

# Why does paediatric emergency assessment cost so much in England?

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**Key Words:** Paediatric assessment, short stay emergency assessment unit, emergency department, costs, maternity, Payment by results, HRG short stay tariff, NHS, England, GP Commissioning, Limitations of the HRG tariff

This article is the final in a three part series investigating the nature of costs for the wider emergency department which includes the use of emergency assessment units.

## **Key Points**

- Short stay paediatric assessment units (SSPAU) are the preferred environment for the equivalent to adult emergency department activities
- These activities are currently paid under the short stay HRG tariff
- The rationale behind the short stay tariff is based on the assumption that the costs of short stays are a simple proportion of the inpatient average length of stay
- No recognition appears to have been given to the fact that the cost of reaching a diagnosis may be totally different to the costs associated with an inpatient stay for the same apparent diagnosis, i.e. while the clinical codes may be the same the two are very different activities
- Based on the 2010/11 HRG tariff, commissioners appear to be paying around £40million more for Paediatric assessment than these activities actually cost, however this is a notional cost.
- Methods used by the department of health to define parts of the tariff appear to lack both intellectual and financial rigour
- A tariff based on the direct costs of assessment is required

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## **Abstract**

Part one of this series investigated the general costs for assessment activities while part two investigated how the four hour A&E target was skewing the costs of A&E attendances. In this part the cost of specific paediatric assessment activities has been compared against the 2010/11 HRG tariff and little linkage appears to exist between the actual cost and the tariff. It is concluded that the approach adopted for the development of HRG covering inpatient admission is inappropriate to assessment activities where it is the cost of achieving a diagnosis rather than the cost associated with inpatient care due to a diagnosis that is the key factor. The current short stay tariff uses a set of assumptions based on length of stay which do not hold for assessment activities.

## **Introduction**

Increasing demand for paediatric emergency assessment is not new and between 1975 and 1985 demand in the former Oxford region rose by 88% (Hill 1989) and ongoing high growth between 1997 and 2006 has also been noted (Saxena et al 2009). Paediatric emergency assessment is a specialized area and the Royal College of Paediatrics and Child Health (2009) and others (Ogilvie 2005) recommend that short stay Paediatric assessment units (SSPAU) are widely implemented. As with the long established trend to increasing demand for paediatric assessment such units are not a new idea (Beverley et al 1997).

Parts one and two of this series have investigated the issues surrounding the four hour A&E target and how this has skewed wider emergency department costs in England. The dilemma was as follows. A political target appears to have been imposed without any degree of clinical involvement. Acute Trusts found it difficult to achieve the target, largely due to the lack of clinical consultation regarding the feasibility of the target and resorted to diverting increasing numbers of otherwise A&E attendances via assessment units where the patient is 'admitted' as an emergency and is therefore outside of the scope of the target (Jones 2006a, 2007, 2009, 2011). This situation is especially true for paediatric assessment and observation where of necessity a significant proportion of patients stay in the department for more than four hours (Chu et al 2008, Nelson et al 2009). In order to protect the target the department was then in the unenviable position of having to turn a blind eye to such developments (Jones 2007). The situation was further confused by the fact that short stay emergency assessment and observation is in itself a desirable feature of the wider role of the emergency department, however, it is difficult to know exactly what is happening in individual acute Trusts other than the fact that zero or same day stay emergency admissions are rising dramatically at a national level (Saxena et al 2009, Jones 2010b).

In this respect Table 1 shows the dramatic apparent rise in paediatric emergency 'admissions' for particular diagnoses between 1998/99 and 2008/09. As can be seen these high growth diagnoses are all consistent with typical paediatric emergency department attendances (Hill 1989, Ogilvie 2005) and this is especially true for diagnoses associated with the new born (jaundice, feeding problems, sepsis) which are a by-product of increasingly shorter post partum stays in maternity (Millar et al 2000).

Experience has consistently shown that the opening of an SSPAU should lead to a reduction in both inpatient demand and cost (Beverley et al 1997, Aitken et al 2003, Ogilvie 2005) and

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Table 1 only reinforces the fact that the trend in 'admissions' seen in England are due solely to the four hour target.

Each year the costs associated with delivering acute care are collected via what is known as the annual reference cost collection (RCC). Due to a change in the way in which costs were grouped it was only the 2006/07 RCC which gave insight into the direct costs associated with assessment unit activities. The 2007/08 RCC switched to collecting average costs associated with zero plus one day stays and this is something which is fundamentally different to assessment activities. This paper will examine the direct costs of Paediatric assessment activities as elucidates via the 2006/07 reference cost collection and will compare these costs with the 2010/11 short stay emergency tariff for the same activities.

## **Methods**

The 2006/07 reference costs data bases were obtained on CD from the Department of Health (DH 2008). A flag was added to the national data to identify those Trusts which reported separate assessment costs from those who had aggregated these costs in with general inpatient emergency admission costs. This flag obscures the type of the assessment unit and so paediatric, medical, surgical or ante-natal assessment activities are all lumped together with only the healthcare resource group (HRG) as a means of identifying the type of unit. In this instance paediatric activities are predominantly covered by the HRG chapter commenting with the letter P and this enables the relevant activities to be identified. Some 115 Trusts reported separate assessment costs. The 2010/11 tariff for short stay emergency admissions was obtained from the Department of Health website: ([http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_112284](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_112284)).

## **Short Stay Tariff**

Adult patients admitted and discharged on the same day are paid under the short stay tariff, however, because of the logic applied to calculate the 2010/11 short stay tariff all paediatric admissions are paid at full tariff. This anomalous situation arises due to the assumption made by the department of health that assessment costs are a sub-set of inpatient costs and are therefore must be (under such logic) proportionate to length of stay (para 84, p32 DH 2010). Hence since almost all paediatric average lengths of stay are relatively short then they are all deemed to fall within short stay activities!

In these HRG it is assumed that short stay admissions are therefore a normal part of 'inpatient' care, however, zero day stay admissions do occur even in HRG describing complex procedures presumably due to errors in the coding process or assessment unit procedures inappropriately translated by the HRG grouper into the appearance of a more complex HRG (Jones 2007). Hence for paediatric assessment in 2010/11 the national tariff for a zero day stay and all assessment activities reported as an 'inpatient admission' lies in the range £452 to £4,845 per 'admission'.

## **How are prices calculated?**

The current approach adopted by the department to the calculation of prices relies heavily on a rather myopic accountancy view of the world; namely, as long as the national total cost remains the same then the method of allocating costs to a tariff is valid. For example, under

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this view, two separate tariffs for zero day stay and one day stay admissions are deemed no different than a single tariff based on the average cost for zero plus one day stays. In both instances the total national cost remains the same.

However, if one particular trust decides to divert every paediatric A&E attendance to an 'assessment unit' where the patients will all be 'admitted' then this Trust will reap a huge profit margin from a combined average zero plus one day tariff because it is now counting a large number of zero day stay assessments but is getting paid at the average price for a zero plus one day stay 'admission'. Herein lies the central flaw in the 2010/11 tariff.

However given the additional logic around 'short stays' explained above all paediatric assessment activities are paid at full tariff. Hence the acute Trust which moves the highest number of A&E attendances into an assessment unit gets paid at the average cost for all inpatient admissions and stands to make a very large profit on each assessment. The down side is that other acute Trusts who are 'more honorable' in their counting activities now lose out because the price of a genuine inpatient admission is being diluted by the large numbers of low cost assessment activities at other Trusts.

It is probably correct to observe that the approach adopted by the department appears to lack both intellectual and financial rigor in terms of the full scale of the potential consequences.

### **Cost of an SSPAU 'admission'**

Table 2 gives a list of high volume paediatric HRG where the direct national average cost of assessment activities is compared to the actual price paid in 2010/11 via the HRG tariff. As can be seen the actual costs of assessment activities ranges from £168 to £227 (full range is £90 to £350 across all paediatric HRG). However the price paid for these activities ranges from 2.3- to 5.9-times the actual cost. The average profit margin for assessment activities using the 2006/07 activity and case mix and applying the 2010/11 tariff comes to £520 per assessment.

Obviously we need to sense check this apparent huge gap between actual cost and the tariff. Firstly, numerous studies have demonstrated that the average length of stay for paediatric emergency assessment is around 2 to 4 hours (Isaachman et al 2001, Gorelick et al 2005, Chu et al 2008). In fact a stay of over 10 hours is considered to be of extreme length (Nelson et al 2009) and is associated with extenuating factors such as night arrival, radiology study, high triage acuity and subspecialty consultation. Hence based on an average stay of below four hours and the largely 'general illness' nature of the case mix it would seem sensible to assume that a cost approximating that of an outpatient attendance should apply. Secondly, the costs of an A&E attendance at specialist children's hospitals in Scotland ranges from £119 to £126 per attendance (Audit Scotland 2010) and the full range in costs across all HRG for assessment of £90 to £350 therefore seems reasonable.

If we assume that diagnoses showing greater than 80% growth for apparent 'emergency admission' between 1998/99 and 2008/09 give a minimum case scenario then the approximate minimum number of assessments performed each year comes to around 78,000 across England. At an average profit margin of £520 per assessment this implies that PCT's are paying in excess of £40million per annum more for paediatric assessments than the actual cost. Although it must be remembered (for reasons discussed above) that this is a notional cost which is expressed in different ways at a local level.

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The consequences of this huge disparity between cost and price are that some PCT's (for reasons explained above) are paying far more for the same level of service than others and the difference is at the discretion of how events are counted at different acute Trusts. Genuine paediatric inpatient costs are likewise being diluted by very low cost assessment activities and other acute Trusts will be suffering cost pressures due to the counting activities of their fellows.

Basically commissioners are now in a postcode lottery based on how acute Trusts choose to count activities.

## **Wider Issues**

A similar situation applies for Maternity services where once again all activities are deemed to be short stay and are therefore paid at full tariff. What used to be the old HRG N12 (events not related to delivery) has been split into a range of HRG (NZ04 to NZ09) where the full tariff ranges from £324 to £1335. In this specialty the average cost of an assessment is £202 which generates an average profit margin of £359 per assessment due to the assumption of full tariff. Interestingly the department has stated in the 2010/11 PbR guidance document 'We are planning to work with Maternity PBR sites to understand the reasons for some of the variation in reported costs' (para 106, p36 DH 2010). The simple answer lies in the 2006/07 reference cost collection which the department has apparently ignored.

At this point we need to ask why the department appears to be making such flawed decisions regarding the nature of different types of costs? There are several possible reasons. Firstly, the department appears determined to avoid any involvement in the issue of how Trusts choose to count activities (Jones 2007). Publically the department endorses the application of the NHS Data Dictionary (2010) but privately it appears to be choosing the route of least resistance and is attempting to use the tariff as a means of addressing the underlying issues (Jones 2007). Secondly, the whole ethos of the tariff is based upon the premise that if something has the same ICD diagnosis or OPCS procedure code then it must cost the same. Such muddled thinking ignores the reality that clinical codes are context specific. To visit your chemist for a 'headache' is vastly different to being admitted to hospital for 'headache'. The clinical code for the diagnosis would however be identical.

This same muddled thinking led to the withdrawal of the planned same day tariff (PSD) and short stay tariff, implemented in 2009/10 and then withdrawn in 2010/11.

'As a result, we have removed the PSD and short stay elective tariffs and re-introduced combined day case and elective spell tariffs' (para 60, p26 DH 2010).

On this occasion outpatient procedures with the same procedure code were assumed to be equivalent to a day surgery procedure with the same code and somewhat unsurprisingly the PSD tariff which was effectively an amalgam of costs for simple outpatient procedures and more complex day surgery was too low to support genuine day surgery (Jones 2006b, 2007). This issue arises out of the almost unregulated ability of acute Trusts to count whatever they wish as a 'day case' even if this represents gross abuse of the data dictionary (Jones 2004, 2006a,b, 2007, 2008a, 2009b). A similar dilemma exists with the apparent 'higher' cost of particular HRG conducted in specialist hospitals (Jones 2008b, Jones 2009a). Once again the department seems unable to grasp the concept that codes are context specific.

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## Conclusions

This paper is not arguing against the appropriateness of short stay paediatric assessment (or indeed any other form of short stay assessment and observation) which is a vital part of the wider emergency department function at any hospital (Ogilvie 2005, Royal College of Paediatrics and Child Health 2009), however, it is questioning the appropriateness of the current tariff arrangement within the NHS which confuses inpatient admission with emergency assessment. The whole issue of data standards and the context specific nature of clinical codes need to be acknowledged and reflected in a tariff which is fair to both purchaser and provider alike.

Under the present situation the department and its somewhat muddled views appears to be the greatest hindrance to implementing the necessary tariffs which will allow purchasers to invest in genuine cost saving schemes which then allow funds to be released to other priority areas (Bojakowski 2010).

**Conflict of Interest: The author provides actuarial and forecasting advice to health care organizations.**

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**Table 1: Increase in Paediatric emergency ‘admissions’**

ICD Code	Description of ICD Diagnosis	1998/99	2008/09	Growth	Percentage Growth
A41	Other septicaemia	756	1,614	858	113%
E16	Other disorders of pancreatic internal secretion	721	1,450	729	101%
J00	Acute nasopharyngitis [common cold]	446	1,295	849	190%
K21	Gastro-oesophageal reflux disease	611	1,629	1,018	167%
L04	Acute lymphadenitis	575	1,131	555	96%
N50	Other disorders of male genital organs	675	1,350	675	100%
P22	Respiratory distress of newborn	418	1,129	711	170%
P36	Bacterial sepsis of newborn	372	1,229	857	230%
P39	Other infections specific to the perinatal period	605	1,623	1,019	169%
P59	Neonatal jaundice from other causes	4,629	11,539	6,909	149%
P78	Other perinatal digestive system disorders	425	1,664	1,240	292%
P92	Feeding problems of newborn	4,061	8,614	4,553	112%
P96	Conditions originating in the perinatal period	351	1,404	1,053	300%
R06	Abnormalities of breathing	10,908	24,171	13,263	122%
R07	Pain in throat and chest	686	1,550	864	126%
R21	Rash and other nonspecific skin eruption	3,716	8,192	4,476	120%
R22	Localized swelling, mass & lump of skin	484	1,250	767	158%
R25	Abnormal involuntary movements	731	1,447	716	98%
R29	Nervous and musculoskeletal signs & symptoms	889	2,006	1,117	126%
R50	Fever of unknown origin	6,530	12,489	5,959	91%
R55	Syncope and collapse	1,372	2,693	1,321	96%
T78	Adverse effects not elsewhere classified	1,324	2,749	1,425	108%
Z03	Medical observation	857	3,876	3,019	352%
Z04	Examination and observation for other reasons	1,091	2,833	1,742	160%

**Footnote: Data is from Hospital Episode Statistics and relates specifically to England (<http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=203>) For comparison the overall average growth in all types of paediatric emergency admission over this period is only 18% or 1.8% per annum.**

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**Table 2: Average costs for Paediatric assessment**

HRG Code	Description	Assessment	2010/11	Ratio
		Cost	Tariff	
PA09B	Major Upper Respiratory Tract Disorders	£168	£988	5.9
PA15B	Acute Bronchiolitis	£180	£1,036	5.8
PA02Z	Epilepsy Syndrome	£193	£880	4.6
PA37Z	Diabetes Mellitus	£214	£959	4.5
PA14B	Lower Respiratory Tract Disorders	£192	£837	4.3
PA17B	Intermediate Infections	£195	£842	4.3
PB02Z	Minor Neonatal Diagnoses	£227	£883	3.9
PA39Z	Renal Diseases	£198	£731	3.7
PA18B	Minor Infections	£189	£695	3.7
PA12Z	Asthma or Wheezing	£180	£648	3.6
PA20Z	Pyrexia of Unknown Origin	£184	£630	3.4
PA01B	Nervous System Disorders	£208	£707	3.4
PA03Z	Febrile Convulsions	£187	£617	3.3
PA26B	Other Gastrointestinal or Metabolic Disorders	£202	£665	3.3
PA35B	Skin Disorders	£182	£595	3.3
PA34B	Musculoskeletal or Connective Tissue Disorders	£200	£647	3.2
PA07B	Head Injury	£174	£550	3.2
PA19Z	Viral Infections	£199	£623	3.1
PA28B	Feeding Difficulties and Vomiting	£185	£576	3.1
PA10B	Minor Upper Respiratory Tract Disorders	£169	£520	3.1
PA11Z	Acute Upper Respiratory Tract Infection and Common Cold	£178	£541	3.0
PA33B	Intermediate Upper Respiratory Tract Disorders	£193	£582	3.0
PA32B	Minor Injury	£181	£532	2.9
PA04B	Headaches and Migraines	£193	£556	2.9
PA29Z	Abdominal Pain	£203	£579	2.9
PA21B	Infectious and Non-Infectious Gastroenteritis	£203	£570	2.8
PA50Z	Ingestion Poisoning or Allergies	£192	£508	2.6
PA58Z	Examination, Follow-up, Special Screening	£222	£533	2.4
PA22Z	Chest Pain	£197	£452	2.3

Footnote: Table shows HRG where there were more than 1,000 FCE in 2006/07 for those Trusts who reported assessment activities. Tariff is for 2010/11. Assume 6.5% cost inflation to adjust 2006/07 costs to the 2010/11 equivalent HRG price.