Chapter 11 ***Death: Meaning, Manner,
Mechanism, Cause, and Time***

Real CSI: Crime Autopsy Notes

Pig Decomposition Notes

The Body Farm Notes

The Definition of Death

* In the 17th Century, before the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, anyone in a coma or a slow heart rate was presumed dead and was buried.
* Cessation, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Irreversible cessation of blood circulation
	+ Cessation of all brain activity
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Autolysis-

The manner of death can be

* Natural, the most common, caused by interruption and failure of body functions resulting from age or disease
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Suicidal
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Undetermined
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the Manner of Death in these cases?

* A man with a heart condition is attacked and dies from a heart attack during the assault.
* An elderly woman dies after being kept from receiving proper health care by her son.

Cause and Mechanism of Death

*Cause of the death* is …

*Proximate cause of death* …

*Mechanism of death* …

\*\*usually only “Cause” and “Mechanism” are listed on the death certificate\*\*

Time of Death- Livor Mortis

The Color of Death

* ***Lividity****—*
* Lividity begins about \_\_\_\_\_\_\_\_\_\_\_ hours after death
* Discoloration becomes permanent after \_\_\_\_\_\_\_\_\_\_\_\_\_ hours
* Ambient temperature affects the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of decomposition
* Lividity can determine the position of the body during the first \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_hours
* Dual lividity could occur if the body was kept in one position \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hours after death and then moved to a second position before the lividity became permanent.

Time of Death- Rigor Mortis

**The Rigidity of Death** (Stiffness)

* Without oxygen in the blood—
* Starts in the \_\_\_\_\_\_\_\_\_\_\_ and expands throughout
* Begins after 2 hours
* After about 15 hours—



Explain this picture:

|  |  |
| --- | --- |
| **Observation** | **Approx. Time Scale** |
| The body is at its most rigid state |   |
|  | Less than 2 hours or more than 48 hours ago |
|  |  |

**Factors affecting rigor mortis:**

* Ambient temperature
* General health of person at time of death
* Sun exposure

Time of Death- Algor Mortis

**Death heat (describes temperature loss)**

* Body heat falls after death
	+ About 1.5 degrees per hour immediately after death
	+ Heat loss is affected by the ambient temperature
* Time of death is expressed as a range of time

|  |  |
| --- | --- |
| **State of Contents** | **Timing of Death** |
| Undigested food present in the stomach | Zero to two hours after the last meal |
| Stomach is empty, but food found in small intestine | Death occurred at least four to six hours after a meal |
| Small intestine is empty; waste found in large intestine | Death occurred 12 or more hours after a meal |



Time of Death- Stages of Decomposition

1. Fluids begin to leak from body openings as cell membranes rupture
2. Discoloration of the face
3. The skin sloughs off
4. The skin blisters
5. Green and purplish staining from blood decomposition
6. The corpse bloats
7. Eyeballs and other tissues liquefy
8. The abdomen swells
9. Marbling appearance on the skin

\*The speed of decomposition depends on the person’s:

 1) 2) size of body 3) nature of death 4)

Dirty Jobs- Decomposition Notes:

Time of Death- Insects

Forensic entomologist

* + Collects insect evidence from on, above, and below the body
* As the corpse decomposes, other kinds of insects arrive

Time of Death- Blowfly Life Cycle

1. <8 hours after death—blowfly eggs can be found in the moist, warm areas of a corpse
2. Within 20 hours—1**st** of their 3 larva stages

3. 4**th** or 5**th** day—3**rd** of their 3 larva stages

1. 8 to 12 days—larvae migrates to a dry place
2. 18 to 24 days— Early pupa; immobile; changes from light brown to dark brown
3. By the 21**st**-24**th** day the pupa cases will split open and adult blowflies will emerge.



Insect Timeline

* 1.8 days First Stage (instar 1) V-shaped
* 2.5 days Second Stage (instar 2) two spiracles
* 4-5 days Third Stage (instar 3) three spiracles

Accumulated Degree Hours (ADH)

1. Immediately preserve some insects from the crime scene.
2. At the crime lab, raise some of the insects from the crime scene in the same conditions as those found at the crime scene

3.

4.

* The insect life cycle provides scientists with a benchmark to estimate a time of death
* Insect evidence cannot provide:

 \*

 \*

 \* Insect evidence provides a close estimate and may provide proof that the corpse has been moved.

Summary: