**Screening and Prevention**

**Objectives:**

* To define screening / prevention and its uses in family practice.
* To identify Screening types and targeted people for each type with examples.
* To explain pros and cons of screening.
* To identify appropriate approaches for prevention and screening of common problems in primary care.
* To understand the Criteria for screening tests.
* To justify the rational for selection of a screening test with practical case /condition, examples like for CA. breast, Ca. colon, Ca. prostate.
* **1st Objective : To define screening / prevention and its uses in family practice :**

**A) Screening is defined as:**

* The systematic testing of asymptomatic individuals for pre-clinical disease.
* The ability to diagnose and treat a potentially serious condition at an early stage when it is still treatable. (Oxford handbook of general practice).
* The aim of screening is:
* To be able to diagnose and treat a potentially serious condition at an early stage when it is still treatable.
* To prevent or delay the development of advanced disease in the subset with preclinical disease.

**B) Prevention is defined as:**

* Health promoting and preventing diseases’ occurrence.
* Averting and eliminating diseases and minimizing the impact of diseases.
* **2nd Objective: To identify Screening types and targeted people for each type with examples**.
1. **Mass screening:** is screening of a whole population or sub-group.

Ex: Visual defects in school children.

1. **High risk /selection screening** :

Applied selectively to a high risk groups, on the basis of epidemiological research.

Ex: screening of cervix cancer in lower social groups.

1. **Multi-purpose OR Multi-phasic :**

Applying two or more screening tests in combination to a large number of people at one time (usually Expensive).

Ex: chemical and hematological tests on blood and urine specimens.

* **Additional: Types of prevention were not mentioned in the objectives but I believe they are important:**
1. **Primary prevention:**

Health promoting and preventing diseases’ occurrence.

Ex: Avoiding harmful exposure, Vaccination, Prophylaxis, Education, Structural safety, Sanitation and Sterilization.

1. **Secondary prevention:**

Is to reduce the impact of a disease or injury that has already occurred, by:

* Screening and treating diseases or injuries as soon as possible to halt or slow their progression.
* Encouraging personal strategies to prevent re-injury or recurrence

Ex: Mammograms to detect breast cancer (carcinoma in situ).

1. **Tertiary prevention:**

Prevention of complications once a symptomatic disease is present and has lasting effects.

Ex: - long term management in DM patients.

 - Stroke rehabilitation program.

* **3rd objective: To explain pros and cons of screening.**

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**NOTE: The doctor emphasized the importance of differentiation between Screening and Diagnosis:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Disease** | **Symptoms** | **Individuals** | **Pre-test probability of the disease** |
| **Screening** | Pre-clinical satge | Usually Absent | Asymptomatic | Low |
| **Diagnosis** | Clinically overt | Usually Present | Symptomatic | High  |

* **4th Objective : To understand the Criteria for screening tests.**
* **The Wilson–Jungner criteria for screening:**
* **All screening tests should meet the following criteria before they are introduced to the target population:**
* The condition being screened for is an important health problem.
* Natural history of the condition is well understood.
* There is a detectable early stage.
* Treatment at early stage is of more benefit than at late stage.
* There is a suitable test to detect early stage disease.
* The test is acceptable to the target population.
* Intervals for repeating the test have been determined.
* Adequate health service provision has been made for the extra clinical workload resulting from screening.
* Risks, both physical and psychological, are < benefits
* Costs are worthwhile in relation to benefits  gained
* **5th Objective: To identify appropriate approaches for prevention and screening of common problems in primary care.**

**Diabetes Mellitus:**

* Diabetes mellitus is one of the most common diagnoses made by family physicians.
* Lifestyle (Obesity) and pharmacologic interventions decrease progression to diabetes in patients with impaired fasting glucose or impaired glucose tolerance.
* Uncontrolled diabetes can lead to blindness, limb amputation, kidney failure, and vascular heart disease.
* Screening is recommended for abnormal blood glucose and type 2 diabetes in adults 40 to 70 years of age who are overweight or obese, and repeating testing every 3 years if results are normal.
* Screen all adults who are overweight (BMI ≥ 25 kg/ m2) and have additional risk factors.
* Screening for type 1 diabetes is not recommended

**Hypertension**:

* Hypertension is a major risk factor for CVD
* It is usually asymptomatic until it causes organ damage.
* Usually found during routine BP screening or incidentally
* Changing in the lifestyle habits will help in prevention of hypertension:
* Offer smoking cessation advice and help.
* Decrease weight
* Exercise.
* Dietary salt intake.

 Statin For primary prevention in patients >40y

Screening for high blood pressure is recommended in:

* Adults 40 years or older -> annually
* Adults aged 18 to 39 annually if risk factors are present (family history, obesity, 130-139/85-89 mmHg).
* Adults aged 18 to 39 with no risk factors every three years.
* **6th Objective: To justify the rational for selection of a screening test with practical case /condition, examples like for CA. breast, Ca. colon, Ca. prostate.**

**Breast cancer:**

-It is the most common cause of death in women aged 35-55.

-It’s an important health problem, where early diagnosis is critical.

-Mammography is the only screening test shown to reduce breast

 Cancer–related mortality.

-screening should be offered at least biennially to women 50 to 74 years of age.

-High-risk women <50y: Women with family history of breast cancer may benefit from earlier screening and/or genetic screening.

-Women known to have a genetic mutation should be offered annual MRI surveillance from 20y if TP53 mutation, and from 30y if BRCA1/2 mutation.

**Colorectal Cancer:**

* Most common cancer in Saudi males and 3rd in Saudi females.
* 25-30% of patients present with distant metastasis
* **Patients at risk:**
* Lifestyle factors: Dietary factors. Alcohol. Physical activity.
* First-degree relative.

*Medication that will decrease the risk:*

HRT-risk. *COC pill. Statins. Aspirin.*

* Screening in persons at average risk should begin at 50 years of age
* Recommended every 2y to all patients aged 60–74y.
* **Screening tests:**
* High-sensitivity fecal occult blood testing annually.
* Flexible sigmoidoscopy every five years with high-sensitivity fecal occult blood testing every three years.
* Colonoscopy every 10 years.

**Prostate cancer:**

Second most common cancer affecting men.

Risk factors: 85% are diagnosed aged >65y

 Genetic. Dietary (low intake of fruit, high intake of fat, meat, and Ca2+)

Problems with screening:

Incidental post-mortem evidence of prostate cancer is high (75% men>75y);

Inadequate screening tests

* *Screening tests:*
* • Prostate-specific antigen (PSA)
* • Digital rectal examination (DRE) Operator-dependent, Annual screening in the USA and Germany has not decrease mortality
* • Transrectal ultrasound (TRUS) Too expensive
* The most effective screening regime involves rectal examination and PSA
* A digital rectal examination and PSA test are recommended for patients with any of the following unexplained symptoms:

-Erectile dysfunction

-Hematuria

-Lower back pain

-Bone pain

-lower urinary tract symptoms

-Weight loss, especially in the elderly

