

Multivariate Approaches to Evaluating Quality in Trauma Care

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The need to assess the performance of healthcare systems to improve quality and reduce costs has gained increasing attention in recent years. The Trauma Quality Improvement Program (TQIP) developed a database to measure and compare trauma centers' performance. In 2001 the Institute of Medicine (IOM) proposed six aims to guide quality improvement efforts: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity of care. However, most quality improvement programs still use one aim at a time, often corresponding to effectiveness. In this study, the viability of using all the IOM quality aims in the evaluation of trauma care quality is investigated. Data from the Michigan-TQIP is used to quantify quality metrics associated with each aim. Correlation analysis is used to identify relationships between metrics, and composite measures are developed to represent each aim. The traditional, univariate analysis approach is compared with two other approaches involving more than one aim at a time: (1) combining all aim-metrics into a single composite measure of quality to replicate the traditional analysis methods and (2) using deterministic dominance theory to overcome the heterogeneity of quality metrics. Results indicate that considering several aims at a time may add value to performance evaluation. Limitations of the approaches and possible implications for practice are discussed.