Learning Objectives

- Screening for disease?
- Screening tests & programs?
- Validity & reliability of screening tests

Mustnasiriya 2017
Screened Population

Screening test

Probably diseased
What the Dr sees

Hidden Disease

Iceberg
Patient goes to Dr
Diagnostic test
Clinical Exam
Treatment
Dr goes to people
Screening test
Screening
Screening
Application of rapid test for large number of people, to know those probably having the disease, and those probably free of disease.

Screening is:
- **Primary** prevention for community,
- **Secondary** prevention for asymptomatic patients.

Screening should be a quick, simple way of testing large number of people, thus not intended to be diagnostic.
Natural history of disease

Exposure → Pathologic Changes → Onset of Symptoms → Usual Time of Diagnosis

Stage of Susceptibility → Preclinical Disease → Clinical Disease → Stage of Recovery, Disability or Death
Don’t screen for a disease

- Very rare disease (why?)
- Simple health problem (why?)
- Unknown natural history (why?)
- Short pre-clinical phase (why?)
- If there is no good screening test.
- Treatment is unavailable (why?)
- Early detection not change outcome
- Early detection costs exceed benefits.
Is Screening diagnostic?

People who are **positive** by a screening test should be further tested using a diagnostic test to know the “really” diseased, and treat them.

Although those who are **negative** by screening are most likely healthy, a minority of them are diseased, but not picked up by the test.
Screening test
- Acceptable by the population
- Reliable (repeatable, precise)
- Valid (accurate)
- Quick & rather simple (why?)
- Safe & non-invasive (why?)
- Total costs are acceptable

Examples: mammography, Pap smear, blood sugar, GUE, VDRL
Screening programs

**Neonates:** congenital hypothyroidism, phenylketonuria, galactosemia

**Infancy:** hearing & visual defects, dislocation of hip, cong heart disease.

**Pregnancy:** anemia, Rh, Syphilis, diabetes, toxemia, down’s syndrome

**Middle aged:** BP, diabetes, cancer, obesity

**Elderly:** cancer, TB, glucoma, cataract
Validity & Reliability

- **Valid test** صادق measures in reality what it is supposed to measure. Validly includes: Sensitivity and specificity
- **Reliable test** ثابت gives similar & stable results when repeated to the same person under similar conditions.

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### Systolic BP for healthy

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<th>Category</th>
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**Chart:**

- **R**
- **V&R**
- **V**

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