

Oct 2024




Fourth
Grade

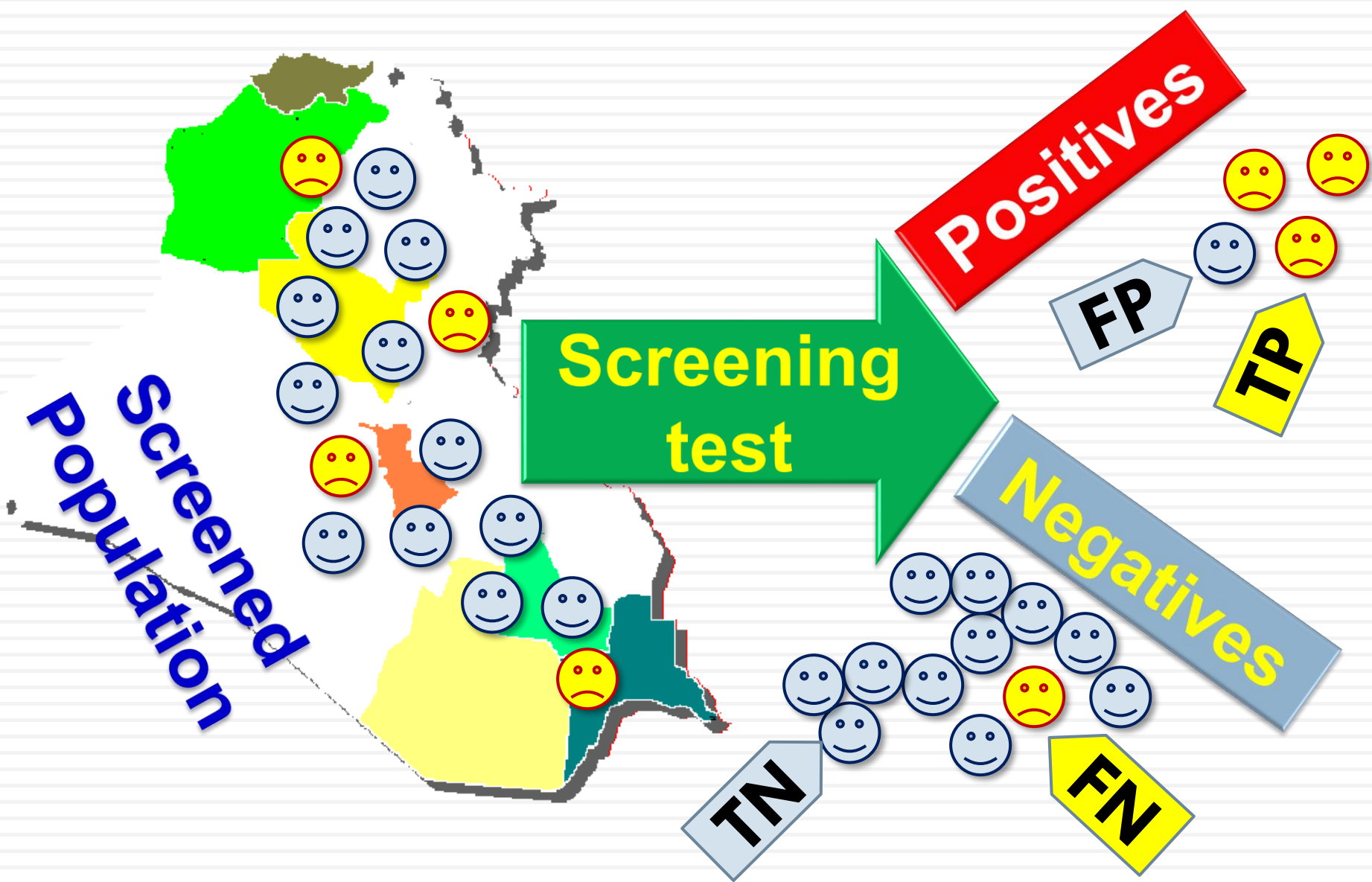
Screening Tests

د. جمال الخضيري / كلية طب المستنصرية



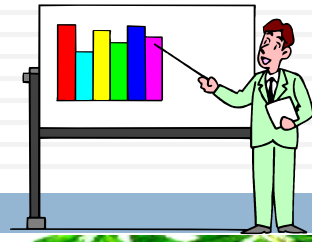
LECTURE OBJECTIVES

- 
- To understand screening tests
 - Differentiate validity & reliability
 - To evaluate screening tests



What is screening test?

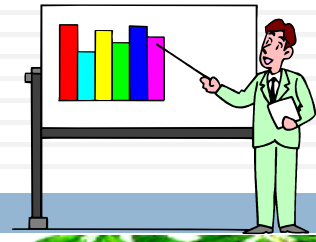
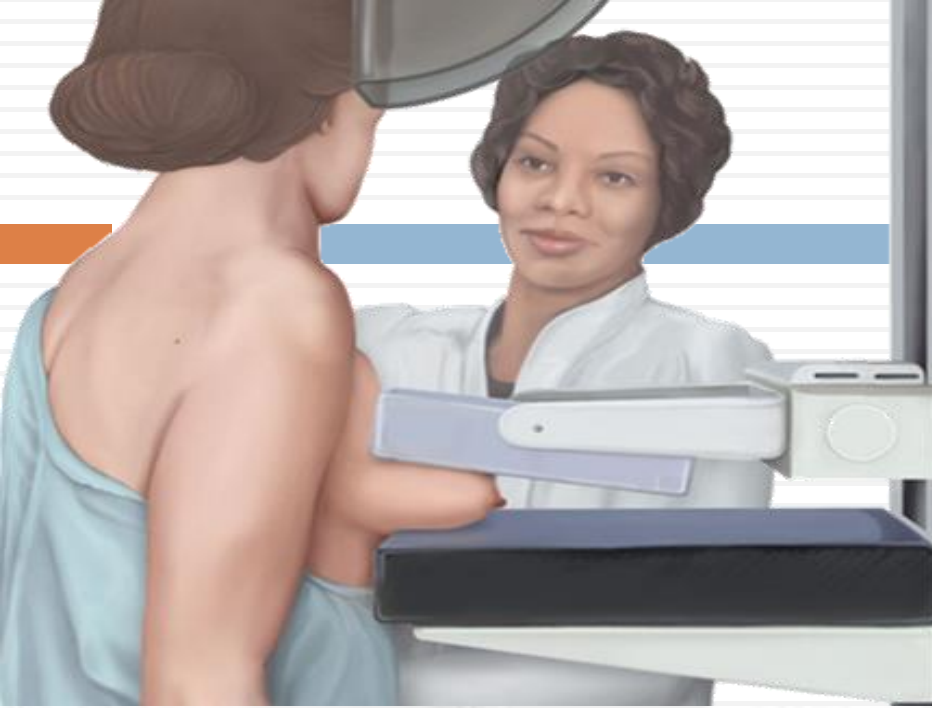
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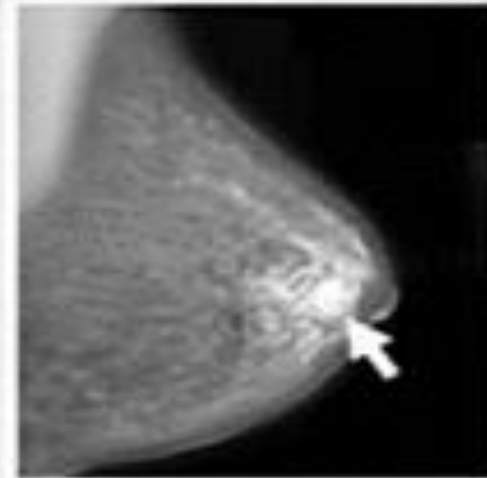
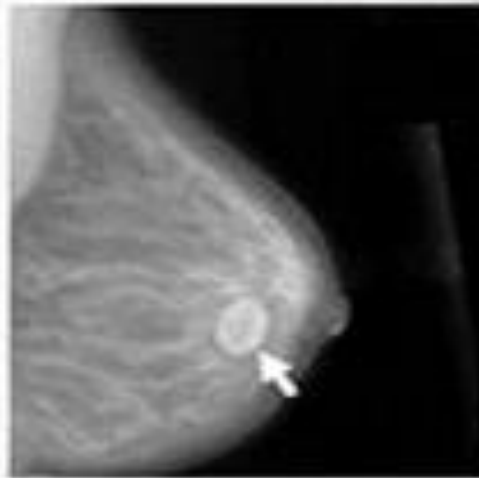
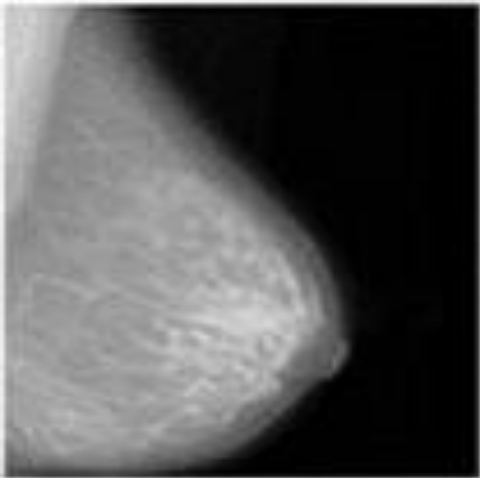
It is **dichotomous** test that is:

- ✓ Acceptable by the population
- ✓ **Reliable** (repeatable, precise)
- ✓ **Valid** (accurate)
- ✓ Quick & Safe (why?)
- ✓ Not costly

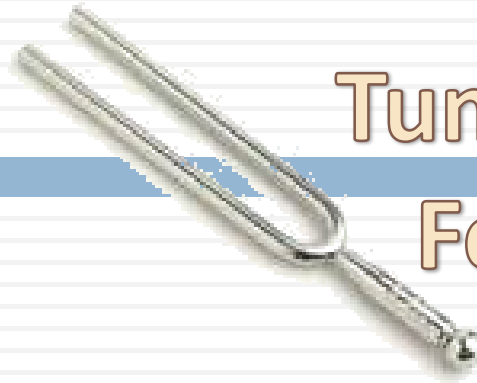
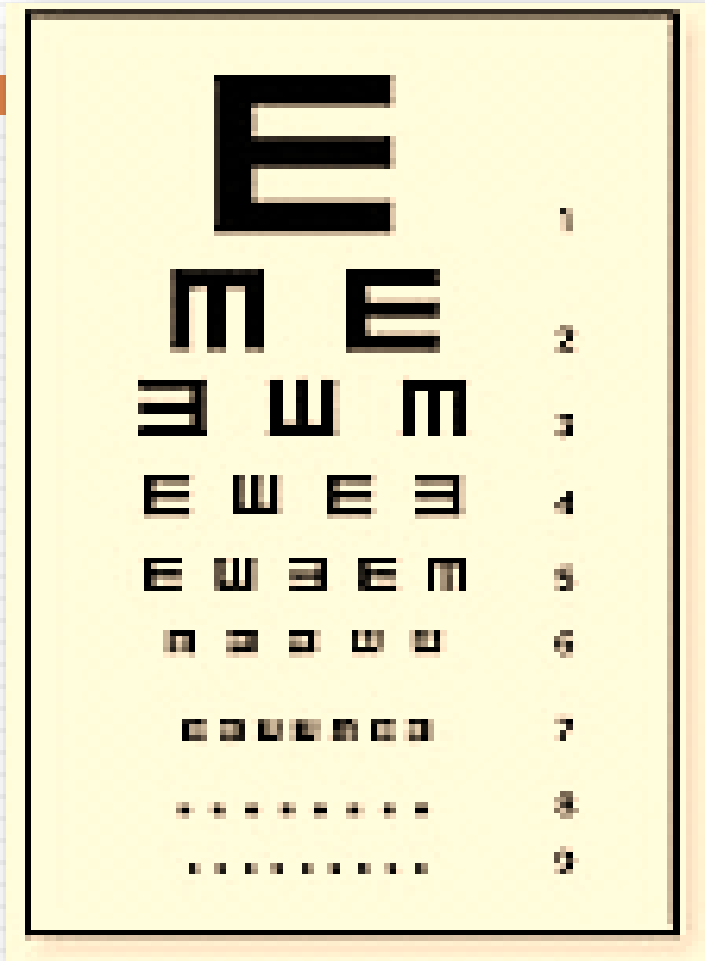




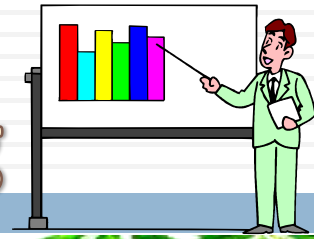
Mammogram screening for breast cancer



Snellen chart



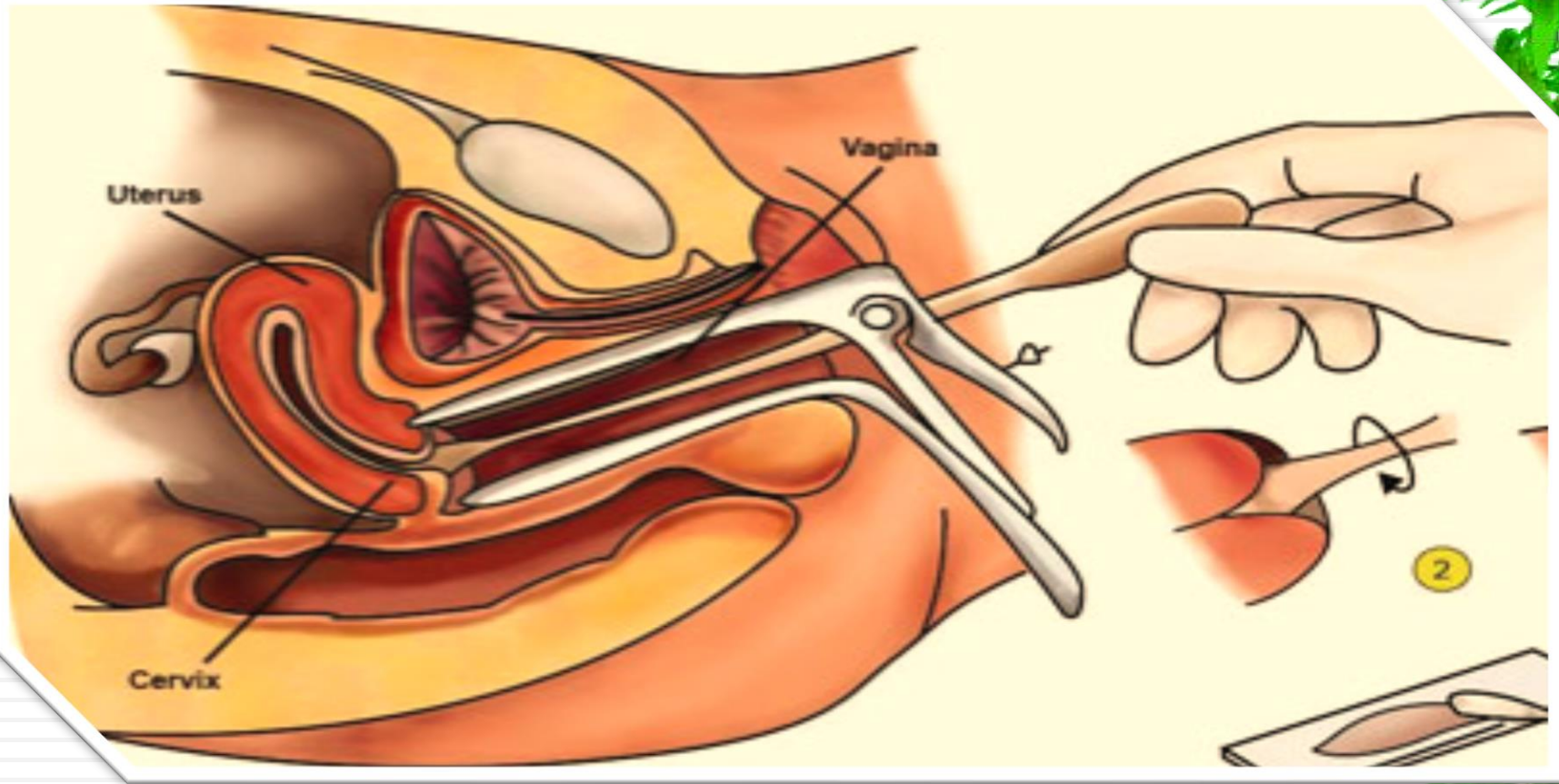
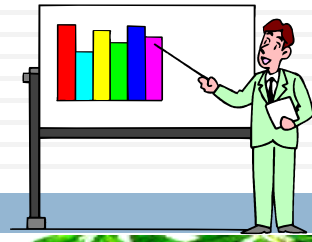
Tuning
Fork



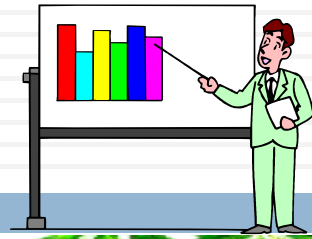
Stethoscope



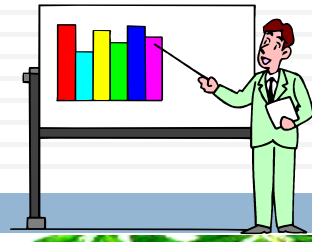
Pap Smear



Mobile Lab Screening



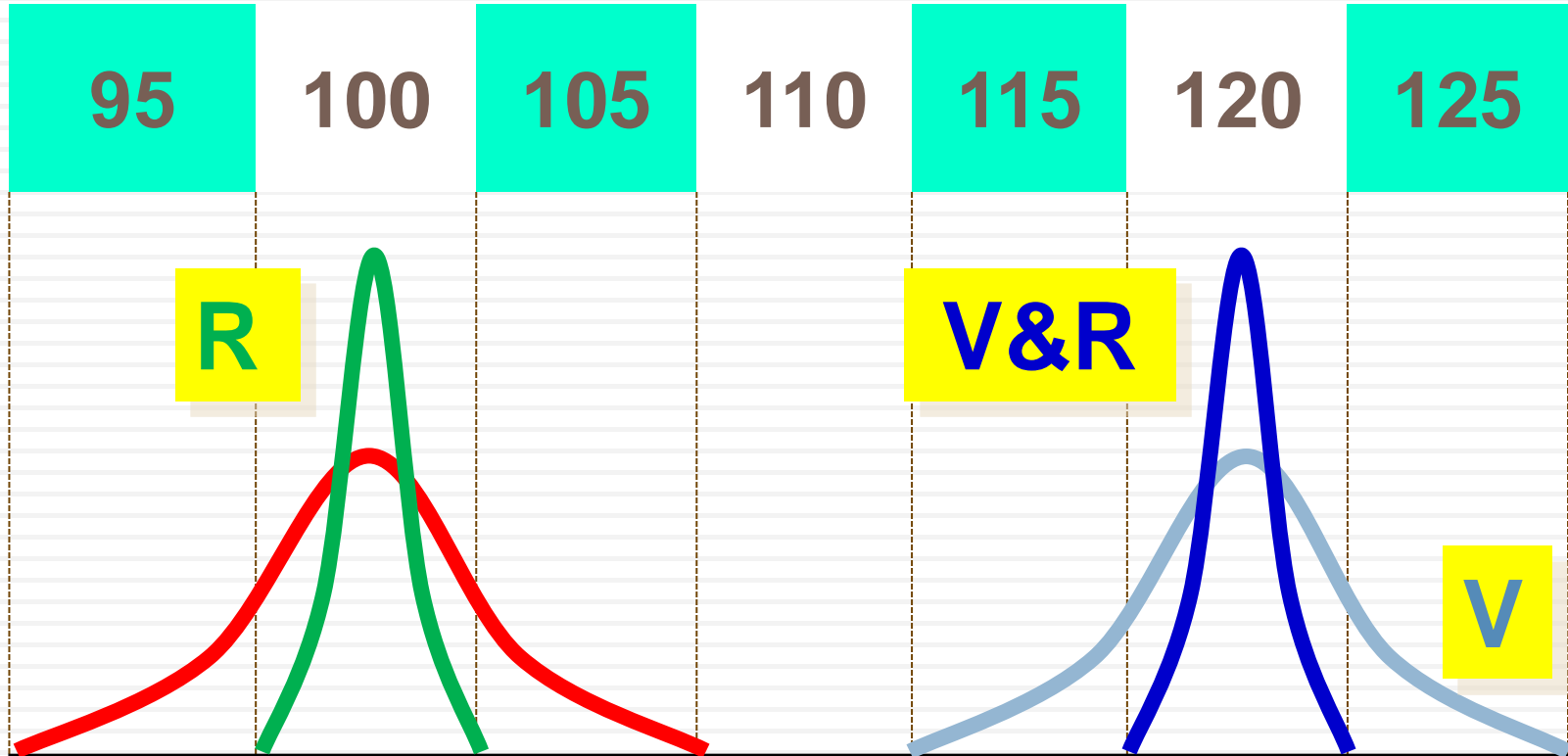
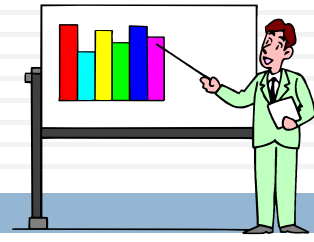
Validity & Reliability



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

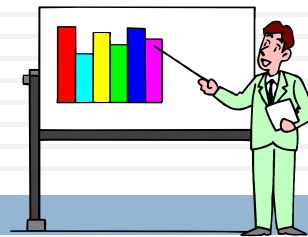


Systolic BP for healthy



Screening test

Diagnosis



DISEASED

HEALTHY

Test +

TP

FP

Test -

FN

TN

All
positives

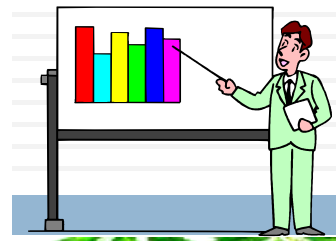
All
negatives

All
Diseased

All
Healthy

Screened Pop

Sensitivity: ability of screening test to identify diseased people or % of diseased people who were positive in the test حساسية الاختبار



→ TP%

$$Sensitivity = \frac{TP}{Diseased} \times 100$$

Percentage of false negatives: % of diseased people who were negative in the test (% missed cases) → 100 - Sn

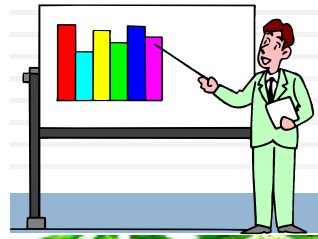
$$FN\% = \frac{FN}{Diseased} \times 100$$

Specificity: ability of screening test to identify healthy people **نوعية الاختبار**
(% of healthy people who were negative) → **TN**

$$Specificity = \frac{TN}{Healthy} \times 100$$

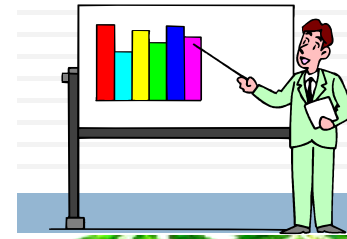
Percentage of false positives: % of healthy people who were positive in the test → **100 - Sp**

$$FP\% = \frac{FP}{Healthy} \times 100$$



Predictive value of positive test:

% of people with +ve test who have disease (diagnostic power of test)



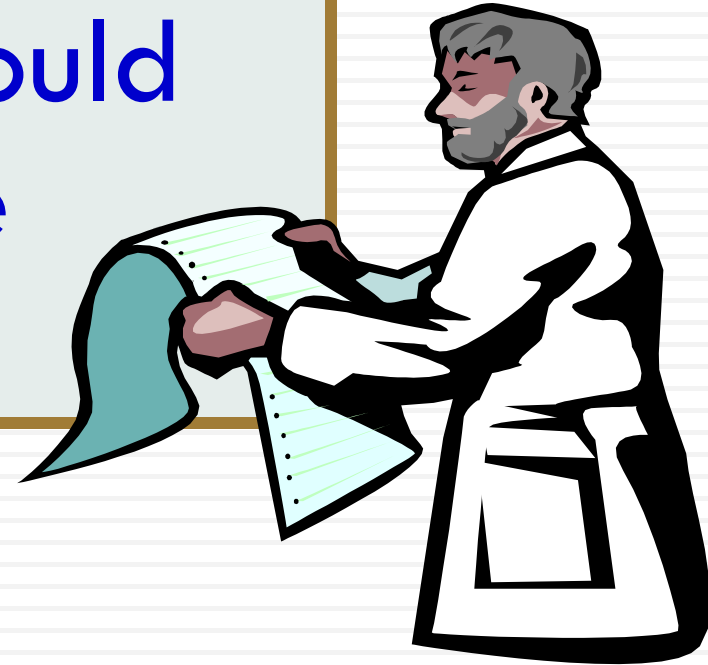
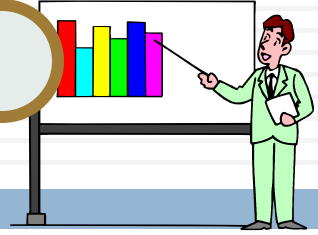
$$\text{Pr}(+) = \frac{TP}{\text{All Positives}} \times 100$$

Predictive value of negative test:

% of people with -ve test who are healthy

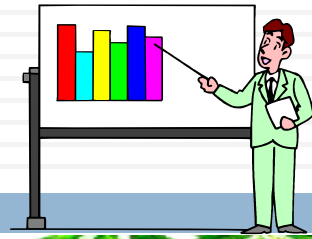
$$\text{Pr}(-) = \frac{TN}{\text{All Negatives}} \times 100$$

Although Screening tests
are not intended to be
diagnostic, they should
be valid & reliable



Closing Remarks

References



- Fletcher R, Fletcher S, Fletcher GS. Clinical Epidemiology: The Essentials. 5th ed 2012
- Richard D. ; Fátima C ; Denise K. An introduction to applied epidemiology and biostatistics. 3rd ed, 2012. CDC stacks.



Thank You

