"Quality Improvement with CDW Mining, Graph-Network Analysis & Visualization: The INFECTALYTICS Project"

Abstract: unrealized analytic potential lies in the stockpiles of a Clinical Data Warehouse (CDW). INFECTALYTICS leverages de-identified CDW data to identify and target quality gaps in laboratory practice and utilization. Graph-network analysis and Bayesian statistics are used to provide novel, multi-factorial insights into root cause analyses and targeting of interventions. Data visualizations can be rapidly crafted and iteratively improved to serve the needs of frontline clinical quality improvement. The same analysis tools have additional utility for researchers to analyze clinical behavior patterns and for enabling collaborative communications between laboratory personnel, clinicians, researchers, and patients. A set of sample applications, including our efforts at reducing blood culture contamination, will demonstrate the power and flexibility of INFECTALYTICS; planned extensions to chemistry, transfusion medicine, and other applications will also be discussed.