Evidence-Based Medicine

Usefulness of info = (Relevance x Validity)/Work
POEM=Patient-Oriented Evidence that Matters
DOE=Disease-Oriented Evidence

Are the study results valid?
Are the valid results important?
Does this valid, important evidence apply to my case?

Preferred study design:
Therapy: RCT
Diagnosis: Cross-sectional survey
Screening: Cross-sectional survey
Prognosis: Longitudinal cohort study
Causation/Harm: Cohort or case-control, depending on disease rarity but case reports may be crucial

Methods:
Who was the study about?
Was the design of the study sensible?
Was systematic bias avoided or minimized?
Was assessment “blind”?

Statistics:
Sample size large enough?
Duration of follow-up long enough?
Follow-up complete enough? (Too many dropouts?)

Additional questions:
Results: Statistical vs. clinical significance
Discussion: Did the authors overstate or understate their conclusions?
General: So what? How should this study change my practice? How does this study change my study?

Sensitivity = # true pos/# with disease
Specificity = # true neg/# without disease

Pos predictive value = # with disease/# with pos test result
Neg predictive value = # without disease/# with neg test result
Posttest probability of pos test = # with disease/# with pos test result (same as pos predictive value)
Posttest probability of neg test = # with disease/# with neg test result (converse of neg predictive value)
Both predictive values and posttest probabilities change with likelihood of disease.

Likelihood ratios
LR+ = sensitivity/(100-specificity)
LR- = (100-sensitivity)/specificity

LR interpretation:
>10: strong evidence to rule in disease
5-10: Moderate evidence to rule in disease
2-5: Weak evidence to rule in disease
0.5-2: No significant change in the likelihood of disease
0.2-0.5: Weak evidence to rule out disease
0.1-0.2: Moderate evidence to rule out disease
<0.1: Strong evidence to rule out disease

Number Needed to Treat = \(1/\text{Absolute Risk Reduction}\)

Adapted from:

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