

Are NHS deficits and surpluses cyclical?

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The economic cycle and its consequences to NHS funding are by now widely appreciated. In this respect the wider issue of cycles may be worthy of some consideration. Almost all natural phenomena follow long term cycles, from crop yields (Cantelaube & Terres 2004) through to global warming (Holbrook 2009). Which suggests that healthcare may also be subject to the same forces. Indeed climate change is anticipated to have future impacts on specific aspects of emergency medicine (Hess et al 2009).

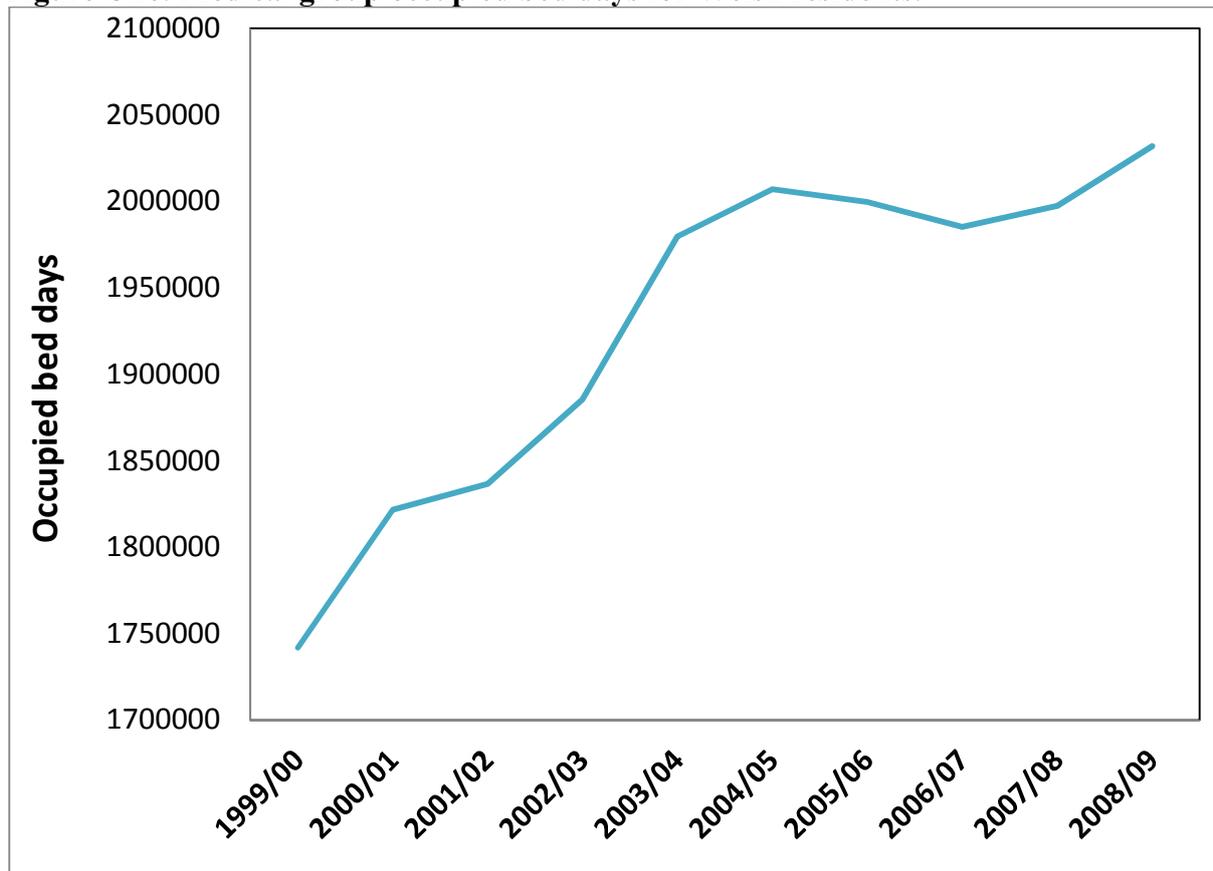
A recent review of the trends in acute hospital admissions in the UK has concluded that there is evidence that long term cycles may be operating in emergency admissions to the consultant specialties General Surgery, Trauma & Orthopaedics, Paediatrics and others (Jones 2009b). Such cycles will give rise to background undulations in the cost of care in these specialties. However by far the greatest effect on NHS finances will arise from a periodic step increase in Medical admissions and bed occupancy which occurs at four to six year intervals (Jones 2009a,b,c,d). As opposed to the more usual and widely understood concept of a trend, a step increase leads to a sudden and permanent increase in the admission rate.

In England the medical specialties account for around 2,300,000 overnight stay admissions and around 18,700,000 occupied bed days. The latter represents 60% of total occupied beds (excluding Maternity and Mental Health). Unexpected changes in admissions to the medical group therefore have the greatest potential to disrupt NHS workload and finances. This pattern of step increases in medical demand appears to have occurred over the past 25 years and perhaps longer with a typical 10% step increase in medical admissions occurring in the years 1983/84, 1988/89, 1993, 1996, 2002 and 2007 (Jones 2009b).

At this point we need to note that in the USA a somewhat similar pattern of health insurance underwriting profit and loss was observed to occur between 1965 to 1990 with maximum losses in the years 1969/70, 1974, 1979/80 and 1986 (Gabel et al 1991). This cycle of profit/loss was largely due to the fact that the cyclic nature of healthcare cost was not appreciated by underwriters who were basing premiums on historic analysis of data (assuming simple demographic change and medical cost inflation). Once this fact was appreciated underwriters changed the way premiums were calculated (Rosenblatt 2004). There are very real similarities to the way NHS prices are currently determined in a costing and pricing cycle which uses costs from three years ago to calculate today's prices. Can the step change in admissions seen in the UK explain a cyclic pattern in profit and loss? The simple answer is, yes. A large step increase in admissions and bed days will lead to a

compensating reduction in length of stay which in the absence of other forces would generate a saw tooth pattern. If we accept the fact that each step change can occur at any point in a financial year then using whole financial year data will blur the edges of such a saw tooth pattern. A consideration of the pattern in the USA by the author shows evidence for this effect. An example is given in Figure 1 covering total occupied bed days for the medical specialties in Wales. Something which looks like a cycle can be seen in the total bed days. In the medical specialties total bed days probably account for 80% to 90% of total cost. Given the size of medicine this then translates into a 3% step increase in total NHS inpatient costs.

Figure One: Medical group occupied bed days for Welsh residents.



Footnote: Data covering Welsh residents at main specialty level was obtained from <http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&pid=41010&subjectlist=Main+Specialty&patientcoverlist=0&period=0&keyword=&action=Search>

Unfortunately the simplicity of the picture around the 2002 outbreak is complicated by an additional pattern in admissions and bed days relating to injuries which in itself links back to the wider issues around longer term cycles. Never-the-less the point has been established that cycles in cost do occur within the NHS. Combine these with changes in funding and the lagged cycle in determining the tariff and you have the basis for a cycle in surplus/deficit as seen in the NHS.

As pointed out above the last step change in medical admissions occurred in late 2002 with a dramatic step increase seen in the 2003/04 financial year. At this point the NHS was in surplus. However the totally unexpected and unplanned 10% increase in medical admissions took both purchaser and provider by surprise and by the mid-point in 2005/06 the NHS had an accumulated deficit of £620 million (Davidson 2006). External consultants were appointed by the Department of Health and the usual and expected comments about the robustness of NHS financial planning were made. And behold, by 2007/08 the NHS had accumulated

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another surplus of £1.67 billion (National Audit Office 2008). Unknown to all the next step increase was to occur in the latter part of 2007 and hence the 2008/09 financial year experienced the full effect of another 10% increase in medical admissions with both purchasers and providers once again struggling to balance the books (Nursing Times 2009) and are thus headed for another cycle of deficit. Perhaps somewhat unfairly the Audit Commission (2009) concluded that demand management schemes within PCT's had failed. An opinion formed in the absence of the knowledge of the longer term cycle in medical admissions and related GP referrals.

In conclusion, for many years the NHS has operated under a highly naïve business model where admissions are supposed to increase due to demography (but do not) and planning follows the same philosophy. Hopefully more mature models will be applied in future with a more considered approach to what demand management can and cannot achieve.

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