Abstract

Health care processes are complex and errors in processes have the potential to pose serious threats to patient safety. Our research focuses on two processes: the identification of a patient before conducting patient care tasks to study whether workers catch identification errors, and the surgery process in order to study the effects of sleep deprivation on surgeons. The goal of our research is to provide health care decision makers with information that allows them to 1) better understand how people actually complete these processes and 2) decide what actions need to be taken in order to minimize the chances that individuals commit process-related errors. In order to accomplish our goal, we have collected and documented how individuals complete the aforementioned processes. We have analyzed this data at an aggregate level – in order to understand whether bar-coding technology allows nurses to more efficiently identify patients, for instance. We have also transformed this process execution data into visualizations based on Markov Chains. Thus far, we believe that the Markov Chain visualizations that have been created will be a very useful tool in helping health care decision makers gain knowledge about the aforementioned processes.

Research Objectives

1) Determine how to capture surgery process data in a structured way
2) Process the structured data into a format amenable to the visualization approaches
3) Make sure that health care decision makers can understand the visualizations

Future Work: Create visualizations for the surgery data, Empirically evaluate whether visualizations improve decision quality

Collaboration: We are currently collaborating on the project with Baystate Medical Center and Brigham and Women’s Hospital

NSF Proposal: Measuring the quality of decisions under uncertainty and the benefit of interactive information presentation

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