

## Health Care using Queuing Theory

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**Abstract :** The appointment system was designed to minimize patient's idle time overlooking patients waiting time in hospitals. This is no longer valid in today's consumer oriented society. Long waiting times for treatment in the outpatient department followed by short consultations has long been a complaint. Nowadays, customers use waiting time as a decisive factor in choosing a service provider. Queuing theory constitutes a very powerful tool because queuing models require relatively little data and are simple and fast to use. Because of this simplicity and speed, modelers can be used to quickly evaluate and compare various alternatives for providing service. The application of queuing models in the analysis of health care systems is increasingly accepted by health care decision makers. Timely access to care is a key component of high-quality health care. However, patient delays are prevalent throughout health care systems, resulting in dissatisfaction and adverse clinical consequences for patients as well as potentially higher costs and wasted capacity for providers. Arguably, the most critical delays for health care are the ones associated with health care emergencies. The allocation of resources can be divided into three general areas: bed management, staff management, and room facility management. Effective and efficient patient flow is indicated by high patient throughput, low patient waiting times, a short length of stay at the hospital and overtime, while simultaneously maintaining adequate staff utilization rates and low patient's idle times.

**Keywords :** appointment system, patient scheduling, bed management, queueing calculation, system analysis

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