

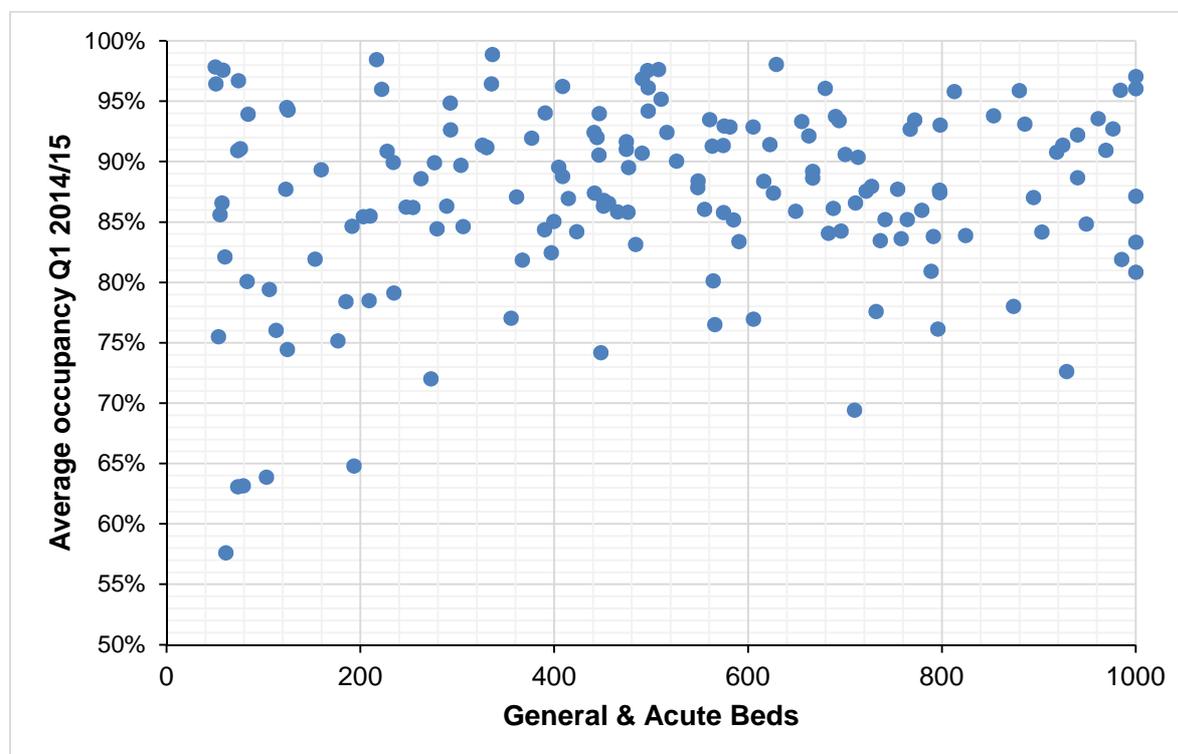
Medical bed occupancy and cancelled operations

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An extended series of articles in BJHCM has explained the role of high hospital bed occupancy in regulating almost every aspect of poor performance (see reviews by Jones 2009, 2011a-b, 2013). The latest quarterly average occupancy for hospitals in England is shown in Figure 1. Due to the effect of size on turn-away average occupancy is supposed to reduce as size gets smaller, however, a perverse outcome of the HRG tariff (which assumes that everything is at the average), forces almost all but a few paediatric and specialist hospitals to operate above 85% average occupancy.

Figure 1: Average (midnight) occupancy in English acute hospitals (April-June 2014)

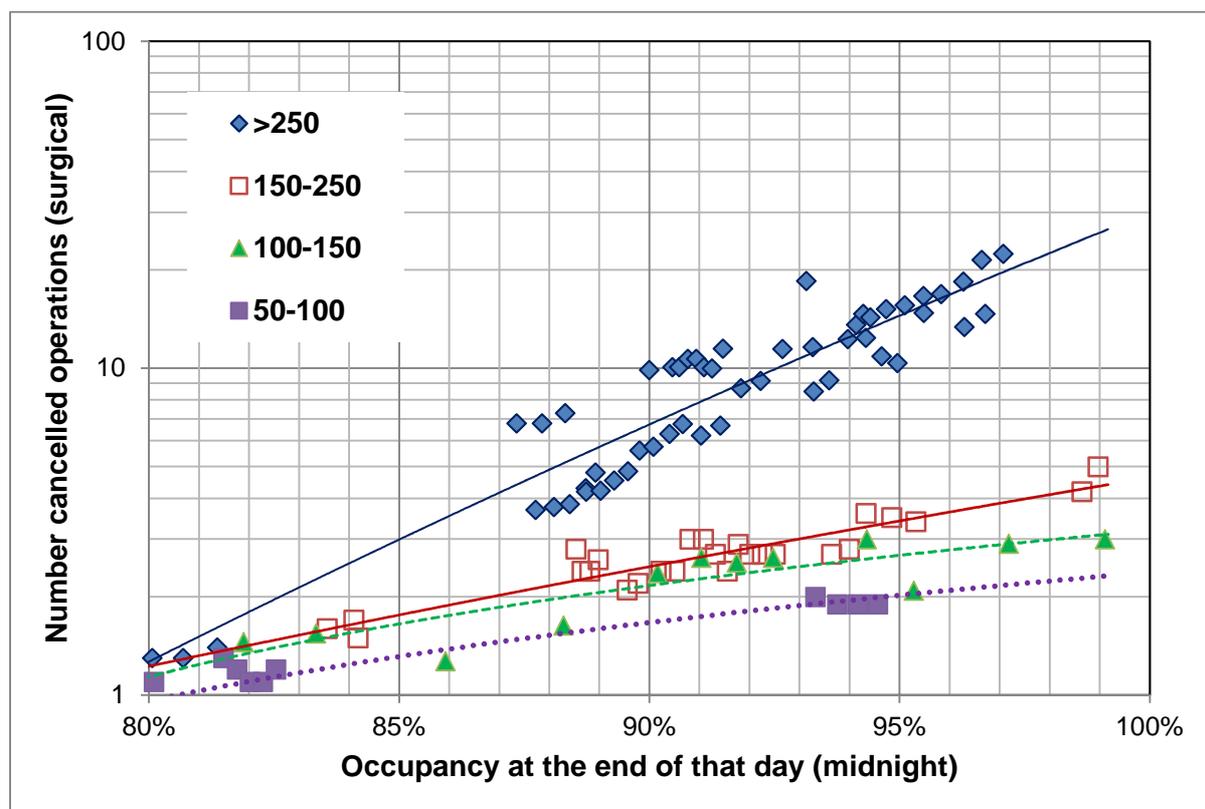


Data is from <http://www.england.nhs.uk/statistics/statistical-work-areas/bed-availability-and-occupancy/bed-data-overnight/>

Are these figures cause for concern or indicative of a well-run health service? Insight can be gained from a unique survey of daily (midnight) occupancy of the medical bed pool in Scottish hospitals and how this related to cancelled surgical operations during that day. Hence we are dealing with a daily occupancy figure and not a quarterly average.

This data has been summarised in Figure 2 where it can be seen that cancelled operations during the day are a function of hospital size and medical bed pool occupancy at the end of the day (midnight). Hospital size ranged from 22 medical beds at the Gilbert Bain hospital in Shetland through to 424 medical beds at the Ninewells hospital in Dundee. Data was obtained by a series of Freedom of Information requests over the period 1st January 2013 to 1st March 2014 (Elison 2014).

Figure 2: Daily (midnight) medical occupancy and cancelled surgical operations



Data is from Ellison M (2014). Each data point is an average of 10 consecutive daily readings ranked by increasing midnight occupancy.

In England, the average acute hospital has 66%, 29% and 5% of the general & acute bed pool as medical, surgical and paediatric beds respectively. Some 60 out of 190 acute Trusts have more than the maximum of 424 medical beds in the Scottish survey, and some 57 English hospitals match the >250 group in Figure 2. Only 16% of hospitals have an average less than 80% occupancy, while 41% have an average over 90% and 13% have an average over 95%.

Recall that the weekly average occupancy in the general and acute bed pool is artificially lowered by low occupancy in the surgical bed pool over the weekend, and by the inclusion of low average occupancy specialties such as paediatrics. Also that daily medical bed

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occupancy tends to rise throughout the day until around 2 p.m. and then begins to fall reaching a minimum around midnight. A typical medical/surgical assessment unit will see an 80% increase in occupied beds between midnight and 2 pm, and relative to minimum occupancy at Saturday midnight will experience a 140% increase in occupancy around 2 pm on a Monday. These pressures are then reflected in the wider medical bed pool.

Average occupancy in Figure 1 therefore implies daily midnight occupancy higher than the average on 50% of occasions, and on more than 50% of occasions during week days.

The next issue is how does medical occupancy affect cancelled surgical operations? The simple answer is via boarding or bed borrowing, in which a medical patient is placed in a surgical bed. Hence the 24 hour cycle in medical occupancy often conflicts with the need to admit surgical patients at the beginning of the day, i.e. bed borrowing has already begun and so surgical patients no longer have a bed to be admitted for surgery.

The reason that the number of cancelled operations increase with hospital size is that larger hospitals have a larger surgical bed pool and hence the potential for larger numbers of cancellations.

Hence putting Figures 1 and 2 together it would appear that for the average English hospital, sustained midnight medical occupancy (during the week days) of less than 90% is required to avoid an average of 7 cancelled operations per day. To maintain such an occupancy implies an average quarterly occupancy somewhere around 85% in Figure 1, which 80% of English acute hospitals fail to achieve. Which more or less confirms what is widely known, namely, the NHS is operating at far too high levels of average medical bed occupancy to avoid cancelled operation and to sustain waiting time reductions (and to avoid a host of other poor performance measures such as hospital acquired infection, staff burn-out, etc).

References

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