Screening Test

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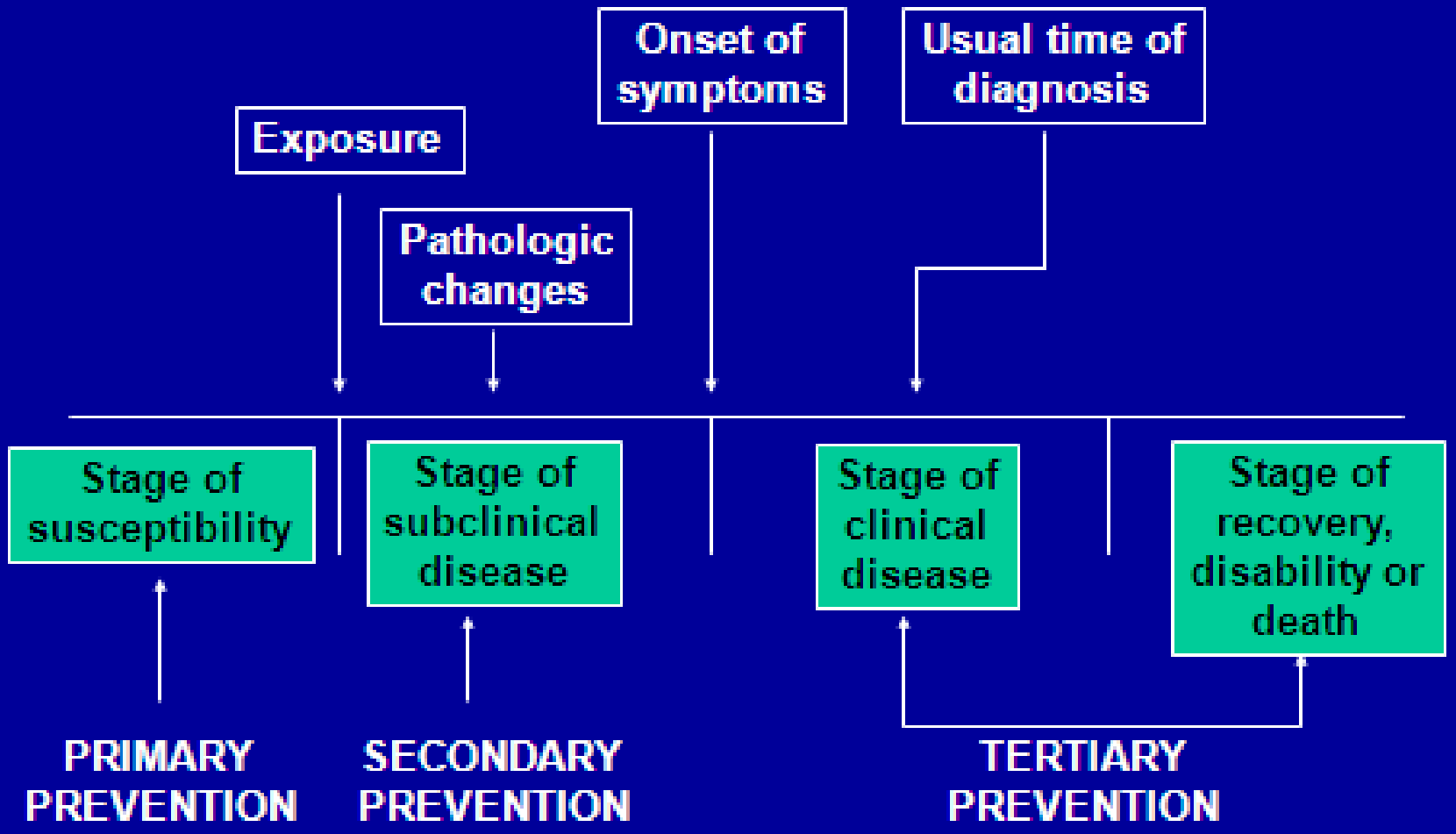
- **Definition:** Application of simple test on asymptomatic people (have no sings and symptoms) to sort out the apparently healthy from those had illness. It important in prevention and control, after screening we should confirm diagnosis by golden test for positive cases in screening and treat them.

Natural history of disease



Criteria for good screening test:

- 1: Easy and quick test.
- 2: Acceptable and safe to people.
- 3: Not expensive.
- 4: Used for searching serious problems.
- 5: Treatment should be available for the problem.

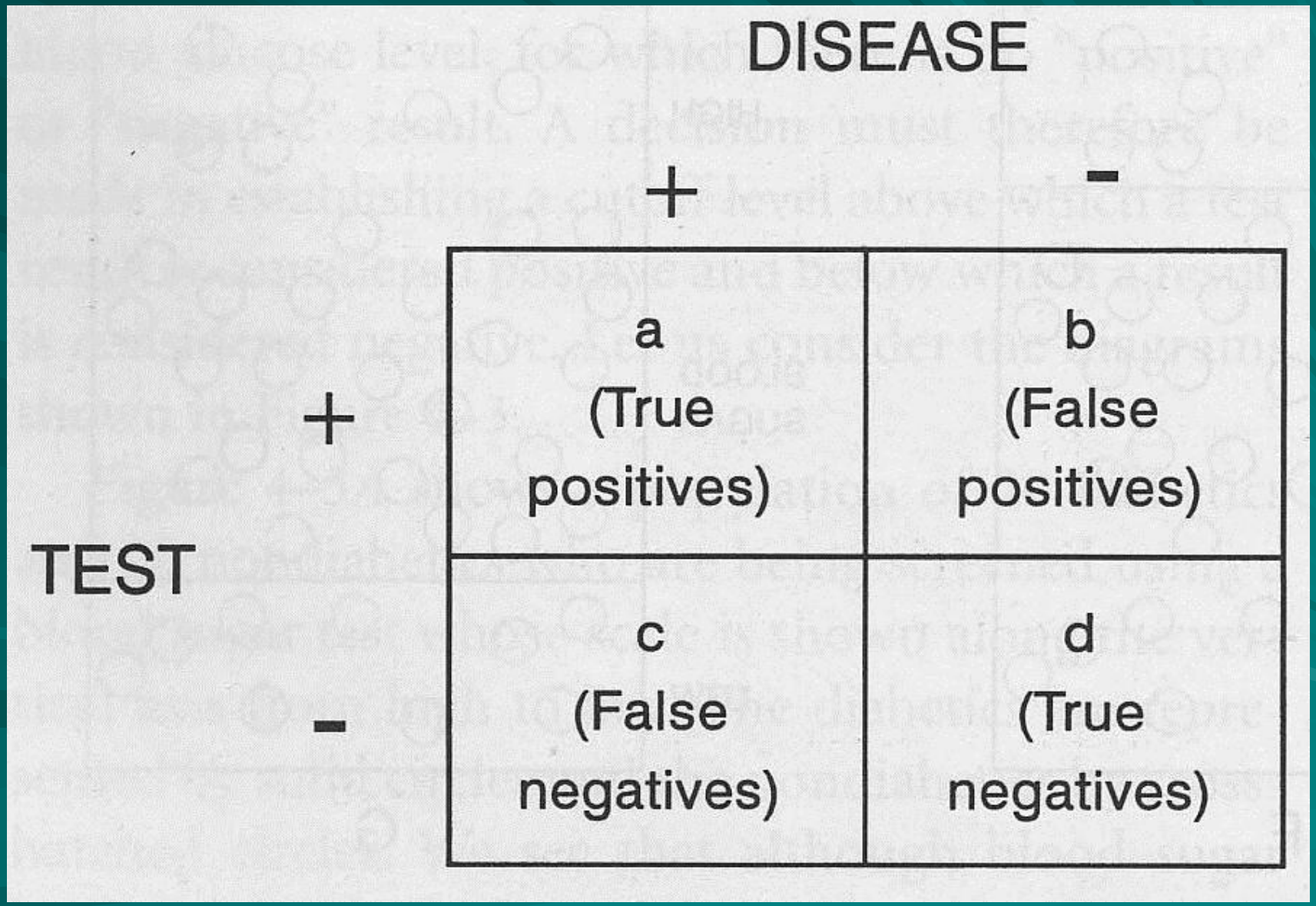
Criteria for disease or problem suitable for screening:

- 1. Highly prevalent.
- 2. Serious consequence of a disease.
- 3. No symptoms or signs at early stage.
- 4. Can be detected at relatively low cost before the clinical stage starts.
- 5. Early treatment is available and accessible that has been shown to reduce morbidity and mortality.

Types of screening

- 1. Mass screening: involve screening of whole population e.g. chest X-ray to detect T.B. in Iraq in 1980.
- 2. Multiple or multiphasic screening involve the use of a variety of screening tests on the same occasion e.g. to detect peptic ulcer use Ba-meal then endoscopy.

- 3. Targeted screening: involve screening of a group of people with specific exposure e.g. workers in high noise environment to detect hearing defect (this type of screening used to detect environmental and occupational hazards).
- 4. Case finding screening or opportunistic screening: is restricted type to patients who consult health practitioner for other purpose (screening for ca-breast in female who come for urinary tract infection).


DISEASE
+
-
TEST
+
-
a
(True
positives)
b
(False
positives)
c
(False
negatives)
d
(True
negatives)

- ***Sensitivity:** It is the ability of a test to give a positive finding when the person tested truly had a disease.
- $= \frac{a}{a+c}$

- ***Specificity:** It is the ability of the test to give a negative finding when the person tested is free of the disease.
- $= \frac{d}{b+d}$

- *** False positive:** Person without a disease who were positive in the test.
- $= \frac{b}{b+d}$

- * **False negative:** Person with a disease who were negative to test.
- $= \frac{c}{a+c}$

***Predictive value positive test:**

Percentage of persons with a positive test who have the disease $= \frac{a}{a+b} * 100$

***Predictive value negative test:**

Percentage of persons with a negative test who do not have the disease $= \frac{d}{c+d} * 100$

Golden Test (diagnostic)

	Diseased	**Non diseased**	**Total**
Screening test			
+Ve	**a**	**b**	**a+b**
-Ve	**c**	**d**	**c+d**
Total	**a+c**	**b+d**	**a+b+c+d**

Validity - relates to accuracy (correctness)

Reliability - repeatability

Yield - the # of tests that can be done in a time period