

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.
- BENCKO, Vladimír. *Biomedicínská statistika. Díl 3, Statistické metody v epidemiologii. Sv. 1*. 1. edition. Karolinum, 2003. ISBN 80-246-0763-8.
- KUPKA, Karel – KUBINYI, Jozef – ŠÁMAL, Martin. *Nukleární medicína*. 1. edition. vydavatel, 2007. 0 pp. ISBN 978-80-903584-9-2.