Healthcare Resource Utilizati

Healthcare

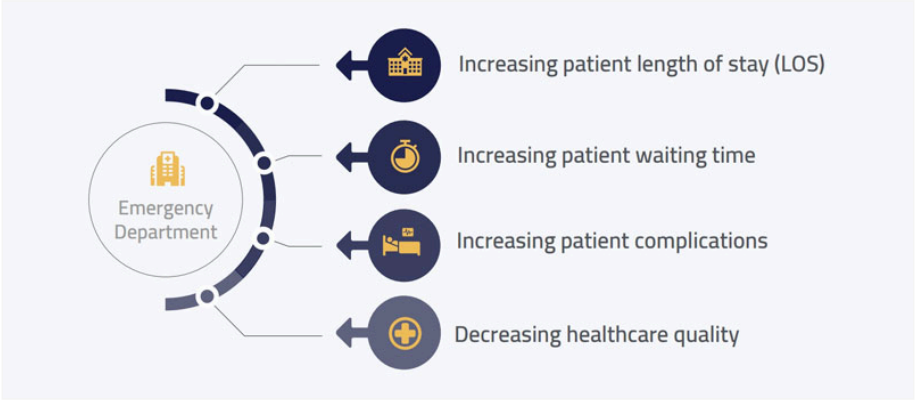
Overview

Lean Business Services is a leading company in the service and development of the healthcare sector in Saudi Arabia. Lean Business Services strives to improve the accuracy of public health indicators in the Kingdom of Saudi Arabia by developing innovative solutions thus boosting the health sector services.

optimize their performance was more efficient management of resources and personnel in their operations.

Congestion in emergency rooms caused several issues:

- An increase in patient length of stay (LOS)
- An increase in inpatient waiting time
- An increase in inpatient complications
- A decrease in healthcare quality

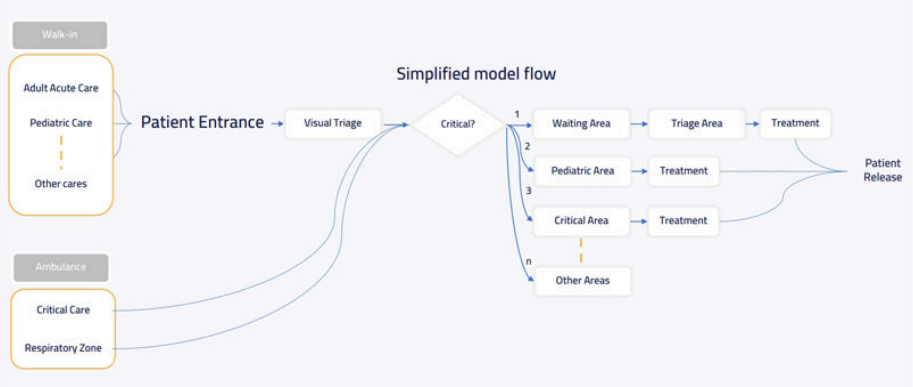


Issues caused by congestion in ERs

Solution to emergency room overcrowding

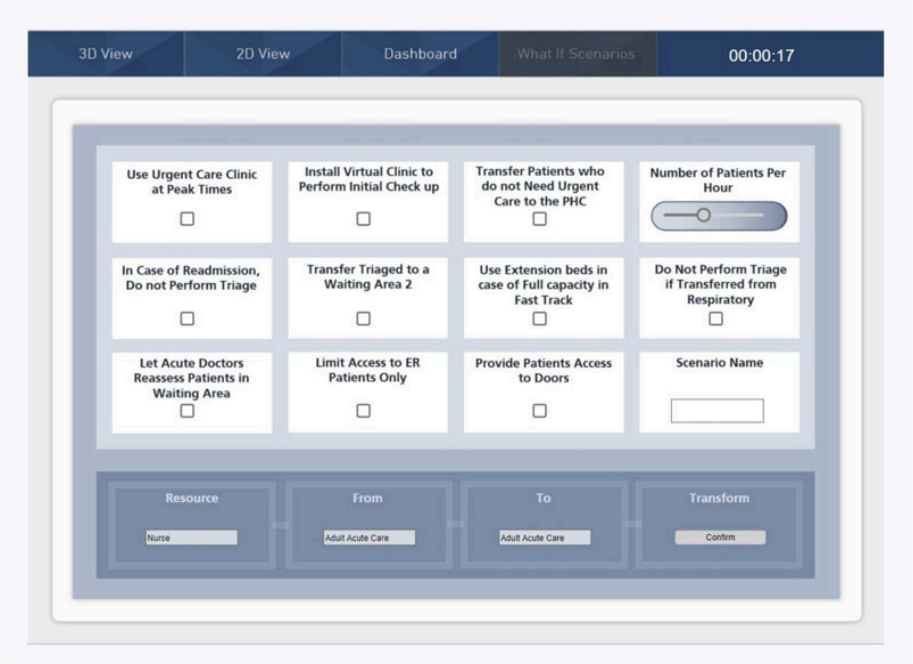
Lean Business Services intended to resolve the emergency room overcrowding problem. For a more informed management of resources, Lean's engineers developed a simulation model. The model developers wanted to understand how to create a smooth patient flow and decrease the length of the patient stay. By doing so, they could simulate different situations in the

The simulation model was implemented using the discrete-event paradigm for modeling the operations of emergency rooms and modeling patient flows.



Simplified model flow (click to enlarge)

The model provided several what-if scenarios to see how the changes could affect the ER operations.



What-if scenarios in the model (click to enlarge)

Simulation provided different outputs for each category in ER

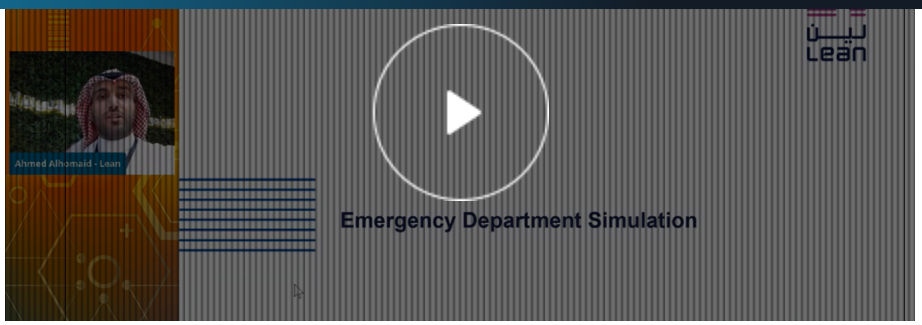
Results

The simulation model gave opportunities for the ER managers to make decisions by analyzing and evaluating different scenarios before implementing them in real life.

The modeling enabled them to:

- Identify the full capacity limit in emergency rooms. The simulation could help find the maximum capacity of patients in the hospital
- Identify the root cause of ER problems
- Decrease patient waiting time
- Better utilize human resources, e.g. transfer from another unit

Understanding and improving resource utilization as well as identifying areas of improvement became possible thanks to the simulations using AnyLogic software. In 2D and 3D views, a friendly user interface showed the operations of the emergency department and the exact patient flow within the ER and ran



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