Vertical	Manufacturing	Pharmaceutical	**Healthcare**	Portfolio	Logistics	Financial	Government	Business

Genre	Case Study	**Project Review:**	White Paper	Technology Overview

Client

Miami Valley Hospital

Situation

Miami Valley Hospital (MVH) built a new emergency department (ED), and operations were running well. Then the nearest hospital shut its doors, causing MVH's annual ED visits to immediately jump from 75,000 to 95,000. MVH was in a position where the ED was seeing the number of patients per day that it expected to be seeing - in 8-10 years! Two years into their 10-year plan, they needed to come up with a new plan that did not involve any immediate expansion.

MVH had previously worked with ProModel Healthcare Solutions in other areas of their hospital, resulting in documented improvement in patient satisfaction and expense reductions. This previous success, combined with ProModel's strong reputation in consulting and decision-support technology specific to Emergency Services, led to a valuable partnership to reduce length of stay (LOS) in the MVH Emergency Service without significant investment.

Results

With a current LOS of 225 minutes at 95,000 patient visits per year, the anticipated volume in 8-10 years, all ideas or potential "best practices" were welcome. Emergency VAO allowed the project team to: visualize current and future ED environments; analyze the impact of various scenarios prior to investing time or money; and optimize the care delivery process and use of resources. The first step was to accurately portray the current MVH ED process flow with the Emergency VAO Technology. This is the most accurate means of mimicking reality because it models the inherent variability and high degree of interdependencies which exist. Using data and process maps unique to MVH, the model depicted the current ED to 99.2% accuracy. This gave the project team confidence the VAOpredicted impact of changes would be accurate. This "as-is" model helped to develop a deeper understanding of the bottlenecks and opportunities for improvement.

Solution

LOS was broken down into subcategories:

- Present to triage
- Triage to registration
- Registration to room
- Room to MD
- MD to orders
- Orders to disposition
- Disposition to exit (discharge or admit)
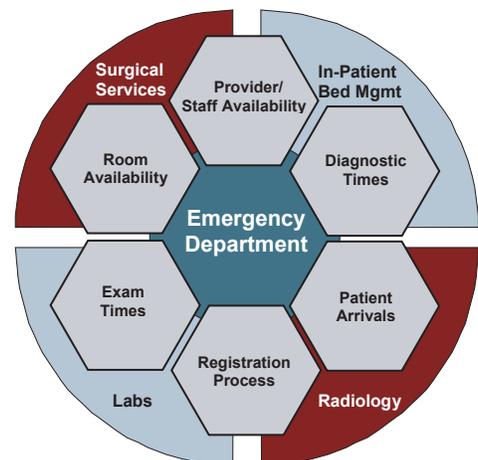
These times were benchmarked against peer hospitals. The two areas which, when improved, would apparently have the most impact on patient LOS were "orders to disposition" and "disposition to exit". The fact LOS for admitted patients was almost twice as high as for discharged patients further validated that "disposition to exit" could be improved.

In tackling the "disposition to exit" issue, the key was to improve admission time. Several process improvement opportunities were evaluated to reduce average admission time to 30 minutes. This new admission time was shown to reduce ED LOS by 21 minutes. Diving deeper into this problem area, there were a high number of cardiac patients that had to go through time-consuming diagnostics. Devoting part of an observation area to heart diagnostics showed an LOS improvement of 12 minutes.

To address the area of "MD to disposition" and the overall LOS, several scenarios were investigated. "Front-loading" more work to triage decreased LOS by 12 minutes, and by 20 minutes for patients requiring labs. By moving to a bedside registration system, LOS was reduced by 13 minutes. Several other process changes and IT investments were considered.

Once all of the potential impacts on LOS were evaluated independently, combinations of various changes were considered. Overall LOS improvement in the 12-17% range in the next 6-12 months seems quite probable, with potential for even greater improvements. Miami Valley Hospital is now focused on the implementation and change management associated with these improvement initiatives. Based on MVH's previous success working with ProModel Healthcare Solutions and VAO technology, confidence is high to achieve LOS reduction of 12-17% per patient encounter.
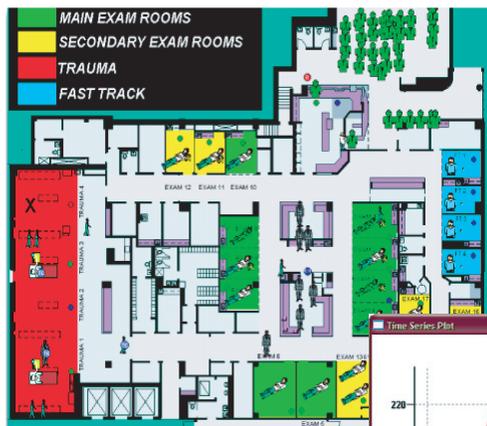
MedModel and ED Simulator enable you to see the impact of your decisions before you make them