

# Requirements for examination techniques

## Investigative Techniques

Examination techniques are used to search for patients in the population.

1. **Individual detection** - every examination of a person who sought medical help for any reason.
2. **Preventive inspection.**
3. **Screening** - search for at-risk or sick persons in the early or subclinical phase of the disease in a population of apparently healthy people using an appropriately chosen and simple screening test (clinical, laboratory, etc.). It is desirable that the screening test be **highly sensitive and highly specific** and the entire screening be truly beneficial.

And cheap - the costs of a screening test are not only costs related directly to the screening performed, but also costs that arise due to other procedures performed on persons who react positively in the test.

**Simple screening tests** - questionnaires, X-ray examination, blood tests, EKG etc., or a combination thereof.

**Multiple screening** (*multiple*) - a set of tests to search for a greater number of diseases at the same time.

If we want to evaluate the quality of the used dg. test when searching for patients with a given diagnosis, it is best to organize the data into a four-field table:

Test	sick +	health -	in total
+	a	b	a+b
-	c	d	c+d
total	a+c	b+d	n

## Sensitivity

Sensitivity is the probability of a positive finding in a sick person ' $a/(a+c)$ '.

Test sensitivity

## Specificity

Specificity is the probability of a negative finding in a healthy person ' $d/(b+d)$ '.

Test specificity

## False positive

- A positive result even in healthy people, its measure is the relative frequency of ' $b/(b+d)$ '.

## False negative

- A sick person has a negative test result, its measure is the relative frequency of ' $c/(a+c)$ '.

## Predictive value of a positive test

- Probability that a person is really sick when the test is positive ' $a/(a+b)$ '.

## Predictive value of a negative test

- Probability that a person does not have the observed disease with a negative result of the ' $d/(c+d)$ ' test.

## Screening Test Accuracy

- Indicates the probability that the test gives correct results in the screened population. We estimate it as ' $(a + d)/n$ '.

## Reliability

'*Reliability* expresses the reliability of the test. That is, whether we get similar results when using the test repeatedly. Reliability takes values between 0 and 1 (100%). The test has high reliability if it gives the same results when repeatedly measuring the same object.

Reliability expresses the technical quality of the test. Not its correctness. A test can be reliable - have high reliability, but may not measure the trait under investigation - so it can simultaneously have low validity. The relationship between **reliability** and *validity* is that between **accuracy** and **correctness**. The reliability of the test is therefore a necessary prerequisite for its validity.

## Validity

**Validity** (truthfulness) is the **ability** of the test, observation or study to **measure the actual condition** of the studied phenomenon. We can mark as valid a test that really tests what we think we are testing. A consistent evaluation of the validity of the test is necessary especially during use of alternate targets.

Kategorie:Vložené články Kategorie:Epidemiologie Kategorie:Zdravotnická statistika

## Links

### Related Articles

Prevention and screening in oncology

### References

- BENCKO, Vladimír. *Epidemiologie, výukové texty pro studenty 1. LFUK, Praha*. 2. edition. Univerzita Karlova v Praze - Nakladatelství Karolinum, 2002. 168 pp. pp. 77-78. ISBN 80-246-0383-7.
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