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Issues in Planning for healthcare management

Waiting for a stroke bed: Planning stroke unit capacity using queuing theory

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Abstract

Background: Access to rapidly advancing healthcare technologies is often limited due to lack of dedicated units with the potential to increase capacity in the health care industries, but outcome of these technologies is often limited due to the potential for capacity planning. These choices will be signaled to our partners and will not affect browsing data. [Privacy Policy](#)

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Results: The study demonstrated that the current bed capacity was considerably less than that required to provide effective care that maximizes the potential outcome for patients. Based on arrival patterns and length of stay the stroke unit requires 21 beds if the probability of a patient being turned away is to be less than 1%. This results in a bed occupancy considerably lower than the recommended 80-85%. Given the size of the unit at the time of the study (8 beds), 44.5% of patients would be turned away and managed on other units.

Conclusion: The study demonstrates the use of queuing theory to more effectively plan capacity for a stroke unit. In order to maximize outcome for patients units may need to run at lower occupancy than often recommended in the literature. Queuing theory provides an additional framework to help clinicians and managers more effectively plan in the future. Their advantage is that they are relatively straightforward to build, require no additional software other than a spreadsheet, and are relatively low on data requirements. The authors recommend that such modelling techniques should be utilized more widely in healthcare planning.

Keywords: [Queuing theories](#) [Hospital bed capacity](#) [Stroke](#) [Quality improvement](#)

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