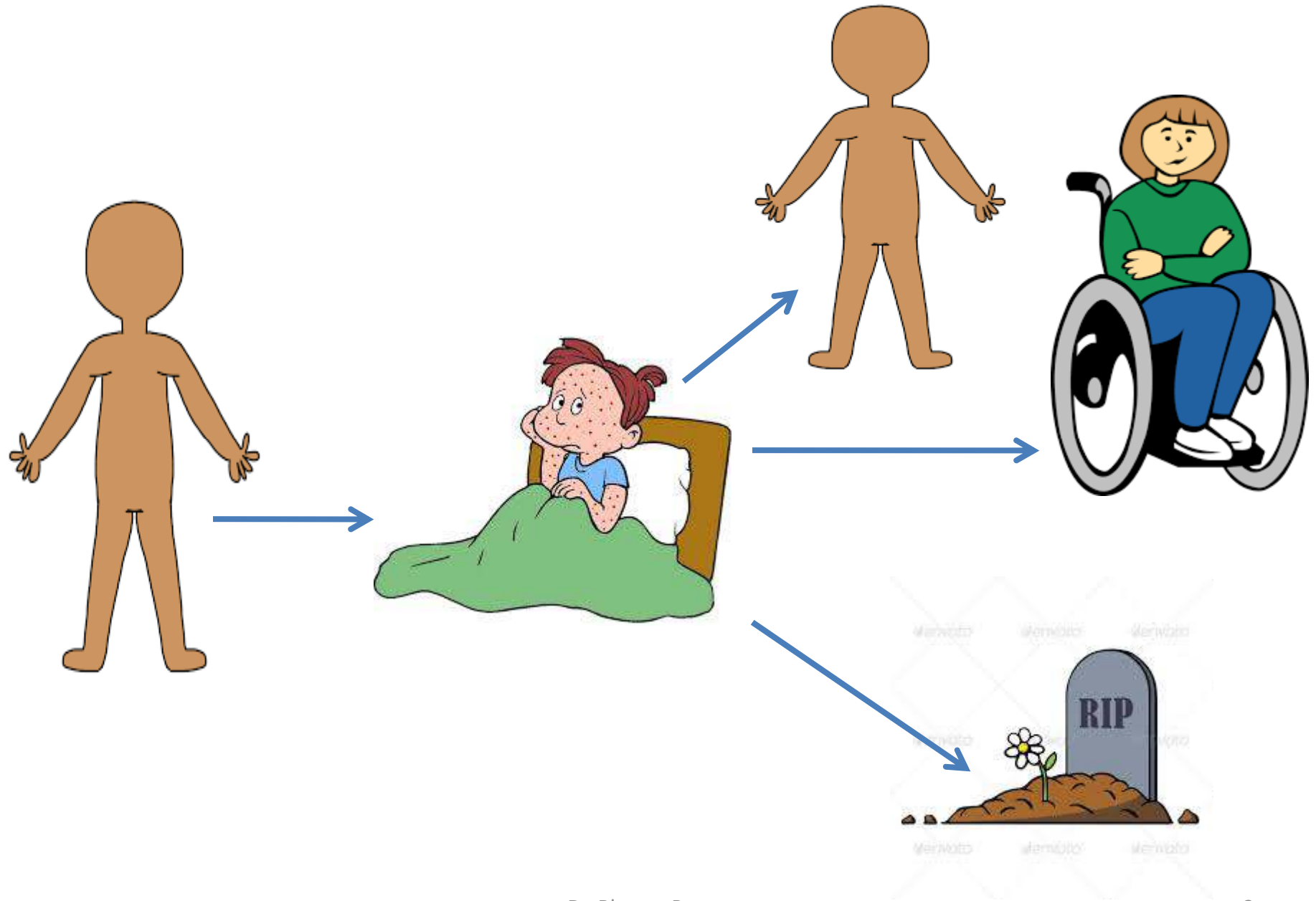


# Natural history of disease



Dr Bhavna Puwar  
Associate Professor

# Natural history of diseases- Key concept



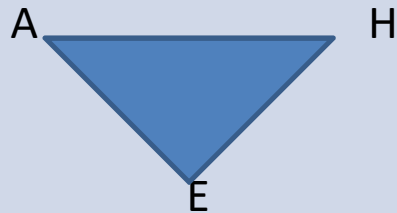
- It signifies the way in which disease evolves over the time from the earliest stage of its prepathogenesis phase to its termination as recovery , disability or death in **absence of treatment or prevention.**
- Each disease has its unique natural history which is not same in all individuals
- It is best established by **cohort studies**
- Physician sees in hospital an episode in natural history of disease but the epidemiologist by studying the natural history in community setting fills the gaps in our  
•knowledge about the natural history of disease

- Natural history of disease is described in two phases:
- Pre pathogenesis- Process in the environment
- Pathogenesis-Process in man
- Described using infectious disease as principal model

## Period of prepathogenesis

Disease Process

Before man is involved

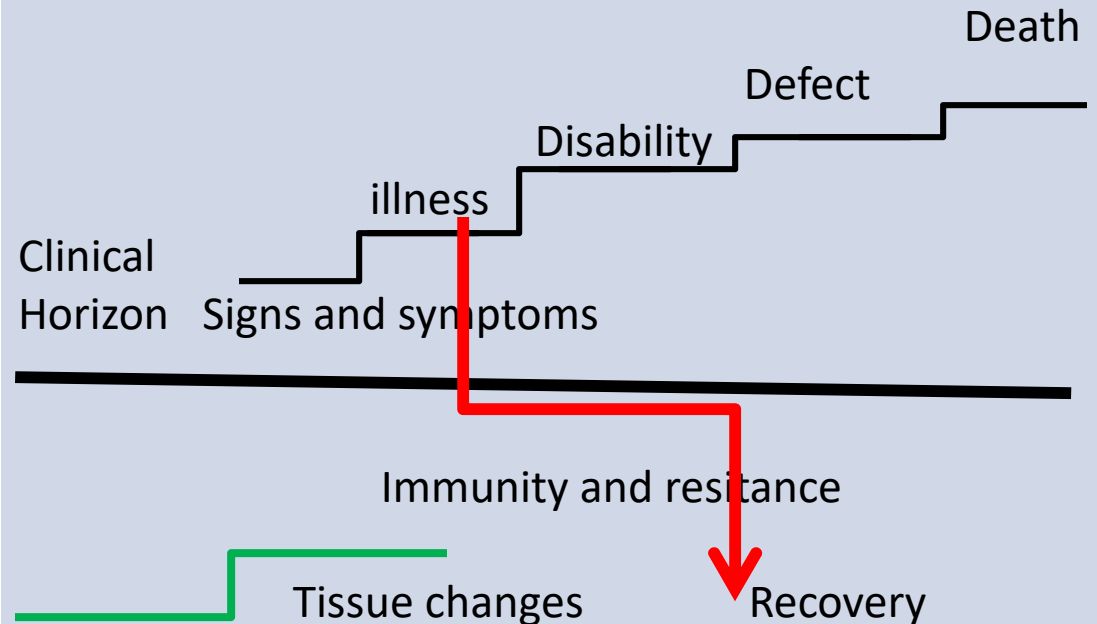


Bring agent and host together or produce a disease provoking stimulus

In  
Host

## Period of pathogenesis

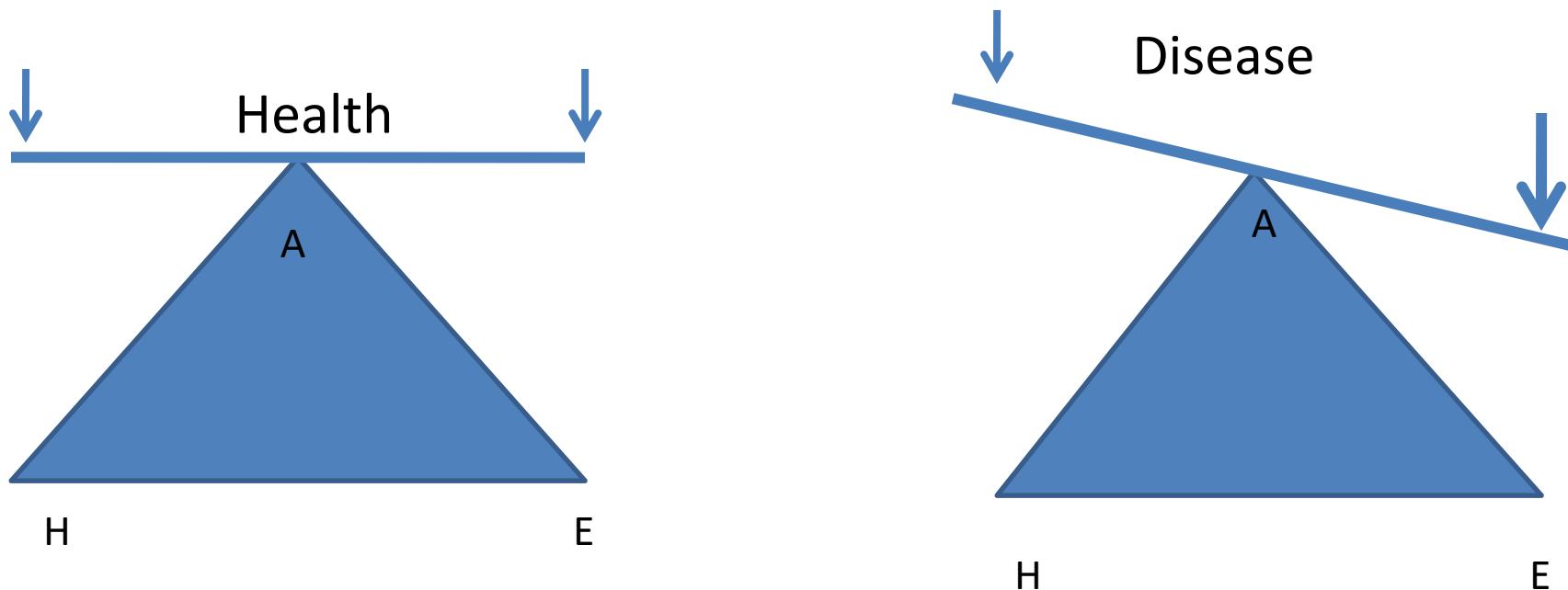
The course of disease in man



Early prepatho- Discernible –Advanced dis- Conva  
early lesion

- Prepathogenesis-
- Preliminary period before onset of disease
- Disease agent not entered in host but the factors favoring interaction of agent host and environment already exist in environment.
  
- Man in the midst of Disease
- Potentially, We all are in this phase for both Communicable and Non Communicable Disease

# Causative factors of Disease



Interaction of agent host and environment initiate the disease process and determines onset and distribution of the disease in community

- Pathogenesis

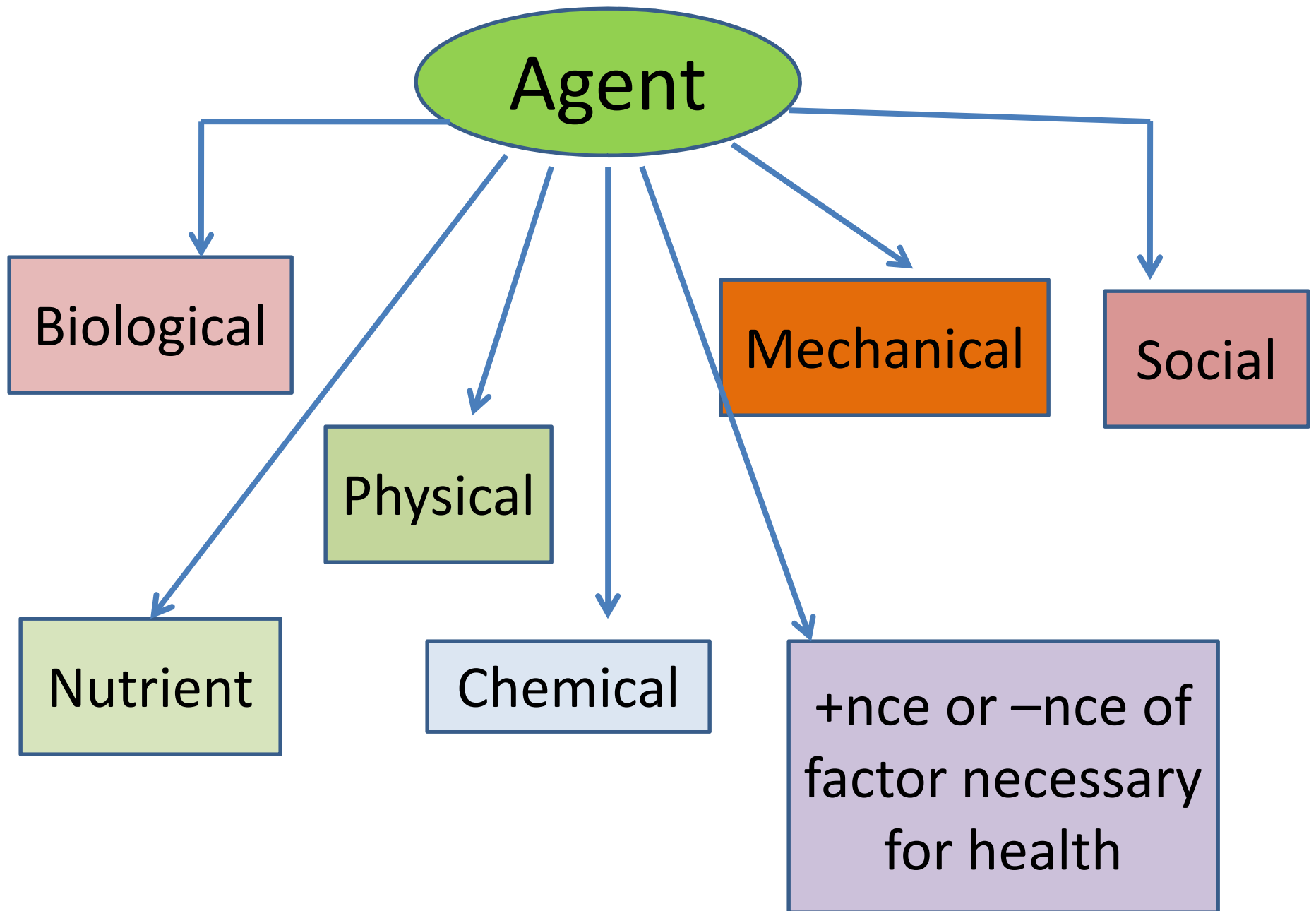
- Entry of disease agent in the susceptible host
- It multiplies and induce tissue and physiological changes, disease progress through incubation period and later to early and late pathogenesis
- The final outcome may be recovery, disability, or death.
- It can be modified by interventions like....



- In pathogenesis phase host reaction to infectious agent may not be predictable.
- Clinical or subclinical,
- typical or atypical,
- carrier state with or without the disease
- eg typhoid and diphtheria

- In chronic disease early prepathogenesis is less dramatic- presymptomatic phase.
- No manifest disease.
- Pathological changes below clinical horizon.
- Clinical phase when sign and symptoms start appearing and disease has advanced into late pathogenesis

- Agent factors: First link in disease transmission
- A disease may have a single agent or multiple agent or complex of two or more agent
- "A substance living or non living, or a force tangible or intangible the excessive presence or relative lack of which may initiate or perpetuate a disease process".



- 1. Biological
- Infectivity
- Pathogenicity
- Virulence



- 2. Physical agent:
- Heat, cold, radiation, noise, atmospheric pressure, humidity
- 3. Chemical:
  - **Endogenous:** Urea, uric acid, bilirubin, ketones, calcium oxalate etc
  - **Exogenous:** Dust, fumes, gas, metals, allergens

- **4. Mechanical:**
- Friction , force, injury, sprain, accidents etc
- **5. Nutritional agent:**



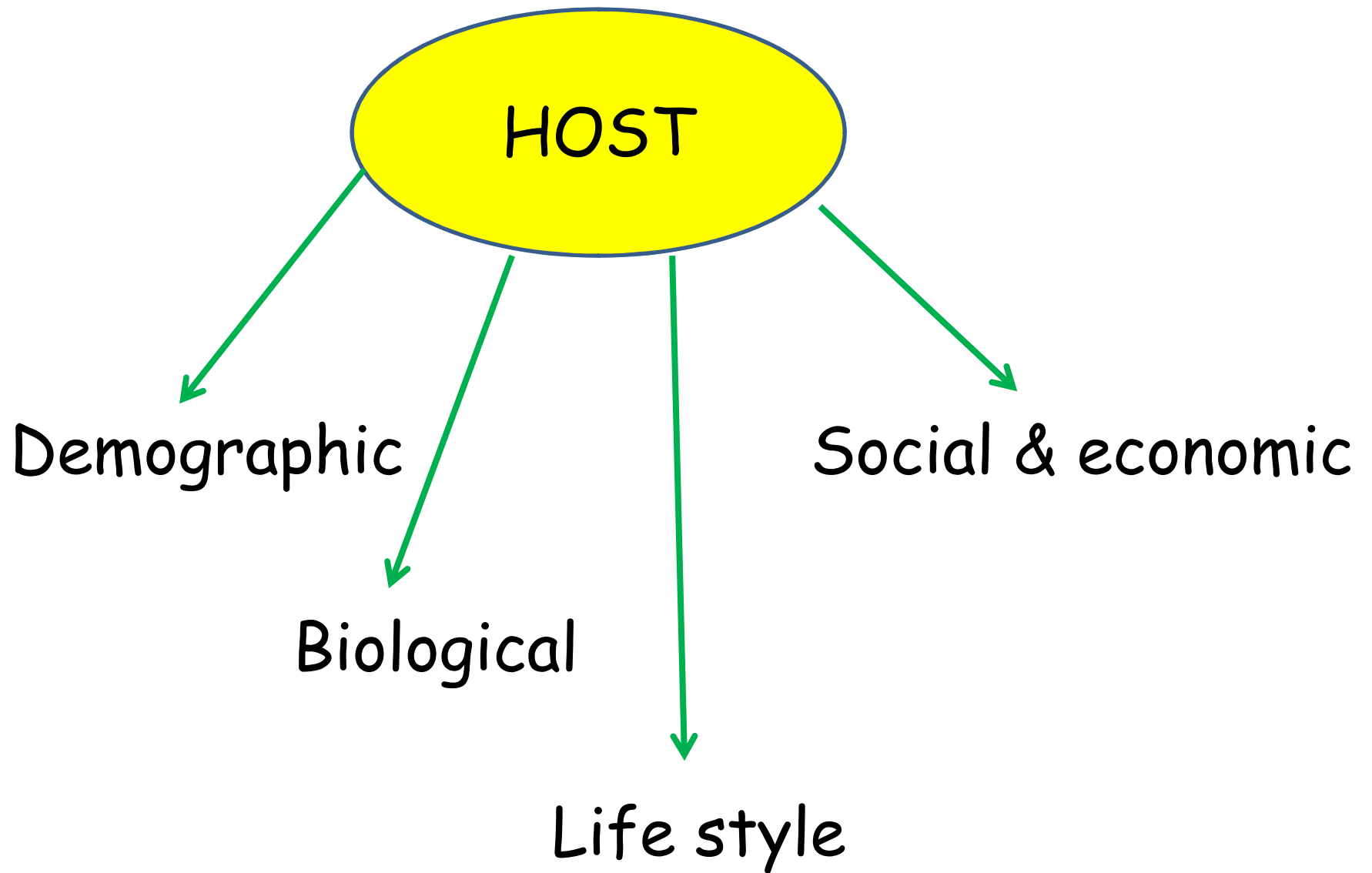
**6. Absence or insufficiency or excess of a factor necessary for health:**

Chemical, Nutrient, Lack of part of structure, chromosomal immunological

**7. Social agents:**

Poverty, Smoking, Abuse of drugs and alcohol, unhealthy life style, social isolation, maternal deprivation etc





- Demographic:
- Age, Sex, Ethnicity



- Biological:
- Genetic factors, blood groups, physiological function of different organs of the body
- Social and economic characteristics:
- SE status, occupation, Education, stress, marital status, housing

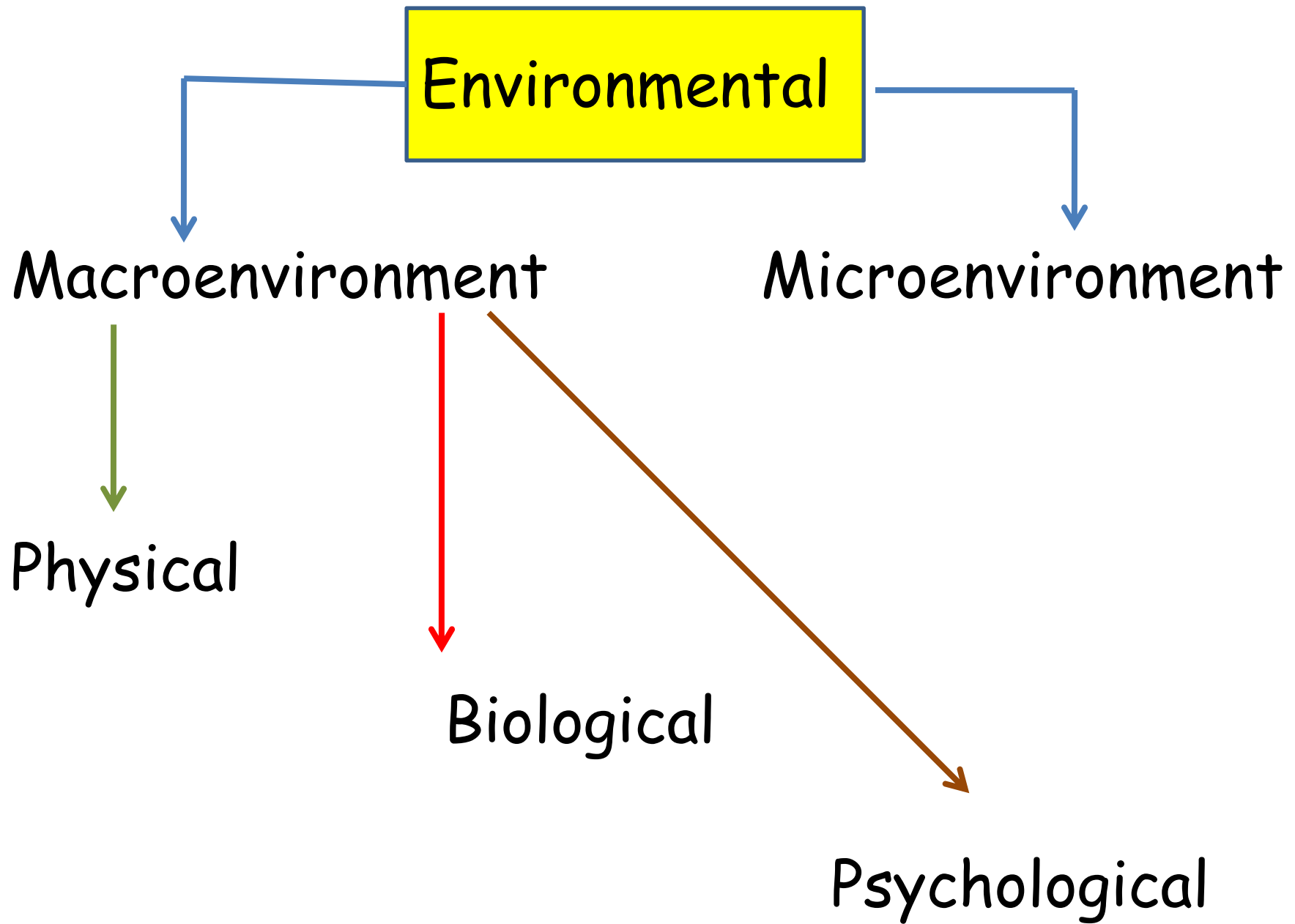
- Life style factors
- Living habits
- Nutritional
- Physical exercise
- Behavioural patterns



Dr. Bhavna Puwar



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- **Physical**: Air water soil food
- Man has altered everything in the environment to his advantage **but in doing so has created problems for himself**
- **Air pollution, noise pollution, water pollution**
  
- **Biological**: Plants, animals, insects, rodents, microbes (**universe of living things surrounding man including man himself**)
- Normally harmonious relationship to achieve peaceful co existence
- But for survival sometimes act as disease agent, reservoir of infection host and vector of disease

## Psychosocial:

Difficult to define

Includes cultural values, customs, habits, beliefs, attitudes, morals, religion, education, lifestyles, community life, health services.

Stressful situation like death, divorce, birth of handicapped child etc,

Feeling of anxiety, anger, depression- predisposes to hypertension, duodenal ulcer, bronchial asthma crimes, violence, suicide or alcohol

- **Man- Agent of his own disease**

Lung cancer



Cigarette - chemical substance-Smoking



maladjustment due to misperception,  
misinterpretation etc

## • Concept of RISK FACTOR

- For many Disease "Agent" is still unidentified (coronary heart disease, cancer), so in such situation disease is generally discussed in terms of risk factors.
- Often suggestive but absolute proof of cause and effect between risk factor and disease is usually lacking.



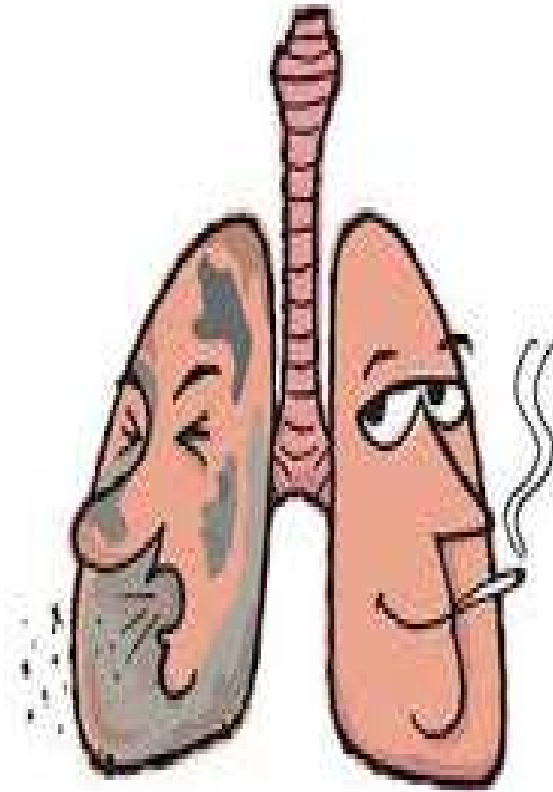
- Presence of risk factor does not imply that the disease will occur and its absence the disease will not occur.
- Observable prior to the event they predict.
- Combination of risk factor in the individual may be purely additive or synergistic

## Risk Factors:

- An attribute or exposure that is significantly associated with occurrence of a disease
- A determinant that can be modified by intervention there by reducing the possibility of disease occurrence or outcome



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- Risk factor may be truly causative  
**Lung cancer and smoking**
- May be merely contributory  
**Physical exercise and coronary artery disease**
- May be predictive in statistical sense  
**Literacy and perinatal mortality**

# Risk Factors:

## Modifiable:

Lack of physical activity

Tobacco use

Alcohol use

## Nonmodifiable:

Age

Sex

Family History

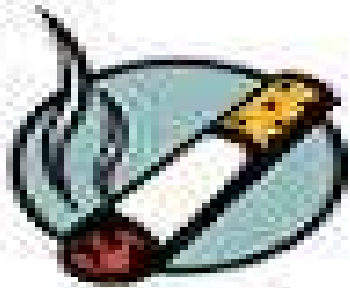
## Risk Groups:

Identify individual in the population by certain defined criteria and direct appropriate measure to them first

## Risk Approach:

Something for all but more for those in need

# Coronary Artery Disease



Smoking



Heredity



Age



Inactive Lifestyle



Obesity

Buzzle.com

# Diabetes Mellitus



**Family History**



**Lack of exercise**

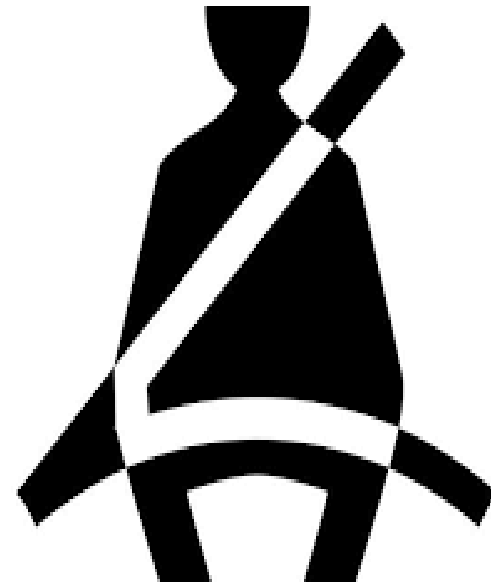
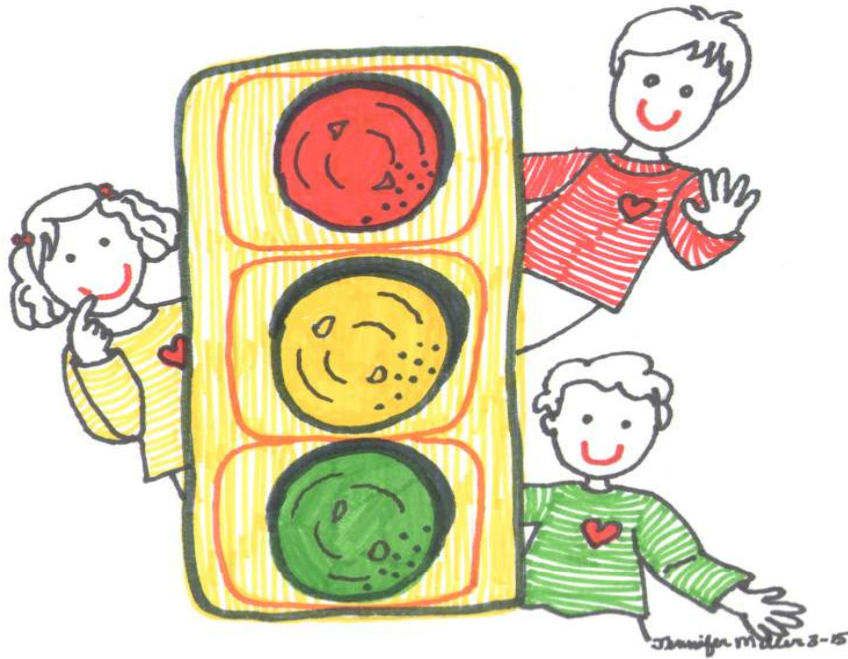


**Unhealthy eating**

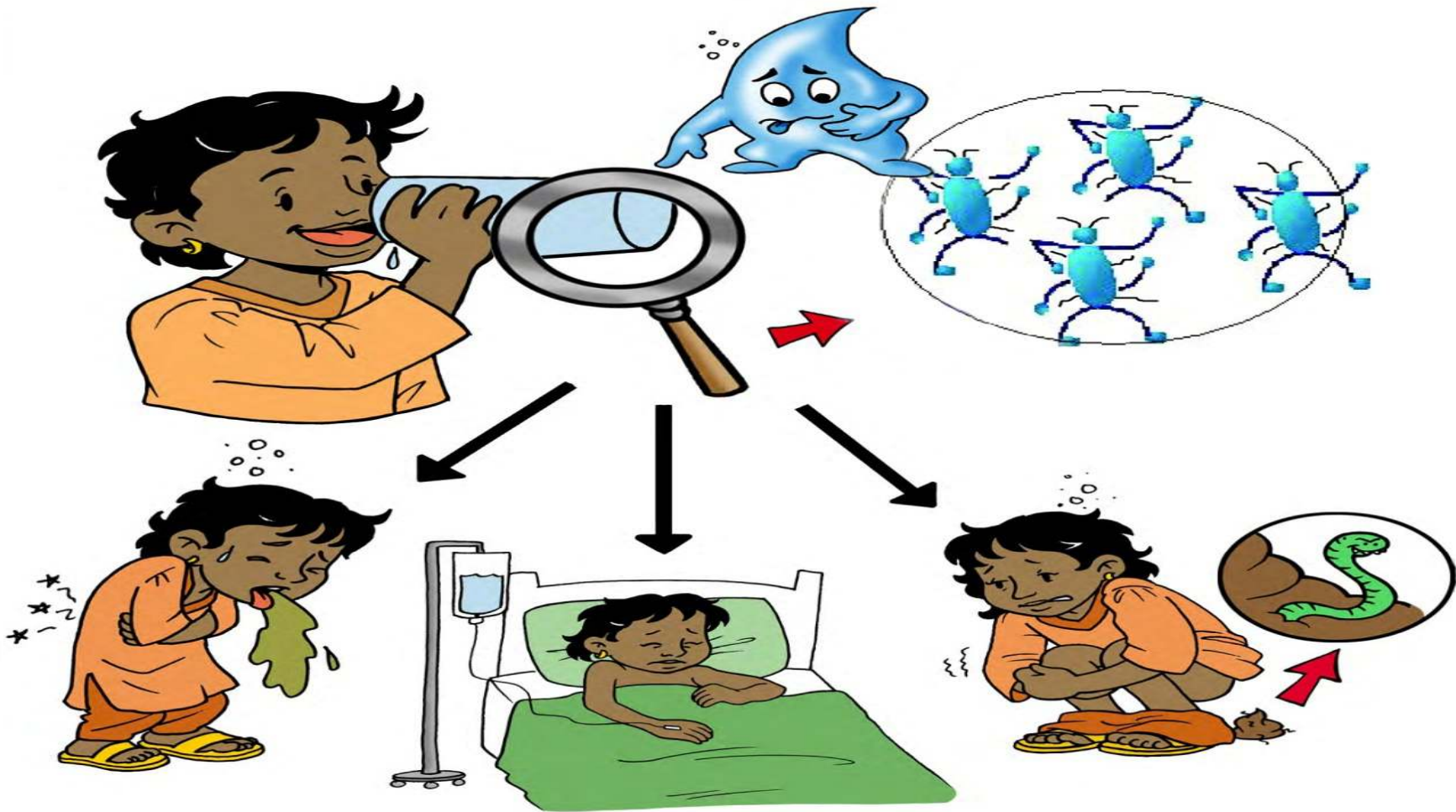


**Overweight**

# Road Traffic Accident



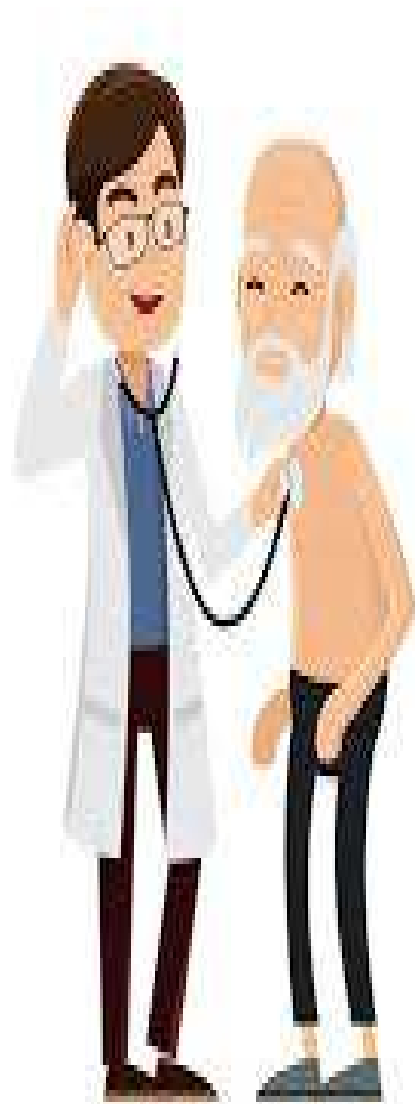




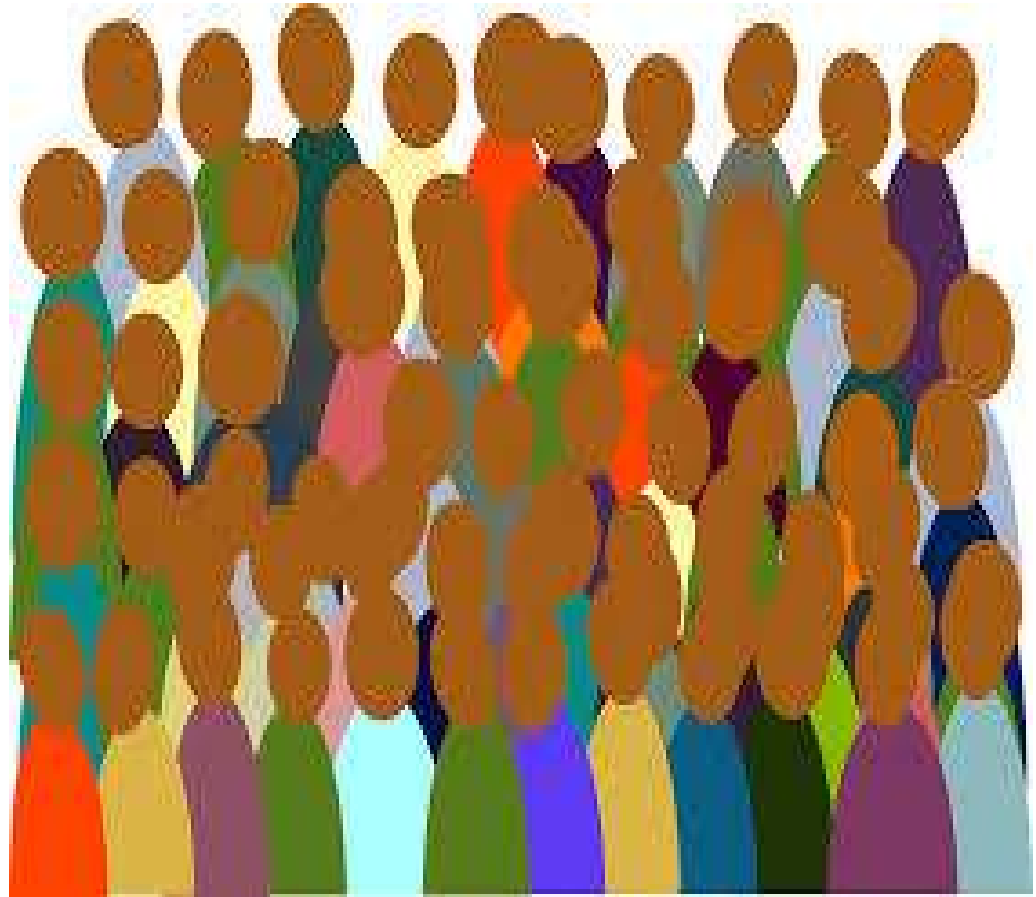
**CONTAMINATED WATER  
CONTAINS MICROBES  
THAT MAKE US SICK**

- Iceberg phenomenon of disease

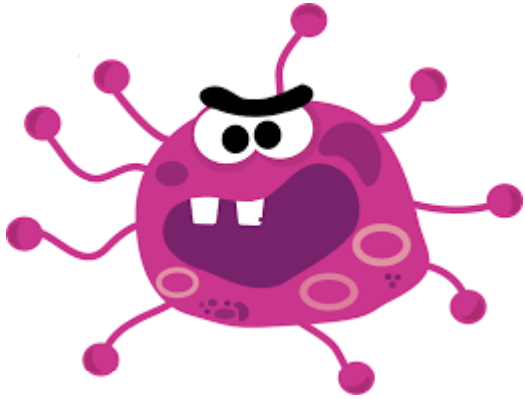




**Clinician sees**



**Epidemiologist sees**



Thank You