SIMUL8 Healthcare

# Simulation in Clinical Operations: Improving Emergency Departments with Simulation

Management of the Emergency Department (ED) is an increasingly important priority for health systems. Under the dual stresses of operational pressures and payment reform, many recommendations have been made about how to improve throughput, reduce length of stay, mitigate readmissions, and improve quality. But do we really know which of the many factors is the main cause of the problem, or which solution would have the highest impact?

Each ED is unique and for any improvement to be successful, it must be a solution that is ***specifically tailored*** to the hospital's local environment, constraints and priorities. In order to weigh both the long and short-term operational effects and associated costs, hospitals need to test potential changes in a safe environment ***before*** committing to a particular solution.

# Variability of Local Services

ED management is not a one-size-fits-all solution. The effectiveness of potential changes can be impacted by many local, complicating factors including:

- Patient behavior and health literacy.
- Patient demographics and the prevalence of chronic disease.
- Access to urgent and primary care.
- Practice and referral patterns of primary care providers.
- Utilization of social services and infrastructure.
- Clinical care protocols for acute conditions such as stroke, heart failure, and fractures.
- Available hospital beds and utilization.
- Mental health services in the local area.

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The variability of local care services is so important that solutions must be carefully considered and tested in order to ensure that the changes will not only solve the current problems, but will not negatively impact any other area of the care system.

**That is why, prior to implementation, it is critical for an improvement team to consider questions such as:**

- What is the likely impact on the desired outcomes (e.g. door-to-doc time)?
- What are the anticipated costs and the associated return on investment?
- Are there combinations of the potential solutions that would improve effectiveness of each?
- How can stakeholder buy-in be created?
- What potential down-stream effects might be unanticipated?

How can operations be conducted while the system is transitioned to new processes or spaces?

*Simulation lets you find out the limitations of your system, and what changes can be made to prevent you reaching that **'tipping point'**.*

# The 'Tipping Point'

Evidence suggests that there is a tipping point in an ED at which the capacity and resources, including physicians, beds, and staff, simply cannot keep up with patient demand. After this point, it is very difficult to recover and return to a normal, efficient mode of operating.

The ***most cost-effective solutions are those that reduce the likelihood*** of this happening, which is precisely the type of question that simulation is designed to answer. In other words, simulation lets you find out the ***limitations*** of your system, what the ***warning signs*** are before this happens, and what ***changes can be made*** to prevent your team and department reaching that 'tipping point'.

# The Benefits of Simulation

A simulation is an accurate computer model that looks and acts just like your real life process, allowing you to experiment with changes to your ED, without taking the risk of making the changes in real life. You simply implement the proposed solutions in the virtual ED, and ***see where things could be improved***.

Since a simulation builds in real life randomness, you can be sure your model performs ***just like your actual department***. You can try out lots of different ideas quickly - simulating days, weeks or years of your department operations in only seconds using the software. The results from simulation models can help an improvement team to ***understand the impacts of a change*** on waiting times, throughput, costs, and other important measures. In turn, this allows decisions to go beyond the many opinions and expert recommendations found in the news and literature, and to instead be ***based on evidence and quantifiable results***, giving managers confidence in their decisions.

## Success Stories

Eric Hamrock, Senior Project Administrator for Operations Integration at ***Johns Hopkins Health System*** (JHHS) presented an online workshop discussing some of the lessons he learned through more than a decade of simulation projects at three JHHS Emergency Departments.

With an ongoing commitment to process excellence, JHHS has a long history of using simulation to support Emergency Department process improvement initiatives. He discusses how the internal process improvement team can work best with the simulation modeling team, what kinds of questions that are best answered with simulation and even offers specific process improvement recommendations.

**View the Johns Hopkins case study and webinar here:**
*https://www.simul8healthcare.com/case-studies/johns-hopkins-health-system-improves-ED-throughput*

## Make fast, confident decisions with simulation

Management of the Emergency Department (ED) is an increasingly important priority for health systems. Due to increasing operational pressures and payment reform each ED has become unique and requires solutions that are specifically tailored to its local environment. This often requires cross-department and cross-organisational working, and time as well as location are key factors.

Learn more about using simulation for Healthcare on our website or contact the SIMUL8 Healthcare team to discuss how simulation could benefit your organization.

***www.SIMUL8Healthcare.com/contact-us***