Predictive analytics

Predictive analytics is the branch of advanced analytics which is used to make predictions about unknown future events. Predictive analytics uses many techniques from data mining, statistics, modeling, machine learning, and artificial intelligence to analyze current data to make predictions about the future.

As interest in utilizing predictive analytics in spine surgery increases, there is a concomitant increase in the number of published prediction models that differ in methodology and performance. Prior to applying these models to patient care, these models must be evaluated. To begin addressing this issue, Ehresman et al. proposed a grading system that compares these models based on various metrics related to their original design as well as internal and external validation. Ultimately, this may hopefully aid clinicians in determining the relative validity and usability of a given model [1)]

Sciubba DM, Pennington Z, Ehresman J. Guest Editorial: Predictive Analytics, Calculators and Cost Modeling in Spine Surgery. Global Spine J. 2021 Apr;11(1_suppl):4S-6S. doi: 10.1177/2192568220977185. PMID: 33890809.

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Ehresman J, Lubelski D, Pennington Z, Hung B, Ahmed AK, Azad TD, Lehner K, Feghali J, Buser Z, Harrop J, Wilson J, Kurpad S, Ghogawala Z, Sciubba DM. Utility of prediction model score: a proposed tool to standardize the performance and generalizability of clinical predictive models based on systematic review. J Neurosurg Spine. 2021 Feb 26:1-9. doi: 10.3171/2020.8.SPINE20963. Epub ahead of print. PMID: 33636704.