

Concept of Disease I

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Disease

- Webster: Condition in which health is impaired, departure from the state of health, an alteration of human body interrupting the performance of vital function.
- Oxford: Condition of the body or some part or some organ of the body in which its function are disrupted or deranged

- Ecological

- Sociological

- **Simplest one:** Any deviation from normal functioning or state of complete physical and mental well being
- Health and disease are mutually exclusive

- WHO has defined health but not disease.
- Why???
- Disease has many shades

- Disease has many shades
- Inapparent to Severe
- Acute to insidious
- Carrier state

- Same organism: more than one manifestations(eg)
- More than one organism: causing one disease(eg)
- Short course to prolonged course
- Borderline between normal and abnormal is indistinct
- End point of disease

- Disease, Illness, Sickness
- **Disease**: Physiological or Psychological dysfunction
- **Illness**: Subjective state of person who feels aware of not being well.
- **Sickness**: State of social dysfunction (role the individual assumes when ill)

- Clinician see those who are ill and not necessarily those who are diseased.
- At times a person may have disease without feeling ill.
- Person may be ill without and physical disruption of function or disease
- So yet to frame adequate definition which is acceptable to all.

Disease Causation

- Various theories.
- Discovery in microbiology

changes the etiological concept

Disease Causation

- Supernatural theory of disease
- Theory of humors
- Concept of contagion
- Miasmatic theory of disease
- Theory of spontaneous generation

Disease Causation

- Supernatural theory of disease





Germ theory of Disease



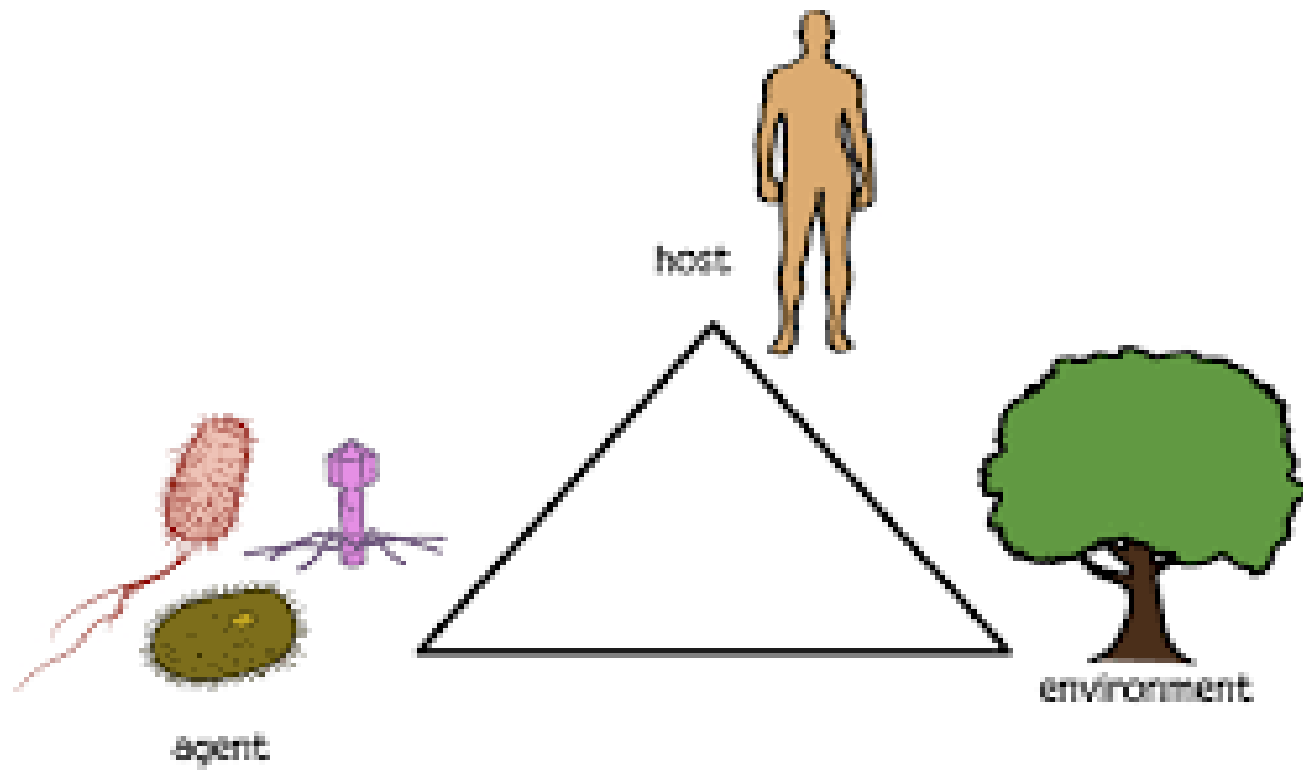
In 19th and early 20th century
Empirical cause to microbes as sole cause of disease

Germ theory of disease

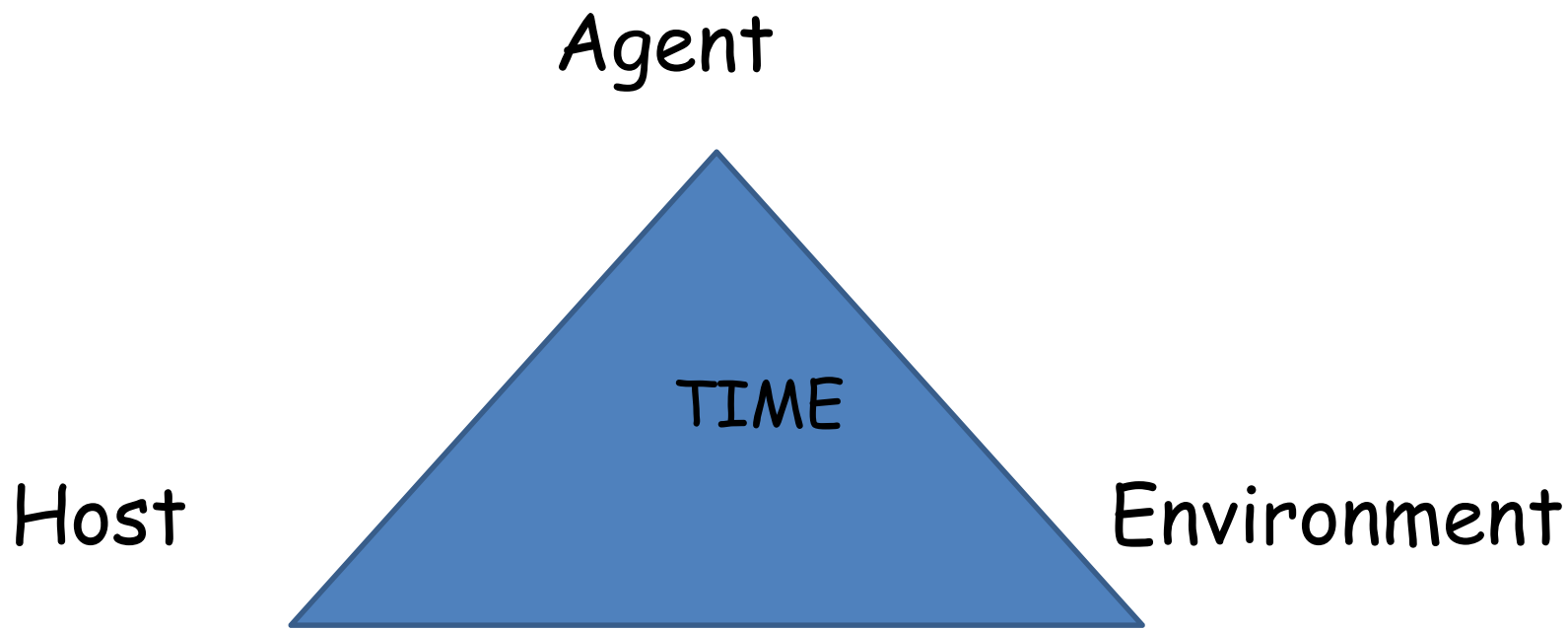
- One to one relationship between causal agent and disease
- Disease agent  Man  disease.
- Revolutionary concept but could not think beyond microbes
- Disease rarely caused by single agent but rather depends on number of factors

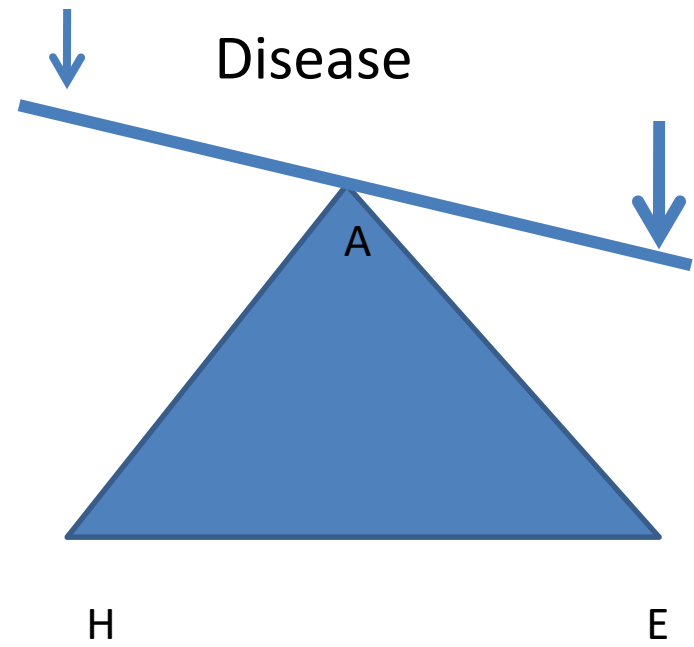
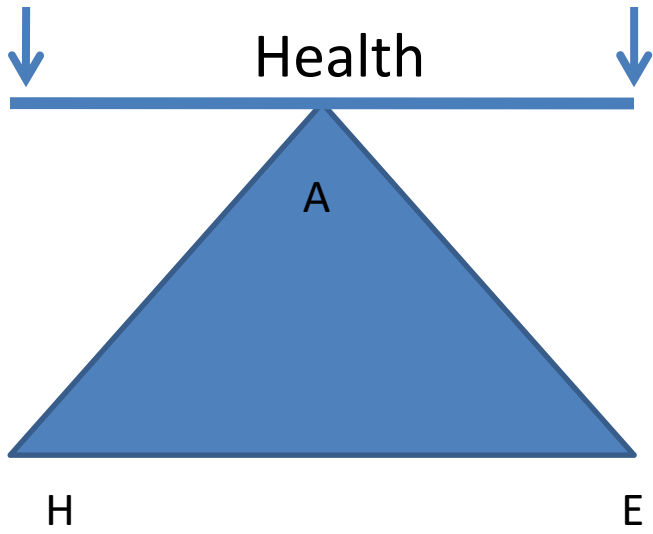
Epidemiological Triad

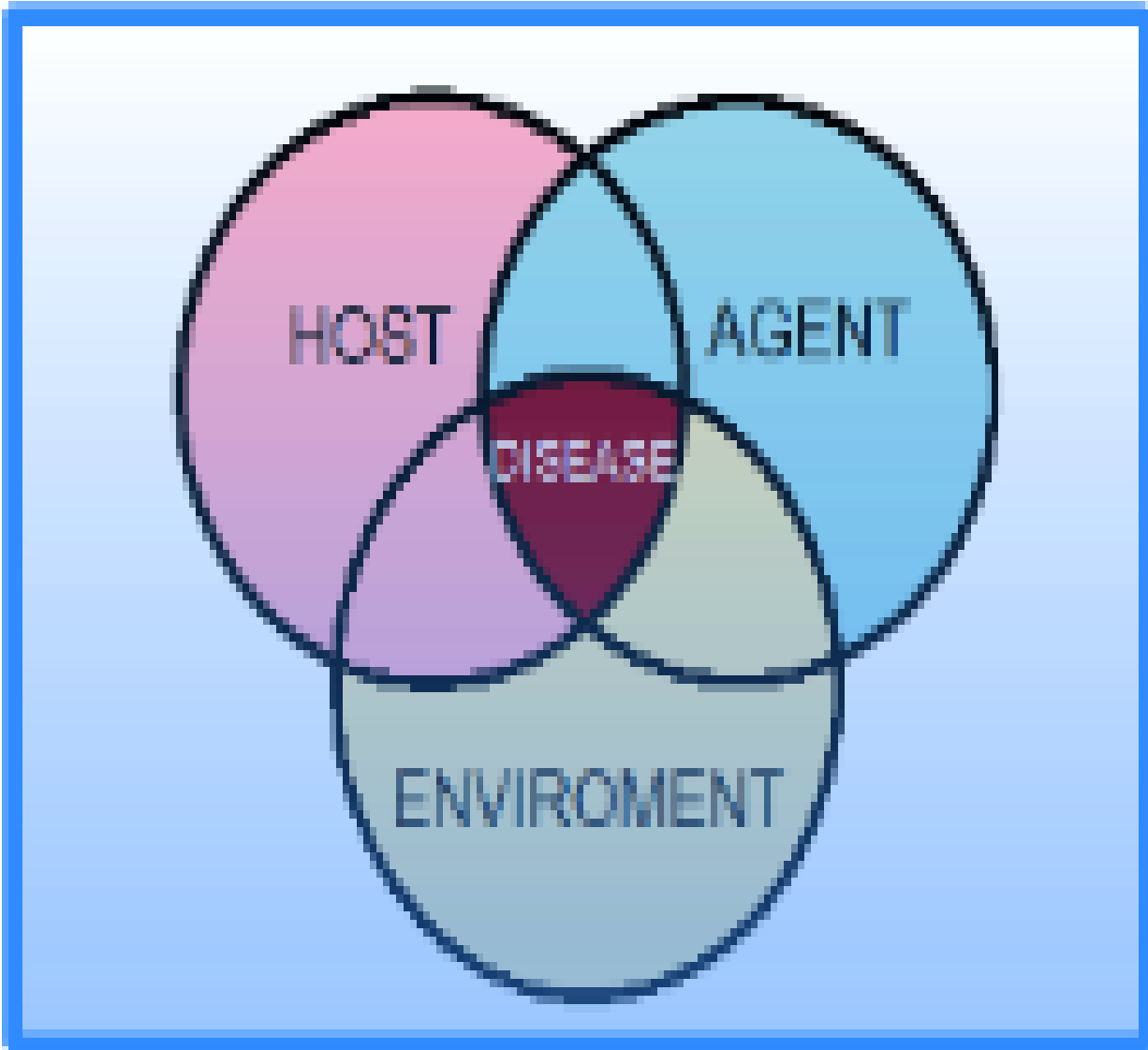
- Limitation of germ theory.
- Factors other than disease agent responsible for disease causation ???
- Used for many years



- Triangular model based on communicable disease model
- Interaction and interdependence of agent, host and environment and time







- Agent: Virus, Bacteria,
- In noninfectious disease single or multiple factors may be causing the disease
- Host: Allow subsistence and lodgement to the organism but may or may not develop the disease
- The determining factors are
- Environmental factors: External and internal Environment
- Time element
- Mission of epidemiology is to break one of the leg of the triangle

BEINGS THEORY

Recent and further expansion of triad theory
Human disease and its consequences are
caused by complex interplay of nine factors

B-Biological

B- Behavioral

E- Environmental

I- Immunological

N- Nutritional

G - Genetics

S- Social

S- Spiritual

S- Service

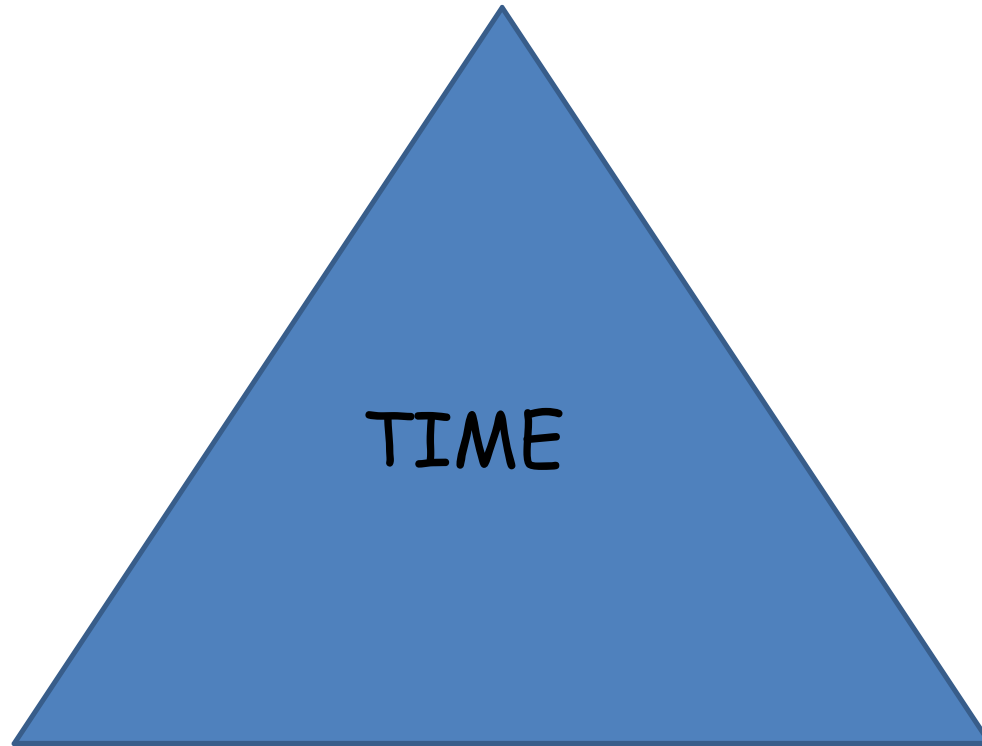
Multifactorial causation

- Germ theory - control of communicable disease as many public health measures like chemotherapy, Antibiotics, and vector control were introduced.
- Disease of civilization- "Modern" disease
- Germ Theory -could not explain nor could control modern disease ???

- Think of **CAD or Cancer**
- Lifestyle factors or behavioral factors
- Total life solution of patient and community search began for multiple factors like social, economic, cultural, genetic and psychological
- Multifactorial

- So advanced model of triad of epidemiology includes all facets of communicable disease model
- **Agent** now termed as causative factor which may be multiple factors and are also called aetiological factors of disease

Causative Agent



Groups or populations
and their
characteristics

Environment Behaviour,
culture, physiological
forces, ecological
elements

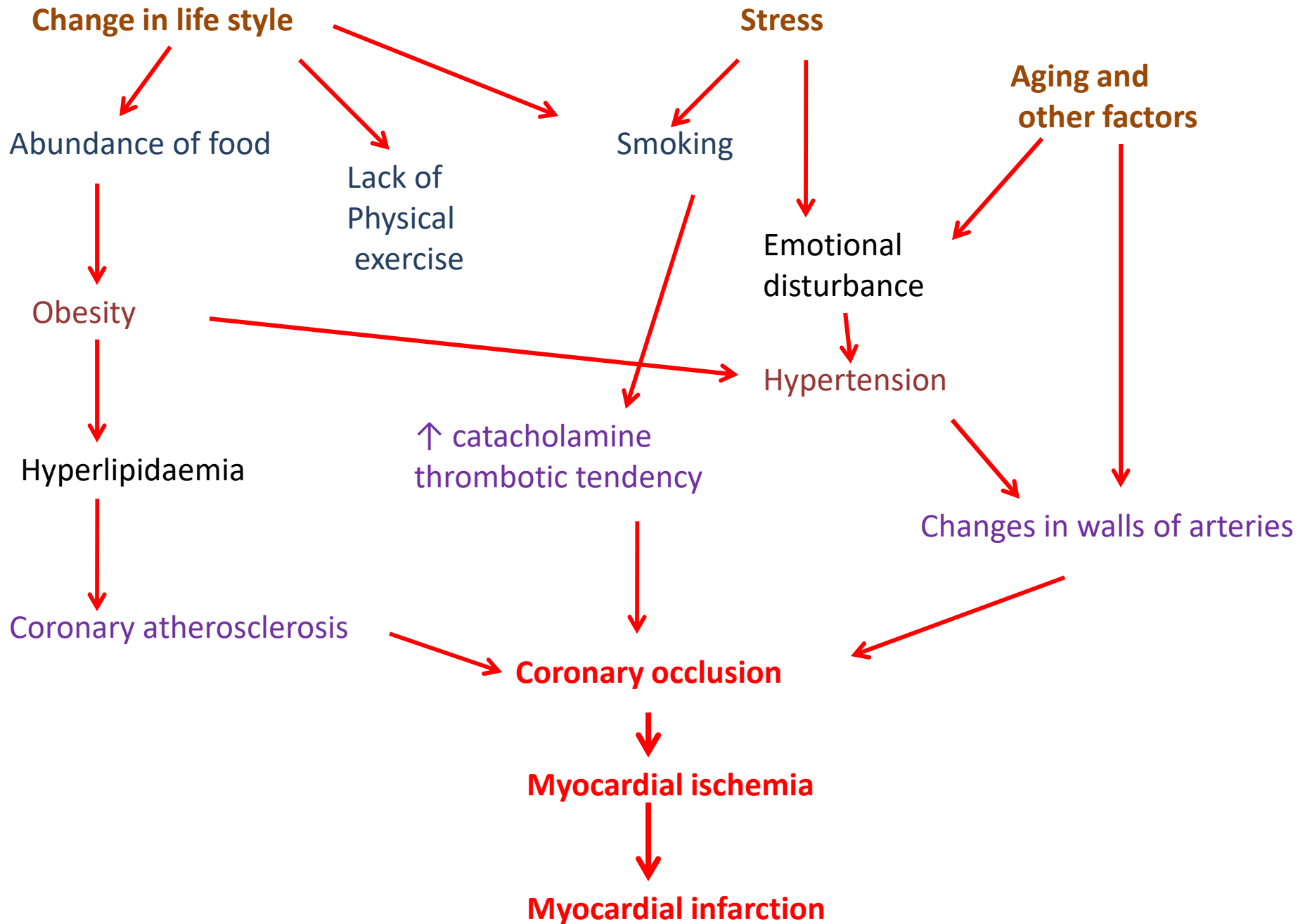
Multifactorial theory

- Multiple factors : Quantify them and arrange them in priority sequence for modification.
- Offers multiple approaches for prevention and control

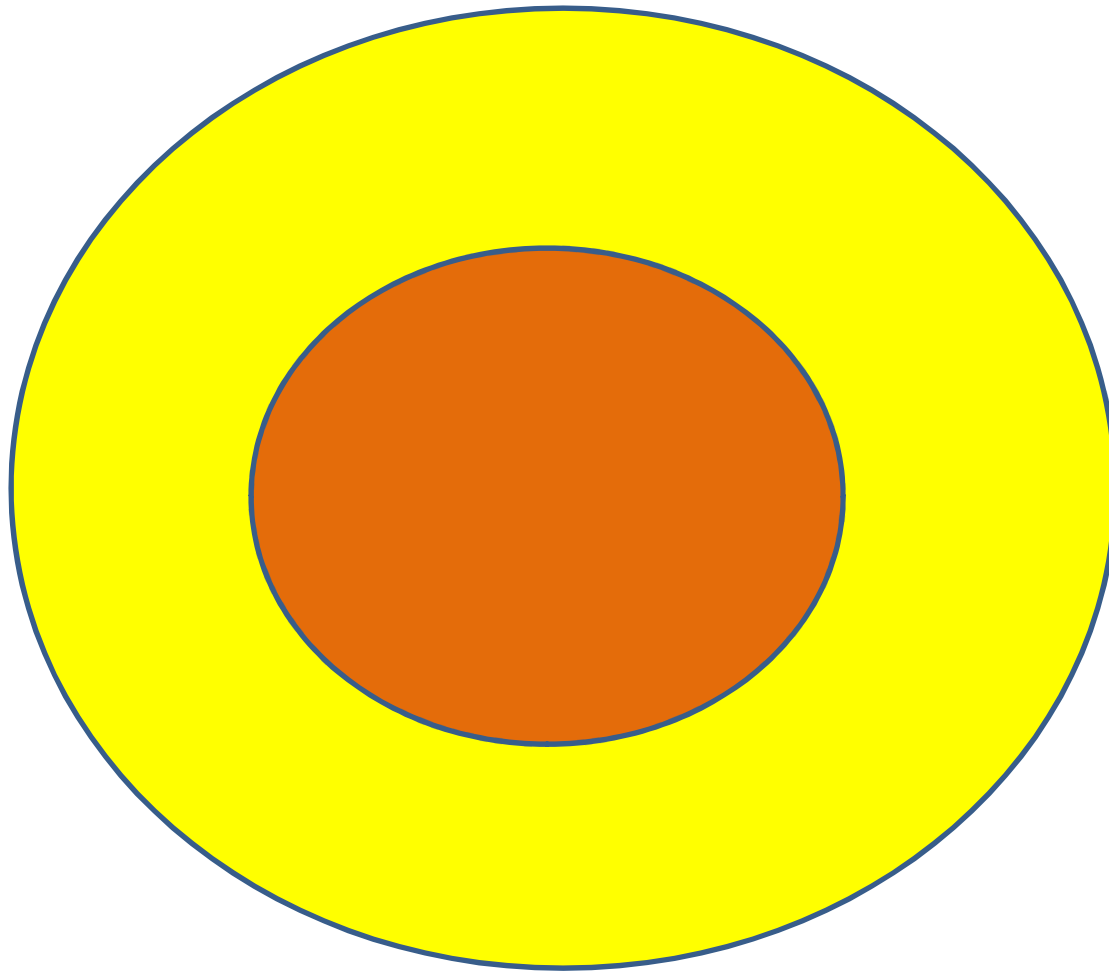
Web of causation

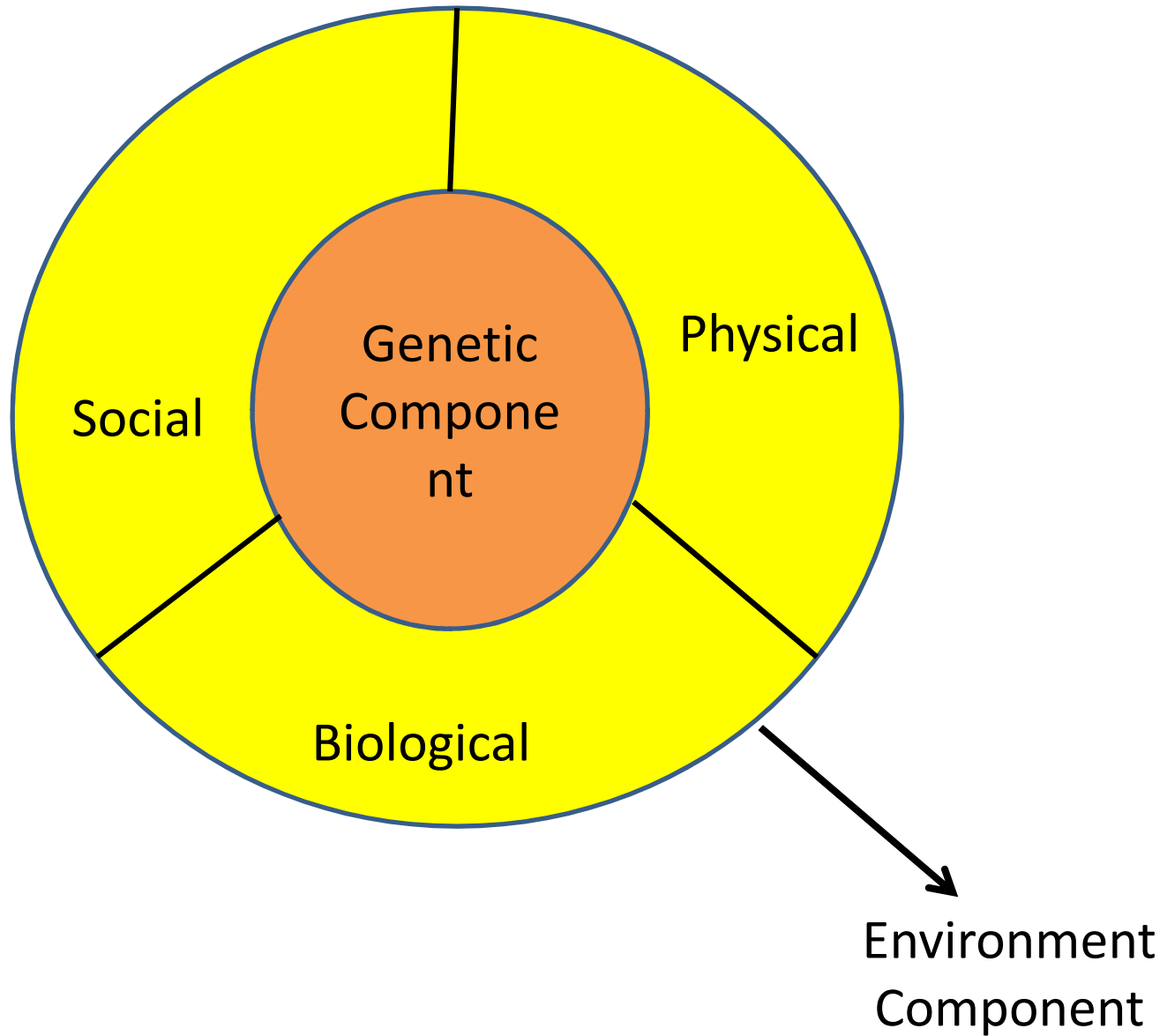
- First suggested by **Macmohan and Pugh**
- For **chronic disease**, the disease agent is mostly unknown
- Disease occurrence depends on interaction of these multiple factors
- Predisposing factors may be of any type and their interaction may be
 - **Cluster of causes**
 - **Combination of effects**
- How they relate?

- Model shows variety of possible interventions that could be taken which might reduce occurrence of myocardial infarction

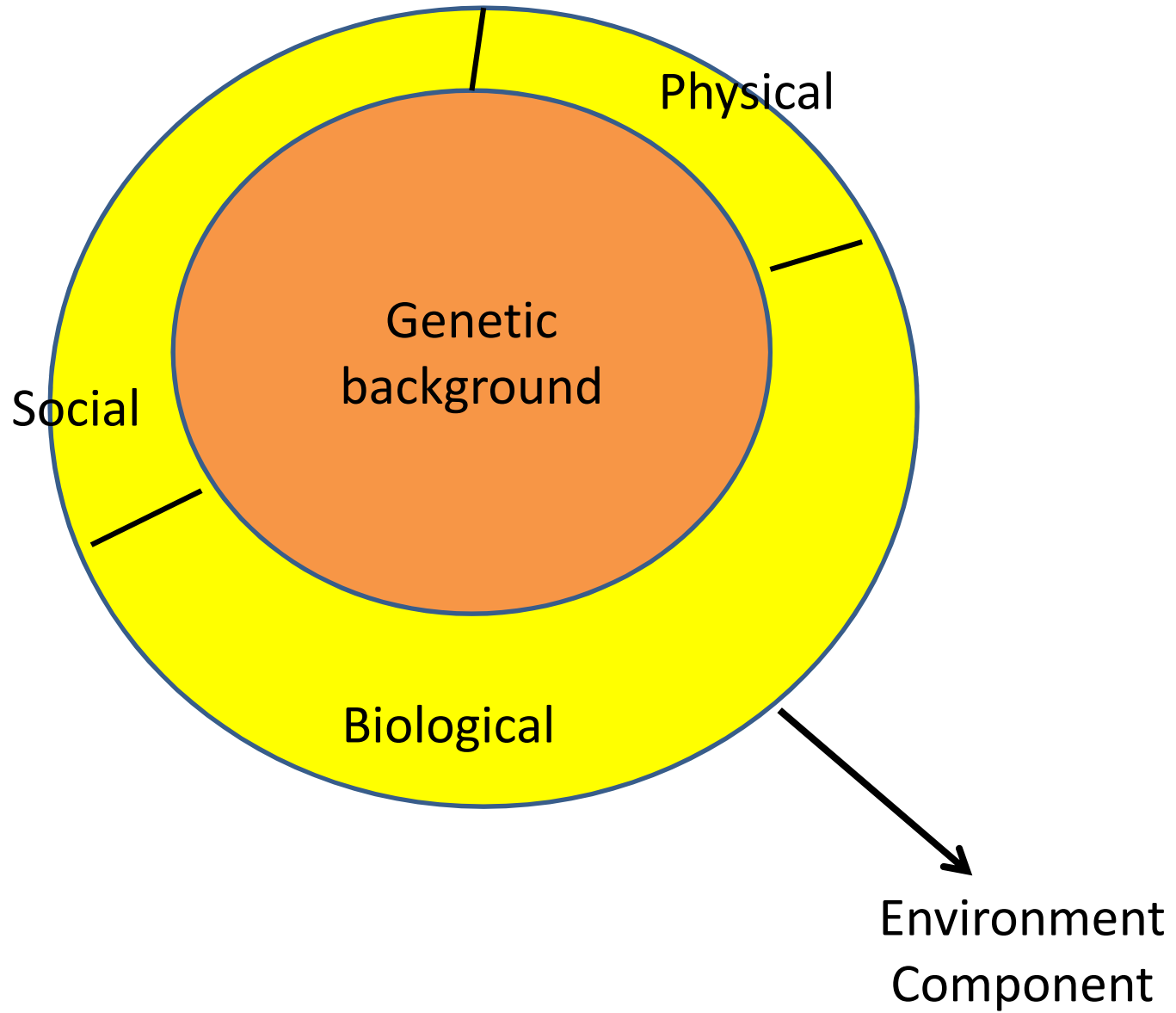


Epidemiological Wheel theory





Epidemiological Wheel theory



Diabetes Mellitus