

PREDICTORS OF QUALITY

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There are several different methods commonly used to identify clinical factors that help predict a successful outcome. Traditionally, methods such as logistic regression have been used to identify patients at risk for a particular disease or outcome with heterogeneous risk predictors. However, such methods have limitations, and identify factors that are statistically significant rather than clinically significant.

We have clinical data for 722 patients who underwent bariatric surgery with over 200 clinically associated variables. We are interested in identifying clinical predictors for successful outcome. We have used this population to compare logistical regression analysis, signal detection regression analysis (SDR), and classification and regression tree analysis (CART). All three methods pull out a slightly different sub-set of predictors for our population and receiver-operating curves (ROC) and area under the curve (AUC) were used to compare the different approaches. Of the above mentioned, we are particularly interested in the SDR technique, as this method identifies both the most and least successful patients undergoing gastric bypass surgery.

Results that have been derived from these analyses and some common limitations with them will be discussed. Several of the variables that would be interesting predictors are not usable due to amount of missing data. In addition, once we start partitioning patients, our sample size down quickly dilutes the power of any statistical test. Examples will be presented along with directions for solutions.