

'RING-FENCING' BEDS FOR STROKE PATIENTS IN ACUTE AND COMMUNITY CARE.

IS IT FEASIBLE TO RESERVE STROKE BEDS FOR STROKE PATIENTS?

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Background

English stroke care standards stipulate that stroke patients should:

- 1) be admitted to specialist stroke unit within 4 hours of admission
- 2) spend at least 90% of their stay on a specialist stroke unit

These targets are often not met¹. One means of achieving this is to 'ring-fence' beds in stroke units for exclusive use by stroke patients.

Stroke patients frequently move from acute care into more local community rehabilitation care before exiting the system, Fig. 1.

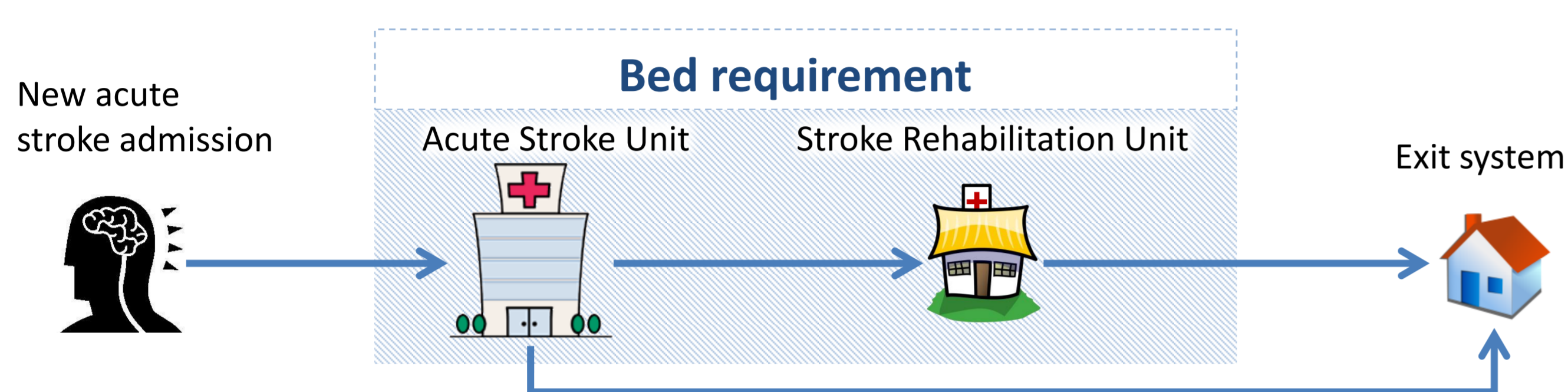


Fig. 1. Stroke patient pathway

Good patient flow through the system depends on appropriate bed capacity in both the acute and community care. A lack of community bed may delay discharge from acute care which in turn may result in a new acute admission not being able to access an appropriate specialist acute stroke bed.

Previous analysis using a 200 bed pool for emergency patients suggests that an 85% occupancy is sufficient to ensure a bed is available to patients in the large majority of cases². We sought to better understand bed availability in the smaller stroke setting by examining a system in South West England. We specifically investigated whether 'ring-fencing' stroke beds is a feasible option to ensure that stroke patients are cared for in a specialised stroke ward, for both acute and community care.

Methods

The modelled system (Fig. 2) was based on a region with one regional acute unit receiving 721 acute stroke admissions per year. ~40% of these patients require ongoing care in a community stroke rehabilitation unit (SRU), there are two SRUs in the region. The model places patients in their closest unit to home location. To replicate reality, out-of-region acute and community units are included in the model and are treated indifferently to the regional units such that patients living near the border may attend an out-of-region unit. Additional admissions to the community SRUs come from out-of-region acute stroke units, bringing the total number requiring community care to 383 patients per year. Length of stays are unit dependant and based on averages recorded in Hospital Episodes Statistics. Individual patient length of stay is sampled from a distribution based on a 70% CV (log-normal distribution).

Acute stroke unit length of stay ~ 7 days
Community SRU length of stay ~26 days
Dashed lines and grey boxes indicate the patients not monitored by the model.

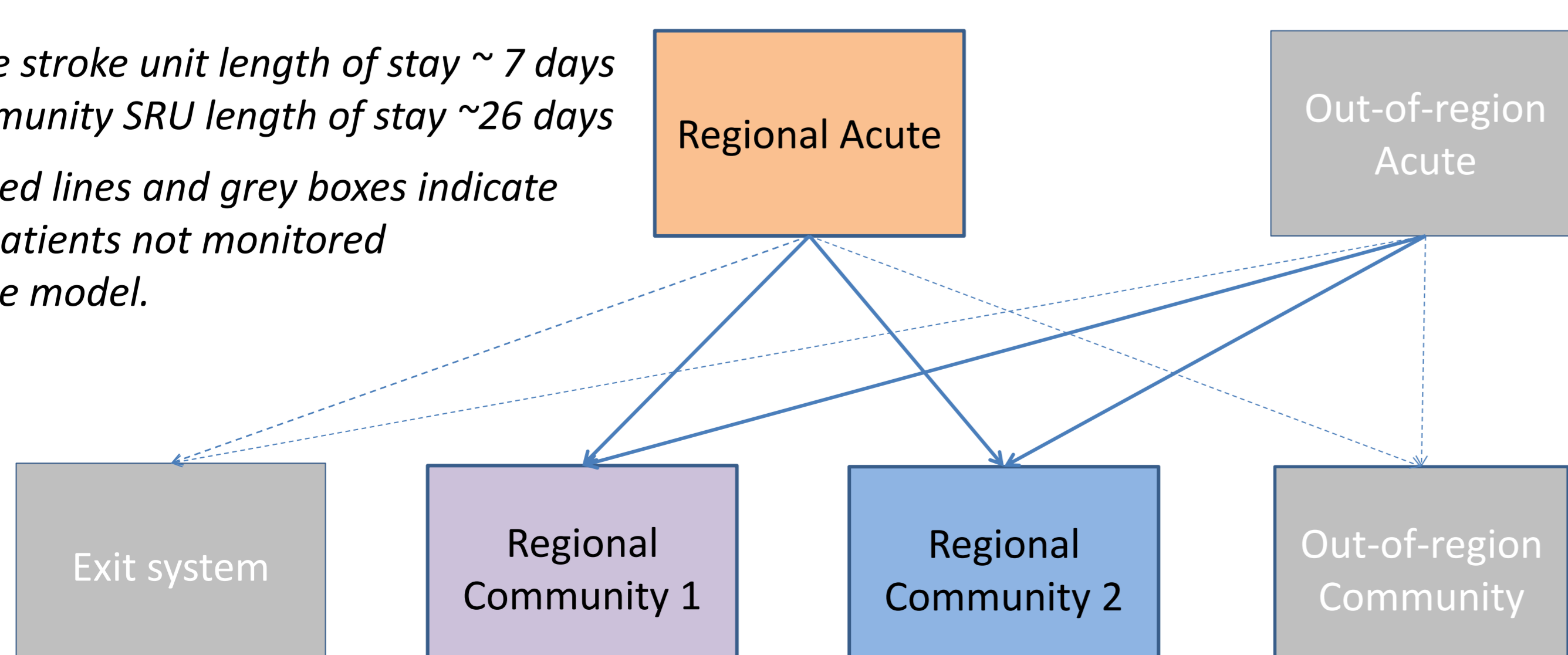


Fig. 2. A summary of the model

Results

The median number of beds occupied in the regional acute and two community hospitals were 13, 13 and 12 respectively, Fig. 3.

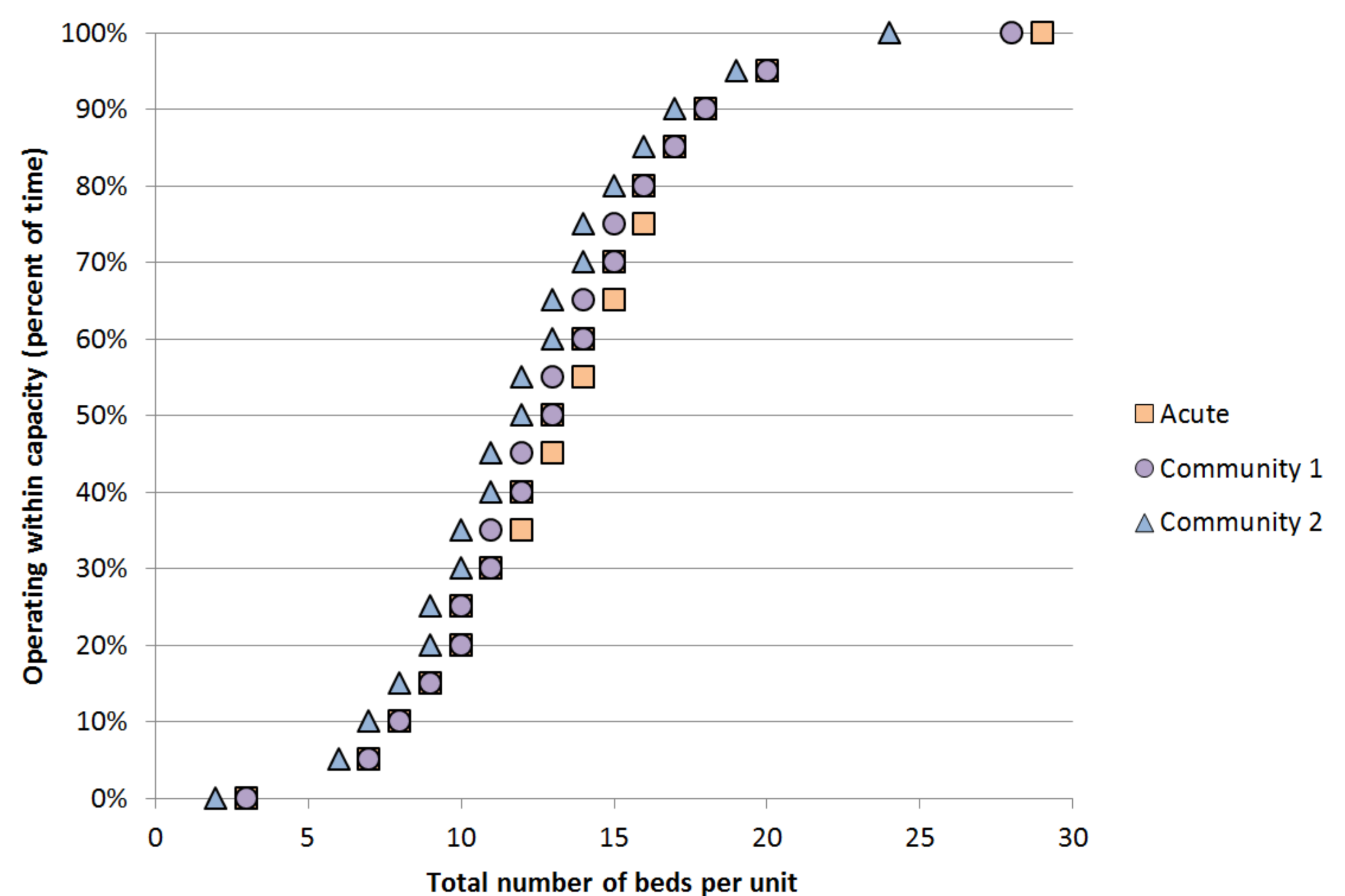


Fig. 3. Distribution of bed use in the regional acute and community stroke units

In order to have a sufficient number of beds in stroke units for 90% of the time, the ring fenced beds would have an occupancy rate of 70-75%. This would be as low as ~65% occupancy to have sufficient beds for 95% of the time, Table 1.

		Acute	Community 1	Community 2
Average beds occupied		13	13	12
Sufficient for 90% of the time	Bed requirements	18	18	17
	Bed occupancy rate	74%	72%	71%
Sufficient for 95% of the time	Bed requirements	20	20	19
	Bed occupancy rate	66%	65%	63%

Table 1. The number of beds required for a bed to be free 90% and 95% of the time, and the resulting average percentage bed occupancy for the regional acute and community stroke units

Conclusions

In contrast to Bagust et al.'s modelling of a whole hospital, our modelling of acute and community stroke units showed that bed occupancy rates may be as low as 65-75% in order to have sufficient beds (for 90-95% of the time).

These results suggest that ring-fencing acute and community beds for stroke patients alone is unlikely to be an acceptable strategy for most hospitals.

Alternative solutions need to be sought and identified. One such bed management approach, termed 'bed protection', selects which patient can take a free bed in the stroke ward, hence choosing those that are more likely to have a short length of stay.

References

1. <http://www.strokeaudit.org/results/Maps-Apr-Jun-2014/Acute-Organisational-Audit-Domain-Map.aspx>
2. Bagust A, Place M, Posnet JW. Dynamics of bed use in accommodating emergency admissions: stochastic simulation model. British Medical Journal 1999;319:155-58.