IMPROVING EFFICIENCY IN HEALTHCARE THROUGH THE USE OF LEAN MANUFACTURING PRINCIPLES AND SIMULATION.

Sarah Ballard*, Dr. Michael Kuhl*, Department of Industrial and Systems Engineering,*
smb3031@rit.edu, mekeie@rit.edu

Lean manufacturing maps out the process by which one can eliminate waste, increase throughput, reduce overall cost, and increase efficiency, which, historically, has focused on manufacturing. With an aging population and the growing impact of uncompensated health care, it is becoming increasingly important for all involved that ambulatory care units make efficient use of resources. Therefore, the implementation of Lean in healthcare has become a topic of interest. Hospitals tend to schedule patients so that there is a comfortable balance between patient satisfaction and throughput. Inefficiencies can be measured by patient waiting time and surgeon idle time. Ambulatory suite capacity can be most accurately determined by modeling the system through discrete-event simulation. Once the model is verified and validated it can be used to perform a Lean analysis by identifying bottlenecks and non value added activities. The statistical power and flexibility of simulation software allow for accurate experimentation of patient schedules to reduce the variability between cases, without the risk associated with testing directly on the system. The model of a case study will be presented along with a discussion of future work.