

# CONCEPT OF DISEASE DEVELOPMENT AND PREVENTION

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## **LEARNING OBJECTIVES**

- Describe theories and models postulated for the development of diseases
- Explain the concept of iceberg phenomenon in diseases
- Define the terms prevention, control, elimination and eradication
- Identify the level of prevention in relation to stage of disease development
- Identify the measures applied at each level of prevention

# DEVELOPMENT OF DISEASES

?



DISEASE

What is a theory?

# PRIMITIVE AND MIDDLE AGE THEORIES

“Supernatural cause”



Evil spirits

”Punishment”



Gods

“Contagion theory”



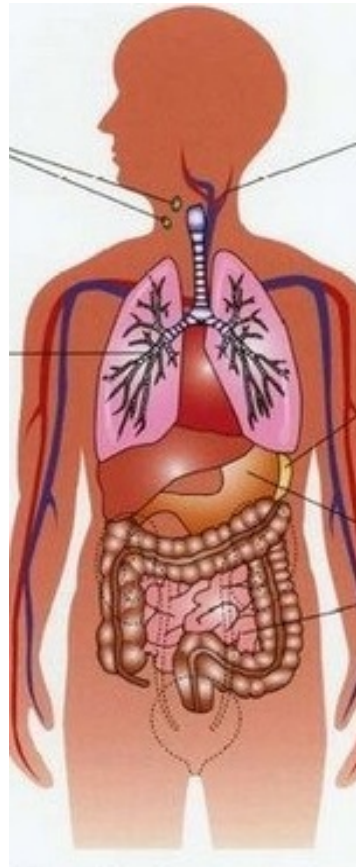
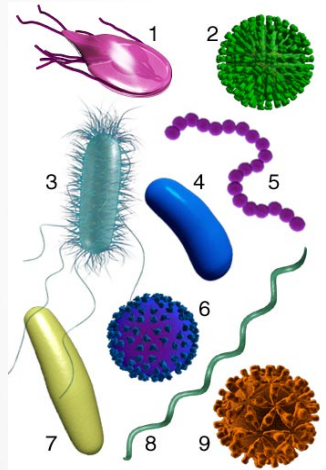
Contact with the sick

“Miasma”



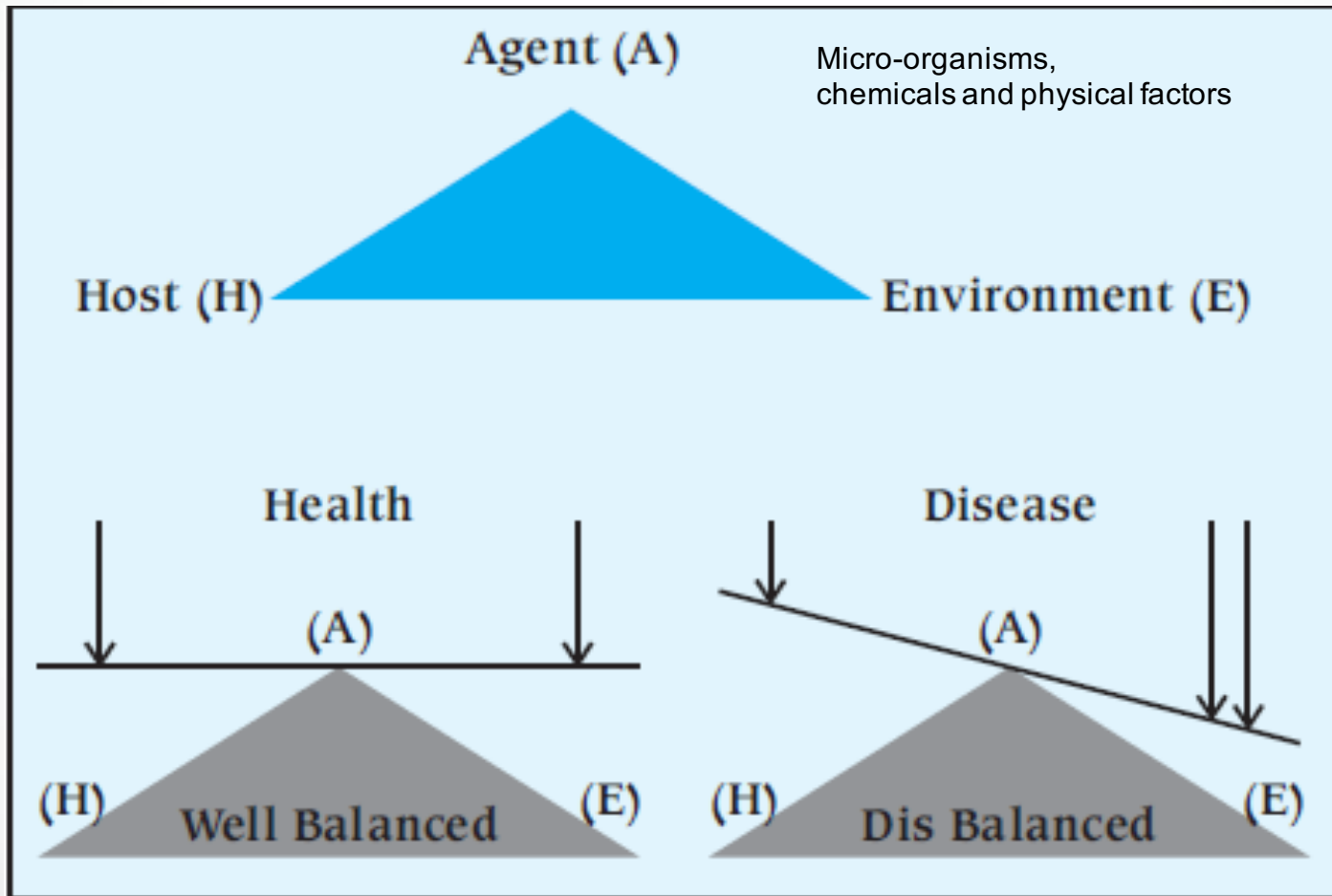
Bad air/poisonous

# GERM THEORY

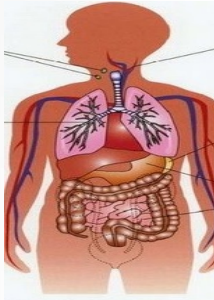


**= DISEASE**

# EPIDEMIOLOGIC TRIAD MODEL



# EPIDEMIOLOGIC TRIAD



Age  
Sex  
Ethnicity  
Genetic composition  
Life style and behaviour  
Nutritional status  
Immunological status  
Hygiene



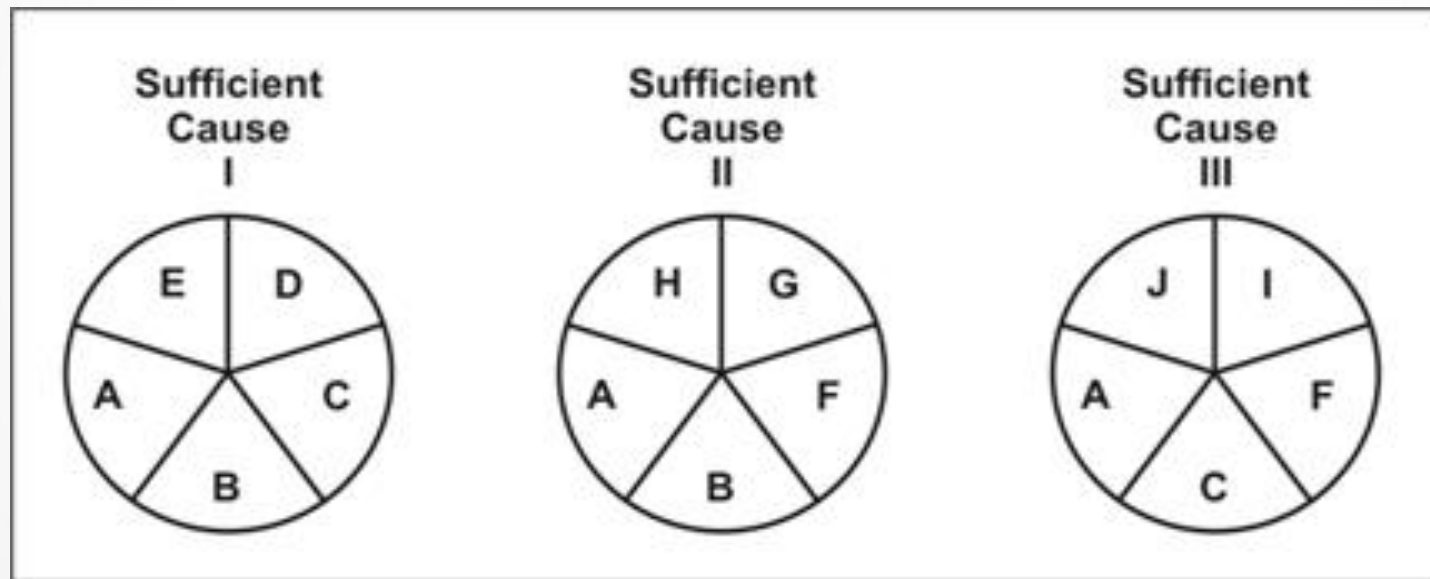
Urbanization  
Climate/rainfall  
Altitude  
Overcrowding  
Bad ventilation  
Indoor air pollution  
Health services



Number  
Virulence  
Resistance



# SUFFICIENT - COMPONENT CAUSES MODEL

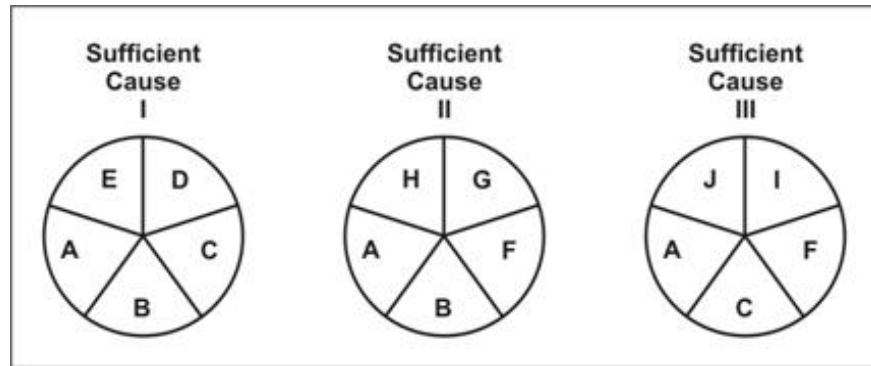


# SUFFICIENT - COMPONENT CAUSES MODEL

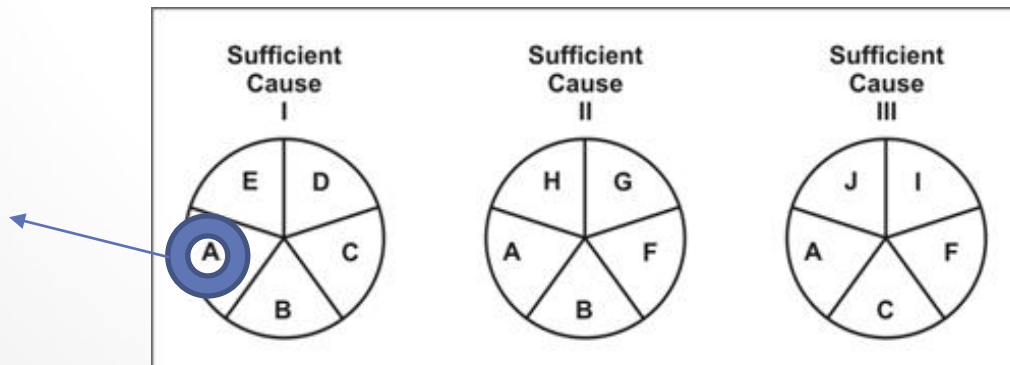
- **Sufficient Cause:** a set of factors or conditions that inevitably produces disease
- **Component Causes:** the factors or conditions that form a sufficient cause
- **Necessary Cause:** a component cause in every causal mechanism. If absent, the disease will not occur

# Examples

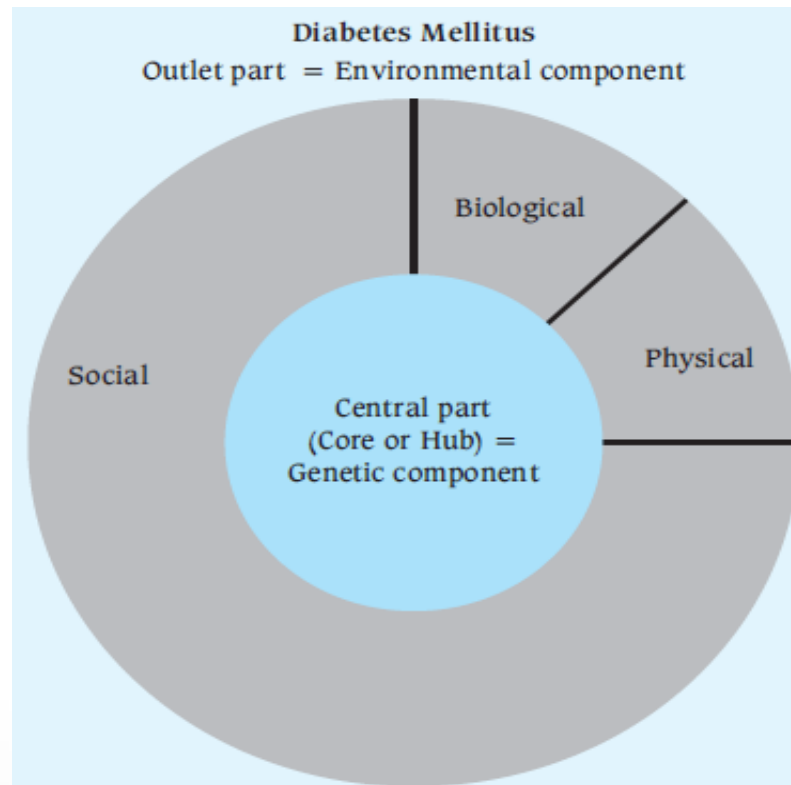
- Tuberculosis (*Mycobacterium tuberculosis*)



- Lung cancer (Smoking)

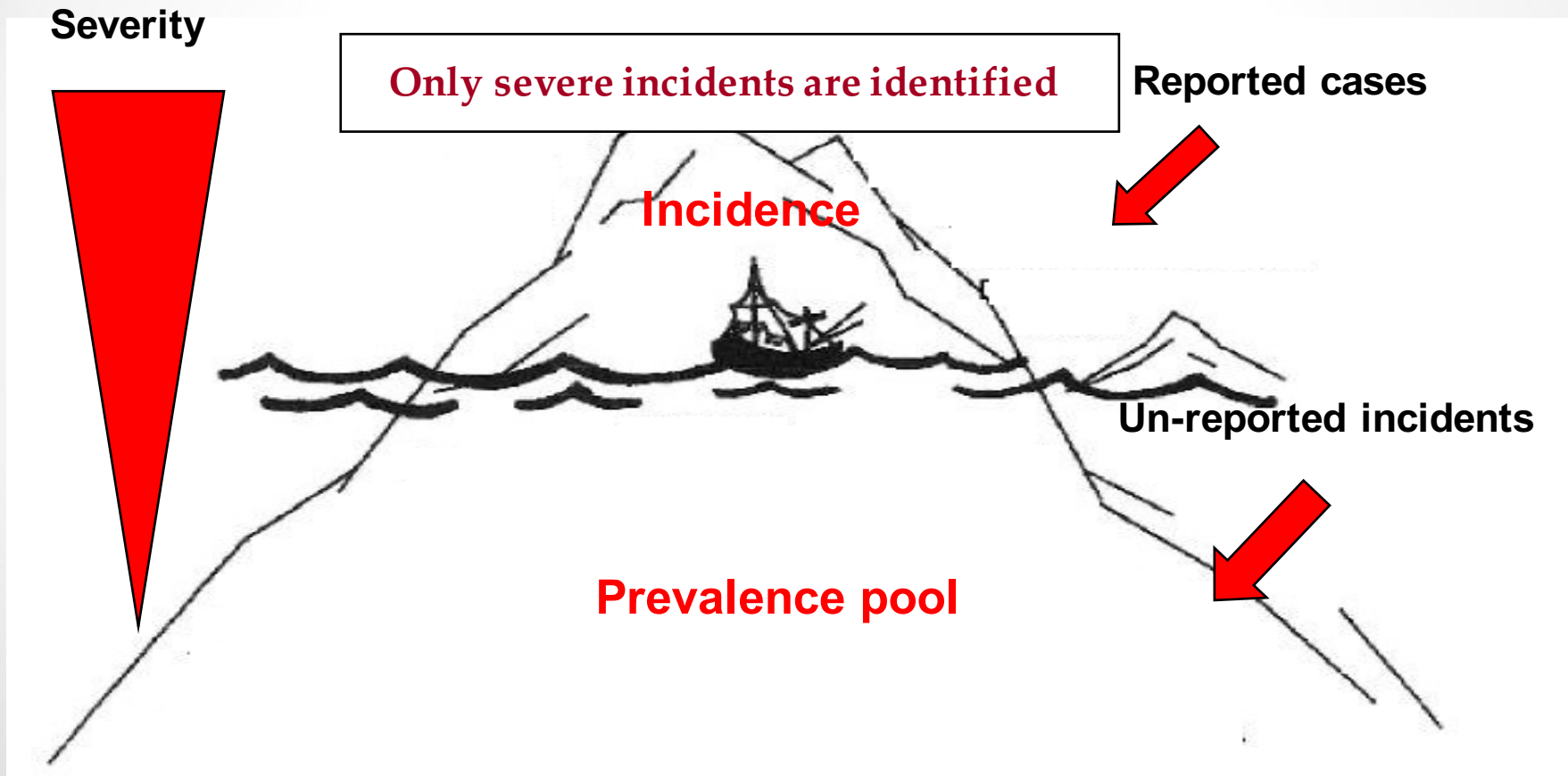


# SUFFICIENT - COMPONENT CAUSES MODEL



**DIABETES MELLITUS**

# ICEBERG PHENOMENON



# PREVENTION

Averting a disease or ill-health before its occurrence

Control of Communicable Diseases in Men, 2013

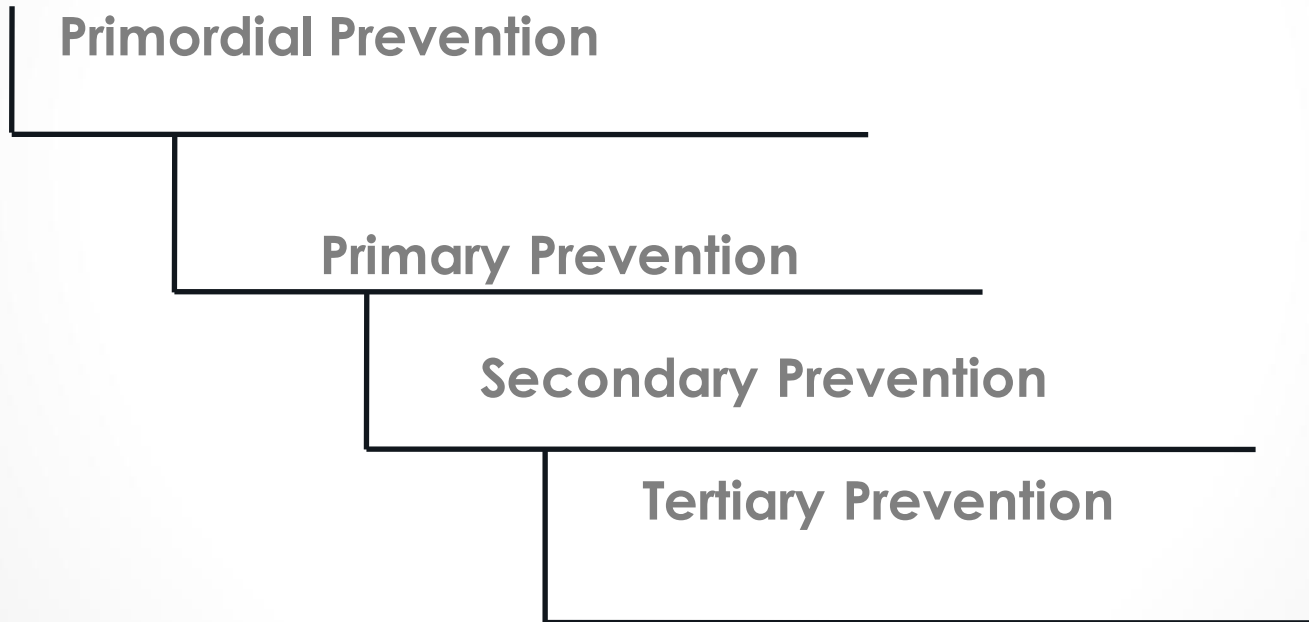
# PREVENTION

Actions aiming at eradicating, eliminating, or minimizing the impact of disease and disability, or if none of these is feasible, retarding the progress of disease and disability.

The concept of *prevention* is best defined in the context of *levels of prevention*; *primary*, *secondary*, and *tertiary* prevention.

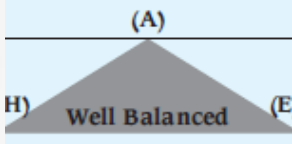
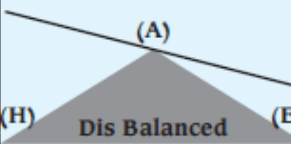
Oxford Dictionary, 2008

# LEVELS OF PREVENTION

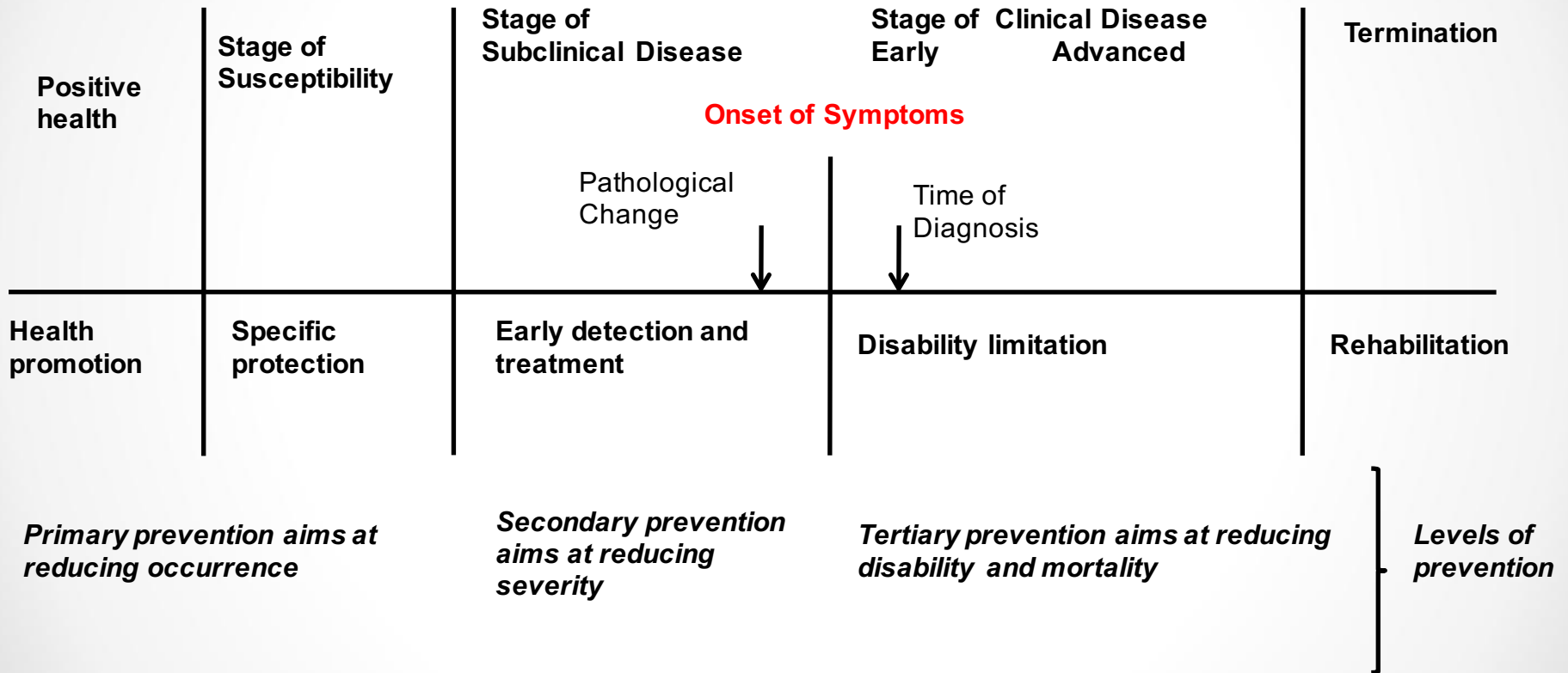




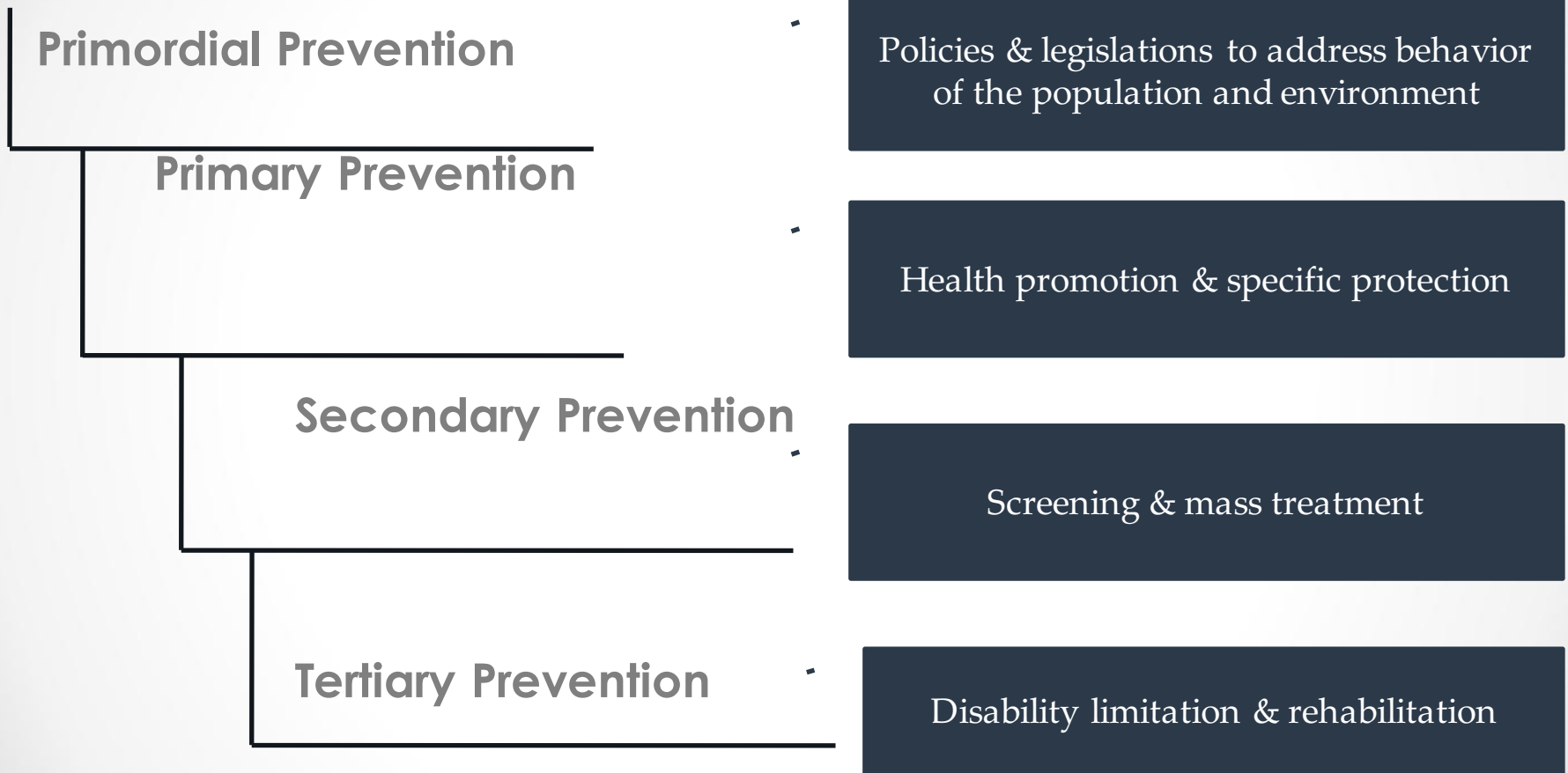
# NATURAL HISTORY OF DISEASE AND LEVELS OF PREVENTION

		Stages of Pathogenesis			
<i>Stage of Positive Health</i>	<i>Stages of Susceptibility (Pre Pathogenesis)</i>	<i>Asymptomatic (Early Pathogenesis)</i>	<i>Early, Discernible Disease</i>	<i>Full-Blown (Classical) Disease</i>	<i>Termination</i>
 <p style="text-align: center;">Well Balanced</p>	 <p style="text-align: center;">Dis Balanced</p>	<p>Pathological process has started. However, outwardly, there are no signs or symptoms whatsoever. Detection is only possible by specialized pathological / investigative studies.</p>	<p>There are very mild or non-specific signs / symptoms which occur at a very early stage of clinical course; not easy to detect at this stage unless very fine clinical acumen and / or specialized equipment is used.</p>	<p>Full fledged disease in classical form; quite easy to diagnose.</p>	<ul style="list-style-type: none"> <li>- Complete Recovery</li> <li>- Chronic Disease</li> <li>- Life With Residual Disability</li> <li>- Death</li> </ul>
<p>Agent, Host and Environmental factors are in perfect balance</p>	<p>Balance between Agent, Host and Environmental Factors is disturbed; conditions have been created for disease process to start; however pathological processes have still not started.</p>				
Health Promotion	Specific Protection	Early Diagnosis and Prompt Treatment	Disability limitation		Rehabilitation
Primary Prevention		Secondary Prevention	Tertiary Prevention		
Levels of Prevention					

# NATURAL HISTORY OF DISEASE AND LEVELS OF PREVENTION



# LEVELS OF PREVENTION



# PRIMARY PREVENTION

## HEALTH PROMOTION

- Health education
- Nutrition intervention
- Sanitation of the environment
- Life style modification

## SPECIFIC PROMOTION

- Immunization
- Chemoprophylaxis
- Specific micronutrient
- Protection from unintentional injuries
- Protection from environmental hazards

# DISABILITY LIMITATION & REHABILITATION

- Disability limitation ===== Prevent progress
- Rehabilitation ===== attain highest level of functional abilities
  - Medical rehabilitation
  - Vocational rehabilitation
  - Social rehabilitation
  - Psychological rehabilitation

THANK YOU