood in tissues after death (lividity)
	+ Can determine if body was moved
	+ Begins 1-2 hrs. after death
	+ 2-8 hrs.: color disappears when skin is pressed
	+ >8 hrs.: permanent discoloration
	+ Factors affecting Livor Mortis
		- Hot day/area– blood pools faster
		- Cool day/area: slower process
* **Rigor Mortis**: stiffening of skeletal muscles after death
	+ Cause: no oxygen to cells  calcium buildup  muscle fibers remain contracted
	+ Starts 1-2 hrs. after death
	+ Starts at head, travels to legs
	+ 12 hrs: most rigid
	+ Stiffness disappears after 24-48 hrs.
	+ Factors affecting rigor mortis:
		- Ambient temperature
		- Person’s weight
		- Type of clothing
		- Illness
		- Level of physical activity shortly before death
		- Sun exposure



* **Algor Mortis**: cooling of body after death
	+ Temperature loss in a corpse
	+ Thermometer inserted in liver
	+ 1 hr. after death: cools 1.4°F per hour
	+ After 1st 12 hrs: cools 0.7°F per hour until it reaches surrounding temp.
	+ Factors affecting algor mortis:
		- Cooler environment – lose heat faster
		- Windy – fast heat loss
		- Excess body fat – slows heat loss
		- Clothing – slows heat loss
	+ Rule of thumb: 1°F per hour
* **Stomach and intestinal contents**:
	+ 0-2 hours after last meal: undigested stomach contents present
	+ 4-6 hours after meal: stomach empty, food in S.I.
	+ 12+ hours after meal: S.I. empty, wastes in L.I.
* **Changes of the eye:**
	+ Thin film on eye surface:
		- 2-3 hours (eyes open)
		- 24 hours (eyes closed)
* **Insects** (forensic entomology)
	+ Flies and maggots also provide an approximate time of death, very useful for cases where the body has been long dead.
	+ Only certain insects will feed and lay eggs on a dead corpse and forensic entomologists study these insects, their larvae cycles and thereafter can determine whether a body has been dead for just one day or up to 3 or 4 weeks.



* 0-3 days: Proteins and carbohydrates in the Blowflies: Bluebottle flies, deceased body begin to break down. Syrphidae flies
* 4-7 days: Body is starting to decay and causes the Fly larvae and beetle

abdomen to inflate because of the gases inside.

* 8-18 days: Decay is well and truly setting in; the Ants, cockroaches, beetles and flies

abdomen wall begins to break down.

* 19-30 days: The decaying body enters a stage know Beetles and mites, Acari

as 'post-decay'; in wet, humid conditions, Nematocera, Brachycera

the body is sticky and wet; in hot dry conditions,

the body is dried out.

* 31 and over days: The bones, skin and hair that remain no
longer give off a powerful stench and smell
just like the soil surrounding it.
* **Stages of Decomposition**
	+ 0-2 Days: Green, purplish stains. Skin: marbled appearance. Face discolored. Flies lay eggs on corpse
	+ 4 Days: Skin blisters. Abdomen swells (CO2 gas released by bacteria in intestines). Maggots on corpse
	+ 6-10 Days: Corpse bloats with CO2, chest and abdomen burst and collapse. Fluids leaks from body openings. Eyeballs and other tissues liquefy. Skin sloughs off. More eggs, maggots, flies, beetles
	+ 10-20 Days: Bloated body collapses. Flattened body, creamy flesh. Strong smell of decay. Fluids drain and seep