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What is driving growth in the English NHS?

Same day stay admissions drive growth, but LOS is increasing

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Details of further articles in this series are available at: www.hcaf.biz and at www.hcaf.biz/2010/Publications_Full.pdf

The original can be obtained from www.bjhcm.co.uk using an NHS Athens login.

Key Points

- Since 2002 the 'apparent' average length of overnight stay has reduced
- This is largely an illusion due to some 1.7 million same day emergency admissions included in the 'overnight' admissions
- Between 2013/14 and 2015/16 the real LOS ***increased*** by 0.7%
- STPs are in danger of signalling large bed closures based on saving same day emergency admissions and deducting them at the average LOS

Introduction

Sustainability and Transformation Plans (STPs) have been introduced in England to enable health and social care to reduce the burden of acute care and reduce overall costs (Kings Fund 2016). Many of these plans appear to be anticipating reductions in the number of acute beds, however, are the fundamental assumptions valid?

Everyone 'knows' that length of stay (LOS) in the NHS is reducing over time. NHS Digital recently announced that LOS had reduced from 6.6 days in 2005/06 to 4.9 days in 2015/16 (NHS Digital 2016). Such a respected government agency must surely know what they are talking about?

Apparent Length of stay

Figure 1 gives an extended view of average (apparent) LOS for various specialty groups which shows that LOS seemingly increases up to 2002/03, declines thereafter, but seems to reach an asymptote in more recent years. The 25% reduction implied by NHS Digital is a seeming unquestionable 'truth'.

However, why did LOS seemingly start reducing after 2002/03? Indeed, why the spectacular behaviour for inpatient specialty 'Accident & Emergency'?

In explanation, the 4-hour target for A&E waiting time was introduced by the Blair government in 2002. At the time, many hospitals found that admitting patients into 'assessment units', where the target no longer applied, was an easy and profitable route to achieving the target (Jones 2009, 2010a,b, 2011a-c). In many hospitals, the specialty code

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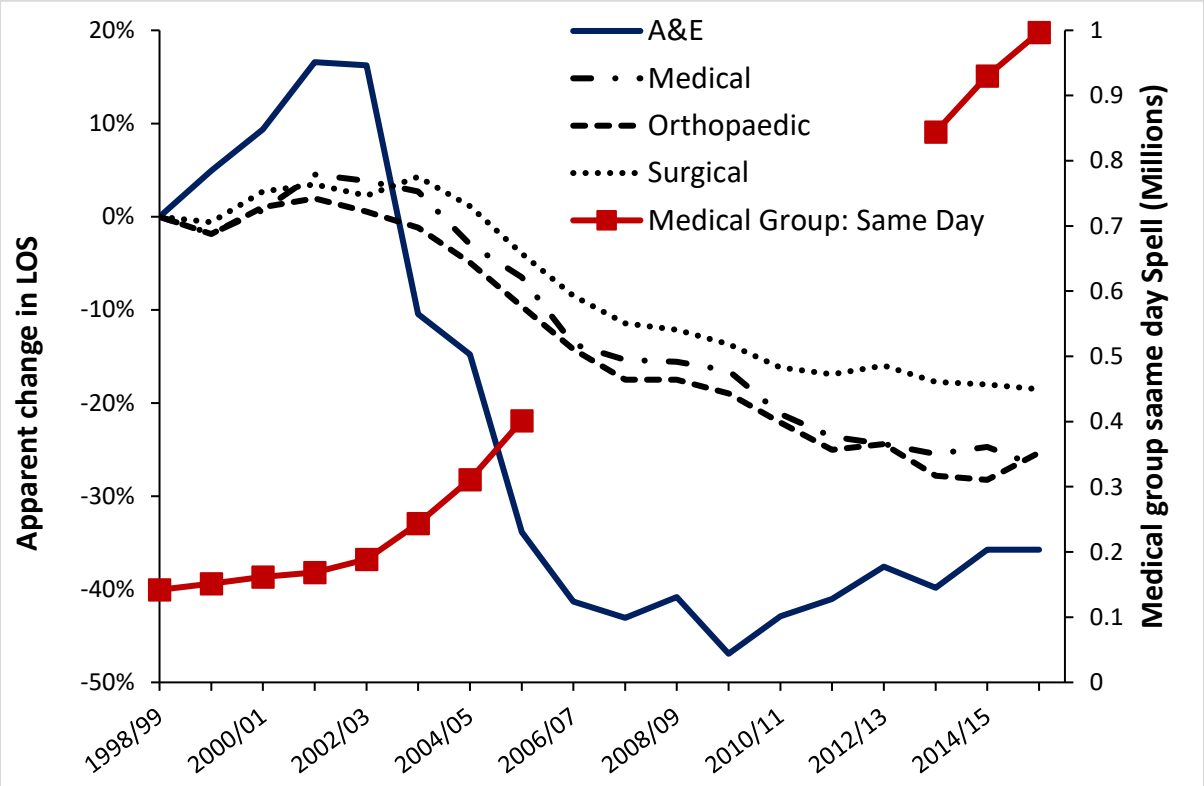
for 'Accident and Emergency' is used for these 'admissions'. The majority of these 'admissions' were same day stay, i.e. admitted and discharged before midnight. In 2001/02 there were less than 0.2 million same day Spells in the medical group (including A&E) (Jones 2009), and this had jumped to 1 million in 2015/16 (NHS Digital 2016). In 2015/16 there were 1.7 million same day stay emergency 'admissions' across all specialties (NHS Digital 2016). Some hospitals make greater recourse to assessment units, and hence the wide range (14% to 40%) between hospitals for the proportion of emergency admissions which are same day (Jones 2016).

Figure 1: Apparent 'overnight' length of stay for various specialty groups in NHS hospitals in England, relative to 1998/99



Footnote: Hospital Episode Statistics (HES) data is from NHS Digital. Data is for Spells and includes both elective and emergency admissions. LOS excludes all 'day case' admissions, but includes the diluting effect of all other same day admissions. Count of same day prior to 2005/06 from (Jones 2009), after adjusting FCE to Spell.

What NHS Digital forgot to mention is that all these same day 'admissions' are included in the calculation of the average overnight LOS. Basically, the calculated (or apparent) LOS has been diluted with 1.7 million '0' day admissions. A sleight of hand of monumental proportions, in which declining LOS has been seemingly masqueraded as due to increasing 'efficiency'.

Real Growth in Admissions

Having discerned that all may not be what it first appears to be Table 1 seeks to unravel exactly where all the growth in NHS admissions is coming from. Since 2012/13 NHS Digital has reported a count of all types of same day admissions which allows three years of growth to be analysed.

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Table 1: Number of same day and overnight admissions (Spell), and the real LOS for the genuine overnight stay admissions for NHS hospitals in England

Specialty Group	Same day stay				Overnight Stay Spell				Real Overnight LOS			
	2013/14	2014/15	2015/16	Growth	2013/14	2014/15	2015/16	Growth	2013/14	2014/15	2015/16	Growth
Oncology	578,647	623,578	673,387	8.2%	85,756	81,083	78,662	-4.1%	6.70	7.09	7.45	5.6%
Head & Neck	1,137,721	1,197,010	1,193,138	2.4%	200,098	192,761	185,126	-3.7%	2.42	2.57	2.62	4.0%
Surgical	1,926,062	1,917,236	1,940,925	0.4%	1,513,473	1,464,434	1,427,028	-2.9%	4.63	4.67	4.64	0.2%
Plastic Surgery	193,577	201,349	206,517	3.3%	57,377	57,285	54,653	-2.4%	4.04	4.08	4.13	1.1%
Haematology	510,979	538,883	559,450	4.7%	49,453	49,334	48,164	-1.3%	12.38	12.79	13.40	4.1%
Orthopaedic	585,126	608,587	605,495	1.7%	567,982	565,241	555,464	-1.1%	6.29	6.31	6.35	0.5%
Paediatrics	584,971	600,524	631,693	4.0%	867,806	868,908	890,658	1.3%	3.50	3.54	3.50	0.1%
Medical Group	2,453,683	2,649,151	2,853,988	8.2%	2,424,355	2,473,391	2,495,223	1.5%	9.44	9.66	9.52	0.5%
Obstetrics	444,800	443,784	457,620	1.4%	580,585	596,577	622,366	3.6%	2.33	2.42	2.38	0.9%
A&E	327,929	365,648	378,365	7.7%	248,930	280,573	283,349	6.9%	1.19	1.27	1.28	3.7%
Total	**8,743,495**	**9,145,750**	**9,500,578**	**4.3%**	**6,595,815**	**6,629,587**	**6,640,693**	**0.3%**	**6.07**	**6.2**	**6.15**	**0.7%**

Footnote: Hospital Episode Statistics (HES) data is from NHD Digital. Data included both elective and emergency admissions. Same day stay includes day case and any other zero day stay admission. Overnight stay spells exclude any same day stay admission as does the calculated real overnight LOS. Growth has been calculated relative to 2013/14 as a linear regression over the three years using the 'slope' function in Microsoft Excel. Growth is on a per annum basis. The real length of stay was calculated by dividing bed days by number of Spells.

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As can be seen growth in same day admissions (including day case) in the surgical group is around 0.4% per annum. This is less than expected from demographic growth, because the elective waiting list has grown significantly over this period. However, overall growth is around 4.3% per annum, or over three-times that expected from demography.

In contrast, overnight stay admissions are being driven by 'Accident & Emergency' or more correctly persons staying overnight in assessment/observation units. Other than that, growth is either negative for most specialties, except for Paediatrics, Obstetrics (older age mothers) and the Medical group of specialties. Overall growth is only 0.3% per annum or below that expected from demographic change.

The NHS is hardly in an overnight stay admission crisis. It is however, in a crisis induced by too few beds and insanely high bed occupancy (largely policy created) which fuels huge queues in A&E, especially in the winter months (Jones 2011d, Beeknoo and Jones 2016a,b), all of which is made worse by the general lower levels of doctors and nurses in the UK. The whole situation is then further exacerbated by same day patients spilling into the available overnight bed pool.

Table 2: Apparent and real average length of stay (LOS) for 25 high volume diagnoses (2015/16)

ICD	Description	Day case (n)	Other same day (n)	Real Overnight (n)	Apparent LOS	Real LOS	Difference
O36	Suspected fetal problem	678	111,127	50,746	0.75	2.39	219%
O26	Maternal care: other conditions	904	76,027	37,573	0.63	1.90	202%
R07	Pain in throat and chest	25,875	133,018	102,797	0.80	1.83	129%
B34	Viral infection of unspecified site	437	46,388	52,099	0.83	1.57	89%
R51	Headache	7,522	26,923	32,100	1.20	2.20	84%
M54	Dorsalgia	100,455	22,428	32,419	2.31	3.91	69%
R10	Abdominal and pelvic pain	65,270	94,127	139,753	1.34	2.24	67%
J03	Acute tonsillitis	18,021	22,101	34,123	0.88	1.45	65%
R06	Abnormalities of breathing	8,297	22,825	36,867	1.14	1.84	62%
O42	Premature rupture of membranes	17	18,284	29,696	1.48	2.39	62%
M25	Other joint disorders NEC	42,414	18,737	31,938	2.82	4.47	59%
O80	Single spontaneous delivery	8	16,145	28,728	0.97	1.51	56%
R55	Syncope and collapse	9,214	26,802	49,081	1.86	2.88	55%
T39	Poison by nonopioid analgesic	19	16,371	33,688	1.33	1.97	49%
K59	Other functional intestinal disorders	17,118	16,998	36,323	3.41	5.01	47%
F10	Behavioural disorders: alcohol	63	14,076	30,352	4.66	6.81	46%
I20	Angina pectoris	6,699	12,736	28,528	2.15	3.11	45%
S52	Fracture of forearm	7,120	14,380	34,169	2.74	3.89	42%
J45	Asthma	8,399	17,298	42,729	2.42	3.39	40%
J22	Acute lower respiratory infection	1,428	29,640	79,725	4.42	6.06	37%
A09	Gastroenteritis: infectious	36,547	19,245	52,534	3.13	4.28	37%
L03	Cellulitis	5,304	19,248	56,738	5.99	8.02	34%
T81	Complications of procedures	6,140	14,188	42,527	4.96	6.61	33%
I48	Atrial fibrillation and flutter	28,739	19,176	59,980	3.15	4.16	32%
O70	Perineal laceration in delivery	30	33,522	121,070	1.43	1.83	28%

Real Length of Stay

The last column in Table 1 gives an analysis of the real overnight LOS which is growing on average by 0.7% per annum. This acts to amplify the effect of the smaller growth in

overnight admissions such that occupied bed days are steadily increasing leading to even higher average occupancy (Beeknoo and Jones 2016a). Hence the apparent LOS in the surgical group of 3.53 days is actually 4.64 days, 7.56 (apparent) in Medicine is actually 9.52 days while the apparent 4.4 days across all acute specialties is actually 6.15 days. It is highly likely that the real LOS has only marginally declined in the last decade (Jones 2015).

To investigate further, Table 2 gives the apparent and real LOS for the 25 highest volume diagnoses (ICD-10 primary diagnosis for combined elective and emergency admissions). As can be seen the minimum distortion in the real LOS is 28%. Highly relevant is the high proportion of maternity diagnoses which appear in Table 2 and the associated very high distortion in the real LOS. Quite simply the apparent LOS 'efficiency' in maternity has been vastly overestimated leading to a totally unwarranted 24% reduction in bed availability since 1999/00 (NHS England 2017), with consequent effects upon maternity operational effectiveness and safety (Jones 2012, 2013).

Pitfalls for the STP

The mote question is to what extent are the STPs capable of extracting same day versus overnight stay emergency admissions? It would seem far easier to extract same day admissions, but the temptation is to assume that these are all at the average LOS (Jones 2017). Indeed, almost all will be making the fallacious assumption that LOS will continue to reduce due to increased 'efficiency'. The likelihood is that the remaining overnight stay admissions will show increasing LOS due to the effect of age on LOS (Beeknoo and Jones 2016a), and the extraction of 'easier' admissions with a lower than average LOS.

Before any locality is permitted to close beds the assumptions in the STP need to be vigorously challenged (not just by NHS England).

Conclusion

As always, there are unanticipated consequences of policy. This comment piece is not a criticism of STPs, nor a call to remain in the past. It simply points out that the hidden assumptions in all STPs need to be rigorously tested and challenged.

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Provenance

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