

The need for single room hospital accommodation

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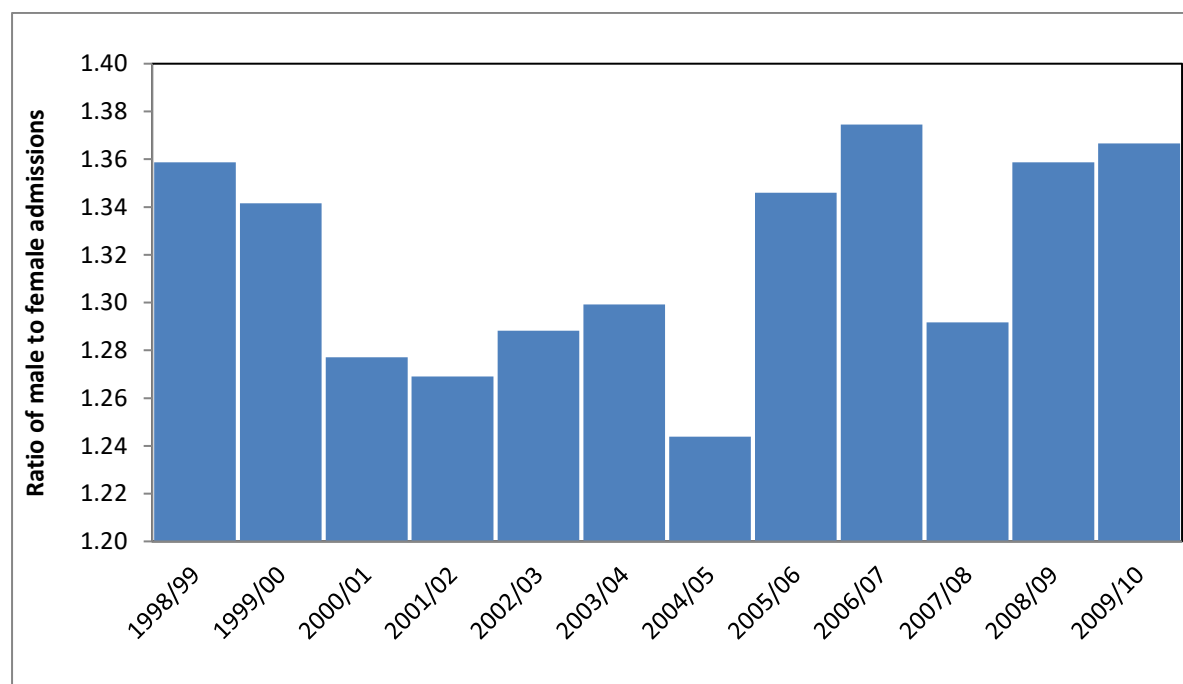
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Key Words: gender ratio, variation in admissions, single sex wards, hospital planning, proportion of single rooms, optimum bed occupancy, bed availability, hospital acquired infection, infection control

A series of articles in BJHCM has been exploring the factors behind the demand for hospital beds and the correct occupancy level required for optimum efficiency (Jones 2009, 2010, 2011a-f).

Figure 1: Trends in admissions for obstructive and reflux uropathy.



Footnote: Data for England was obtained from
<http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=203>

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The abolition of mixed sex wards has been an ongoing objective within the NHS (Department of Health 2005). While the differences between the two genders regarding susceptibility to different diseases and length of stay in hospital is a well recognised and researched area there appears to be virtually no research on the issue of the variability in the ratio of male to female bed occupancy. An understanding of such variability should be the basis for hospital design to eliminate the need for mixed sex wards.

Table 1: Variation in monthly proportion of beds occupied by men

Specialty	Upper Quartile	Lower Quartile
Cardiology	60%	53%
Cardiothoracic	75%	65%
Dermatology	56%	23%
Ear Nose And Throat	73%	55%
Elderly Care	40%	30%
Emergency Medicine	52%	38%
Endocrinology	59%	34%
Gastroenterology	60%	44%
Haematology	66%	53%
Hand Surgery	70%	60%
Medical	53%	45%
Neonatology	67%	47%
Neurology	57%	46%
Neurosurgery	63%	53%
Oncology	53%	42%
Ophthalmology	65%	30%
Orthopaedics	53%	43%
Paediatrics - Medical	58%	49%
Paediatrics - Surgical	93%	50%
Pain Management	65%	15%
Plastic Surgery	74%	55%
Psychiatry	60%	42%
Radiology	60%	29%
Radiotherapy	77%	37%
Renal Medicine	61%	48%
Respiratory	55%	45%
Rheumatology	45%	20%
Spinal Injuries	87%	69%
General Surgery	54%	43%
Trauma	87%	57%
Urology	85%	70%
Vascular Surgery	75%	58%

Footnote: Data is from a large tertiary hospital outside of the UK. As an example, maximum range for Elderly Care is 22% to 49%

Table One presents an analysis of the variation in the monthly proportion of occupied bed days over a six year period at a large tertiary hospital. As can be seen the variation is very large even using upper and lower quartile figures (only 50% of full range variation is encapsulated by the upper and lower quartile). Minimum inter-quartile variation is 8% for two of the largest specialties (General Medicine & Cardiology). Weekly and daily occupancy will show even higher variation. From the viewpoint of mixed sex accommodation traditional hospital design using four bed bays will struggle to cope with such high intrinsic variation and hence the need for an adequate proportion of single room accommodation to balance the allocation of patients.

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In the past, the provision of single room accommodation has been largely viewed from the perspective of infection control. A recent PhD thesis on the topic of infection control has concluded that hospital acquired infection (HAI) increases significantly above 82% average occupancy, however, the evidence regarding single room accommodation as a way of preventing hospital acquired infection is weak (Gidney 2008). Indeed based on Table 1 it would appear that the need for single rooms largely arises from an entirely different source.

Based on the assertion that trends in national and international bed demand may be showing anomalous behaviour (Jones 2009, 2010, 2011b,f) the gender specific trends for ICD diagnosis N13 (obstructive and reflux uropathy – obstruction of the flow of urine) for England are shown in Figure 1. This particular diagnosis was chosen because it has relatively large numbers of admissions (187,000 over 12 years) and so avoids the problem of small number random scatter and the vagaries of clinical coding at individual hospitals.

As can be seen there are unexplained time trends which may arise from gender specific interactions with the prevailing environment (weather and infectious agents). Possible mechanisms for such gender specific responses in particular diagnoses have been discussed (Jones 2011a), however, we do need to be aware that the resulting ratio of male to female admissions across all diagnoses is constantly flexing over time. It is the constant movement in this ratio that drives one of the fundamental needs for single room accommodation as a means of balancing the demand for male and female accommodation within the constraints of otherwise fixed ward design. Obviously the smaller the specialty the greater the variation and the higher the need for balancing single room accommodation.

As is often the case in healthcare, the real reasons for a perceived need for a particular resource are often obscure.

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