

## Patient Service Improvement in Public Emergency Department Using Discrete Event Simulation

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**Abstract :** We study the patient service performance at the emergency department of a major Kuwaiti public hospital, using discrete simulation and lean concepts. In addition to the common problems in such health care systems (over crowdedness, facilities planning and usage, scheduling and staffing, capacity planning) the emergency department suffered from several cultural and patient behavioural issues. Those contributed significantly to the system problems and constituted major obstacles in maintaining the performance in control. This led to overly long waiting times and the potential of delaying providing help to critical cases. We utilized the visual management tools to mitigate the impact of the patients' behaviours and attitudes and improve the logistics inside the system. In addition a proposal is made to automate the date collection and communication within the department using RFID-based barcoding system. Discrete event simulation models were developed as decision support systems; to study the operational problems and assess achieved improvements. The simulation analysis resulted in cutting the patient delays to about 35% of their current values by reallocating and rescheduling the medical staff. Combined with the application of the visual management concepts, this provided the basis to improving patient service without any major investments.

**Keywords :** simulation, visual management, health care system, patient

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