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Is there scope to close acute beds in the Sustainability and Transformation Plans?

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Key Points

- Occupied overnight beds in the surgical group of specialties continue to fall due to increasing day surgery rates
- The trend in medical group bed occupancy is dominated by a series of surges in bed demand for which there remains no (official) explanation
- However, baseline bed demand in the medical group has remained relatively constant since 1998/99
- Suggestions regarding the likely hood of bed reductions in the STP process are provided

Introduction

Rising acute costs are an international problem, but are seeking to be addressed in England via Sustainability and Transformation Plans (STP) (Kings Fund 2016). Early news is that many STP clusters are looking to make large reductions in acute bed numbers.

After all, everyone is aware that since 1987/88 acute overnight bed numbers have reduced by 44% (NHS England 2016), and a continuation of this trend is must surely be somewhat inevitable. However, since 2011/12 acute overnight bed numbers have only reduced by 3.8%. On the other hand, bed occupancy has increased from a nearly manageable 86.3% in Q1 of 2010/11 to an alarming 91.2% in Q4 of 2015/16. Baseline occupancy is increasing by 0.15% (percentage points) every quarter (NHS England 2016). High occupancy is a primary source of all manner of efficiency, safety, morale and queuing issues (Beeknoo and Jones 2016a). An additional 7,600 beds are required to restore average occupancy back to a safe and efficient level.

At this point it may be useful to look at the component parts of acute care, namely, surgical versus medical. To this end, Figure 1 gives the trend in midnight occupied beds from 1998/99 to 2015/16 using Hospital Episode Statistics (HES) data (NHS Digital 2016). Both trend lines include emergency and elective admission types.

Surgical Group Trends

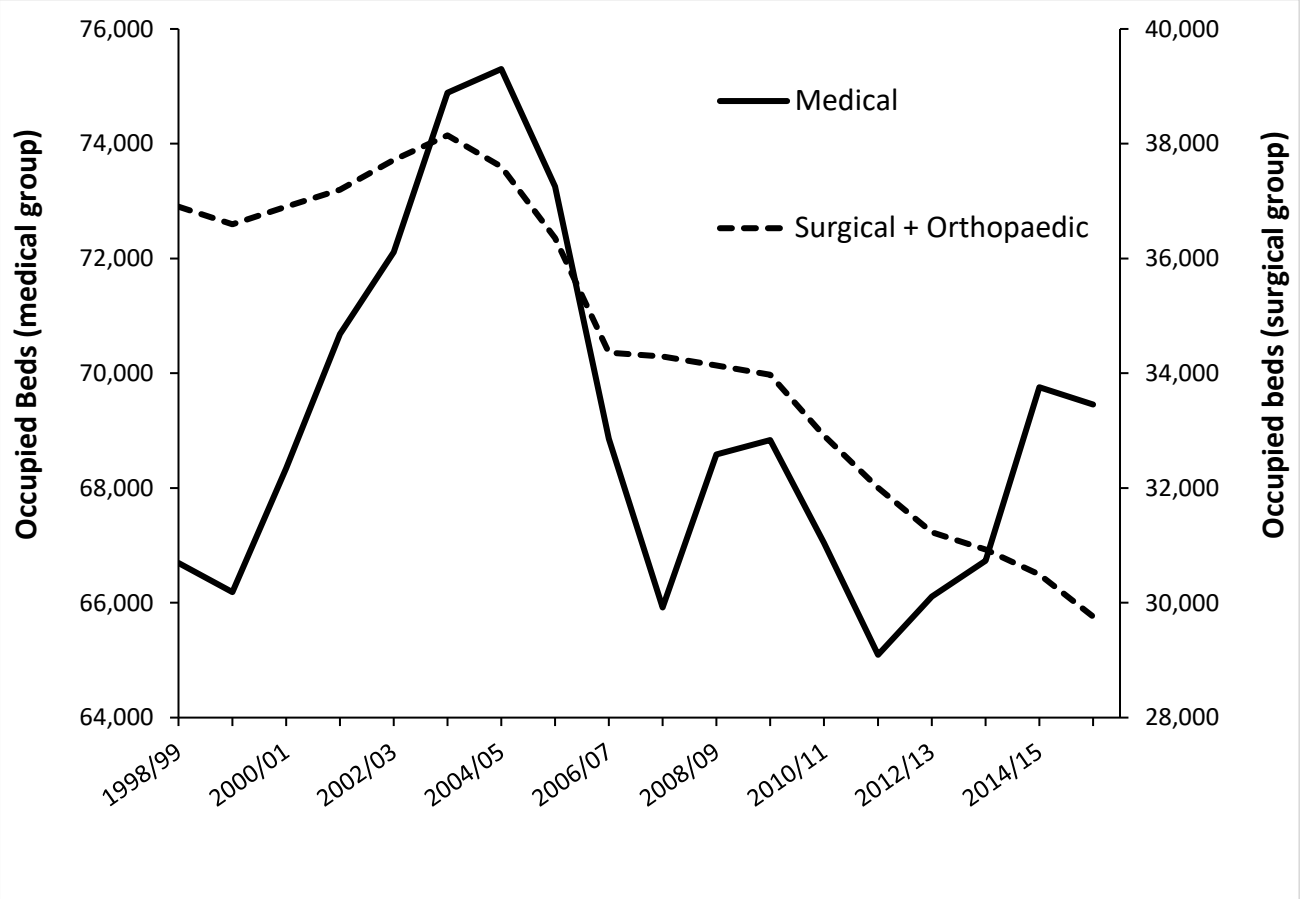
The NHS Modernisation Agency was established in 2001, and efforts to increase day surgery rates and reduce surgical overnight length of stay led to the large decline in surgical occupied beds between 2003/04 and 2006/07. Further increases in day case rates and more modest reductions in length of stay since 2006/07 account for the continuing downward

trend. Hence surgical group day case activity has increased from 2.0 million in 2002/03 to 3.15 million in 2015/16. Recent trends are around 38,000 extra day case admissions every year, approximately 1.2% per annum growth (NHS Digital 2016). Expect continued reduction of around 500 fewer surgical occupied overnight beds per annum (around -1.7% p.a.), however, at a reducing rate over time as day case extraction, and an ageing population place upward pressure on length of stay (Jones 2016b). The biggest need, is however, to restore average occupancy to around 85%, to improve flow, prevent delays in admission from A&E, and minimise cancelled operations (Beeknoo and Jones 2016a).

Medical Group Trends

While the surgical group is relatively straight forward, that of the medical group is far more complex. As can be seen in Figure 1 the long-term trend is marked by a regular series of surges in bed occupancy with no overall trend downward in occupied beds.

Figure 1: Trend in occupied beds (midnight) for the surgical and medical groups of specialties in England



Footnote: Both trend lines contain overnight elective and emergency admissions. The medical group includes haematology, oncology, pain management and admissions into the specialty 'Accident and Emergency', which is often used for assessment/observation units. Mental health, Paediatric and Obstetric/maternity are excluded. By definition, any same day admission is excluded. Average occupied beds in each year are derived from occupied bed days divided by 365 (days per year).

This is nothing new and a large surge in bed occupancy also occurred around 1993 (Jones 1997, 2015a). The surge centred around 2004/05 saw inexplicable increases in bed

occupancy associated with all types of injury (Jones 2009). Such curious trends are seen in other countries (Jones 2011a). The temptation is to conclude that these are unexplained therefore can be ignored (Jones 2011a, 2015a), however, observe that the surgical group also shows bumps in bed occupancy around the same times.

While medical group elective day case admissions are growing at around 158,000 per annum (around 4.7% p.a.) (NHS Digital 2016), the behaviour of overnight occupied beds requires some explanation. Since 2002/03 medical group same day non-elective admissions have grown from around 0.2 million to 1.0 million in 2015/16 (NHS Digital 2016). These admissions do not get counted in the midnight occupancy total in Figure 1, and because these patients (mostly residing in assessment/observation units) require a bed they are placing a hidden pressure on medical bed occupancy. Approximately 1,400 beds are required during daytime hours to accommodate these patients.

However, the behaviour of overnight medical admissions has been recently demonstrated to be associated with equally inexplicable trends in deaths (Jones 2015a-c). Very small area studies show evidence for something resembling infectious spread for both deaths and admissions (Jones 2015a-d). One study in North East Essex suggested that GP surgeries could be inadvertently acting as loci for this seeming infectious spread (Jones 2015d). Austerity and bed blocking may have made the latest unexplained surge worse, but the effect arises fundamentally from more admissions (Jones 2015a). The basic message is – take nothing for granted, and allow sufficient flexibility in the occupancy margin to account for the emergence of unexpected trends. Medical bed occupancy and deaths contain hidden patterns which have yet to be fully explored and understood (Jones 2011a,c, 2015b, 2016a).

For whatever reason, these trends are real and will simultaneously place pressure on any schemes devised as part of the STP. In my own opinion, the STPs will probably extract large numbers of same day stay medical non-elective (Jones 2017), and additional short stay overnight emergency admissions with a combined modest impact on medical bed occupancy. Restoring an average occupancy of around 85% is also vital to unclogging A&E, preventing trolley waits, patients inappropriately placed in surgical beds, and other flow-related issues (Beeknoo and Jones 2016a).

Likely Reductions in Bed Numbers

With a good tail wind, maybe a 10% reduction in occupied beds but certainly nothing like the 50% reduction in total beds which some areas seem to be proposing. Recall that around 9% additional beds are required to restore average occupancy to a safe and efficient level plus provide beds to cope with same day stay emergency admissions. As plans mature some areas may well achieve the 30% reduction in bed days achieved in Torbay – after many years of hard work (Jones 2011b). Any STP claiming greater than 20% (long-term) reduction in acute bed numbers is probably seriously flawed (Beeknoo and Jones 2016b). Recall available and occupied beds are two different things, and the occupancy margin is set by the seasonality in bed demand and the natural volatility associated with seasonal behaviour (Beeknoo and Jones 2016a, Jones 2011c).

By all means, gain the benefits offered by economy of scale, and the better outcomes associated with large and well-resourced regional units specialising in particular areas (Symons et al 2013). Probably easier to implement in the surgical group of specialties. However, it is no one's best interest to make heroic assumptions (such as assuming all

admissions saved will be at the average length of stay), when no one can explain the recurring series of humps in medical bed demand going back to the early 1990's, and probably earlier (Jones 1997, 2011a,c, 2015a). Just because no one can explain it, doesn't mean it doesn't exist. Indeed, the explanation may well be of vital importance.

Conclusions

Hidden assumptions around how the world behaves are always the downfall of mathematical models, and the same will apply to STPs which are an example of a modelling exercise. Hidden assumptions always come back to haunt the naive. The STP process is both necessary and vital, however, be prepared to acknowledge that straight line demographic-based projections have serious limitations in the (complex) real world (Beeknoo and Jones 2016a).

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