Medical Scores

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Abstract
Background: Medical scores represent simplified methods for estimating the prognosis, risk or severity of a condition and are also used in therapeutic decisions, triage and resource allocation, assessment of functionality and frailty, standardization of medical communication. Medical scores add support in the assessment of health status, providing a common, objective and comparable framework for decision-making, but do not replace clinical judgment. Applied medicine must be objective and must eliminate the subjective form caused by the human factor. This is achieved by transforming clinical data into evidence-based decisions - thus reducing human errors and ensuring that all patients benefit from an equally optimized and efficient treatment. *Methods*: Defining score is a process that follows a rigorous statistical methodology to ensure that the score is predictive, reproducible, and applicable in practice. The steps required to define the score: • Data collection, • Definition of variables for inclusion, • Model design and optimization (Linear, Logistic, Cox), • Defining the score, • Score performance (Se, Sp, ROC curve), • Validation. New methods for scoring (inspired by Machine Learning): Fuzzy Systems, Neural Networks, Classifications, Clustering, Dimensions Reduction (Principal Components). Given the power of computers, complex scoring techniques can be applied, but the influence of covariates and factors would be more difficult or even impossible to quantify (example: neural networks). The scores are not perfect and as a result have disadvantages: they do not capture all individual peculiarities, they can be applied rigidly, and they sometimes underestimate or overestimate risk.One method of compensating for these errors is to adapt the scores to the target population. *Conclusions*: Scores represent an important medical support, providing information through a simplified form of calculation by quantifying the effect of covariates. The bridge between the complex reality of medical cases and statistical-mathematical rigor is made by scores in a simplified but useful form.

Keywords: Score; Regression; Optimization.