Clinical decision rule

Clinical decision rules (CDRs) are tools designed to help clinicians make bedside diagnostic and therapeutic decisions. The development of a CDR involves three stages: derivation, validation, and implementation. Several criteria need to be considered when designing and evaluating the results of an implementation trial.

There is a need for the systematic accumulation of evidence to support clinical decision-making [1], because clinical prediction and decision rules use evidence based medicine to assist clinicians in diagnosing and treating illness. Although widespread in modern medical practice, there are relatively few clinical rules for neurosurgical disorders. Stein et al. reviews the background of how clinical prediction and decision rules are derived, validated, evaluated, and used in practice. It also summarizes a list of clinical rules published for neurosurgical illnesses and analyzes each rule for how it was derived and whether it was validated and/or evaluated compared with similar rules. It reports on whether the implementation of each rule was studied and grades the overall quality of each report [2].

see Evidence-based guidelines.

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see Treatment limiting decision.

see Clinical decision support system.

Predictive clinical decision support is having an increasing impact in the field of risk stratification in complex spine surgery. Researchers are building accurate multivariate predictive models that can be applied to clinical practice in the form of decision support systems (DSS). Bekelis et al. created a statistical model to predict complications in spine surgery based on data from 13,660 patient cases. The model's outcome variables included 30-day postoperative risk of stroke, myocardial infarction (MI), wound infection, urinary tract infection (UTI), death, Deep-Vein Thrombosis (Deep-vein thrombosis), pulmonary embolism, and unplanned return to surgery. Predictors were preoperative patient characteristics. The model was able to successfully discriminate between cases that did and did not experience complications. Areas under the receiver operating characteristics curves for each of the outcome variables ranged from moderate to high.

1)
Djulbegovic B, Guyatt GH. Progress in evidence-based medicine: a quarter century on. Lancet. 2017;390(10092):415-423.
2)
Stein SC, Attiah MA. Clinical Prediction and Decision Rules in Neurosurgery: A Critical Review. Neurosurgery. 2015 Aug;77(2):149-56. doi: 10.1227/NEU.0000000000000818. PubMed PMID: 26068135.