An edited version of this article has been published as: Jones R (2016) Hospital bed occupancy and deaths (all-cause mortality) in 2015. ***British Journal of Healthcare Management*** 22(5): 283-285. Plese use this to cite.

Hospital bed occupancy and deaths (all-cause mortality) in 2015

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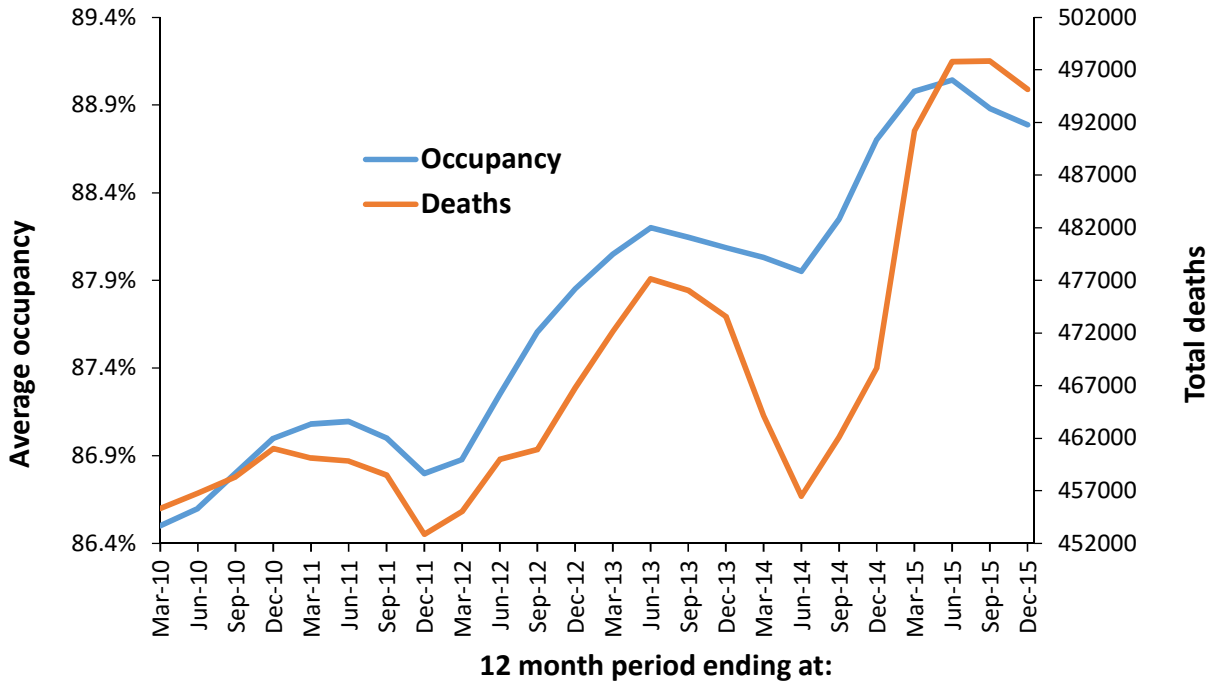
It is vitally important that health service planners and policy makers understand the fundamental mechanisms lying behind the expression of inpatient demand. Although in this respect, Whitehall has been accused of policy-based evidence, as opposed to evidence based policy – the temptation to fit the evidence to cherished policies being too strong for politicians to resist (LSE GV314 Group 2012, Press Association 2013).

Figure 1: Running 12 month average acute occupancy, and total deaths in England



Footnote: General and acute bed occupancy is from NHS England https://www.england.nhs.uk/statistics/statistical-work-areas/bed-availability-and-occupancy/bed-data-overnight/, while monthly deaths are from the Office for National Statistics (ONS) http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/monthlyfiguresondeathsregisteredbyareaofusualresidence.

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Many will be aware that deaths (all-cause mortality) in England for 2015 showed the greatest year-on-year increase in nearly 50 years (Donnelly 2016). This 50,000 of unexplained deaths across the entire UK, led to somewhat feeble suggestions by Public Health England (PHE) regarding possible causes, despite the fact that PHE would have known for many months that deaths were very high. This is also despite the fact that the increased deaths in 2015 were a repeat of a similar situation in 2012, which PHE had promised to fully investigate (Jones 2013, 2015j, 2016d).

Indeed Figure 1 reveals exactly when deaths increased, and the magnitude of the increase. Figure 1 is a running 12 month total for deaths, and a running 12 month average for occupancy. In a running total, a sudden and unexpected increase in deaths or occupancy will show up as a ramp upward. Hence in the 12 month period ending at Jun-14 there were 456,493 deaths, however at some point before Sep-14 they had suddenly and unexpectedly jumped to 497,857, i.e. an increase of 41,094 (with a further 3,000 in Wales and 5,500 in Scotland and around 1,000 in Northern Ireland). This higher level of deaths remained for a full 12 months before reverting back to the baseline level at some point after Sep-15. Hence by Dec-15 PHE would have known about this large and unexplained increase for at least 12 months – long enough to have done considerable background investigation and have had an adequate explanation by the time the data was released in March 2016. Feel free to draw your own conclusions from the above facts.

The next point from Figure 1 is that acute hospital bed occupancy increased roughly in parallel with the increase in deaths, and that this was a repeat of previous events in 2010 and 2012. Indeed these events have been traced back to the 1950's (Jones 2015a) – an observation of which PHE has been made aware. While many of the readers of this journal are health service managers, one does not need to be a qualified public health doctor to reach the conclusion that something which simultaneously increases deaths and hospital bed occupancy is most likely to be infectious in nature. Indeed numerous studies have demonstrated that whatever is causing these events shows both intra- and inter-local authority spatial spread, is international in scope (Jones 2015a-b,e-g,I, 2016a,f), and has characteristic profiles of persons who are more susceptible to hospital admission and death (2015d,2016a). These are some of the more rudimentary characteristics of a genuine infectious epidemic.

The principle of spatial spread of the infectious agent is demonstrated in Figure 2 where occupancy for various randomly chosen acute hospitals (beginning with the letter B or C) is shown for the tail end of the 2012 outbreak, and for the 2014 outbreak. Especially note differences in timing and extent (Calderdale & Huddersfield, Burton and Cambridge hospitals are on the secondary X-axis). The apparent anti-phase behaviour seen at the Countess of Chester hospital being a characteristic of recurring infectious events (He and Stone 2003, Zhang et al 2007), as is the variable synchrony and granularity (Greene et al 2006). The anti-phase behaviour is also replicated at very small areas (in preparation).

The extent of the effect on occupancy is moderated at each hospital by opening beds to cope with the influx of patients, hence across the whole of England available general and acute beds increased from an average of 91,963 for the 12 months ending Jun-14 to 93,128 for the 12 months ending Mar-15. The increase in occupancy in Figure 1 has not been adjusted upward to reflect this increase in the number of available beds. The increase in occupancy is also attenuated by fewer elective operations and a consequent increase in persons on the waiting list. Hence the financial impact of these events starts and stops at different times in different locations and has a different magnitude depending on the granularity of the infectious spread (Jones 2015b,I, 2016b). These infectious events are so powerful that

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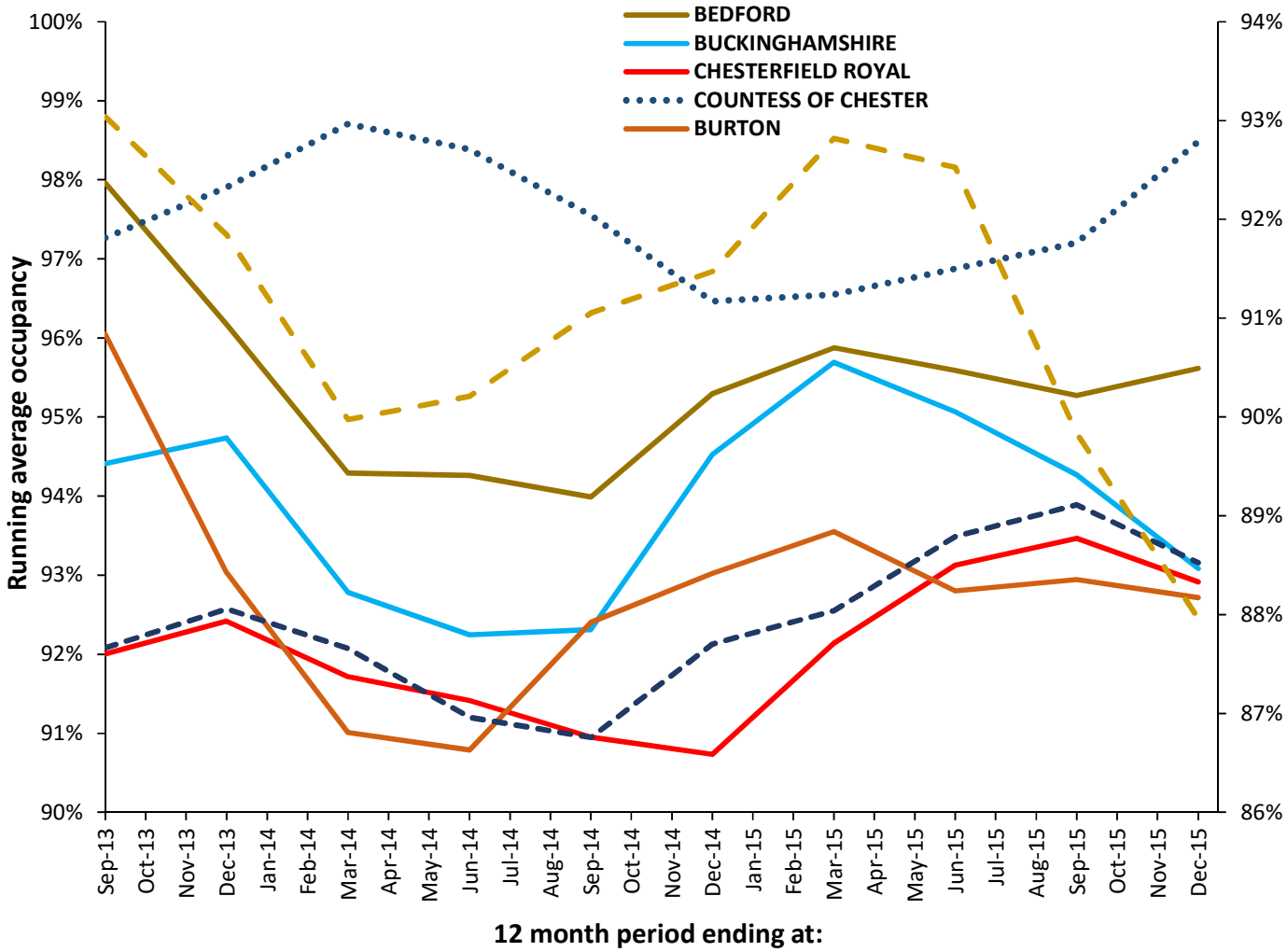
the calculated hospital standardised mortality rate (HSMR) is distorted (Jones 2015h). As expected, the events are also accompanied by an increase in sickness absence (Jones 2015c, 2016e).

Figure 2: Spatial spread and effect on individual hospitals



It would seem that public health doctors from PHE are unable (or unwilling) to provide a public explanation for these recurring events. One possible explanation could be that the rather obvious cost implications of these events to the NHS via increased admissions and bed occupancy, is contrary to the current policy to blame the NHS for all cost 'inefficiencies'. This is presumably in the build-up to the introduction of some type of insurance-based system of funding.

If an infectious event is the primary cause of unexplained periods of higher costs, then the obvious solution is to identify the agent responsible with all possible speed, and then to introduce standard measures of containment to limit infectious spread. Also to instigate research into the development of vaccines or other prophylactic measures. Sadly, these infectious events are adding costs into the NHS faster than efficiency can mitigate the increase, and perversely the NHS is then subject to even further blame (Jones 2015b-c).

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