

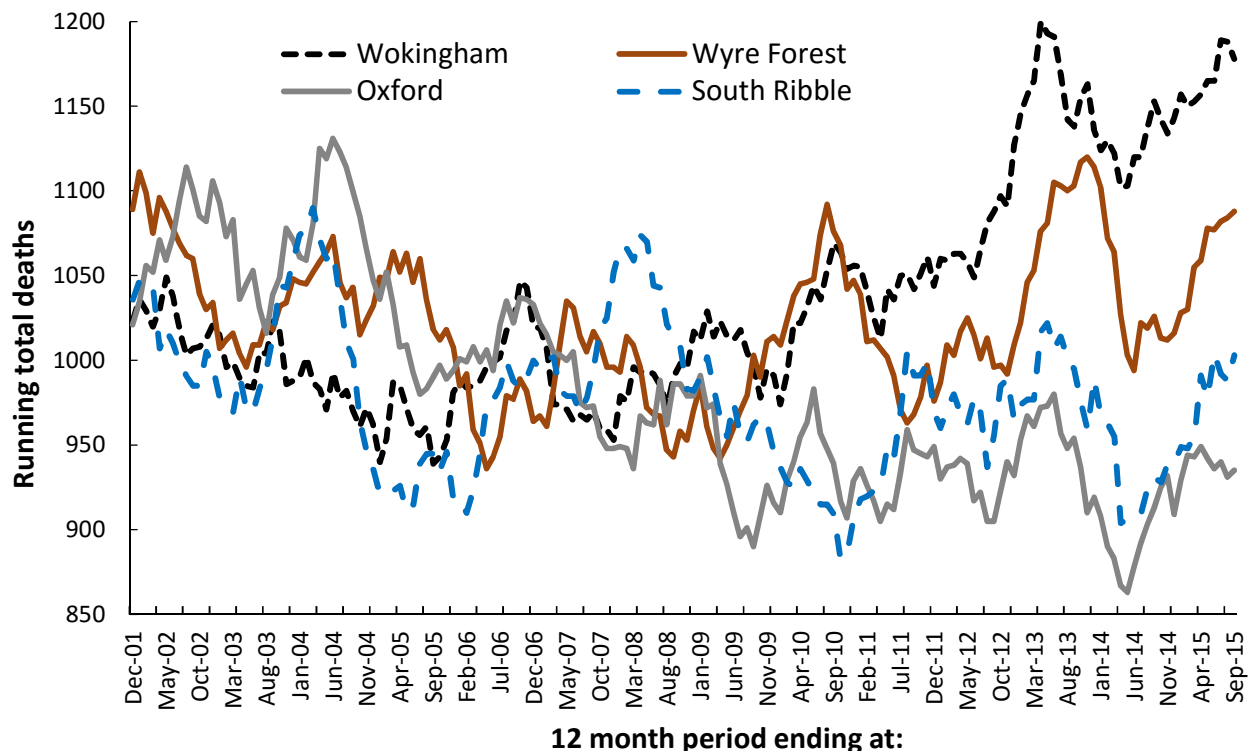
The real reason for the huge NHS overspend?

Dr Rodney P Jones (ACMA, CGMA)
Healthcare Analysis & Forecasting
Camberley
hcaf_rod@yahoo.co.uk
www.hcaf.biz

Further articles in this series are available at http://www.hcaf.biz/2010/Publications_Full.pdf
The published version is available at <http://www.bjhcm.co.uk>

NHS trusts maintained a small surplus from 2009/10 through to 2012/13, and then slid into a large overspend which had reached £1.6 billion by mid-way through the 2015/16 financial year (Triggle 2015). While pressure on Trusts to maintain staff to patient ratios has made a significant contribution to this overspend, is it possible that unexpected increases in emergency admissions have acted to amplify cost pressures?

Figure 1: Running 12 month total of monthly deaths in four local government areas



It has already been noted that there is a strong association between unexplained periods of higher death and health care utilization (Jones 2015a). In this respect Figure 1 shows a running 12 month sum of deaths for four English local government areas from 2001 through to 2015. In a running total,

An edited version has been published as: Jones R (2016) The real reason for the huge NHS overspend? *British Journal of Healthcare Management* 22(1): 40-42. Please use this to cite.

seasonal behaviour is effectively removed and small number monthly variation is minimised. The periods of high unexplained death shows up in a running 12 month total as an inverted 'V', where the upward slope represents a step-like increase in deaths lasting for somewhere around 12 months, and the downward slope simply shows the dilution of the running total after cessation of the step-change. The magnitude of the step-change is shown by the difference from trough to peak and, as can be seen in Figure 1 can be very large or even seemingly absent on some occasions. Differences in timing between local government areas can be discerned, and these differences arise from very small area spatial spread of an as yet unidentified agent (Jones 2015c-f). Increased medical admissions and bed occupancy mirrors the increase in deaths (Jones 2015b,h-l, 2016). Hence Figure 1 illustrates the principle that something strange (probably infectious) is happening, which affects levels of medical admission and hence costs. Also note that the funding formula does not contain any correcting factors to account for this behaviour (Jones 2013).

Table 1: Apparent magnitude of the step-like changes in death for various local government areas

Region/Local Authority	Average deaths	Magnitude of the apparent step-up in deaths						Max-up	Max-down‡
		2002	2004	2008	2010	2012	2014		
ENGLAND AND WALES	507,830	1.6%	n/a	2.0%	2.0%	4.7%	8.7%	8.7%	5.4%
ENGLAND	475,845	1.6%	n/a	2.1%	2.0%	4.7%	8.7%	8.7%	5.3%
SOUTH EAST	76,836	1.3%	0.8%	2.6%	3.5%	5.0%	8.2%	8.2%	5.4%
SOUTH WEST	53,306	1.8%	1.9%	3.8%	2.0%	5.4%	8.4%	8.4%	6.3%
EAST	52,631	1.6%	0.4%	2.8%	2.8%	5.5%	10.8%	10.8%	5.3%
WEST MIDLANDS	52,193	3.1%	0.6%	1.7%	1.9%	6.7%	8.7%	8.7%	5.6%
LONDON	51,153	0.9%	n/a	0.8%	0.8%	3.4%	8.6%	8.6%	7.7%
YORKSHIRE AND HUMBER	50,298	1.6%	0.9%	2.0%	2.4%	3.7%	8.5%	8.5%	6.2%
North West Leicestershire	46,289	n/a	n/a	1.9%	1.9%	8.0%	11.4%	11.4%	9.1%
EAST MIDLANDS	42,001	2.9%	0.6%	3.5%	1.8%	5.4%	9.3%	9.3%	5.6%
Outer London	34,328	1.5%	n/a	1.1%	0.9%	4.5%	9.6%	9.6%	8.1%
WALES	31,985	2.6%	n/a	3.3%	2.0%	6.6%	9.3%	9.3%	6.8%
NORTH EAST	27,082	1.5%	1.5%	2.4%	2.1%	5.0%	10.4%	10.4%	6.2%
Greater Manchester (Met County)	24,887	2.7%	0.9%	1.1%	0.7%	3.8%	8.6%	8.6%	6.1%
West Midlands (Met County)	24,556	3.5%	0.2%	2.4%	1.9%	6.2%	9.1%	9.1%	7.0%
West Yorkshire (Met County)	19,972	1.4%	0.9%	1.7%	3.7%	3.7%	9.1%	9.1%	6.9%
Inner London	16,825	n/a	n/a	1.8%	0.6%	1.2%	7.8%	7.8%	7.4%
Merseyside (Met County)	14,758	1.2%	n/a	2.4%	2.7%	8.5%	7.8%	8.5%	6.8%
Kent	13,858	3.2%	2.3%	4.7%	3.4%	3.7%	9.4%	9.4%	5.6%
South Yorkshire (Met County)	13,071	2.3%	2.0%	4.0%	1.0%	4.6%	8.4%	8.4%	6.5%
Essex	13,063	1.4%	0.5%	3.1%	5.4%	5.4%	12.2%	12.2%	6.8%
Lancashire	12,147	3.5%	n/a	2.4%	3.5%	4.3%	5.6%	5.6%	6.3%
Hampshire	11,668	2.7%	0.5%	4.5%	4.0%	5.8%	7.2%	7.2%	6.1%
Tyne and Wear (Met County)	11,617	1.4%	n/a	3.9%	4.3%	4.3%	9.5%	9.5%	7.0%

Footnote: Monthly data from Office for National Statistics (ONS), n/a = no significant event is apparent. ‡ Insufficient data to characterise the step-down following the 2014 event. It is possible that a 2006 event (highly variable) is also present, and if so, will be in the 2004 or 2008 column.

Table 1 quantifies the magnitude of these step-like increases in death for a variety of the largest regions (CAPITALS) and counties during a number of these suspected infectious outbreaks. Both maximum step-up and step-down are shown in the last two columns simply because the value of the step-down gives an alternative measure for the strength of each event. Immediately apparent is a wide range in

An edited version has been published as: Jones R (2016) The real reason for the huge NHS overspend? *British Journal of Healthcare Management* 22(1): 40-42. Please use this to cite.

percentage increases between regions for each event, with the 2004 (and to a lesser extent 2002) event being below the limit of detection (n/a) in a range of locations. Generally speaking the 2012 and 2014 events are the highest in magnitude, with 60% of all local government areas in England and Wales having the greatest magnitude of increase in deaths (and hence medical admissions) in 2014, and as such will have the greatest impact upon NHS financial pressures. However the principle observation is that different locations will experience different cost pressures, such as Essex (+5.4%) in the 2010 event versus +0.6% in Inner London, etc. The more modest magnitude of the events prior to 2012 also explains why Trusts were able to more easily regain financial balance in an era when they were allowed to reduce staff numbers to ameliorate the financial pressures.

Figure 2: Magnitude for the various events across all local government areas in England and Wales



To illustrate this variable effect upon NHS cost pressures Figure 2 shows the magnitude of all events for every local government area in England and Wales since 2000. As discussed previously the sheer magnitude of these events against human health is increasingly revealed as the size of the area reduces (number of deaths as a proxy for number of social networks). Hence in a small social network up to a 100% increase in the number of deaths is possible (Jones 2015g). As an example of an extreme opposite case, Southwark in London (around 1,300 average deaths per annum) has one of the lowest increases across all events, and only experiences a 4.6% increase during the 2014 event.

An edited version has been published as: Jones R (2016) The real reason for the huge NHS overspend? *British Journal of Healthcare Management* 22(1): 40-42. Please use this to cite.

The explanation as to why NHS Trust finances should deteriorate after the 2012/13 financial year is as follows. The 2012 event does not show high spatial synchrony, and therefore initiates in local government areas from Jan-11 through to Jun-13 (median Apr-12). In addition both deaths and admissions stay high for around 12 months after initiation. Hence a cascade of cost pressures commencing in 2012/13 through to 2013/14. Following the outcome of the Francis enquiry the Department of Health instructed NHS hospitals to report staffing levels commencing in April 2014 (Triggle 2014). Then follows the large 2014 event; which exhibits the highest level of synchrony in the past 15 years. Initiation in all areas occurs in just a six month window in the summer of 2014 (May to October, median June/July), and hence almost all areas experience a large surge in cost pressures shortly after the start of the 2014/15 financial year, which is exacerbated by the need to maintain staffing levels, leading to high demand for expensive agency staff, which further compounds cost pressures (Dreaper 2015). Note that the 2014 event initiates in the summer, and hence typical winter infectious agents can be discounted.

It is of interest to note that the magnitude of the events appears to be increasing with time since 2000. Influenza activity dropped to unprecedented low levels after 2000 and has remained so since that point (Fleming & Elliot 2008). In the absence of large influenza outbreaks it is entirely possible that this other agent has been able to gain ascendancy. Sadly UK government agencies appear unwilling to acknowledge that anything out of the ordinary has happened, and the NHS continues to be blamed for 'inefficiency' over an issue against which it has absolutely no control. In the meantime a huge public health threat remains unrecognised and unaddressed.

References

- Dreaper J (2015) NHS agency nurses spending 'soars'. <http://www.bbc.co.uk/news/health-31135809>
- Jones R (2013) A fundamental flaw in person-based funding. *BJHCM* 19(1): 32-38.
- Fleming D, Elliot A (2008) Lessons from 40 years' surveillance of influenza in England and Wales. *Epidemiol Infect* 136(7): 866–875.
- Jones R (2015a) Recurring Outbreaks of an Infection Apparently Targeting Immune Function, and Consequent Unprecedented Growth in Medical Admission and Costs in the United Kingdom: A Review. *Brit J Med Medical Res* 6(8): 735-770.
- Jones R (2015b) A new type of infectious outbreak? *SMU Med J* 2(1): 19-25.
- Jones R (2015c) Forecasting medical emergency admissions. *BJHCM* 21(2): 98-99.
- Jones R (2015d) Estimating acute costs. *BJHCM* 21(3): 152-153.
- Jones R (2015e) Are emergency admissions contagious? *BJHCM* 21(5): 227-235.
- Jones R (2015f) Small area spread and step-like changes in emergency medical admissions in response to an apparently new type of infectious event. *FGNAMB* 1(2): 42-54.
- Jones R (2015g) Deaths and international health care expenditure. *BJHCM* 21(10): 491-493.
- Jones R (2015h) Exploring trends in demand for urgent care. *Journal of Paramedic Practice* 7(10): 486-488.
- Jones R (2015i) Links between bed occupancy, deaths and costs. *BJHCM* 21(11): 544-545.
- Jones R (2016) Is cytomegalovirus involved in recurring periods of higher than expected death and medical admissions, occurring as clustered outbreaks in the northern and southern hemispheres? *Brit J Med Medical Res* 11(2): 1-31.
- Triggle N (2014) Hospitals in England told to publish staffing levels. <http://www.bbc.co.uk/news/health-24994016>
- Triggle N (2015) NHS trusts' overspend hits £1.6bn <http://www.bbc.co.uk/news/health-34879194>