**Death due to Starvation**

* Starvation is a state of having no food for a long period, often causing death.
* Starvation deaths may be due to (1) famine, (2) being trapped in pits, mines or landslides, (3) neglect on the part of the parents or guardians. (4) Willful withholding of food. (5) wilful refusal to take food.

**Types**

**Acute AND Chronic**

1. **Acute Starvation**- It is defined as sudden deprivation of food from the body. In some cases, even water is withdrawn. This situation mostly happens in famine or natural disasters like earthquake when a person is trapped in debris or in floods. Acute starvation also happens in political workers, who go on fast-unto-death to achieve political goals. It is also reported in religious fasting.

2. **Chronic Starvation**: In India, chronic starvation is common in poor people who eat less due to unavailability of food. Children are most affected.

**Symptoms of acute starvation**

* There is a feeling of hunger for the first 30 to 48 hours, which is followed by pain in the epigastrium which is relieved by pressure.
* The eyes are sunken
* pupils are dilated
* cheeks sink
* the bony prominences become visible.
* The lips are dry and cracked, and the tongue coated and dirty
* saliva is thick and scanty.
* The voice is weak and whispering.
* The skin is dry, rough, thin, inelastic, wrinkled and pigmented.
* limbs become thin and flaccid with loss of muscular power.
* Muscular weakness is progressive and may be severe.
* Constipation is usual, but towards death diarrhoea and dysentery are common.
* The urine is scanty, turbid, and highly concentrated etc

**Symptoms of chronic starvation-**

* Loss of well-being, hunger and hunger-pains.
* Mental and physical lethargy and easy fatigue. etc

**Fatal Period :**

If both water and food are completely withdrawn death occurs in 10 to 12 days. If food alone is withdrawn death occurs in 6 to 8 weeks or even more.

**Medico-legal importance-**

* The acute starvation is usually accidental, like in natural calamities, e.g. in earthquake, building collapse where people may be trapped.
* Starvation may be rarely suicidal except in some persons who under the influence of insanity may starve to death. etc

**Death Cause due to cold**

Thermal deaths are those which result from the effects of systemic and/or localised exposure to excessive heat and cold.

* Death due to cold, also known as **hypothermia,** occurs when the body loses heat faster than it can produce it, leading to a dangerously low body temperature.
* Exposure to cold produces hypothermia which is defined as an oral or axillary temperature of **less than 35°C.** The body can tolerate dry cold much better than wet cold (immersion).
* Symptoms include shivering, confusion, slurred speech, and loss of coordination. In severe cases, Blister formation , hypothermia can lead to organ failure and death.
* Hypothermia can lead to complete failure of your heart and respiratory system and eventually to death. Hypothermia is often caused by exposure to cold weather or immersion in cold water.
* **Examples of cold death is Frostbite-** When the body is exposed to **freezing temperature (–8°C to –10°C),** erythematous patches appear on skin which are caused by impaired local circulation, injury and shock. The frostbites are both, superficial and deep. Superficial frost bites involving skin and subcutaneous tissues have soft blisters in 24–36 hours.

**Post mortem changes-**

It includes external and internal features:

1. External: Frostbites are characteristically seen as pale, irregularly margined, dusky red patches on exposed parts. Rigor mortis is delayed. The body may be quite cold.

2. Internal: The internal findings are not specific. The organs are found to be congested. The blood may appear bright red owing to non-dissociation of oxygen from haemoglobin. Sometimes, ice crystals may be seen microscopically in capillaries. Stress ulcers may be seen in stomach and intestine.

**Medico-legal importance**

* The death due to cold is usually accidental.
* It may be seen in small children, old beggars and drunkards who may die when exposed to cold while sleeping on streets.
* Small infants can be exposed to cold if thrown over streets with an intention to kill them

**Death Cause due to Heat**

* Death due to heat, also known as **hyperthermia**, occurs when the body overheats and is unable to cool down sufficiently.
* This can happen in extreme temperatures or when the body's cooling mechanisms, such as sweating, fail to adequately regulate temperature.
* Symptoms include high body temperature, rapid heartbeat, nausea, dizziness, and confusion

The effects of heat on body **are classified as following types**:

1. **Heat Exhaustion**: The sweating induced by heat causes dehydration and electrolyte loss. The person feels giddy, may have headache, malaise and may fall down. He may feel very thirsty, along with cramps in legs. He may have oliguria. He may collapse later. In some cases, the person may collapse suddenly without symptoms and die.
2. **Heatstroke:** It is also called ‘heat hyperpyrexia’ or ‘sun stroke’. It may be seen in workers who have been working in the sun in high temperature for a long time. heat stroke is a serious medical emergency that occurs when your body is unable to control its internal temperature. It occurs when the body can no longer control its temperature: the body's temperature rises rapidly
3. **Heat Syncope**: In this, the person collapses as a result of hypotension induced by heat.
4. **Heat Fatigue**: The performance of a person may start decreasing due to exposure to heat. He may feel fatigued and less motivated for work.
5. **Heat Cramps:** In workers who are working in the sun or heated atmosphere, cramps start occurring in legs as a result of sweating causing loss of electrolytes, especially sodium. Cramps may occur in hand or fingers

**Post-mortem changes-**

* Rigor mortis starts early and passes off early.
* Sweating may be absent.
* The body is dry and may show higher temperature initially.
* Petechial haemorrhages may be seen.
* Internal organs are found to be congested.

**Medico-legal importance**

Most deaths occurring due to heat are accidental, as in construction workers or industrial workers.

**Death due to Electrocution**

* **Deaths due to electricity** are called electrocution.
* They are quite common in rainy season.

The deleterious effects of electricity depend on following **factors:**

* **The Nature of Current**: High voltage currents are very dangerous to life.
* **Resistance of Body:** The deleterious effects of electricity also depend upon the amount of resistance offered by the body.
* **Duration:** Greater the duration of current, more the damage.

Symptoms-

* Immediate loss of consciousness or collapse.
* Cardiac arrest or irregular heartbeat
* Burns or electrical marks on the skin where the current entered or exited the body
* Muscle contractions or spasms
* Difficulty breathing or respiratory distress
* Numbness or tingling sensations
* Neurological symptoms such as confusion, seizures, or loss of coordination.
* Headache and loss of memory may be seen in later stages.



**Cause of death**

Low voltage currents up to 220 volts cause death by ventricular fibrillation while midvoltage currents up to 1000 volts cause ventricular fibrillation and respiratory centres failure. High voltage current above 1000 volts causes direct respiratory centres failure.

**Post-mortem findings**

* **Joule Burn or Endogenous Burns:** These are characteristic electric marks found on the skin.
* **Flash or Spark Burns** : The intense heat which may result from flash-over produces burns, which resemble thermal burns (exogenous burns).

**Medico-legal importance**

* Most of the deaths are accidental as the person comes under contact with the electric source.
* Suicidal death and homicidal deaths by electrocution are also reported.
* Visit of the crime scene is very essential to know the mode of death.
* Examination of electric source by engineers may suggest whether the leaking is tampered with or not.