Evidence Based Medicine

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Term Used In Evidence Based Medicine

Confidence interval (CI)

Quantifies the uncertainty in measurement. It is usually reported as a 95% sure CI, which is the range of values within which we can be 95%sure that the true value for the whole population lies.

Event rate (ER)

The proportion of patients in a group in whom the event is observed. The rates in the control and experimental group are referred to as the control event rate (CER)and experimental event rate (EER) respectively.

The patient expected event rate (PEER) refers to the rate of events we'd expect in a patient who received no treatment or conventional treatment.

Sensitivity / specificity / Likelihood ration (LR)

	Disease Positive	**Disease negative**
Test positive	A	B
Test negative	C	D

Sensitivity = a/ (a + c) = the nearer 1.0 this figure the more

Sensitive the test is (low number of false negatives)

Specificity = d/(b + d) = the nearer 1.0 this figure the more specific the test is (low false positive rate)

LR + = sensitivity/ 1- specificity) =the likelihood that positive test result is found in a patient with the disorder compared with a positive test result in a patient without the disorder.

LR-= (1-sensitivity)/ specificity = the likelihood that a negative test is found in a patient without the disorder compared with a negative test in a patient with it.

Negative predictive value (NPV) : = d/ (c + b) = proportion of patients with a negative test who do not have the disease. (ie a low number means a high false negative rate).

Positive predictive value (PPV) : = a/ (c + b) = proportion of patients with a positive

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test who do not have the disease. (ie a low number means a high false positive rate).

Relative risk reduction (RRR) : = CER – EER) /CER. Normally expressed as a percentage. Similar to ARR but gives a proportional reduction. For example if an intervention cuts the mortality from a disease process from 2% to 1% there is only an ARR of 1% but a RRR of 50%.

Absolute risk reduction (ARR) : CRR – EER. Normally expressed as a percentage it is the arithmetic difference is occurrence between the control and experimental groups.

Number needs to treat (NNT) : = 1/ARR. The number of patients needs to treat to achieve one additional good outcome. An excellent was of looking at interventions as this corrects for low occurrence rates. For example an intervention may have a fantastic RRR of 50% but only reduces the rate of a rare complication from 0.2% to 0.1% The RRR may be misleading.

The number of patients needed to treat to avoid one complication would be 1000. This makes judgments of risk/benefit / cost more straightforward.

Number needs to harm (NNH) : = 1 ARR when outcome is worse in the experimental group.

Level of Evidence and Grade of Recommendation.

It is important to note that the grade of recommendation reflects the strength of the evidence (methodological quality) and not the clinical importance.

There are various rating systems for levels of evidence described in the medical literature.

Levels of Evidence

Levels	**Description**
1++	High quality meta analysis, systemic review of RCT s, or RCTs with a very low risk of bias.
1+	Well conducted meta analysis, systemic review of RCTs or RCTs with a low risk of bias.
1-	Meta analysis, systemic reviews of RCT s, or RCTs with a high risk of bias.
2++	High quality systemic reviews of case- control or cohort studies. High quality case- control or cohort studies with a very low risk of confounding, bias or chance and a moderate probability that the relationship is casual .
2	Case control or cohort studies with a high risk of confounding. bias, or chabce and a significant risk that the relationship is not casual.

3	Non- analytical studies, e.g. case report, case series.
4	Expert opinion

Grade Recommendation

Grade	Description
A	At least one meta analysis, systemic review, or RCt rated as 1^{++}. and directly applicable to the target population:or
	A systemic review of RCTs or a body of evidence consisting principally of studies rated as 1^{+} , directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2^{++}, directly applicable to the target population and demonstrating overall consistency of results; or
	Extrapolated evidence from studies rated as 1^{++} or 1^{+}
C	A body of evidence including studies rated as 2^{+}, directly applicable to the target population and demonstrating overall consistency of results: or
	Extrapolated evidence from studies rated as 2^{++}
D	Evidence level 3 or 4; or
	Extrapolation of evidence from studies rates as 2^{+}

A new system that rates the evidence from A to C is devised by American Academy of Physicians

Strength of Recommendation	Definition
A	Recommendation based on consistent and good quality patient oriented evidence
B	Recommendation based on inconsistent or limited quality patient oriented evidence
C	Recommendation based on consensus, usual practice, opinion,disease- oriented evidence and case series for studies of diagnosis, treatment, prevention, or screening