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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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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 utilized more widely in healthcare planning.

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