



Levels of prevention


Dr.S.Rathidevi
PROFESSOR

Introduction

- In modern day, the concept of prevention has become broad-based.
- It has become customary to define prevention in terms of four level:
 - ❖ **1. primordial prevention**
 - ❖ **2. primary prevention**
 - ❖ **3. secondary prevention**
 - ❖ **4. tertiary prevention**


I. Primordial prevention


- Primordial prevention, a new concept, is receiving special attention in the prevention of chronic diseases.
- This is primary prevention in its purest sense, that is, 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).
 - 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.


2. Primary prevention

- Primary prevention can be defined as "action taken prior to the onset of disease, which removes the possibility that a disease will ever occur".
- It signifies intervention in the pre-pathogenesis phase of a disease or health problem (e.g., low birth weight) or other departure from health.

- 
- 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**.

- 
- 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".

- 
- The concept of primary prevention is now being applied to the prevention of chronic diseases such as coronary heart disease, hypertension and cancer based on elimination or modification of "risk-factors" of disease.


- 
- The WHO has recommended the following approaches for the primary prevention of chronic diseases where the risk factors are established
 - a. population (mass) strategy
 - b. high-risk strategy


a. Population (mass) strategy

- The preventive approach is "population strategy" which is directed at the whole population irrespective of individual risk levels.
- For example, studies have shown that even a small reduction in the average blood pressure or serum cholesterol of a population would produce a large reduction in the incidence of cardiovascular disease .
- The population approach is directed towards socioeconomic, behavioural and lifestyle changes .

b. High-risk strategy

- The high-risk strategy aims to bring preventive care to individuals at special risk.
- This requires detection of individuals at high risk by the optimum use of clinical methods.
- Primary prevention is a desirable goal.

- 
- It utilizes knowledge of the **pre pathogenesis** phase of disease, embracing the agent, host and environment.
 - Fundamental public health measures and activities such as **sanitation; infection control; immunization; protection of food, milk, and water supplies; environmental protection;** and protection against occupational hazards and accidents are all basic to primary prevention.


- 
- Basic personal hygiene and public health measures have had a major impact on halting communicable disease epidemics.
 - Immunization, infection control (eg, hand washing), refrigeration of foods, garbage collection, solid and liquid waste management, water supply protection and treatment, and general sanitation have reduced infectious disease threats to populations.

3. Secondary prevention

- Secondary prevention can be 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, case finding programmes) and **adequate treatment**.

4. Tertiary prevention


- *It signifies* intervention in the late pathogenesis phase.
- Tertiary prevention can be defined as "all measures available to reduce or limit impairments and disabilities, minimize suffering caused by existing departures from good health and to promote the patient's adjustment to irremediable Conditions".

- 
- *For example, treatment, even if undertaken late in the natural history of disease may prevent sequelae and limit disability.*
 - When defect and disability are more or less stabilized, rehabilitation may play a preventable role.
 - Modern réhabilitation includes psychosocial, vocational, and medical components based on team work from a variety of professions.

- 
- **Tertiary prevention extends the concept of prevention into fields of rehabilitation.**


MODES OF INTERVENTION

- "Intervention" can be defined as any attempt to intervene
- or interrupt the usual sequence in the development of
- disease in man. This may be by the provision of treatment,
- education, help or social support.

- 
- Five modes of intervention have been described which form a continuum corresponding to the natural history of any disease.
 - They are:
 - 1. Health promotion
 - 2. Specific protection
 - 3. Early diagnosis and treatment
 - 4. Disability limitation
 - 5. Rehabilitation

I. Health promotion

- Health promotion is "the process of enabling people to increase control over, and to improve health"
- *It is not* directed against any particular disease, but is intended to strengthen the host through a variety of approaches (interventions).

- 
- The well-known interventions in this area are:
 - i. health education
 - ii. environmental modifications
 - iii. nutritional interventions
 - iv. lifestyle and behavioural changes

(i) Health education:

- **This is one of the most cost effective interventions.**
- A large number of diseases could be prevented with little or no medical intervention if people were adequately informed about them and if they were encouraged to take necessary precautions in time.

(ii) Environmental modifications:

- **A comprehensive approach to health promotion** requires environmental modifications, such as provision of safe water; installation of sanitary latrines; control of insects and rodents; improvement of housing, etc..

(iii) Nutritional interventions:


- **These comprise food distribution and nutrition improvement of vulnerable groups; child feeding programmes; food fortification; nutrition education, etc.**


Lifestyle and behavioural changes:


- **Them** conventional public health measures or interventions have not been successful in making inroads into lifestyle reforms.
- Health education is a basic element of all health activity.


2. Specific protection


- To avoid disease altogether is the ideal but this is possible
- only in a limited number of cases.
- The following are some of the currently available interventions aimed at specific protection:
- (


- 
- a) immunization
 - (b) use of specific nutrients
 - (c) chemoprophylaxis
 - (d) protection against occupational hazards
 - (e) protection against accidents
 - (f) protection from carcinogens
 - g) avoidance of allergens
 - (h) the control of specific hazards in the general environment


- 
- *Health protection*
 - The term "health protection" which is quite often used, is
 - not synonymous with specific protection. Health protection
 - is defined as "The provision of conditions for normal mental
 - and physical functioning of the human being individually
 - and in the group. It includes the promotion of health, the
 - prevention of sickness and curative and restorative medicine
 - in all its aspects" (56). *In fact, health protection is conceived*
 - as an integral part of an overall community development
 - programme, associated with activities such as literacy
 - campaigns, education and food production (113). *Thus*
 - health protection covers a much wider field of health
 - activities than specific protection.


- 
- **3. Early diagnosis and treatment**
 - A WHO Expert Committee (114) defined early detection
 - of health impairment as "the detection of disturbances of
 - homeostatic and compensatory mechanism while
 - biochemical, morphological, and functional changes are still
 - reversible." Thus, in order to prevent overt disease or
 - disablement, the criteria of diagnosis should, if possible, be
 - based on early biochemical, morphological and functional
 - changes that precede the occurrence of manifest signs and
 - symptoms. This is of particular importance in chronic
 - diseases.


- 
- disease control. The earlier a disease is diagnosed and
 - treated the better it is from the point of view of prognosis and
 - preventing the occurrence of further cases (secondary cases)
 - or any long-term disability. It is like stamping out the "spark"
 - rather than calling the fire brigade to put out the fire.
 - Strictly speaking, early diagnosis and treatment cannot be
 - called prevention because the disease has already
 - commenced in the host. However, since early diagnosis and
 - treatment intercepts the disease process, it has been
 - included in the schema of prevention, in as much as the goal
 - of prevention is "to oppose or intercept a cause to prevent
 - or dissipate its effect."


- 
- Early diagnosis and treatment though not as effective and
 - economical as "primary prevention" may be critically
 - important in reducing the high morbidity and mortality in
 - certain diseases such as essential hypertension, cancer
 - cervix and breast cancer. For many others such as
 - tuberculosis, leprosy and STD, early diagnosis and treatment
 - are the only effective mode of intervention. Early effective
 - therapy has made it possible to shorten considerably the
 - period of communicability and reduce the mortality from
 - acute communicable diseases.


- 
- *Mass treatment: A mass treatment approach is used in the*
 - control of certain diseases, viz. yaws, pinta, bejel, trachoma
 - and filaria, The rationale for a mass treatment programme is
 - the existence of at least 4-5 cases of latent infection for each
 - clinical case of active disease in the community. Patients
 - with a latent (incubating) infection may develop disease at
 - any time. In such cases, mass treatment is a critical factor in
 - the interruption of disease transmission. There are many
 - variants of mass treatment total mass treatment, juvenile
 - mass treatment, selective mass treatment, depending
 - upon the nature and prevalence of disease in the
 - community (104).


- 
- 4. Disability limitation
 - When a patient reports late in the pathogenesis phase,
 - the mode of intervention is disability limitation. The
 - objective of this intervention is to prevent or halt the
 - transition of the disease process from impairment to
 - handicap.
 - *Concept of disability*
 - The sequence of events leading to disability and
 - handicap have been stated as follows (115):
 - Disease ~ impairment ~ disability ~ handicap


- 
- The WHO (115) has defined these terms as follows:
 - (i) **Impairment** : **An impairment is defined as "any loss**
 - or abnormality of psychological, physiological or anatomical
 - structure or function", e.g., loss of foot, defective vision or
 - mental retardation. An impairment may be visible or
 - invisible, temporary or permanent, progressive or regressive.
 - Further, one impairment may lead to the development of
 - "secondary" impairments as in the case of leprosy where
 - damage to nerves (primary impairment) may lead to plantar
 - ulcers (secondary impairment).


- 
- (ii) **Disability : Because of an impairment, the affected**
 - person may be unable to carry out certain activities
 - considered normal for his age, sex, etc. This inability to
 - carry out certain activities is termed "disability". A disability
 - has been defined as "any restriction or lack of ability to
 - perform an activity in the manner or within the range
 - considered normal for a human being".
 - (iii) **Handicap :As a result of disability, the person**
 - experiences certain disadvantages in life and is not able to
 - discharge the obligations required of him and play the role
 - expected of him in the society. This is termed "handicap",
 - and is defined as "a disadvantage for a given individual,
 - resulting from an impairment or a disability, that limits or
 - prevents the fulfilment of a role that is normal (depending
 - on age, sex, and social and cultural factors) for that
 - individual".


- 
- Taking accidents as an example, the above terms can be
 - explained further as follows (93):
 - Accident.
 - Loss of foot
 - Cannot walk
 - Unemployed
 - Disease (or disorder)
 - Impairment (extrinsic or intrinsic)
 - Disability (objectified)
 - Handicap (socialized)


- 
- The intervention in disability will often be social or
 - environmental as well as medical. While impairment which
 - is the earliest stage has a large medical component,
 - disability and handicap which are later stages have large
 - social and environmental components in terms of
 - dependence and social cost (93


- 
- *Disability prevention*
 - Another concept is "disability prevention". It relates to all
 - the levels of prevention: (a) reducing the occurrence of
 - impairment, viz. immunization against polio (primary prevention); (b) disability limitation by appropriate treatment
 - (secondary prevention); and, (c) preventing the transition of
 - disability into handicap (tertiary prevention) (116).
 - The major causes of disabling impairments in the


- 
- developing countries are communicable diseases,
 - malnutrition, low quality of perinatal care and accidents.
 - These are responsible for about 70 per cent of cases of
 - disability in developing countries. Primary prevention is the
 - most effective way of dealing with the disability problem in
 - developing countries (116

- 
- 5. Rehabilitation
 - Rehabilitation has been defined as "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"
 - (117). *It includes all measures aimed at reducing the impact*
 - *of disabling and handicapping conditions and at enabling*
 - *the disabled and handicapped to achieve social integration*
 - (116). *Social integration has been defined as the active*
 - *participation of disabled and handicapped people in the*
 - *mainstream of community life (118).*

- 
- Rehabilitation medicine has emerged in recent years as a
 - medical speciality. It involves disciplines such as physical
 - medicine or physiotherapy, occupational therapy, speech
 - therapy, audiology, psychology, education, social work,
 - vocational guidance and placement services. The following
 - areas of concern in rehabilitation have been identified:
 - (a) Medical rehabilitation - restoration of function.
 - (b) Vocational rehabilitation - restoration of the capacity
 - to earn a livelihood.
 - (c) Social rehabilitation - restoration of family and social
 - relationships.
 - (d) Psychological rehabilitation restoration of personal
 - dignity and confidence.

- 
- Rehabilitation is no longer looked upon as an extracurricular
 - activity of the physician. The current view is that
 - the responsibility of the doctor does not end when the
 - "temperature touches normal and stitches are removed".
 - The patient must be restored and retrained "to live and work
 - within the limits of his disability but to the hilt of his
 - capacity". As such medical rehabilitation should start very
 - early in the process of medical treatment.

- 
- Examples of rehabilitation are: establishing schools for
 - the blind, provision of aids for the crippled, reconstructive
 - surgery in leprosy, muscle re-education and graded exercises
 - in neurological disorders, change of profession for a more
 - suitable one and modification of life in general in the case of
 - tuberculosis, cardiac patients and others. The purpose of
 - rehabilitation is to make productive people out of
 - nonproductive
 - people.

- 
- It is now recognized that rehabilitation is a difficult and
 - demanding task that seldom gives totally satisfactory results;
 - but needs enthusiastic cooperation from different segments
 - of society as well as expertise, equipment and funds not
 - readily available for this purpose even in affluent societies. It
 - is further recognized that interventions at earlier stages are
 - more feasible, will yield results, and are less demanding of
 - scarce resources.

LEVELS OF PREVENTION

- PRIMARY PREVENTION
- SECONDARY PREVENTION
- TERTIARY PREVENTION



Primary prevention



Secondary prevention



Tertiary prevention





IMPLICATIONS OF EPIDEMIOLOGY IN C.H.N PRACTICE

- An understanding of epidemiological concepts & principles are vital for nurses in the community as well as hospital setting.
- Knowledge of methods of epidemiology is useful to the C.H. nurse, both as tool in conducting the investigation to evaluate & explain phenomena observed in the course of work & as a basis for interpreting & evaluating the epidemiological literature.



- Epidemiological methods such as measures of health , serve as tools for assessing community needs & evaluating the impact of C.H. programmes of disease prevention & health promotion.
- The body of knowledge derived from epidemiological studies , including the natural history & patterns of disease occurrence & factors associated with high risk for developing disease, serves as an information base for C.H. practice .
- It provides a frame work for planning,& evaluating community intervention



- Serves as a basis for assessing individual & family health needs & for planning nursing interventions.
- Provides tools for evaluating success of interventions.
- Nurses may be the one who initiate a study & more frequently assist in data collection.
- In actual practice, C.H. nurse is considered as the foot soldier in the army of epidemiology.
- Epidemiologist depend on C.H. nurse for