Tishk International University

Faculty of Applied Science

Department of Anesthesia

Measurement of Body's temperature

Fall Semester

Course Name : Biophysics

Stage : First

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2026

Temperature

- Measurement of the balance between heat loss and heat produce

- Types
  - Oral - mouth
  - Rectal - rectum
  - Axillary - armpit
  - Aural (tympanic) – ear

Q/List the types of fever thermometers according to its location in the body

1-Oral

2- Rectal

3- Axillary

4- Aural

Oral Temperature

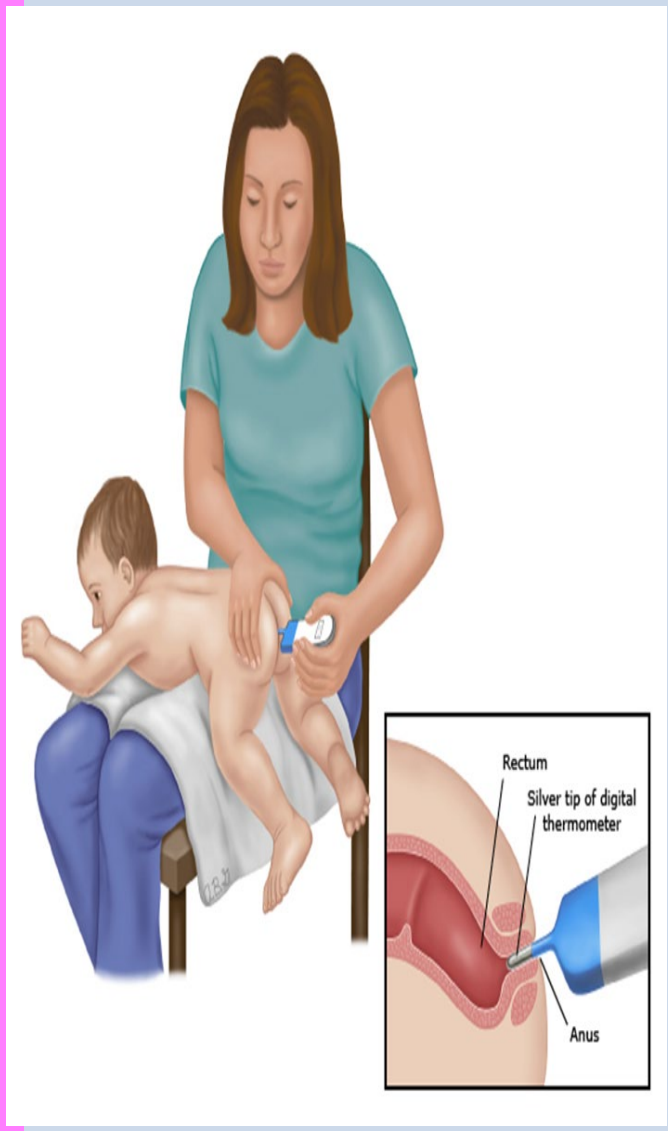
- Taken in the mouth
- Thermometer left in for 3-5 minutes
- Most common, convenient, comfortable way to take temperature
- Check for eating/drinking anything hot/cold exercising or smoking a cigarette 15 minutes prior

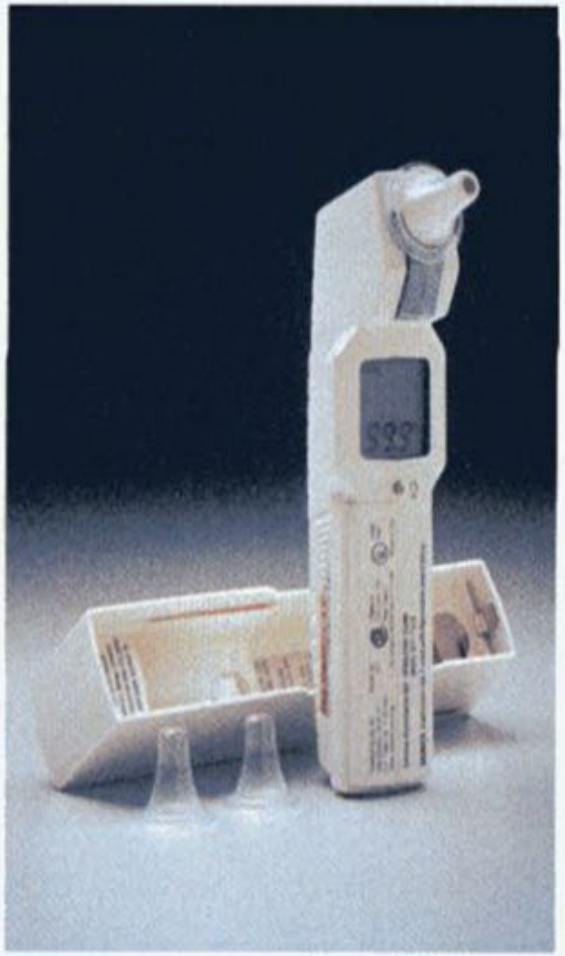
Axillary/Groin Temperature

- Taken under the armpit or in the groin fold
- Thermometer left in for 8-10 minutes
- Least Accurate
- Dry armpit/groin, place in center and hold in place

Rectal Temperature

- Taken in the rectum
- Thermometer left in for 3-5 minutes
- Most accurate
- Insert 1-1 ½ inches, hold in place and screen patient for privacy





Tympanic thermometers record the aural temperature in the ear. (Courtesy of Thermoscan® Inc., San Diego, CA)

- Tympanic
  - used to record temperature in the ear
  - Records temperature in 1-3 seconds

Temperature Conditions

- Hyperthermia
  - Increased body temp
  - Body temp >104ºF
  - >106 ºF will cause convulsions and death
- Fever
  - temp over 101 ºF
  - Due to illness or injury

Q/ What is Hyperthermia?

Increasing body`s temperature more than 104 °F (40 °C)

Q/ What is value of normal body`s temperature in °F?

It is 98.6 °F

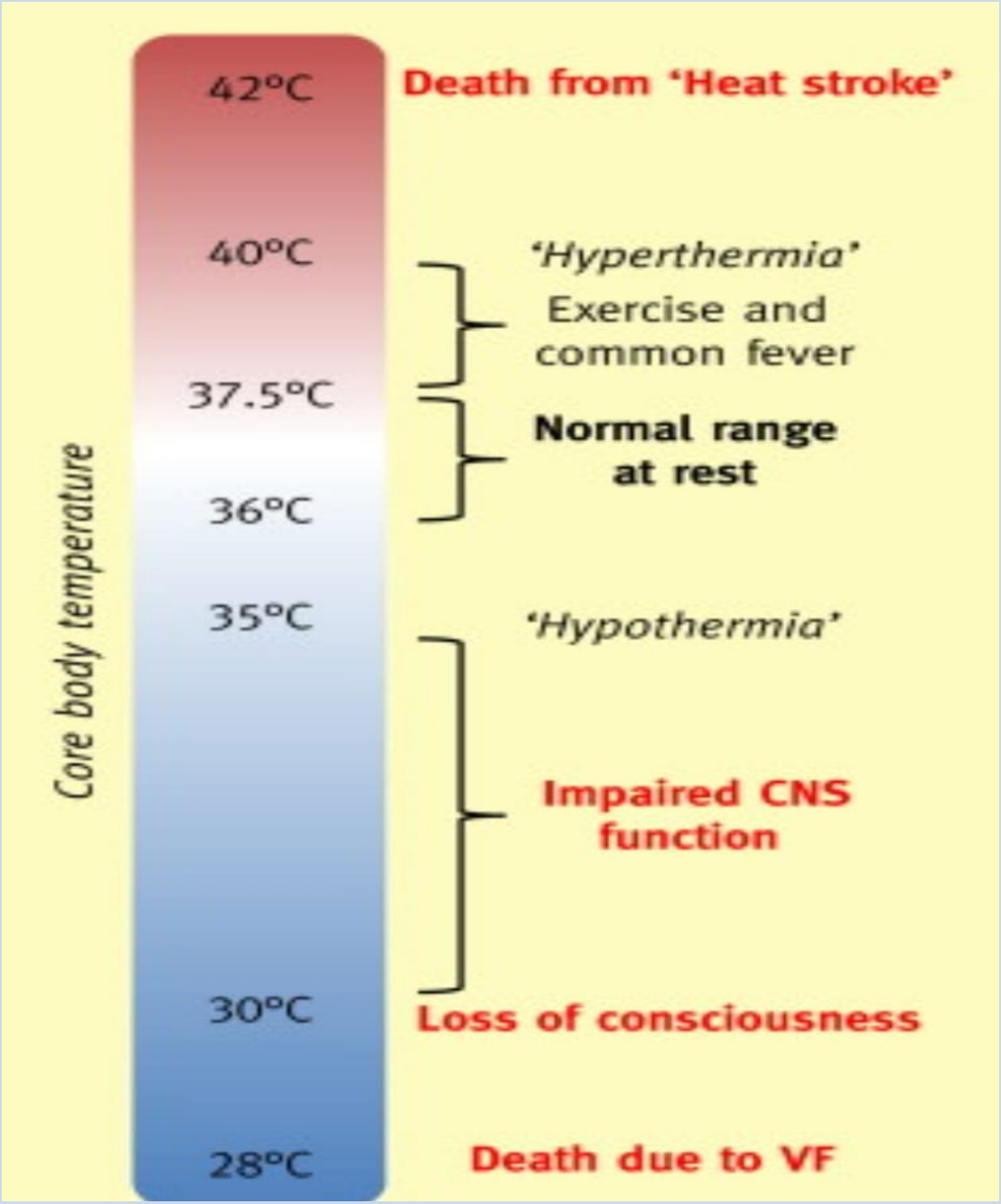
Q/ Convert 98.6 °F to ° C

$$T_C = \frac{5}{9}(T_F - 32^\circ)$$

= 37 °C

Temperature Conditions

- Hypothermia
  - Body temp below 96 ºF
  - due to exposure to cold temperatures
  - Depends on core temperature, age and length of exposure


Core body temperature
42°C
Death from 'Heat stroke'
40°C
'Hyperthermia'
Exercise and common fever
37.5°C
Normal range at rest
36°C
35°C
'Hypothermia'
Impaired CNS function
30°C
Loss of consciousness
28°C
Death due to VF

Q/ What is Hypothermia?

It is body`s temperature below 96 °F

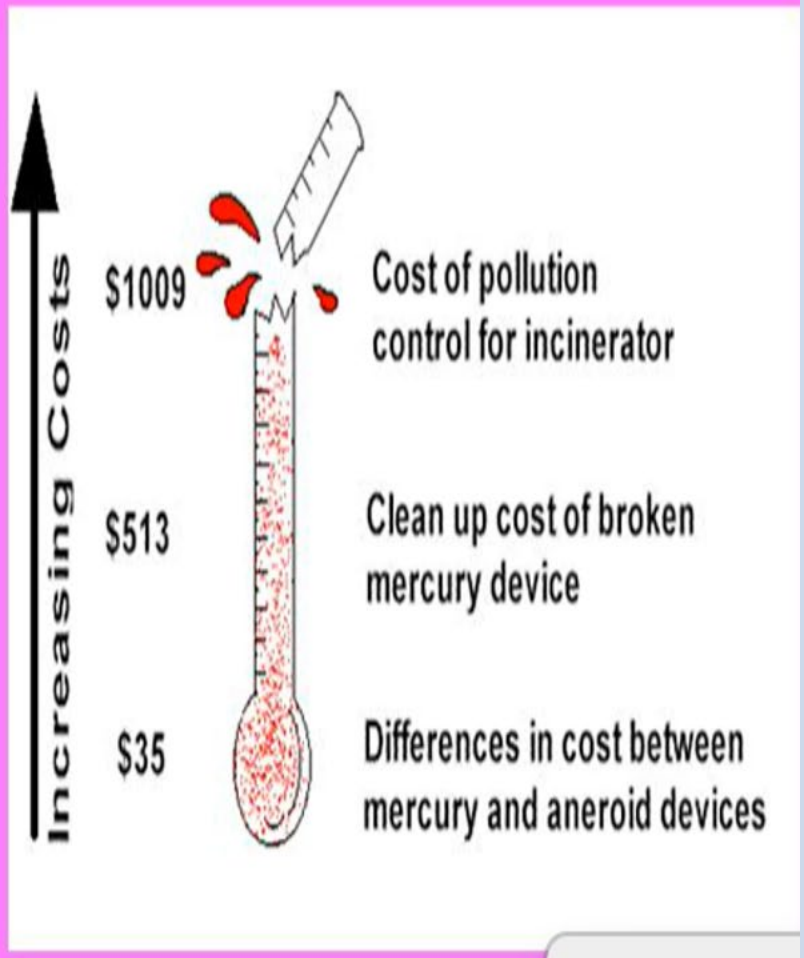
Q/ Convert 96 °F to ° C

$$T_C = \frac{5}{9}(T_F - 32^\circ)$$

$$TC = \frac{5}{9}(96 - 32^\circ) = 35.55 \circ C$$

Mercury Thermometers

- Colored column Mercury
- Toxic to the body and environment
- Can be absorbed through the skin and inhaled as a vapor through the lungs
- Heavy metal that accumulates in the brain and causes mental retardation



What is happened if fever thermometer broke in the mouth?

1- The mercury can absorbed by skin lead to poisoning of the body
2- Inhaled as a vapor through the lungs lead to suffocation
3- may accumulate in the brain and cause mental retardation

Types of Thermometers

- Electronic
  - Can be used for oral, rectal, or axillary
  - Blue probe for oral
  - Red probe for rectal
  - Disposable probe covers prevent cross-contamination

Digital thermometer

Digital thermometer

Digital thermometer

Digital thermometer

Name of the experiment:-

Measurement of Body's temperature

Date of the experiment:- 1-6-2026

Name of the students:-

Group:-

Name	body`s temperature in °C at rest	body`s temperature in °C after exercises

Discussion:-

1-Effect of exercises on body`s temperature

2- Hypothermia

3- Hyperthermia

Thank you