



Round : Forensic medicine

Group no : A4

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DEATH & POST- MORTEM CHANGES

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مصدر للمحاضرة:

https://youtu.be/l4OFNdmiduw?si=y9Zg9RlcT5WP18_F

https://youtu.be/o_LJAFeg-lU?si=P6BEZ-phf93j1Vsv





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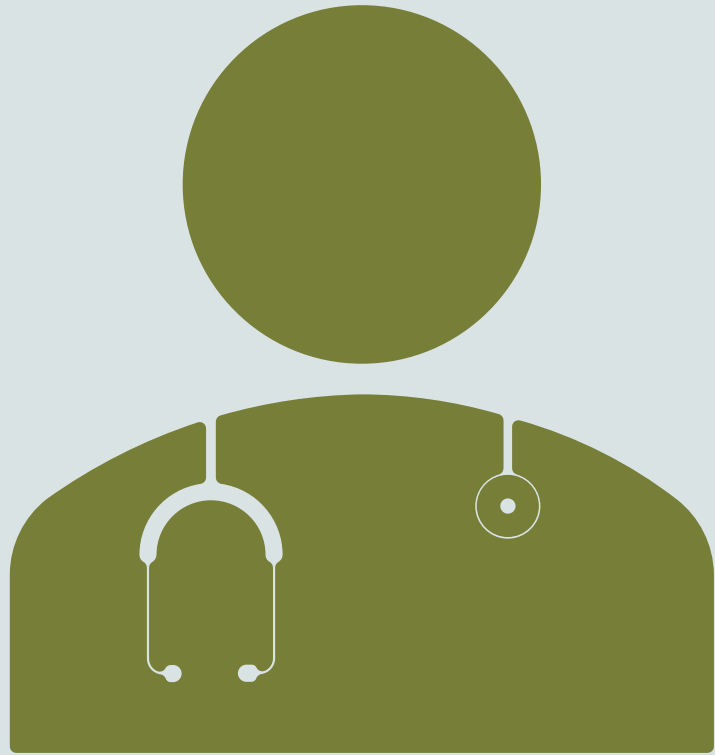


DEATH DEFINITION



Medically and scientifically, death is **not an event**, it is a **process**.

Process means not all cells die together (brain die first then gradually other tissues will be dead).



One hundred years ago, it was priests who declared a person dead. Now, doctors have taken that role.



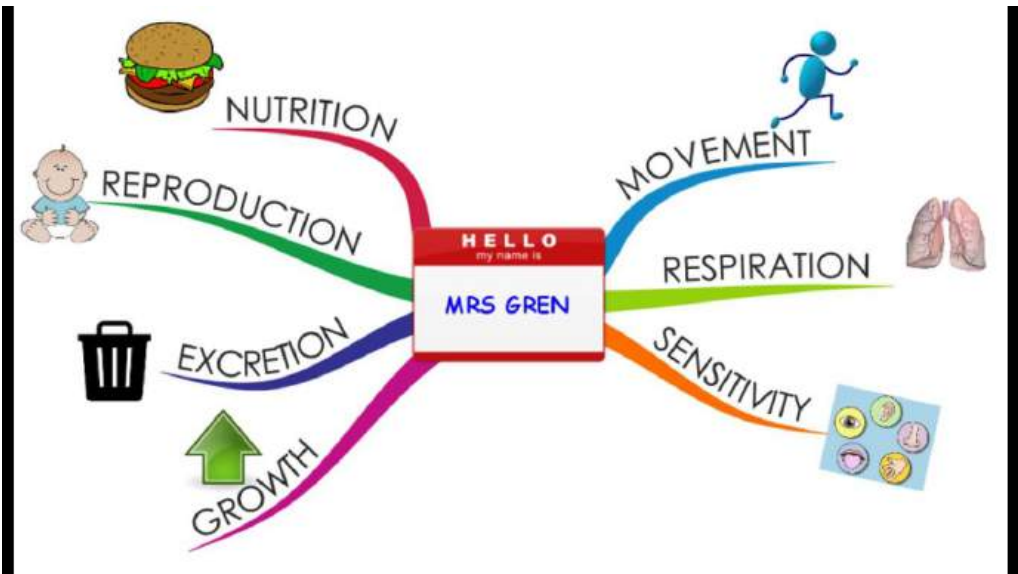


The 7 Life Processes

Death

The absence of the 7 vital life processes!

1. Movement
2. Reproduction
3. Growth
4. Respiration
5. Nutrition
6. Excretion
7. Sensitivity



Death

- The irreversible cessation of all integrated functioning of the human organism as a whole, mental or physical
- legally defined as the irreversible cessation of function of 3 systems:
 - (1) **CNS**
 - (2) **RS**
 - (3) **CVS**
- Before the 1960's, death was diagnosed only by **cardio-pulmonary** criteria: **CNS** criteria are new to the list.

TYPES OF DEATH

+ In this stage life can not be restored even if the heart and lungs are artificially supported

+ When the brain is irreversibly damaged due to prolonged lack of oxygen (anoxia)

1. **SOMATIC DEATH:** The permanent, irreversible death of an organism as a whole. The person irreversibly loses its sentient personality, becomes unconscious, unable to be aware of (or to communicate with) its environment, and unable to appreciate any sensory stimulator to initiate any voluntary movement.

The first stage of death

2. **CLINICAL DEATH:** From the point of view of medicine, it is preceded with the heartbeat cessation.

Visible signs of the state of failure of the living organism actions such as 1. heart beating, 2. respiratory function or 3. blood circulation. It lasts for about four minutes and it is the interval in which life can be brought back

through CPR. + Brain cells may stay alive for this time due to residual oxygen » if the circulation is restarted within this window the person may recover without permanent brain damage, it not the brain enters irreversible damage

3. **CELLULAR DEATH:** The tissues and their constituent cells are dead, that is, they no longer function or

have metabolic activity, primarily aerobic respiration (the utilization of oxygen). Different tissues die at

different rates, the cerebral cortex being vulnerable to only a few minutes of anoxia, whereas connective tissues and even muscle survive for many hours, even days after the cessation of the circulation.

+ Starts after somatic death



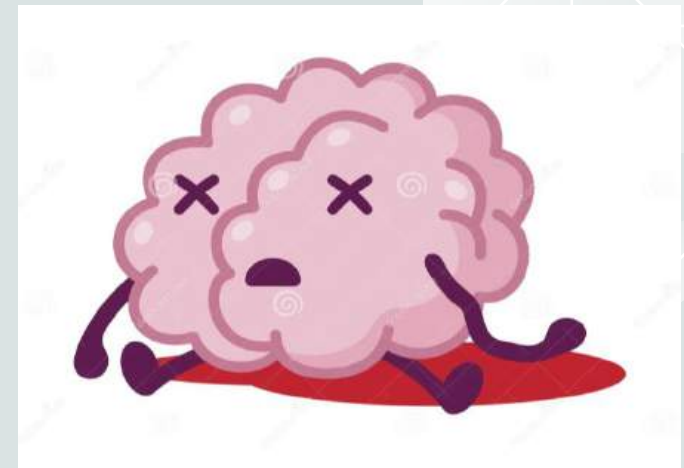
Complete and irreversible loss of brain function

4. BRAIN DEATH:- The actual number of minutes for which total anoxia will cause cortical damage is controversial; it was formerly held that 3 minutes was sufficient, but this time has been extended to 7 or 9 minutes. After few minutes, the brain cannot be brought back to life by any means available today.

✚ Only the cerebrum is damaged while the brainstem remains intact

- When the higher levels of cerebral activity (above tentorium) are selectively lost, either from a period of hypoxia, trauma, or toxic insult, the victim will exist in a "vegetative state".

- Here the survival of the brainstem ensures that spontaneous breathing will continue and therefore cardiac function is not compromised. The victim can remain in deep coma almost, but they are not on life-support machines. It is another matter when brain death spreads below the tentorium.

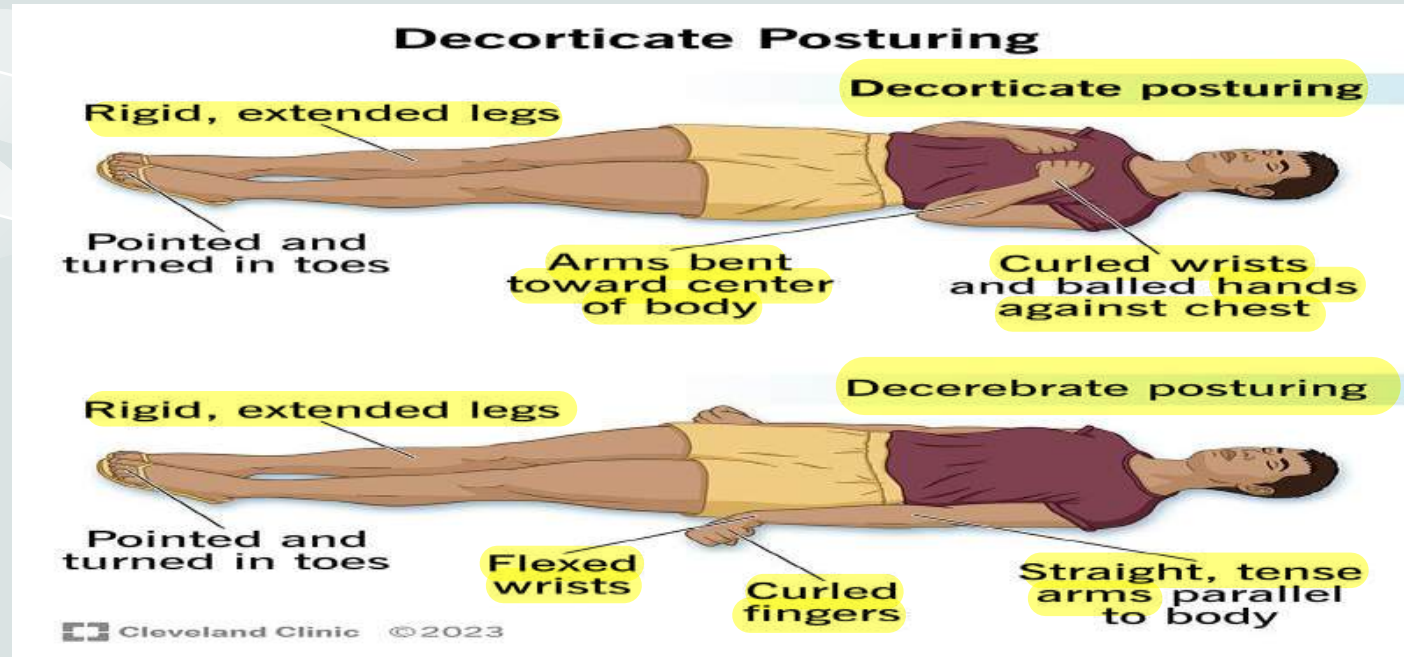


-Brainstem suffers neuronal damage; the loss of the "vital centers", and of the ascending reticular activating system, cause the victim not only to be irreversibly comatose, but also to be incapable of spontaneous breathing and the heart stops. The patient now needs life support machines.

-This then is the state of "brainstem death", and almost all doctors and most jurisdictions now accept that, once irreversible damage to the brainstem has been proved, the patient is "dead" in the somatic sense.

-They are, however, not yet dead in the cellular sense and it is through this "physiological window" that the spectacular advances in cadaver donor transplant surgery have been made.

-Brainstem death is a clinical syndrome defined by the absence of reflexes with pathways through the brainstem in a deeply comatose, ventilator-dependent patient. No abnormal decorticate or decerebrate postures should be present.



ms

Apparent Death: A state of suspended animation that mimics death; it occurs in electrocution, hypothermia, sun stroke, drowning, drug overdose (eg, barbiturates), and head injury. Suspended animation is the slowing of life processes by external means without termination. We can know if it is true death only by ECG and EEG.



Difference Between Cause, Mode, And Manner

1. Cause of Death: Any injury or disease that produces a physiological derangement in the body that results in the death of the individual. Examples: a gunshot wound to the head, a stab wound to the chest, adenocarcinoma of the lung, and coronary atherosclerosis.

✦ It's the specific injury or disease that directly caused the death, the actual medical reason why the person died

2. Mode/Mechanism of Death: An abnormal physiological state that pertained at the time of death "produced by the cause". Examples: coma, congestive cardiac failure, cardiac arrest and pulmonary oedema. These offer no information as to the underlying pathological condition and should not be used as the definitive cause of death unless further qualified by the more fundamental etiological process.

✦ The physiological or biochemical disturbance caused by the underlying condition that ultimately leads to death, the process of death

3. Manner of Death : Manner refers to the circumstantial events and is a legal categorization : natural, accident, homicide, suicide, undetermined (2-5%), or pending investigation.

✦ The circumstantial and legal classification of death based on how it occurred

THE CAUSE OF DEATH

is the specific illness or injury that caused the death



Cancer

Stroke

Kidney Disease

Heart Failure

COPD



THE MANNER OF DEATH

is the category that a death falls into



Natural Death

Accidental Death

Suicide

Homicide

Undetermined



THE MECHANISM OF DEATH

is the exact reason why death occurred



Excessive blood loss

Lack of oxygen

Cardiac arrhythmia

Respiratory depression and paralysis

Sepsis





Example

An individual can die of **massive hemorrhage** (the mechanism of death) due to a **gunshot** wound to the heart (the cause of death), with the manner of death being **homicide** (somebody shot the individual), **suicide** (they shot themselves), **accident** (the weapon fell and discharged), or **undetermined** (one is not sure what occurred).

Medico-legal Aspects

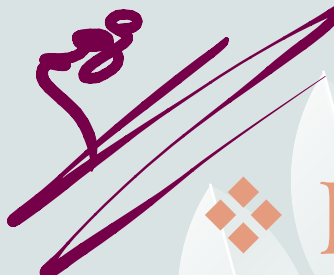
ITS MAIN AIM IS TO ESTABLISH THE IDENTITY OF THE BODY OF UNKNOWN BODY, TO FIND OUT THE TIME OF DEATH AND THE CAUSE OF DEATH; AND WHETHER THE DEATH IS NATURAL OR UNNATURAL AND IF DEATH IS UNNATURAL, WHETHER IT WAS HOMICIDAL, SUICIDAL OR ACCIDENTAL.

❑ **DIAGNOSING DEATH IS IMPORTANT MEDICO-LEGALLY:-**

- To detect the cause of death.
- To know the time of death
- For social reasons
- For organ donation
- For recognizing apparent death
- For statistical reasons
- For heritage reasons

Body changes after death

- Initially these changes can only be detected **biochemically** as the metabolism in the cells alters to autolytic pathways. Eventually the **changes become visible**, and these visible changes are **important for two reasons**:
 1. Because a doctor needs to know the **normal progress of decomposition** so that he does not misinterpret these normal changes for signs of an unnatural death
 2. Because they can be used in determining **how long the individual has been dead.**



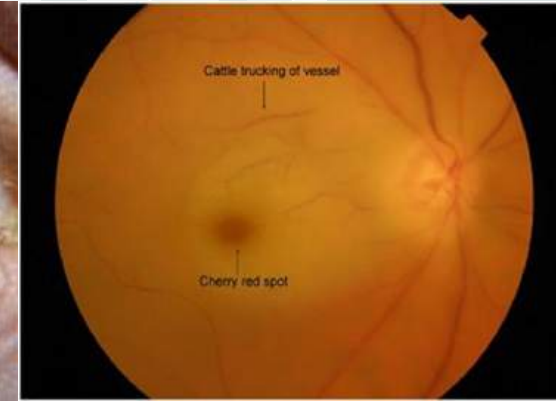
❖ Post-mortem signs of death can be roughly estimated by:

- **IMMEDIATELY** (Loss of reflexes, permanent cessation of RS & CVS)
 - **EARLY** (Eye, pale skin, muscles "primary flaccidity", gastric "relaxation" of LES and regurgitation)
 - **LATE** (Algor mortis, livor mortis, rigor mortis)
 - **VERY LATE** (Decomposition)
-

Early Changes

Eye

- Loss of corneal and light **reflexes**.
- **Mid-dilated** pupils. + This is commonly seen in head trauma cases, neurological conditions before death
- Irregular size and shape of the pupils (**anisocoria**).
- Loss of intraocular tension. The eye will lose its firmness
- The retinal vessels show the breakup or fragmentation of the columns of blood, which is called '**trucking**' or '**shunting**'
 - + Segmented or broken appearance of blood columns in the retinal vessels

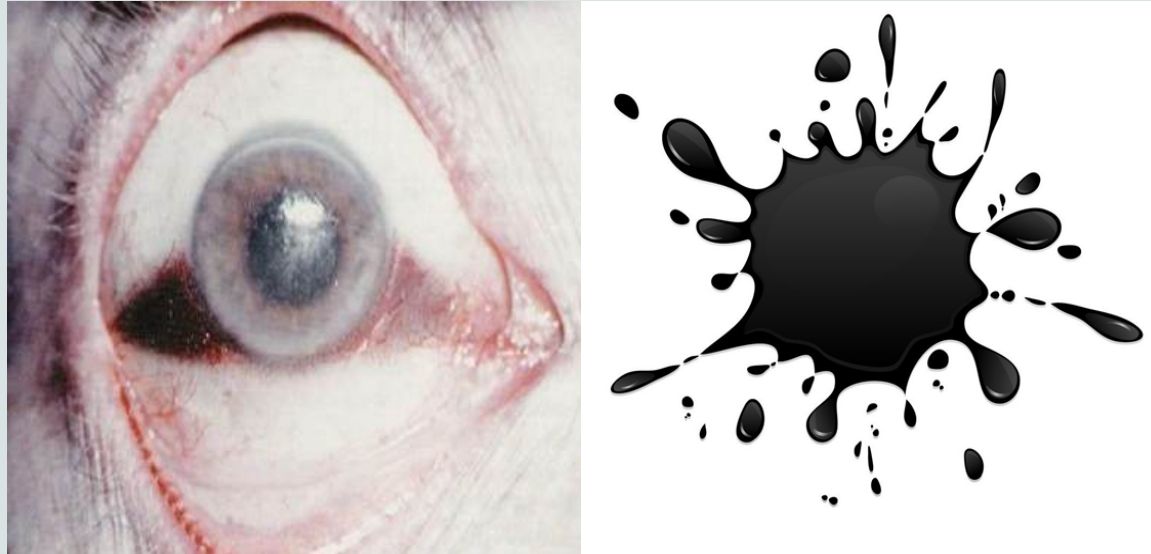


Early Eyelids

Eyelids usually closed **incompletely**.

***Tache noire**: where the sclera remains exposed to air, two black triangular spots appear at each side of the cornea (due to drying).

✦ It's a sure signs of death



Early Muscles

- I. The muscles rapidly become flaccid (**primary flaccidity**), with complete loss of tone, but they may retain their reactivity and may respond to touch and other forms of stimulation for some hours after cardiac arrest.
- II. Discharges of the dying motor neurons may stimulate **small groups of muscle cells and lead to focal twitching**, although these decrease with time.
- III. Loss of muscle tone in **the sphincters** may result in **voiding** of urine; this is such a common postmortem phenomenon. This relaxation of urinary sphincters is utilized in estimating the postmortem interval, contributing to forensic investigations.

Early Skin

A. The **fall in blood pressure** and cessation of circulation of the blood usually render the skin, conjunctivae and mucous membranes **pale**.

B. The **hair follicles die at the same time** as the rest of the skin and there is no truth in the belief that hair continues to grow after death, although the beard may appear more prominent against a pale skin.

C. The skin of the **face and the lips** may **remain red or blue in color** in **hypoxic/congestive deaths**.

Early Stomach

a. Gastric contents are identified in the mouth or airways in up to 25 % of all autopsies.

b. B. Regurgitation is a very common feature of terminal collapse, and it is a common complication of resuscitation.

-The presence of this material cannot be used to indicate that inhalation was the cause of death unless it is supported by eyewitness accounts or by the **microscopic identification of food debris in the peripheral airways.**

Mechanism of Algor Mortis

- ❖ **BODY COOLING/ALGOR MORTIS:** After death, the individuals no longer produce body heat or cooling mechanisms, and the descent temperature slowly approaches ambient temperature.
- ❑ Normal body temperature when taken orally (36-37.2 C), rectally (36.5-37.5 C), when the rectal temperature falls below 24 C it is indicative of death and below 21 C it is a sure sign of death.
- ❑ **THE RATE OF BODY COOLING:** 1C/ hr in summer and 1.5 C/ hr in winter. It usually remains stable for an hour then starts to change.
- ❑ **TWO OF THE FORMULAS THAT ARE THE EASIEST TO USE ARE:**
 - Time since death = $37^{\circ}\text{C} - \text{rectal temperature (C)} + 3$
 - Time since death = $(98.6 \text{ F} - \text{rectal temperature (F)}) / 1.5$.
- ❑ **SUCH DETERMINATIONS MAKE TWO ASSUMPTIONS THAT MAY NOT BE TRUE:**
 - The body temperature at death was normal.
 - Body cooling follows a progressive repetitive pattern.

• Variations in rectal temperature:

-LOW: Cholera, prolonged exposure to cold, CHF, severe collapse.

-HIGH: CO poisoning, coronary thrombosis, ruptured aortic aneurysm, heat stroke.

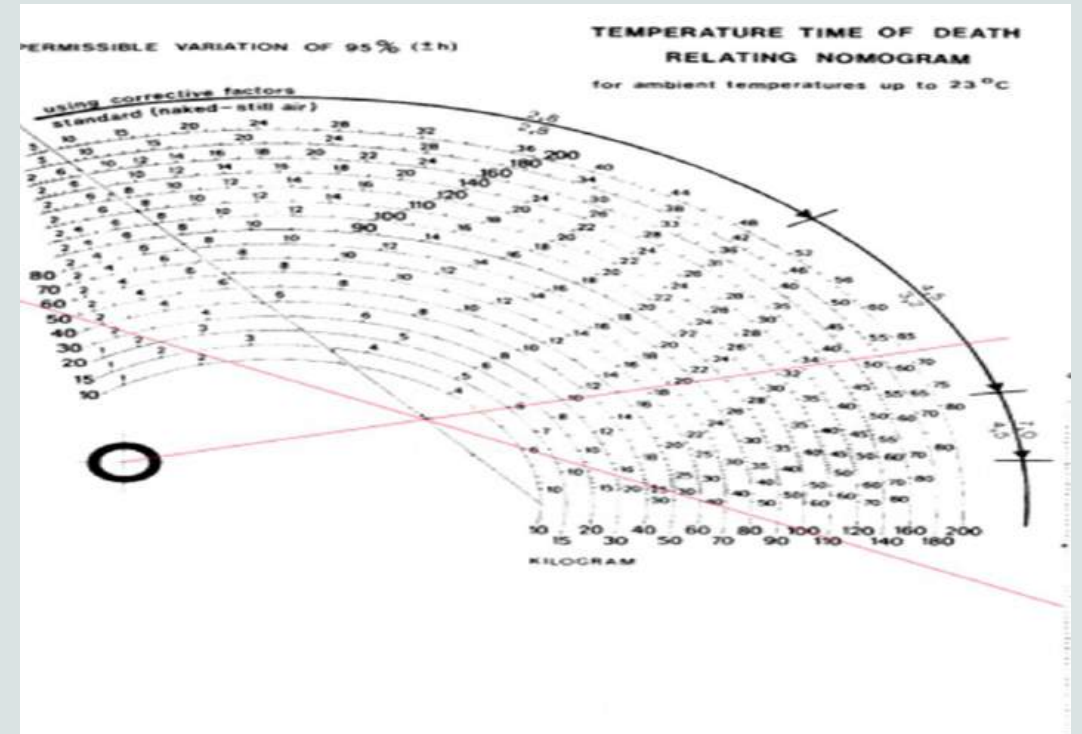
Pontine hemorrhage, infections, asphyxia, exercise before death.



Henssge's Nomogram

-THE MOST USEFUL
METHOD OF ESTIMATING
THE TIME OF DEATH:

1. BODY WEIGHT.
2. BODY TEMPERATURE.
3. AMBIENT TEMPERATURE



❖ Factors affecting algor mortis:

1. BODY SURFACE AREA: Larger surface area speeds up cooling rate.

- Children: large surface area gives rapid heat loss. Edema slows cooling rate. Because water retains heat

2. BODY WEIGHT: Obese weight slows down cooling, thin body weight fastens cooling. Fat acts as an insulator preventing heat loss

3. CLOTHING AND POSTURE: Thick clothing traps body heat .. Curled up position retains heat while extended position allows faster heat loss

4. ENVIRONMENT: Higher humidity fastens cooling rate and rapid air velocity causes rapid cooling rate. Water fastens cooling rate (more rapid in flowing water than still water).

5. FULMINATING INFECTION (E.G. : SEPTICEMIA): The body temperature may continue to rise for some hours after death.

Bacterial overgrowth produces heat, high fever before death causes the body to remain warm for hours

Mechanism of Livor Mortis

- ❑ **Hypostasis/ livor mortis** occurs **when the circulation ceases**, as arterial propulsion and venous return fail to keep blood moving through the capillary bed and the associated small afferent and efferent vessels. Gravity then acts upon the now **stagnant blood** and pulls it down to the **lowest accessible areas**.
- ❑ The **red cells** are most affected, sedimenting through the lax network, but plasma also drifts downwards to a lesser extent, causing an eventual post-mortem "dependent oedema", which contributes to the skin blistering that is part of early post-mortem decay.
- ❑ The arrival of erythrocytes in the lower areas is visible through the skin as a **bluish red discoloration**, "hypostasis". It often begins as blotchy patches on both lateral and dependent surfaces, but also on the upper surfaces of the legs, especially thighs. These soon coalesce and slide down to the lowest areas.

✱ Overtime they merge together and spread uniformly



❖ The distribution of hypostasis depends on the posture of the body after death:

1. Supine position:



2. Vertical/hanging position:



-Chest, upper chest, and upper limbs :

-Face-down as in epilepsy, drunken victims whitening around nose and lips:

-In the feet, legs, and to lesser extent in the hands and distal part of the arms:



❑ The most common place is the back of the shoulders and neck, though they may appear on the front of the chest, even on a body lying on its back . they are more common in cyanotic, congestive types of death.

❑ **OTHER SITES "INTERNAL LIVIDITY":**

- I. **HEART:** Mistaken for MI.
- II. **LUNGS:** Mistaken for pneumonia.
- III. **INTESTINE:** Mistaken for hemorrhagic infarction.



- ❑ **COLOR OF HYPOSTASIS:** Variable and depends on the state of oxygenation at death.
It might be masked by dark skin colors , by jaundice or by some dermatological conditions.

Colour	Cause
<u>Dark blue-pink</u>	Cyanide poisoning
<u>Brown</u>	Methemoglobinemia
<u>Cherry pink</u>	CO poisoning (carboxyhemoglobinemia /cold temperatures)
<u>Pale</u>	Anaemia, hemorrhage (or normal in extremes of age).

❑ **TIMING AND PERMANENCE OF HYPOSTASIS:** Hypostasis starts from 1/2 an hour to many hour after death. The time is so variable that it has no significant role in determining the time of death.

- In summer hypostasis remain 24-36 hours.
- In winter it remains about 48 hours or more.
- In snow it remains much more.

❑ If the body is moved into a different posture, the primary hypostasis may either remain fixed, 1. move completely, 2. stay partly fixed and partly move, 3.

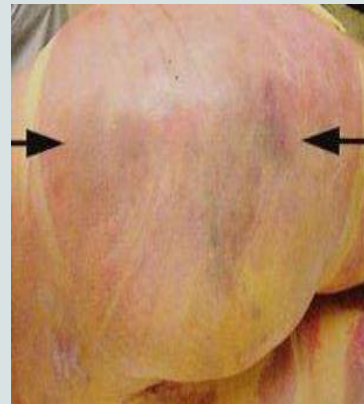
❑ **MEDICO-LEGAL IMPORTANCE OF HYPOSTASIS:**

1. Sure sign of death.
2. Cause of death.
3. Position before and after death.
4. Indicate if the body was moved or not after death.



HYPOSTASIS AND BRUISES

Hypostasis	BRUISES
Dependent area	Any where
Well-defined edges	Ill-defined edges
Blood is retained in intact capillaries	Blood escapes through ruptures capillaries
Same level on surface	Raised
Pale over pressure areas	Red
Incision: blood flows from the cut vessel (washable)	Incision: blood coagulates in tissue



Mechanism of Rigor Mortis

- ❑ **RIGOR MORTIS:** Temperature-dependent, **physicochemical** change that occurs within muscles cell bodies, **lack of oxygen causing** the limbs of the corpse to become **stiff** and **difficult to move** or **manipulate**.
- ❑ Death → cessation of respiration → depletion of oxygen → less ATP → secondary anoxic process → increase in lactic acid → cell cytoplasm becomes increasingly acidic → with low ATP and high acidity, the actin and myosin fibers bind together and form a gel → but Unlike normal muscle contractions, the body is unable to complete the cycle and release the coupling between the myosin and actin, creating a perpetual state of muscular contraction, until the breakdown of muscle tissue by digestive enzymes during decomposition.
- RM initiated when the ATP concentration **falls to 85% of normal**
- It starts to develop about **2-3 hrs after death**
- Rigor develops **uniformly throughout the body**, but it is first detected in **smaller muscle groups** such as those around the **eyes, mouth, jaw & fingers**
- Peaks in the next 6-12 hrs, it concludes around 36-48 hrs after death it resolves in the same order in which it develops **"secondary flaccidity"**.

❑ The decedent was found lying on his back with his head elevated under several pillows. He was in full rigor mortis.





❖ Factors affecting timing of Rigor Mortis:

1. **ENVIRONMENTAL TEMPERATURE**: Cold and wet → onset slow, longer duration "remain 36-48 hrs"; hot and dry → onset is fast, shorter duration "remain 24-36 hrs".
2. **MUSCULAR ACTIVITY BEFORE DEATH**: Muscles healthy and robust, at rest before death → slow onset; longer duration , Muscles exhausted/ fatigued → rapid onset, especially in those limbs being used; increased activity (convulsions, electrocution, lightning) → rapid onset and short duration.
3. **AGE**: Extremes of age → rapid onset.
4. **HEALTH**.
5. **OTHERS:-**
 - Rigor mortis may be delayed or be very weak in emaciated individuals.
 - Its onset may also be very rapid in infants.
 - Poisons, such as strychnine , that produce convulsions can accelerate the development of rigor mortis.

❖ Estimated Time Of Death:

Body Temperature	Muscles Tone	ETD
Warm	Flaccid	<3hours
Warm	Stiff	3-8hours
Cold	Stiff	8-36hours
Cold	Flaccid	>36hours

- RM in iris : May affect the eyes unequal, making the pupils unequal .
- RM in the heart: Contracted ,stiff LV may be mistaken for LV hypertrophy.
- RM in dartos muscle of scrotum : Rigor in dartos-> constricts testes and epididymis expulsion of semen.
- RM in erector pilli muscles attached to hair follicles : Goose bumps , hair stands up.

- ❑ It is best to test for rigor across a joint using very gentle pressure from one or two fingers only; the aim is to detect the presence and extent of the stiffness, not to “break” it. If rigor is broken by applying too much force, those muscle groups can not reliably be tested again.



❖ Conditions mistaken as rigor mortis:

1. **HEAT STIFFNESS:** Exposure of a body to intense heat (burning, high voltage electrocution, etc) → coagulation of muscular proteins muscular shortening.
2. **COLD STIFFNESS:** Exposure of the body to extreme cold ($<-5\text{ C}$) → solidification of subcutaneous fat and muscles, freezing of synovial fluid in joints.

Cadaveric Spasm:



→ Also known as **instantaneous rigor or rigidity**, or **cataleptic rigidity**. Rare form of muscular stiffening that occurs **at the moment of death**, persists into the period of rigor mortis and can be mistaken for rigor mortis.

→ The cause is unknown, but usually associated with **violent deaths** happening with **intense emotion**. May affect all muscles in the body, but typically **only groups**, such as the forearms , or hands.

→ Maybe seen in cases of drowning victims when grass, weeds, roots or other materials are clutched and provides proof of life at the time of entry into the water. Often demonstrates the last activity one did prior to death and is therefore significant in forensic investigations.



Rigor Mortis

Onset delayed after death (2-3 hrs); duration up to 36hrs

Intensity comparatively moderate

Mechanism of formation:
breakdown of ATP below critical level

All muscles of the body are
Affected gradually.

Cadaveric Spasm

Onset is instantaneous ; duration is a few hours, until it is replaced by rigor mortis

Intensity comparatively very strong

Mechanism of formation unknown ,but predisposing factors :
emotions and contraction of muscles at time of death

Selected muscles , which were in a state of contraction at the time of death ,area ffectected.

Decomposition

❑ **DECOMPOSITION :** Is a mixed process ranging from autolysis of individual cells by internal chemical breakdown to tissue autolysis from liberated enzymes , and external processes introduced by bacteria and fungi from the intestine and outer environment. ———

- Animal predators , from maggots to mammals ,can be included in the range of destruction.
- Decomposition may differ from body to body , from environment to environment, and even from one part of the same corpse to another.

❑ **TYPES OF DECOMPOSITION :**

1. Putrefaction.
2. Adipocere.
3. Mummification.
4. Skeletalization.

❖ Types of decomposition:

1. **PUTREFACTION:** The normal final sign of death; starts immediately after death at the cellular level and becomes visible in 48-72 hrs.

- Two phenomena for putrefaction:

A. AUTOLYSIS: Occurs by digestive enzymes released from the cells after death. Since it is a chemical process, it is accelerated by heat, slowed by cold, and stopped by freezing or the inactivation of enzymes by heat. Organs rich in enzymes will undergo autolysis faster than organs with lesser amounts of enzyme. Thus, the pancreas gets autolyzed before the heart.

B. BACTERIAL ACTION: Bacterial action and fermentation (liquefaction) of the soft tissues over a period of time, most of them come from the bowel and clostridium predominates. The 1st visible sign of putrefaction is green or greenish red discoloration of the skin of the anterior abdominal wall, normally starts in the right iliac fossa. It usually occurs in the first 24-36 hours with generalized bloating in 60-72 hours.

❖ Types of decomposition:

1. PUTREFACTION:

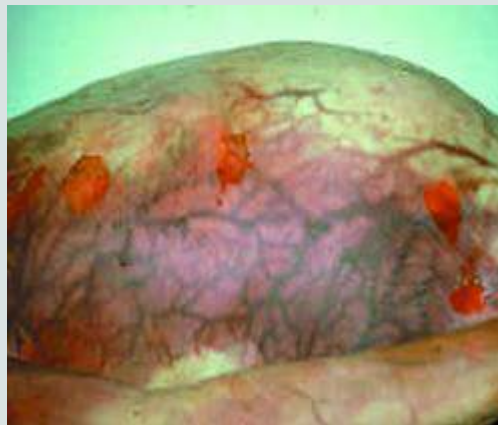
- Early yellow-clear fluid-filled blister formation.
- Early to moderate putrefactive change with green-brown fluid-filled blisters.



❖ Types of decomposition:

1. PUTREFACTION:

- The blood vessels provide an excellent channel for bacterial spread throughout the body. The decomposition of hemoglobin in the superficial vessels results in linear branching patterns of brown discoloration of the skin that is called **"marbling"**.
- As the superficial layers of the skin lose cohesions, **blisters** full of red or brown fluid form in many areas.
- When the blisters burst, the skin sloughs off.
- Considerable **gas formation** is common, and the body begins to swell, with bloating of the face, abdomen, breasts, and genitals.



❖ Types of decomposition:

- ❑ As internal pressure increases, the eyes and tongue might protrude, and bloody fluids from the lungs will be pushed upwards, often leaking from the mouth and nose as **"PURGE"**.
- ❑ In general terms, within around a week the body cavities will burst, and the tissues will liquefy and drain away into the underlying ground:
 - I. **Brain and epithelial tissues** are the first to be affected by putrefaction.
 - II. **Heart, uterus & prostate** may survive for longer periods.
- As decomposition proceeds, the weight of the organs decreases.

❖ Types of decomposition:

2. ADIPOCERE : Also known as Grave Wax, Formed when body fats are exposed to some chemical changes, causing them to hydrolyze into a waxy compound similar to soap.

- **Moisture** is necessary for this process.
- ❑ The optimum conditions for the formation of adipocere:
 1. Wet , warm environment (sometimes original body water is sufficient for adipocere).
 2. Bacterial activity (Clostridium Perfringens, Bacteroides).
- ❑ it occurs in:
 1. **Subcutaneous fat** of the cheeks , breast, and buttocks.
 2. May occur in **internal organs** such as liver , kidney, and heart.
- It needs **months** to occur , and occurs **partially**

❖ Types of decomposition:

2. ADIPOCERE:-

3 STAGES OF ADIPOCERE:

- A. **In early stages**, adipocere is a **pale , rancid , greasy** , semi-fluid material with an unpleasant smell.
- B. **Later**, it becomes more **brittle** and **whiter**.
- C. **When fully formed**, adipocere is a **grey , firm, waxy** compound which maintains the shape of the body.

-MEDICO-LEGAL IMPORTANCE OF ADIPOCERE:

- A. **Preserve the body** which can permit identification after death.
- B. It may give conclusions about the **cause** of death.
- C. It indicates that the **time** interval since death was **at least weeks to several months**.

❖ Types of decomposition:

3. MUMMIFICATION : The drying out and preservation of the body due to environmental conditions that prevent the usual breakdown of tissues

- Occur in **dry and warm** conditions, either climatic or in the microenvironment , causing the tissues to desiccate (dry out) instead of putrefying, this could be due to:
 - **No growth of micro-organisms.**
 - Mummification is partial.

- **MEDICO-LEGAL IMPORTANCE OF MUMMIFICATION:**

- A. Determining the **Cause of death** (injuries, toxins).
- B. Can **detect abnormal pathology** in deep tissues.

❖ Types of decomposition:

4. SKELETONIZATION : it is the final stage of human decomposition where all soft tissues, such as skin, muscles, and internal organs, are removed, leaving behind the bones.

- The environment is more important than the time in this process.
- ❑ Within 12-18 months: soft tissues will be gone, after 3 years: the bones will be bare and disarticulated. After 40-50 years : bone surface becomes dry and brittle; marrow cavity will be empty.
- ❑ In temperate regions, bones will remain solid and heavy with the preservation of bone marrow in long bones for a number of years, which can sometimes be suitable for specialist DNA analysis.

Determination Of Time Of Death

1. **CORE BODY TEMPERATURE** : The best and the most commonly used.
2. **RIGOR MORTIS.**
3. **HYPOSTASIS:** Complete after 6 hrs.
4. **CHEMICAL CHANGES IN VITREOUS.**
5. **EYE PRESSURE** : Eyeballs become softer ,and less fluid pressure in the first 3hrs.
6. **GASTRIC EMPTYING** : Depend on type of meal and emotional status.
7. **THE ENTOMOLOGY OF DEAD** : Studying insects & their maggots which infest the dead body for estimating the probable time of death. Different types of insects infest the dead body at different stages after death occurs.
8. **SCENE MARKERS** : Though unscientific , it is often more accurate than determinations made by scientific means.

Determination Of Time Of Death

8. SCENE MARKERS :

- Uncollected mail or newspapers.
- Whether the lights are on or off.
- How the individual is dressed.
- Any food that is out or dirty dishes in the sink.
- Sales receipts or dated slips of paper in the deceased's pockets.
- When the neighbors last saw the individual or observed a change in his habits.



Thank you

DONE BY :

- ABDALRAHMAN SUFIAN
- ABDALRAHMAN ALDEEB
- MOHAMMAD AL-OMARI