

# Disease Elimination and Eradication

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# Prevention; Definition and Concept

- **Actions aimed at eradicating, eliminating or minimizing the impact of disease and disability, or if none of these are feasible, retarding the progress of the disease and disability.**
- **The concept of prevention is best defined in the context of levels, traditionally called primary, secondary and tertiary prevention. A fourth level, called primordial prevention, was later added.**

# Levels of Prevention

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<b>Stage of disease</b>	<b>Level of prevention</b>	<b>Type of response</b>
<b>Pre-disease</b>	<b>Primary Prevention</b>	<b>Health promotion and Specific protection</b>
<b>Latent Disease</b>	<b>Secondary prevention</b>	<b>Pre-symptomatic Diagnosis and treatment</b>
<b>Symptomatic Disease</b>	<b>Tertiary prevention</b>	<b>•Disability limitation for early symptomatic disease •Rehabilitation for late Symptomatic disease</b>

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# Levels of prevention

Primordial prevention

Primary prevention

Secondary prevention

Tertiary prevention

# Primordial prevention

- **Primordial prevention consists of actions and measures that inhibit the emergence of risk factors in the form of environmental, economic, social, and behavioral conditions and cultural patterns of living.**

# Primordial prevention(cont.)

- **It is the prevention of the emergence or development of risk factors in countries or population groups in which they have not yet appeared**
- **For example, many adult health problems (e.g., obesity, hypertension) have their early origins in childhood, because this is the time when lifestyles are formed (for example, smoking, eating patterns, physical exercise).**

# Primordial prevention(cont.)

- In primordial prevention, efforts are directed towards discouraging children from adopting harmful lifestyles
- The main intervention in primordial prevention is through individual and mass education

# Primary prevention

- Primary prevention can be defined as the action taken prior to the onset of disease, which removes the possibility that the disease will ever occur.
- It signifies intervention in the pre-pathogenesis phase of a disease or health problem.
- Primary prevention may be accomplished by measures of “Health promotion” and “specific protection”

# Primary prevention (cont.)

- It includes the concept of "**positive health**", a concept that encourages achievement and maintenance of "an acceptable level of health that will enable every individual to lead a socially and economically productive life".
- Primary prevention may be accomplished by measures designed to promote general health and well-being, and quality of life of people or by specific protective measures.

# Primary prevention

Achieved by

## Health promotion

- Health education
- Environmental modifications
- Nutritional interventions
- Life style and behavioral changes

## Specific protection

- Immunization and seroprophylaxis
- chemoprophylaxis
- Use of specific nutrients or supplementations
- Protection against occupational hazards
- Safety of drugs and foods
- Control of environmental hazards, e.g. air pollution

# Health promotion

- **Health promotion is “ the process of enabling people to increase control over the determinants of health and thereby improve their health”.**

# Secondary prevention

- It is defined as “ action which halts the progress of a disease at its incipient stage and prevents complications.”
- The specific interventions are: early diagnosis (e.g. screening tests, and case finding programs....) and adequate treatment.
- Secondary prevention attempts to arrest the disease process, restore health by seeking out unrecognized disease and treating it before irreversible pathological changes take place, and reverse communicability of infectious diseases.
- It thus protects others from in the community from acquiring the infection and thus provide at once secondary prevention for the infected ones and primary prevention for their potential contacts.

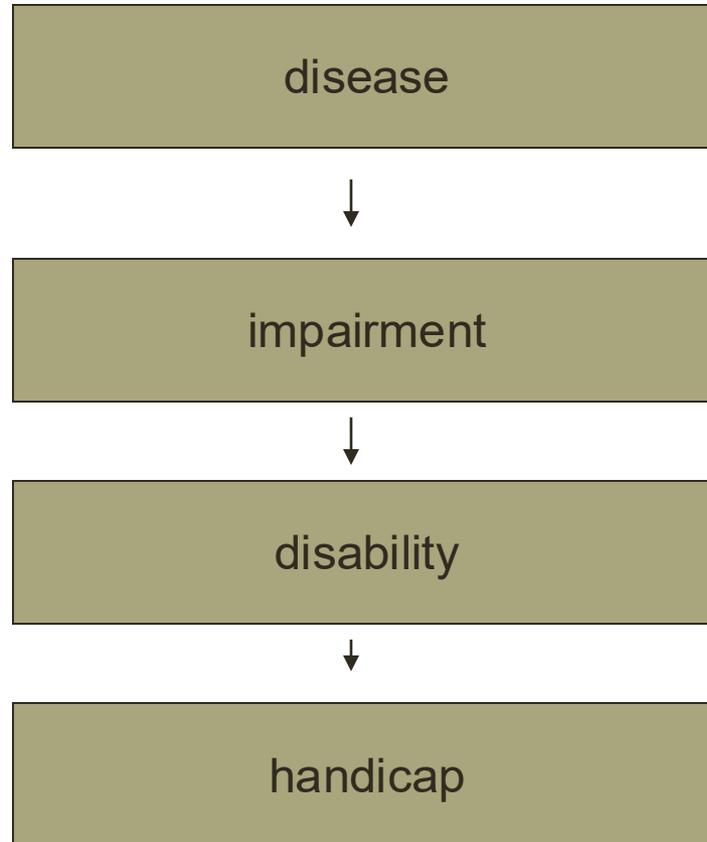
# Secondary prevention (cont.)

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# Tertiary prevention

- It is used when the disease process has advanced beyond its early stages.
- It is defined as “all the measures available to reduce or limit impairments and disabilities, and to promote the patients’ adjustment to irremediable conditions.”
- Intervention that should be accomplished in the stage of tertiary prevention are disability limitation, and rehabilitation.

# Disability limitation



# Impairment

- Impairment is “any loss or abnormality of psychological, physiological or anatomical structure or function.”

# Disability

- **Disability is “any restriction or lack of ability to perform an activity in the manner or within the range considered normal for the human being.”**

# Handicap

- **Handicap is termed as “a disadvantage for a given individual, resulting from an impairment or disability, that limits or prevents the fulfillment of a role in the community that is normal (depending on age, sex, and social and cultural factors) for that individual.”**

# Rehabilitation

- **Rehabilitation is “ the combined and coordinated use of medical, social, educational, and vocational measures for training and retraining the individual to the highest possible level of functional ability.”**

# Rehabilitation

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graph TD; A[Rehabilitation] --> B[Medical rehabilitation]; A --> C[Vocational rehabilitation]; A --> D[Social rehabilitation]; A --> E[Psychological rehabilitation];
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Medical  
rehabilitation

Vocational  
rehabilitation

Social  
rehabilitation

Psychological  
rehabilitation

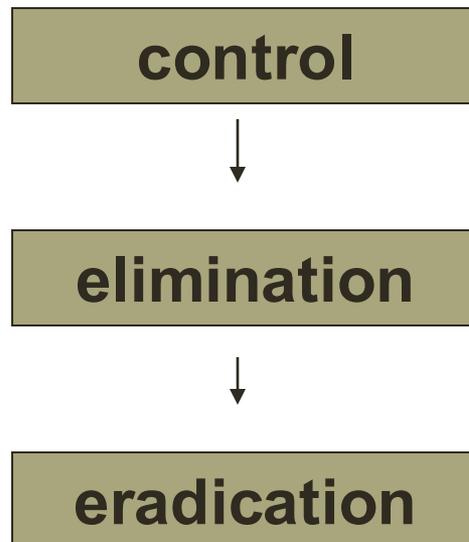
# Control

- **Concept of control:**

**The term disease control describes ongoing operations aimed at reducing:**

- **The incidence of disease**
- **The duration of disease and consequently the risk of transmission**
- **The effects of infection, including both the physical and psychosocial complications**
- **The financial burden to the community.**

- **Control activities focus on primary prevention or secondary prevention, but most programs combine both.**



# Terms

- **Control: Reduction of incidence, prevalence, morbidity and mortality to locally accepted level.**

**Deliberate efforts**  
**Continuous efforts**

# Elimination of Disease

- Reduction of disease incidence to **zero** in a defined geographical area.

E.g. **Neonatal tetanus**

**Deliberate efforts**  
**Continuous efforts**

# Elimination of Infection

- Reduction of infection incidence to zero in a defined geographical area.

E.g. **Measles & poliomyelitis**

**Deliberate efforts**  
**Continuous efforts**

# Eradication

- Permanent reduction of the **worldwide** incidence of infection to **zero**.

e.g. **smallpox**

**Deliberate efforts**

**No Continuous efforts**

# Disease Eradication

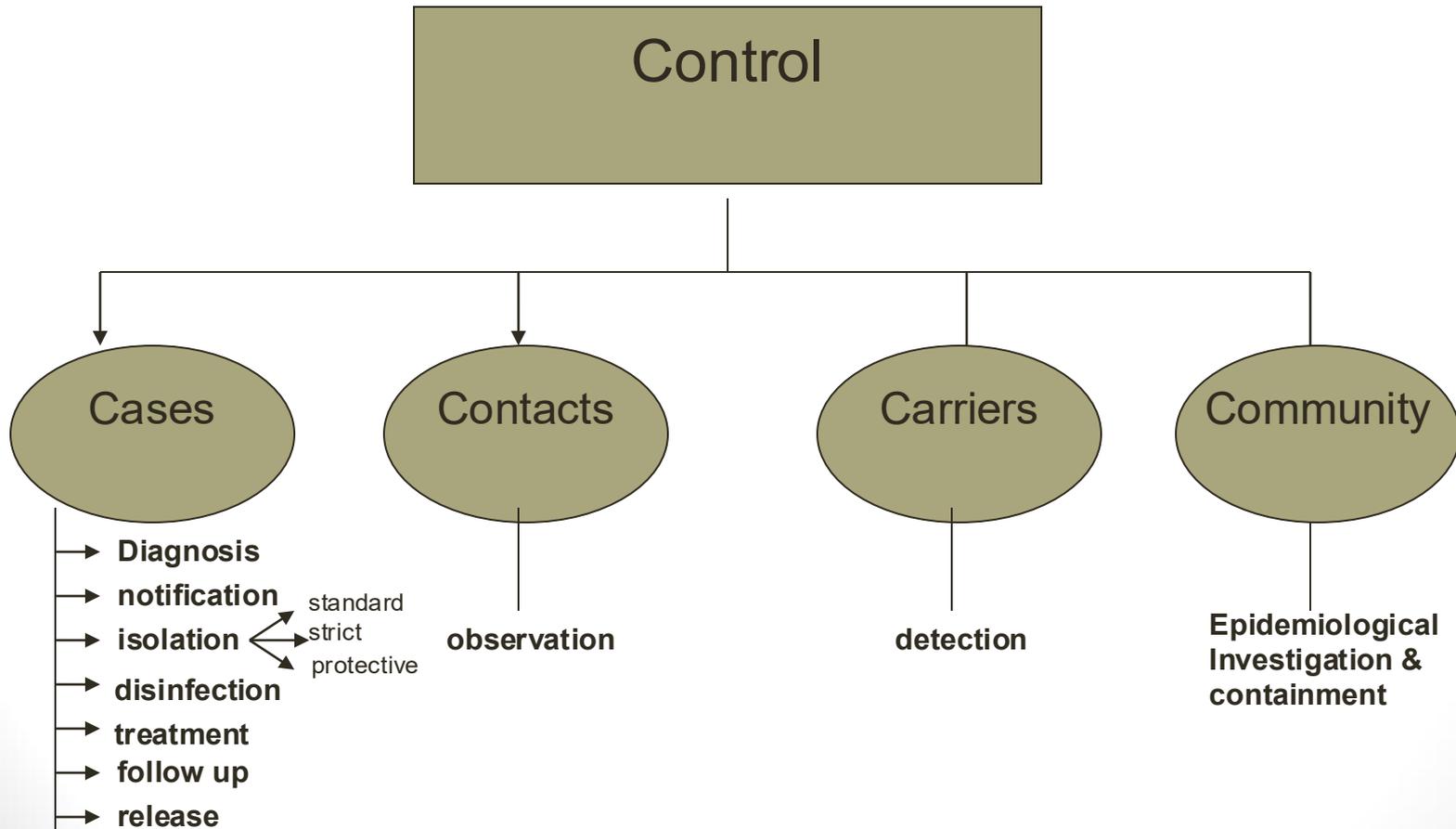
- Eradication literally means to "tear out by roots".
- It is the process of "Termination of all transmission of infection by extermination of the infectious agent through surveillance and containment".
- Eradication is an absolute process, an "all or none" phenomenon, restricted to termination of an infection from the whole world. It implies that disease will no longer occur in a population.
- To-date, only one disease has been eradicated, that is **smallpox**.

# Extinction

- The specific **infectious agent** no longer exists in the nature or laboratory.

**No Deliberate efforts**  
**No Continuous efforts**

# Control of infectious diseases (the 4 “C”s



# Quarantine

- Quarantine has been defined as:  
“The limitation of freedom of such persons or domestic animals exposed to communicable disease for a period of time not longer than the longest incubation period of the disease to prevent contact with those not exposed”.



Thank You