

CONCEPT OF PREVENTION & CONTROL of DISEASES

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- Health Promotion
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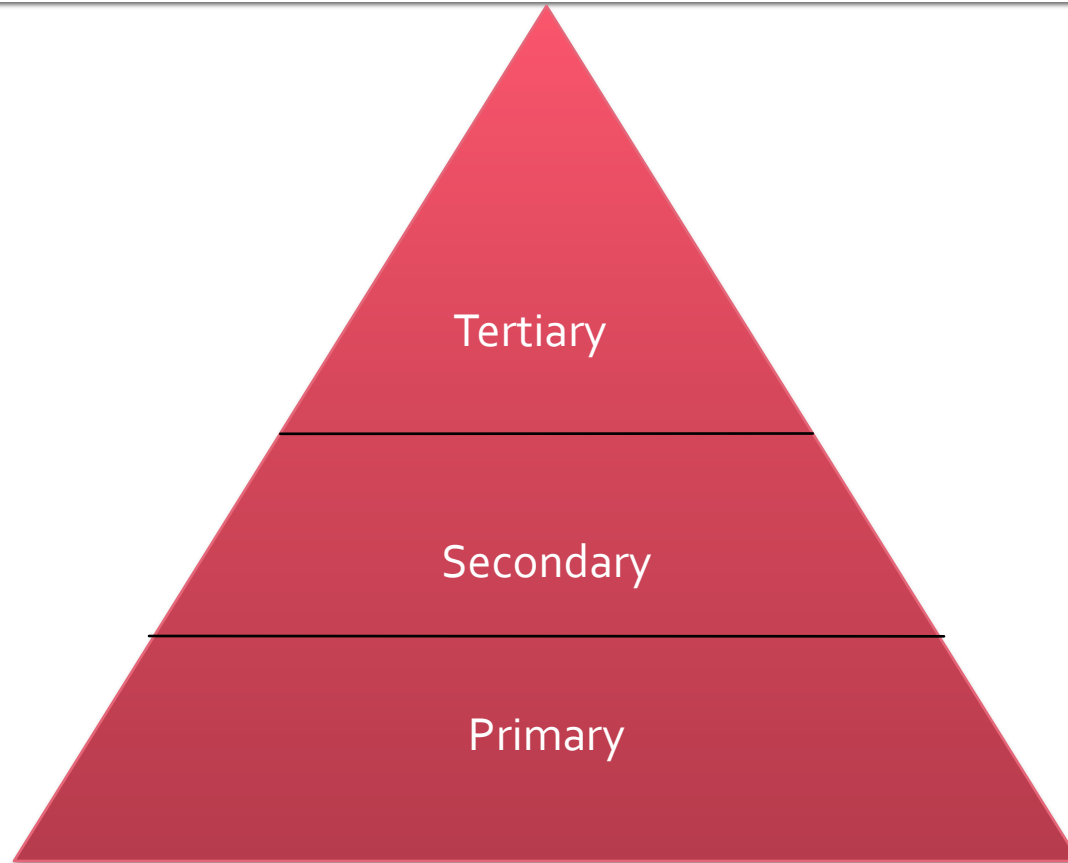
Health Care

- It is defined as a “multitude of services rendered to individuals, families or communities by the agents of the health services or professions, for the purpose of promoting, maintaining, monitoring or restoring health”.

Characteristics of Health care

- Appropriateness
- Comprehensiveness
- Adequacy
- Availability
- Accessibility
- Affordability
- Feasibility

Levels of Health Care



Primary Health Care

Definition: Essential healthcare made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development.

- Came into limelight after Alma-Ata conference in 1978

Health for All

- Given by the WHO in World Health Assembly in May 1977.
- Background to this was the growing concern about the unacceptably low levels of health status of the majority of the world's population, esp. the rural poor, & the gross disparities in health between rich & poor and urban & rural population.

Health Team Concept

Definition: A group of persons who share a common health goal and common objectives, determined by community needs and towards the achievement of which each member of the team contributes in accordance with her/his competence and skills, and respecting the functions of the other.

- Essential member of the team is an auxiliary.

Health promotion

- It has been recognized as an essential element of health development.
- The ultimate goal is to increase life expectancy.
- 1986- Ottawa Charter for Health Promotion;
Health promotion logo
- 1997- Jakarta Declaration on Health promotion

Millennium Development Goals



- These were set in Sept. 2000 at the millennium Declaration and were to be met by 2015.

Sustainable Development Goals



- These were launched in 2015 and the target year for completion of these goals is 2030.

Concept of Disease

- The term disease literally means “without ease”.
- Ecological POV: Maladjustment of the human organism to the environment.
- Sociological POV: A social phenomenon, occurring in all societies and defined and fought in terms of the particular cultural forces prevalent in the society.

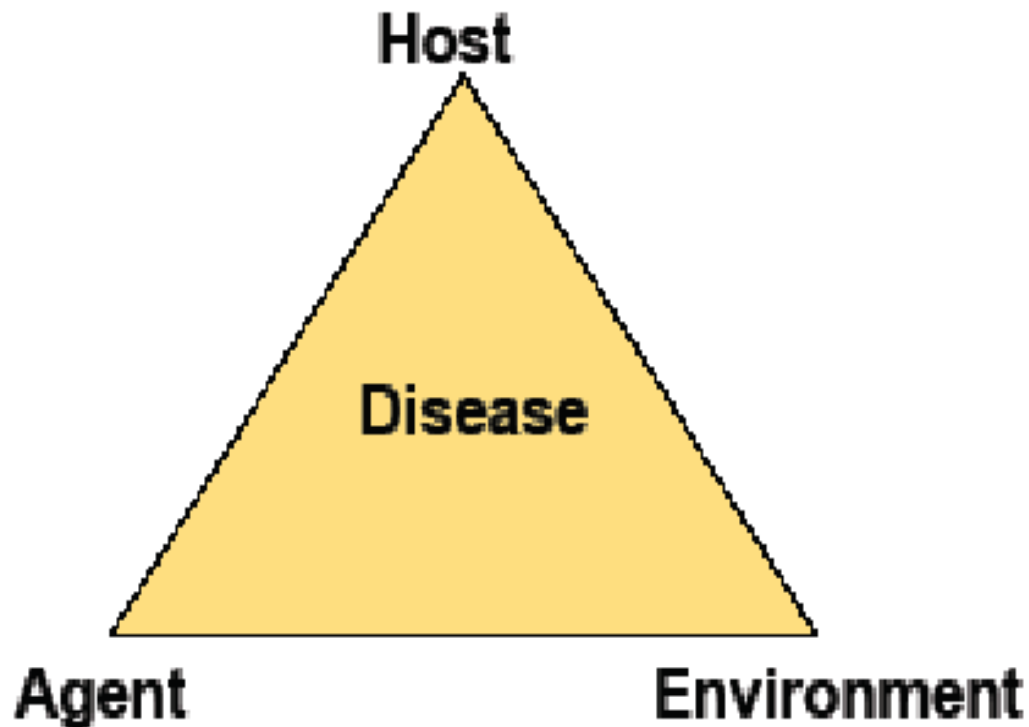
- **Disease:** Physiological/psychological dysfunction
- **Illness:** A subjective state of the person who feels aware of not being well
- **Sickness:** A state of social dysfunction

Concepts of Causation

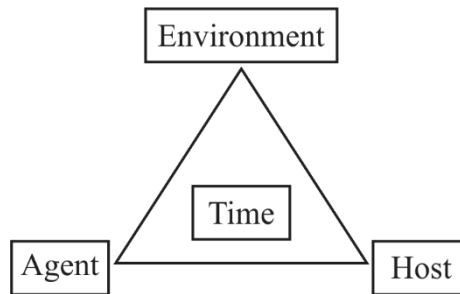
Germ Theory of Disease

- This concept gained momentum during the 19th and early part of 20th century.
- Emphasis shifted from empirical causes (e.g. bad air) to microbes as the cause of disease.
- It talked about the **one-to-one** relationship between causal agent and disease
- The disease model is:
- Disease agent \longrightarrow Man \longrightarrow Disease
- Pasteur, Henle and Koch were strong proponents of this theory

Epidemiological triad

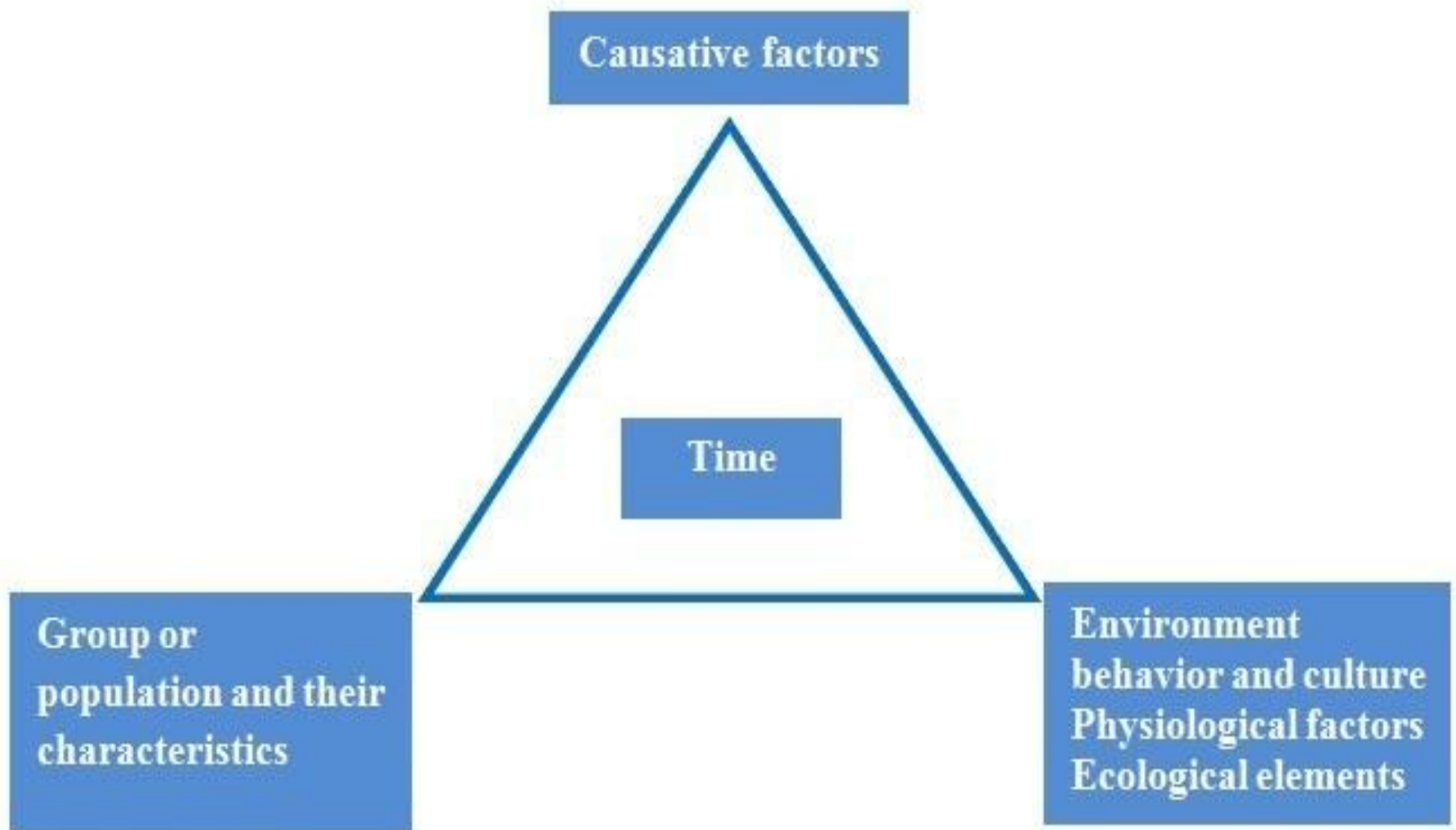


Epidemiological Triangle



Multifactorial causation

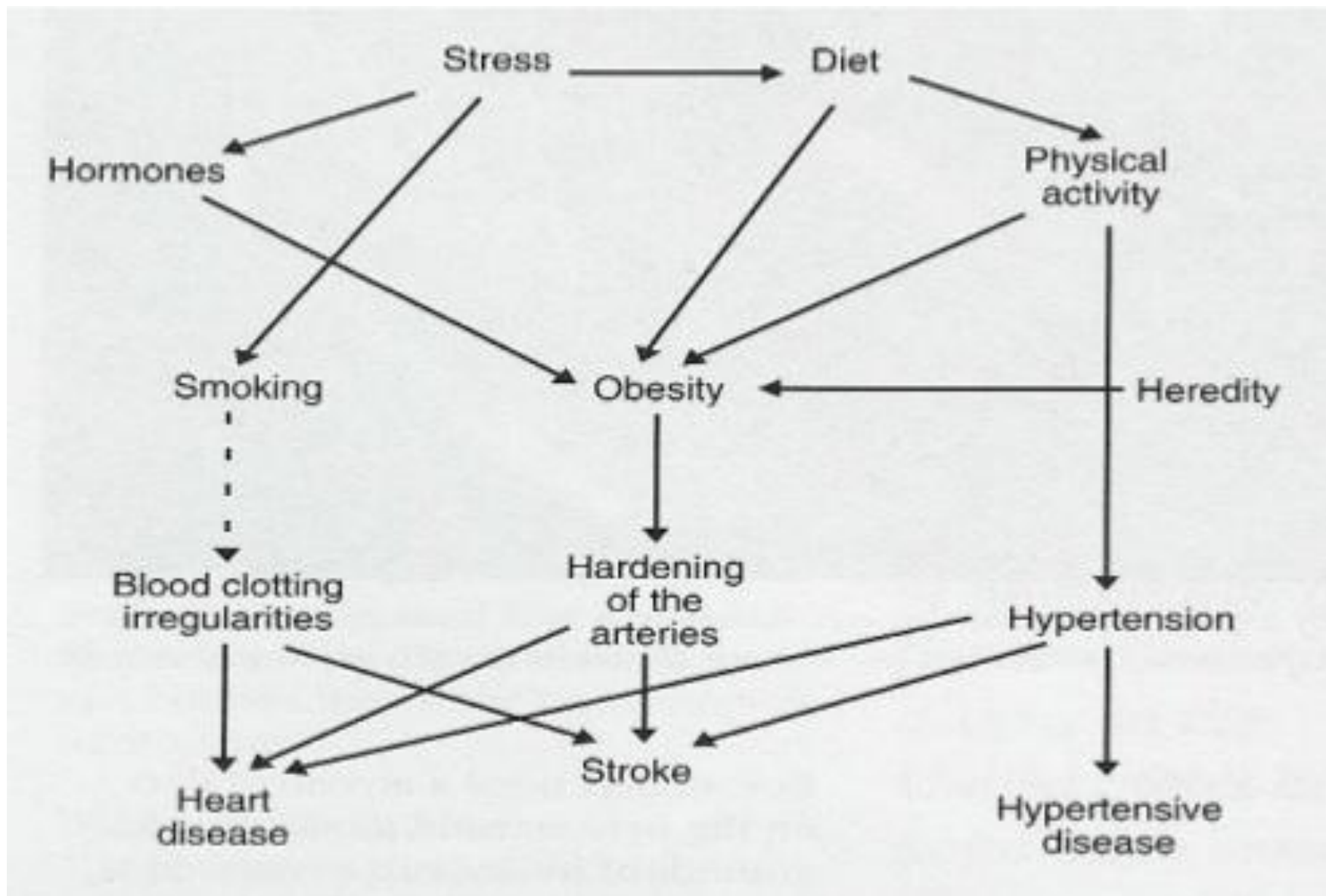
- Proposed by Pettenkofer of Munich in late 19th century
- He stated that a disease occurred due to multiple factors; agent, host and environment act synergistically as well as independently to cause disease.



Advanced model of the triangle of epidemiology

Web of Causation

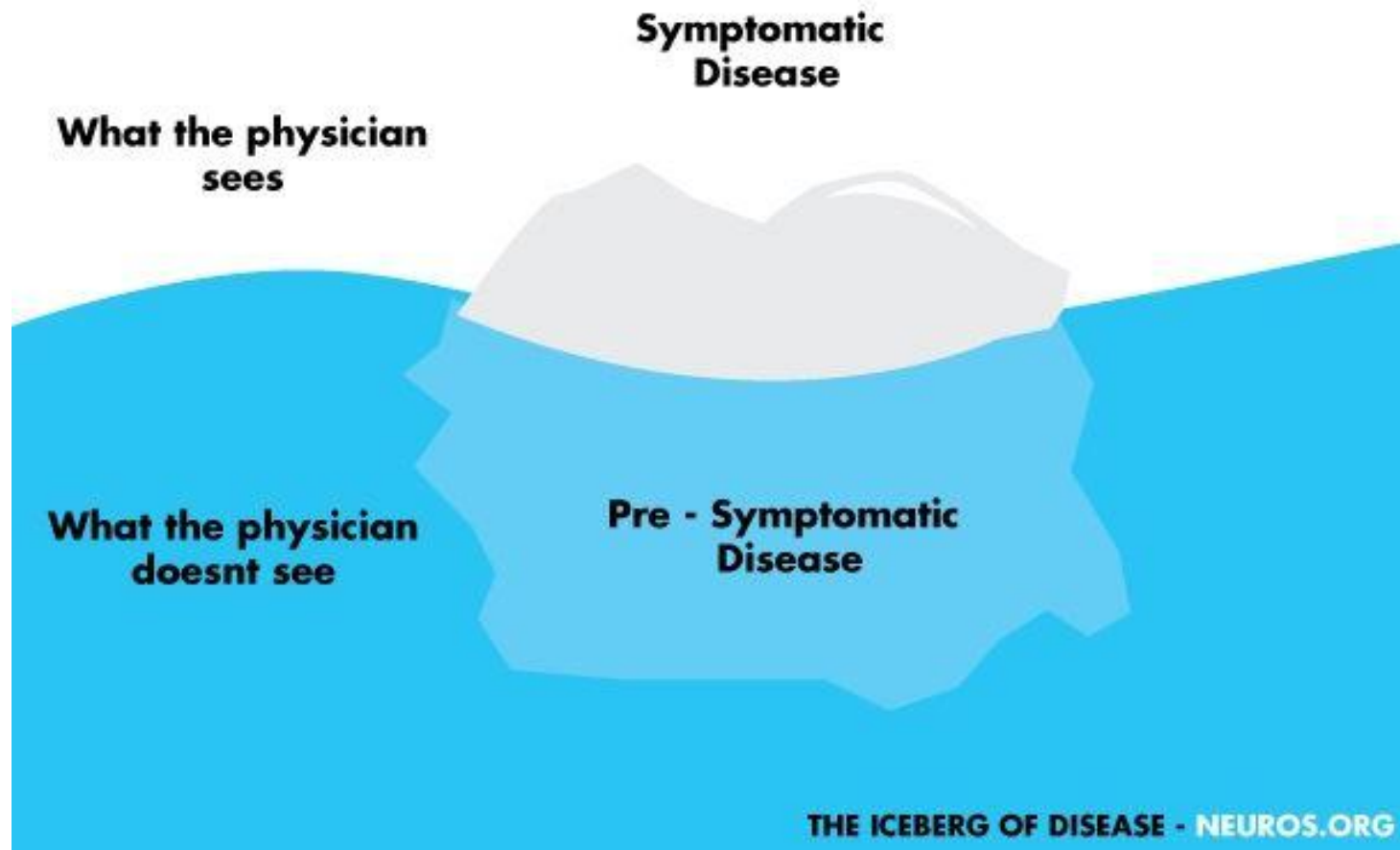
- This was suggested by MacMohan & Pugh
- It is ideally suited in the study of chronic diseases, where agent is not known but is the outcome of interaction of multiple factors.



Natural History of Disease

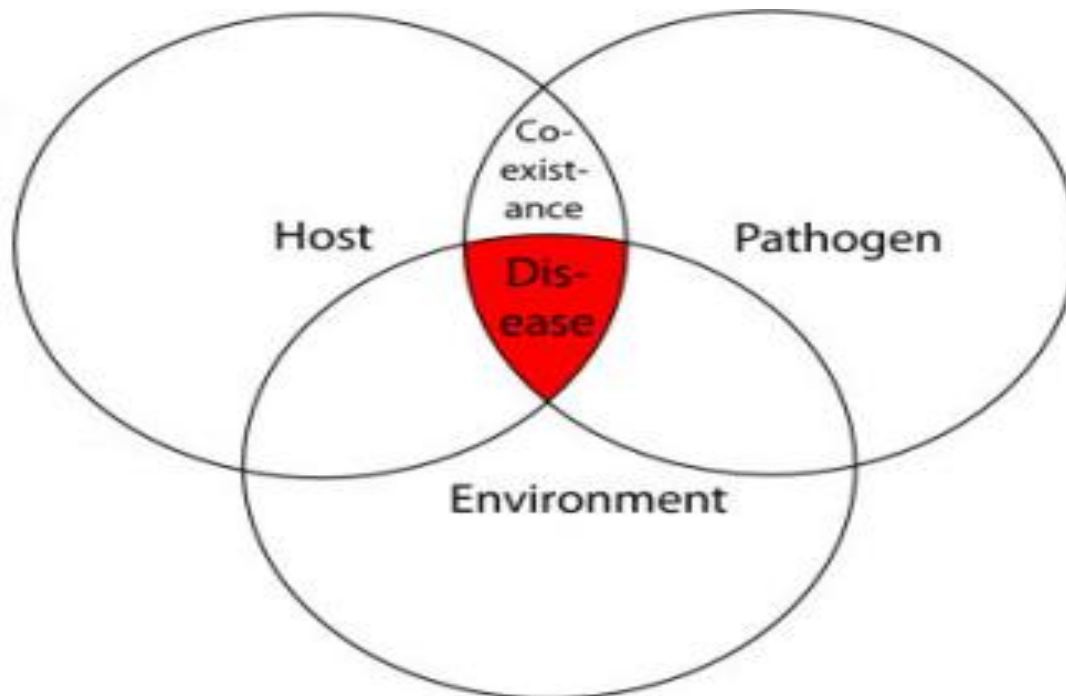
- Natural history of a disease signifies the way in which a disease evolves over time from the earliest stage of its pre-pathogenesis phase to its termination as recovery, disability or death, in the absence of treatment or prevention.
- Two phases are seen:-
 - Pre-pathogenesis
 - Pathogenesis

Iceberg of Disease



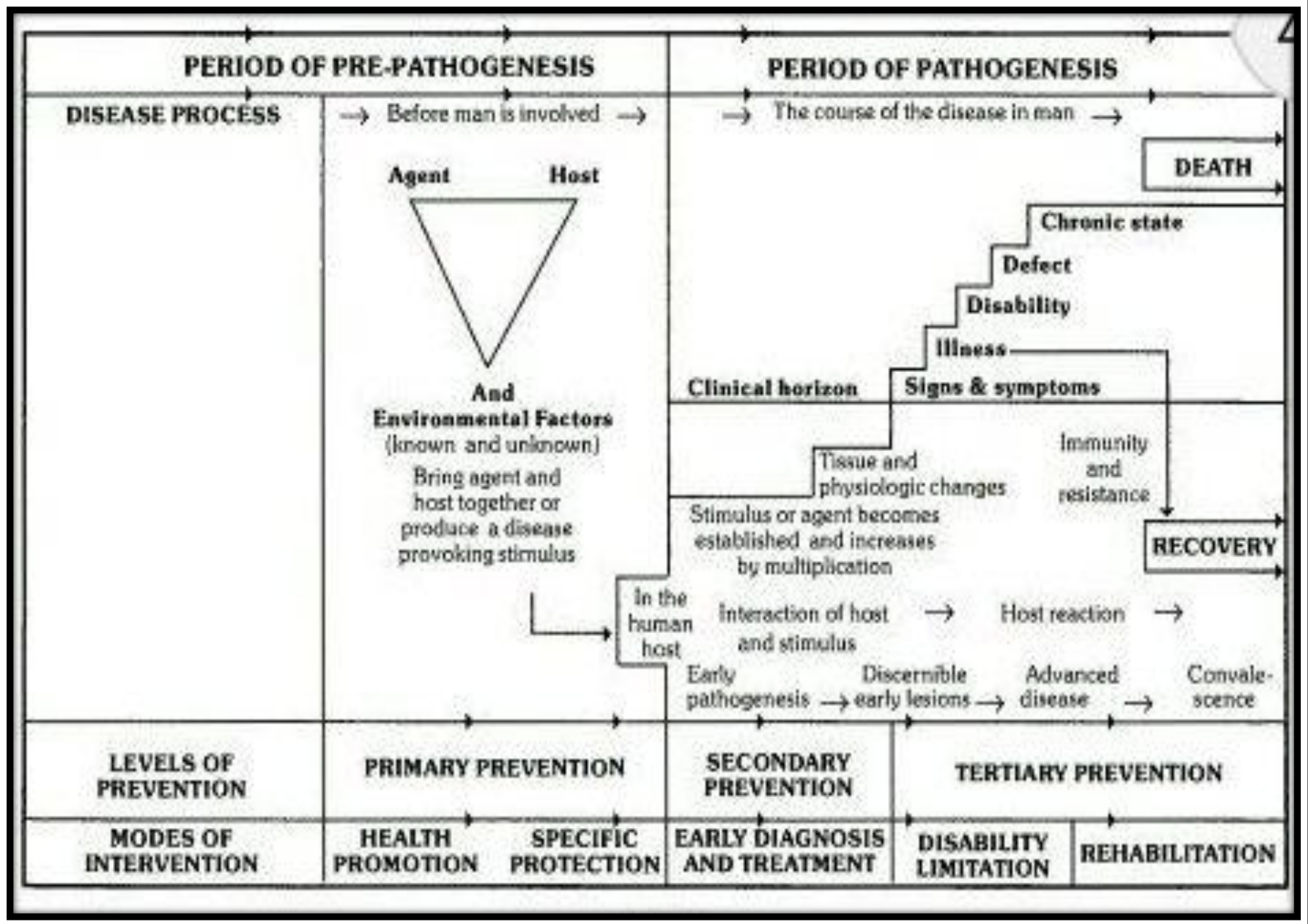
Pre-pathogenesis

- This refers to the period prior to the onset of the disease in man
- The disease agent has not yet entered man but factors favouring its interaction with the human are already present



Pathogenesis

- It begins with entry of agent in the susceptible human host
- The host reaction to disease agent is unpredictable. It may result in clinical or subclinical infection; host can also become a carrier with or without having developed the disease.



Level	Phase of Disease	Aim	Target
Primordial	Underlying economic, social, and environmental conditions leading to causation	Establish & maintain conditions that minimize hazards to health	Total population or selected groups
Primary	Specific causal factors	Reduce incidence of disease	Total population, selected groups and individuals at high risk
Secondary	Early stage of disease	Reduce the prevalence of disease by shortening its duration	Individuals with established disease
Tertiary	Late stage of disease	Reduce the number and/or impact of complications	Patients

Level of Prevention

7

*Prevent the
development of
risk factors*

**Primordial
Prevention**

Onset of
disease

Clinical
diagnosis

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Modes of intervention

- **Intervention** is defined as any attempt to intervene or interrupt the usual sequence in the development of disease in man. Types:-
 1. Health promotion
 2. Specific protection
 3. Early diagnosis and treatment
 4. Disability limitation
 5. Rehabilitation

Risk Factors

An attribute or exposure that is significantly associated with the development of a disease.

- **Modifiable risk factors:** smoking, hypertension, elevated serum cholesterol, physical activity, obesity, etc.
- **Non-modifiable risk factors:** age, sex, race, family history & genetic factors.

Examples:

- Alcohol cirrhosis of liver,
- Obesity & diet Diabetes,
- High B.P and cholesterol stroke,
- Smoking, High B.P, lack of exercise heart disease.

Risk Groups

- The risk approach was developed and promoted by the WHO in order to increase the efficiency of healthcare services within limits of existing resources.
- It helps in identifying the target groups or the risk groups.
- There are 3 criteria for defining At-risk groups:-
 1. Biological situation
 2. Physical situation
 3. Socio-cultural situation

Concept of Control

Disease Control

- It describes ongoing operations aimed at reducing:
 1. The incidence of disease
 2. The duration of disease
 3. The effects of infection
 4. The financial burden to the community

Here the disease agent is present in the community at a level where it ceases to be a public health problem.

Disease Elimination

- The term “**elimination**” is used to describe interruption of transmission of disease.
- Examples: Elimination of maternal & neonatal tetanus, dracunculiasis from large geographic areas or regions.
- Regional elimination is now seen as an important precursor of eradication.

Disease Eradication

- Eradication means to literally tear out by roots.
- Disease eradication is the termination of all transmission of infection by extermination of the infectious agent.
- It is an absolute process.
- Small pox is the only disease that has been eradicated globally.

Monitoring and surveillance

- **Monitoring:** It is the performance & analysis of routine measurements aimed at detecting change in the environment or health status of population.
- **Surveillance:** The continuous scrutiny of the factors that determine the occurrence and distribution of disease and other conditions of ill-health.
- **Sentinel Surveillance:** A method for identifying the missing cases.

Preventive and control measures

- Source of infection
- Agent or modes of transmission
- The susceptible population



Sources or reservoirs of infection

- Where the agents usually live and multiply and in general, they consist of cases and carriers of a given disease



Measures directed towards the source

■ 1. ISOLATION

- Separation for the period of communicability of infected persons or animals from others, in such places and under such conditions as to prevent the direct or indirect conveyance of the infectious agent from those infected to those who are susceptible or who may spread the agent to others



Period of communicability

- the time or times during which an infectious agent maybe transferred directly or indirectly from an infected person to another person, from an infected animal to man, or from an infected man to an animal, including arthropods



Measures directed towards the source

■ 2. QUARANTINE

- Complete quarantine is the limitation of freedom of movement of such well persons or domestic animals as have been exposed to a communicable disease, for a period of time not longer than the longest usual incubation period of the disease, in such manner as to prevent effective contact with those not exposed



Contact

- Person or animal that has been in such association with an infected person or animal or a contaminated environment as to have had the opportunity to acquire the infection



Quarantine

- In international law, name given to the regulations of a country imposing a period of time during which a ship arriving in port is forbidden to land freight or passengers because it is suspected of being infected with a contagious disease.
- In municipal law, the term is applied to the sanitary regulations of a state or municipality that restrict the spread of contagious diseases within its own boundaries



Measures directed towards the source

■ 3. CLEANING

- Removal by scrubbing and washing, as with hot water, soap or suitable detergent or by vacuum cleaning, of infectious agents and of organic matter from surfaces on which and in which infectious agents may find favorable conditions for surviving or multiplying



Measures directed towards the source

■ 4. DISINFECTION

- The killing of infectious agents outside the body by chemical or physical means, directly applied



Measures directed towards the source

■ 5. TREATMENT

- Specific treatment may shorten the course of illness and also the period of communicability



Agent or mode of transmission

- Measures directed towards the agent while it is in transit, from the source to the susceptibles



Measures directed towards the agent

- 1. DISINFESTATION

- Any physical or chemical process serving to destroy or remove undesired small animal forms, particularly arthropods or rodents, present upon the person, the clothing or in the environment of an individual or domestic animals
- Infestation – lodgment , development and reproduction of arthropods on the surface of the body or in the clothing



Measures directed towards the agent

- Fumigation – any process by which the killing of animal forms especially arthropods and rodents is accomplished by the use of gaseous agents
- Insecticide – any chemical substance used for the destruction of arthropods, whether applied as powder, liquid, aerosol or paint spray, residual action of which is usual



Measures directed towards the agent

- Rodenticide – chemical substance used for the destruction of rodents generally through ingestion
- Molluscicide – chemical substance used for the destruction of snails and other mollusks



Measures directed towards the agent

- 2. PROVISION OF SAFE AND ADEQUATE WATER
- The full list of water-related infections is large and varied, but most are only marginally affected by water supply improvements. The first effort to simplify the relationship between water supplies and health in developing countries was made by David Bradley (1972) who developed a classification of disease transmission routes in terms of whether they were
 - *waterborne*, in the strict sense in which the pathogen is ingested in drinking water
 - *water-washed*—that is, favored by inadequate hygiene conditions and practices and susceptible to control by improvements in hygiene
 - *water-based*, referring to transmission by means of an aquatic invertebrate host
 - *water-related insect vector* routes, involving an insect vector that breeds in or near to water.



Measures directed towards the agent

- 3. proper sewage and waste disposal
- 4. food sanitation including milk hygiene
- 5. proper housing and drainage



Susceptible

- Measures directed towards making the susceptible non susceptible or minimizing their exposure to infection



Measures directed towards the susceptible

■ 1. HEALTH EDUCATION

- Process by which individuals or groups of people learn to promote, maintain or restore health
- To be effective, methods and procedures used must take into account the following :
 - The ways in which people develop various forms of behavior
 - The factors that lead them to maintain or to alter their acquired behavior
 - The ways in which people acquire and use knowledge



HEALTH EDUCATION

- Aim : develop in them a sense of responsibility for health conditions, as individuals and as members of families and communities
- In disease control, it includes an appraisal of habits and attitudes of the people as they relate spread and frequency of disease and the specific means to remedy observer deficiency



Measures directed towards the susceptible

■ 2. PERSONAL HYGIENE

- Includes measures primarily within the individual's responsibility which promotes health and limit the spread of infectious diseases especially those transmitted by direct contact



PERSONAL HYGIENE

- Keeping body clean by bathing
- Washing hands with soap and water after coming from the toilet and before handling food or eating
- Keeping hands and unclean articles away from mouth, nose, eyes, wounds, genitals
- Avoiding use of common or unclean eating utensils, cups, handkerchiefs, combs, etc
- Avoiding exposure of other persons to spray from the nose and mouth as in coughing, sneezing, laughing or talking
- Washing the hands after handling the patient or his belongings



Measures directed towards the susceptible

■ 3. CHEMOPROPHYLAXIS

- The administration of a chemical, including antibiotics, to prevent the development of an infection or the progression of an infection to actively manifest the disease



Measures directed towards the susceptible

■ 4. REPELLENT

- A chemical applied to the skin or clothing or other places to discourage arthropods from alighting on and attacking an individual



Measures directed towards the susceptible

■ 5. IMMUNIZATION

A primary preventive measure to alter the susceptibility of an individual

Immunity – the resistance usually associated with possession of antibodies having a specific action on the microbes concerned with a particular infectious disease or its toxin



IMMUNITY

- Passive
 - Attained either naturally by maternal transfer or artificially by inoculation with specific protective antibodies (convalescent or hyper immune serum, globulin)
 - Of brief duration (days to few months)
- Active
 - Attained either naturally by infection with or without clinical manifestations or artificially by inoculation of fractions or products of an infectious agent or of the agent itself in killed, modified or variant form
 - Lasts for months or years
 - Depends on the cellular immunity which is conferred by T lymphocytes sensitization and humoral immunity which is based on B lymphocyte response



Thank you