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DEPARTMENT OF ZOOLOGY

Unit 2: Public health and hygiene

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Subject : Zoology Paper II
FYBSc SEM II

Definition

- Webster Collegiate dictionary- “State of being hale and sound body, mind or soul especially free from physical disease or pain’
- WHO- “ A state of complete physical , mental and social well-being of an individual and not merely absence of disease or infirmity’

Characteristics of healthy individual

- Sense of well being
- Work with enthusiasm
- Self confidence
- Cheerfulness
- Self control
- Absence of disease and discomfort
- Wholesome mental attitude
- Freedom from unnecessary anxiety
- Courage to face reality
- Undisturbed sound sleep

Factors that influence health

- Food
- Physical activity
- Hygiene
- Sleep
- Job
- Proper use of time
- Positive attitude

Need for health education and its goal

- Why health education?

a. School

b. Health department of govt.

- Goal of health education
- Reduce chronic diseases
- Policy development
- Monitor science and promote research
- Promote healthy life style habits

Health issues

- Physical health
- Psychological health
- Social health

Factors maintaining social health

1. Social bond
2. Social support

If a person is not social

- Loneliness
- Frustration
- Inability to show sympathy, empat
- Cant discuss problem
- Cant take help from society

WHO

- Established – 7th April 1948 by representatives of 61 nations
- Head quarter Geneva in Switzerland
- Purpose – coordinate and direct international health work
- Objective – to work for attainment of highest level of health by all people
- Helps in eradication of epidemic and endemic diseases
- Encourage and conducts research, disseminates medical information for public health
- Standardized drugs and vaccines
- World health day – 7th April to make people aware of health needs

Polio

- Viral infection caused by RNA virus – poliomyelitis
- Affects primarily alimentary canal
- Vaccination is sole method for

Polio vaccine

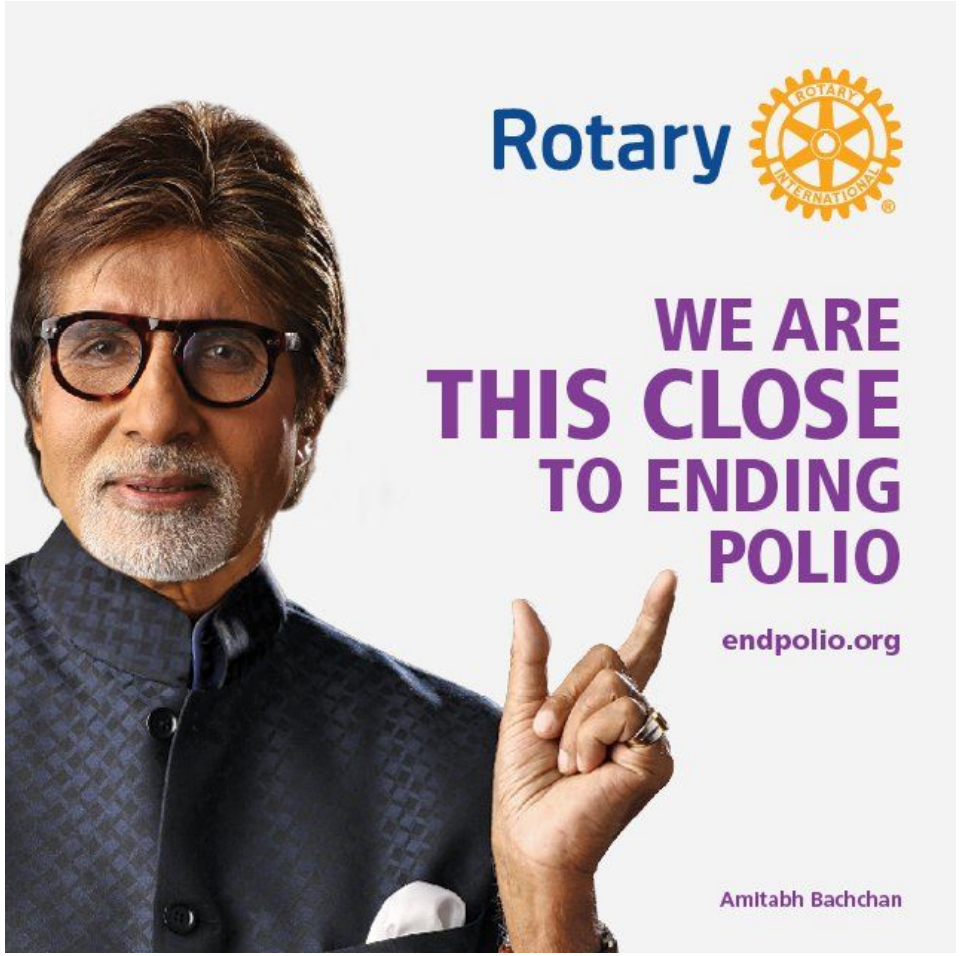
- Vaccination eliminated disease from developed countries since 1954
- Reduce disease from 125 in 1988 to 4 in 2006
- Pulse polio immunization program PPIP was launched in country 1995
- All the vaccines to be completed before baby is 6 month age, because most cases occurs from 6 yrs to 3 yrs

Polio dose:

- A zero OPV after birth
- Who program on Immunization and National Immunization program in India envisage a mandatory primary course of 3 doses in one month interval and must be completed before 6 month age
- One booster dose of OPV is recommended 12-18 months later of third dose
- In India children under 5 yrs are given additional polio drops in December and January every years on fixed days

Strategies for polio eradication in India

a. Observe pulse polio immunization days every year till polio eradicated
b. Sustain high levels of routine immunization coverage
c. Monitor OPV coverage at all levels
d. Detecting all cases of AFP due to polio and non polio
e. Rapid stool collection of stool samples from cases for virus isolation
f. Follow-up of all cases of AFP of 60 days to check for residual paralysis
g. Control measures to stop transmission of Virus



Outcome of polio eradication program:

- There is significant decline in incidence of poliomyelitis in India

Smallpox or Variola:

- Most fearful virulent disease in human history
- Sudden fever, chills , severe headache, backache and prostration
- When body temperature falls skin eruption with successive stages

Stages of skin eruption

1. Macules

2. Papules

Stages of skin eruption

3. Vesicle

4. Pustuls

Stages of skin eruption

5.Crust

6. scab

Smallpox or Variola:

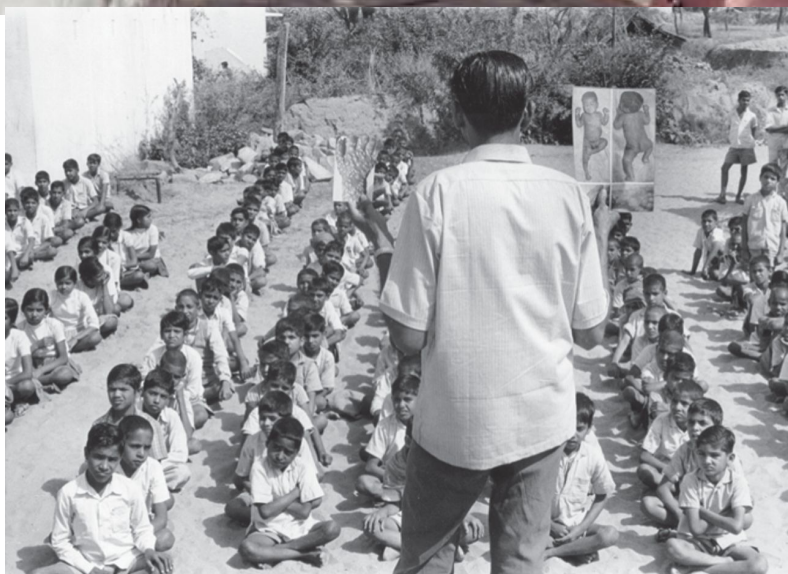
- Acute infectious disease
- Virus present in secretion in early stages and later in skin eruption also
- Transfer by droplets or air

Smallpox Eradication:

- In 1966 WHO launched a global campaign to eliminate it
- 1980 disease killed about 35% victims and remaining remained blind and scarred
- In India in 1975 about 188000 cases of smallpox were reported

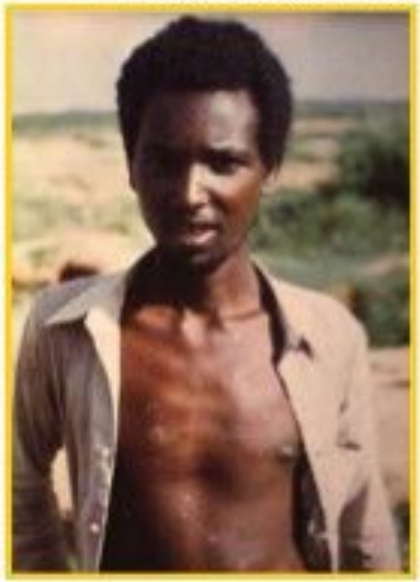
Smallpox Eradication Program:

- Notification
- Isolation
- Concurrent disinfection
- Vaccination
- Care of convalescent
- Care of dead body
- Disinfection of home
- Education of public
- Outcome: India successfully eradicated smallpox



The End of Smallpox

- LAST CASE IN INDIA- 24TH MAY,1975 (SAIBAN BIBI, ASSAM)
- INDIA DECLARED FREE OF SMALLPOX- 5TH JULY 1975
- LAST CASE OF SMALLPOX in WORLD- OCT 26, 1977
- **MAY 8, 1980,** OFFICIAL DECLARATION BY WHO - SMALLPOX ERADICATED!



Last case of Variola minor, Somalia 1977

Last case of Variola major, Bangladesh 1975

Malaria

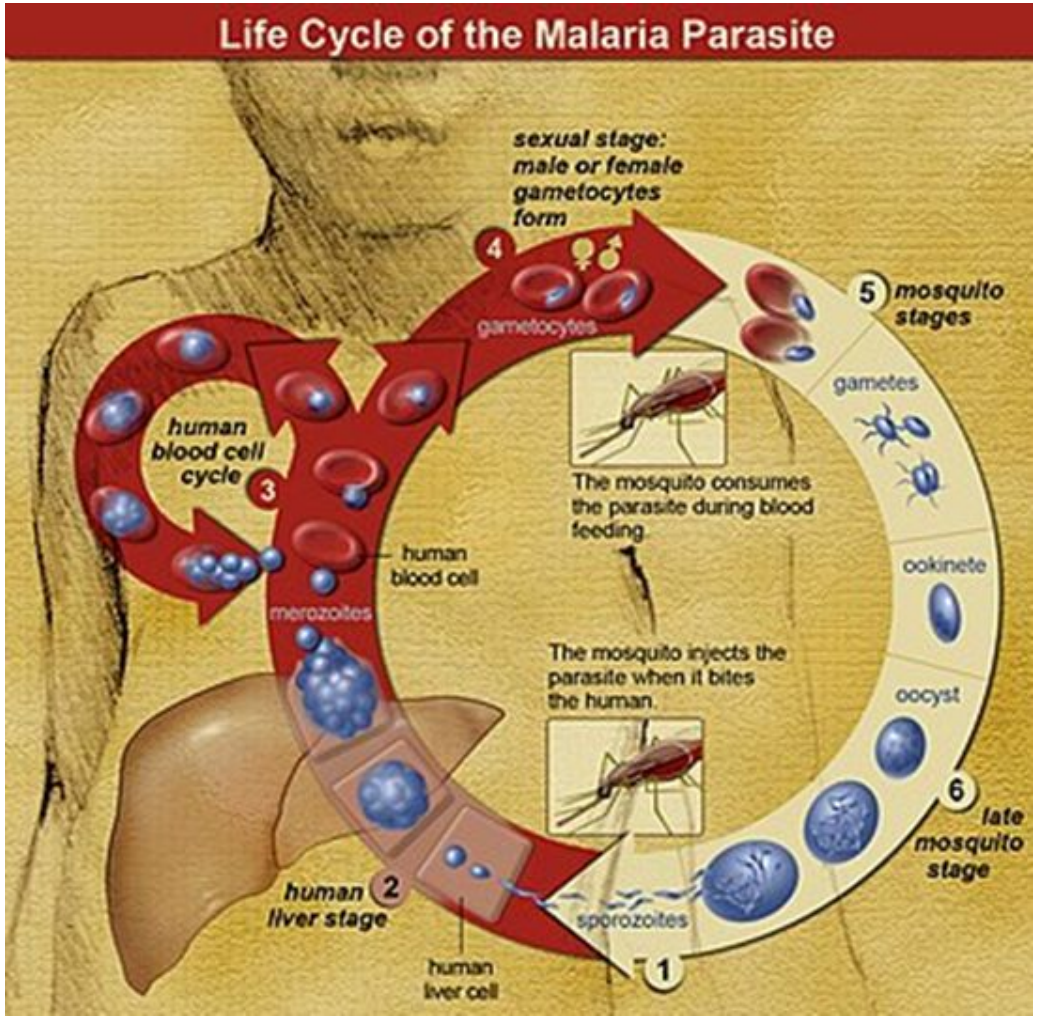
- 100 million suffered, about a million died
- 200 million people resides in high malarious area
- National Malaria Eradication Program in India 1958
- In this project United states, International Cooperation Administration and WHO collaborate

Planning and Organization of Malaria Eradication Program:

Four Phases:

1. Preparatory phase
2. Attack phase
3. Consolidation phase
4. Maintenance phase

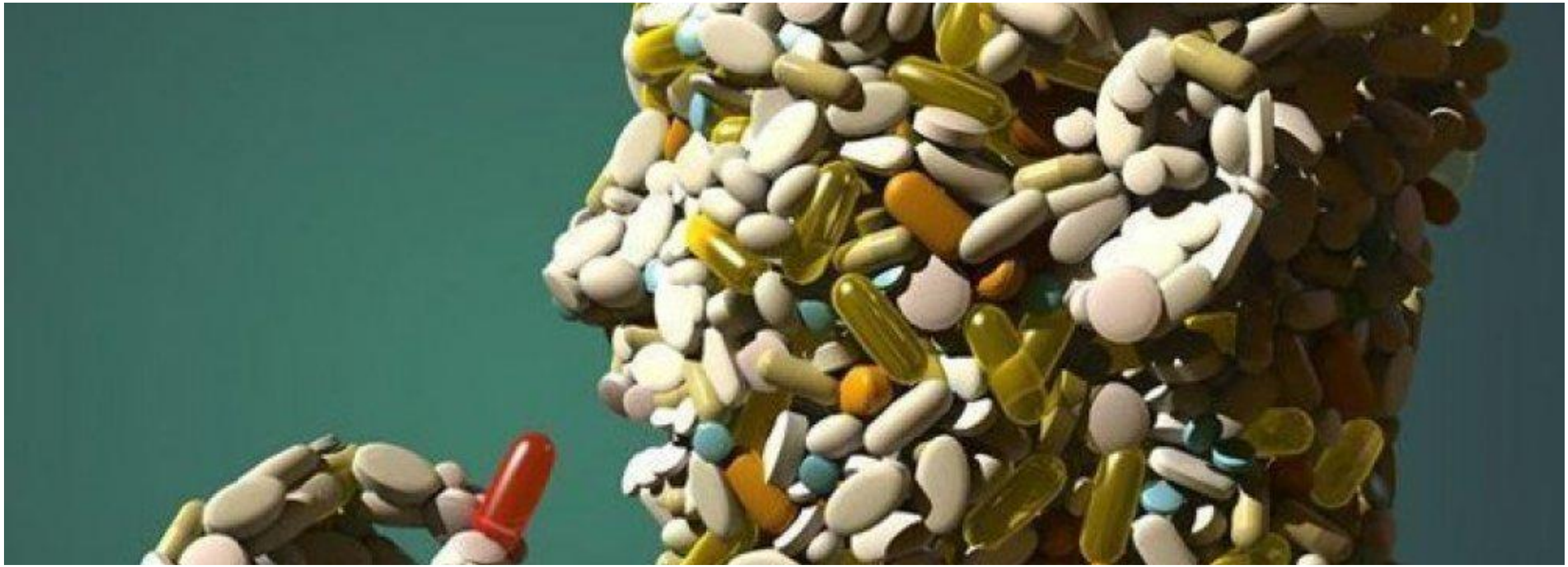
Outcome: stubborn disease needs several measures

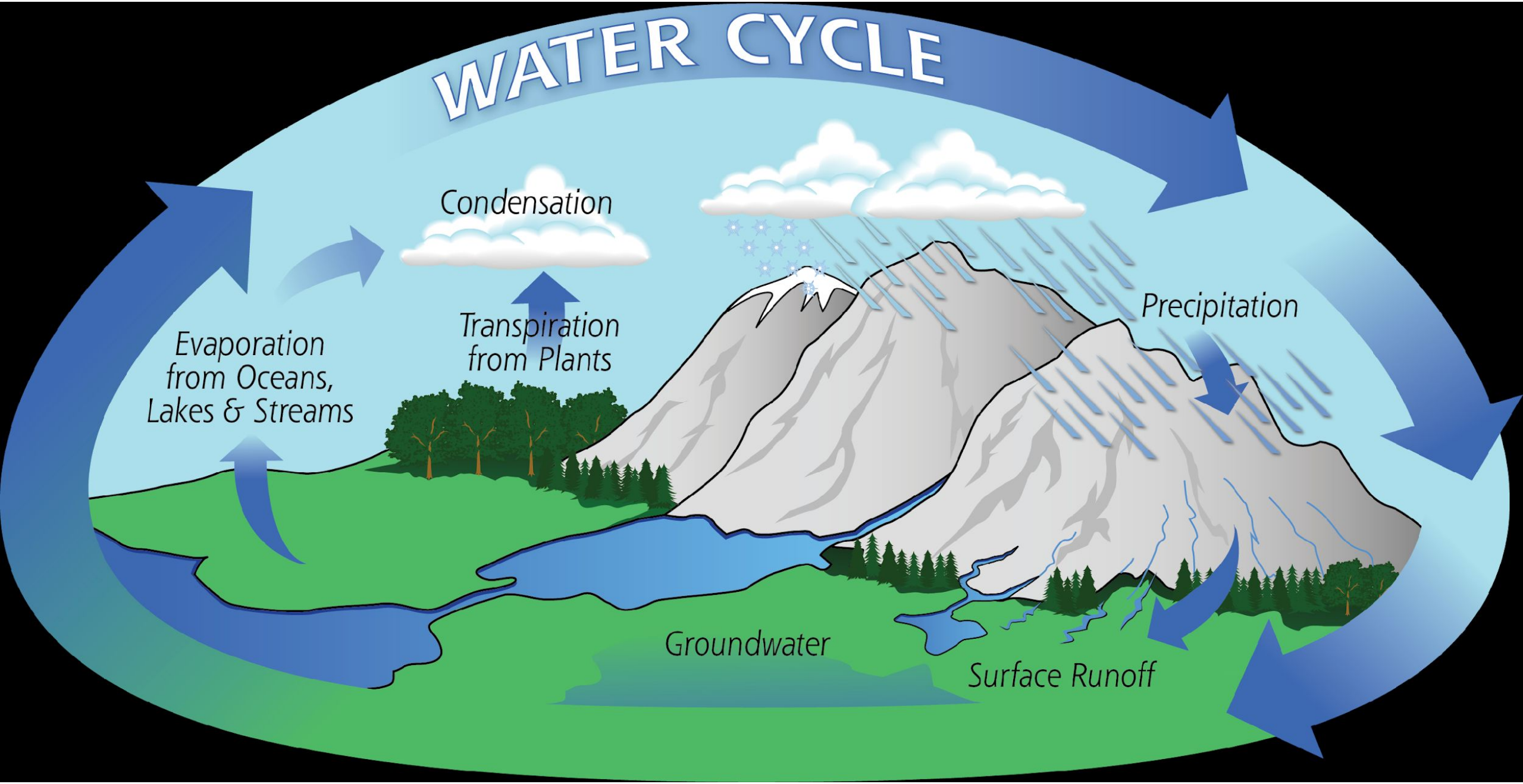


Leprosy

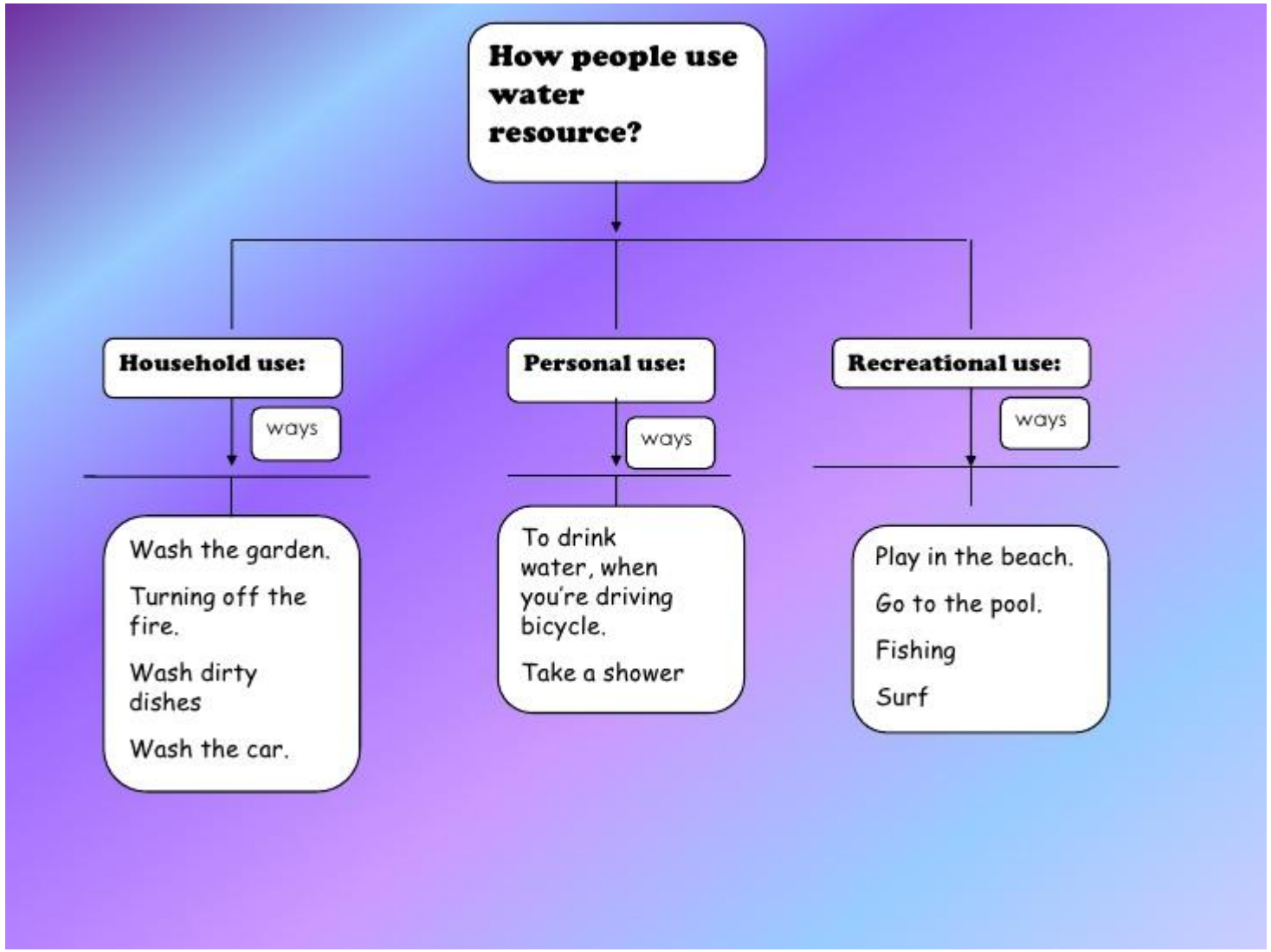
- Chronic infectious disease caused by *Mycobacterium leprae,* mainly affects peripheral nerves
- NCLP 1955 using Dapsone monotherapy
- Multidrug chemotherapy
- Mobile leprosy treatment
- Outcome: High burdrn to Low burden

Self medication




WATER CYCLE
Condensation
Transpiration from Plants
Evaporation from Oceans, Lakes & Streams
Precipitation
Groundwater
Surface Runoff

Water and water supply



Water Sources and Water Treatment

- Drinking water should be essentially free of disease-causing microbes, but often this is not the case.
  - A large proportion of the world's population drinks microbially contaminated water, especially in developing countries
- Using the best possible source of water for potable water supply and protecting it from microbial and chemical contamination is the goal
  - In many places an adequate supply of pristine water or water that can be protected from contamination is not available
- The burden of providing microbially safe drinking water supplies from contaminated natural waters rests upon water treatment processes
  - The efficiency of removal or inactivation of enteric microbes and other pathogenic microbes in specific water treatment processes has been determined for some microbes but not others.
  - **The ability of water treatment processes and systems to reduce waterborne disease has been determined in epidemiological studies**

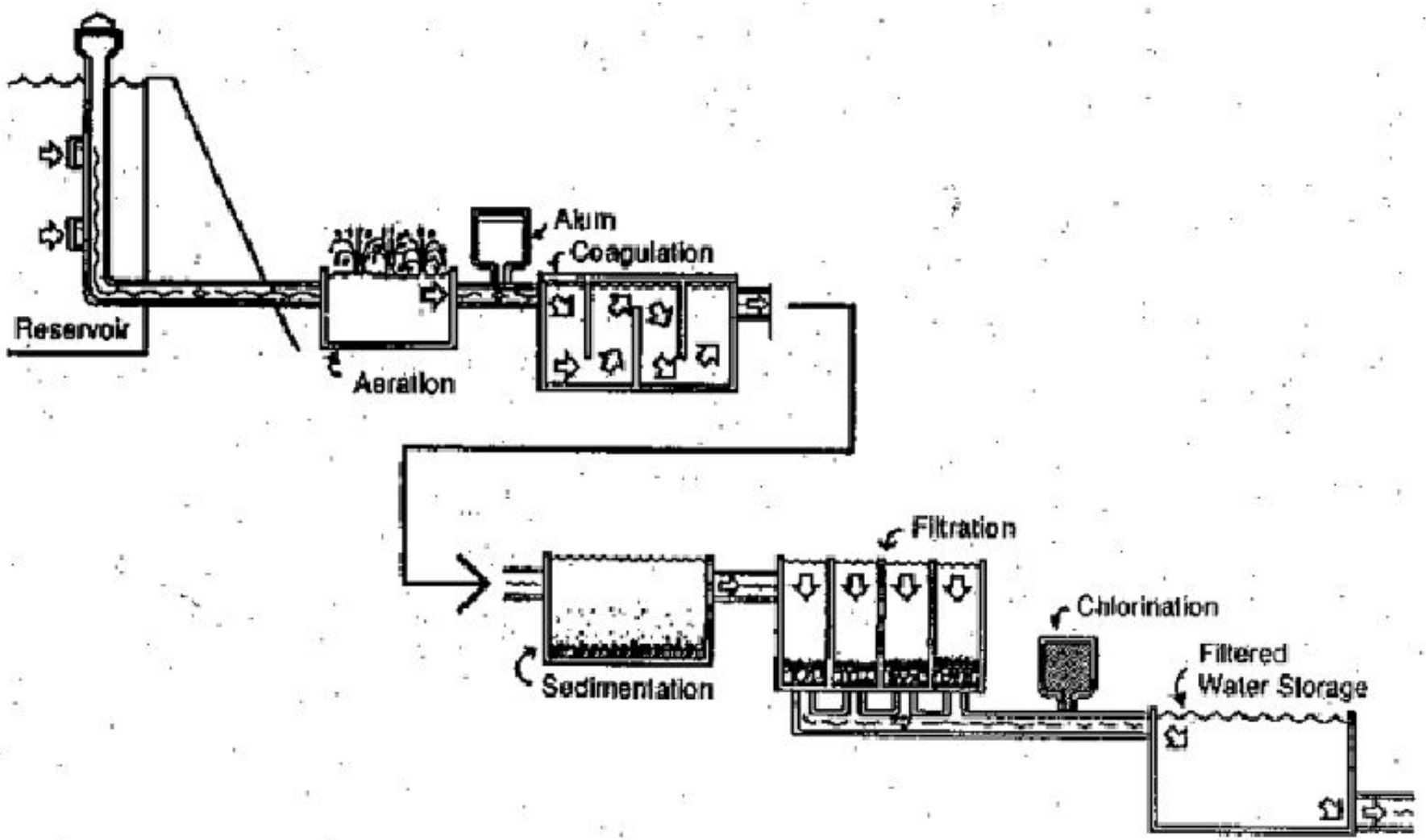
Small Scale water Purification

- Boiling
- Sedimentation
- Filtration
- Chemical disinfection
  - Chlorine
  - Iodine
  - Potassium Permagnet

Medium Scale

- Slow sand filter
- UV Radiation

Large Scale


Reservoir
Aeration
Alum
Coagulation
Sedimentation
Filtration
Chlorination
Filtered
Water Storage

Hygiene

- Basic Hygiene
- Hygiene practices
  - Personal hygiene
  - Personal care
  - Professional care
- Sex Hygiene
  - Safe sex precautions

Radiation Risk

- Cell Tower Radiation
- Electronic Gadgets
  1. Mobile Phones
  2. Microwave
  3. Television
- Thermal effects
- Non thermal effects
- Biological effects
- Suggested Solution

Blood Bank

The rational use of blood and blood products

What is role of blood?

- Blood is an amazing fluid!
- Keeps us warm
- Provides nutrients for cells, tissues and organs
- Removes waste products from various sites
- Provides transport of materials like Gases and hormones etc

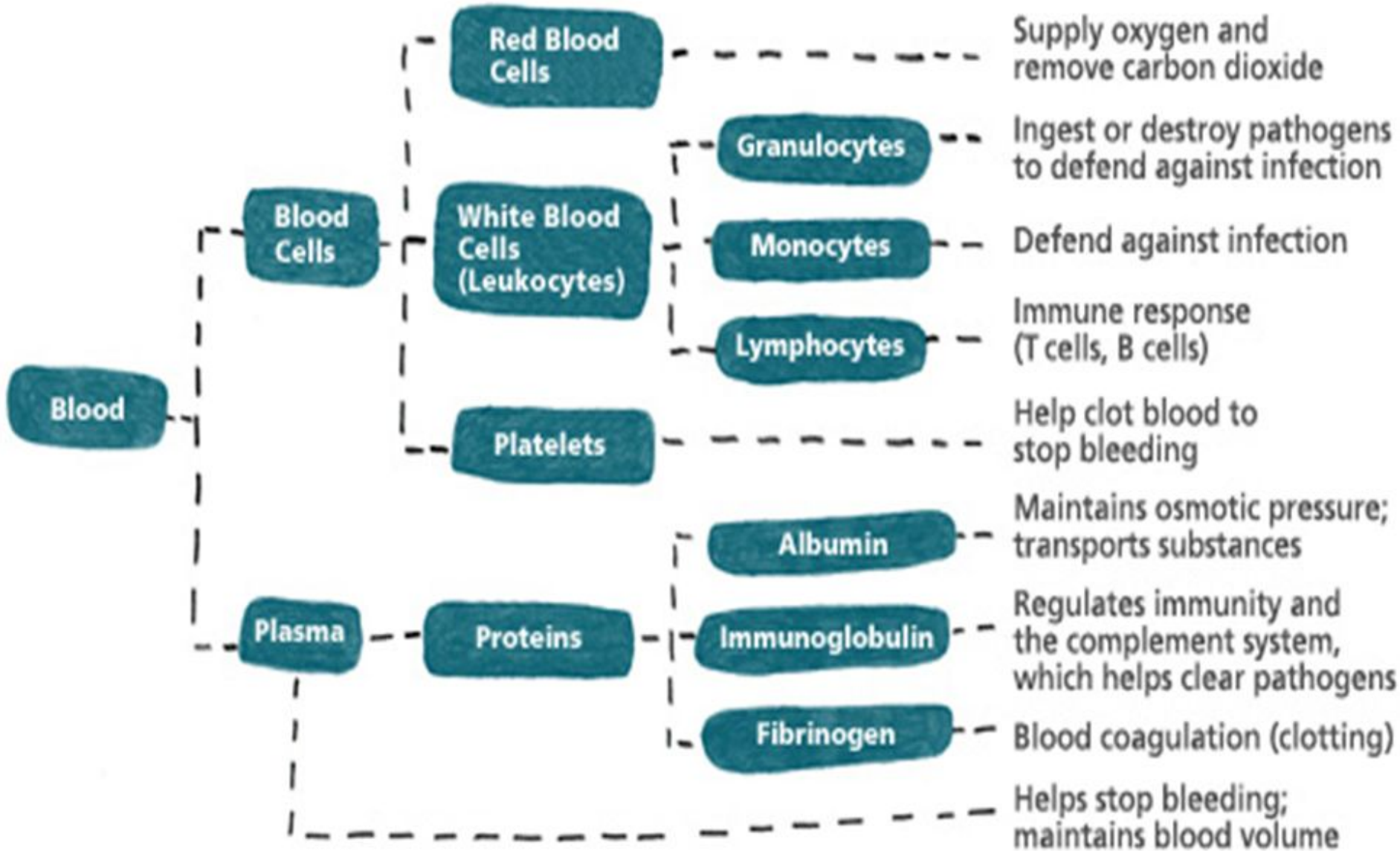
What is blood?

- A highly specialised circulating tissue which has several types of cells suspended in a liquid medium called plasma.

- Origins from Greek '*haima*'

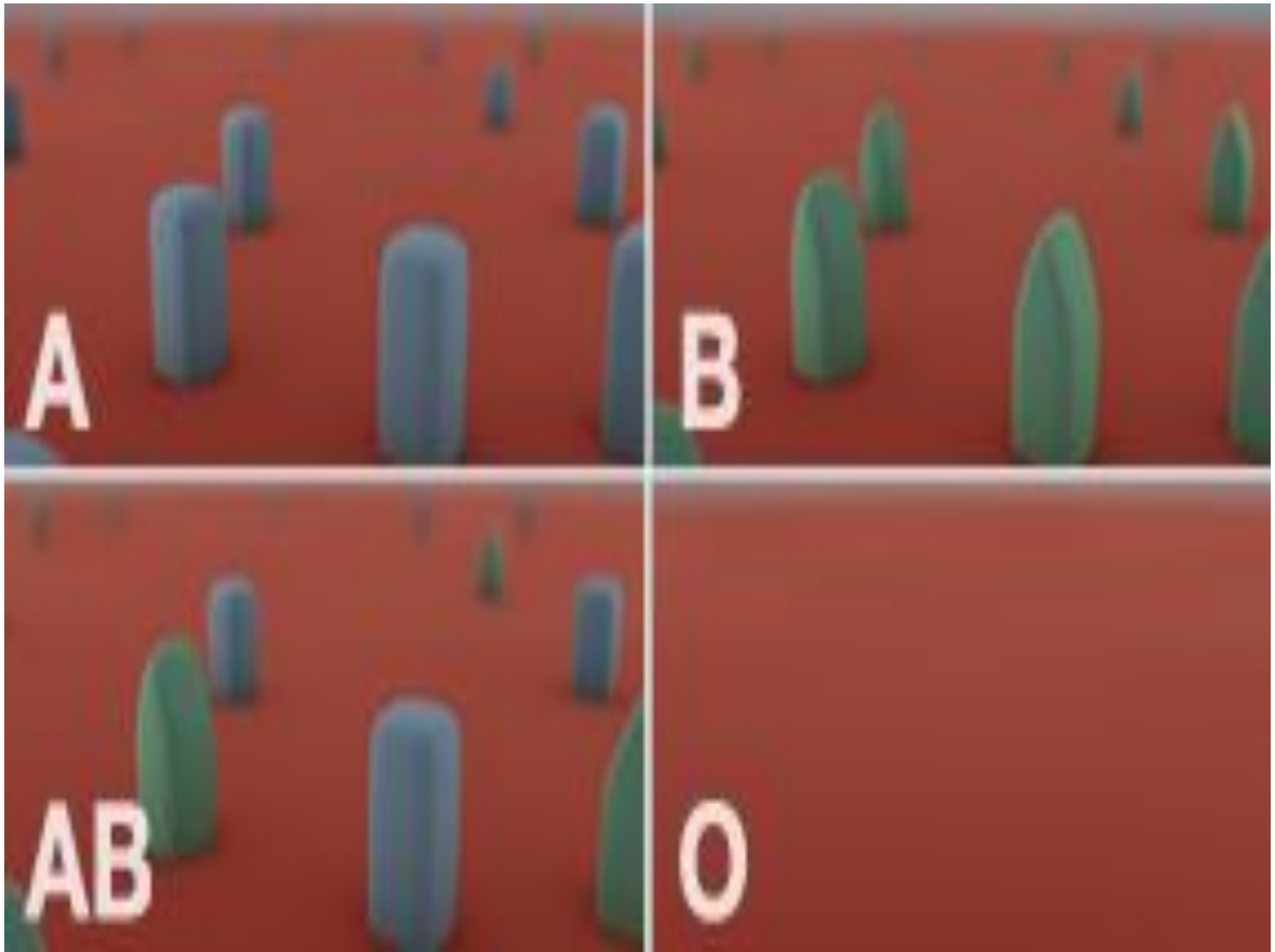
- Blood is a life sustaining fluid

Blood constituents and their functions



Blood agglutinogens

- A
- B
- O
- AB
- Rh +ve
- Rh -ve



Blood Bank

- It’s a catche or bank of blood or it’s components
- Works for Collection or donation, stored and preserved for later use of transfusion
- Hospitals or it’s components

Blood Collecting

Blood Donation

Infectious Disease Testing

- HIV
- Hepatitis B
- Hepatitis C
- HTLV-I and II
- CMV
- Malaria
- Syphilis*

Blood storing

- Blood stored with anti coagulant (ACD)
- Low temperature
- Glycerol or dimethyl sulfoxide – frozen state

Importance of blood bank

Source: www.creativemarketing.co.uk

Ensure constant supply of blood