

VisualDecisionLinc: Real-Time Decision Support for Behavioral Health

Principal Investigator:	Mane, Ketan, Ph.D., M.S.
Organization:	University of North Carolina Chapel Hill
Mechanism:	PAR: HS08-269: Exploratory and Developmental Grant to Improve Health Care Quality through Health Information Technology (IT) (R21)
Grant Number:	R21 HS 019023
Project Period:	August 2011 - July 2013
AHRQ Funding Amount:	\$299,997

Summary: In 2000, the societal burden of psychiatric disorders was estimated at \$83 billion, with \$26 billion attributable to direct medical expenses. A [research review](#) of psychiatric disorders, supported by the Agency for Healthcare Research and Quality, recommended that studies build the evidence-base on the most appropriate initial treatment strategies for maintaining a favorable response. Improving the initial selection of treatments has the potential to reduce the time to remission, as well as reduce the likelihood of medication errors and the adverse events caused by medication switching. There is consensus among clinicians and health policy experts that mental health decision support tools that aid clinical decision-making hold enormous potential to improve psychiatric care, including initial treatment strategies. One strategy is providing clinicians with expert and evidence-derived knowledge at the point of care. General guidelines often lack specific treatment algorithms that are tailored to a patient's unique symptom profile and disease history. Thus, supplementing clinical guidelines with data on treatment response from patients sharing similar profiles would narrow the range of treatment options to those based on the best available evidence.

To address these needs, Dr. Mane and his research team are developing a software-based decision support prototype known as VisualDecisionLinc (VDL). The VDL is designed to provide decision support for treatments of major depressive disorder (MDD), one of the most prevalent and burdensome psychiatric disorders. The project will: 1) develop new approaches to selecting comparative patient populations based on expert-, guideline-, and data-driven approaches; 2) develop software user interfaces to quickly allow clinicians to determine which treatment approaches have been effective for patients similar to the presenting patient; and 3) provide an initial evaluation of approaches in preparation of a larger scale deployment and test of clinical effectiveness. The research has the potential to help understand novel ways to leverage historical patient databases and to demonstrate a health information technology (IT) approach to optimize treatment choices for behavioral health care.

Specific Aims:

- Develop and validate expert-driven, guideline-driven, and data-driven attribute sets for the creation of comparative populations. **(Ongoing)**
- Develop a data visualization based user-interface to aid in the selection of treatment choices. **(Ongoing)**
- Conduct an exploratory effectiveness evaluation of VisualDecisionLinc in preparation for a larger scale, health IT implementation research. **(Upcoming)**

2011 Activities: The research team laid the ground work for this project by building a database to maintain and clean patient data from the electronic medical record (EMR) so that it may be imported into VLD. In collaboration with psychiatrists, the data were evaluated to identify a set of similarity attributes (SSAs) to define a comparative population. The SSAs include demographics such as race, gender, and age; comorbid conditions; and prescribed medications. The SSAs will form the basis of the analytical engine, which is a query that filters the database of patient information to identify a comparative population similar to the target patient. Subsequently, a VDL user-interface (UI) was developed and integrated with the analytical engine and the EMR such that providers may click to select SSAs of interest.

At the UI level, the prescribed medications were organized by medication class to facilitate the understanding of medication combinations prescribed to the comparative population. Additional data views were built to provide an at-a-glance view of comorbid conditions for the comparative population as well as an overview of the patient's medical profile, including medications, outcomes, and comorbidities. The UI also integrates a guideline view that shows patient data in relation to the Texas Medication Algorithm Project, which developed guidelines for the treatment of the MDD patients.

As last self-reported in the AHRQ Research Reporting Systems, project progress is mostly on track, and project spending is on target.

Preliminary Impact and Findings: This project has no findings to date.

Target Population: Mental Health/Depression

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decision-making through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation
