


Objectives

- At the end of the class students will be able to;
- describe epidemiology of non-communicable diseases
- explain epidemiology of cardiovascular diseases
- explain epidemiology of congenital heart disease
- describe epidemiology of rheumatic heart disease

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- describe epidemiology of hypertension
 - explain epidemiology of Obesity
 - describe epidemiology of cancer
 - explain the epidemiology of diabetes mellitus
 - explain epidemiology of accidents
 - explain epidemiology of blindness

INTRODUCTION

- NCDs, also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors.
- The main types of NCDs are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes.

DEFINITION

- The commission on chronic Illness in USA has defined “Chronic Disease” as “comprising all impairments or deviations from normal, which have one or more of the following characteristics:

CHARACTERISTICS:

- Are permanent
- Leave residual disability
- Are caused by non-reversible pathological alteration
- Require special training of the patient for rehabilitation
- May be expected to require a long period of supervision, observation or care

GAPS IN NATURAL HISTORY

- **Absence of a known agent**

There is much to learn about the cause of chronic disease. The absence of a known agent makes both diagnosis and specific prevention difficult.

- **Multifactorial causation**

Most chronic diseases are the result of multiple causes- rarely is there a simple one-to-one cause-effect relationship.

- **Long latent period**

Understanding of the natural history of chronic disease is the long latent period between the first exposure to “suspected cause” and the eventual development of disease (e.g., cervical cancer).

- **Indefinite onset**

Most chronic diseases are slow in onset and development, and the distinction between diseased and non-diseased states may be difficult to establish.

CARDIOVASCULAR DISEASES

CARDIOVASCULAR DISEASE

Who Does It Affect?



Heart disease is the second leading cause of death in Canada. In 2008, heart disease caused 28% of deaths. Half of the men and almost two thirds of the women who die suddenly from coronary artery disease have no previous coronary artery disease warning signs.



Generally, the risk of cardiovascular disease increases as you age. However, more and more young people are affected by heart disease, in part because diabetes and childhood obesity are on the rise.



The prevalence of diabetes, heart disease, and high blood pressure is higher among the First Nations population than among the rest of the Canadian population.



Lower socioeconomic status is associated with an increase of chronic stress, which may lead to heart problems. It is also linked to a diet high in saturated fat, cholesterol, and carbohydrates, as well as to poorer access to healthcare and health insurance.

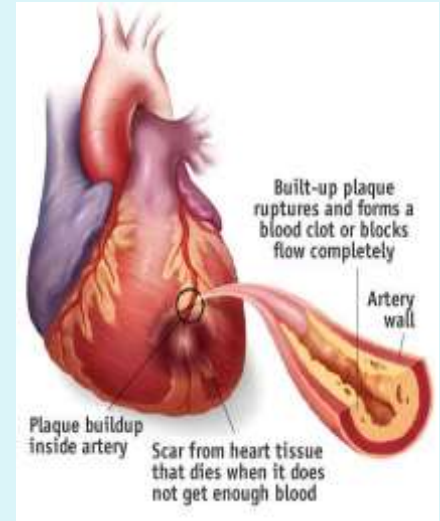



People who are physically inactive are twice as likely to be at a risk for heart disease or stroke than people who are physically active. Choose activities you enjoy, start slowly and find a buddy to keep you motivated!



Coronary heart disease (CAD) and ischemic heart diseases

- It is the impairment of function of heart due to inadequate blood flow to myocardium, as result of obstruction in the coronary circulation.
- The disease is produced from the blockage of lumen of the coronary artery.(Atherosclerosis)



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- CAD is manifested as
 - Angina pectoris
 - Myocardial infraction
 - Irregularities of the heart
 - cardiac failure
 - cardiac arrest

Predisposing factors

Non-modifiable

- **Age:** between 50-60 years of age.
- **Sex:** This is more among men than women.
- **Family history:** It has been seen to run in families
- **Genetic factors:** It plays role indirectly by determining the total cholesterol and low density lipoprotein levels.



Modifiable risk factors

- **Cigarettes smoking:** (atherogenesis, hypertension, increases oxygen demand and decreases HDL)
- **Hypertension:**
- **Serum cholesterol:** LDL
- **Serum homocysteine:** damages the arteries
- **Diabetes mellitus:** 2 to 3 times higher among diabetic



- **Obesity:** Association with LDL, HTN and diabetes.
- **Exercise:** Increases HDL
- **Hormone:** Hyperestrogenemia favours the development of CAD. Eg. Oral contraceptive pill
- **Type A personality:** competitive, restlessness, impatience, irritability, short- temper, sense of urgency



- **Alcohol:** high among heavy drinker.
- **Soft water:** higher among those consuming soft water than those consuming hard-water (Minerals).
- **Noise:** Chronic exposure to noise over 110 db increases serum cholesterol level and thus the rise of CAD.
- **Drugs:** Misuse of fenfluramine and Phentermine used for reduction of weight can be damaging to the heart.



Prevention of CAD

- Primordial
- Primary
- Secondary



Primordial prevention

- This prevention directed towards discouraging the children from adopting harmful lifestyle such as smoking, eating pattern, physical exercise, alcoholism etc. The main intervention is through mass education.

Primary prevention

- This consists of elimination and modifications of risk factors of disease, with the following approach.
- A. Population strategy
- B. High risk strategy

Population strategy

- **Dietary changes:** Consumption of saturated fats should be less than 10% of total energy intake
- **Smoking changes**
- **Blood pressure**
- **Physical activity:**

High risk strategy

- This consists of identifying the at-risk group persons for CAD and providing preventive care. Individuals with hypertension are given treatment, smokers to give up smoking, persons with hyperlipidaemia are treated.

Secondary prevention

- Here prevention of reoccurrence of CAD by cessation of smoking, regularly taking tablets is the focus.

CONGENITAL HEART DISEASE (CHD)

- is a defect in the structure and function of the heart, developed during fetal growth, present at birth, often detected during later life.
- The prevalence of CHD is estimated to be about 5-9/ 1000 children below 10 years



CHD are grouped in to acyanotic and cyanotic heart disease.

Acyanotic heart disease (left to right shunt)

- Atrial septal defect (ASD)
- Ventricular septal defect (VSD)
- Patent ductus arteriosus (PDA)
- Persistent truncus arteriosus

Acyanotic heart disease without a shunt

- Congenital aortic stenosis
- Coarctation of aorta
- Congenital aortic incompetence; mitral incompetence

- **Cyanotic heart disease (right to left shunt)**
- Tetralogy of fallot
- Complete transposition of great arteries
- Tricuspid atresia
- Coarctation of aorta
- VSD with reversed shunt
- PDA with reversed shunt
- ASD with reversed shunt

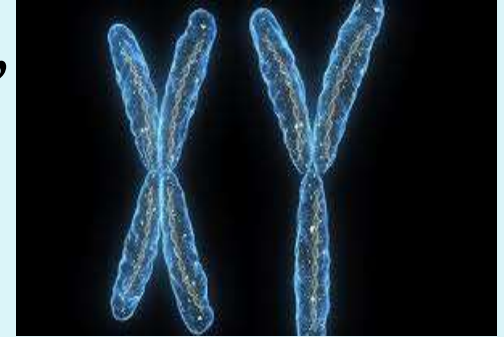
Signs and symptoms

- A child with CHD is suspected if there is history of
- apnea, growth failure and repeated attacks of respiratory infections.
- physically retarded and often cyanotic.
- Cardiac murmur are common. Anomalies of other organs in the body may come exists



Causes

- **Intrinsic agents** chromosomal aberration, defects of T lymphocytes, systemic lupus erythematosus.
- **Altitude at birth:** above sea level
- **External agents:** rubellavirus, X-rays, alcohol, drugs taken by mother
- **Prematurity:**
- **Maternal age :** late
- **Sex of the child:** bicuspid aortic valve- male



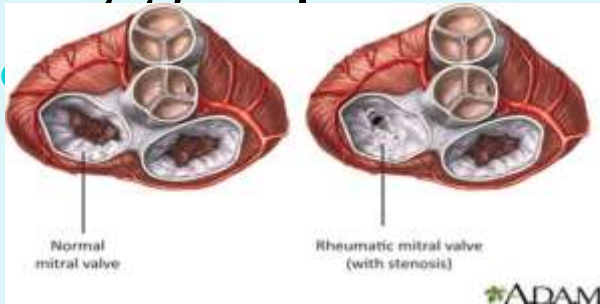
Prevention

- **Health education:** avoid consanguineous marriages, 1st pregnancy not beyond 30. Pregnant women should be advised to avoid infections, alcohol, smoking, X-ray, drugs and chemicals.
- **Genetic counselling:** should be given to who has family history.
- **Antenatal care:** should be accessed



RHEUMATIC HEART DISEASE (RHD)

- It is the ultimate, sequelae and crippling stage of rheumatic fever, which in turn is the result of streptococcal pharyngitis.
- Rheumatic fever is an acute febrile disease, affecting the connective tissues particularly in the heart and joints, which occurs following the infection of throat by group A beta-hemolytic streptococci.

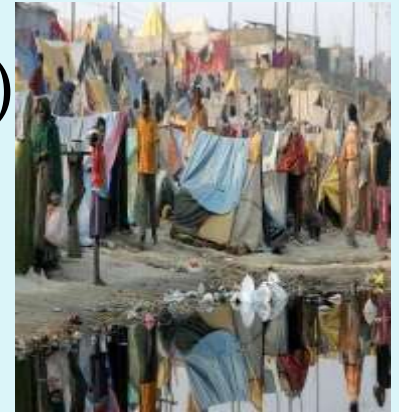


Agents factors

- **Agents:** Group A, beta hemolytic streptococci.
- **Reservior of infection:** All the cases and carriers of streptococcal pharyngitis are the reservior.
- **Age Incidence:** Age 5-15.
- **Sex:** it's equal in both the sexes.
- **Immunity:** it causes immunological process and repeated exposure practpitate illness

Predisposing factors:

- **Social factors:** Poverty, poor housing, under nutrition, illiteracy, ignorance, large families, overcrowding. (standard of living)
- **Pathogenesis:** Aschoff's nodule is the pathognomonic sign of R. Fever. In heart mitral valvulitis is the most common lesion. As the fibrosis of valve takes place results in mitral stenosis and incompetence.



Clinical features

- **Fever:** low grade fever lasting for 3 mon.
- **Polyarthrititis:** Large joints like knees, ankles, elbows and wrist are affected.
- **Carditis:** The manifestation are tachycardia, cardiomegaly, pericarditis and heart failure. Presence of murmur indicates involvement of mitral valve. In ecg, p-r interval presence indicates first degree AV block.



- **Subcutaneous nodules:** Presence of round, firm and painless nodules below the skin.
- **Chorea:** It is characterized by purposeless, abnormal, jerky movements of arms, often associated with muscular weakness and behavioral abnormalities.
- **Erythema marginatum:** It is non pruritic, pink colored, skin rashes appears on trunk and extremities.

Subcutaneous nodules :



- **Major manifestation**
- Carditis, polyarthritits, chorea, erythema nodosum and marginatum.
- Minor manifestation
- Fever, polyarthralgia, past history, raised ESR, leucocytosis, raised c- reactivatate protien.

Prevention

Health promotion: Primordial prevention includes

- Improvement in living conditions
- Improvement of sanitation in and around the house
- Prevention of overcrowding
- Prevention of malnutrition among children
- Improvement in the socio-economic condition

Specific protection

- No vaccine is available
- Chemoprophylaxis in case of pharyngitis i.e. benzathine

Secondary: Early diagnosis and treatment

- School health survey
- High risk group surveillance
- Detections and treatment

- Disability limitations
- This consists of giving intensive treatment with aspirin for joint pain, prednisolone for carditis, lifelong Benzathine penicillin
- Rehabilitation: by social, vocational and psychological measures.

HYPERTENSION

- Hypertension —if Blood pressure is Systolic >120 mmHg and diastolic >80 mmHg readings at each of two or more visits after an initial screening



- Causes:

- There are two types of high blood pressure.
- Primary (essential) hypertension
- For most adults, there's no identifiable cause of high blood pressure. This type of high blood pressure, called primary (essential) hypertension, tends to develop gradually over many years.

Secondary hypertension

- Obstructive sleep apnea
- Kidney problems
- Adrenal gland tumors
- Thyroid problems
- Certain medications, such as birth control pills, cold remedies, decongestants, over-the-counter pain relievers and some prescription drugs
- Illegal drugs, such as cocaine and amphetamines
- Alcohol abuse or chronic alcohol use

Symptoms and Signs

- Asymptomatic
- Dizziness,
- flushed face
- headache,
- fatigue,
- Epistaxis and nervousness
- severe cardiovascular, neurologic, renal, and retinal symptoms



Risk factors

- High blood pressure has many risk factors, including:
- **Age.** Above 45 years (men) and 65 years (female)
- **Race:** common among **blacks**
- **Family history.**
- **Too much salt (sodium) in your diet.** Water retention
- **Too little potassium in your diet.** Potassium helps balance the amount of sodium in your cells.

- **Being overweight or obese.** High demand of oxygen and nutrition.
- **Not being physically active.** The higher your heart rate, the harder your heart must work with each contraction and the stronger the force on your arteries.
- **Using tobacco.** The chemicals in tobacco can damage the lining of your artery walls. This can cause your arteries to narrow, increasing your blood pressure.

- **Too little vitamin D in your diet.** It's uncertain if having too little vitamin D in your diet can lead to high blood pressure.
- **Drinking too much alcohol.** Over time, heavy drinking can damage your heart.
- **Stress.** High levels of stress can lead to a temporary increase in blood pressure.
- **Certain chronic conditions.** such as kidney disease, diabetes and sleep apnea.

Diagnosis

- Multiple measurements of BP to confirm
- Urinalysis and urinary albumin:creatinine ratio; if abnormal, consider renal ultrasonography
- Blood tests: Fasting lipids, creatinine, potassium
- Renal ultrasonography if creatinine increased
- Evaluate for aldosteronism if potassium decreased
- ECG: If left ventricular hypertrophy, consider echocardiography
- Sometimes thyroid-stimulating hormone measurement
- Evaluate for pheochromocytoma or a sleep disorder if BP elevation sudden and labile or severe

● Treatment

- Weight loss and exercise
- Smoking cessation
- Diet: Increased fruits and vegetables, decreased salt, limited alcohol
- Drugs if BP is initially high (>160/100 mm Hg) or unresponsive to lifestyle modifications
- Lifestyle modifications

OBESITY

- It is characterized by the abnormal growth of the adipose tissue, resulting in an increase in the body weight to the extent of 20% or more of standard weight for the person's age , sex and height.



- **Corpulence index:** this is based on only weight of the individual.
- = Actual body weight of the individual
- Expected body weight
- **Expected weight formula:**
- **Broca's = height in cm – 100**

- **Body mass index:** This is based on weight and height of the individual.
- = $\frac{\text{Weight in Kg}}{(\text{Height in mtr})^2}$
- **Waist circumference:** It is measured at a mid point between the lower border of the rib cage and the iliac crest. Men > 102 cm and women > 88 cm.

Risk factors

- **Non modifiable risk factors**
- **Age:** Obese children continues to adult life.
- **Sex:** over weight is more among men but obesity among women. It's because of physiological process contribute to an increased storage of fat in female and during pregnancy.
- **Genetic factors:**

Modifiable risk factors

- **Physical activity:** Regular activity burns Cal
- **Socioeconomic status:** High socioeconomic status correlates positively with obesity in developing countries
- **Literacy level:** less literacy level
- **Body image:** Thin and slim body symbolizes competence, while obesity represents laziness
- **Eating habits:** Overnutrition (95%)



- **Alcoholism:** Every gram = 7 k Cal of energy.
- **Smoking:** Smoking and obesity is inversely related.
- **Psychological factors:** Emotional strains people find satisfaction in eating the food.
- **Drug use:** use of corticosteroids, oral contraceptive pills, insulin, beta adrenergic blockers can promote weight gain.
- **Environmental factors:** Modernization of standard of living.

Prevention and control

Aim

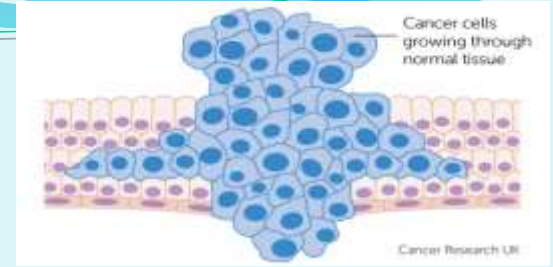
- To maintain BMI between 18 to 25 throughout adulthood.
- To prevent the development of over weight
- To prevent the progression of overweight to obesity.
- To prevent regain of weight among those obese patients, who have already lost so weight

Strategies

- **Dietary changes**
- Refrain from over consumption of fats and carbohydrates
- -cereal, legumes and vegetables, fiber content should be increased.
- **Physical activities:**
- Regular physical activity helps in increasing the energy expenditure.
- **Health education:** on hazards of obesity and it's prevention by healthy diet and lifestyle

CANCER

- Cancer is a most fearful disease.
- It is characterized by the following features:
- Abnormal and uncontrolled growth of the cells.
- The presence of aberrations in the nucleus.
- Ability to invade the surrounding tissues and even distant organs later.
- Eventual death of the person, if the tumor has progressed beyond a certain stage at which it can be successfully removed.



Agent factors

Types

- Physical agents: Heat, solar radiation, ionizing radiation
- Mechanical: Friction
- Chemical: Aniline, asbestos dye, benzol, nickel, coal tar
- Biological: hepatitis b virus, cytomegalovirus virus, Epstein-Barr virus, human papilloma virus, human T cell lymphoma virus, aspergillusflavus and herpes virus.
- Nutritional: smoked fish, beef, high intake of fat, alcohol.
- Socio-environmental: Tobacco, over use of estrogen drug, sunlight.

Host factors

- Age: in developing countries, (young people)
- Sex: among men than among women.
- Occupation: in certain types of industries
- Example: coal tar, soot, pitch, dyes, U-V radiation,
- Habits: smoking, alcoholism, sun bath, pan, zarda, low fibre diet, excessive sex with multiple partners.
- Environmental Factors: air pollution and ozone layer depletion.

Prevention: Health promotion



- A. " Danger signal" of cancer
- A lump in the breast
- A non healing ulcer
- Sudden change in the wart or mole
- Persistent indigestion or difficulty in swallowing
- Hoarseness of voice
- Unusual bleeding from any natural orifice
- Any change in the usual bowel habit
- In explained loss of weight

- B. People are also educated to avoid alcohol, smoking, pan,
- C. To increase the use of legumes, grains, fruits and vegetables and to avoid coloring agents, fast food etc
- D. To maintain high standard of personal hygiene, specially among industrial workers.
- E. Women are educated about self examination of the breasts.

- **Control of air pollution:**By dilutions, replacement and legislation from a part of cancer control activities.
- **Oral hygiene:** Maintenance of oral hygiene and correction of non- alignment of teeth resulting in aphthous ulcers, goes a long-way in prevention of oral cancers.
- **Legislation:** To control consumption of alcohol, tobacco and food related carcinogens.
- To control air pollution
- To protect "at- risk" industrial workers.

Specific protection

- Avoidance of carcinogens
- Immunization against hepatitis B to prevent liver cancer.
- Treatment of pre-cancerous lesions.
- At risk industrial workers should wear protective gadgets.
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Secondary prevention

- Early diagnosis and treatment
- Early diagnosis- is done by history, clinical exam and investigation. Screening of those who comes with warning signals and those at risk.
- Exfoliative cytology to detect ca cervix
- X-ray chest and sputum cytology - to detect bronchogenic ca.
- Mamography- to detect ca breast.
- Endoscopic examination- to detect ca of stomach, colon and other hollow viscera.

Treatment

- Surgery
- Chemotherapy
- Radiation therapy
- Immunotherapy

Tertiary prevention

- Disability limitations
- Rehabilitation
- Rehabilitation with a prosthesis and training, later placed in a suitable job.
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DIABETES MELLITUS

- It is a metabolic syndrome, clinically characterized by polyuria, polyphagia, polydypsia, hyperglycemia and glycosuria due to absolute or relative deficiency of the hormone insulin, that control the metabolism of carbohydrates, protien, fat and electrolytes.



Classification of diabetes mellitus

Primary

- Type 1 Insulin dependent diabetes mellitus
- Type 2 Non insulin dependent diabetes mellitus

Secondary

- Pancreatic pathology
- Excessive production of hormone antagonist to insulin
- Long term use of drugs like corticosteroids, this idea, phenytoin, oral contraceptive
- Liver disease
- Genetic syndrome


Agent factors

- Underlying cause of DM is deficiency of insulin.
- The overall effects of these mechanism is reduced utilization of glucose leading to Hyperglycemia and glycosuria.
- Other causes could be decreased insulin sensitivity and increased insulin resistance or synthesis of abnormal, biologically less active insulin molecule

Host factors

- Age: Type 1 (younger age) and Type 2 among middle aged and elderly.
- Sex: Type 1 DM (men) and type 2 (women)
- Genetic factors: Type 2 shows 90% concordance genetic component whereas Type 1 shows only 50%.
- Obesity: obesity increases the insulin resistance and reduces the number of insulin receptors on target cells.

- **Environmental Factors:**
- **Pregnancy:** It places a burden on beta cells of pancreas to secrete more insulin.
- **Viral infection:** rubellavirus, mumps, rheovirus type 1.
- **Diet:** wheat and cow's milk have diabetogenic factors, A high saturated fat intake
- **Malnutrition:** diabetes directly cause by protien deficiency.
- **Alcoholism:** Excessive intake can lead to type 2 DM.

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- Lifestyle: lack of exercise is risk factor for DM type 2.
 - Immunological factors: Auto immune disorder can cause diabetes.
 - Stress and strain: pregnancy, surgery, trauma can lead to DM.
 - Socioeconomic class: change in lifestyle.

- **Potential diabetic:** It is a one who has risk of developing DM due to genetic reasons.
- **Latent diabetic:** It is a one who has risk of developing DM due to stressful conditions like pregnancy, surgery, trauma, infection. They may returns to normal if stress is removed.
- **Black zone:** is a state of affairs in a type 2 DM patients, in whom blood glucose levels are high but do not have symptoms, although the process of complications is going on.

Prevention and care of diabetes

- **Population strategy**
- Improvement in the nutritional habits
- Maintenance of body weight
- Genetic counseling: consanguineous marriage to be discouraged.
- Prospective eugenics: one diabetic should not marry another diabetic
- Retrospective eugenics: if they are already married, they should not have children.

Highrisk strategy

- Correction of obesity
- Avoiding over nutrition and alcohol
- Changing lifestyle
- Regular exercises
- Maintainace of normal body weight
- Avoidance of oral contraceptive and steroids
- Reduction of factors promoting atherosclerosis
- Yoga exercise and meditation to be encouraged

● **Secondary prevention**

● Aim

● To maintain normal blood glucose level

● To maintain normal body weight

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● **Principle treatment:**

● Diet : Small balanced meals more frequently.

● More of raw vegetables and less cereals

Self-care in diabetes mellitus

- Personal hygiene: Feet hygiene is important.
- Person should
- Look for changes in color, temperature, swelling crakes and wounds
- Always wear footwear.
- Keep the feet clean, dry and warm



- Change socks daily
- Habits: Should avoid smoking, spirit and steroids.
- Exercise regularly
- Diet:
- Drug: take regularly

Tertiary Prevention

- Disability limitation
- Rehabilitation

ACCIDENTS



- Accidents is an event, independent of human will power, caused by a rapidly acting external force, resulting in physical with or without mental damage.
- If death occurs at once or within a week after the accident, it is called fatal accident;
- if death occurs after a week but within a month, it is called death due to accident or killed in accident and
- if death occurs after one year, it is called the sequel of accident.

Measurements

- **Mortality indicator**
- Proportional mortality rate(% of total deaths)
- Number of deaths per 1000 registered vehicle per year.
- Ratio of number of accidents: Number vehicle per km
- **Morbidity indicator**
- This is measured in term of serious and slight injury assessed by a scale known as Abbreviated injury scale.
- **Disability rate**
- This depends on severity, duration of disability.

Types of accidents

- **Road traffic accidents:** Deaths due Motor vehicle accident
- Factors
 - Poor maintenance of vehicle
 - Large number of vehicles.
 - Overloading of vehicles
 - Low driving standard
 - Drink and drive

- **Railway accidents** : Deaths due train accidents
- Factors : Improper maintenance and Terrorism
- **Domestic accidents**: occurring in and around the house. These includes burns, drowning, poisoning
- **Industrial accidents**:
- The workers at risk caused by mechanical equipment, tractors and pesticide.
- **Violence**:
- Due to war, antisocial activities and terrorism.

Agent factors

- **Age:** 15- 34 years
- **Sex:** common among men than women
- **Medical conditions:** epilepsy, vertigo, refractive errors
- **Experience and training:** common among untrained and unskilled workers
- **Habits:** drugs, alcoholism, smoking

Environmental factors:

- **Relative to road:** defective roads, poor lightening , many curves, slippery roads.
- **Relating to vehicles:** over speed, poorly maintenance, overload and low driving standard.
- **Season:** bad weather in winter and rainy season
- **Legislation:** Ignoring rules, fraud issue of Licence
- **Domestic Environment:** Vegetables and fruit peeling on floor, smoking, electric wires, dark corners, forgetfulness to switch off LPG cylinders


Prevention:

- 1. Inter-sectoral coordination
- 2. Reporting of all accidents
- 3. Safety education
- 4. Promotion of safety measures
- 5. Alcohol and other drugs
- 6. Primary care
- 7. Enforcement of laws
- 8. Rehabilitation services
- 9. Accident research(extent, types, environment, human behavior, evaluation of control measures)

BLINDNESS

- There are 4 levels of visual function, according to the International Classification of Diseases -10 (Update and Revision 2006):
- Normal vision
- Moderate visual impairment
- Severe visual impairment
- Blindness.



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- **Normal vision**
 - Visual acuity is usually measured with a Snellen chart. The Snellen chart displays letters of progressively smaller size. "Normal" vision is 20/20. This means that the test subject sees the same line of letters at 20 feet that a normal person sees at 20 feet. 9

- **Visual impairment** is defined as the limitation of actions and functions of the visual system. The National Eye Institute defines low vision as “a visual impairment not correctable by standard glasses, contact lenses, medication or surgery that interferes with the ability to perform activities of daily living”

- **WHO Definition:-** Visual Acuity less than 3/60 (Snellens) or its equivalent. • **NPCB Definition:-** Inability of a person to count fingers from a distance of 6 meters or 20 feet. – Vision 6/60 or less with the best possible spectacle correction – Diminution of field vision to 20 degrees or less in better eye
- **Visual Acuity:-** Sharpness of vision, measured as maximum distance a person can see a certain object, divided by the maximum distance at which a person with normal sight can see the same object
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Types of Blindness

- **Economic blindness:-** – Inability of a person to count fingers from a distance of 6 meters or 20 feet.
- **Social blindness:-** – Vision 3/60 or diminution of field of vision to 10 degrees
- **Manifest blindness:-** – Vision 1/60 to just perception of light.
- **Absolute blindness:-** – No perception of light

- **Curable blindness:-** – That stage of blindness where the damage is reversible by prompt management e.g. cataract
- **Preventable blindness:-** – The loss of vision that could have been completely prevented by institution of effective preventive or prophylactic measures.
- **Legal blindness:-** Is a level of vision loss that has been legally defined to determine eligibility for benefits. The clinical diagnosis refers to a central visual acuity of 20/200 or less in the better eye with the best possible correction, and/or a visual field of 20 degrees or less

India

- Main causes of blindness are as follows:
 - 1. Cataract (62.6%)
 - 2. Refractive Error (19.70%)
 - 3. Corneal Blindness (0.90%),
 - 4. Glaucoma (5.80%),
 - 5. Surgical Complication (1.20%)
 - 6. Posterior Capsular Opacification (0.90%)
 - 7. Posterior Segment Disorder (4.70%),
 - 8. Others (4.19%)
 - 9. Estimated National Prevalence of Childhood Blindness /Low Vision is 0.80 per thousand

Factors

- Age: ◦ In children & young: Refractive error, trachoma, conjunctivitis, malnutrition. ◦ In adults: cataract, refractive error, glaucoma, DM
- Sex: ◦ Higher prevalence of trachoma, conjunctivitis and cataract in women leading to higher prevalence of blindness in women 21
- Malnutrition: ◦ Infectious diseases of childhood especially measles & diarrhoea ◦ PEM ◦ Severe blinding corneal destruction due to vit. A deficiency in first 4 to 6 years of life.

- Occupation: ◦ People working in factories, workshop, industries are prone to eye injuries because of exposure to dust, airborne particles, flying objects, gases, fumes, radiation. 22
- Social class: ◦ Surveys indicate that blindness twice more prevalent in poorer classes than in the well to do.
- Social factors: ◦ Basic social factors are ignorance, poverty, low standards of personal and community hygiene and inadequate health care services.

- **Prevention:**
- **Primary care**
- Wide range of eye conditions can be treated or prevented at grass root level by locally trained health workers who are first to make contact with the community.
- They are also trained to refer the difficult cases to the nearest PHC or district hospital.
- Their activities also involve promotion of personal hygiene, sanitation, good dietary habits and safety in general.


- **Secondary care:**

- Involves definitive management of common blinding conditions as cataract, trichiasis, entropion, ocular trauma, glaucoma.
- It is provided in PHCs and district hospitals where eye depts are established.
- May involve the use of mobile eye clinics

Tertiary care

- Established in the national or regional capitals and are often associated with medical colleges and institutes of medicine.
- Provide sophisticated eye care such as retinal detachment surgery, corneal grafting which are not available in the secondary centres.
- Other measures of rehabilitation comprise education of blind in the special schools & utilisation of their services in the gainful employment.

- **Specific programmes**
- ◦ Trachoma control
- School eye health services: Screening and treatment, Health education
- ◦ Vit. A prophylaxis
- ◦ Occupational eye health services

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- An important way to control NCDs is to focus on reducing the risk factors associated with these diseases. Low-cost solutions exist for governments and other stakeholders to reduce the common modifiable risk factors. Monitoring progress and trends of NCDs and their risk is important for guiding policy and priorities.

SUMMARY

- describe epidemiology of non-communicable diseases
- explain epidemiology of cardiovascular diseases
- explain epidemiology of congenital heart disease
- describe epidemiology of rheumatic heart disease

● REFERENCES

● Book:

- Park, K. (2015). *Park's textbook of preventive and social medicine* (23rd ed.). Jabalpur: M/S Banarsidas Bhanot.
- Lal, S., A., & P. (2014). *Textbook of community medicine: preventive and social medicine* (3rd ed.). New Delhi: CBS & Distributors Pvt. Ltd.

- Website

- Non communicable diseases. (2017.). Retrieved October 01, 2017, from <http://www.who.int/mediacentre/factsheets/fs355/en/>

- Journal

- R, P. U. (2012). An Overview of the Burden of Non-Communicable Diseases in India. *Iran J Public Health.*, 413, 1-8.

doi:10.1007/springerreference_73361





- Thank you