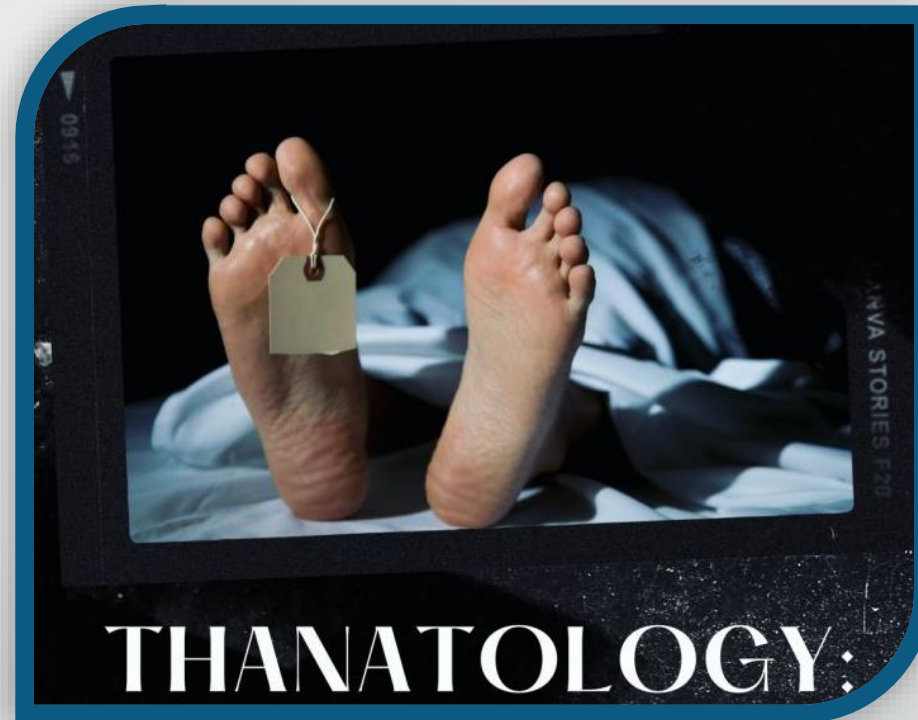


# FORENSIC THANATOLOGY ...STUDY OF DEATH



Presented by-  
**Dr. Afsara Tasnim**  
Lecturer, Dept. of Forensic Medicine

# Learning Objectives

- Definition and classification of death
- Modes and manner of death
- Somatic and molecular death
- Organ transplantation
- Investigations of diagnosis of death
- Sudden death
- Death trance
- Euthanasia

# Forensic Thanatology

The branch of forensic medicine which deals with medico legal study of death , chemistry of death and the condition affecting dead body is known as forensic thanatology.



**DEATH**

A pair of hands, one palm up and one palm down, are shown holding a small, white, rectangular card. The card has the word "DEATH" written on it in a bold, black, sans-serif font. The word is centered on the card and is reflected on the surface below it. The hands are positioned in the center of the frame, with the fingers slightly curled around the card. The background is a light, textured surface.

# DEATH

Death is defined as permanent & irreversible cessation of functions of three interlinked vital systems of the body (Bishop tripod of life) namely circulatory system, respiratory system & nervous system.

# Classification of Death

## **1. According to death of cells & tissues:**

- a) Systemic / Somatic / Clinical death.
- b) Cellular / Molecular death.

# Classification of Death

## 2. Medico legal classification:

- a) Suicidal.
  - b) Homicidal.
  - c) Accidental.
- } Unnatural death

# Suicidal



# Homicidal



# Accidental



# Classification of Death

## 3. Other types:

- a) Natural death.
- b) Sudden death.
- c) Apparent death.

## **Somatic/ Systemic / Clinical death**

It is defined as permanent & irreversible cessation of functions of central nervous system , circulatory system & respiratory system. It means death of body as a whole but the individual cells still remain alive.

## **Cellular / Molecular Death**

It is defined as death of cells and tissues individually. It comes 1-2 hours after somatic death.

# Difference between somatic & molecular Death

Traits	Somatic Death	Molecular Death
Definition	Death of body as a whole but the individual cells still remain alive.	Death of cells and tissues individually.
Precedence	It precedes molecular death.	It follows somatic death.
Confusion	May confused with apparent death.	No chance of confusion.
Organ transplantation	Possible.	Impossible.
Respond to electrical stimuli	Respond.	Not respond.

# MEDICO LEGAL IMPORTANCE OF SOMATIC DEATH

1. Issuing death certificate.
2. Organ transplantation.
3. May be confused with apparent death.
4. Taking decision for resuscitation.

# ORGAN TRANSPLANTATION

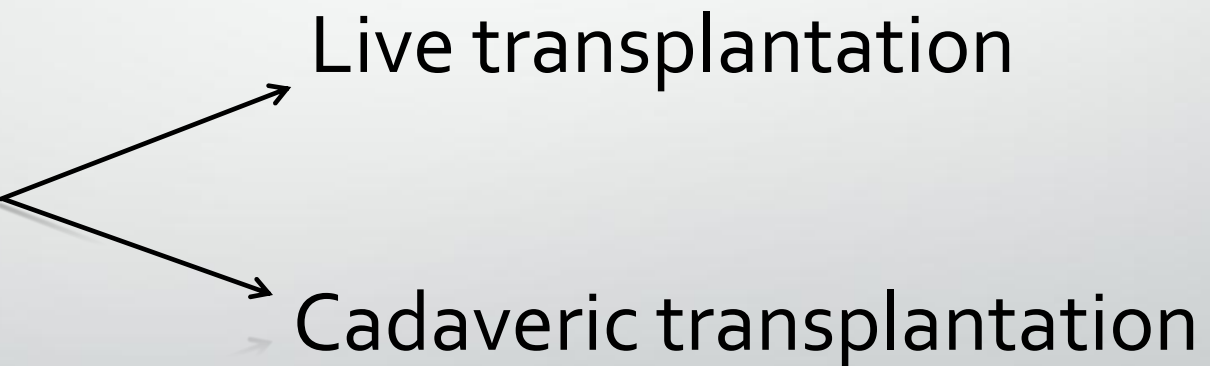


# ORGAN TRANSPLANTATION

## Types:

1. Homologous.

2. Heterologous



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graph LR; A[2. Heterologous] --> B[Live transplantation]; A --> C[Cadaveric transplantation]
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Live transplantation

Cadaveric transplantation

## 1. Homologous:

Another name *autologous*.

Transplantation of organs from one place to another place of the same individual.

***Example:*** Skin grafting.

## 2. Heterologous:

### Live transplantation:

Transplantation of organs from one living person to another living person.

***Examples:*** Blood, bone marrow, kidney, cornea, part of liver etc. transplantation.



**Cadaveric transplantation:** Transplantation of organs from dead body to living person.

***Examples:*** Cornea, Liver, kidney, Lungs etc.

# ORGANS & TIME OF TRANSPLANTATION

Brain can not be transplanted because it is damaged within 3 minutes of death

Organ	Time of transplantation
Lungs, heart, kidney, liver	Soon after death
Cornea	Within 6 hours of death
Skin	Within 24 hours of death
Bones	Within 48 hours of death
Arterial grafts	Within 72 hours of death

# Modes of Death

1. **Coma:-** Cessation of functions of CNS (central nervous system).
2. **Syncope:-** Cessation of functions of the circulatory system.
3. **Asphyxia:-** Cessation of functions of respiratory system.

# Manner of Death

**1. Natural.**

**2. Unnatural.**

**Natural death:** Death occurs completely by disease process or due to old age, trauma or poisoning did not play any part in bringing it about.

**Unnatural death:** It occurs due to trauma or poisoning.

## Examples:-

A.



1. **Manner of death-** Homicide
2. **Cause of death-** Stabbing
3. **Mode/Mechanism of death-** Loss of blood/Syncope



**B.**



1. **Manner of death-** Homicide
2. **Cause of death-** Smothering
3. **Mode/Mechanism of death-** Asphyxia

# Classification of cause of death

**1. Immediate cause:** Cause of death is due to terminal illness.

E.g. Peritonitis due to stab injury.

# Classification of cause of death

2. **Basic cause:** The cause for which terminal illness develop.

E.g. Stab injury is the basic cause for development of peritonitis

# Classification of cause of death

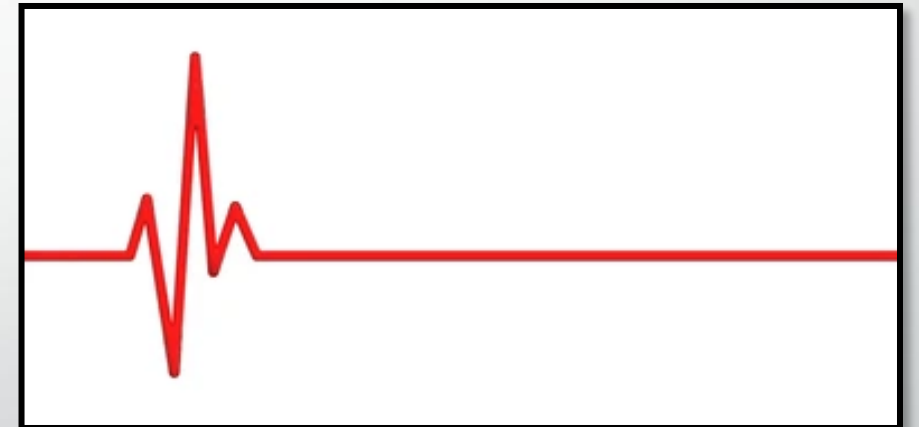
3. **Contributory cause:** It is a pathology of the body which can complicate the basic & immediate cause.

E.g. DM is the contributory cause of a patient of stab injury.

# What are the investigations of diagnosis of death?

## Investigations for CVS:

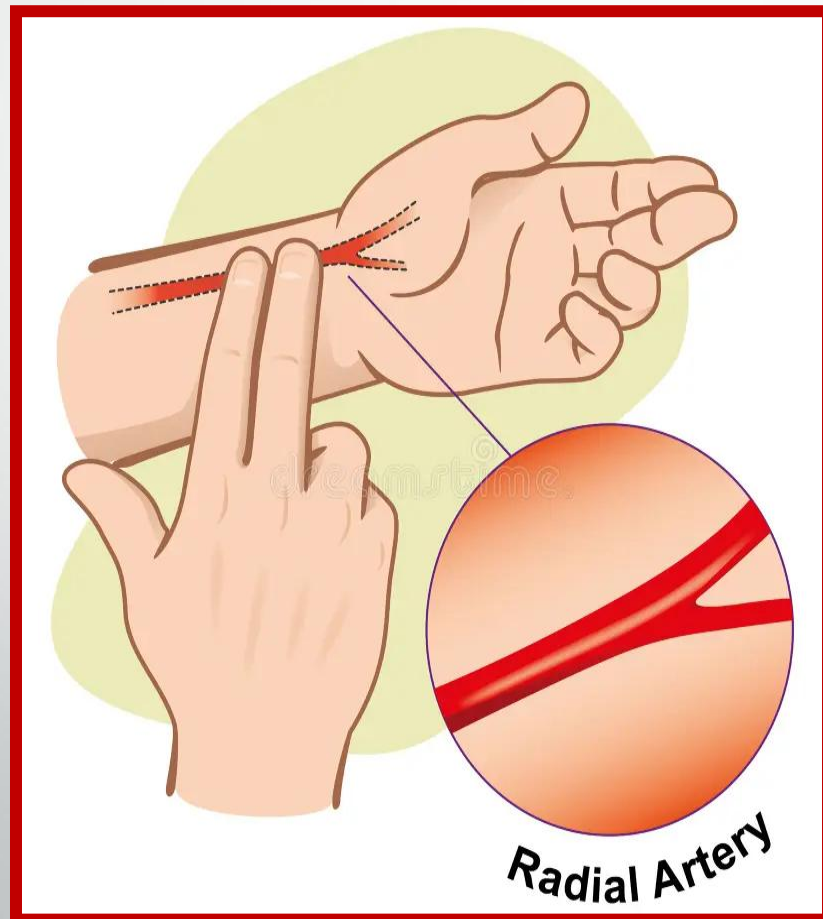
1. **Pulse:** Not palpable.
2. **Heart sound:** Not audible.
3. **Blood pressure:** Not recordable.
4. **ECG:** Flat & iso-electric.



5. **Heat test:** application of heat over the skin producing blister indicating presence of circulation.



6. **Cut test:** Sectioning of radial artery shows jerky bleeding indicating presence of circulation.



**7. I card test:** Subcutaneous injection of fluoresceine with  $\text{NaHCO}_3$ , producing greenish yellow discoloration at the injection site indicating presence of circulation.

## **Investigations for respiratory system:**

- 1. Inspection:** No visible respiratory movement.
- 2. Palpation:** No respiratory movement appreciated.
- 3. Auscultation:** No audible breath sound.

**4. Mirror test:** Holding a mirror in front of the mouth and nostrils produce haziness, indicating presence of respiration.



5. **Feather test:** Holding a feather in front of the mouth and nostrils producing movement indicating presence of respiration.

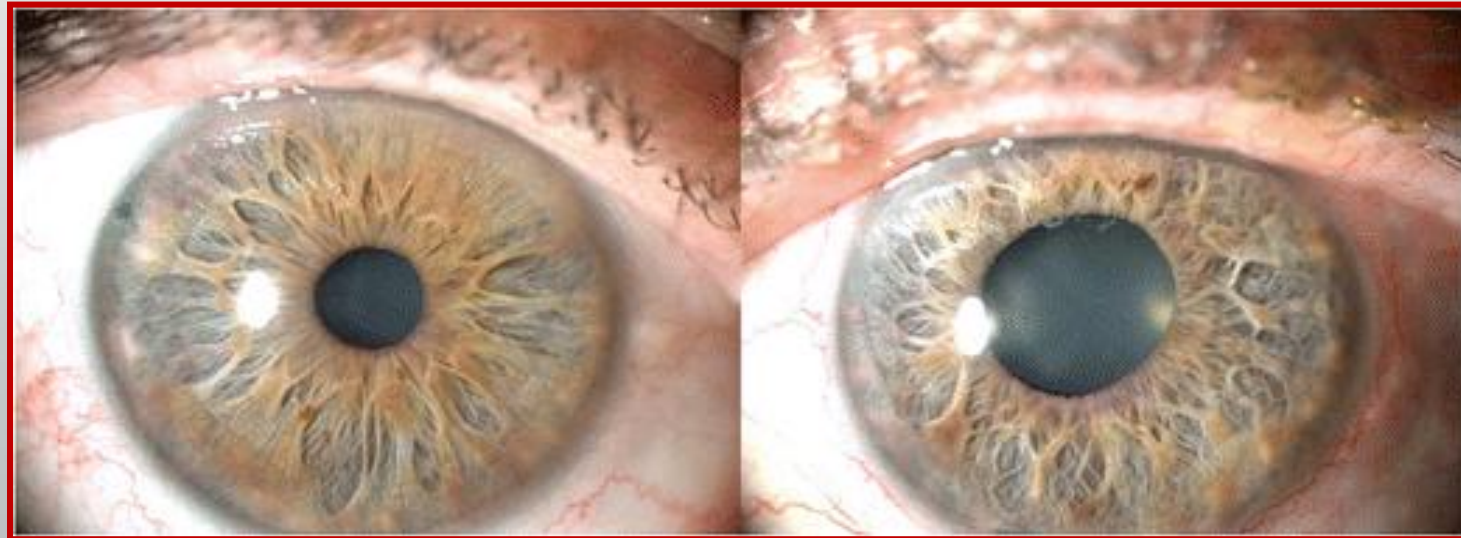


6. **Winslow test:** Holding a water containing vessel over the chest producing reflection spot from the surface of the water to the wall of the vessel indicating presence of respiration.



## Investigations for CNS:

1. All superficial and deep reflexes are lost.
2. Pupil: dilated & fixed, non reacting to light.
3. Loss of sensory function.
4. loss of motor function.
5. Flat & iso-electric EEG.



# Criteria fulfilled for issuing death certificate

1. The doctor must be qualified registered medical practitioners.
2. The doctor should examine the patient at least once within 14 days prior to his death.
3. Doctor must be fully satisfied about the death.
4. Doctor have to wait at least 30-45 minutes before issuing death certificate.
5. Without doing investigations of diagnosis of death a doctor should not issue death certificate.
6. In suspicious cases a doctor should not issue a death certificate.



# Sudden Death



# Sudden Death

Death is said to be sudden or unexpected , when a person not known to have been suffering from any dangerous disease, trauma or poisoning did not play any part in bringing it about. Death occurs within 24 hours of onset of terminal illness.

# Causes of sudden death

- Coronary artery disease: atherosclerosis, thrombosis.
- Ischemic heart disease: MI.
- Pulmonary thrombo embolism.
- Haemoptysis from TB or carcinoma lung.
- Intra cerebral haemorrhage.
- Sub arachnoid haemorrhage due to ruptured Berry aneurism.
- Haemorrhage from ruptured hollow viscus.
- Toxaemia in pregnancy.
- Ruptured ectopic pregnancy.
- Mismatched blood transfusion.

# DEATH TRANCE

Other Names:

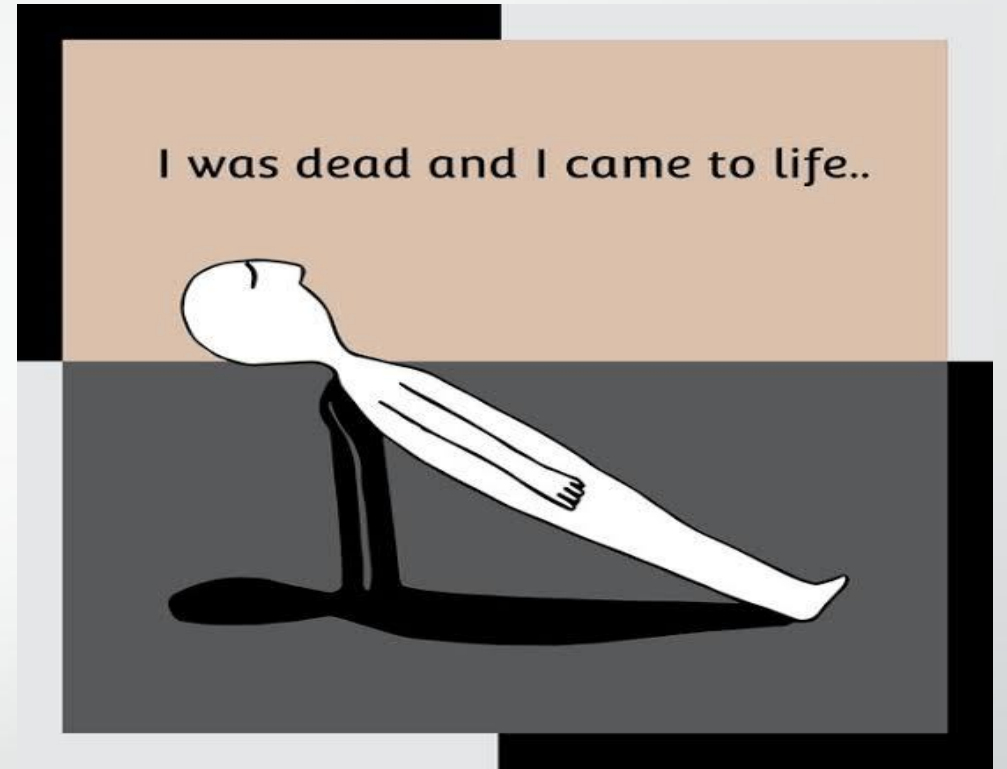
*Apparent death*

*Or*

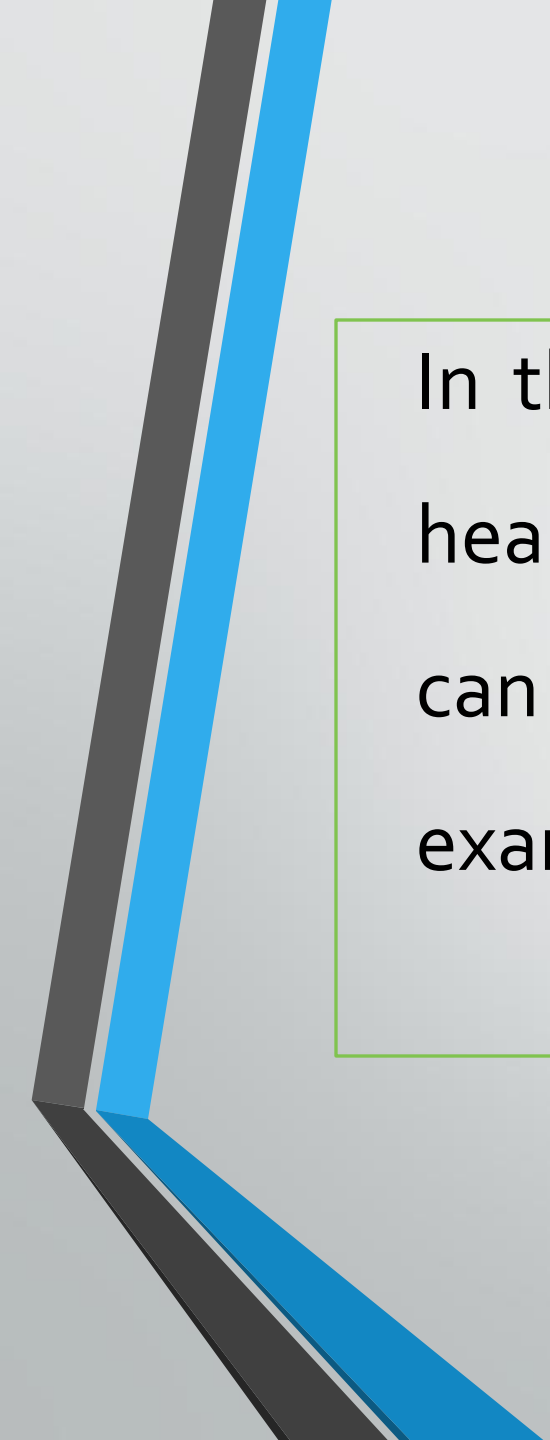
*Suspended animation*

*Or*

*Catalepsy.*



It is a condition in which life is compatible with temporary suspension of heart beat and respiration. So, it is known as suspended animation.



In this condition the vital functions of the body such as heart beat & respiration are at such low pitch that they can not be recorded by routine method of clinical examination.

It is also known as **apparent death** because the person seems to be dead but he/she is not really dead. It persists few seconds to several hours. And can be revived by resuscitative techniques . It can be diagnosed by ECG or EEG. **Without an ECG death certificate should not be issued.**

# Types & causes:

## *A. Involuntary :*

- Drowning.
- New born.
- Electrocution.
- Poisoning.
- Snake bite.
- After anaesthesia.
- Heat stroke.
- Hypothermia.
- Diseases like cholera, typhoid fever etc.



## ***B. Voluntary :***

- Practicing yoga.

## **Medicolegal Importance of death trance:**

1. It may confuse with clinical death.
2. Death certificate may be issued whether the person is not really dead.
3. A living person may be sent to the morgue for autopsy or may be prepared for disposal.

# Euthanasia/Mercy Killing



# Euthanasia/Mercy Killing

Painless killing of a person who is suffering from hopelessly incurable disease, severe trauma or head injury, senility.

## Types:

### 1. According to mode of killing:

**a. Active** ( act of commission): it is done by introducing of opoid drugs into the patient.

**b. Passive** (act of omission): it is done by removal or withdrawal of resuscitative techniques.

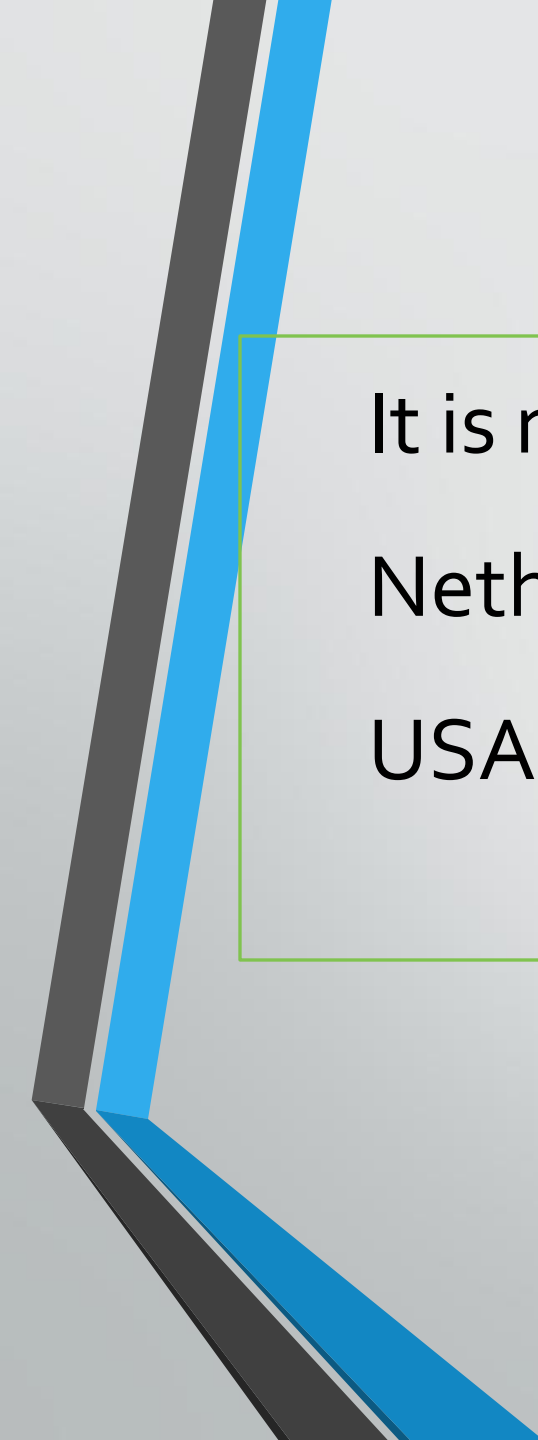
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**2. According to willingness of the patient:**

**a. Voluntary:** patient wishes to kill him.

**b. Involuntary:** Patient is in such a condition that he/she can not express his/her willingness .

**c. Non voluntary:** it is not depended on patient wishes.



It is not approved in all country but in some country like  
Netherland, Australia, Poland, Sweden, Switzerland,  
USA it is approved.

SEE YOU SOON



***Thank You***