University of Baghdad

Al Kindy College of Medicine

Department of Community & Family Medicine

Community & Family Health Module - Part III

Common Diseases & Health Problems in Community: Non Communicable, Occupational, Environmental & Social Diseases and Health Problems

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By:

The Staff members of Community & Family Medicine Department

Al Kindy College of Medicine University of Baghdad

Note

- These lectures worth 30% (10% Non-communicable, 5% occupational, 5% environmental, 5% Social, and 5% Health management) of the degree of the modules
- The topics will be delivered for the students in lectures, tutorials, seminars and group discussion

- **Learning Objectives:** Upon completion of this theme, students will be able to:

I. Non Communicable Diseases (NCDs)

Learning Objectives: On completion of this module students should be able to:

1) define the scope of non-communicable diseases epidemiology and appreciate the changing importance of non-communicable diseases as a major public health burden in different parts of the world,
2) Identify the difference between the modifiable and non-modifiable risk factors.
3) Explain the role of risk factors as aetiology of non- communicable diseases.
4) explain how functional genetic variant associations with common chronic diseases can provide strong estimates of the effects of environmental exposures on these diseases,
5) Describe the role of some infectious agents in the etiology of non-communicable diseases.
6) explain the concept of screening for disease control and how it can be used as a tool in public health,
7) Discuss the importance of non-communicable diseases in low and middle income countries.
8) Discuss the burden of how NCD on the family, community and the country and health system.
9) Identify the some measures regarding NCD prevention.

❖ Introduction & Definition

- Non-communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person.
- Non-communicable diseases (NCDs) or chronic diseases are diseases of long duration and slow progression.
- In developed countries, chronic diseases are the major cause of mortality and morbidity.These countries are expert dramatic changes in health need of their population. They are facing now dramatic shift in the distribution of cause of death from infection (communicable disease) to CVD and cancer (non-communicable disease NC).
- These disease are rapidly replaced infectious disease and malnutrition as the leading cause of death and disability, it is expected that this increase with time so that at year 2020: 7 of 10 deaths in developing countries are due to NCD comparison to 5 today.
- Developing countries facing now what called "epidemiological transition" which is the shift of generation from acute infection and deficiency diseases ((characteristic of under development)) into chronic NCD((characteristic of modernization, urbanization and advance level of development.
- Main types of non-communicable diseases
- Four main groups of non-communicable diseases are:
  I. Cardiovascular diseases (CVDs): - e.g. Hypertension, heart attacks, strokes;
  II. Diabetes (II type).
  III. Cancers:- e.g. lung cancer, breast cancer, cervical cancer;
  IV. Chronic respiratory diseases - e.g. chronic pulmonary obstructive disease diseases (COPDs), asthma;

- Until the second part of the 19th century, the **main causes of mortality in the world have been communicable (infectious) diseases.**
- Industrialization has resulted in **availability of antibiotics**, **vaccines, and good life conditions** (such as housing, water supply, nutrition),because of that, death from communicable diseases has decreased.
- Improvements have also been made in areas such as infant mortality and child health.
- All above lead to decline in mortality due to communicable disease and increase in mortality due to non-communicable disease.
- Trends of increase in mortality due to non-communicable disease (WHO, 2011):
- Factors that have contributed to this trend in recent decades include:
  - ✓ A higher standard of living,
  - ✓ New medicines and technologies,
  - ✓ Improved health literacy,
  - ✓ Attention to human rights,
  - ✓ Population growth.
  - ✓ Improved longevity are leading to increasing numbers and proportions of older people, with population ageing.

- Non- communicable diseases (NCDs) kill more than 36 million people each year.
- Nearly 80% of NCD deaths (29 million) occur in low- and middle-income countries.
- More than (9 million) of all deaths attributed to NCDs occur before the age of 60; 90% of these "premature" deaths occurred in low- and middle-income countries.
- Cardiovascular diseases account for most NCD deaths, (17.3 million) people annually, followed by cancers (7.6 million),
- Respiratory diseases (4.2 million), and
- diabetes (1.3 million).
- These four groups of diseases account for around 80% of all NCD deaths.
- They share four risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets.
- Prevention of NCD
  - ✓ WHO estimates that 80% of premature deaths are preventable
  - ✓ The World Health Assembly in May 2012 set a global target to reduce deaths under 70 from NCD by 25% by 2025.
  - ✓ The prevention may act on the biological risk factors of NCD (hypertension, high blood sugar, high blood lipids, and obesity), on the behavioural risk factors (tobacco, poor diet, physical inactivity, and the harmful use of alcohol), or on the social determinants of NCD.
- The risk factors for NCD are divided into two main groups.
  1) Lifestyle Risk Factors (behavioral, Modifiable)
  2) Biological Risk Factors (Non- Modifiable)
- Lifestyle risk factors (Modifiable or Behavioral): Risk factors which arise from the way persons live their daily lives and can be reduced and controlled by intervention so that reduce the probability of the occurrence of disease. they include:
  - ✓ Unhealthy Diet and obesity
  - ✓ Physical Inactivity
  - ✓ Tobacco use

- ✓ Alcohol use

- Biological risk factors (Non modifiable): Biological risk factors are risk factors which arise from the way the body functions or dysfunctions. Can't be reduced and controlled by intervention. They include: Age, Gender, Race, & Family history/ genetics
- Other Risk Factors include the ((Metabolic Risk Factors)) :
- "Metabolic" refers to the biochemical processes involved in the body's normal functioning • Behaviors (modifiable risk factors) can lead to metabolic/physiologic changes. • WHO has prioritized the following four metabolic risk factors:
  - ✓ Raised Blood Sugar (Elevated glucose).
  - ✓ Raised Blood Pressure
  - ✓ Raised Serum Lipids (Raised total cholesterol).
  - ✓ Overweight and obesity

- Obesity & NCD:
  - ✓ Obesity is a global public health challenge
  - ✓ BMI {weight (kg)/ height2 (m)} level of 25 or more is classified as overweight and 30 or more is classified as obese.
  - ✓ Overweight and obesity occur when more energy (measured in calories) is consumed than is spent through exercise.
  - ✓ Diets which are high in fat and sugar are "energy-dense", meaning that they have many calories. Energy-dense diets contribute to obesity and overweight.
  - ✓ Poor diet (rich in calories, fat, salt and sugar, and low in fruit and vegetables).
  - ✓ Rapid urbanization, globalization, changes in transport and food production and other economic and social developments have altered the way people live and eat in most parts of the world.
  - ✓ For many, traditional diets are being replaced by processed fast foods. In more and more countries, fat and sugar have become the cheapest way to get calories, cheaper than staples like grains, beans, lentils or fruits and vegetables.
  - ✓ It is associated with DM, H.T, ↑ TG, ↑total cholesterol, ↓ HDL

- Smoking & NCD
  - ✓ Tobacco use is the one risk factor common to the four main groups of NCDs (cardiovascular disease, cancer, chronic lung disease and diabetes).
  - ✓ It is also a risk factor for infectious diseases, tuberculosis and lower respiratory infections — health burdens that afflict much of humanity.
  - ✓ Tobacco use is the single greatest preventable cause of NCDs:
  - ✓ Tobacco use kills more than 15,000 people a day. Tobacco accounts for almost 6 million deaths every year (including over 600 000 deaths from exposure to second-hand smoke), and is projected to increase to 8 million by 2030.
  - ✓ Tobacco use and exposure comes in both smokeless and smoking forms. Smokeless tobacco is consumed in un-burnt forms through chewing or sniffing and contains several carcinogenic, or cancer-causing, compounds. Smokeless tobacco has been associated with oral cancer, hypertension, heart disease and other conditions..
  - ✓ Tobacco causes at least 16 different types of cancer. It is most closely associated with lung cancer, the world's leading cause of cancer deaths, accounting for nearly one in five cancer deaths.

- ✓ Tobacco use is known to cause several cancers of the throat and oral cavity, as well as cancer in diverse sites, such as the bladder, kidney, stomach and uterine cervix.
- ✓ Smoking in pregnancy is associated with a number of conditions that are hazardous to the health of both the mother and child, including ectopic pregnancy, miscarriage, pre-term delivery, low birth weight and sudden infant death syndrome
- ✓ Women who smoke during pregnancy have an increased risk of developing gestational DM and increase the risk to their child of developing DM later in life.
- ✓ Second-hand smoke (SHS): Tobacco not only imperils the health of those who are actively smoking but also those around them who breathe the smoke.
- ✓ There's no safe way to smoke. Replacing cigarette with a cigar, pipe, or hookah won't help avoid the health risks associated with tobacco products.
- ✓ Cigarettes contain about 600 ingredients. When they burn, they generate more than 7,000 chemicals, according to the American Lung Association. Many of those chemicals are poisonous and at least 69 of them can cause cancer.
- ✓ Many of the same ingredients are found in cigars and in tobacco used in pipes and hookahs.
- ✓ **<u>Cessation of smoking can be done by:</u>**
    1. Personal advice
    2. Smoking cessation clinic } Poor Results
    3. Nicotin with drawl therapy
    4. Social pressure
    5. Prohibition of smoking in public place x work } Good Results
    6. Restrict advertisement
    7. Heavily taxes cigarette trade

➢ Physical inactivity & NCDs
- ✓ Physical inactivity. About 3.2 million deaths annually can be attributed to insufficient physical activity
- ✓ Strong evidence shows that physical inactivity increases the risk of many adverse health conditions, including the world's major non-communicable diseases (NCDs) of coronary heart disease (CHD), type 2 diabetes, and breast and colon cancers, and shortens life expectancy.
- ✓ Because much of the world's population is inactive, this presents a major public health problem. More people are employed in sedentary work, and more use motorized transport instead of walking or biking.
- ✓ WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household tasks, travelling, and engaging in recreational pursuits.
- ✓ The term "physical activity" should not be confused with "exercise", which is a subcategory of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness. Both, moderate and vigorous intensity physical activity brings health benefits.

➢ A general recommendation for all risk factors is the development of a system and an environment which avoids the development of these risk factors and helps persons who already have these risk factors to minimize them.

➢ Such a system would include a multi-disciplinary team which would be able to help persons with multiple risk factors to avoid the development of other risk factors.

- Non-communicable diseases are preventable through interventions that tackle shared risk factors, namely: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol (WHO, 2011).
- Problems in investigation of NCDs:
    1) Absence of a known agent.
    2) Multifactorial nature of aetiology.
    3) Long latent period.
    4) Indirect onset (cannot identify specifically when the disease start).
    5) Differential effect of factors on incidence and the course of the disease. e.g: single factor play different role in the disease E.g:ca-breast more common in high socio-economics state, this socio-economic state make the patient live longer.

I. Cardiovascular Diseases (CVDs)

- CVDs are the number 1 cause of death globally.
- An estimated 17.5 million people died from CVDs in 2012, representing 30% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke.
- Over three quarters of CVD deaths take place in low- and middle-income countries.
- Out of the 16 million deaths under the age of 70 due to non-communicable diseases, 82% are in low and middle income countries and 37% are caused by CVDs.
- Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies.
- People with cardiovascular disease or who are at high cardiovascular risk (due to the presence of one or more risk factors such as hypertension, diabetes, hyper-lipidaemia or already established disease) need early detection and management using counseling and medicines, as appropriate.
- Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and they include:
    1) Coronary or ischemic heart disease (Angina Myocardial infarction MI or heart attack and heart failure): Disease of the blood vessels supplying the heart muscle.
    2) Hypertension
    3) Rheumatic heart disease – damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria
    4) Cerebrovascular disease (stroke): Disease of the blood vessels supplying the brain;
    5) Peripheral arterial disease – disease of blood vessels supplying the arms and legs;
    6) Congenital heart disease – malformations of heart structure existing at birth;
    7) Deep vein thrombosis and pulmonary embolism – blood clots in the leg veins, which can dislodge and move to the heart and lungs.

1) Coronary Heart Disease (Heart attack) & Cerebrovascular Disease (Stroke)

- Heart attacks (angina or myocardial infarction MI) and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain.

- The most common reason for this is a build-up of fatty deposits on the inner walls of the blood vessels that supply the heart or brain.
- Strokes can also be caused by bleeding from a blood vessel in the brain or from blood clots.
- What are the risk factors for cardiovascular disease?
  - ✓ The most important behavioural risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol.
  - ✓ The effects of behavioural risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity.
  - ✓ These "intermediate risks factors" can be measured in primary care facilities and indicate an increased risk of developing a heart attack, stroke, heart failure and other complications.

- Prevention And Control
  - ✓ Cessation of tobacco use, reduction of salt in the diet, consuming fruits and vegetables, regular physical activity and avoiding harmful use of alcohol have been shown to reduce the risk of cardiovascular disease.
  - ✓ In addition, drug treatment of diabetes, hypertension and high blood lipids may be necessary to reduce cardiovascular risk and prevent heart attacks and strokes.
  - ✓ Control other determinants of CVDs include poverty, stress and hereditary factors Health policies that create conducive environments for making healthy choices affordable and available are essential for motivating people to adopt and sustain healthy behaviour.
  - ✓ Reduce major CVD risk factors and their social and economic determinants through community based programmes for integrated prevention of NCDs.
  - ✓ Risk factors take root in the newborn, childhood and youth
  - ✓ Low birth weight is associated with an increased risk of adult diabetes and CVD.

2) Hypertension (HT) "Silent killer"

- An elevated arterial pressure is probably the more important public health problem specially in society undergo epidemiological transition ((development countries)) being common ((it is the commonest cardiovascular disease)), asymptomatic, readily detectable, usually easily treatable and often lead to lethal complication ((major risk factor for cardiovascular mortality, congestive heart failure,CVA and renal failure.
- HT affect 25% of adult population in E.M.R ((Eastern Mediterranean Region)).
- About 75% of hypertensive patients are unaware of their HT, and 50% of HT patients who know their condition not take treatment, and about 50% of patients who receive treatment are with uncontrolled blood pressure. HT raises the risk for heart disease and stroke, which are leading causes of death.
- HT account for 9.4 million deaths worldwide every year.
- HT is responsible for at least 45% of deaths due to heart disease , and 51% of deaths due to stroke

- Normal adult blood pressure is defined as a blood pressure of 120 mm Hg[1] when the heart beats (systolic) and a blood pressure of 80 mm Hg.
- HT is defined as a systolic blood pressure equal to or above 140 mm Hg and/or diastolic blood pressure equal to or above 90 mm Hg.
- Normal levels of both systolic and diastolic blood pressure are particularly important for the efficient function of vital organs such as the heart, brain and kidneys and for overall health and wellbeing.
- HT is prevented and could be controlled. That's why it is important to check the blood pressure regularly.
- The symptoms of high blood pressure
  - ✓ Most hypertensive people have no symptoms at all. There is a common misconception that people with hypertension always experience symptoms, but the reality is that most hypertensive people have no symptoms at all.
  - ✓ Sometimes hypertension causes symptoms such as headache, shortness of breath, dizziness, chest pain, palpitations of the heart and nose bleeds.
- Diagnosing HT
  - ✓ Occasionally, when blood pressure is measured it may be higher than it usually is. For some people, the anxiety of visiting a doctor may temporarily raise their blood pressure ("white coat syndrome").
  - ✓ There are electronic and, mercury devices that are used to measure BP.
  - ✓ WHO recommends the use of affordable and reliable electronic devices that have the option to select manual readings.
  - ✓ Blood pressure measurements need to be recorded for several days before a diagnosis of hypertension can be made.
  - ✓ BP is recorded twice daily, ideally in the morning and evening. Two consecutive measurements are taken, at least a minute apart and with the person seated.
  - ✓ Measurements taken on the first day are discarded and the average value of all the remaining measurements is taken to confirm a diagnosis of hypertension.
- Why Blood Pressure Matters
  - ✓ HT increases risk for dangerous health conditions:
  - ✓ First heart attack: About 7 of every 10 people having their first heart attack have high blood pressure.
  - ✓ First stroke: About 8 of every 10 people having their first stroke have HT.
  - ✓ Chronic (long lasting) heart failure: About 7 of every 10 people with chronic heart failure have high blood pressure.
  - ✓ Kidney disease is also a major risk factor for high blood pressure.
  - ✓ Although we cannot control risk factors for high blood pressure, we can prevent or control high blood pressure and its complications.
- Causes of hypertension
  - ✓ In most cases there is no known specific cause for hypertension.
  - ✓ Genetic factors, Behavioural risk factors, other associated disease & social factors:
  - ✓ Behavioural risk factors: Tobacco, too much salt and fat, and not eating enough fruit and vegetables Poor stress management, Alcohol use, Physical inactivity and lack of exercise

- ✓ Associated diseases: Heart disease, kidney failure diabetes, high cholesterol and being overweight or obese.
- ✓ Socioeconomic factors: Social determinants of health, e.g. income, education and housing, have an adverse impact on behavioural risk factors and in this way influence the development of hypertension. Living and working conditions can also delay timely detection and treatment due to lack of access to diagnostics and treatment and may also impede prevention of complications.

- ➢ Rapid unplanned urbanization also tends to promote the development of hypertension as a result of unhealthy environments that encourage consumption of fast food, sedentary behavior, tobacco use and the harmful use of alcohol.
- ➢ Finally, the risk of hypertension increases with age due to stiffening of blood vessels, although ageing of blood vessels can be slowed through healthy living, including healthy eating and reducing the salt intake in the diet.
- ➢ Other factors:
- ➢ When hypertension develops in people below the age of 40 years it is important to exclude a secondary cause such as kidney disease, endocrine disease and malformations of blood vessels.
- ➢ Preeclampsia is hypertension that occurs in some women during pregnancy. It usually resolves after the birth but it can sometimes linger (stay), and women who experience preeclampsia are more likely to have hypertension in later life.
- ➢ Measuring blood pressure at home instead, using a machine to measure blood pressure several times a day or taking several measurements at the doctor's office, can reveal if this is the case.
- ➢ Preventing and control High Blood Pressure:
- ➢ Practice healthy living habits.
  - ✓ Education in public
  - ✓ Healthy dietary habits (Eating a healthy diet and avoid harmful diet), best begin in early adulthood prior the age of high risk Prevent or treat medical conditions.
  - ✓ Maintaining a healthy weight and weight reduction among obese.
  - ✓ Getting enough physical activity
  - ✓ Avoid smoking & alcohol use
  - ✓ Screening of high risk group
  - ✓ Self-care is important for all, but it is particularly so for people who have limited access to health services due to geographic, physical or economic reasons.
  - ✓ Control Blood Pressure:(medicine and follow up checking)
  - ✓ Prevent or treat medical conditions:
    - Manage Diabetes.
    - Cholesterol control especially LDL, through dietary prevention and monitoring food habits of low animal fat and high fiber and vegetables.
  - ✓ Multiple guidelines for the more effective management of HT have been published
  - ✓ Civil society institutions, in particular nongovernmental organizations (NGOs)Activities: can range from blood pressure measurement campaigns to health education programmes in the workplace to information dialogue with policy makers on how living conditions and unhealthy behavior influence blood pressure levels.

3) Rheumatic Fever (RF):

- Public health problem especially in parts of world where poverty, overcrowding, malnutrition and inadequate medical care and common place even industrialize societies, a relatively high prevalence of rheumatic fever persist in pockets of poverty and out breaks have been reported recently in wealthy area.
- In both developing and developed countries, pharyngitis and skin infection (impetigo) are the most common infections caused by group A streptococci (GAS). Group A streptococci are the most common bacterial cause of pharyngitis, with a peak incidence in children 5–15 years of age. Streptococcal pharyngitis is less frequent among children in the first three years of life and among adults. It has been estimated that most children develop at least one episode of pharyngitis per year, 15–20% of which are caused by group A streptococci and nearly 80% by viral pathogens
- Rheumatic fever is an systemic inflammatory disease with inflammatory process which can involve the joints, heart, skin and brain. It is caused by antibody cross reactivity and occurs after 2-3 weeks as a delay sequel to pharyngeal infection with group A Beta- haemolytic streptococci ((non suppurative complication of post-streptcoccal infect of URT only, while glomerulonephritic complication (glomerulonephritis) can occur after skin infection also.after a Group A Streptococcal infection.
- It mainly affect joint, heart, skin nervous system, and subcutaneous tissues.
- In developing countries it may account for 30-40% of cardiac diseases.
- 20% of URT infection that occur in school children (5-15 year) are caused by group A Beta- haemolytic streptococcal infection and only 20% of these strep-URT infect produce symptoms so for every 1 symptomatic case of streptococcal URT infection there are 4 asymptomatic case.
- Despite the common nature of GAS infections, the carrier state is not well understood. Identification and management of GAS carriers often causes frustration for the clinician, the patient, parents, and researchers.
- Every case of symptomatic strep pharynigtis can transmit the infection to the family contact or people living in the same house hold (e.g school) in a proportion varies between 8-50%, the worse the socioeconomic, the higher will be the transmission.
- Risk factor
  - ✓ Genetic factor may involve since the disease is more in families
  - ✓ Children 5-15 years (school age), but could occur in all age-group except infancy.
  - ✓ "Occur equally in male and female"
  - ✓ Low socio-economic state ((potently).
  - ✓ Oven crowded areas e.g schools, & families with high number of children.
  - ✓ Seasonality: common in winter.

- The child with history of acute Rh. fever has almost 150 times risk of recurrence of acute Rh. fever compare with child with no such history.
- A latent period occurs between the acute pharyngitis and RF (3wk) and nephritis (2wk)

➢ Major criteria are:

✓ Poly arthritis: Most frequent feature 75% of cases, as an (acute migratory poly arthritis the large Joints of the extremities e.g knee, elbow are most frequently affected usually last for 2-3 week there is swelling, redness and hotness of the Joint. But later on the joint heal completely without residual deformity.

✓ Carditis: 40-50% of cases, it is the most serious manifestation occur within 1-2 wk of onset and last for 6wk-6mouth, can presented as new murmur, sign of pericarditis, sign of congestive heart failure or may be silent and pass un notice.

✓ Subcutaneous nodule: rare presentation (1%) but indicate the severity of the infection ((if present patient always has carditis)) it is painless swelling over bony prominence usually, mobile, not tender seen in seven cases only.

✓ Erythema marginatum 5%, non-pruritic non indurated, blanch on pressure pink rash vary in size usually on trunk but never or the face, seen usually in severe cases.

✓ Sydenham's chorea: occur in 10-15% it is sudden, aimless irregular movement. it is disorder of CNS, it is a delayed manifestation of Rh. fever (2-6 m later).

➢ Minor criteria:

✓ Clinical: Fever, Polyarthralgia, or Past history of ARF or CRC

✓ Lab: Prolong PR interval, Acute phase reaction ↑ WBSC, ↑ESR ↑CRP ((C reactive protein))

➢ Diagnosis: No single symptom, sign or lab test is pathognomonic of Rh. Fever. But (2 major) or (1major+ 2minor) Plus→ Evidence of presenting strept. URT infection ((+ve culture, increasing ASOT repeated twice or trice (>200 IU) or history of scarlet fever))

➢ Prevention:

✓ Primary prevention: Definite diagnosis and eradication of strep URTI.

1) Definite diagnosis of strep infection
   - Scarlet fever
   - -+ve culture
   - -Increasingly ASO titer (twice or trice)
2) *Characteristic symptoms of strept URT infection:
   - - Exudate on the throat
   - -Enlarge and tender anterior cervical LN
   - -High temperature>38°C
   - -Erosion of the edge of the nostril with scabbing.

Primary Prevention of Rheumatic Fever (Treatment of Streptococcal Tonsillopharyngitis)

Eradication of strep URTI:This is achieved by:

- Achieving bactericidal level of antibiotic within 9 days of onset of symptoms & last for 10 days.
- Benzathin penicillin: 60,000 U((< 6year)) or less than 30kg, 1,200,000 U ((>6 year)) or more than 30 kg Intramuscular Once OR Penicillin V 250 mg tds Oral 10 days .
- If sensitive: Erythromycin 20mg/kg 1 day (<12 year) four divided dose or 250mg X4 ((≥12year)) for 10 days.

✓ **2ndry prevention:** Indicated in patient with:
- Chronic rheumatic cardiopathy
- Acute rheumatic fever

To interrupt the re-infection recurrence cycle, this is achieved by:
- A bacteriostatic level of antibiotic against GABHS for 5 consecutive years or the age of 16 years ((which is for)) e.g if the child develop Rh. Fever at age 5year ⇒ give R_x till 16 years old age but if the adult develop Rh. fever at age of 15 years ⇒ give R_x for 5 year (till 20 years old age)
- We give Benzathin penicillin 600,000 IU ((<6y)), 1 million I.U (≥6y)).
- If sensitive: Sulphadiazin 0.5 gm 1day (<6year), 1gm 1 day (≥6year)
- Patient with chronic valvular rheumatic heart disease (CRC)and those with cardio vascular surgery should be kept on this regimen for life.
- Noncompliance is a major threat to treatment

3) Diabetes Mellitus (DM)

- Important Chronic disease both in term of the number of person affected and the considerable associated morbidity and early mortality.
- Group of metabolic disorders characterized by hyperglycemia and disturbances of CHO, fat, and prot. metabolism there is a deficiency in the action of the hormone insulin this may result from quantitative deficiency of insulin, an abnormal in insulin, resistance to its action or a combination of deficits
- Without treatment, patient develop sever metabolic disturbance including ketoacidosis & dehydration which can lead to death. Death from ketoacidosis is largely preventable
- Long-term complications of DM
  - ✓ Retinopathy with potential loss of vision
  - ✓ Nephropathy leading to renal failure
  - ✓ Peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction.
  - ✓ Increased incidence of atherosclerotic cardiovascular, peripheral arterial and cerebrovascular disease.
- The vast majority of cases of diabetes affect large no of people (100 million individual in 1990, increase to 230 million by 2010. As of 2015, an estimated 415 million people had diabetes worldwide and expected to be 642 million at 2040.
- Incidence & prevalence are highly varied between and within countries e.g there is 20-60 folds difference among individual in the same country.
- In developing countries there is ↑ in incidence x prevalence of DM (NIDDM) due to modernization of life style, but the mortality from acute complication is high due to lack of basic requirement.
- It is an important cause of premature death disability and serious consequence
- Imp. Risk factor for CHD and HT.
- Classification of DM "WHO classification:"
- There are three main types of diabetes mellitus:

1) Type 1 DM (10%): Pancreas's β-cell destruction, usually leading to absolute insulin deficiency results from the failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The exact cause is unknown, could be autoimmune mechanism.
2) Type 2 DM (85%) begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non-insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The most common cause is excessive body weight and not enough exercise.
3) Gestational diabetes is the third main form and occurs when pregnant women without a previous history of diabetes develop high blood-sugar levels.

- Risk factors for Type I DM
  - ✓ Genetics.
  - ✓ Family history.
  - ✓ Geography. People living in Finland and Sardinia have the highest incidence of type 1 diabetes — about two to three times higher than rates in the United States and 400 times the incidence among people living in Venezuela.
  - ✓ Age. Although type 1 diabetes can appear at any age, it appears at two noticeable peaks. The first peak occurs in children between 4 and 7 years old, and the second is in children between 10 and 14 years old.
  - ✓ Exposure to certain viruses, such as the Epstein-Barr virus, Coxsackie virus, mumps virus and cytomegalovirus
  - ✓ Early exposure to cow's milk

- Risk factors for Type II DM
  - ✓ Family history of diabetes
  - ✓ Overweight
  - ✓ Unhealthy diet
  - ✓ Physical inactivity
  - ✓ Increasing age
  - ✓ High blood pressure
  - ✓ Impaired glucose tolerance (IGT)*
  - ✓ History of gestational diabetes
  - ✓ Poor nutrition during pregnancy

- Diagnosis: symptoms + high blood sugar and/ or glucose in urine + keton in urea. FPG values are as follows:
  - ✓ FPG <100 mg/dl (5.6 mmol/l) = normal fasting glucose; 2-h postload glucose <140 mg/dl (7.8 mmol/l) = normal glucose tolerance
  - ✓ FPG 100–125 mg/dl (5.6–6.9 mmol/l) = IFG (impaired fasting glucose); 2-h postload glucose 140–199 mg/dl (7.8–11.1 mmol/l) = IGT (impaired glucose tolerance);
  - ✓ FPG ≥126 mg/dl (7.0 mmol/l) = provisional diagnosis of diabetes. 2-h postload glucose ≥200 mg/dl (11.1 mmol/l) = provisional diagnosis of diabetes

- ✓ The diagnosis must be confirmed

- The hemoglobin A1c (HBA1c%) test may be used to screen for and diagnose diabetes and prediabetes in adults. It is glycated hemoglobin formed in the blood when glucose attaches to hemoglobin. The higher the level of glucose in the blood, the more glycated hemoglobin is formed. It is usually used in treatment monitoring to achieve good glycemic control as it provides information about a person's average levels of blood glucose over the past 3 months. Normal below 5.7 percent, Diabetes ≥6.5 percent Prediabetes 5.7 to 6.4 percent.
- The diagnosis of type II DM is usually not made on the basis or classic diabetic symptoms but rather on the presentation of one of complication of DM e.g macrovascular complication as accelerated atherosclerosis in coronary arteries, microvascular ⇒ small vessels in kidney & eye or neuropathic.
- The diagnosis may be found in pat over 40 year as a part of routine screening.
- Both IDDM ,NIDDM patients are at risk for these long term complication either ⇒ **macro-vascular** e.g. accelerated atherosclerosis resulting in stroke, heart disease peripheral vascular disease
- Or ⇒ **micro-vascular** lead to:⇒Retinopathy (80-90% of pat with DM show some evidence of retinal damage (back ground retinopathy) after 20 years (DM is a leading cause of blindness in the age of 20-74 age ⇒ *preventable)
- ⇒ Nephropathy: (40% of pat with DM develop significant clinical proteinuria renal disease) DM ↑ risk of renal failure 17-20 folds
- DM is currently the leading cause at Rx of end stage renal disease
- ⇒Neuropathy: not occur until at least 5 year after the Dx. the major consequence of DM neuropathy are pain weakness & loss of sensation parallel disorder of autonomic NS may lead to problem of sexual function, urinary & GIT.
- Primary prevention Mainly of NIDDN
  - ✓ Prevention should be based on effort to ↓ insulin resistance & promotion of insulin secretion → Maintaining a healthy weight, ↓ obesity ↑ physical activity
  - ✓ Life style changes that ↓ insulin resistance
  - ✓ Correction& prevention of obesity +healthy dietary habits. Caloric restriction is effective in the prevention
  - ✓ Avoidance of high fat diet, Encourage using un refined sugar ,soluble fibers
  - ✓ Secondary prevention of NIDDM: Aim:
    - ❖ Retard progression of DM complication
    - ❖ ↓ risk or severity of complication
    - ❖ Slow or arrest development of early micro or macro-vascular complications
    - ❖ Decrease premature morbidity and mortality.

    This is done by:
    - Screening for undetected DM (early diagnosis and adequate glycemic control
    - Control of hyper glycaemia
    - Control of other metabolic abnormalities
    - Correction of risk factors e.g. smoking, dyslipidaemia, HT, obesity

- ✓ Tertiary preventive of NIDDM. ↓morbidity and mortality by delaying or arresting the complication (CHD, stroke ESRD, visual impairment, lower limb amputation and assure relatively normal life. Good glycaemic control by intensive Rx & frequent monitoring blood glucose (plasma glucose level)
- ✓ Diabetic prevention program progress can be integrated with other NCDs especially CVD &CA.

4) Cancer

- ➢ Cancer (malignant neoplasm): is a class of diseases in which a group of cells show uncontrolled growth (division beyond the normal limits), invasion (interference and destruction of adjacent tissues), and sometimes metastasis (spread to other locations in the body via lymph or blood).
- ➢ It is an important factor in the global burden of disease. The estimated number of new cases each year is expected to rise from 10 million in 2002 to 15 million by 2025, with 60% of those cases occurring in developing countries .
- ➢ Cancer affects people at all ages with the risk for most types increasing with age.
- ➢ Cancer caused about 13% of all human deaths in 2007 (7.6 million).
- ➢ Many cancers can be prevented by avoiding exposure to common risk factors, such as tobacco smoke. In addition, a significant proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early.
- ➢ In Adults: Most common cancer are lung, breast, prostate and colorectal
- ➢ In Children (under 20): Leukaemia, brain tumor, bone tumor & Lymphoma Update report on Iraq said that breast cancer, lung cancer followed by leukaemia were the most prevalent cancers.
- ➢ These three malignant properties of cancers differentiate them from benign tumors, which are self-limited, and do not invade or metastasize. Most cancers form a tumor but some, like leukemia, do not. The branch of medicine concerned with the study, diagnosis, treatment, and prevention of cancer is oncology.
- ➢ Carcinogens are any substances that cause DNA mutations and cause damage to the genome are known as mutagen.
- ➢ Classification: According to the histology and the location, respectively. Examples of general categories include:
  - ✓ Carcinoma: Malignant tumors derived from epithelial cells. Most common cancers, including the common forms of breast, prostate, lung and colon cancer.
  - ✓ Sarcoma: Malignant tumors derived from connective tissue cells.
  - ✓ Lymphoma and leukemia: Malignancies derived from hematopoietic (blood-forming) cells
  - ✓ Germ cell tumor: Tumors derived from totipotent cells. In adults most often found in the testicle and ovary ;
  - ✓ Blastic tumor or blastoma: A tumor (usually malignant) which resembles an immature or embryonic tissue. Most common in children.
- ➢ Signs and symptoms: cancer symptoms can be divided into three groups:
  - ✓ Local symptoms: unusual lumps or swelling (tumor), hemorrhage (bleeding), pain and/or ulceration. Compression of surrounding tissues may cause symptoms such as jaundice.

- ✓ Symptoms of metastasis (spreading): enlarged lymph nodes, cough and hemoptysis, hepatomegaly (enlarged liver), bone pain, fracture of affected bones and neurological symptoms. Although advanced cancer may cause pain, it is often not the first symptom.

➢ Systemic symptoms: weight loss, poor appetite, fatigue and cachexia (wasting), excessive sweating (night sweats), and anemia.

➢ Causes:

- External agents:

✓ Physical carcinogens:

- Prolonged exposure to UV radiation from the sun can lead to skin cancer (melanoma) and other skin malignancies.
- Ionizing radiation e.g. x-rays radiation (which induces cancer of the lung and certain other organs); It is estimated that 2% of future cancers will be due to current CT scans.
- Non-ionizing radio frequency radiation from mobile phones and other similar RF sources has also been proposed as a cause of cancer.

✓ Chemical carcinogens, for example, Tobacco smoking is associated with many forms of cancer, and causes 90% of lung cancer. Vinyl chloride (which can cause liver cancer), benzidine, (which can cause cancer of the bladder), Alcohol Liver cirrhosis, is associated with the development of liver cancer.

✓ Biological carcinogens: Infectious Pathogens (Microbial Carcinogenesis).

a) Viruses: HBV, HCV, HPV, EBV, HIV HBV,
   - HCV→Hepatocellular Carcinoma (Hepatoma)
   - HPV→ Squamous cell carcinoma
   - EBV→ Burkitt Lymphoma
   - HIV→ Kaposi Sarcoma

b) Bacteria: Helicobacter pylori. First bacterium classified as a carcinogen Implicated in gastric adeno-carcinoma & gastric lymphomas. Increased epithelial cell proliferation with chronic inflammation → cancer

c) Parasite: Schistosoma hematobium→ Squamous cell carcinoma of the bladder

✓ Hormonal imbalances: Some hormones can act in a similar manner to non-mutagenic carcinogens in that they may stimulate excessive cell growth. Ex:Hyper estrogenic states in promoting endometrial cancer.

✓ Immune system dysfunction: HIV is associated with a number of malignancies, including Kaposi's sarcoma, non-Hodgkin's lymphoma, and HPV-associated malignancies such as anal cancer and cervical cancer. AIDS-defining illnesses have long included these diagnoses.

✓ Heredity: Certain inherited mutations in the genes BRCA1 and BRCA2 are associated with an elevated risk of breast cancer and ovarian cancer. Down syndrome patients, who have an extra chromosome 21, are known to develop malignancies such as leukemia and testicular cancer.

- ✓ Dietary factors: Several studies indicate that vegetables and fruits contain substances that provide protection against some cancers.
- ✓ Excessive amounts of animal products in the diet, such as red meat, increase the risk of colorectal and perhaps breast cancer and other forms of the disease
- ✓ Occupation: Related to the exposure of workers to physical and chemical carcinogens.e.g. Asbestos can cause lung cancer; aniline dyes have been linked to bladder cancer; and benzene can lead to leukaemia.
- ✓ Air and water pollution: Throughout the world, carcinogenic agents are released into the air and into surface and ground waters as a result of industrial processes and the accidental or intentional discarding of toxic wastes.
- ✓ The role of medical services and care: Although rare, some incidences of cancer have been iatrogenically induced. For example, routine use of X-ray fluoroscopy to follow the course of tuberculosis induced breast cancer in some patients. Some drugs used to treat cancer are carcinogenic, while estrogens – used to counteract menopausal symptoms – increase the risk of endometrial and breast cancer.

- ➢ Greater than 30% of cancer is preventable via avoiding risk factors including: tobacco, overweight or obesity, low fruit and vegetable intake, physical inactivity, alcohol, sexually transmitted infections, and air pollution .
- ➢ Diagnosis: Inetiall diagnosed either because signs or symptoms appear or through screening. People with suspected cancer are investigated with medical tests (blood tests, X-rays, CT scans and endoscopy.
- ➢ Management: Many management options for cancer exist including: chemotherapy, radiation therapy, surgery, immunotherapy, monoclonal antibody therapy and others.
- ➢ Prevention: Cancer prevention is defined as active measures to decrease the incidence of cancer .
- ➢ Modifiable (lifestyle) risk factors: Stop alcohol and smoking, increase physical inactivity, overweight / obesity management, avoid and treat sexually transmitted diseases, avoid the use of exogenous hormones, or the exposure to ionizing radiation and UV radiation from the sun and certain occupational and chemical exposures.
- ➢ Diet: The consensus on diet and cancer is that obesity increases the risk of developing cancer. Particular dietary practices often explain differences in cancer incidence in different countries (e.g. gastric cancer is more common in Japan, while colon cancer is more common in the United States .
- ➢ Chemoprevention: The concept that medications could be used to prevent cancer is an attractive one, and many high-quality clinical trials support the use of such chemoprevention in defined circumstances. Daily use of tamoxifen, a selective estrogen receptor modulator (SERM), typically for 5 years, has been demonstrated to reduce the risk of developing breast cancer in high-risk women by about 50% .
- ➢ Vaccination: Prophylactic vaccines have been developed to prevent infection by oncogenic infectious agents such as viruses, and therapeutic vaccines are in development to stimulate an immune response against cancer. a hepatitis B vaccine, which prevents infection with the hepatitis B virus, an infectious agent that can cause liver cancer .

- Education to promote early diagnosis: Increased awareness of possible warning signs of cancer, among physicians, nurses and other health care providers as well as among the general public, can have a great impact on the disease.
- Screening and early detection of cancer: Early detection of cancer greatly increases the chances for successful treatment. A number of different screening tests have been developed for different malignancies. Breast cancer screening can be done by breast self-examination; Screening for breast cancer with mammograms has been shown to reduce the average stage of diagnosis of breast cancer in a population. Similarly, cervical cytology testing (using the Pap smear) leads to the identification and excision of precancerous lesions. Over time, such testing has been followed by a dramatic reduction of cervical cancer incidence and mortality.

5) Chronic Respiratory Diseases (CRDs)

- Diseases affect the airways and other structures of the lungs, and represent a wide group of serious diseases.
- The adult inhales about 5L of air per min may increase 20 folds or more at exercise, with a daily inhalation of 10,000-20,000 L of air agents present even in low concentration may be biologically significant.
- Preventable CRDs include asthma and respiratory allergies, chronic obstructive pulmonary disease (COPD), occupational lung diseases, cancer, sleep apnoea syndrome and pulmonary hypertension.
- They constitute a serious public health problem in all countries throughout the world. Hundreds of millions of people suffer from these chronic respiratory diseases worldwide:
- 300 million have asthma, 210 million people have COPD while millions have allergic rhinitis and other often-under diagnosed CRDs.
- By 2030, COPD is predicted to become the third leading cause of death worldwide.
- The prevalence of preventable CRDs is increasing everywhere and in particular among children and elderly people; its burden has major adverse effects on the quality of life and disability of affected individuals.
- Preventable CRDs cause premature deaths and also have large adverse and underappreciated economic effects on families, communities and societies in general.
- Many risk factors for preventable CRDs have been identified: tobacco smoke and other forms of indoor air pollution;; outdoor pollution; allergens; occupational agents; diseases such as schistosomiasis or sickle cell disease and living at a high altitude.
- National surveillance systems should primarily focus on monitoring the Following:
  - ✓ Cause specific mortality;
  - ✓ Risk factor prevalence;
  - ✓ Certain morbidity data like hospital admissions and consultations due to common respiratory conditions, as well as therapeutic trends.
- CRDs prevention:
  - ✓ Primary prevention of CRDs requires the reduction or avoidance of personal exposure to common risk factors, to be started during pregnancy and childhood.

- Health education: the population must be fully informed about what constitutes a healthy lifestyle, such as healthy nutritional habits, regular exercise and avoidance of tobacco, airway irritants and allergens
- Avoidance of direct and indirect exposure to tobacco smoke.
- Other shared risk factors that should be addressed include low birth weight, poor nutrition, acute respiratory infections of early childhood, indoor and outdoor air pollutants, and occupational risk factors.
- Other sectors within a community must be actively engaged.

✓ Secondary and tertiary prevention to strengthen health care for people with Chronic Respiratory Diseases by :

- Promotion of standards and accessibility of care at the health care system.
- Early detection is vital to prevent further progression and to ensure cost-effective management.
- Effective management including smoking cessation, pulmonary rehabilitation and reduction of personal exposure to harmful particles and gases can reduce symptoms, improve quality of life, and increase physical fitness.
- Further, evidence indicates influenza vaccination is a cost-effective intervention for patients with COPD.
- For Asthma, although it is not curable, is a treatable disease with preventable morbidity. It is also a known risk factor for COPD. Secondary and tertiary prevention for asthma involves:
- Avoidance of allergens and non-specific triggers.
- Optimal pharmacological treatment, including the use of anti-inflammatory medication, has been shown to be cost-effective in controlling asthma, preventing the development of chronic symptoms, and reducing mortality.
- Promotion of standards and accessibility of care at different levels of the health care system by adapting existing guidelines for the prevention and management of CRDs and adapting them into primary health care.
- Oxygen should be available in health facilities for treatment of severe exacerbations of asthma, COPD and other severe forms of chronic respiratory diseases, whenever possible.
- Affordable standards of health care (access to essential drugs) for people with CRDs should be accessible to all populations.
- Health care providers should have access to equipment and supplies needed for diagnosis and management.

6) Mental Health & Diseases

➢ Mental health is more than the absence of mental illness.

➢ One way to think about mental health is by looking at how effectively and successfully a person functions, how to feel about himself.

➢ Feeling capable and competent; being able to handle normal levels of stress, maintain satisfying relationships, and lead an independent life; and being able to recover from difficult situations, are all signs of mental health.

- Having positive mental health is essential for the wellbeing and effective functioning of an individual and also serves as a protective factor against mental illness.
- The top mental illnesses are depression, anxiety disorders and schizophrenia. As these are treatable medical conditions, it is important to seek help early for these illnesses.
- Mental disorder or mental illness: is a psychological or behavioural pattern that occurs in an individual and is thought to cause distress or disability that is not expected as part of normal development or culture.
- Classification of mental disorders: (Different classification)
- In general, mental disorders are classified separately to neurological disorders, learning disabilities or mental retardation.
- Mental disorders have been found to be common, with more than one in three people in most countries reporting sufficient criteria for at least one diagnosis at some point in their life up to the time they were assessed.
- An estimated 450 million people worldwide are affected by mental disorders. Ex: WHO in 2002 showed that 154 million people globally suffer from depression and 25 million people from schizophrenia; 91 million people are affected by alcohol use disorders and 15 million by drug use disorders. 50 million people suffer from epilepsy and 24 million from Alzheimer and other dementias.
- Iraq Mental Health Survey 2006/7 Report: reported the overall lifetime prevalence of mental disorders of 16.56%, Anxiety disorders of a lifetime prevalence are clearly dominant, For the affective disorders, depression (mild, moderate and severe) are the main disorders in every prevalence condition.
- Causes of mental disorders
  - ✓ Mental disorders can arise from a combination of sources. A common view is that disorders result from genetic vulnerabilities exposed by environmental stressors
  - ✓ Environmental events surrounding pregnancy, birth, Traumatic brain injury may increase the risk of developing certain mental disorders. Links found to certain viral infections, to substance misuse, and to general physical health.
  - ✓ Other factors: Social influences (abuse), negative or stressful life experiences; including employment problems, socioeconomic inequality, problems linked to migration, and features of particular societies and cultures.
- Diagnosis:
  - ✓ Routine diagnostic practice in mental health services typically involves an interview (which may be referred to as a mental status examination), where judgments are made of the interviewee's appearance and behavior, self-reported symptoms, mental health history, and current life circumstances.
  - ✓ A physical examination to check for ill health or the effects of medications or other drugs may be conducted.
  - ✓ Psychological testing is sometimes used via paper-and-pen or computerized questionnaires, which may include algorithms based on ticking off standardized diagnostic criteria, and in rare specialist cases neuroimaging tests may be requested, but these methods are more commonly found in research studies than routine clinical practice.
- Treatments: Psychotherapy, Medication, Electroconvulsive therapy (ECT)

➢ Prevention

- Mental Health Programme: The Programme targets the general population across lifespan from childhood to old age and across all ethnic groups. Aims to:
  - ✓ Promote positive mental health through raising awareness of the importance of mental wellbeing and enhancing one's self esteem (good opinion) and resilience.
  - ✓ Reduce mental illnesses by raising awareness of the impaortnce of early detection and treatment of mental illnesses, and highlight the way to get help.
- Mental health promotion requires multi-sectoral action, involving a number of government sectors such as health, employment/industry, education, environment, transport and social and community services as well as non-governmental or community-based organizations.
- Mental health and stigma: People with mental disorders are often subjected to social isolation, poor quality of life and increased mortality. These disorders are the cause of surprising economic and social costs. People with mental disorders faces stigma and discrimination in all sectors of the society, including by the health-care workforce. As they are the first point of contact for people with mental disorders in general health services.
- Proper management of chronic illness: Mental illnesses affect and are affected by chronic conditions such as cancer, heart and cardiovascular diseases, diabetes and HIV/AIDS. If untreated, they bring about unhealthy behaviour, non-compliance with prescribed medical regimens, diminished immune functioning, and poor prognosis.

➢ 2ndry prevention: These rehabilitation services represent an alternative to psychiatric hospitals, and aim to provide local care to people with severe mental health disorders, including medication, psychological support, and rehabilitation activities.

➢ It is clear that schools remain a crucial social institution for the education of children in preparation for life. But they need to be more involved in a broader educational role fostering healthy social and emotional development of pupils.

➢ Early rehabilitation strategies.

➢ Mental health promotion and the ageing population: Ageing of the population is a highly desirable and natural aim of any society. By 2025 there will be 1.2 billion older people in the world, close to three-quarters of them in the developing world. But if ageing is to be a positive experience it must be accompanied by improvements in the quality of life of those who have reached - or are reaching - old age.

➢ Ten recommendations to care providers for mental health) (WHO/2001)

1. Provide treatment in primary care.
2. Make psychotropic drug available.
3. Give care in the community.
4. Educate the public.
5. Involve communities, families and consumers.
6. Establish national policies, programmes and legislations.
7. Develop human resources.
8. Link up with other sectors.
9. Monitor community mental health.
10. Support more research. Mental health services through primary health care

8) Elderly Health & Diseases

- The age distribution of the world's population is changing. With advances in medicine and prolonged life expectancy, the proportion of older people will continue to rise worldwide.
- In many developing countries, increases of up to 300% of the elderly population are expected by 2025. By 2050, there will be 2 billion people over the age of 60, 80% living in developing countries.
- As people age, their susceptibility to chronic and life-threatening diseases as well as acute infections increases, exacerbated by compromised immune systems. Cancer, CVD, diabetes, infections and poor oral health Back Pain, Osteoarthritis, Rheumatoid Arthritis, Osteoporosis, Other Immune Disorders, Parkinson's Disease, Dementia, Stroke, Problems of the Prostate Gland , Depression, Urinary Incontinence
- The consequences of these diseases and conditions are significant, leading to disabilities and reduced quality of life.
- Approximately 50 % of the elderly suffer from chronic diseases. Visual and hearing impairments are highly prevalent. At the same time, the availability of health services for the elderly are lacking.
- Lack of activity and poor nutrition often lead to obesity. More than any other problem facing older people, obesity can have the worst effect on their health. It leads to joint degeneration, heart problems, stroke, congestive heart failure, diabetes.
- Another health problem with the elderly is the overuse of alcohol, cigarettes and addictive medicines such as pain killers or tranquilizers. It is assumed by the elderly and by their family that long-term use of these substances has gotten to a point where it would be pointless or impossible to get the elder person to discontinue or cut back on their use.
- It is important that elderly people are not taken as a burden on society, their wisdom and experience have to be fully utilized.
- Appropriate mechanisms are needed for engaging elderly in social activities which require strong support from both governmental and non-governmental organizations.
- Healthcare professionals do not receive enough training in geriatrics to properly care for many older patients.
- Nursing homes serve two purposes. The first is to provide nursing and medical care for people recovering from illness or injury (rehabilitation). The intent is to get these people well and return them back into the community. A second purpose for the nursing home is to care for people who have severe chronic medical or cognitive impairments and who are not expected to recover but only to get worse. These are often called long-term care residents.
- Medications and the Elderly: Older person is taking a number of prescribed drugs. This could be from two to six or more different medications. Drugs can interact with and interfere with each other. Sometimes a drug will heighten the effect of another drug being taken at the same time result in serious side effects. In order to control the problem the older person or a responsible family member should bring all medications being taken by the patient to a doctor's appointment.

- Physical Changes of Aging: The physical changes that are commonly associated with aging, and is that occur normally and are not due to disease.
  1) Vision: The most common causes of visual impairment in the elderly include presbyopia, cataracts, glaucoma, diabetic retinopathy and age-related macular degeneration. Changes in vision can cause a significant number of problems for elderly patients, including an increased risk for falls and is interfering with daily activities.

     To help a person with any visual impairment:
     - ✓ Light the room brightly and use more than one non-glare light in a room.
     - ✓ Keep a night light on in the bedroom, hallway, and bathroom to maintain an equal level of light.
     - ✓ Increase lighting on stairwells and steps.
     - ✓ Use concentrated light for sewing and reading.
     - ✓ Use contrasting colors in the home, such as colors between the doors and walls, and between the dishes and table coverings.
     - ✓ Mark the edge of steps with a brightly colored tape or different colored paint, and paint the handrails.
     - ✓ Make sure the older person has regular eye exams,
  2) Hearing: The prevalence of hearing loss in the geriatric population ranges from 14 to 46 percent, but only 20 percent of primary care physicians routinely screen elderly patients for hearing loss.
     - Appropriate interventions include
       - ✓ periodic screening to provide early detection of hearing impairment, cautious use or avoidance of ototoxic drugs, and support for the obtainment and continued use of hearing aids.
       - ✓ Speak clearly and in a normal tone of voice. Don't speak too fast or too slow..Do not shout.
       - ✓ Get the older person's attention before speaking.Look directly at her or his face
       - ✓ Use facial expressions, Repeat yourself if necessary, using different words.
       - ✓ Ask how you can help.
  3) Taste and Smell: Some loss in taste sensitivity takes place with aging. However, the loss is minor and does not seem to occur in most people until well after 70. There is also a loss of smell, but this is not severe. Nevertheless, older people often complain that their meals are tasteless or that they no longer like their favorite foods.
     - To help the older person enjoy mealtime:
       - ✓ Offer familiar, well-liked foods.
       - ✓ Invite or encourage the elder to share meals with friends and family, in his or her home or at congregate meal sites.
       - ✓ Experiment with different seasonings and flavorings.
       - ✓ Prepare a variety of foods each day.
       - ✓ Encourage exercise, when possible, which stimulates the appetite.
  4) Touch: The skin serves a protective function by buffering us from the environment. Reduced sensitivity, heat sources such as heating pads, hot water bottles, and pot handles can hurt the skin before the elder realizes that damage is occurring.

- To cope with these changes, the older person should:
  - ✓ Avoid extreme exposure to sun and wind, which speed up the aging of the skin.
  - ✓ Avoid daily baths or showers, as these tend to dry out the skin.
  - ✓ Moisturize the skin with body oil after a bath, gently patted on with a washcloth.
  - ✓ After bathing, pat the skin dry.
  - ✓ Drink one to two quarts of fluid daily to maintain normal body temperature and functioning.

5) Fall and Injury: The annual incidence of falls in patients over 65 years of age who live independently is approximately 25 % but rises to 50% in patients over 80 years of age. Falls are responsible for a significant number of accidental deaths and traumatic injuries among elderly. One third of patients with confirmed falls may not recall falling.

- Risk Factors
  - ✓ Intrinsic factors: that contribute to falls include age-related changes in postural control, gait and balance disturbances and visual ability, and the presence of acute and chronic diseases that affect sensory input, the central nervous system and musculoskeletal strength and coordination. Osteoporosis: is one notable intrinsic factor that leads to falls.
    - ❖ Osteoporosis is a disease characterized by bones that are thin and fragile and can break (fracture) easily. People with osteoporosis have low bone mass, and low bone mass can result in bone fractures. In patients with this condition, a pathologic fracture may precede a fall. In the absence of universally accepted criteria for the assessment of bone mineral density, screening should be directed at a risk assessment for osteoporosis.
  - ✓ Extrinsic factors that contribute to falls include poor lighting, obtrusive furniture, slippery floors, loose floor coverings and bathrooms without handrails or grab bars.

- Nutrition, oral health and general health: The interrelationship between oral health and general health is particularly pronounced among older people. Poor oral health can increase the risks to general health and, with compromised chewing and eating abilities, affect nutritional intake. Proper nutrition delays the onset of debilitating illness or disability.
- Malnutrition and undernutrition are common yet frequently overlooked problems in the geriatric population. Elderly patients with a compromised nutritional state require longer hospital stays and develop more complications.
- It is recommended for encouraging regular tooth brushing and dental visits to improve teeth and dental health in the elderly.
- Immunizations: Updated tetanus-diphtheria, influenza and pneumococcal immunizations should be available to elderly. Primary care physicians must be diligent in assessing the immunization status of geriatric patients and providing the recommended vaccines. Annual influenza vaccination is recommended for all elderly patients. Patients over 65 years of age should also receive at least one pneumococcal vaccination in their lifetime, with high-risk patients receiving a second immunization

in six years. The tetanus-diphtheria (Td) toxoid should be given every 10 years. The Td toxoid is given again after five (or more) years if the patient suffers a wound that would be classified as "dirty."

- Overuse of alcohol, cigarettes and addictive medicines: Another health problem with the elderly is the overuse of alcohol, cigarettes and addictive medicines such as pain killers or tranquilizers. It is assumed by the elderly and by their family that long-term use of these substances has gotten to a point where it would be pointless or impossible to get the elder person to discontinue or cut back on their use.
- Sexuality: Although the sexual activity may change over time, problems that relate to sexual relations should not be considered part of the normal aging process. Studies show that 74 % of married men and 56 % of married women over 60 years of age remain sexually active. Common problems affecting sexual functioning include arthritis, diabetes, fatigue, fear of precipitating a heart attack, prescription drugs and over-the-counter medications.
- Incontinence: is estimated to occur in 11%- 34% of elderly men and 17%- 55% of elderly women. Although incontinence is common, is frequently reversible and has significant social and emotional consequences, relatively few patients that having problems request treatment.

Community attitude and mental health:

- Older people tend to live alone, away from friends and family. The lack of social support and feelings of loneliness and isolation may affect their mental health and well being
- Mental Status: Changes in mental status can have a profound impact on elderly patients and their families. Two of the more common changes are cognitive decline and depression.
- Cognition: Dementia is chronic and progressive, and it is characterized by the gradual onset of impaired memory and deficits in two or more areas of cognition, such as anomia (speech), agnosia (sensory perception) or apraxia (motor). For the diagnosis of dementia to be established, these deficits must be present with no alteration of consciousness and no underlying medical cause that would better explain the deficits.
- Depression: Depression significantly increases morbidity and mortality. As opposed to dementia, depression is usually characterized by a relatively rapid onset
- An assessment for suicide risk is important in geriatric patients who appear depressed. The best way to accomplish this task is to ask direct, yet nonthreatening questions. An effective interview progression might be to begin by asking patients if they are concerned that they are becoming a burden to their family and if they have ever felt that their family might be better off without them. This is followed by questions about active suicidal ideation.
- Digestion: Elderly are more likely to lose teeth, gum disease, upset stomach or lack of appetite, constipation.
- Circulation: The older heart slows down, having less energy for physical work, cold sensitivity, particularly in the hands and feet. Poor circulation to brain may experience forgetfulness and other symptoms of poor cognition.

II. Occupational Health & Diseases

Learning Objective:

1) Gives international accepted definitions of the following concepts: noise, vibration, radiation, electromagnetic field, lighting, and temperature
2) Identifies physical hazards as risk factors in the work and work environment
3) Explains the main effects of physical hazards on health
4) Knows roughly the threshold values of physical hazards
5) Explains the specific role, tasks and responsibilities of the occupational health services and occupational physician at the workplaces with physical hazards exposure
6) Recognizes the main occupational diseases due to physical hazards exposure and knows when to refer the patient to an occupational physician.

- Occupational safety and health (OSH) is generally defined as the science ofthe anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment.
- About 2 million occupational fatalities occur across the world every year, the highest proportions of these deaths being caused by work-related cancers, circulatory and cerebrovascular diseases, accidents, and some communicable diseases. The overall annual rate of occupational accidents, fatal and non-fatal, is estimated at 270 million
- According to the International Labour Organization (ILO), between 1.9 and 2.3 million people are killed by their work every year—including 12 000 children—and 25 million people have workplace injuries, causing them to take time off.
- Occupational diseases are reportable in most countries, but are usually grossly underreported. Then notification of these diseases, usually to a health and safety agency to provide national statistics and subsequent preventive action, and for compensation paid to individuals affected by such diseases. There are no universally accepted diagnostic criteria, coding systems, or classifications worldwide.
- Classification of occupational diseases
    1) Diseases caused by physical agents
    2) Diseases caused by chemical agents
    3) Diseases caused by biological agents
    4) Work related injury
    5) Disorders due to psychological factors
    6) Ergonomic disorders
- The goals of occupational safety and health programs include to foster a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment.

- The main OSH objectives:
  - ✓ (i) the maintenance and promotion of workers' health and working capacity;
  - ✓ (ii) the improvement of working environment and work to become conducive to safety and health
  - ✓ (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertakings.
- Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job.
- Although occupational medicine is the branch that deals with occupational diseases, but occupational diseases usually need multidisplinary approaches (medicine, surgery, psychology, epidemiology, physiotherapy and rehabilitation, occupational therapy)
- Occupational health is practiced by physicians, nurses, safety and risk assessors, and occupational hygienists, sometimes with support from ergonomists, psychologists, toxicologists, and epidemiologists.
- Occupational health services can help in:
  1) Comply with legal responsibilities
  2) Identify hazards and quantify health risks at work
  3) Implement controls for health risks at work
  4) Confirm the adequacy of controls through health surveillance
  5) Select and place workers according to health criteria for particular jobs
  6) Support employees with a disability
  7) Ensure fitness for work
  8) Manage work related disorders
  9) Control sickness absence and advise on ill-health retirement
  10) Develop policies relating to health and safety
  11) Promote health among workers
  12) Provide training and education in health aspects of employment
  13) Organize adequate first aid arrangements

- Activities of OSH
  1) Surveillance of work environment and risk assessment
  2) Health surveillance and health examinations
  3) Advice on preventive and control measures
  4) Health education and health promotion, and promotion of work ability
  5) Maintaining preparadness for first aid and participation in emergency
  6) Diagnosis of occupational diseases
  7) Record keeping

1) **<u>Diseases caused by physical agents:</u>** Can be classified:

a) Extreme Heat.

- Too cold →working in cold environment. Nonfreezing injury (cold injury) or freezing injury (frost bite)
- Too hoot → working in hot environment. Heat exhaustion, simple condition because of excessive sweating is characterized by thirst, fatigue, with muscle cramps. Heat stroke, is the most serious effect of exposure to heat. It is generally characterized by a body temperature of 40-41 C, an altered level of consciousness, and a hot dry skin resulting from failure of the sweating mechanism. Working in high temperatures can also result in an increased risk of accidents.

✓ In planning work, the state of acclimatization of the workers and the resistance to heat loss provided by their clothing has to be taken into account stroke

✓ First aid should be provided when need.

b) Noise

✓ Exposure to excessive noise can be unpleasant and can impair working efficiency.

✓ Temporary or permanent hearing loss may also occur, depending on the loudness or intensity of the noise, its pitch or frequency, the length and pattern of exposure, and the vulnerability of the individual.

✓ Prolonged exposure to sound energy of intensity above 80 to 90 decibels is likely to result in noise-induced hearing loss, developing first for high frequencies and progressing downward.

✓ The condition can be prevented by enclosing noisy machinery and by providing effective ear protection.

✓ Routine audiometry gives an indication of the effectiveness of preventive measures.

c) Vibration

✓ Whole-body vibration is experienced in surface and air transport, with motion sickness its most familiar effect.

✓ A more serious disorder, known as Raynaud's syndrome or vibration white finger (VWF), can result from the extensive use of vibratory hand tools, especially in cold weather.

✓ The condition is seen most frequently among workers who handle chain saws, grinders, pneumatic drills, hammers, and chisels.

✓ Initial signs of VWF are tingling and numbness of the fingers, followed by intermittent blanching; redness and pain occur in the recovery stage. In a minority of cases the tissues, bones, and joints affected by the vibration may develop abnormalities; even gangrene may develop.

✓ VWF can be prevented by using properly designed tools, avoiding prolonged use of vibrating tools, and keeping the hands warm in cold weather.

d) Atmospheric pressure

- ✓ Decompression sickness (caisson disease) can result from exposure to high or low atmospheric pressure.
- ✓ Under increased atmospheric pressure (such as that experienced by deep-sea divers or tunnel workers), fat-soluble nitrogen gas dissolves in the body fluids and tissues.
- ✓ During decompression the gas comes out of solution and, if decompression is rapid, forms bubbles in the tissues. These bubbles cause pains in the limbs (known as the bends), breathlessness, angina, headache, dizziness, collapse, coma, and in some cases death.
- ✓ Similarly, the gases in solution in the body tissues under normal atmospheric pressure form bubbles when pressure rapidly decreases, as when aviators in unpressurized aircraft ascend to high altitudes too quickly.
- ✓ Emergency treatment of decompression sickness consists of rapid recompression in a compression chamber with gradual subsequent decompression. The condition can be prevented by allowing sufficient decompression time for the excess nitrogen gas to be expelled naturally.

e) Ionizing radiation:

- ✓ Damages or destroys body tissues by breaking down the molecules in the tissues into positively or negatively charged particles called ions.
- ✓ Radiation that is capable of causing ionization may be electromagnetic (X rays and gamma rays) or particulate (radiation of electrons, protons, neutrons, alpha particles, and other subatomic particles) and has many uses in industry, medicine, and scientific research.
- ✓ Ionizing radiation injury is in general dose-dependent. Whole-body exposure to doses in excess of 1,000 rads results in acute radiation syndrome and is usually fatal.
- ✓ Doses in excess of 3,000 rads produce cerebral edema (brain swelling) within a matter of minutes, and death within days.
- ✓ Delayed effects of exposure to radiation include the development of leukemia and other cancers..

f) Nonionizing radiation

- ✓ Nonionizing forms of radiation include electromagnetic radiation in the radio frequency, infrared, visible light, and ultraviolet ranges.
- ✓ Exposure to radiation in the radio frequency range occurs in the telecommunications industry and in the use of microwaves.
- ✓ Microwaves produce localized heating of tissues that may be intense and dangerous. Various other disorders, mainly of a subjective nature, have been reported in workers exposed to this frequency range.

- ✓ Infrared radiation can be felt as heat and is commonly used in industry in drying or baking processes.
- ✓ Prolonged exposure to the radiation can result in severe damage to the skin and especially to the lens of the eye, where cataracts may be produced.
- ✓ Working under poor lighting conditions can adversely affect worker efficiency and well-being and may even cause temporary physical disorders, such as headache or dizziness. Proper lighting should provide adequate, uniform illumination and appropriate contrast and colour, without any flickering or glare.
- ✓ Exposure to ultraviolet radiation from the Sun or such industrial operations as welding or glassblowing causes erythema of the skin (a condition familiarly known as sunburn), skin cancer, and inflammation of the conjunctiva and cornea.
- ✓ Pigmentation offers natural protection against sunburn, and clothing and glass can also be used as effective shields against ultraviolet radiation. Lasers emit intense infrared, visible, or ultraviolet radiation of a single frequency that is used in surgery, for scientific research, and for cutting, welding, and drilling in industry. Exposure to these beams can burn the skin and cause severe damage to the eye.

2) <u>Diseases caused by chemical agents</u>

- ✓ Every workplace has chemicals - ranging from cleaning products to full scale chemical production.
- ✓ If chemicals are not used, stored and handled properly, they can cause injury, illness, disease, fire, explosions, or property damage.
- ✓ Chemical agents can be:
  a) Element: the simplest form of matter that cannot be broken down further by chemical means. There are currently 109 known elements in the periodic table. Examples of elements are aluminium, carbon, chlorine, hydrogen, mercury and oxygen.
  b) Chemical compound – a substance consisting of two or more elements combined or bonded together so that its constituent elements are always present in the same proportions. Ex: pesticide
  c) Mixture – any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
- ✓ Type of chemicals
  a) Liquids such as acids, solvents especially if they do not have a label
  b) vapors and fumes
  c) flammable materials
- ✓ Chemical hazards and toxic substances pose a wide range of health hazards (such as irritation, sensitization, and carcinogenicity)
- ✓ Know the hazards of chemicals and appropriate precautions to take to work safely and avoid injury.

- ✓ In case of emergency, it is recommended to understand the first aid procedures in order to minimize any damages. The different types of chemicals will cause a variety of damages but the majority of sources recommend that it is best to rinse any contacted skin or eye with water for at least 15 – 20 minutes.

3) Diseases caused by biological agents

- ✓ A large number of infectious diseases are transmitted to humans by animals.
- ✓ Anthrax, for example, can be acquired by workers handling the unsterilized hair, hide, and bone of infected animals; and slaughterhouse workers, farmers, veterinarians, and others in contact with infected animals, milk, and milk products still frequently contract brucellosis
- ✓ Contact with contaminated food & water is another common method of acquiring infectious diseases.
- ✓ Laboratory workers, nurses, surgeons, and other health care workers may contract infectious diseases such as tuberculosis, HBV. HCV in the course of their work.
- ✓ To help prevent infection, these workers should wear appropriate protective clothing and exercise care when handling contaminated needles or other equipment. Contaminated material should be appropriately bagged, labeled, and disposed

4) Workplace accident

- ✓ Occupational accident, or accident at work is a "Unexpected discrete occurrence in the course of work" leading to physical or mental occupational injury or even death.
- ✓ More than 337 million accidents happen on the job each year, resulting, together with occupational diseases, in more than 2.3 million deaths annually.
- ✓ Occupational accidents differ from occupational diseases as accidents are unexpected and unplanned occurrences (e.g., mine collapse), while occupational diseases are "contracted as a result of an exposure over a period of time to risk factors arising from work activity" (e.g., miner's lung).
- ✓ Can be classified as:
  a) Slips and falls on pavements or staircases (injury or fractures)
  b) Hitting by sharp or blind object (trauma or wounds)
  c) Acute poisoning, attacks by humans and animals, insects etc.,
  d) Accidental Heat, radiation or chemical burns
  e) Traffic collisions, and accidents on board means of transportation.
- ✓ Identification and Analyses and of where and which types of accidents occur. The goal is to determine the incidence of the injuries, associated factors with respect to monitoring developments in the incidence of accidents and identify risk groups and area of work.

5- Disorders due to psychological factors

- ✓ Psychological factors are important determinants of worker health, well-being, and productivity.
- ✓ Studies have shown the benefits to workers who feel satisfied and stimulated by their jobs, who maintain good relationships with their employers or supervisors and with other employees, and who do not feel overworked. Such workers have lower rates of absenteeism and job turnover and higher rates of output than average.
- ✓ The two psychological hazards commonly encountered at work are boredom and mental stress. Workers who perform simple, repetitious tasks for prolonged periods are subject to boredom, as are people who work in bland, colourless environments. Boredom can cause frustration, unhappiness, inattentiveness, and other detriments to mental well-being. More practically, boredom decreases worker output and increases the chances of error and accident.
- ✓ Mental stress often results from overwork, although nonoccupational factors, such as personal relationships, life-style, and state of physical health, can play a major role. Job dissatisfaction, increased responsibility, disinterest, competition, feelings of inadequacy, and bad working relationships can also contribute to mental stress. Stress affects both mental and physical health, causing anger, irritation, fatigue, aches, nausea, ulcers, migraine, asthma, colitis, or even breakdown and coronary heart disease.
- ✓ Moderate exercise, meditation, relaxation, and therapy can help workers to cope with stress.

6- Ergonomic disorders

- ✓ Ergonomics: The applied science that study people at workplace and the relationship between workers and their environment, especially the equipment they use to initiate equipment design intended to maximize productivity by reducing operator fatigue and discomfort.
- ✓ The goal of ergonomics is to reduce stress and eliminate injuries and disorders associated with the overuse of muscles, bad posture, and repeated tasks.
- ✓ This is accomplished by designing tasks, work spaces, controls, displays, tools, lighting, and equipment to fit the employee´s physical capabilities and limitations to prevent ergonomic injuries and disorders.
- ✓ Ergonomic injuries are those injuries caused by the presence of ergonomic risk factors, including:
    a) Awkward or sustained postures
    b) Forceful exertion or strain
    c) Contact pressure
    d) Exposure to vibration
    e) Exposure to heat or cold
- ✓ It is often a combination of these risk factors that, over time, can lead to pain, injury, and disability.

- ✓ Repeated exposure to these risk factors, on the other hand, may interfere with the body's normal healing process and produce disproportionate responses and lead to an ergonomic disorders.
- ✓ Ergonomic injuries may be referred to as Repetitive Stress Injuries (RSIs), Repetitive Motion Injuries (RMIs), Musculoskeletal Disorders (MSDs), Cumulative Trauma Disorders (CTDs), or Cumulative Trauma Injuries (CTIs). OSHA and NIOSH typically use the term MSD or Musculoskeletal Disorder.
- ✓ Ergonomic injuries or MSDs can affect the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs.
- ✓ It is imperative that we take the steps to be sure our computer (both at work and at home) is set up to prevent these Musculoskeletal Disorders.

III. Environmental Health & Problems

- Environmental Health: Important public health subject. It concern with those forms of life, substances, forces and conditions in the surrounding of human that may exert an influence on human health and well-being.
- It also concern with the assessment & control the impact of people on their environment; so our aim is complete physical & mental wellbeing plus safe environment ((clear air, pure water, pure food, & safe occupation)).
- Environmental disease is more difficult to quantify because the populations at risk are much larger than the working population.
- Environment health affect by:
    a) Population density.
    b) Economic status e.g. poverty, malnutrition.
    c) Educational status.
    d) Medical care facilities
    e) Mean of transportation.
    f) Urbanization & Industry

- Stressors that can produce harm to the environment (and to human) are:
    a) Chemical: Toxic chemical waste, pesticide, preservative in food…etc.
    b) Physical: Noise, extreme heat and cold, ionizing and non-ionizing radiation…etc.
    c) Biological: Various causative agents that may present in food, water, air or animals.
    d) Socio-cultural or psychological (difficult to asses

- Important points should be included in any environmental protecting program:
    - Protection of environmental resources (air, water, land, plant and animal) from being harmed by different noxious agents (chemical, radiation).
    - Continuous environment monitoring (environment lab.)

- Environment health education and research.
- Ensure full community participation.

➢ The main environmental problems are:

1) Purification of drinking water and the impact of unsafe water supply.

✓ Water contamination: Water may be contaminated by:

a) Chemical contaminants: Nitrate, Asbestos (increase the risk of CA in GIT), Heavy metals (Lead especially lead in lead service piping cause neurological damage in children) and Synthetic organic chemicals; result from industrial or municipal discharge.

b) Physical contaminants: Radioactive contamination, naturally occurring (ground water) or manmade (surface water).

c) Biological contaminants:

a- Viruses: e.g. Hepatitis A, Polio, Coxacki, Rota viruses.
b- Bacteria e.g. Cholera, Typhoid, Shigella.
c- Protozoa e.g. Amebic dysentery, Giaridia,
d- Worm e.g. Scistosomiasis.

✓ Water purification: The purification of surface water for potable purpose includes:

a) Flocculation and coagulation.
b) Sedimentation (2-6 hrs).
c) Filtration (filter 1m depth made of sand grains).
d) Disinfection (chlorination): By adding **chlorine** which is the most important process for assuring the bacteriological safety of potable water supply.

The disinfectant must possess the following properties:

1- Must destroy bacteria, viruses and cysts in water in reasonable time.
2- Must be not toxic to human or domestic animals.
3- Must be safe, easy to transport and handle, and with reasonable cost.
4- Must have residual concentration in the treated water.

Chlorine is the widely used disinfectant as it meets the above criteria, liquid chlorine is still the most common form used in the chlorination. But the most important point against chlorine use is the production of chlorinated hydrocarbon as a result of the reaction of the chlorine with organic matters present in the water.

2) Importance of safe food and proper food preservation.

✓ Protection of public from food born hazards involve the maintenance of sanitary control over harvesting or slaughtering, processing, preserving, distribution, storage and preparation of food for institutional or home conception.

✓ Purpose of sanitary food control**:**

a) Prevent illness resulting from consumption of unsafe food.
b) Reduce economic and nutritional losses.

- ✓ Food borne diseases can be classified:
  - I- Food born poisoning:
    - a- Food born intoxication;
      - i- Microbial toxin: -Staphylococcal intoxication.
        - Botulism (clostridium botulism toxin).
        - Clostridium perfrenges.
        - Bacillus cerus.
      - ii- poisonous animal tissue, e.g. Scrombroid (histamine) fish poisoning
      - iii- poisoning plant tissue.
    - b- Chemicals in food;
      - i- Environmental or industrial chemicals that accidentally find their way into food e.g. heavy metals as lead & mercury.
      - ii- Chemicals used in the protection of food (improper use)
      - Pesticide e.g. insecticide, rodentcide, organo-phosphorus compounds.
      - Antibiotics residues e.g. tetracycline in poultry & cattle feed.
      - Growth hormones
      - Nitrogen fertilizers.
  - II - Food born infections.
    - a- Viral infection e.g. hepatitis A virus, poliovirus.
    - b- Bacterial infection e.g. Salomnellosis, vibriosis, shigellosis.
    - c- Parasitic infection e.g. Giardiasis, amoebiasis.

- ✓ Food preservation: A major objective of food processing is to delay nutritional and organoleptic deterioration of food so that it can economically storage, transport and marked. **The main methods of food preservation are:**

1- Pasteurization; inactivate pathogens but will not affect the level of microbial toxin, antibiotic or chemicals. Can be either:
   - a- Low temperature (long time), 63 C^o for 30 min.
   - b- High temperature (short time) 72 C^o for 15 min.
2- Canning; heating the food in hermetically can or pouches.
3- Refrigeration; temp.between 4 C^o-7 C^o (without freezing).
4- Freezing; temp.below -10 C^o, complete inhibition of microbial growth but toxin present in food are not significantly affected.
5- Dehydration; removal of water, but staphylococci, salmonella, can be expected to survive in dried food.
6- Fermentation; Non diary (e.g. bread) and diary (e.g. milk) fermentation.
7- Chemical preservation; salt and sugar are the most common preservatives.
8- Blanching; mild heat treatment (hot water or stream) to fruit or vegetable prior to drying or canning.
9- Irradiation; ionizing radiation destroy pathogens with out adverse side effect in food,but people may believe such food to be radioactive & unsafe.

3) The proper collection, disposal and treatment of waste (excreta and solid waste).

- ✓ Waste (excreta and solid waste) is introduced into the environment due to the day-to-day activities of humans. Waste management refers to the many methods and processes of dealing with waste at every stage from generation and collection through to final disposal.
- ✓ Safe disposal of Human waste (mainly composed of faeces and urine, which together are known as excreta) so that it does not contaminate the environment, water, food or hands, is essential for ensuring a healthy environment and for protecting personal and community health.
- ✓ Regardless of method, the safe disposal of human faeces is one of the principal ways of breaking the faecal–oral disease transmission cycle. Sanitation is therefore a critical barrier to disease transmission.
- ✓ Plans for locating sanitation facilities, and for treating and removing waste, must consider cultural issues, particularly as sanitation is usually focused on the household.
- ✓ Solid waste needs to be managed in order to prevent contact with humans or their immediate environment. Therefore, the main purpose of waste management is to isolate waste from humans and the environment, and consequently, safeguard individual, family and community health. In addition, the aesthetic value of a better outlook and a clean physical environment is important for our emotional wellbeing.
- ✓ The waste we produce can be categorized as liquid waste or solid waste depending on its physical state. It can also be categorized as hazardous or non-hazardous
- ✓ Hazardous wastes are not classified by their physical state (solid, liquid or gas) but by their properties & potential to cause harm. Hazardous wastes are defined as wastes that have one or more of the following properties. They may be:
    a) Corrosive (substances that cause damage on contact, e.g. acids(
    b) Inflammable (materials that can catch fire easily like benzene(
    c) Toxic (materials that can be poisonous to humans when inhaled or ingested, or come in contact with skin or mucous membranes
    d) Reactive (substances that can yield a harmful chemical if they react with other substances
    e) Infectious (substances that are capable of causing or communicating infection.
- ✓ Potential sources of hazardous waste in rural households include obsolete pesticides, herbicides or rodenticides.
- ✓ Non-hazardous wastes include all other types of waste: Liquid waste includes human waste, runoff (storm water or flood water), sullage, industrial wastewater and other forms of wastewater from different sources.
- ✓ The mixture of human waste with wastewater is known as sewage and also sometimes known as blackwater.

4) Proper Housing.

- ✓ WHO estimates that nearly 2 million people in developing countries die from indoor air pollution caused by the burning of biomass and coal in leaky and inefficient household stoves.
- ✓ Safe, secure and affordable housing is crucial to maintaining and improving health and well-being
- ✓ The scientific evidence on the many links between housing and health has grown substantially in recent decades.
- ✓ Primary preventive" measures related to housing construction, renovation, use and maintenance, ventilation, illumination which can promote better overall health.
- ✓ Protection from physical environment and biological environment (Pest, rodents, cockroaches, flies and other animals).
- ✓ Poor housing quality and design also can exacerbate the health impacts from exposure to different stressors: e.g. Inadequate ventilation is associated with a higher risk of airborne infectious disease transmission, including tuberculosis, as well as the accumulation of indoor pollutants and dampness, which are factors in the development of allergies and asthma.

5) Air pollution.

- ✓ Important public health problem especially in industrial countries. It results due to the presence of one or more of the air contaminants in the atmospheres that are harmful to the human, animal or plant life.
- ✓ Pollutant gases are CO, CO2, NO2, SO2, Methan, Chloro-fluro carbon...etc.
- ✓ The major sources of air pollution are:
  - Transportation.
  - Industries and refineries.
  - Power plant.
  - Refuses disposal.
  - Space heating.
  - Others; pesticides, smoking …..etc.
- ✓ "So many people on earth consume so much energy & produce so much waste"
- ✓ The effects of air pollution:
  1- Ecological: Global warming, acidic rain deposition, contamination of water and food, affect plants.
  2- Biological: irritation, impaired pulmonary function, increase risk of respiratory infections and diseases (COPD) or even cancers, or pass to the circulation causing systemic diseases (lead poisoning).
  3- Economic: losses of animals or plants, increase sickness absenteeism and medical cost, increase cost of equipments and cleaning bills.

- ✓ Control of air pollution:
  1. Engineering methods: The best way to control air pollution is to prevent it from the first place, this is done by:
  a- Altering the process.
  b- Substitution by non-pollutant substance.
  But this is not always possible, so we do:

a- Isolation of heavy industries away from cities.
b- Use very tall stacks.
c- Shielding of the dangerous process e.g. radioactive substances.
d- Appropriate collection of harmful particles, gases and industrial was.
e- Continuous monitoring of the process.
f- Education and legislation.

2- Medical methods:

a- Health education, the benefit of safe environment.
b- Supervision of sanitary collection and disposal of human waste.
c- Continuous environmental monitoring.

6) Global environment pollution (green-house effect…etc.).

- ✓ Important public health issue, it is one of the main public health concern of last 20th & early 21st Centuries.
- ✓ Major sources of environmental pollution are: -Transportations, -Industries, -Refineries, -Power plants, -Refuses disposal, -Space heating, & others e.g. pesticides, smoking……etc. (All are due human activity →" So many people on earth consume so much energy & produce so much waste")
- ✓ Factors that increase the impact of the problem are deforestation and the use of certain type of Coal called 'fossil Coal' increase the Co2 emission, & -lack of effective environmental control program and environmental health education in many parts of the World.
- ✓ 3 important problems arise as a result of global environmental pollution; Green-house effect, acidic rain deposition and Ozone layer depletion.

A-Green-house effect

- The term 'Green-house' used to describe how atmospheric gases (Co_2, No_2, So_2, Methane, ozone, chlorofluorocarbons & miscellaneous others) in the troposphere stabilize earth temperature.
- These gases permit the passage of the visible & UV-radiation which warmth the earth surface but block the escape back into space of reflected infra-red radiation.
- The 'Green-house' effect maintain the bio-sphere with in a temperature range that sustain life, without the greenhouse effect all the radiant heat from the sun would be reflected back into the space & the surface temperature would be many degree below zero.
- It is found that the concentration of 'Green house' gases rising (due to environmental pollution) & the temperature of the biosphere rise as a result & this would cause a global warming.
- Effect of global warming

1- Decline of soil moisture → Impair grain production.
2- Alter the habit for pests such as insect, fungus & micro-organisms →Diseases of grain, fruit & vegetable.

3- See level raise due to thermal expansion of see water mass & ice caps melting → coastal flooding which contribute to depletion of fish stock & salination of coastal estuaries.
4- Prevailing winds, oceanic up willing & more frequent hurricanes.
5- It affects industry, transport, urban planning and human health as well.

B- Acidic Rain Deposition

- Mainly due to Co2, No2 and So2 in water vapor to produce carbonic acid, nitric acid and sulfuric acid consequently.
- Acid rain has been shown to have adverse impacts on forests, freshwaters and soils, killing insect and aquatic life-forms, causing paint to peel, corrosion of steel structures such as bridges, and weathering of stone buildings and statues as well as having impacts on human health.

C- Ozone Layer Depletion

- The stratospheric ozone layer is located 12-24 Km from the earth's surface. This layer provides protection against harmful biological effects of UV-radiation. Stratospheric ozone layer has decline 4% in the last 12 years this is mainly due;
- To access use of chlorofluorocarbons (CFCs) when used extensively lastly in refrigerators, air-conditioners and other home appliances.
- Oxides of nitrogen which emitted as exhausted gases by high flying supersonic jet aircrafts.

This would lead to more UV-irradiation reach the earth → Increase the incidence of skin cancer &cataract, UV-B radiation appears to suppress the immune system, can reduce croup yield and also contribute to global warming.

IV. Social Health & Diseases

- Health is determined by several factors including internal genetic inheritance, external environment (such as the quality of air, water, and housing conditions) and social determinants such as socioeconomic status (SES), poverty or access to quality health care.
- The sociology of health and illness, (the sociology of health and wellness) examines the interaction between society and health
- The influence of social and cultural variables on health involves dimensions of both time (critical stages in the life course and the effects of cumulative exposure) as well as place (multiple levels of exposure in the same time).
- There are obvious differences in patterns of health and illness across societies, over time, and within particular society types.
- Significant differences in mortality and morbidity rates continue to exist between income groups and social classes in community.
- In recent years, social scientists and social epidemiologists have turned their attention to a growing range of social and cultural variables as antecedents of health. These

variables include SES, race/ethnicity, gender and sex roles, immigration status, poverty and deprivation, social networks and social support.

- An association between SES and health has been recognized for centuries. Socioeconomic differences in health are large, persistent, and widespread across different societies and for a diverse range of health outcomes. In the social sciences, SES has been measured by three different indicators: education, income, and occupational status.
- Social determinants of health are economic and social conditions that influence the health of people and communities. These conditions are shaped by the amount of money, power, and resources that people have, all of which are influenced by policy choices. Social determinants of health affect factors that are related to health outcomes. Factors related to health outcomes include:
    1) Early childhood development)
    2) Education
    3) Occupation & unemployment
    4) Food security (Having food or being able to get food)
    5) Access to health services and the quality of those services
    6) Housing status
    7) Income (How much money a person earns) & poverty
    8) Discrimination, violence and social support
    9) Stress including work stress
    10) Disability

- Social issues vary among countries. Maintaining a clean water supply and proper sanitation are major concerns in India in 2014. In China, inequities between urban and rural residents, poor infrastructure and censorship of the media are primary social issues. In the United States, same-sex marriage and abortion are often debated as social issues in 2014.
- But in general the social problems are: Racism, poverty, violence, juvenile delinquency & crimes, drug abuse, and unemployment are examples of social issues in the many communities.

1- <u>Racism:</u>

- ✓ Racism is the belief that a particular race is superior or inferior to another, that a person's social and moral traits are predetermined by his or her inborn biological characteristics.
- ✓ Racism has existed throughout human history. It can also be defined as the hatred of one person by another or the belief that another person is less than human -- because of skin color, language, customs, place of birth or any factor that supposedly reveals the basic nature of that person.
- ✓ It has influenced wars, slavery, the formation of nations, and legal codes.
- ✓ Racism is the result of a complex interplay of individual attitudes, social values and institutional practices. It is expressed in the actions of individuals and institutions and

is promoted in the ideology of popular culture. It changes its form in response to social change.

- ✓ Racist attitudes and beliefs are misconceptions about people based on perceived racial lines and are often founded on the fear of difference, including differences in customs, values, religion, physical appearance and ways of living and viewing the world. This includes negative attitudes towards the use of different languages, 'foreign' accents or the use of non-standard variations of a dominant community language.
- ✓ Racist attitudes may be manifested in a number of ways including common expressions of racial prejudice. These beliefs are reinforced by prevailing social attitudes towards people who are seen as different and are often a reflection of the values which underpin social relations and institutional practices.
- ✓ Examples of racist behaviour include ridicule, racist abuse, property damage, racial harassment, and physical assault. Extreme examples of racist behaviour include ethnic cleansing and genocide.
- ✓ An example would be an employer who won't hire someone on the basis of their cultural or linguistic background. This type of discrimination is typically deliberate.

2- <u>Poverty:</u>

- ✓ Poverty refers to the lack of means necessary to meet basic needs such as food, clothing and shelter.
- ✓ It is a multifaceted concept, which includes social, economic, and political elements.
- ✓ Poor people do not enjoy a certain minimum level of living standards as compared to the rest of society and so would vary from country to country, sometimes within the same country.
- ✓ Poverty reduction is a major goal and issue for many international organizations such as the United Nations and the World Bank.
- ✓ Extreme poverty is a global challenge; it is observed in all parts of the world, including developed economies.
- ✓ UNICEF estimates half the world's children (or 1.1 billion) live in poverty.
- ✓ In 2012 it is estimated that, given a poverty line of $1.25 a day 1.2 billion people lived in poverty.
- ✓ Personal Sequences of poverty:
    a) Malnutrition & poor health e.g Protein, CHO, Vitamin deficiency diseases
    b) Excess in Morbidity (physical, chemical, biological, behavioral) & mortality. Eg. Higher in infectious diseases , Maternal mortality rate
    c) Vulnerable to environmental hazards. E.g RTA, delinquency, violence, drug abuse, teenage pregnancy.
    d) Educational underachievement
    e) Lack of security (food, clean water, shelter)
    f) Maldevelopment of personality and moral judgment
- ✓ These factors will lead to community sequences which are:
    a) Abuse of their power
    b) Excluded locations

c) Limited capabilities to use community services
d) Physical limitations
e) Problems in social relationships
f) Weak community organizations
g) Discrimination

3- Violence

- ✓ Violence is defined by the WHO as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation".
- ✓ Globally, violence resulted in the deaths of an estimated 1.28 million people in 2013 up from 1.13 million in 1990. Of the deaths in 2013, roughly 842,000 were attributed to self-harm (suicide), 405,000 to interpersonal violence, and 31,000 to collective violence (war) and legal intervention.
- ✓ Violent acts can be: Physical, sexual, psychological, emotional
- ✓ Violence can be divided into three broad categories:
  a) Self-directed violence (suicide, self-abuse)
  b) Interpersonal violence (violence against women, Family and intimate partner violence, child abused)
  c) Collective violence (by large group or state, crimes of hate committed by organized groups, terrorist acts and mob violence)

- ✓ Child maltreatment is the abuse and neglect that occurs to children under 18 years of age. It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other child exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power. It is a global problem with serious lifelong consequences, which is, however, complex and difficult to study. The Consequences of child maltreatment include impaired lifelong physical and mental health, and social and occupational functioning (e.g. school, job, and relationship difficulties). These can ultimately slow a country's economic and social development.
- ✓ Intimate partner violence refers to behaviour in an intimate relationship that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse and controlling behaviours. A study conducted by WHO in 10 mainly developing countries found that, among women aged 15 to 49 years, between 15% (Japan) and 70% (Ethiopia and Peru) of women reported physical and/or sexual violence by an intimate partner. Intimate partner and sexual violence have serious short- and long-term physical, mental, sexual and reproductive health problems for victims and for their children, and lead to high social and economic costs. These include both fatal and non-fatal injuries, depression and post-traumatic stress disorder, unintended pregnancies, sexually transmitted infections, including HIV.

- ✓ Factors associated with the perpetration and experiencing of child abuse & intimate partner violence are poverty, low levels of education, alcohol & drug abuse.
- ✓ Prevention of violence: Violence in many forms is preventable.
    a) National Strategies addressing the causes of violence can be effective in preventing violence. There is a strong relationship between levels of violence and modifiable factors such as concentrated poverty, income and gender inequality, the harmful use of alcohol, and the absence of safe, stable, and nurturing relationships between children and parents.
    b) Effective prevention programmes support parents and children, teach positive parenting skills. Ongoing care of children and families can reduce the risk of maltreatment reoccurring and can minimize its consequences
    c) Provision of social health services centers
    d) Raise public awareness

4) <u>Juvenile Delinquency</u> "juvenile offending"

- ✓ Participation in illegal behavior by young individuals (usually below 18)
- ✓ Most legal systems prescribe specific procedures for dealing with juveniles, such as juvenile detention centers, and courts.
- ✓ Juvenile crimes can range from status offenses (such as underage smoking), to property crimes and violent crimes.
- ✓ Juvenile offending can be considered risk factors for adolescent behavior.
- ✓ It occurs largely by males than by females. This great gap between the crimes reinforces the connotations of traditional masculinity to be the center of violence, aggression, and competition.
- ✓ It is expressed as an outlet especially to those of lower socioeconomic backgrounds that cannot gain precedence through conventional means.
- ✓ Risk factors: Individual psychological or behavioural that may make offending more likely include low intelligence, impulsiveness or the inability to delay gratification, aggression, lack of empathy, and restlessness.
- ✓ Other risk factors that may be evident during childhood and adolescence include, aggressive or troublesome behavior, peer group association, lack of emotional control (learning to control one's anger), and cruelty to animals.
- ✓ Television and movies have popularized the "cult of heroes", which promotes justice through the physical elimination of enemies. Movies that demonstrate violent acts excite spectators, and the aggressive energy can then be transferred to everyday life, pushing an individual to engage in physical activity on the streets. This type of influence is temporary, lasting from several hours to several days.
- ✓ Delinquency prevention: Preventing youth from becoming involved in criminal, or other antisocial, activity. This is done through:
    - Typically, juvenile delinquency follows a trajectory similar to that of normal adolescent development. In other words, children and youth tend to follow a path toward delinquent and criminal behavior rather than engaging randomly.
    - Because the development of delinquency in youth is influenced by numerous factors, prevention efforts need to be comprehensive in scope.

- Promote a positive youth development model to address the needs of youth who might be at risk of entering the juvenile justice system.
- Prevention services may include activities such as substance abuse education and treatment, family counseling, youth mentoring, parenting education, educational support, and youth sheltering.
- Increasing availability and use of family planning services, including education and contraceptives helps to reduce unintended pregnancy and unwanted births, which are risk factors for delinquency.
- Rehabilitation of indulge persons: Need specialized centers and personnel

5) <u>Drugs & Substances Abuse</u>

- ✓ Harmful or hazardous use of psychoactive substances, including alcohol, tobacco, chemicals and illicit drugs.
- ✓ Psychoactive substance use can lead to dependence syndrome; a cluster of behavioural, cognitive, and physiological phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences.
- ✓ It may lead to addiction. Addiction is a chronic disease characterized by drug seeking and use that is compulsive, or difficult to control, despite harmful consequences.
- ✓ It is usually started during adolescence and young adulthood, large proportion have smoked a cigarette
- ✓ Almost all these substances affect brain and the long-term use can causes changes in other brain chemical systems and circuits as well, affecting functions that include: learning, judgment, decision-making, stress, memory & behavior
- ✓ There are many reasons adolescents use these substances, including the desire for new experiences, an attempt to deal with problems (runaway) or perform better in school, and simple peer pressure.
- ✓ Drugs most often used: alcohol, barbiturates, benzodiazepines, cannabis, codeine. Cocaine, opioids and substituted amphetamines.
- ✓ The exact cause of substance abuse is not clear, with theories including one of two: either a genetic disposition which is learned from others, or a habit which if addiction develops associated with several risk factors.

- ✓ Many factors for abuse:
    - Availability of the substance or drugs
    - Adolescent's friends.
    - The family environment is also important: Violence, physical or emotional abuse, mental illness, or drug use in the household increase the likelihood an adolescent will use drugs.
    - School failure
    - Presence of chronic disease
    - Social and economic difficulties
    - Absence of law or supervision

✓ Prevention

- Raise public awareness
- Promote a positive youth development model. Encourage sport, social activities
- Special program in schools & PHC centers
- Policies which influence the levels and patterns of substance use and related harm can significantly reduce the public health problems attributable to substance use, and interventions at the health care system level can work towards the restoration of health in affected individuals.

✓ Managing of affected persons in specialized center

- Detoxification.
- Individual or group therapy.
- Participation in support groups.
- A comprehensive aftercare program.

V. Health System Management

- Health systems management or health care systems management describes the leadership and general management of health care systems (hospitals, Primary health care centers and other health settings). The term refers to management at all levels to provide better health services.
- "Healthcare management", or also called "Health administration".
- The process of achieving defined goals at a defined time through the guidance, leadership, and control of the efforts of a group of individuals and the efficient utilization of resources bearing in mind adequacy, speed, and economy to the utmost possible level.
- It requires competencies to engage with credibility, creativity, and motivation in complex and dynamic health care environments (Deal with health as business).
- The main issues in Health system management are:
    a) Accountability
    b) Leadership
    c) Collaboration
    d) Communication skills
    e) Financial Skills
    f) Innovative thinking
    g) Organizational awareness
    h) Professionalism

- Elements of Administration:
    1. Planning
    2. Organization
    3. Staffing
    4. Budgeting

5. Leading
6. Supervising
7. Evaluation
8. Team working

- Levels of Administration
    1. Central level=Ministry of health
    2. Intermediate level=directorates of health
    3. Local Level= health office, Hospital, health care unit

1) **Planning**: Considered the most important element of the administrative process. The higher the level of administration, the more the involvement and time devoting to planning. A good plan is the basis of any successful program. Planning is a projected or predetermined course of action designed to achieve a specific goal or objective." The Process of systemic planning should include:
    1. Establishing goals and objectives
    2. Designing alternative courses of action
    3. Analyzing and predicting the consequences
    4. Selecting the best course of action
    5. Implementing the selected plan and performing periodic evaluation to assure success of plan

- SWOT analysis (strengths, weaknesses, opportunities, and threats) is a structured planning method that evaluates those four elements of a project or program.
- SWOT analysis aims to identify the key internal and external factors seen as important to achieving an objective.

    1. Internal factors – the strengths and weaknesses internal to the organization
    2. External factors – the opportunities and threats presented by the environment external to the organization

2) **Organization:** Collection of persons, materials, procedures, ideas or facts arranged and ordered that the combination of parts makes a meaningful whole that works towards achieving organizational objectives. The process of organization implies to the arrangement of human and non-human resources in an orderly fashion to make a meaningful whole that accomplishes organizational objectives. The organizational process is classified into:
    a) Structural organization
    b) Functional organization

3) **Staffing:** It is the process of "personalizing" the organization, by hiring the right type and adequate number of workers to each unit for the time required for the program, (right person in the right place) through the following steps:

c) Identifying the type and number of personnel
d) Recruitment
e) Selection and appointment
f) Orientation
    i. Job analysis
    ii. Job description
    iii. Job specification

4) **Budgeting:** Financial administration consists of a series activities were funds are made available for certain people in the organization under procedures that will ensure their efficient use. The main activities are:
    a. Budgeting
    b. Accounting
    c. Auditing
    d. Purchasing

5) **Leading & Leadership**: The ability of an individual or organization to "lead" or guide other individuals, teams, or entire organizations.
    - ✓ An effective leader is a person who does the following:
        a) Creates an inspiring vision of the future.
        b) Motivates and inspires people to engage with that vision.
        c) Manages delivery of the vision.
        d) Coaches and builds a team, so that it is more effective at achieving the vision.

    - ✓ Leadership brings together the skills needed to do these things.
    - ✓ Not each manager is a leader: Leaders are people who do the right thing; managers are people who do things right.
    - ✓ Responsibilities of team leader
        a) Has good interpersonal skills & Master is how to communicate.
        b) Expression idea in constructive rather than destructive, also hear others' opinions of them and receiving Feedback for more.
        c) Understand the way that others behave, and create positive interactions.
        d) Able to work well in group situation.
        e) Assign clear tasks to each member
        f) Regularly review and monitor progress of work
        g) Resolve conflicts & Helps members to overcome barriers
        h) Ensure that the team meets objectives
        i) Regularly assess team performance using a checklist
        j) Discuss and agree on the timetable for major activities with the team
        k) Motivate team members

    Motivation is defined as: "an externally induced behaviour which occurs in order to bring about or maintain need fulfillment". The following conditions if present build high levels of motivation:
        1. Achievement

2. Recognition
3. Advancement
4. Working conditions
5. Responsibility
6. Organizational policy
7. Technical supervision
8. Interpersonal relations

6) Supervision: Supervision refers to the day-to-day relationship between an executive and his immediate subordinates. Supervision aims at satisfying both: Work & Workers
Factors affecting style of supervision:
    a. Condition present
    b. Type of work
    c. Subordinates characteristics
    d. Personal characteristic of manager

7) **Evaluation: S**ystemic collection of information about the activities, characteristics and outcomes of programs, personnel, and products fpr use by specific people to reduce uncertainties, improve effectiveness and make decision with regard to what those programs, personnel or products are doing and affecting." Evaluation is an ongoing process
Elements of Evaluation
    1. Relevance
    2. Adequacy
    3. Accessibility
    4. Acceptability
    5. Effectiveness
    6. Efficiency
    7. Impact

Steps of Evaluation: Describe the program in terms of objectives expected. Objectives can be either outcome or process objectives.

a) Outcome objectives: "a statement of the amount of change expected for a given health problem for a specified population within a given time frame"
b) Process objectives: "a statement of the amount of change expected in the performance and utilization of interventions that impact on the outcome."
c) Leadership development and skill strengthening through the establishment of development plans.

- Feedback is the communication that occurs among all parties to the evaluation. Giving and receiving feedback creates an atmosphere of trust among stakeholders; it keeps an evaluation on track by letting those involved stay informed regarding how the evaluation is proceeding.

- Stakeholder feedback is an integral part of evaluation, particularly for ensuring use.
- Obtaining feedback can be encouraged by holding periodic discussions during each step of the evaluation process and routinely sharing interim findings, provisional interpretations.

8) Team Building & Team working

- ✓ Team: Two or more people working interdependently towards a common goal.
- ✓ Getting a group of people together does not make a "team." A team develops products that are the result of the team's collective effort and involves synergy. Synergy is the property where the whole is greater than the sum of its parts.
- ✓ Team Building: The process of gathering the right people and getting them to work together for the benefit of a project.
- ✓ Team Management: The direction to a group of individuals who work as a unit. Effective teams are result-oriented and are committed to project objectives, goals and strategies.
- ✓ The choice of type depends on the task to be performed, the organizational context and the resources available. Carefully consider if some routine tasks will need to be performed on an ongoing basis.
- ✓ Having the right core team can make or break a project. Therefore, great care should be taken when selecting team members. It might be very useful to consider the following elements:Team size, Overall team composition , Team member selection and exclusion criteria and Member recruitment process
- ✓ team member resources (e.g. talents, skills, knowledge) and experiences are fully identified, recognized, and used whenever appropriate. Risk taking and creativity are encouraged. Problem-solving, discussing team issues, and assessing team effectiveness are encouraged by all team members.
- ✓ There are three main components in any team's work :
  1. Goal: Result-oriented tasks or content aspect (e.g. team goals and objectives). These are usually developed through interaction with team members;
  2. Methodology: Process aspect, which includes the team's interactions and how members work together (e.g. leadership, team roles, etc.) Teams, especially technical teams, frequently struggle more with process issues than with task issues;
  3. Resources: Time, budget, computer facility, educational tools and administrative support.
- ✓ Some teams fail from the beginning and some deteriorate over time due to.

  1- External barriers to teamwork:
  - Work load,
  - Inadequate recognition for individual team members
  - Team leaders do not control or release the team members adequately
  - Teams are not given adequate resources
  - Frequent changes in team membership
  - Team members resist taking responsibility for tasks expected

2- Internal barriers to teamwork

- Inadequate support from key external stakeholders
- Team members don't set appropriate goals for the team and do not implement a plan for reaching them
- Team members don't spend enough time planning how they will work together
- Team members don't resolve interpersonal conflict
- Teams members don't conduct efficient meetings
- Team members don't have compatible levels of problem-solving, analytic, or project management skills
- Team members don't know how to influence the work of other members Lack of consistent or clear team leadership
- Inability to make decision effectively as a group

Global Health Management

- The World Health Organization (WHO) is a specialized agency of the United Nations that is concerned with international public health.
- It was established on 7 April 1948, headquartered in Geneva, Switzerland. The WHO is a member of the United Nations Development Group.
- The constitution of the World Health Organization had been signed by 61 countries on 22 July 1946, with the first meeting of the World Health Assembly finishing on 24 July 1948.
- Since its creation, it has played a leading role in the controling of diseases that pose a global threat e.g eradication of smallpox.
- Its current priorities include communicable diseases, in particular HIV/AIDS, Ebola, malaria and tuberculosis; the mitigation of the effects of non-communicable diseases; sexual and reproductive health, development, and aging; nutrition, food security and healthy eating; occupational health; substance abuse; facing health emergencies; and driving the development of reporting, publications, and networking.
- The WHO is responsible for the World Health Report, a leading international publication on health, the worldwide World Health Survey, and World Health Day (7 April of every year).
- As of 2015, the WHO has 194 member states:
- The divisions of WHO were designated by the regions. Each region has a Regional Committee (office), which generally meets once a year, normally in the autumn. IRAQ is part of The Eastern Mediterranean Regional office (EMRO).
- Regional Offices of WHO

Region	Headquarters	Notes	Abb
Africa	Brazzaville, Republic of Congo	Includes most of Africa, with the exception of Egypt, Sudan, Djibouti, Tunisia, Libya, Somalia and Morocco (all fall under EMRO).	AFRO
Europe	Copenhagen,	EURO includes Europe, Israel, and former	EURO

	Denmark.	USSR, except Liechtenstein.	
South-East Asia	New Delhi, India	North Korea is served by SEARO.	SEARO
Eastern Mediterranean	Cairo, Egypt	Eastern Mediterranean Regional office includes the countries of Africa that are not included in AFRO, as well as the countries of the Middle East, except for Israel.	EMRO
Western Pacific	Manila, Philippines.	WPRO covers all the Asian countries not served by SEARO and EMRO, and all the countries in Oceania.	WPRO
The Americas	Washington D.C., USA.	Also known as the Pan American Health Organization (PAHO), and covers the Americas.	AMRO

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