

FORENSIC NURSING

TOPIC: MODES OF DEATH

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Introduction

- Oxford dictionary gives the meaning of death as – “The end of life”.
- Chamber’s twentieth century dictionary defines death as – “Extinction of life.”
- Black’s law dictionary defines death as – “The cessation of life; the ceasing the exist”.



Definition

Death may be defined as permanent & irreversible cessation of three interlinked vital systems of body , called tripod of life, namely – the nervous , circulatory & respiratory systems.

(Medico legal definition)



Types of death

1. Somatic death/systemic death /Clinical death:

It means complete & irreversible stoppage of vital functions .

2. Cellular death/molecular death :

It means death of tissues & cells of body individually



Somatic death/systemic death /Clinical death

Irreversible cessation of functioning brain, heart, and lungs resulting in complete loss of sensibility and ability to move the body. It is the extinction of personality or the death of the body as a whole.

- Cells of different tissues of the body are still alive and dies after sometime at different rate



Somatic death/systemic death /Clinical death

Cessation of heart beating:-Clinical criteria:

1. Absence of pulse (central i.e. carotid)
2. Absence of heart sound on repeated prolonged auscultation.
3. A flat electrocardiogram (ECG).



Somatic death/systemic death /Clinical death

Cessation of breathing:-Clinical criteria

1. Absence of respiratory movement
2. Absence of breath sound on thorough auscultation of chest. (Central)



Somatic death/systemic death /Clinical death

Cessation of brain activity:-Clinical criteria

- 1.Generalized flaccidity with generalized anesthesia.
- 2.Dilated fixed pupils, not responding to light
- 3.Absence of motor responses within the cranial nerve distribution on painful stimuli.
- 4.Absence of corneal reflexes.



Cellular or molecular death

- Somatic death is followed by progressive disintegration of body tissues and is called as cellular or molecular death.
- In absence of circulation and respiration different cells die at different times.
- Death of some cells are mentioned below in sequential order from the earliest:-



Brain Death

Permanent & irreversible cessation of function of brain irrespective of function of other organs like heart , lungs.



Types of brain death

Cortical death

- Permanent & irreversible cessation of function of cerebral cortex is called cortical death.
- Death of the cortex with an intact brain stem.

Brain stem death

- Cerebrum is intact but loss of all vital centre causes the victim to be irreversible comatose and incapable of spontaneous breathing.
- **Combined brain death:**



Criteria for diagnosing brain death

- The patient must be in a deep coma, which is not due to depressant drugs, metabolic or endocrine disorder.
- The patient must not be in hypothermia.
- The patient must be on a mechanical ventilator/heart-lung machine.

Cont



- Diagnostic test for brain death:-
 - ✓ Absence of corneal reflex.
 - ✓ Dilated and fixed pupil not reacting to light.
 - ✓ Absence of vestibulo-ocular reflex.
 - ✓ Absence of cranial nerve response to painful stimuli.
 - ✓ Absence of cough reflex.



Difference of somatic & molecular death

Somatic	Molecular
Complete & irreversible stoppage of functions three vital organs –brain, heart & lungs .	Death of tissue & individual cells takes place .
Muscles response to electric stimuli	do not response to electric stimuli .
organs can be removed for transplantation	organs cannot be removed for transplantation
It precedes molecular death.	It follows somatic death

Different aspects of death

Three main aspects to be considered:

1. Mood of death

2. Cause of death

3. Manner of death



1. Mode of death

The term “mode of death” usually refers to the system that initiates the process of death.

- Stoppage of which system initiated the process of death.

These modes are:

1. Coma. (failure of nervous system).
2. Syncope (failure of circulatory system).
3. Asphyxia (failure of respiratory system).



Coma

- Coma means insensibility or loss of consciousness, which may be partial or complete depending on the degree of involvement of the C.N.S.
- Causes - Cerebral compression, Cerebral injuries, Any growth, Cerebral embolism, Metabolic disorder, encephalitis, meningitis etc...



Asphyxia

Asphyxia is a condition caused by interference with respiration, or due to lack of oxygen in respired air due to which the organ and tissues are deprived of oxygen causing unconsciousness or death.



Hypoxia & Anoxia

Hypoxia

- Lack of supply of oxygen to the tissues below normal is known as hypoxia.

Anoxia

- Anoxia means total lack of oxygen in the tissues.



Syncope

Syncope is the sudden cessation of the action of the heart and failure of circulation leading to death.



2. Cause of death

- **Natural causes-** Natural disease & geriatric causes
- **Unnatural causes** – Injury, poisoning, drowning etc.
- ***Obscure causes.**



3. Manner of death

It is the way by which cause of death was produced.

1. Natural

2. Unnatural– Suicidal, homicidal, accidental

*Undetermined/unexplained



WHO Syntax regarding writing cause of death

I. Cause of death

- a) **Direct** cause ...Myocardial infarction (due to or as a consequence of)
- b) **Antecedent** cause ...Coronary thrombosis (due to or as a consequence of)
- c) **Underlying** cause ...Coronary atherosclerosis

II. Contributory causes...

(Usually applicable for geriatric death) DM, Hypercholesterolemia.



Death certification

A doctor is the person who is legally authorized to declare a death & issue a death certificate.

- To issue a death certificate/Condition of certifying death:
 - Inspection of the dead body by the doctor himself
 - Full satisfaction about the death

Cont...



- The doctor must be sure of the cause of death
- The doctor should be free from least suspicion of foul play
- The doctor has seen/examined the person within 14 days before death as alive.
- The doctor registered as a qualified medical practitioner



Death certificate (WHO)

I do hereby certify that I attended the deceased (Name) aged
residing at during his last illness and that to the best of
my belief the cause of his death (time)..... on (date) was as stated below:

Cause of Death

Approximate interval between onset and death

1. Disease of condition or condition

directly leading to death

(a) Years Months

(due to or as consequence of) Days Hours

Antecedent cause

(b) Years Months

(due to or as consequence of) days hours

Morbid conditions, if any,

(c) Years Months

giving rise to the above cause, days hours

stating the underlying condition last

2. Other significant conditions Years Months

contributing to the death but not days hours

related to the disease or condition

causing it.

Address or rubber stamp of the institution

Signature, designation, degree and
registration number.



Tests for death declaration

1. For stoppage of function of NS

- Look for movement -No movement
- Look for response-No response to stimulus
- Look for jerk-No jerks
- Look for reflex-No reflex
- Confirmation by EEG.



Cont...

2. For Stoppage of respiration

- Inspection , palpation & auscultation for respiration—repeated for at least 5 min.
- Feather test –Feather/cotton –Nose -Movement
- Mirror test –Mirror –Nose/Mouth -Hazy
- Winslow"s test –Water bowl –Chest -Light reflection

Cont....



3. For stoppage of circulation

- Inspection, palpation & auscultation for HS—repeated for at least 5 minutes.
- Detection of pulse & BP : absent
- Icard"stest -1 ml of 20% alkaline fluorescein S/C –Colour change spread
- Ligature test(Magnusstest) –Ligature –Finger –Swollen & Bluish
- Finger web inspection (Diaphanous test) –Hand –Light – Pinkish & translucent / Yellowish & opaque.
- By applying heat –Skin –Hot Object –Blister & redness.
- Confirmation by ECG.
- Earliest & surest sign of death : Segmentation/trucking of blood
- column in the retinal blood vesceles–by ophthalmoscope



Suspended Animation/Apparent Death / Death Trance / Catalepsy:

- Death trance is a condition in which all the signs of life or vitality are seemed to be absent although the individual still remains alive.
- It is a condition , wherein the vital functions of body (heart beat and respiration) are maintained at a low pitch reduced to a minimum for sometime, that they could not be detected by routine methods of clinical examination. **Cont...**



- Person appears to be dead because of very feeble or minimum function of his body systems
- The function of circulatory , respiratory or nervous system may not be perceived by conventional method though the person is still alive.
- Function of these system may return after sometime by proper resuscitation



Causes of Suspended Animation/Apparent Death/Death Trance

- **Voluntary-** Yoga practicing.
- **Involuntary-**
 1. Newborn infants
 2. Drowning
 3. Electrocution
 4. Thunder injury
 5. Sever diarrhea/Cholera
 6. Poisoning
 7. Anesthesia
 8. Shock
 9. Sun-stroke
 10. Snake bite
 11. Epilepsy
 12. Head injury
 13. Sever narcosis



Medico legal importance of Suspended Animation

1. It can lead error if precautions are not taken.
2. Confusion may lead to issue of a dead certificate for a live person
3. An alive person may be sent to mortuary.
4. Premature burial / funeral.
5. May create professional problems for doctor.
6. May create social/public agitation/problems



Sudden death

Sudden death may be defined as a death which occur suddenly or unexpectedly when a person not known to have been suffering from any dangerous disease, injury or poisoning is found dead or dies within 24hours after the onset of terminal illness.

- Incidence is approximately 10 %



Causes Of Sudden Death

- Diseases of Cardiovascular system(40-50%)
- Diseases of Respiratory system(15-23%)
- Diseases of Central Nervous system(10-18%)
- Diseases of Alimentary system(6-8%)
- Diseases of Genito-urinary system(3-5%)
- Miscellaneous(5 -10%)



Thank you

