

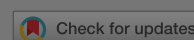
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Issues in Planning for healthcare management

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

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Pages 4-10 | Published online: 07 Jan 2016

Cite this article <https://doi.org/10.1080/20479700.2015.1101910>

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Abstract

Background: Access to rapidly advancing healthcare technologies is often limited due to lack of appropriate capacity. As stroke care continues to advance creating dedicated units with appropriate and effective capacity is paramount to maximizing the potential outcomes for patients. Queuing theory methodologies are widely used in industries, but infrequently in healthcare. Yet they provide the opportunity for more effective capacity planning

Method: ...
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Results: ...
...ably less
than that required to provide effective care that maximizes the potential outcome for

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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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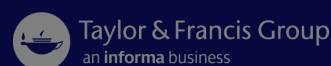
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