Community Medicine Review

This file attempts to summarize all the important information in the lectures and gather them in one file. It is NOT, by any means, a comprehensive source to study the course material.

سعينا بهذا الملف إلى تلخيص و جمع المعلومات الهامة التي وردت في المحاضرات في ملف واحد.
لا يعد الملف، بأي شكل من الأشكال، مرجعًا شاملًا لدراسة مقرر المادة.

Important | Extra | Notes

Editing file

ختام عمل فريق طب المجتمع ٤٣٦

نتقدم بخالص الشكر والتقدير لكل من ساهم في إخراج هذا العمل بأفضل صورة ممكنة وضحّى بوقته وجهده الثمينين لمساعدة الدفعة.

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"اللهم انفعني بما علّمتني، وعلّمني ما ينفعني، وزدني علمًا"

قادة فريق طب المجتمع ٤٣٦:

خالد العيسى – غادة الهدلق

Lecture 1: Overview of Non-communicable disease

Non-communicable diseases are all impairments or deviations from the normal, which have one or more of the following characteristics:

1. Are permanent
2. Leave residual disability
3. Caused by non-reversible pathological alterations
4. Require special training of the patient for rehabilitation
5. May be expected to require a long term supervision

Epidemiology of NCDs:

- Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.0 million), respiratory diseases (3.9million), and diabetes (1.6 million)
- These 4 groups of diseases account for over 80% of all premature NCD deaths.
- Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from a NCD.

Examples of NCDs: Coronary Heart Diseases • Hypertensive Heart Diseases • Cancer • Stroke • Diabetes • Chronic Obstructive diseases • Peptic Ulcer • Blindness • Mental Retardation • Schizophrenia • Arthritis

Lecture 1: Overview of Non-communicable disease

Metabolic risk factor for NCDs :

- Raised blood pressure(Attributable risk is 19%)
- Overweight/obesity
- Hyperglycaemia
- Hyperlipidaemia

The most common risk factor for NCD in primary school children in ksa is nutritional imbalance

Prevention:

Primary Population strategy	Primary High Risk approach	Secondary prevention
➔ Dietary Changes ➔ Blood pressure control ➔ Physical activity (weight reduction) - specially children ➔ Behavioral change – reduction of stress and Smoking cessation. ➔ Self care ➔ Health education	➔ Identify Risk: Identify high risk people and families e.g. those who smoke, and have high serum cholesterol ➔ Specific Advice: helping them to stop smoking and exercise and diet control etc.	➔ Cessation of smoking ➔ Reduction of serum cholesterol level ➔ Mammogram in high risk female

Lecture 2: Methods of Prevention & Control in NCDs

Chronic disease continuum: is a concept involving a system that guides and tracks patients over time through a comprehensive array of health services spanning all levels and intensity of care.

Intervention Methods for NCD Control			
1. Behavioral Determinants: poor diet, physical inactivity and smoking.	2. Environmental Determinants: safe sidewalks, community swimming pools, healthy menu choices in schools.	3. Social Determinants: level of education, level of economic stressors.	4. Health Care Determinants: primary prevention, secondary prevention (screening) ,tertiary prevention.

Levels of intervention: Ecological model of health

1. *Intrapersonal factors:* altering at the level of the individual person.
    - Health Belief Model: the prediction of the likelihood the person will adopt the behavior based on the person's belief.
    - Transtheoretical Model and Stages of Change: assumption that people do not change behaviors quickly rather it occurs continuously through a cyclical process.
    - Theory of Planned Behavior: intended to explain all behaviors over which people have the ability to exert self-control.
    - Health Locus of Control Model: who or what is responsible for that which happens to one's health.

2. *Interpersonal factors:* accessing the relationships that people have.
    - Social Cognitive Theory: learning occurs in a social context with a dynamic and reciprocal interaction.
    - Family-Based Interventions: family members trained to provide support.
    - Friends and Social Networks.
    - Social Support and Social Networks.
    - Natural Helpers.

3. *Organizational factors:* schools, faith-based groups, work sites.

4. *Community factors:* catalyzing interest within a geographic area to achieve a particular set of health objectives.

5. *Policy factors:* policies, regulations and laws that influence the fight against chronic diseases.

Next Lecture

Lecture 3: Social Determinants of NCDs

Social determinants

both specific features of and pathways by which societal conditions affect health and that potentially can be altered by informed action. **Influence health both directly & indirectly**

- Income
- Public policies
- Health services
- Employment
- Material & neighborhood factors
  - Housing:dwelling and the location
  - neighborhood environment
- Education
- Transportation
- Socio-economic status
- Built environment
- Community support networks
- Health behavior and lifestyle

High risk groups

- Uneducated or low educational attainment
- Unemployed
- Low income
- Low social status
- Ethnic minorities
- Female

Material & Neighborhood factors

- Housing
- Consumption potential, i.e. the financial means to buy healthy food, warm clothing, etc.
- The quality of physical working environment.
- Neighborhood environment

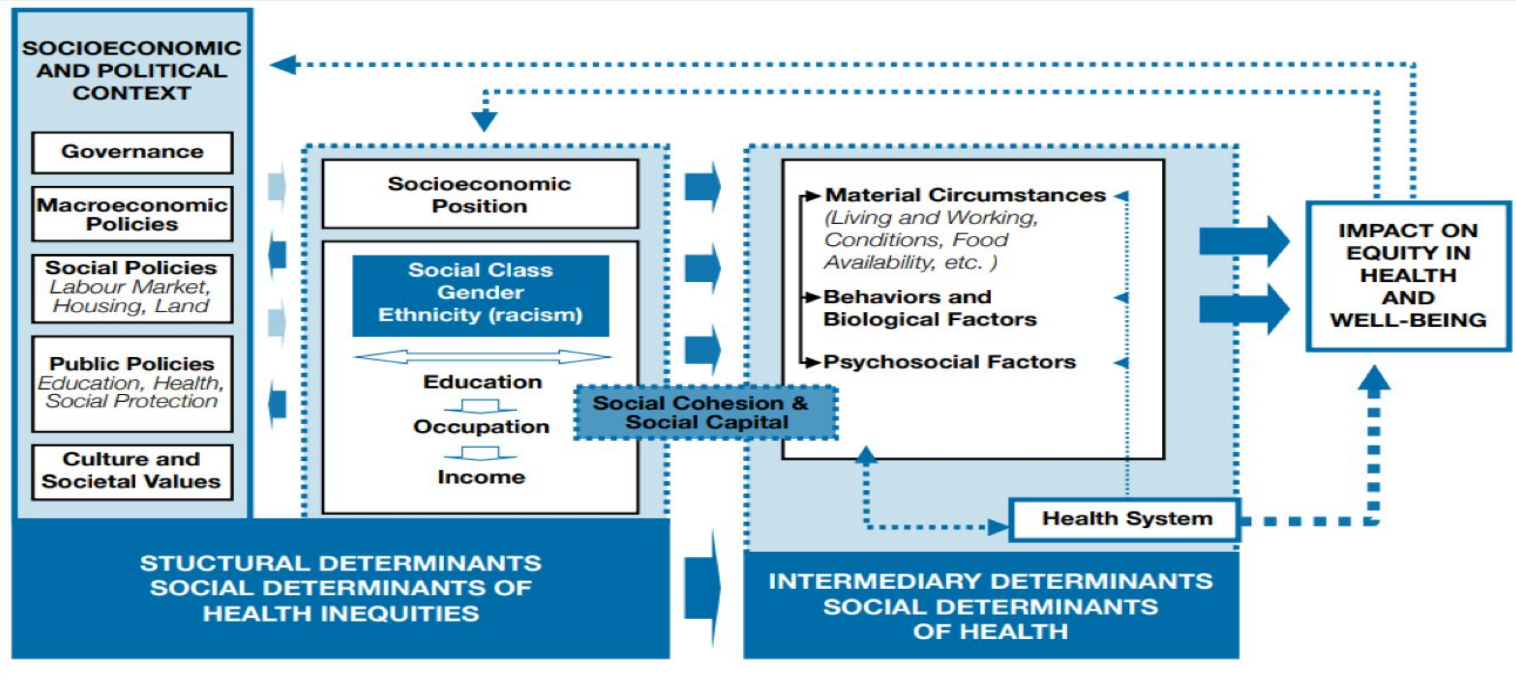
Psychosocial Risk Factors

Psychosocial Risk Factors increase with the low Socioeconomic status such as:

- Stress
- Personality factors
  - Traumatic life events
  - Coping and resilience
  - Hopelessness
- Social relationships
  - social support
  - social networks

Lecture 3: Social Determinants of NCDs

WHO conceptual framework for action on the social determinants of health-2010



Context : البيئة اللي تحيطك

social cohesion: يصير المجتمع متجانس و يشتغل سوا

Equity : لما يكون في حي أو منطقة مدخنين فنزيد هناك عيادات التوقف عن التدخين احسن من ان نحطها في منطقة ما فيها مدخنين عشان نستفيد من المصادر

Macroeconomic policies:الوضع الاقتصادي في البلد، ممكن الحالي أو السابق.

Social policies:قوانين مزاولة العمل أو أشياء لها علاقة بالسكن

Public policies: Government free education or health coverage laws the prevent child abuse.

Next Lecture

Lecture 4: Risk Factors for NCDs

Name:	Definition:	Global Burden:	Risk Factors:
Cardiovascular Disease	Coronary heart disease, Cerebrovascular disease (stroke), Peripheral arterial disease, Congenital heart disease.	CVDs are the #1 cause of death globally.	•Modifiable: High blood pressure •Other modifiable: Low socioeconomic status •Non-modifiable: Age •“Novel” : Excess homocysteine in blood
Diabetes	Type 1, Type 2, Gestational, and Pre-Diabetes (Impaired Glucose Tolerance).	347 million people worldwide have diabetes.	•Modifiable: Unhealthy diets •Other modifiable: Low socioeconomic status •Non-modifiable: Age •“Novel”: Low birth weight
Cervical Cancer:	Cancer is Rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs	7.6 million people died from cancer in 2008.	•Human papilloma virus infection (HPV) •Smoking •Immune Deficiencies •Poverty
Lung Cancer:			•Smoking •Being exposed to second-hand smoke •Being treated with radiation therapy •Living where there is air pollution
Breast Cancer:			•Hormone therapies •Weight & physical activity •Genetics or family history •Age is the most reliable risk factor!
Colorectal Cancer:			•Aging •Black race •Diabetes •Family history of colorectal cancer
Chronic Respiratory Diseases	.	A leading cause of death and High under-diagnoses rates	•Genes •Infections •Socio-economic status •Aging Populations

Lecture 4: Risk Factors for NCDs

Common Risk Factors:

Unhealthy diet:

Health Effects: Coronary heart disease, Stroke,,Cancer, Type 2 diabetes, Hypertension, Diseases of the liver and gallbladder, Obesity.

Physical activity:

Health Effects: Reduces:, High blood pressure, Adverse lipid profile, Arthritis pain, Psychiatric issues.

Alcohol Use:

Health Effects: Immediate effects: Diminished brain function, Loss of body heat.
Long-term effects: Liver diseases, Cancers.

Metabolic Risk Factors:

Raised Blood pressure:

Health Effects: Leading risk factor for stroke, Major risk factor for coronary heart disease.

Raised Total Cholesterol:

Health Effects: Increases risks of heart disease and stroke.

Overweight & Obesity:

Health Effects: Increases risk of coronary heart disease, type 2 diabetes, and hypertension.

Next Lecture

Lecture 5: Diabetes

A metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. However, Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation.

Types:

Type 1 due to autoimmune b-cell destruction,

Type 2 (90 - 95%) – due to a progressive loss of β-cell insulin secretion frequently on the background of insulin resistance.

Gestational diabetes, drug induced diabetes, endocrine diabetes

Symptoms: Increase frequency of Urine, Specially nocturnal. Increase thirst. Weight loss. Increase appetite. (polyphagia) Blurred vision. Tingling hands and feet., Easy fatigability, Dry skin, Slow healing wounds.

Diagnosis:

Diabetes

Fasting plasma glucose: ≥ 7.0 mmol/L (126 mg/dl) or
2-h plasma glucose: ≥ 11.1 mmol/L (200 mg/dl) or
HbA1c : ≥ 6.5%

Impaired glucose tolerance (IGT)

Fasting plasma glucose: <7.0 mmol/L (126 mg/dl)
and
2-h plasma glucose: ≥ 7.8 and <11.1 mmol/L
(140 mg/dl and 200 mg/dl)

Impaired fasting glucose (IFG)

Fasting plasma glucose : 6.1 to 6.9 mmol/L (110 mg/dl to 125 mg/dl)
2-h plasma glucose: <7.8 mmol/L (140 mg/dl)

Gestational diabetes (GDM)

Fasting plasma glucose: 5.1–6.9 mmol/L (92–125 mg/dl)
1-h plasma glucose : ≥ 10.0 mmol/L (180 mg/dl)
2-h plasma glucose: 8.5–11.0 mmol/L (153–199 mg/dl)

Lecture 5: Diabetes

Age group most affected 60-69. Highest mortality in lower middle income, Both gender running the race together.

Common diabetes complications:

1. **Loss of vision:** retinopathy rates are higher among: people with type 1 diabetes; people with longer duration of diabetes; Caucasian populations; and possibly among people of lower socioeconomic status

2. **End-stage renal disease:** 80% of cases of end-stage renal disease (ESRD) are caused by diabetes, hypertension or a combination of the two.The proportion of ESRD attributable to diabetes alone ranges from 12–55%.

   The incidence of ESRD is up to 10 times as high in adults with diabetes

3. **Cardiovascular events:** 2-3 times higher rate of cardiovascular disease (CVD) than adults without diabetes.The risk of cardiovascular disease increases continuously with rising fasting plasma glucose levels, even before reaching levels sufficient for a diabetes diagnosis.
4. **Lower extremity amputations:** increase the risk of lower extremity amputation because of infected, non-healing foot ulcers. Rates of amputation in populations with diagnosed diabetes are typically 10 to 20 times those of nondiabetic populations.

Risk factors:

- **Genetic:** more with type 1
- **Family history:** a family history of type 2 in any first degree relative have a two to three-fold increased risk of developing diabetes.
  The risk of type 2 diabetes is higher (five- to six fold) in those with both a maternal and paternal history.
- **Obesity:** The risk of impaired glucose tolerance (IGT) or type 2 diabetes rises with increasing body weight.

- **Fat distribution:** The incidence of type 2 diabetes are highest in those subjects with central or abdominal obesity,
- **Physical inactivity**
- **Infections:** can cause type 1 diabetes
- **Pregnancy**
- **Diet**: Fruits, vegetables, nuts, whole grains, and olive oil is associated with a reduced risk.
- **Medications**: Drugs that antagonize the effects of insulin: Thiazide diuretics, Adrenal corticosteroids, Oral contraceptives.
- **Physiologic or emotional stress**
- **Smoking**

Prevention

Type 2 diabetes is largely preventable in people who are overweight and have impaired glucose tolerance (IGT). Diet and physical activity interventions are more effective than medication.

- **Healthy diet & physical activity:**

1. Saturated fatty acid intake - less than 10% of total energy intake (and for high risk groups, less than 7%);
2. Dietary fibre - minimum daily intake of 20 g through regular consumption of whole grain cereals, legumes, fruits and vegetables.
3. Free sugars - less than 10% of total energy intake
4. Further reduction to 5% could have additional health benefits
5. Children and youth aged 5–17 - at least 60 minutes of moderate- to vigorous-intensity physical activity daily.
6. Adults aged 18–64 - at least 150 minutes of moderate-intensity aerobic physical activity spread throughout the week, or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
7. Older adults (above 65) - the same amount of physical activity

Lecture 5: Diabetes

Population-based prevention:

- **Fiscal, legislative and regulatory measures for healthy diet**:
  - Fiscal measures: Policies that increase the price of foods high in fat, sugar and salt can decrease their consumption.
  - Trade and agricultural policies that promote healthy diets
    - Changes in agricultural subsidies to encourage fruit and vegetable production
    - Regulation of marketing of foods high in sugars, fats and salt.
    - Marketing of foods and non-alcoholic beverages influences children's knowledge, attitudes, beliefs and preferences.
    - Nutrition labelling can guide consumers towards healthier food choices.
- **Education, social marketing and mobilization**.
- **A life-course approach**
- **Improving early childhood nutrition**
- **Supportive environments for physical activity**
- **Settings-based interventions**

Preventing diabetes in people at high risk:

Intensive interventions that change people's diet , increase physical activity & lead to the loss of excess body weight can prevent type 2 diabetes.

Testing asymptomatic diabetes: Testing should be considered in overweight or obese adults who have one or more of the following risk factors:

A. First-degree relative with diabetes
B. History of CVD or Hypertension
C. Women with polycystic ovary syndrome
D. Physical inactivity
E. Conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

II. Patients with prediabetes should be tested yearly.
III. Women who were diagnosed with GDM.
IV. For all other patients, testing should begin at age 45 years.
V. If results are normal, testing should be repeated at a minimum of 3-year intervals

Lecture 5: Diabetes

Global efforts:

Global action plan for the prevention & control of noncommunicable disease 2013-2020.

The Sustainable Development Goals (SDGs), the third is: Good health and well being.

Saudi Efforts in preventing and controlling diabetes:

multiple sectors serving people with diabetes in Saudi Arabia both in the private and public sectors at primary, secondary, and third level preventions.

Next Lecture

Lecture 6: Cancer

- The 2nd leading cause of death **globally**.

Important !

Most preventable cancers:

	In the World & Middle East			
	Men		Women	
	Incidence	Mortality	Incidence	Mortality
1st cause	Lung		Breast	
2nd cause	Prostate	Liver	Colorectal (Also Lung worldwide)	

	In Saudi Arabia			
	Men		Women	
	Incidence	Mortality	Incidence	Mortality
1st cause	Colorectal		Breast	
2nd cause	Lymphoma, Multiple myeloma		Colorectal	

Causes of Cancer:

- Physical carcinogens - Chemical carcinogens- Biological carcinogens

Diethylstilbestrol (DES) hormone is associated with vaginal adenocarcinoma

Cancer causing pathogens:

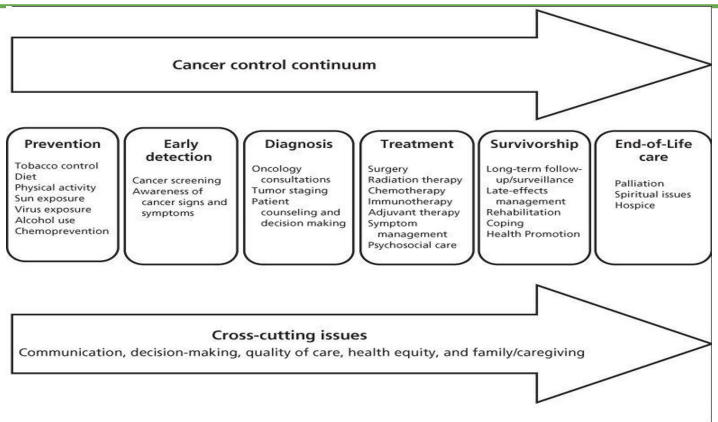
H.pylori ➔ Stomach CA

C. Sinensis & O. Viverrini ➔ Biliary, gallbladder, & Pancreatic CA

Schistosoma haematobium ➔ Bladder CA

EBV ➔ Hodgkin and non-Hodgkin lymphomas, stomach & nasopharyngeal CA

HBV & HCV ➔ Hepatocellular Carcinoma



Lecture 6: Cancer

Screening for Cancers:

The Wilson-Jungner Criteria for Screening:

1. Important health problem
2. Well understood natural history
3. Detectable early stage
4. More benefit in early treatment
5. Suitable early stage test
6. Acceptable test
7. Determined intervals for repeating test
8. Adequate health service provision
9. Benefit > Risk
10. Cost balanced against benefit

USPSTF Recommendation Grades:

Grade	Recommended / against
A	Recommended
B	Recommended
C	Recommended selectively based on: 1. Professional judgment. 2. Patient preferences.
D	Against
I	Unknown

Breast Cancer Screening:

Population	Grade
40 to 49 yrs	C
50 to 74 yrs	B
75 yrs or older	I

Colorectal Cancer Screening:

Population	Grade
Adults aged 50 to 75 yrs	A
Adults aged 76 to 85 yrs	C

Guaiac-based Fecal Occult Blood Test (gFOBT): every year
Colonoscopy: every 10 years

Cervical Cancer Screening:

Age Group	Pap smear (cytology)	HPV testing	Grade
< 21 years	Against screening	-	D
21-30 years	-	Against	D
	Recommended every 3 years	-	A
30-65 years	Recommended every 3 years	Recommended every 5 years	A
	Or recommend pap + HPV every 5 years		
>65 years	against screening if have had adequate prior screening and are not otherwise at high risk for cervical cancer.		A
Had Hysterectomy + removal of cervix + no prior precancerous lesion or cervical cancer.			D

Adequate Cervical Cancers Screening:

- 3 consecutive negative cytology
- Or 2 consecutive negative HPV results

Primary prevention of cervical cancer → pap smear every 3 years

Hematological Malignancies Screening:

No routine screening tests

Lung Cancer Screening:

Screening modality: Low dose chest CT scan

Prostate Cancer Screening:

Population	Grade
Men aged 55 to 69 yrs	C
Men 70 yrs & older	D

Thyroid Cancer Screening:

Population	Grade
Adults	D

Lecture 6: Cancer

Liver Cancers Screening:

Best screening modality: Ultrasound of Liver

Uterine Cancers Screening:

No evidence that screening reduces mortality

Ovarian Cancers Screening:

Population	Grade
Asymptomatic women	D

Factors & Trends Affecting Cancer Control:

1. **Tobacco**
2. **Alcohol**
3. **Unhealthy Diet, Physical Inactivity, Overweight And Obesity**
4. **Hepatitis B Virus (HBV)**
5. **Environmental Exposure to Carcinogens**
6. **Occupational Exposure to Carcinogens**
7. **Radiation**

Next Lecture

Lecture 7: Cardiovascular disease

Cardiovascular Epidemiology:	
Descriptive epidemiology:	Describing distribution of CVDs by person (i.e., age, gender, ethnicity) time and place
Analytic epidemiology:	Analyzing relationships between CVDs and risk factors. risk models, and multicausal developments.
Experimental	epidemiology/Interventions: Strategies of CVD prevention (primordial, primary, secondary, tertiary; individual vs community levels).
Types of cardiovascular diseases (CVD):	
1- Coronary heart disease(CHD): manifested by myocardial infarction (MI), angina pectoris, heart failure, and coronary death.	2- Peripheral arterial disease: manifested by intermittent claudication.
3- Aortic disease: Aortic atherosclerosis and thoracic or abdominal aortic aneurysm	4- Cerebrovascular disease: manifested by stroke and transient ischemic attack (TIA).

Lecture 7: Cardiovascular disease

<table>
<tr><th colspan="2">Unmodifiable risk factors</th></tr>
<tr><td colspan="2">Increase age
The majority of people who die of coronary heart disease are 65 or older. (Men > 45 and Females >55).</td></tr>
<tr><td>Male gender</td><td>Heredity (including race)</td></tr>
<tr><td colspan="2">Modifiable risk factors</td></tr>
<tr><td colspan="2">Tobacco smoking
Cause:
1. Damage of endothelium and atherosclerosis
2. Increase coagulability and fibrinogen levels
3. Polycythaemia and increase blood viscosity
4. Increase LDL and triglyceride and decrease HDL</td></tr>
<tr><td>High blood cholesterol</td><td>High triglyceride</td></tr>
<tr><td colspan="2">Hypertension
1. High blood pressure increases the heart’s workload, causing the heart muscle to thicken and become stiffer.
2. Causing Mechanical damage of endothelium and atherosclerosis.In patients <50 years of age, diastolic blood pressure was the strongest predictor of CHD risk.
3. In patients ≥60 years of age, systolic pressure (pulse pressure) was the strongest predictor.</td></tr>
<tr><td>Physical activity :
inactive=risk for coronary heart disease
Regular active =reduce the risk of cvd</td><td>obesity</td></tr>
<tr><td>Diabetes</td><td></td></tr>
<tr><th colspan="2">Contributing factors to heart disease</th></tr>
<tr><td>Stress: increase blood pressure</td><td>Alcohol: raise BP and triglyceride</td></tr>
<tr><td>Prothrombin markers:
• Homocystinaemia (more among smokers).
• High fibrinogen (more among smokers).

Proinflammatory markers:
High sensitive C-Reactive protein</td><td>Microalbuminuria:
• Microalbuminuria reflects vascular damage and appears to be a marker of early arterial disease.
• Urinary albumin excretion (UAE) ranges of (30-300 mg/day) -- is an indication of increased cardiovascular risk and endothelial dysfunction</td></tr>
</table>

Lecture 7: Cardiovascular disease

Primary purpose:	to identify patients whose prognosis could be improved with an intervention (in this case, medical therapy for risk factors or coronary heart disease [CHD]).
Screening & risk estimation:	• Screening for CHD should be distinguished from estimation of risk for CHD (or overall cardiovascular disease [CVD]). • By definition, both are performed in asymptomatic persons, and both aim to improve outcomes with interventions, if indicated. • However: ➢ screening for CHD (or CVD) identifies existing disease. ➢ while estimating the risk of CHD (or CVD) does not directly identify existing disease but rather the likelihood of any future event related to CHD (or CVD).
Who to screen?	• Usually, most asymptomatic adults are not screened for CHD. • However, American Heart Association recommends nearly all patients aged 20 years or older without established CVD should undergo periodic cardiovascular risk assessment every three to five years. • (LDL) cholesterol and/or (HDL) cholesterol, glucose level, BP, life-style, ...are required.

WHO:

CVD is number 1 cause of death globally (31% of all deaths)

Major risk factor contributing to CVD:

1. Tobacco
2. Consumption of food high in salt
3. High blood pressure

Q: WHO and FAO recommend which of the following aiming to decrease CVD by:

A: Decrease trans fatty acid

Lecture 7: Cardiovascular disease

cardiovascular disease prevention			
Not smoking	Being physically active	Normal blood pressure	Normal blood glucose
Normal total cholesterol	Normal weight	Eating healthy diet	
Patients at high risk of CVD			
Exercise: 23% lower risk	Healthy diet: ● Higher intake of red meat and high-fat dairy products has also been associated with higher risks of CHD. ● Fiber – High fiber intake is also associated with a reduction in the risk of CHD and stroke compared with low fiber intake.		
Statins: Lower risk by 15-20%	Antiplatelet therapy: For patients with established and stable atherosclerotic CVD, aspirin is recommended. ● Long-term antiplatelet therapy with aspirin reduces the risk of subsequent myocardial infarction (MI), stroke, and cardiovascular death among patients with a wide range of manifestations of occlusive CVD. ● In patients who are unable to take aspirin and in those with a history of gastrointestinal bleeding, clopidogrel is a reasonable alternative.		

Conclusion:

1. Risk factors for CVD:
   Age, Gender, Smoking, Hypertension, Hypercholesterolaemia, Obesity, FH of premature CVD.
2. Contributing factors:
   High levels of Homocysteine, Fibrinogen, HSCRP and Microalbuminuria.
3. Prevention:
   Dealing with risk factors and importantly Life Style Modification

Next Lecture

Lecture 8: Injury

Definition of Injury:	Acute exposure to agents such as **mechanical energy**, **heat**, **electricity**, **chemicals**, and ionising **radiation** interacting with the body in amounts or at rates that exceed the threshold of human tolerance. In some cases, injuries result from the **sudden lack of essential agents such as oxygen or heat**
Definition of Violence:	**The intentional use** of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation>
Epidemiologic Triad of Injuries:	**1-Host: Human, 2-Agent: Energy, 3-Environment: Vector, Vehicle that conveys the agent (Energy).**

Nature of Energy:

1-Mechanical Energy:

When a vehicle stops suddenly, the occupant will continue to move at the same speed and direction.
Stresses: contact with energy source generates forces counter to the load.
Strain: extent of deformation, resulting from tension, compression, shear.
The shape and elasticity of the materials struck will determine the damage to the tissue.
Devices as seat-belts, airbags and child restraints reduce the severity of injury by reducing contact with less flexible structures (second collision).

Types of the force : Tension, compression, shear

2-Thermal and chemical energy:

- Fires, heat & smoke.
- As a result of ignition sources, flammable materials and of the heat and chemical energies.
- Chemicals may be breathed / inhaled (as in a fire); ingested; injected; absorbed
- Harms of chemicals are divided into 3 phases: exposure (poisoning); toxo-kinetic (chemical absorption through the organism's membranes: GIT, lungs' air sacs); toxo-dynamic (interaction of chemical with receptors in target tissues).

Lecture 8: Injury

Thermal and chemical energy:

1. **Intentional:** Violence, Suicide, Homicide, Intentional fire-arm injuries.
2. **Non-intentional (accidental):** Road-traffic injuries, fires, falls, poisoning, drowning-asphyxia, burns, sports, accidental firearm injuries.

Combustion varies by:

1. Concentration and type of heat source.
2. Shape / size of a combustible.
3. Oxygen concentration.
4. Vaporization of gases.
5. Presence or absence of catalysts.

3-Electrical energy:

- The flow of electrons is “electrical current”.
- The extent of damage of human contact with electrical energy increases with amperage.
- Skin sensitivity varies 100-fold as a function of wetness

4-Asphyxiation energy:

Definition: absence of oxygen to sustain endogenous energy conversion, which causes essential cells (in brain / heart) to be damaged within minutes.

Causes: 1- Objects blocking nose, mouth, trachea. 2-Mechanical blow to the trachea or constriction of the trachea. 3-Lung obstruction, water in lungs (drowning), ung congestion (endogenous fluids as in pneumonia / congestive heart failure)

Measuring the problem of accidents:

Mortality	Morbidity	Disability
• Proportionate mortality rate. • Number of deaths per million population. • Death rate per 1000 registered vehicles per year. • Number of accidents or fatalities as a ratio of no. of vehicles per km or passengers per km.	• Slight injuries • Serious injuries	• Temporary or permanent • Partial or total • DALY, QALY...

Global & Regional Burden:

- The most common cause of death among people 1- 44 years of age.
- More than 90% of injury deaths occur in low- and middle-income countries.

Lecture 8: Injury

Haddon Phase-Factor Matrix:

Motor vehicle crash				
Phase	**Host (Human)**	**Vector (Vehicle)**	**Physical environment**	**Cultural environment**
Pre event	- Alcohol experience - Judgment	- Brake status - Tires	- Nigh - Rain - Icy road	Acceptance of drinking and driving
Event	No seat belt	- No air bag - Hardness of surfaces	- Tree too close to road. - No guard rail	- Speed limits - Enforcement of seat belt
Post event	Physical condition	- Fuel system integrity - Cell Phone	Distance of emergency response	- Support for trauma systems. - EMS standard

Types of Data & Potential Sources of Information:

Mortality : Death certificates, Reports from mortuaries
Morbidity and health-related: Hospitals, Medical records
Self Reported: Surveys, Media
Community-based: Demographic records, Local government records
Law enforcement: Police records, Prison records
Economic-social: Institutional or agency records, Special studies

Prevention & Control:

- **Primary prevention:** Raising awareness of the community, at its different levels, as to methods of avoiding injuries. This includes health promotion / health education activities and applying preventive measures accordingly.
- **Secondary prevention:** Early detection, proper evaluation and management of injuries at different levels of healthcare delivery (primary, secondary and tertiary facilities).
- **Tertiary prevention:** Management of complications of injuries, especially disabilities, including rehabilitative measures and approaches, improvement of quality of life of injury victims, as well as palliative care, when needed.
- **Safety education**
- **Promotion of safety measures**
- **Primary care**
- **Elimination of causative factors**
- **Law enforcement**
- **Rehabilitation**
- **Research and data collection**

Lecture 8: Injury

Proven Injury Prevention Interventions:

Car safety seats and belts, Air bags, Motorcycle helmets, Bicycle helmets, Child resistant packaging, Swimming pool fencing, Smoke detectors, & Self extinguishing cigarettes.

KSA efforts:

- **Injury and accidents prevention program:** Surveillance System, Education

- **Application to Road Traffic Accidents**
  - **Host: victim:** e.g. driver, passenger, pedestrian, etc
  - **Agent:** mechanical / thermal energy
  - **Environment:** vehicles of incident
  - **Stresses:** contact with energy source generates forces counter to the load.
  - **Strain:** extent of deformation, resulting from tension, compression, shear
  - The shape and elasticity of the materials struck will determine the damage to the tissue.
  - Devices as seat-belts, airbags and child restraints reduce the severity of injury by reducing contact with less flexible structures (second collision).

National strategic plan to reduce RTI that covers the 4Es:

- **Education:** annual traffic weeks
- **Engineering:** road infrastructure and vehicles
- **Enforcement:** seatbelt rule, speed limit law
- **Emergency:** Saudi Red Crescent Society (SRCS)
- **Epidemiology**.

Q: Which one of the following is the leading causes of road traffic injuries in Saudi Arabia?
A: Exceeding speed limit

Q:What is the Primary prevention of injuries?
A: Educate the People about how to deal with accidents

Q: How are road traffic accidents calcified?
A: Non intentional injury of public health importance

Next Lecture

Lecture 9: Introduction to Environmental health & hazards

Environmental Health: the science and practice of preventing human injury and illness and promoting well- being by identifying and evaluating environmental sources and hazardous agents and limiting exposures to hazardous agents.

Components of the environment: Physical, Chemical, Biological, Social.

1) Air Quality

Air pollution	Pollutants	Types of pollutants
the introduction of materials that cause harm to humans or other living organisms, or cause damage to the natural environment or built environment, into the atmosphere.	A substance in the air that can cause harm to humans and the environment.	• Primary (directly emitted):Sulphur oxide, Nitrogen oxides, carbon monoxide (CO)... • Secondary (form in air when primary pollutants interact):Ozone, smog, peroxyacetyl nitrate

2) Water Sanitation and Availability

Sources of water	Water pollution	Water related disease
1. Rain. 2. Surface water. 3. **Ground water.** **Most affected by pollution**	<u>NOT hazardous:</u> 1-Dissolved gasses (CO2, N, H2S) 2-Dissolved minerals (Ca, Mg, Na) 3-Suspended impurities (Clay, sand, mud) <u>Hazardous:</u> 1-Sewage 2-Toxic waste 3-Agricultural pollutants (insecticide, fertilizers) 4-Heat and radioactive materials	• Biological causes: Viral, bacterial... • Chemical causes: Cyanides, dyes...
Water purification	**Water storage**	**Methods for disinfection**
1. Filtration 2. Storage 3. disinfection	• To preserve water from further contamination and pollution. • Provides a small amount of purification. • Must be stored within a certain period.	1. Heat. 2. Chlorination (can't kill spores and viruses) 3. Ozonation. 4. Bleaching powder. 5. Bromination.

Acidic rain is caused by factories

1 ppm = 1 mg/liter = 1 g/m^3 ➔ Enough to kill microbes if the water doesn't contain organic materials.

Lecture 9: Introduction to Environmental health & hazards

3) Risk Assessment

What is risk assessment?

The process of estimating the potential impact of a chemical, physical, microbiological or psychosocial hazard on a specified human population or ecological system under a specific set of conditions and for a certain time frame.

It involves assessing impacts of:

1. chemical pollutants
2. pathogenic microbiological contaminants
3. radiation sources
4. electromagnetic fields (EMFs)
5. climate and climate change

keep in mind when attempting risk assessment:

6. Heavily relies on assumptions
7. Does not take into account the different interaction of environment with other factors
8. Exposures and outcomes on which the risk assessment is based are poorly defined

Types of environmental risk assessment:

- Individual and population-based
- Quantitative and qualitative

The five stages of environmental hazard risk assessment:

4) Prevention and control

Monitoring Water:

- Biological surveillance of water:
- Sanitary surveys.
- Inspection of manufacturing of water bottles and ice.
- Inspection of reservoirs and wells.
- Establishing policies and procedures for extracting water from wells, and maintaining water safety and storing water.

Monitoring air pollution:

- Monitoring the concentration of:
- Sulphur dioxide
- Smoke
- Suspended particles

Next Lecture

Lecture 10: Diseases related to Environmental hazards

1) The Field of Environmental Health: That focus on natural and man-made agents

2) Diseases Related to Environment linked to:

1. Unsafe water/food 2.Poor sanitation 3.Indoor air pollution 4.Outdoor air pollution

3) Environmental Health Impact Depends on:

1. Frequency of Exposure 2.**Individual characteristics**

4) Environmental Burden of Disease (According to WHO): key areas of risk include:

- **Environmental Burden of Disease:**
  1.Unsafe water, poor sanitation and hygiene 2.Indoor smoke from solid fuels 3.Malaria

Contributing factors to the most common vector-borne diseases including malaria, dengue and leishmaniasis.

1. Poorly designed irrigation and water systems
2. Inadequate housing
3. Poor waste disposal and water storage

- Urban air pollution generated by vehicles, industries and energy production
- **Unintentional acute poisonings**
- Climate change

5) Common Environmental Diseases:

1. Asthma, Respiratory Allergies, and Airway Diseases
2. Vector-borne and Zoonotic Diseases
3. Heat-Related Morbidity and Mortality
4. Neurological Diseases and Disorders
5. Cancer
6. Cardiovascular Disease and Stroke
7. Foodborne Diseases and Nutrition
8. Mental Health and Stress-Related Disorders
9. Waterborne Diseases

Lecture 10: Diseases related to Environmental hazards

6) Diseases Related to Air Pollution:

- **Primary Pollutants include :**

1. Nitrogen oxides (NOx) very poisonous gas 2.Carbon dioxide (CO2) - non- toxic 3.Particulate matter 4.Toxic metals, such as lead and copper.
   The delayed exposure to lead is weeks to months

- **Secondary Pollutants include :** Particulate matter formed from gaseous primary pollutants and compounds in photochemical smog.

There are two main types of air pollution:

1. Ambient air pollution (outdoor pollution) 2.Household (or indoor) 3. Both indoor and outdoor air pollution can contribute to each other,

7) The Health Effects of Air Pollution:

deaths from stroke, lung cancer and heart disease

8) Household Air Pollution:The main pollutants:

1. Particulate matter **2.** Nitrogen dioxide **3.** Sulphur dioxide **4.** Ozone

9) The Health Effects of Air Pollution:

PM2.5 -**Ozone** -**Nitrogen**

➢ **Air pollution has a disastrous effect on children.**

➢ **Air pollution effect on Pregnant women**

The biological consequences of the ozone depletion are: increased skin cancer, cortical cataracts, and reduction of plankton populations.

Lecture 10: Diseases related to Environmental hazards

Water-borne Diseases:	
commonly results during bathing, washing, drinking, in the preparation of food, or th consumption of food thus infected. Examples :: Polio, Malaria, Cholera, Dengue, Scabies and Typhoid	
Diarrhea	• Caused by water-borne viruses. But bacteria and parasites from water contaminated with feces are also common causes. • Watery stools can cause dehydration and death to young children and infants.
Cholera	• Is an infection of the small intestine by the bacterium **Vibrio Cholerae**. • can kill within hours if not treated on time. • Symptoms :diarrhea and vomiting, as well as abdominal cramps and headache.
Dysentery	• diarrheal contain visible red blood. • It is most often caused by **Shigella species** or **Entamoeba histolytica** • combination of nausea, abdominal cramps coupled with severe diarrhea.
Typhoid fever	• This infection is caused by **Salmonella Typhi bacteria.** • This disease is contracted by consuming contaminated food or water. • Its symptoms include nausea, loss of appetite, and headache
Schistoso-miasis	• Caused **by worms** that are spread by freshwater snails living in polluted water.
Trachoma (Eye Infection)	•caused by **Chlamydia Trachomatis** •Trachoma results in a **coarsening of the inner surface** of the eyelids. •This leads to pain in the eyes, lesion on the outer surface or cornea, and eventual blindness.

Lecture 10: Diseases related to Environmental hazards

Vector borne Diseases	
Malaria	•Water pollution has resulted in increased breeding of parasite- carrying mosquitoes. •**Insect**: mosquitoes •**Organism**: protozoan, Plasmodium falciparum, P. vivax, P. ovale, P. malariae, P. knowlesi •This disease causes high fever, headache, and shivering. In severe cases, it can even lead to complications like severe anaemia, coma, and death.
Yellow fever	o acute viral hemorrhagic disease transmitted by infected mosquitoes. The "yellow" in the name refers to the jaundice that affects some patients. o **Symptoms**: fever, headache, jaundice, muscle pain, nausea, vomiting and fatigue. o **Insects:** Mosquitoes o **Organism:** Virus, Flavivirus
Dengue fever	➢ Is the most important mosquito-borne viral disease in the world ➢ It is endemic in over 100 countries across the tropics, from central and South America, Africa, South and Southeast Asia and to the Pacific Islands. ➢ It has increased rapidly over the last few decades in urban sprawls that provide ideal conditions for breeding.

Q: Which of the following is the 'Delay exposure' to lead?
A: Weeks to months

Q: What are the biological consequences of the ozone depletion?
A: Increased skin cancer ,cortical cataracts,reduction of plankton populations

Next Lecture

Lecture 11: Introduction to Occupational Health

Occupational health

It is The prevention of disease and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations. Similar to preventive medicine but targets the workers mainly.

قوانين العمل

Ergonomics: Objective is "to achieve the best mutual adjustment of man and his work, for the improvement of human efficiency and well-being".

Occupational hazards

• Physical hazards • Chemical hazards • Biological hazards • Mechanical hazards • Psychosocial hazards.

1-Heat and cold:

HEAT	COLD
-Direct effects:• Burns • Heat stroke • Heat exhaustion • Heat cramps -Indirect effects:• Decreased efficiency •Increased fatigue •Increased accidents rates like bakers and glass blowers they are exposed for long times to a hot temperature	• Chilblains • Erythrocyanosis • Frostbite • General hypothermia

2-Noise:

Auditory	Non-Auditory
Temporary hearing loss , Permanent hearing loss	Nervousness, Fatigue, Interference with communication by speech, Decreased efficiency,and Annoyance

Factors affecting degree of injury:
1-intensity and frequency range,
2-duration of exposure and individual susceptibility.

3-Vibration:

• frequency range 10 to 500 Hz. • drills and hammers.

• the fine blood vessels of the fingers may become increasingly sensitive to spasm (white fingers).

• injuries of the joints of the hands, elbows and shoulders.

Lecture 11: Introduction to Occupational Health

4-Light:

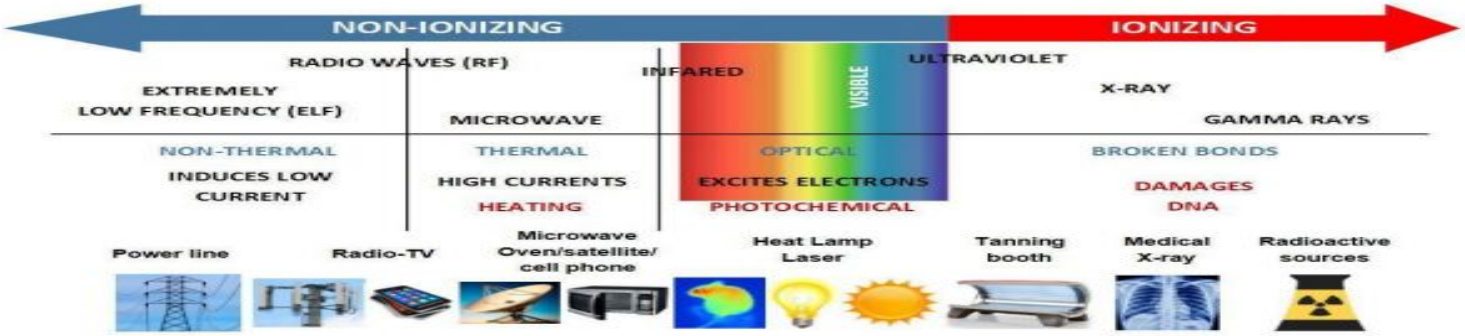
Poor illumination	Excessive brightness
Acute effects: • Eye strain • Headache • Eye pain • Lachrymation • Congestion around the cornea • Eye fatigue Chronic effects: Miner's nystagmus Due to trying to focus with poor illumination and the muscles of the eye get fatigued	• Discomfort • Annoyance and Visual fatigue • Blurring of vision. • Light should be sufficient and suitable, natural or artificial.

5-Ultraviolet radiation:

Arc welding. mainly affects the eyes: **1-**Intense conjunctivitis **2-**Keratitis (welder's flash).
Symptoms: pain and redness in eyes. usually disappear with no permanent effects.

6-Ionizing radiation: biggest source of UV rays: sun. sunblock reduces the effect of UV rays

• e.g., X-rays and radioactive isotopes.
• Hazards: genetic changes, malformation, cancer, leukaemia, depilation, ulceration, death.
• exposure at 5 rem per year to the whole body.



Lecture 11: Introduction to Occupational Health

Chemical hazards

effect depends on route of entry into the body

• local action, absorption, inhalation and ingestion. • Effects depend on duration quantity of exposure, and individual susceptibility.

Local action:

•Irritation: allergic reactions, dermatitis, eczema, ulcers and cancer. •Absorption: systemic effects.

•Occupational dermatitis: machine oil, rubber, caustic alkalies and lime. bleach or vanish: make the hand white due to a reaction from the chemicals. like using perfume, detergent, soap, or cream that causes an allergic reaction.

Inhalation:

1-Dust: • 0.1-150 microns • Organic (cotton), inorganic (silica, mica, coal,asbestos) • Soluble, insoluble

• Pneumoconiosis: <5 microns, insoluble dust • Example of dust disease: silicosis, anthracosis.

insoluble ➔ deposition: we can see it in histopathology or X ray, causes silicosis or asbestosis overall called pneumoconiosis, causes malignant diseases.

2- Gases:

• simple gases (e.g., oxygen, hydrogen),

• asphyxiating gases (e.g. carbon monoxide, cyanide gas, sulphur dioxide, chlorine)

• anaesthetic gases (e.g., chloroform, ether, trichlorethylene). Chloroform: used for kidnappings

3- Metals and their compounds:

• dust or fumes.

• lead, antimony, arsenic, beryllium, cadmium, cobalt, manganese, mercury, phosphorus, chromium, zinc and others.

• responds favorably to cessation and medical treatment.

water pipes contain lead, make up can contain lead (cheap make up)

4-Ingestion:

• lead, mercury, arsenic, zinc, chromium,cadmium, phosphorus etc.

• contaminated hands, food or cigarettes.

• Most is excreted through feces and only a small proportion may reach the general blood circulation.

Mostly not ingested purposefully unless suicidal or children drinking bleach. Can happen if working in a plant or lab and its still stuck in the workers' hands and they eat, coloring in food, and cigarettes.
In high amounts: a systemic manifestation

Minamata (Japan) ➔ Dumping of Mercury
Bhopal (India) ➔ Methylisocynate leakage
Chernobyl (Ukraine) ➔ Nuclear Meltdown

Lecture 11: Introduction to Occupational Health

Biological hazards

Persons working in medical field, among animal products (e.g., hair, wool, hides) and agricultural workers are specially exposed to biological hazards.

Mechanical hazards

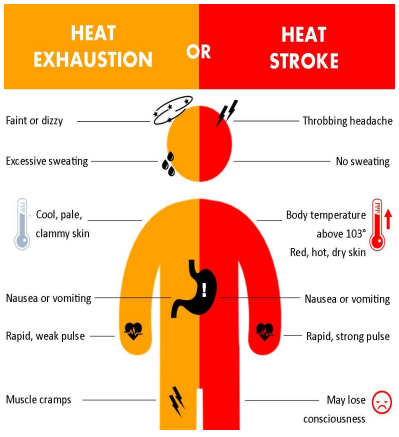
• About 10 % of accidents in industry are due to mechanical causes.

زي اللي يفرم اللحم او يقطع الجبن وتدخل يده او اصبعه فيها

Psychosocial hazards

Psychological and behavioral changes	Psychosomatic ill-health
hostility, aggressiveness, anxiety, depression, substance abuse, sickness, absenteeism	fatigue, headache; body pain, peptic ulcer, hypertension, heart disease and rapid aging. Psychosomatic: patient is stressed or psychologically ill but it shows physical manifestations most commonly PUD

Personal Protective Equipment (PPE)



What symptom distinguishes between heat stroke and heat exhaustion?

Answer: Dry Skin

Which of the following manifestations is characteristic of "heat stroke" ?

Answer: Dry skin and high temperature

Which of the following mechanism is responsible for the lethal effect of carbon monoxide?

Answer: binding to hemoglobin molecule

OSHA's Permissible Noise Exposures	
Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
<.25	115

Which of the following is the maximum permissible noise exposure for 8 hours/day?

Answer: 90

Next Lecture

Lecture 12: Diseases related to occupational hazards

Definition: Occupational diseases are adverse health conditions in the human being, the occurrence or severity of which is related to exposure to factors on the job or in the work environment

Such Factors can be:					
Physical	Chemical	Biological	Ergonomic	Psychosocial stressors	Mechanical
heat, noise, radiation	solvents, pesticides, heavy metals, dust	tuberculosis, hepatitis B virus, HIV	improperly designed tools or work areas, repetitive motions	lack of control over work, inadequate personal support	mainly cause work accidents and injuries rather than occupational diseases.

Pulmonary dust diseases

Pneumoconiosis is disabling pulmonary fibrosis that results from the inhalation of various types of inorganic dust, such as silica, asbestos, coal, talc and china clay.
e.g. **silicosis** and **asbestosis**
- all of them are **Progressive diseases**
"prevention and periodic examinations"

Radiation hazards: **Industrial**

exposures: manufacture of radioactive paints, painting of luminous dials for watches, mining of radioactive ores, sand workers, x-rays rooms **Pregnant ladies should not be allowed to work in the area**

Prevention of occupational disease

Medical measures

1. Pre-placement exams
2. Periodic examinations
3. Medical and health care services
4. Notifications
5. Supervision of working environment
6. Maintenance and analysis of records
7. Health education and counseling

Engineering measures

1. Designing of the buildings
2. Good housekeeping
3. General ventilation 4. Substitution
5. Dusts 6. Enclose 7. Isolate
8. Local exhausts ventilations
9. Protective devices
10. Environmental monitoring 11. Research

Next Lecture

Lecture 13:
Strategies for prevention and control for environmental and occupational diseases

Global STRATEGIES:

The Millennium Development Goals (MDGs) are eight goals with measurable targets and clear deadlines for improving the lives of the world's poorest people.

Millennium Development Goals (MDGs):

Goal 1 Eradicate extreme poverty and hunger

Minimizing exposures to environmental risk factors indirectly contributes to reducing poverty, because many environmentally mediated diseases cause lost earnings by losing the family breadwinner for example.

Goal 2 Achieve universal primary education

Providing clean water and toilet at school (particularly toilet for girls) will encourage primary school students to come to school.

Goal 3 Promote gender equality and empower women

In developing countries, women are more likely to in looking after children who may be sick from environmental risk factors such as polluted water or polluted indoor air.

Goal 4 Reduce child mortality

Improving the environment could help to reach the MDG, to reduce by two thirds the mortality rate among children under five years old.

Goal 5 Improve maternal health

A contaminated home environment is a threat to the mother and her unborn child.

Goal 6 Combat AIDS, malaria and other diseases

These diseases affect children and adults, a lot of them due to environmental and occupational causes.

Goal 7 Ensure environmental sustainability

Providing sustainable sources of safe water and clean energy are key environmental interventions that contribute to this MDG.

Goal 8 Develop a global partnership for development

ENVIRONMENTAL IMPACT ASSESSMENT:

The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Lecture 13:
Strategies for prevention and control for environmental and occupational diseases

Objectives of EIA:

- Ensure that environmental considerations are obviously addressed and incorporated into the development of the decision making process.
- To anticipate and avoid, minimize or offset the adverse significant effects of development proposals.
- protect the productivity and capacity of natural systems
- To promote development that is sustainable.

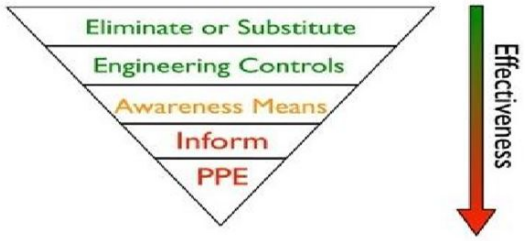
The EIA process should be applied:

- As early as possible in decision making
- To all development proposals that may cause potentially significant effects
- To biophysical impacts and relevant socio-economic factors, including health, culture, gender, etc.
- the involvement and input of communities and industries affected by a proposal,
- In accordance with internationally agreed measures.

STRATEGIES FOR PREVENTION AND CONTROL FOR OCCUPATIONAL DISEASES

Risk assessment

•Step 1: identifying hazards and those at risk
•Step 2: evaluating and prioritizing risks
•Step 3: Deciding on preventive action
•Step 4: Taking action
•Step 5: Monitoring and reviewing



Hierarchy of prevention and control measures

Step 1 Elimination: the total removal of the hazards, the ideal objective of any risk management.

Step 2 Substitution: Substitution means replacing the hazard by one that presents a lower risk

Step 3 Engineering Controls: Engineering controls are physical means that limit the hazard, Local exhaust ventilation (LEV) for example.

Step 4 Administrative Controls: or organizational measures: reduce or eliminate exposure to a hazard by adherence to procedures or instructions.

Step 5 Personal Protective Equipment (PPE): PPE should be used only as a last resort
The success of this control is dependent on the protective equipment being chosen correctly

Next Lecture

Lecture 14: Mass-gathering and related hazards

Mass gatherings (MGs) are events attended by large numbers of individuals, concentrated in a specific area for a specific purpose and over a limited period of time.

>25 000 people

Categories of MGs:

- **Planned**

- Recurrent**,** same location (Hajj)
- Recurrent, different locations (Olympics)
- Not recurrent (political speech)

- **Unplanned** زي المظاهرات

MG characteristics that represent public health risk: ليش هي خطر؟

- **Higher population concentration:** diverse people, import diseases, epidemic...
- **Environmental conditions:** hot, cold...
- **Pressure on infrastructure:** the hotel, food service, healthcare system...
- **Political attention**: terrorism...

Steps of risk assessment:

Risk Identification - Risk Characterization - Risk Management

1- Identification: depends on Event Assessment:

- **MG features: type** (sports, political...), **duration**, **activity** (sitting, walking...), **occurrence** (repeated, single).
- **Environmental factors: season:** summer ➔ heat stroke, dehydration...
- **Participants: country, density, health status.**
- **Venue**المكان**: temporary** ➔ poor infrastructure**, indoor** ➔ poor air circulation**, outdoor**, **medical services**, **catering**توفير الطعام (professional, self-catering...), **alcohol availability, hygiene** (bathrooms, hand washing stations ➔ decrease infections...)

2- Characterization: Impact on MG حجم المشكلة لو صارت**, risk likelihood**. احتماليتها

3- Management: includes:

- **Surveillance:** must be sensitive and timely. **Types**(active, passive, enhanced, syndromic) mostly we use all of them.
- **Characteristics of disease for surveillance:** outbreak potential, the mode of transmission, severity, imported, highly infectious. Reported through IHR (international health regulations) 2005
- **MG Planning:** Should be **Early**, **Multi-sectora**l cooperation, depends on risk assessment and identification.

Next Lecture

Lecture 15: Global Health Programs & Policies

What is a Healthcare System

"a system which 'exists and evolves to serve societal needs'—with 'components' that ' . . . can be utilized as policy instruments to alter the outcomes"

what is a Health Policy

Decisions, plans and actions that are undertaken to achieve specific health care goals within a society."

"A set of rules that describe what will and will not be done in terms of healthcare; can range from broad philosophies to specific regulations."

Factors that affect health policy decision making:

- Economic factors
- Cultural/religious factors **(e.g.HPV vaccine; in the west they vaccinate teenagers due to their sexual activity at a young age)**
- Behavioral factors
- Physical environment
- Availability of medical services (technology advances)
- Epidemiological structure (disease distribution and disease prevention priorities)
- Public health evidence
- Political situation **networking and connections to get to the policymakers or influencers**

Macro Health Policy

- Broad and expansive health policies that are developed at the national level
- Affect a large portion of the population (region or country)
- Define the country's vision priorities, budgetary decisions, course of action to sustain health
- Developed based on population-health needs

Micro Health Policy

More specific to level of organization or individuals, examples:

- Hospital administrative policy and procedures (APP)
- Departmental/Internal policy and procedures (DPP/IPP)
- Clinical practice guidelines
- Based on the operational needs of the facility; differ by organization (from hospital to another)
- Policies that apply to: employees; operations; ethics; safety; research

Lecture 15: Global Health Programs & Policies

Inter-relationship between micro- and macro- policies

Micro-policies at organizations are developed in line with macro-policies put in place by the MOH

The development and implementation of such policies require a multi-disciplinary approach

- Different departments of the hospital collaborate for putting in place micro-policies

MOH (macro policy) > Hospital (micro policy) > Department (Departmental policy)

What is the usefulness of health policies?

- Defines a vision for the future
- Helps to establish targets
- Outlines priorities
- Points of reference for the short and medium term.
- Shows the expected roles of different groups
- Builds consensus
- Informs people

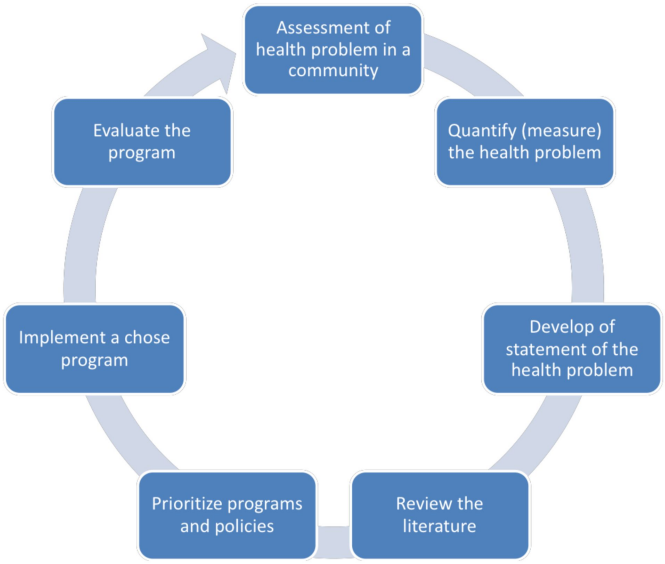
Pathway for policy development

Policy should be driven by evidence

Many factors may challenge the adoption of a policy:

- Ideological
- Political
- Economic

Most of all, adoption of policy is largely driven by the beliefs of the policymakers more so than the strength of the evidence itself



Lecture 15: Global Health Programs & Policies

Health Policy

A set of rules that describe what will and will not be done in terms of healthcare; can range from broad philosophies to specific regulations.

It includes: • What the role is? • When will it apply? • Who does it cover?

Health Procedure

Steps that describe methods and instructions on how to carry out a relevant policy, accomplish a particular goal, perform a function or carry out an activity or process.

i.e. steps on how to implement your policy

Health or Clinical Guideline

Systematically developed statements to assist practitioners in making patient decisions about appropriate healthcare for specific circumstances''

• These provide clear evidence-based recommendations to influence physicians' (or clinicians') decision making

Q: What is the greatest challenge to global health?

A: Accessibility to health information

Q: What is the scope of global Health?

A: Sharing health problems and solutions worldwide

Q: To which Ministry of health departments In KSA does the healthy marriage program belong?

A: General department for preventive health.

Next Lecture

Lecture 16: Saudi Arabia Health Systems

What is a Healthcare System?

- A system which **exists and evolves to serve societal needs** with components that can be utilized as policy instruments to alter the outcomes.
- A health system is the total of all the organizations, institutions and resources whose primary purpose is to improve health.

Components of a health system:

1-Financial resources:

1. The government.
2. Out of pocket services (Private).
3. Charity.
4. Donation

2-Legislation:

- Executive bodies:
  - The King.
  - The Council of Ministers.
- Judicial body:
  - The Saudi court.
- Legislative body:
  - Shariah.

3-Health regulators:

- The National Health Council. المجلس الوطني الصحي
- Ministry of health.
- The Saudi Commission for Health Specialties. Regulates medical practice of physicians.
- Council of Co-operative Health Insurance.
- The Saudi Food and Drug Authority. Regulates pharmaceutical aspects.
- International health regulators. E.g. WHO & CDC.

4-Healthcare providers:

- Governmental:
  - MOH.
  - Other ministries (MOE, MOD...etc).
- Non-governmental (private).

5-Human resources:

- Current manpower in Saudi Arabia Health System: 282 hospitals under the ministry of health. (only hospitals of MOH WITHOUT other governmental hospitals).
- Why the staff count is important? Because we have global benchmarks for countries to have a good health system to have a staff to population ratio. Until now, we have not reached the global ratios.
- We are underserved in physicians, dentists, pharmacists.
- We are underserved particularly in public health professionals.

6-Medical supplies 7-Pharmaceutical producers 8- Judiciary Services

Lecture 16: Saudi Arabia Health Systems

- ## Provision and Financing of Healthcare:
  - **Prior to 2016**, almost 60% of the healthcare provision was provided by MOH and free.
  - 40% provided by Other Government bodies under the guidance & direction of MOH but the funding is not from the MOH.
- ## Ministry Directorates:
  - Healthcare is operated in each region under the directorate of that region.
    - 20 regions => **20** directorates محافظة
- ## Strengths & Weaknesses of the current health system:

Strength	Weakness

• Universal (covers everybody) (NHS).
• Accessible.
• Comprehensive (primary, secondary and tertiary).
• Safe.
• Equitable.
• Free.
	• Weak primary care.
	• Multi-sectoral:
	  ○ Duplication of services among providers.
	  ○ Difficult to Coordinate.
	  ○ Waste of resources.
	• Poor electronic health record system.

- ## Vision 2030 and the Transformation in Healthcare:

Some of the National transformation program objectives:

1. Increase privatization of healthcare services. by making 60% of health care services from non-governmental sources & 40& provided by the government).
2. Optimization of use of resources To avoid waste of resources.
3. Increase the use of information technology.
4. Increase training for physicians (through The Saudi Commission for Health Specialties).
5. Increase number of nurses and allied health.
6. Improve services in ER and ICU.
7. Improve primary care services.
8. Improve infrastructure, facilities, standards.
9. Acceptable waiting time for services (all levels).
10. Improve governance of healthcare.
11. Adopt national emergency preparedness plan (to be prepared for any national disaster such as; Corona)
12. Identify additional revenues.
13. **Improve public health services (aiming to be a developed country). Controlling community is more beneficial & effective in prevention than individual-based services.**
14. Improve services provided post-discharge.
15. Improve safety principles.

Next Lecture

Lecture 17: Health Education & Promotion (Concepts)

Health education:

Any combination of learning experiences to help individuals and communities improve their health by increasing their knowledge, influencing their attitudes.

Health:

Complete physical, mental and social being and not merely the absence of disease or infirmity.

Health literacy:

The cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health.

Knowledge:

Intellectual acquaintance with facts truth or principles by sights experience or report , it's the collection & storage of info, or experience.

Attitude:

Manner, disposition, feeling, position toward a person or thing

Skill:

The ability to so something well arising from talent training or practice

GOAL OF HEALTH EDUCATION

- Promote health by reinforcing healthy practices **(Primordial prevention)**
- Prevent ill-health, maintain the highest level of health & improve the quality of life **(Primary Prevention)**
- Understand health behavior underlying the ailments and means of behavioral changes to prevent further deterioration of health or restoration of health **(Secondary Prevention)**
- Make the most of the remaining potential for healthy living. **(Tertiary Prevention)**

Belief:

Is a conviction that a phenomenon or object is true **or** real.

Values:

Are broad ideas and widely held assumptions regarding what are desirable, correct and good that most members of a society share.

Lecture 17: Health Education & Promotion (Concepts)

Behaviour change communication:

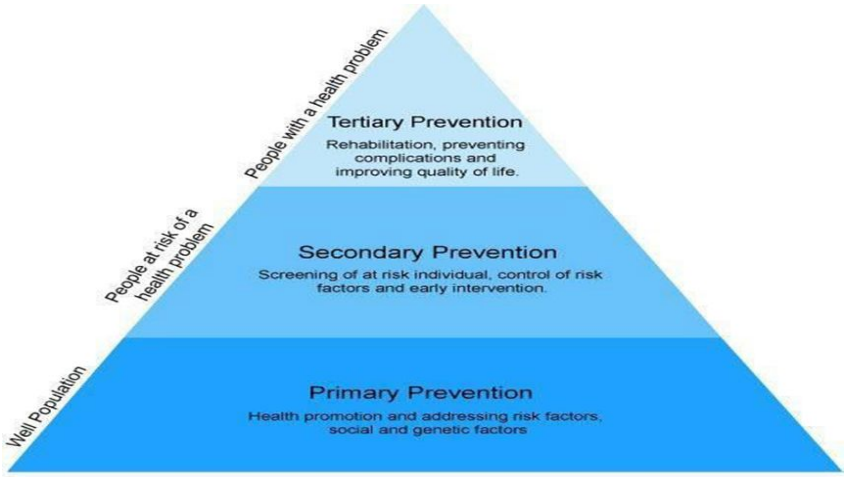
A process of working with individuals, families and communities through different communication channels. To promote positive health behaviors and support an environment that maintains positive behaviours.

Aims Of Health Education

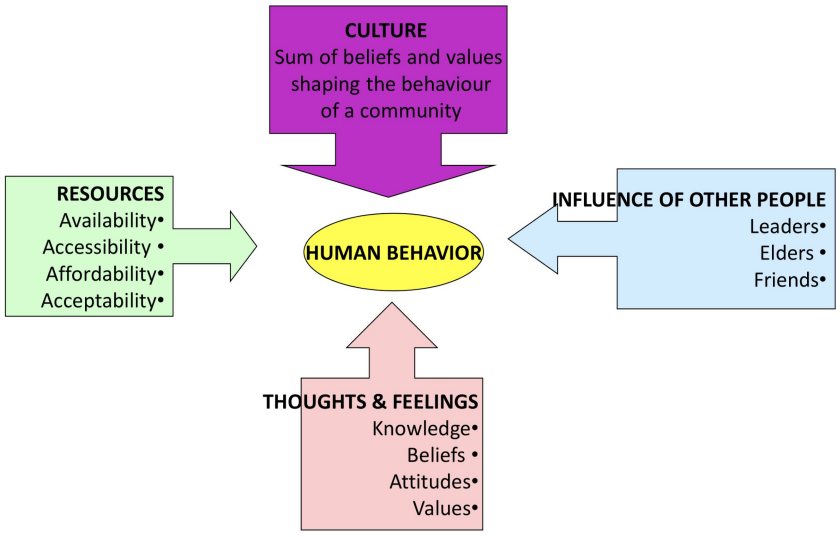
- Make people value their own health
- Take the initiative to attain and keep positive health
- Understand and practice healthy habits
- Interrupt a behavioral pattern that heightened the risk of disease, injury, disability or death
- Utilize the available health services

What is prevention:

The planning for and the measures taken to prevent the onset of a disease or other health problem before the occurrence of undesirable health events.
Three distinct levels of prevention: **primary, secondary, tertiary** prevention

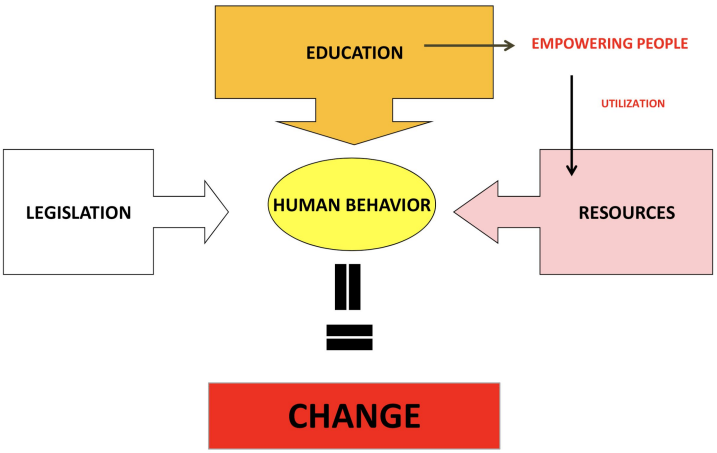


Factors Influencing Human Behavior:

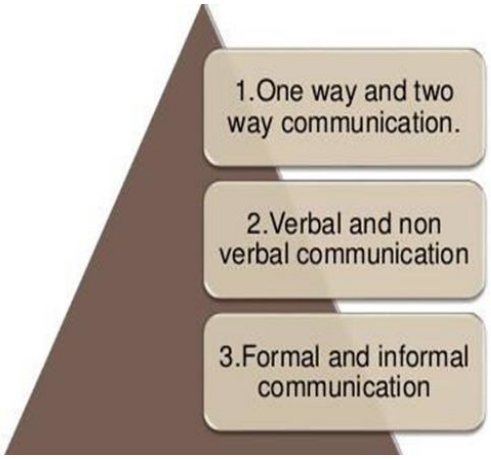


Lecture 17: Health Education & Promotion (Concepts)

Changing Human Behavior:

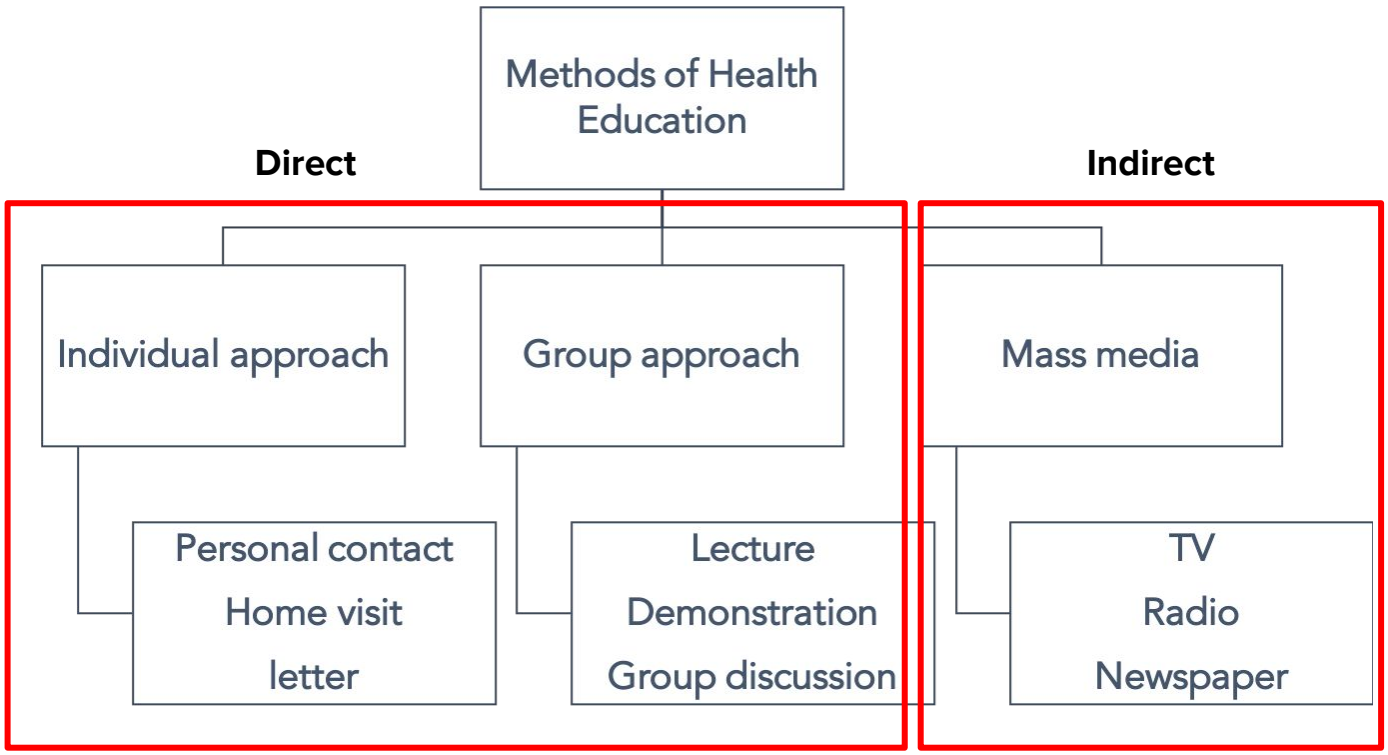


Types of communication:



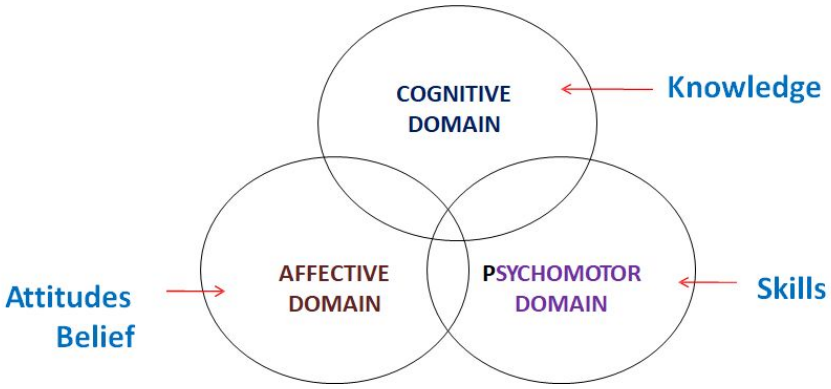
Barrier to communication:

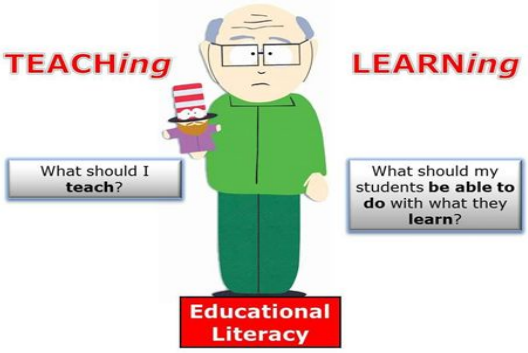
cultural ➔ health literate
Psychological ➔ sad
Physiological ➔ deafness
Environmental ➔ noisy background



Lecture 17: Health Education & Promotion (Concepts)

Domains of learning





TEACHING → enable learning

FORMAL = **PLANNED**

INFORMAL = **NOT PLANNED**

Learning is an **ACTIVE PROCESS**
Learning is stimulated by a **NEED**
Learning is demonstrated by a **CHANGE IN BEHAVIOR**

Variables In The Behavior Change

- **Knowledge**
- **Values**
- **Beliefs**
- **Attitudes**
- **Perceptions:** Ascribing meanings to sensory or cortical activity in such a way that the activity comes to acquire symbolic function.
- **Skills**
- **Self-efficacy:** The internal condition of experiencing competence to perform desired tasks which will influence the eventual outcome.

The Health Belief Model For Behavior Change

1. Health behavior of all kind is related to a general health belief that one is susceptible to a health problem (**Perceived susceptibility**).
2. Health problems have undesirable consequences (**Perceived seriousness or severity**).
3. Health problems and their consequences are preventable.
4. If health problems are to be overcome, barriers have to be overcome.

Lecture 17: Health Education & Promotion (Concepts)

Predisposing, enabling and reinforcing factor in education process

- **Predisposing Factors:**
  Characteristics that motivate a behavior change.
  Predisposing factors are **knowledge, beliefs, values** and **attitudes**

- **Enabling factors:**
  Characteristics that facilitate action to attain a specific behavior. e.g. legislations

- **Reinforcing factors:**
  It determines the continuity (maintenance) of the new behavior. (rewards)

MAINTAINING A HEALTH-RISKY BEHAVIOR

REASONS:

1. Lack of **knowledge** of the health risk.
2. Modified **perception** of risk.
3. Low **self efficacy** to change.

Transtheoretical Model: Stages Of Motivation (*cyclic rather than a straight line.)*

✓ **Pre-contemplation:** No interest or consideration for behavior change (denial, ignorance, demoralization).

✓ **Contemplation:** Thinking about making a change.

✓ **Preparation:** Person's imagining himself with different behavior.

✓ **Action:** Making specific changes.

✓ **Maintenance:** New behavior becomes a lifelong pattern.

Next Lecture

Lecture 18: Global School Health Services

School Health

- **Definition:** School health is a branch of preventive medicine which deals with the curative, preventive and promotive aspects of school health settings.
- **The fundamental aim:** prevention, early detection, and correction of disease

Targets of School health

- Creation of a suitable environment for healthy physical, mental and emotional development.
- To have a clear written measure of the health status of the children.
- Detection of early deviation form the normal.
- Training of scholars in health habits.

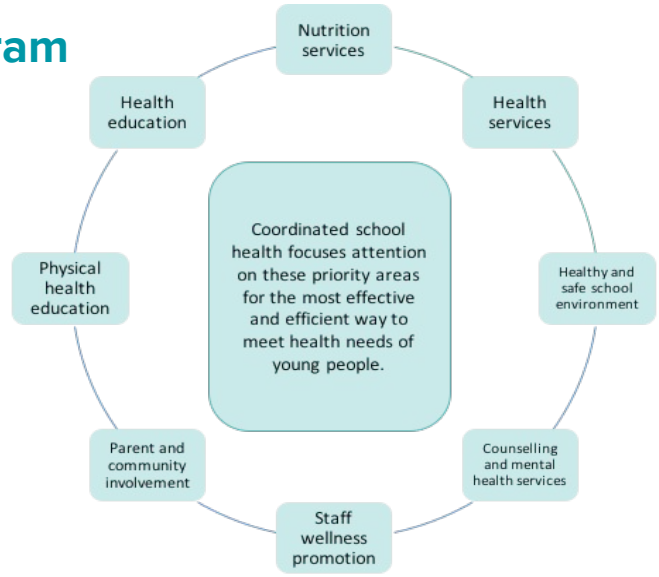
Objectives of School Health Problems (SHP)

Health promotion of school children, prevention and control of health hazards, and rehabilitation of the handicapped.

School health problems

1. Nutritional problems; obesity arising in KSA, malnutrition
2. Dental caries because of lack awareness of dental hygiene
3. Eye defects
4. Ear, nose and throat disorders e.g. otitis media
5. Skin disorders
6. Postural issues which lead to back and neck pain
7. Respiratory illnesses corona, URTI, TB (Improper ventilation)
8. Hair lice
9. Infectious diseases (e.g. scapes, malaria)

Coordinated School health program



Lecture 18: Global School Health Services

Role of School medical officer

- Health appraisal
- First aid and emergency service
- Participation in prevention and curative services
- General inspection of the school environment
- Participation in health education program
- Supervising preparation of statistical indices and health reports/records
- Counseling of parents, students, administration on health issues

Role of a school health nurse

- Assists the medical officer in planning a medical inspection
- Measurement of biometrics of children.
- Actively maintains and updates record keeping
- Helps the medical officer in conducting health education sessions.
- Interacts and communicates with the teachers and mothers
- Supervises and monitors hygiene
- Visits homes of children to follow-up on care and gather any other information that might be helpful.

Role of Teacher

- Key person in the school health service program.
- Screening suspected cases through supervision of the students in the classrooms.
- Participation in health education program.
- Supporting preventive and health promotion services and activities.
- If trained; first AID, vaccination, education sessions.
- Monitoring of activities under the school health program.

Functions of a school health service

- Primary prevention: Health education, Accident prevention, Immunization, Teacher training.
- Secondary prevention: Complete general physical exam, Follow up of cases, Treatment of minor ailments, Prevention of spread of communicable diseases.
- Tertiary prevention: Assistance of children with learning difficulties, Assistance for families and schools in managing children with chronic diseases.

Lecture 18: Global School Health Services

Health Promotion

- Adequate nutrition.
- Sanitary school environment.
- Meeting the needs for mental development.
- Physical fitness and activities.
- Prevention of mental fatigue.
- Social activities and recreation.

School environment

- **Value of Sanitary Environment:**
  - Basic preventive measure of communicable diseases
  - Contributes to health promotion
  - Provides feeling of comfort, and enhances educational achievement

Components of healthy school Environment

- Site and Area **- School Building** **- Classrooms**

- School Furniture **- Kitchen & Dining** **- Water, Sewage & Refuse disposal**

Medical Care

- **Health Appraisal includes**
  - comprehensive medical examination (Assessment of health status)
  - screening tests (dental examination)
  - clinical (curative) service (Referrals to specialized clinics)
  - survey studies (find out ecological data)

Research in school health services

Required for investigation of a particular disease or health problem.

Handicapping conditions

- May be congenital or acquired
- Children with minor or mild cases of disability can attend regular schools
- Examples: Rheumatic valvular disease, healed rickets.

Lecture 18: Global School Health Services

School Health Record

For registration of events and activities related to health

Contents of Record

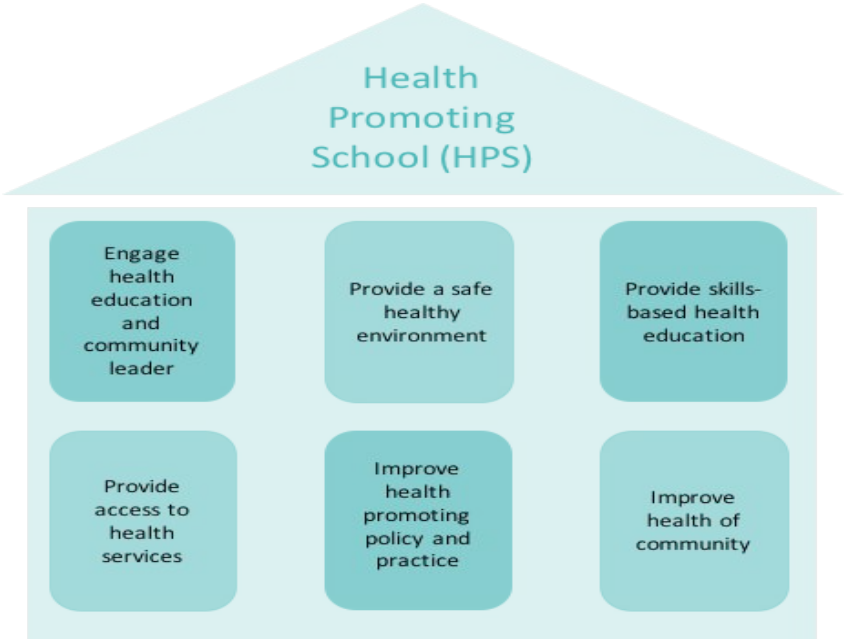
Personal and social data, Results of health appraisal, Immunizations /date/age, Any morbidity, and management record

Value of Health Record

1. For reference **2.** Allows follow-up **3.** Collecting statistical data

What is a health promoting school?

A school that constantly seeks to strengthen its capacity to promote healthy living, learning and working conditions (WHO).



Next Lecture

Lecture 19: Health of People with Disabilities

Definitions	
Health	• Defined by WHO as: A state of complete physical, mental, and social well-being not merely the absence of disease.
Quality of life	• WHO: an individual's perception of their position in life in the context of the **culture and value systems** in which they live and **in relation to** their goals, expectations, standards and concerns. • Broad multidimensional concept that usually includes subjective evaluations of different aspects of life.
Health-related quality of life	• Defined by the CDC as: an individual's or group's perceived physical and mental health over time • Include those **aspects** of overall quality of life that can be clearly shown to **affect health**—either physical or mental.
Disability	• Disability refers to the **negative aspects of the interaction** between individuals with a health condition and personal and environmental factors • An umbrella term for impairments, activity limitations, and participation restrictions.
Handicap	limitation of the person's role in society.
ICF	• Short for: International classification of functioning, disability and health.
Community-based rehabilitation	**Aim:** promote engagement of disabled persons in the society. **Main objective:** Enhancing their social life. **Characteristics:** • provide rehabilitation. • reduce poverty. • equalisation of opportunities. • promote the inclusion of persons with disabilities in their communities.

Lecture 19: Health of People with Disabilities

Quality of life (QOL):

Everyone can define it differently making it challenging to measure.

Key domains of overall quality of life:

Health (important domain)	Jobs	Housing	Schools
The neighborhood	Cultures	Values	Spirituality

Quality of life is affected by:

- The person's physical health.
- Psychological state.
- Personal beliefs.
- Social relationships.
- The person's relationship with environment.

Health-related quality of life (HRQOL):

Levels:

a. Individual level:
   Physical and mental health perceptions and their correlates (health risks and conditions, functional status, social support, and socioeconomic status).

b. Community level:
   Community-level resources, conditions, policies, and practices (that influence health perceptions and functional status).

The importance of tracking (measuring) HRQOL:

- **Determining the burden** of preventable diseases, injuries, and disabilities, and provide valuable insights into the relationships between HRQOL and risk factors.
- Help **monitor progress** in achieving the nation's health objectives.

Lecture 19: Health of People with Disabilities

Spectrum of health:

- The **lowest point** on the health-disease spectrum is death.
- The **highest point** corresponds to the WHO definition of positive health.

The transition from optimum health to ill-health is often gradual.

Disability:

Disability is part of the human condition and almost everyone will be affected by it at some point.

The most common causes of disabilities in KSA are congenital, metabolic, traumatic.

Models:

1. **Medical model**: an individual (medical perspective).
2. **Social model**: Structural (social perspective).

- Disability should be viewed neither as purely medical nor as purely social.

Environment:

- Inaccessible environments create disability by creating barriers to participation and inclusion.

Examples of the negative impact of the environment:

- A Deaf individual without a sign language interpreter.
- A wheelchair user in a building without an accessible bathroom or elevator.
- A blind person using a computer without screen-reading software.

Lecture 19: Health of People with Disabilities

The International Classification of Functioning, Disability and Health (ICF):

- advanced the understanding and measurement of disability
- The ICF emphasizes environmental factors in creating disability, which is the main difference between this new classification and the previous International Classification of Impairments, Disabilities, and Handicaps (ICIDH).

Strengths of ICF:

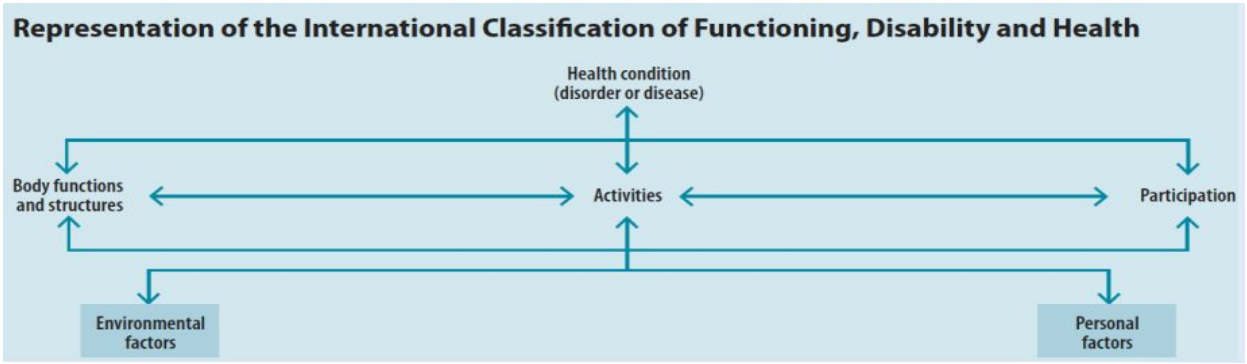
Covers all human functioning and treats disability as a continuum (spectrum) rather than categorizing people with disabilities as a separate group.

Problems with human functioning:

categorized in three interconnected areas:

1. **Impairments** are problems in body function or alterations in body structure (e.g. paralysis or blindness).
2. **Activity limitations** are difficulties in executing activities (e.g. walking or eating).
3. **Participation restrictions** are problems with involvement in any area of life (e.g. facing discrimination in employment or transportation).

Disability refers to difficulties encountered in any or all three areas of functioning.



Environmental factors describe the world in which people with different levels of functioning must live and act. Either facilitators of barriers. It includes: • products and technology • the natural and built environment • support and relationships • attitudes • services, systems, and policies.	**Personal factors** (e.g.motivation and self-esteem) influence participation in society. It further distinguishes between a **person's capacities** to perform actions and the **actual performance** of those actions in real life.

Lecture 19: Health of People with Disabilities

Main Health conditions associated with disability:

Individuals with disability are more likely to report:

- Poorer overall health.
- Less access to adequate health care.
- Smoking and physical inactivity.

People with disabilities often are at greater risk for health problems that can be prevented.

As a result of having a specific type of disability, other physical or mental health conditions can occur.

Secondary conditions include:			
Bowel or bladder problems	Mental health and depression		Injury
Overweight and obesity	Fatigue	Pain	Pressure sores or ulcers

The disabling barriers:

1. Inadequate policies and standards (policies that don't consider people with disability or not enforced).
2. Negative attitudes (negative ideas about disability).
3. Lack of provision of services (e.g. health care, rehabilitation).
4. Problems with service delivery (services with poor quality).
5. Inadequate funding (inadequate resources for implementing policies and plans).
6. Lack of accessibility (e.g. lack of access to transportation).
7. Lack of consultation and involvement (excluded from decision making in matters directly affecting their lives).

Prevention:

Prevention of health conditions associated with disability is a development issue.

Attention to environmental factors can greatly reduce the incidence of health conditions leading to disability.

Preventing disability should be regarded as a multidimensional strategy that includes:

- prevention of disabling barriers
- prevention and treatment of underlying health conditions.

Next Lecture

Lecture 20: Geriatric Health

Introduction:

- Gerontology - the study of the physical and psychological changes which are incident to old age.
- Geriatrics - the care of the aged is called clinical gerontology or geriatrics.

What is the difference between geriatrics & gerontology?
-Geriatric (طب الشيخوخة) = conditions or health status of people at the old-age group
- Gerontology (علم الشيخوخة) = the science that deals w/ all aspects related to people in the old-age group, including physiological changes / social life/ behavioral changes.

CLASSIFICATION OF ELDERLY POPULATION:

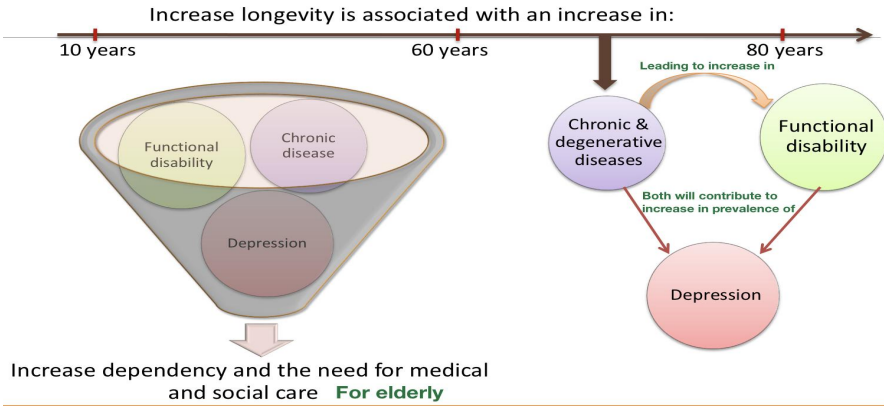
- **Classified into:**

1-Young old (60 to less than 75 years) 2-Old (75 years to less than 85 years)

3- Oldest old (85 years and above)

4-Frail elderly (above 60 years with cognitive impairment or a disability)

EFFECTS OF AGEING



It is not all about the occurrence of chronic diseases. The psychological effects on the elderly as they are becoming inactive, unable of doing their daily activities & more dependent on others would deteriorate their medical conditions.

PROBLEMS OF THE ELDERLY All the problems are related to each other

PHYSICAL PROBLEMS	MENTAL PROBLEMS	SOCIAL PROBLEMS
Chronic/degenerative diseases	Cognitive impairment : (Dementia)	Low social contact Due to previous factors. They think they are worthless
Nutrition problems	Psychological problems: (Depression)	Low social involvement
Impairment of special senses		Decrease income
Unintentional injuries **Such as falls**		Unsuitable living conditions
Deterioration of functional abilities		
Polypharmacy		

Lecture 20: Geriatric Health

GLOBAL CHALLENGES FACING THE INCREASE IN THE ELDERLY POPULATION:

- Strains on the social security systems;
- Demands for health care and social services;
- Needs for trained-health workforce in gerontology;
- Needs for long-term care, particularly for dementia; and
- Counteract pervasive ageism that denies older people the rights and opportunities available for other adults.

Health Problems (cont.)

Physical and mental health problems among the elderly are characterized by:

1. Insidious onset (Progressive onset) **2.** Multitude of ailments. **3.** Rapid deterioration

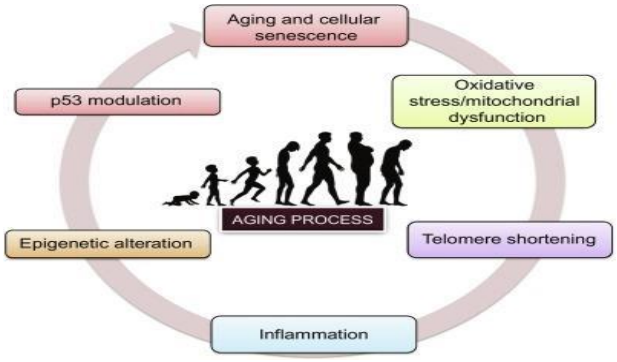
Multiple conditions arise at the same time (can be combination of physical/social/mental factors)

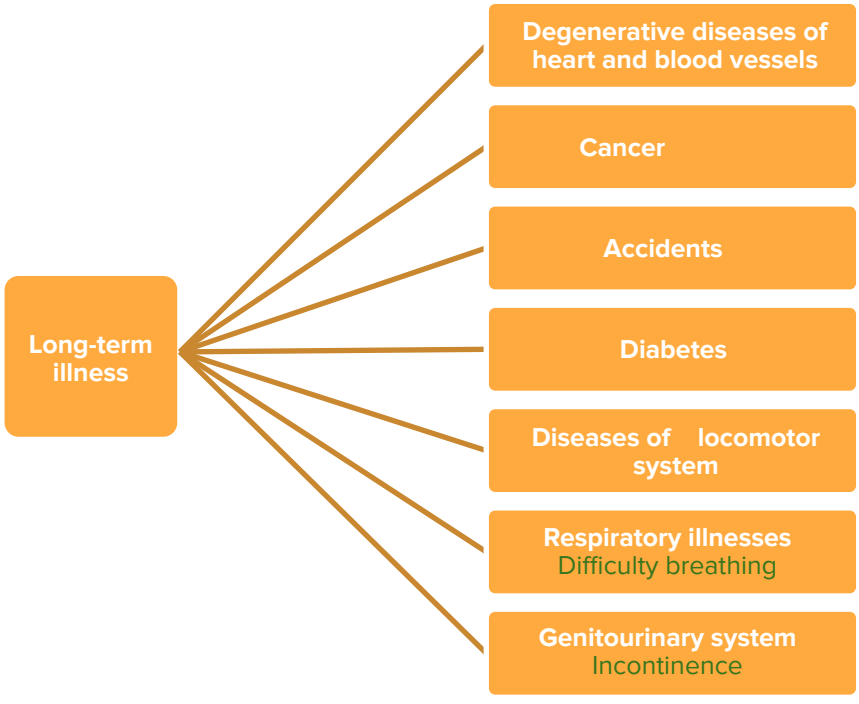
Physiological aging

Senescence - Deterioration in the vitality or the lowering of the biological efficiency that accompanies ageing: Degenerative diseases are secondary to physiological aging

1-Senile cataract. **2-**Glaucoma. **3-**Nerve deafness. **4-**Osteoporosis affecting mobility.

5-Emphysema. **6-**Failure of special senses **7-**Changes in mental outlook. **8-**Others.





Psychological problems:

1. MENTAL CHANGES. **2.** SEXUAL ADJUSTMENT. **3**. EMOTIONAL DISORDERS.

Lecture 20: Geriatric Health

NUTRITION PROBLEM:

Primary malnutrition	Secondary malnutrition	Overweight and obesity
Reduced intake due to social or economic reasons. Examples: reduced intake secondary to depression Financial issues after retirement	Excess loss and reduced absorption **Secondary to aging**	imbalance between intake and expenditure of energy

POLYPHARMACY:

It's defined as taken more than 5 drugs at a time including:

1-Prescribed medications. **2-**Over the counter medications. **3-**Herbal treatment

Polypharmacy is the result of :

- Presence of multitude of diseases. -Physician's aim to control physical problems.
- For instance: when a physician describes a drug for cholesterol to decrease the risk of coronary artery.
- diseases even if the patient is NOT diagnosed with hyperlipidemia.

Polypharmacy may have adverse health effects on the elderly in the form of side effects and drug interaction.

IMPAIRED SPECIAL SENSES:

- **Vision impairment**
  1. Cataract
  2. Corneal opacity
  3. Macular degeneration
- **Hearing impairment**
- **Deterioration of smell**

→

- Increase dependence on others
- Psychological problems (frustration of not hearing others)
- Social isolation
- Increase rate of unintentional injuries

UNINTENTIONAL INJURIES:

- **Mostly falls in the elderly own home**
- **Less likely falls outside the home**
  - Risk assessment for falls has decreased the incidence of the condition.

Resulting in increased risk of →

- Fractures
- Being bed bound
- Slow recovery
- Unable to regain their status
- Increase dependency
- Especially head of femur fracture & worsened if the patient is diabetic

Lecture 20: Geriatric Health

INSTRUMENTAL ACTIVITIES OF DAILY LIVING:

Reflects the abilities of the elderly to live independently. It includes:

Housekeeping	Shopping.	Cooking.	Use of transportation.
Use of telephone.	Dealing with money.	Taking medications.	

- It is important that they do their own needs & be independent long as they are capable.
- This would result in a positive psychological impact on them.

ACTIVITIES OF DAILY LIVING:

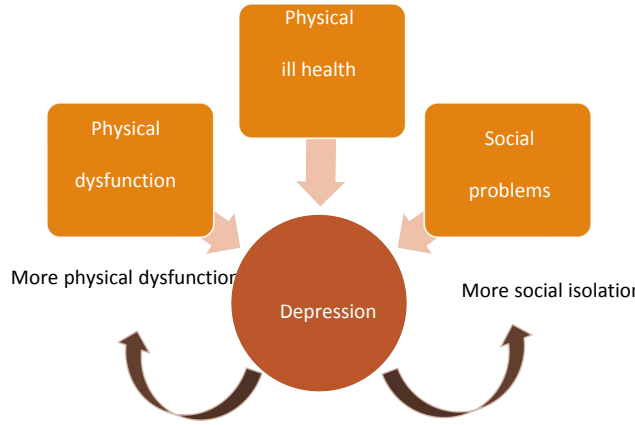
Reflects the abilities of the elderly for self-care. It includes:

Bathing	Dressing	Grooming (appearance)	Feeding
Continence (control urine & stool)	Ambulating (moving about)	Transfer (moving inside the house)	

DEPRESSION:

- Commonest psychological disorder among the elderly
- Insidious onset and progressive course
- Often not recognized by the elderly or the caregivers
- Manifested by executive dysfunction

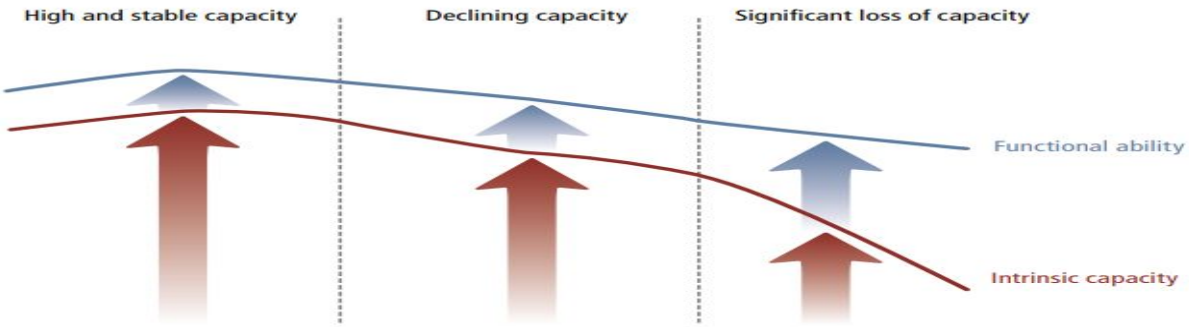
- It can be secondary due to other conditions
- Can be precipitated by being inactive, on Polypharmacy or isolation from community.



CARE FOR THE ELDERLY:

- **The aim of the elderly care is:** The care is provided from multiple levels Hospital, family & community
  - Promote healthy ageing; growing old and delaying ill-health
  - Provide a comprehensive care at the PHC for early detection and treatment of physical and mental health problems
  - Provide a social support to ensure a decent and safe living
  - Establish long and short term community based services to provide care for the elderly and alleviate tension on the family

Framework for Healthy Ageing



we try to increase the functional ability (that declines with aging) & intrinsic capacity to perform their activities

Lecture 20: Geriatric Health

PROMOTE HEALTHY AGEING:

Promoting healthy ageing has its roots in adopting a healthy lifestyle through the lifespan including:

Maintaining acceptable level of physical activity	Adherence to a healthy diet	Healthy weight
Avoid the use of any tobacco products	Avoid the use of alcohol	Social activities

EARLY DETECTION AND MANAGEMENT:

Comprehensive health assessment of the elderly at PHC to screen for major health problems through:

1.History: Medical problems, Unintentional injuries, Medications.

2.Use of standardized tools for the screening for:

Nutrition problems, Hearing impairment, Incontinence, Functional abilities, depression, dementia.

SOCIAL EVALUATION AND SUPPORT:

-These need to be asked in elderly but may not in young patients & It is a very important part in history taking

- Social contact. (living in a family, presence of caregiver...etc)
- Social activities. (having a profession, friends, hobbies...etc)
- Living conditions. (comfort and safety in the house)
- Economic status. (tangible wealth, monthly income)

COMMUNITY-BASED SERVICES:

- Elderly day care centers: Elderly clubs to maintain social interaction.
- Elderly day health centers: Day hospitals for elderly who need nursing care.
- Home services: Provide social and nursing services to elderly in their own homes.
- Residential or institutional care.
- Elderly homes (long term care for elderly who can't live independently in their own homes).
- Nursing homes (long term care for elderly with health problems requiring continuous medical and nursing care).

★ The **main objective of the "elderly health program"** as recommended by the World health Organization (WHO) is **to preserve functional abilities.**

★ The **main cause of disability adjusted life years (DALYs)** among people aged 70 years and older in Saudi Arabia is **Ischemic Heart Disease**

Next Lecture

Lecture 21: Maternal Health

Maternal health

Definition:
Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period.

Facts:
- Maternal mortality is higher in women living in rural areas and among poorer communities.
- Young adolescents face a higher risk of complications and death as a result of pregnancy than other women.
- Skilled care before, during and after childbirth can save the lives of women and newborn babies.

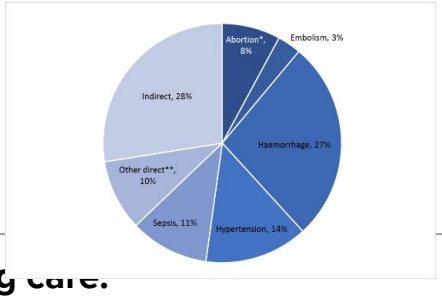
Maternal death (death of women while pregnant) accidental causes of death not classified as maternal death

Why women die (Maternal mortality fell by almost half between 1990 and 2015)

Major complication account for 75% of all maternal deaths:

1. severe bleeding (mostly bleeding after childbirth)
2. infections (usually after childbirth)
3. high blood pressure during pregnancy (pre-eclampsia and
4. eclampsia)
5. complications from delivery
6. unsafe abortion

Other: malaria ,AIDS, during pregnancy



Delay in decision to seek care:
- Lack of understanding of complications
- Acceptance of maternal death
- Low status of women
- Socio-cultural barriers to seeking care

Delay in reaching care:
Mountains, islands, rivers — poor organization

Delay in receiving care:
- Supplies, personnel
- Poorly trained personnel with punitive attitude
- Finances

Lecture 21: Maternal Health

Maternal mortality indicator		
Maternal mortality ratio: Number of maternal death per live births Maternal death/live birth	**Maternal mortality rate:** Number of maternal death in given period per population of women in reproductive age Maternal deaths/ women in rep age	**Lifetime risk of maternal mortality** = (N of maternal deaths over the reproductive life span) / (women entering the reproductive period) **Proportion maternal = proportion of all female deaths due to maternal causes** = (N of maternal deaths in a period/Number of all female deaths in same period) * 100

Successful Interventions for Maternal Care

Antenatal care:

- Nutrition support
- Personal hygiene, dental care, rest (2 hrs) and sleep (8 hrs), regular bowel habits..enough fiber and fruit intake...avoid constipation
- Immunization (mother and the newborn)
- Drugs; thalidomide (deformed hands), corticosteroids (impair fetal growth), streptomycin (8th nerve damage)
- Education on delivery and care of the newborn
- Identifying high risk pregnancies, smoking and exposure to passive smoking
- Emphasizing on ANC visits and maintenance of AN card
- Importance and management of lactation

Why is ANC is critical?

- Reduces complications from pregnancy and childbirth
- Reduces stillbirths and perinatal deaths
- Integrated care delivery throughout pregnancy

Lecture 21: Maternal Health

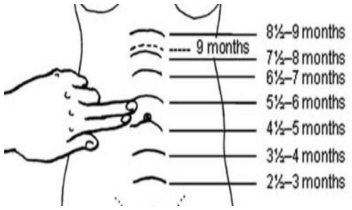
Antenatal care

History (first visit)
- Confirm the pregnancy
- Any previous complications (abortions, stillbirths)
- Calculate LMP (add 9 months and 7 days to the first day of menstruation)
- Record symptoms
- Any concurrent illness; asthma, heart disease, jaundice, HTN, DM,
- Family history of twins, congenital malformations
- History of drug allergies, or drugs

Physical exam:
- General physical; pallor, pulse , respiratory rate edema (slight edema is normal, if co-existent with any diseases eg HTN, referral)
- BP (every visit)
- Urine +2 albumin

High BP + albuminuria = preeclampsia ---refer
- Weight ; 9-11 kg during pregnancy. Approx. 2 kg /month
- Breast exam

Abdominal exam:
Fundal height



Assessment of gestational age:
- Routine US + LMP (history)
- Lab investigations:

Pregnac test, Hb estimation, Urine for albumin and sugar, blood grouping, Rh factor, VDRL, HIV testing, Blood sugar, HBsAg for Hep B

Ultrasound:
- Fetal assessment:

One ultrasound scan before 24 weeks of gestation (early ultrasound)
is recommended for pregnant women to estimate gestational age

Antenatal care counseling:
- Nutritional recommendations:

Daily oral iron and folic acid supplementation with 30 mg to 60 mg of
elemental iron and 400 µg (0.4 mg) of folic acid is recommended for
pregnant women to prevent maternal anaemia, puerperal sepsis, low
birth weight, and preterm birth

Antenatal care:
- Maternal assessment:

Hyperglycaemia first detected at any time during pregnancy should be classified as either gestational diabetes mellitus (GDM) or diabetes mellitus in pregnancy.

Preventive services:
- A seven-day antibiotic regimen is recommended for all pregnant women with asymptomatic bacteriuria
- Tetanus toxoid vaccination is recommended for all pregnant women.

Lecture 21: Maternal Health

Tetanus Vaccine

Table 2 Guidelines for tetanus toxoid immunization of women who were immunized during infancy, childhood or adolescence[b]

Age at last vaccination	Previous immunizations (based on written records)	Recommended Immunizations	
		At present contact/pregnancy	Later (at intervals of at least one year)
Infancy	3 DTP	2 doses of TT/Td (min.4 weeks interval between doses)	1 dose of TT/Td
Childhood	4 DTP	1 dose of TT/Td	1 dose of TT/Td
School age	3 DTP + 1 DT/Td	1 dose of TT/Td	1 dose of TT/Td
School age	4 DTP + 1 DT/Td	1 dose of TT/Td	None
Adolescence	4 DTP + 1 DT at 4-6 yrs + 1 TT/Td at 14-16 yrs	None	None

[b] Adapted from: Galazka AM. *The immunological basis for immunization series. Module 3: tetanus.* Geneva, World Health Organization, 1993 (WHO/EPI/GEN/93.13), page 17.

Table 1 Tetanus toxoid immunization schedule for women of childbearing age and pregnant women without previous exposure to TT, Td or DTP[a]

Dose of TT or Td (according to card or history)	When to give	Expected duration of protection
1	At first contact or as early as possible in pregnancy	None
2	At least 4 weeks after TT1	1-3 years
3	At least 6 months after TT2 or during subsequent pregnancy	At least 5 years
4	At least one year after TT3 or during subsequent pregnancy	At least 10 years
5	At least one year after TT4 or during subsequent pregnancy	For all childbearing age years and possibly longer

[a] Source: *Core information for the development of immunization policy. 2002 update.* Geneva. World Health Organization, 2002 (document WHO/V&B/02.28), page 130.

Common physiological symptoms

Ginger, chamomile, vitamin B6 and/or acupuncture are recommended for the relief of nausea in early pregnancy, Advice on diet and lifestyle is recommended to prevent and relieve heartburn in pregnancy	Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy, Regular exercise throughout pregnancy is recommended to prevent low back and pelvic pain.
Wheat bran or other fibre supplements can be used to relieve constipation in pregnancy if the condition fails to respond to dietary modification,	Non-pharmacological options, such as compression stockings, leg elevation and water immersion, can be used for the management of varicose veins and oedema in pregnancy, based on a woman's preferences and available options.

Q: You are asked to train the health care providers in your area on the benefits of breastfeeding

What is the duration of exclusive breastfeeding as recommended by WHO

A: 6 months

Q: What are the 4 pillars of the WHO model for safe motherhood?

A: 1- Clean and safe delivery 2-Essential Obstetric care 3-Antenatal care 4-Family planning

Q: What is the recommended vaccine for pregnant women?

A: tetanus

Q: What is the major cause of maternal death worldwide?

A: Hemorrhage

Q: What of the following is the definition for the maternal mortality ratio?

A:Number of maternal deaths per live births

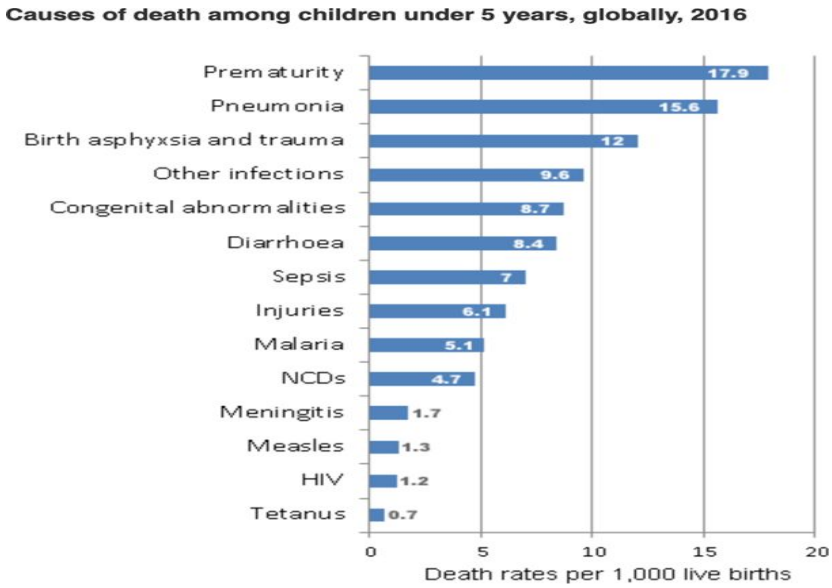
Next Lecture

Lecture 22: Global Adolescents & Child Health

What are the main health problems of adolescents and children?

Top causes of illness and disability

1. Depression
2. Road traffic injuries
3. Anaemia
4. HIV/AIDS
5. Self-harm
6. Back and neck pain
7. Diarrhoea
8. Anxiety disorders
9. Asthma
10. Lower respiratory infections



Prematurity is the leading cause of death in neonates

Pregnancy and childbirth complications are the leading cause of death among 15-19 years old girls

WHO recommendations:

1- stop child early and forced marriage

2- provide comprehensive sexuality education

3- information,counselling and services for the full range of safe, effective, accessible and affordable contraceptive methods

4- pre pregnancy,pregnancy, birth, post pregnancy safe abortion (where legal) and post abortion care. The mother is young and there is so much responsibility for her and she doesn't know how to deal with the baby, so she needs a lot of support. Risk for baby: babies which are born to mothers at a young age are at higher risk of dying because of nutrition deficiencies.

Emerging Issues in child health:

congenital anomalies ,Injuries, Non-communicable diseases (chronic respiratory diseases, acquired heart diseases, childhood cancers, diabetes, and obesity)

Lecture 22: Global Adolescents & Child Health

Global response:

- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births

Indicators of Child Health: to compare globally

Stillbirth mortality rate: 28th week of gestation - birth

Perinatal mortality rate: 28th week of gestation - 7th day antenatal care is most important in bringing down perinatal mortality rate

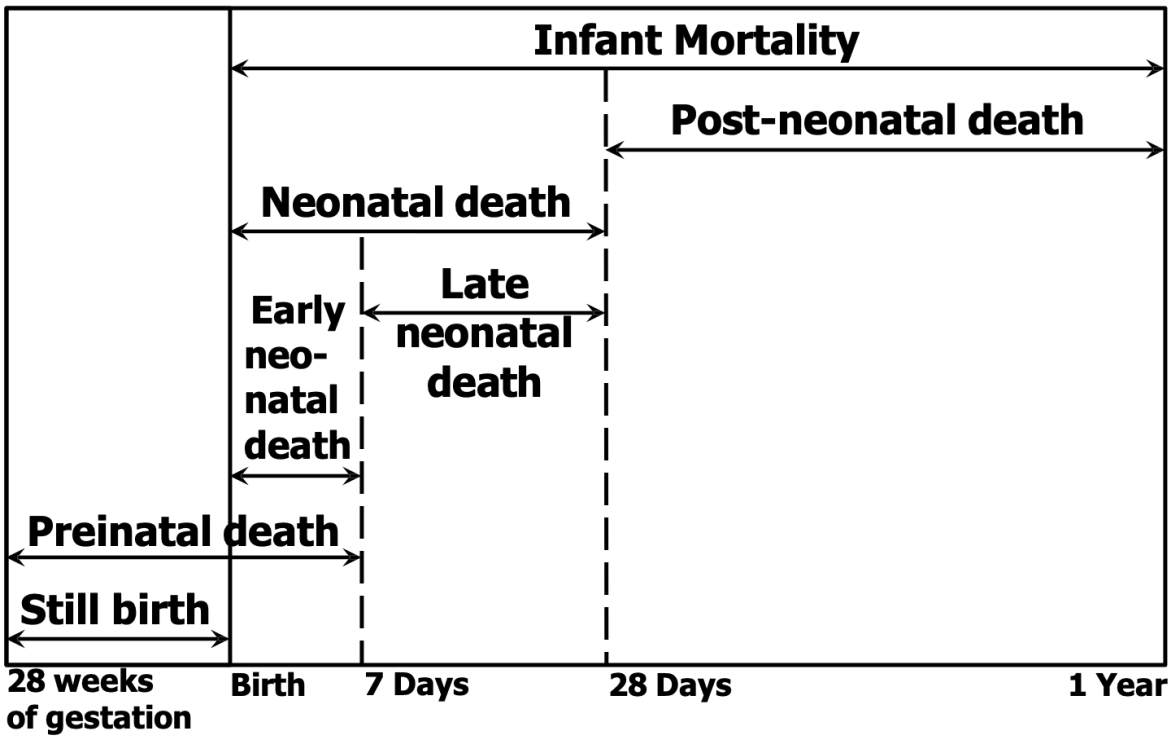
Neonatal mortality rate: early neonatal: birth - 7th day / late: 7th day -28th day

Post neonatal mortality rate : 28th day - 1 year

Infant mortality rate :less than 1 year

Under 5 mortality rate

Mortality in and around infancy: why do we take the 28th week as a cut-off point? because if the baby is taken off the womb he can survive (so they're viable)



Lecture 22: Global Adolescents & Child Health

Breastfeeding recommendations:

Early initiation of breastfeeding within 1 hour of birth

Delaying breastfeeding for 2-23 hours increase the risk of death 1.3 times,waiting 1 day or more increase the risk of dying 2 times.

Exclusive breastfeeding for the first 6 months of life

Introduction of nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond

Globally, only 2 out of 5 newborns are put to the breast within the first hour of life

Breastfeeding benefits:

For the baby	For the mother
Decrease : •bacteremia •diarrhea •respiratory tract infection •necrotizing enterocolitis •otitis media •urinary tract infection •late-onset sepsis in preterm infants •type 1 and type 2 diabetes •lymphoma, leukemia, and Hodgkin's disease •childhood overweight and obesity	•decreased postpartum bleeding and more rapid uterine involution •decreased menstrual blood loss and increased child spacing (lactational amenorrhea) •earlier return to pre-pregnancy weight •decreased risk of breast and ovarian cancers

Next Lecture

Lecture 23: Global Mental Health

Mental Health:

“the capacity in an individual to form harmonious relations with others, and to participate in, or contribute constructively to, changes in his social and physical environment“

Causes and contributing factor:

1- organic ➔ neoplasms, neurological diseases, endocrine disease.

2- hereditary **3- social** ➔ emotional stress, broken home, economic insecurity

4-environmental ➔ - Toxic substance: lead compound, Trauma
Psychotropic drugs: barbiturates, alcohol

Drug abuse and dependence:

- **Drug abuse** ➔ self administration of drug for non medical reasons, in quantities and frequencies which may impair an individual's ability to function effectively.
- **Drug dependence** ➔ a state, psychic and sometimes also physical, resulting from interaction between a living organism and a drug, characterized by behavioral and other responses that always include a compulsion to take the drug on a continuous or periodic basis in order to experience its psychic effects and sometimes to avoid the discomfort.

Drug	Psychic dependence	Physical dependence
amphetamines	×	
Barbiturates	×	×
cannabis	×	
Heroin	×	× fast
Lysergic acid diethylamide	×	
Alcohol	×	× slow
Tobacco	×	×

Lecture 23: Global Mental Health

Stigma:

A mark of shame, disgrace or disapproval which results in an individual being shunned or rejected by others.

Stigma leads to:

- **Rejection** by friends. Relatives, neighbors and employers.
- **In-equal** participation in familylife, normal social m networks and productive employment.
- Detriment effect on a mentally ill persons recovery, ability to find access to service, the type of treatment and level of support received and acceptance in the community.
- Family and caretakers isolation and humiliation.

How to reduce stigma:

- Openly talking about mental illness in community
- Provide accurate information
- Countering the negative stereotypes and misconceptions
- Providing support and treatment services
- Ensuring the existence of legislation to reduce discrimination in workplace, in access to health and social community services.

Resiliency: Acquire coping skills

- ## WHO recommends redirecting mental health funds to community-based services:

1- Integration of mental health into general health care settings to deliver a professional care

2- Improves access and cost-effectiveness

Lecture 23: Global Mental Health

“Prevention of mental illness”

Primary prevention:

1- community based

2- improving the: social environment, living condition, public mental health education health and welfare resources

increase self-estimate and coping skills

Drug abuse is greatly preventable at the primary prevention

Secondary prevention:

screening program in schools, universities, industry, recreation centers

Tertiary prevention:

1- seek to reduce the duration of mental illness

2-prevent further break down and disruption

3- mental health services:

- diagnosis and treatment
- rehabilitation , group and individual psychotherapy
- mental health education
- psychoactive drugs
- after care services (ex : social care m employment services)

Next Lecture

Lecture 24: International Health Regulations

Why have IHR?

IHR's latest update → 2015

- Globalisation - problem in one location is everybody's headache.
- Serious and unusual disease events are inevitable.

International health regulations

- An **international legal instrument** that is binding on **196 countries** across the globe, including all the Member States of WHO.
- Require countries to **report certain disease** outbreaks and public health events to WHO.
- This legally-binding agreement significantly contributes to global public health security.
- Through IHR, countries have agreed to **build their capacities to detect, assess and report public health events.**
- WHO plays the coordinating role in IHR and helps countries to build capacities.
- IHR also includes **specific measures at ports, airports and ground crossings**
  - ❏ to limit the spread of health risks to neighboring countries
  - ❏ to prevent unwarranted travel and trade restrictions so that traffic and trade disruption is kept to a minimum.

Aims of IHR

Why IHR is needed?	• To prevent, protect against, control and provide a public health response to the international spread of diseases • Restricted to public health risks, and which avoid unnecessary interference with international traffic and trade
What's new?	• **From three diseases to all public health threats** • From **preset measures** to **adapted response** • From **control of borders** to, also, **containment at source**
All public health threats	• IHR recognize that international disease threats have increased • Scope has been **expanded** from **cholera, plague and yellow fever** to **all public health emergencies of international concern** • They include those caused by **infectious diseases, chemical agents, radioactive materials and contaminated food**

Lecture 24: International Health Regulations

Strategies globally adopted to control public health related diseases	
What do the IHR call for?	• **Strengthened national capacity** for surveillance and control, including in travel and transport • **Prevention, alert and response** to international public health emergencies • **Global partnership** and international collaboration • **Rights, obligations and procedures**, and progress monitoring
Acute public health threats are collectively managed	• The IHR define a risk management process where States Parties work together, coordinated by WHO, to collectively **manage acute public health risks.** • The key functions of this global system, for States and WHO, are to: o detect o verify o assess o inform o assist
IHR Actions	• **Timely** and enhanced epidemic intelligence • **Real-time exchange of situational reports** and other data for decision-making • Enhanced **information management** and risk communications • Joint **risk analysis** and decision support • Action planning and coordination of response activities • Technical partnerships to support international health security.
Containment at source	• **Rapid response at the source is:** ❑ The most effective way to secure maximum protection against international spread of diseases ❑ Key to limiting unnecessary health-based restrictions on trade and travel
Importance of national capacity	• The best way to prevent international spread of diseases is to detect public health events early and implement effective response actions when the problem is small • Early detection of unusual disease events by effective national surveillance (both disease and event based) • Systems to ensure response (investigation, control measures) at all levels (local, regional, and national) • Routine measures and emergency response at ports, airports and ground crossings.

Lecture 24: International Health Regulations

Strategies globally adopted to control public health related diseases (cont.)

Core capacity requirements for designated points of entry (PoE)

PoE Core capacity requirements at all times (routine) :

a. Assessment and Medical care, staff & equipment.
b. Equipment & personnel for transport ill travelers.
c. Trained personnel for inspection of conveyances.
d. Ensure save environment: water, food, waste, wash rooms & other potential risk areas - inspection programmes.
e. Trained staff and programme for vector control.

PoE Capacity requirements for responding to potential PHEIC (emergency):

a. Public Health Emergency Contingency plan: coordinator, contact points for relevant PoE, PH & other agencies.
b. Provide assessment & care for affected travellers, animals: arrangements with medical, veterinary facilities for isolation, treatment & other services.
c. Provide space, separate from other travellers to interview suspect or affected persons.
d. Provide for assessment, quarantine of suspect or affected travelers.
e. To apply recommended measures, disinsect, disinfect, decontaminate.
f. To apply entry/exit control for passengers.
g. Provide access to required equipment, personnel with protection gear for transfer of travellers with infection/contamination.

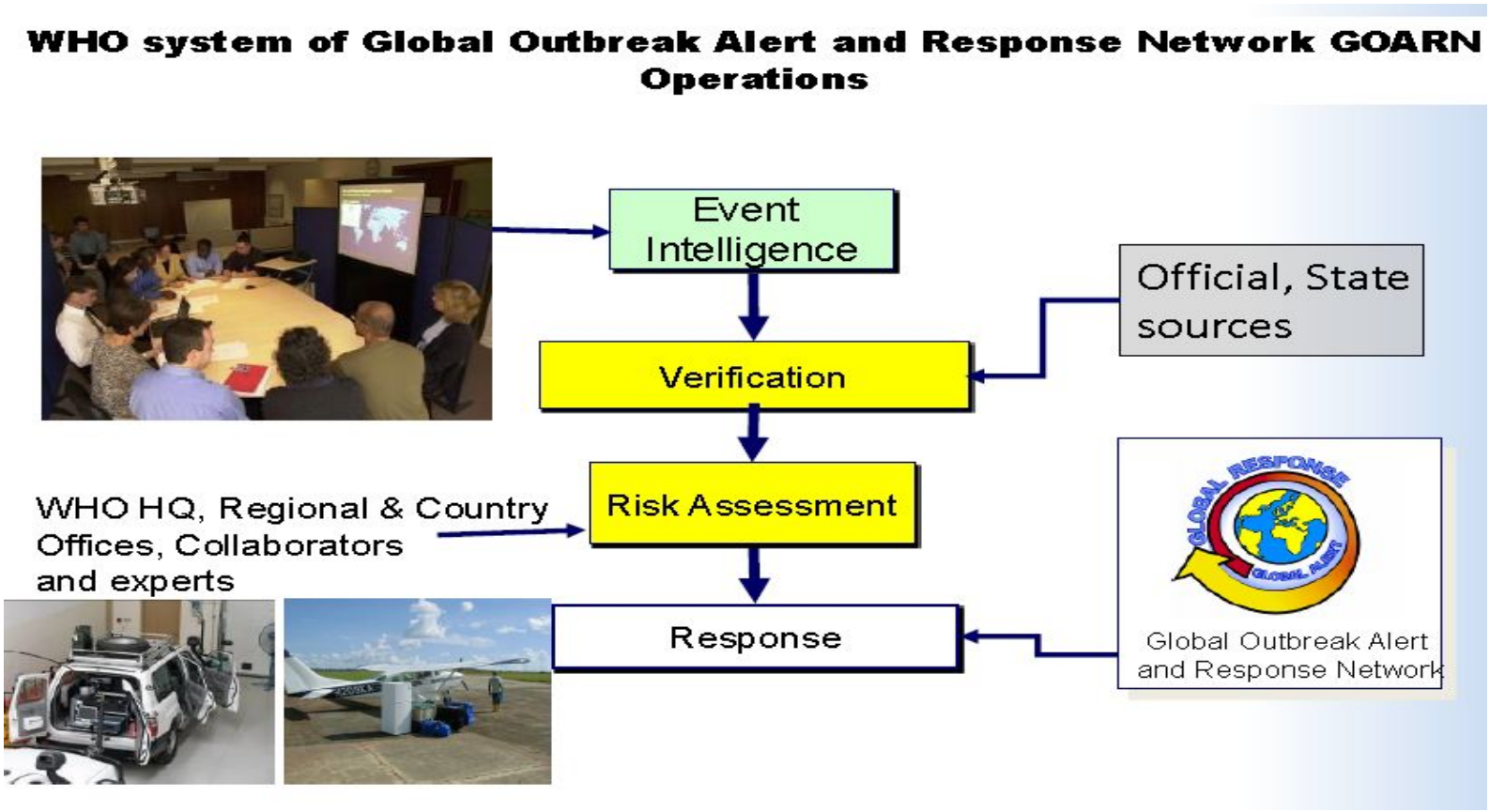
Some principle approaches

Continuous risks

- **Routine measures in place:**
  - "sanitary conditions" at points of entry and conveyances
  - travelers, goods etc.
- **Specific measures for certain known risks in place:**
  - Vector control, vaccination
  - Standing recommendation

Sudden increase in risk

- **Detection:**
  - information & verification
  - notification
  - risk assessment
- **Response:**
  - Support to investigation and control
  - Information and recommendations



IHR Challenges:

Countries' challenges for IHR implementation:

- Mobilize resources and develop national action plans
- Strengthen national capacities in alert and response
- Strengthen capacity at ports, airports, and ground crossings
- Maintaining strong threat-specific readiness for known diseases/risks
- Rapidly notify WHO of acute public health risks
- Sustain international and intersectoral collaboration
- Monitor progress of IHR implementation

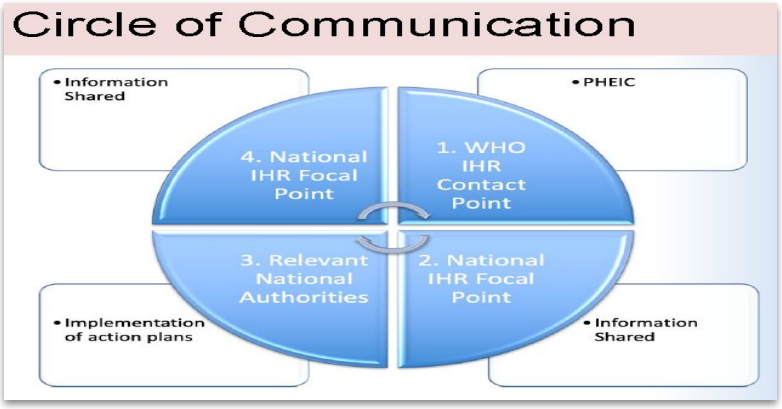
Lecture 24: International Health Regulations

IHR in Saudi context: Case study

- During Hajj Season of 2014, the country was subjected to the risk of Ebola Virus Disease outbreak
- What was the action plan conducted under the IHR?
    - The disease was announced to be endemic in west African countries.
    - A localised spread of the virus was announced in certain areas of Nigeria.
    - This announcement indicated a **Public Health Event of International Concern (PHEIC).**
    - Saudi Arabia was informed about this PHEIC through the **National IHR Focal Point.**
    - The National IHR Focal Point in Saudi Arabia was a representative of the **Saudi Ministry of Health.**

How does The National IHR Focal Point in Saudi Arabia receive information from the WHO?

Through the WHO IHR Contact Points (EMRO IHR contact point.)



A) The Information components:

1. surveillance, notification, consultation, verification, and information sharing at the endemic countries with EVD.
2. Announcement of the PHEIC with state parties.
3. Sharing of relevant public health knowledge about EVD with state parties.

B) Action plan at endemic countries:

1. Application of prevention and control measures in endemic countries.
2. Application of exit screening measures at Points of Entry.
3. Information sharing with state parties.

C) Action plan at Saudi Arabia:

1. **Restriction of entry of citizens of affected countries.** (the most effective)
2. Application of entry screening measures.
3. Information sharing with relevant local authorities.
4. Assessment of the established capacity:
5. Transportation system adherence to the IHR guidelines.
6. Maintenance of core capacities at **designated Points of Entry in Saudi Arabia.**

- Development of Public health Emergency Contingency Plans at Points of Entry.
- Plan trials, monitoring and evaluation.

Next Lecture

Lecture 25: Travel Medicine

Travel medicine:

Seeks to prevent illnesses and injuries occurring to travelers going abroad, Refugee and migrant health.

Concerns :

- International travel carries a risk for travelers, community of origin and community of destination
- The risk for travelers includes diseases, injuries and death.

Types of travelers:

- Tourists
- VFRs (visiting friends and relations)
- Business travellers
- Migrant workers
- Pilgrims
- Refugees
- Expatriates
- Students

Special populations:

- Elderly travellers
- Infants and children
- Pregnant women
- Travellers with chronic diseases
- Travellers with disability
- Immunocompromised traveller

Special itineraries:

- Cruise ship travel
- Extreme travel

- Diving
- Mass gatherings (eg. The Hajj)

- Extended stay
- Wilderness/remote regions

Risk depends on destination

Components of travel medicine:

- Pre-travel
- During travel
- Post-travel

Lecture 25: Travel Medicine

<table>
<tr><th colspan="3">Pre-travel consultation: (4-6 weeks before departure)</th></tr>
<tr><td rowspan="6">Risk assessment (potential hazards)</td><th>Information about travelers</th><th>Information about trip</th></tr>
<tr><td>Age and sex</td><td>destination</td></tr>
<tr><td>Medical history</td><td>Length of stay</td></tr>
<tr><td>medications</td><td>Mode of transport</td></tr>
<tr><td>allergies</td><td>Purpose of trip</td></tr>
<tr><td>Immunization history</td><td>Financial budget and insurance</td></tr>
<tr><td>Special health needs</td><td>Health care in destination</td></tr>
<tr><td>Risk management (advice to reduce exposure to health risks)</td><td colspan="2">• Food and water safety and hand hygiene
• Insect bite prevention
• Immunization
• Malaria prevention
• Personal safety (RTA, fall, drowning, fire, robbery, STD)
• Environmental risks (sun exposure, heat, high altitude, motion sickness, DVT)
• Travelers with special needs (chronic disease, children, pregnant)
• Traveler’s medical insurance</td></tr>
<tr><td colspan="3">Service delivery: immunization, prophylaxis or self-medications</td></tr>
<tr><td colspan="3">Empower traveler to manage his health</td></tr>
</table>

Unintentional and intentional injuries:

- Road traffic injuries
- Interpersonal violence
- Injury in recreational water
- Animal bites (domestic and wild animals
- Falls (unintentional)

Lecture 25: Travel Medicine

Required immunizations	
Yellow fever (International health regulation)	**Required** for travelers to a country under the international health regulations. **Recommended** for travelers to endemic area. (Brazil) • Live attenuated virus vaccine • Single subcutaneous Injection • Immunity starts after 10 days • Valid for 10 years **Not recommended for**: • Infants < 9 months • Immunocompromised patients • Pregnant women • Egg allergies • HIV-positive individuals

Meningococcal meningitis: by Saudi Arabia for Hajj and Umrah and seasonal workers	**Required** by Saudi government for Hajj or Umrah.
	
	Recommended for travelers to endemic areas
	
	• Quadrivalent polysaccharides or conjugated with diphtheria
	• Single dose (injection)
	
	• **Risk**:
	  ○ Sub-saharan Africa (seasonal)
	  ○ Saudi Arabia (Hajj)
	  ○ Crowded student dormitory situations
	• **Protection**:
	  ○ For 3-5 years in adults and older children
	  ○ Not effective for children below 2 years

Polio	• **Transmission**: contaminated food and water
	• Rare in travelers
	• **Prevention**:
	  1. Food, water & personal hygiene
	  2. Vaccination (injectable, oral)
	
	• **Polio in Saudi Arabia:**
	  ○ Proof of receipt of polio vaccine is **required** from travelers from endemic countries or countries vulnerable to infection or re-infection.
	  ○ Within the previous 12 months and at least 4 weeks prior to departure.
	  ○ All travelers from these countries will also receive 1 dose of OPV at border points on arrival in Saudi Arabia

Lecture 25: Travel Medicine

Recommended immunizations (according to risk):	
Hepatitis A, B	**A:** • Endemic in many developing countries • High mortality in elderly and pregnant women. • Prevention by food, water, personal hygiene and immunization • Two doses of inactivated vaccines (HAVRIX® or VAQTA®) • First dose: 70 – 85% develop antibodies within two weeks • Second dose: after 12 to 18 months leading 100% seroconversion • If traveling in <4 weeks after 1st dose: immune globulin should be administered at a different anatomic injection site Protection: • 14 – 20 years in children • 25 years among adults Recommended: • Travelers to the developing countries • 2 years and older
	B: • Transmission: Blood-borne, sexual contact • Prevention: Avoid risk factors, immunization • Recombinant vaccine given by intramuscular injection • Monovalent or combined with hepatitis A (for those ≥ 18 years) • Regular schedule: 0-, 1-, and 6-month with no booster dose Accelerated schedule for the combined vaccine only (FDA) • 0-, 7-, and 21- days • Booster dose at 1 year Recommended for travelers to endemic areas and travelers with special risk
Typhoid	• Transmission: by contaminated food and water • Prevention: food, water, personal hygiene and vaccination Live attenuated (Ty21a): • Oral vaccine • Four doses (One capsule on alternating days not with antibiotics) • Schedule should be completed at least one week before traveling • Booster every 5 – 7 years Vi capsular polysaccharide vaccine (ViCPS): • Single dose intramuscular injection • At least two weeks before traveling • Booster at 2 years intervals 1. Both vaccines are effective but differ in duration of immunity 2. Compliance may be a problem with oral vaccine 3. Recommended to travelers to developing countries

Lecture 25: Travel Medicine

Cholera	• Transmission by contaminated food or water • Rare in travelers • Prevention: food, water, Personal hygiene and Vaccination (oral) • Live attenuated oral vaccine • Result in 60–80% protection for 6 to 12 months • Not effective against serotype O139 (spread rapidly through Asia in mid 90s)
Poliomyelitis	--
Japanese encephalitis	• Transmission: by mosquito bite • Risk increases in travelers to rural Asia or long stay travelers. • Prevention: vector control and vaccination • Two available vaccines • Given as three doses: 0, 7 and 30 days • Accelerated schedule of two doses at 0 and 7 days (80% conversion) • The last dose should be at least 10 days before departure • Booster dose at 24 months if the risk continues Vaccine should be given at least 10 days prior to departure because of the possible serious adverse reactions
Rabies	• Transmission: animal bite or scratch • Risk: occupational , travel to rabies risk countries • Prevention; immunization, Preexposure, Post exposure and Immunoglobulin • Inactivated vaccine • Three doses on 0, 7, and 21 or 28 (intramuscular) Pre-exposure vaccine eliminates the need for rabies immunoglobulin (RIG) after exposure, but does not eliminate the need for additional post exposure rabies vaccinations.
Tick-borne encephalitis	Transmission by: 1. Ixodes sp. Ticks 2. Ingestion of unpasteurized dairy products • Rural forested areas of east and central Europe, Russia and parts of Asia • March – November Prevention: • Tick prevention • Avoidance of unpasteurized dairy products • Vaccination • Self check and removal ASAP (tweezers)

Lecture 25: Travel Medicine

Other vaccines	
Influenza:	The risk: • Risk of exposure to virus is throughout the year in tropical and subtropical areas • The attack rate is 1.2–2.8% in travelers of all age groups The vaccine: • Inactivated parenteral vaccine • live attenuated vaccine administered by nasal spray (for healthy persons 5–49 years) Recommended to travelers to: • tropics and subtropics at risk of serious related complications • Southern Hemisphere from April through September
Tuberculosis:	The vaccine: • BCG vaccine • Live attenuated • Single intradermal injection • Recommended to long stay in developing countries • Baseline tuberculin before travel with a follow up every 1 year
Other infections	
Zika virus:	• Transmission by mosquito bite • Risk to pregnant women which leads to microcephaly and other brain abnormalities • Prevention: preventing mosquito bites
Traveler's diarrhea:	Cause: • Bacterial (60-80% • Viral (10-20%) • Parasitic (5-10%) Prevention: • Wash It, Peel It*, Cook It, or Forget It • Only Drink Bottled Water • Wash hands frequently
Chemoprophylaxis (before, during and after traveling)	
Malaria: Details in lecture you should study them	Transmission by mosquito bite Prevention: • Awareness • Bite avoidance • Chemoprophylaxis • Diagnosis of febrile illness Fever in returned traveler is a medical emergency considered malaria until proven otherwise

Lecture 25: Travel Medicine

Post-Travel Care:

Post-travel checkup:

- Long term travelers
- Adventure travelers
- Expatriates in developing world

Post-travel care:

- Fever, chills, sweats
- Persistent diarrhea
- Weight loss

Travelers' responsibilities. Details in lecture

- **Check status of destination.**
- **Consult general practitioner:** 4 to 6 weeks **before** departure
- **Carry emergency medical kit**
- **Issue travel insurance**

Precautions:

- **Food and Water Precautions.**
- **Environmental Precautions.**
- **Vector Precautions.**
- **Animal Precautions.**

Injury and Crime:

- **Vehicles:**
  - Risk of road and pedestrian accidents
  - Night travel
  - Seat belts and car seats
- **Avoid the use of drugs and alcohol**
- **Understanding local crime risks:**
  - Scam awareness
  - Situational awareness
  - Location avoidance

Congratulations, Ladies & Gentlemen!

You have finished the community medicine course & the third year!

Good luck!

You'll need it