



Summary

In 2013, the paediatric asthma audit received data on 4,263 cases of children hospitalised with asthma.

- Sixty percent of children admitted were male, with approximately 70% under 5 years of age and 25% children under 2 years.
- Illness severity as assessed by vital signs at the time of admissions remains surprisingly stable over time.
- Initial treatment follows BTS/SIGN asthma guidelines closely and no more than 5% of children receive anything other than the basic treatment triad of high dose inhaled bronchodilators, oral steroids, and oxygen.
- Discharge planning is poorly done, with only 53% of children recorded as receiving a written asthma plan at discharge, and less than 50% recorded as having inhaler device use checked.

Background

The 2013 audit saw the largest number of participating units and cases submitted since the annual November audit started. The number of submitted cases has doubled since the audit was first included on the list of national audits approved for inclusion in Department of Health Quality Accounts in England.

	Institutions	Submissions
2010	97	2,164
2011	127	3,195
2012	144	4,060
2013	148	4,263

Table 1: Number of institutions taking part and number of cases submitted from UK in 2010 – 2013.

The inclusion criteria in the audit have remained unchanged: children have to be over 1 year of age and admitted into participating units for more than 4 hours during November 2013 with a diagnosis of wheezing/asthma. Cases were submitted from all the countries of the United Kingdom. Units are asked to submit data on every child meeting the inclusion criteria admitted in November; however, it is recognised that tracking down details of every case is not always possible. Although this means the number of cases returned does not represent 100% of children admitted with asthma/wheezing in November, data on over 4,200 children represents a very large snapshot of current acute management of asthma/wheeze in the UK.

The audit has always collected basic demographic data as well as information on 4 other domains: initial hospital assessment; initial hospital treatment; discharge planning and follow-up plans. The standards for acute asthma management are drawn from the BTS/SIGN asthma guideline (1).

Using the reports produced via the BTS audit system, units can quickly compare their submitted cases with the aggregated national data. In addition, if units have submitted data in previous audits they can see how their performance is changing over time.

Basic Demographics in 2013

Despite the increasing number of cases submitted, it is striking how consistent the basic demographics of the children admitted with asthma/wheezing has remained (Table 2). Sixty percent of children admitted are male and around 70% of the children are under 5 years of age. About 25% children are under 2 years, just the age group where the evidence base for acute management is almost non-existent.

	2011	2012	2013
Sex (Males)	63.9%	59.4%	62.3%
Age			
1-<2yrs	22.3%	28.7%	22.0%
2-<5yrs	45.4%	44.4%	46.4%
5-<12yrs	28.3%	23.1%	25.7%
Over 12yrs	4.0%	3.8%	4.7%

Table 2: Sex and age profile of children submitted over the last 3 years

New questions in 2013

Following user feedback, new questions have gradually been incorporated in the audit.

In 2012, a question about a history of previous wheezing was added. In both 2012 and 2013, around 23% of children admitted had no history of previous wheezing with 41-42% wheezing only with colds.

In 2013, we added a new question about cigarette smokers in the child's home environment. This is because following the introduction of smoking bans, there is now strong evidence that passive exposure to tobacco is a risk factor in children for admission to hospital with an asthma attack. 868 children (20.4%) were recorded as exposed but unfortunately, in 45% of cases there was no data in the records. In the light of this, paediatricians need to focus on exposure to environmental tobacco smoke - recording clearly whether children admitted with wheezing are exposed to passive smoking, and thinking about how the fact of a hospital admission can be used to encourage parents to quit smoking.

The asthma audit, like many audits, has been mainly an audit of the process of health care. This year, for the first time, a question that focused on the outcome of admission was included. We asked whether the child was readmitted within 3 months with a further episode of wheezing/asthma. 537 (12.6%) children were readmitted and of these children 426 had a further admission with the remainder (99 cases) having 2 or more admissions. Reducing readmissions through better education in asthma attack management should clearly be a priority. It will be important to see whether readmissions can be reduced in future audits.

Illness severity

If the demographics have changed little it is also the case that illness severity as assessed by vital signs at the time of admissions remains surprisingly stable. This is well illustrated by comparing the median values for respiratory rate, pulse and saturation at the time of admissions in 2012 and 2013.

Age Group	2012 Median	2013 Median
Respiratory Rate (bpm)		
1-<2yrs	45	46
2-<5yrs	42	40
5-<12yrs	32	32
Over 12yrs	26	26
Pulse rate (bpm)		
1-<2yrs	155	156
2-<5yrs	147	149
5-<12yrs	131	130
Over 12yrs	117	116
Pulse Oxygen Saturation (%)		
1-<2yrs	95	96
2-<5yrs	94	95
5-<12yrs	94	95
Over 12yrs	96	96

Table 3: Median values for initial respiratory rate, pulse rate and saturation of children admitted in 2012 and 2013.

It is perhaps a reflection of the fact that most children do not have significant physiological disturbance at the time of admissions, and that most children then improve rapidly with treatment and are only in hospital for a short period of time – usually 1 day or less (Figure 1). Further, 31% of children were managed entirely within the emergency room or short stay units.

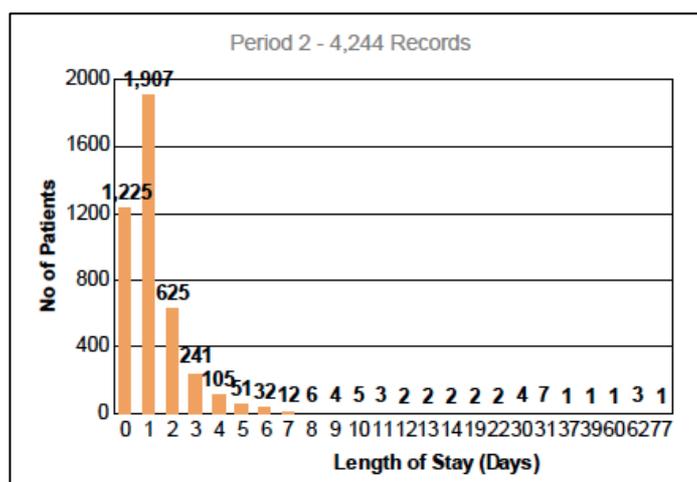


Figure 1: Length of stay in days for children admitted with acute asthma/wheezing (in hospital for more than 4hrs).

Hospital Treatment

The initial treatment children receive generally follows the BTS/SIGN asthma guidelines closely (Figure 2). Virtually all received beta agonist bronchodilators, while about 80% receive corticosteroid therapy. About half the children also receive ipratropium, which should be targeted to those with severe attacks. Oxygen is only required in about 40% of children.

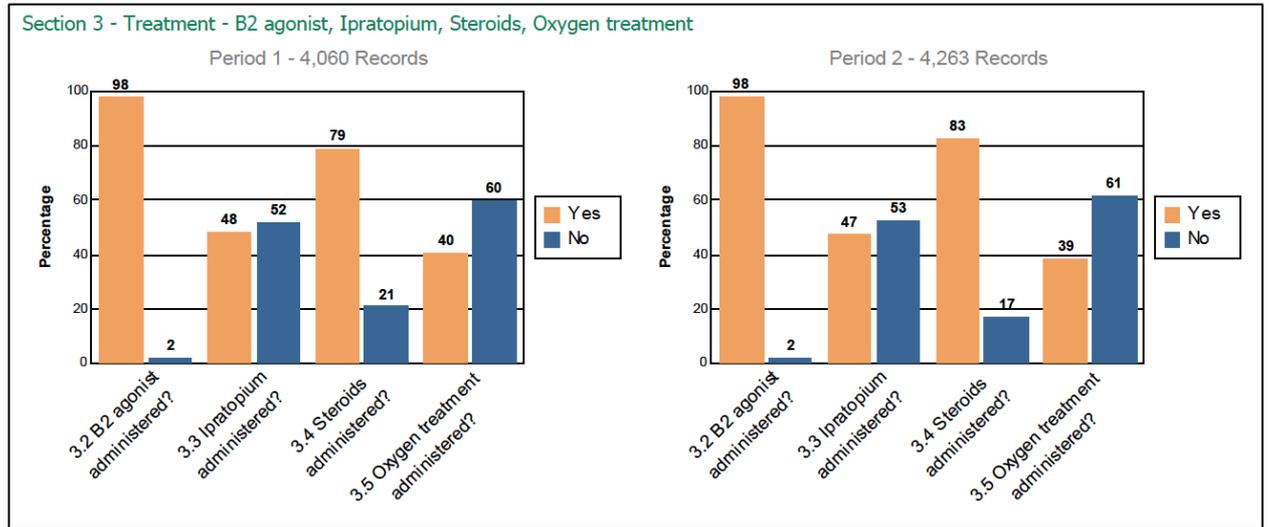


Figure 2: Percentage of children receiving in B2-agonists, steroids and oxygen treatment in 2012 (period 1) and 2013 (period 2).

For most children, this initial, intensive treatment remains highly effective with the proportion of children receiving second line treatment or being admitted to PICU, or receiving second line treatment remaining low.

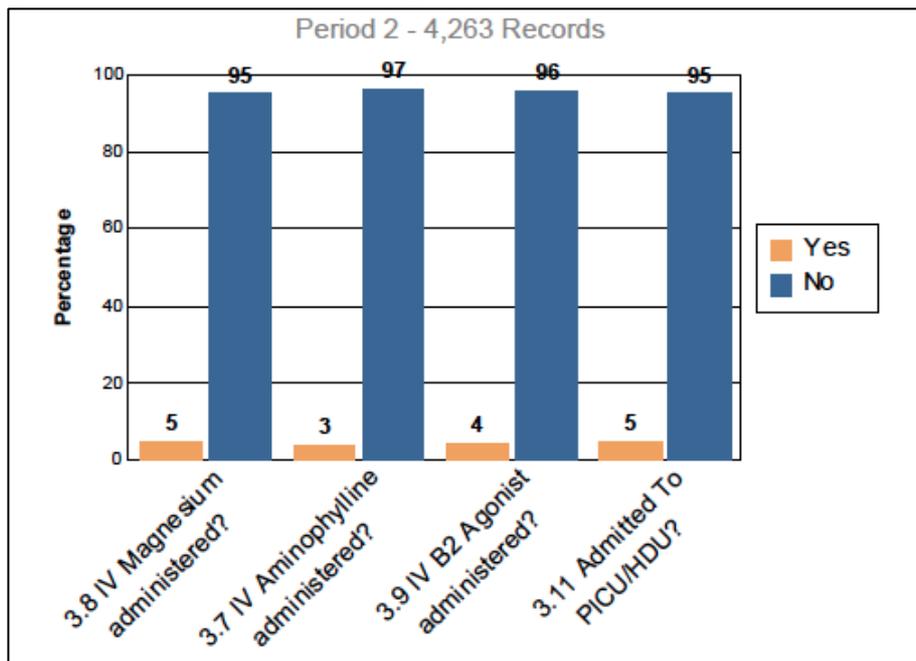


Figure 3 Number of children receiving intravenous therapy and HDU/PICU admission in 2013 audit (responses n =4263)

The number of children who received a CXR was stable at 26%. The number who received antibiotics was also stable at 26%. We have noted before that the published evidence suggests that the optimum rate of CXRs is around 10-12% of children and that having a CXR appears linked with antibiotic prescription. There is clearly work still to be done in reducing the number of X-rays and the prescription of antibiotics in children with acute asthma attacks.

Discharge planning

We have noted before that discharge planning remains the area where opportunities for improvement are most evident with wide variations between units. Figure 4 shows the data for 2012 and 2013 and it is clear that there has been little improvement.

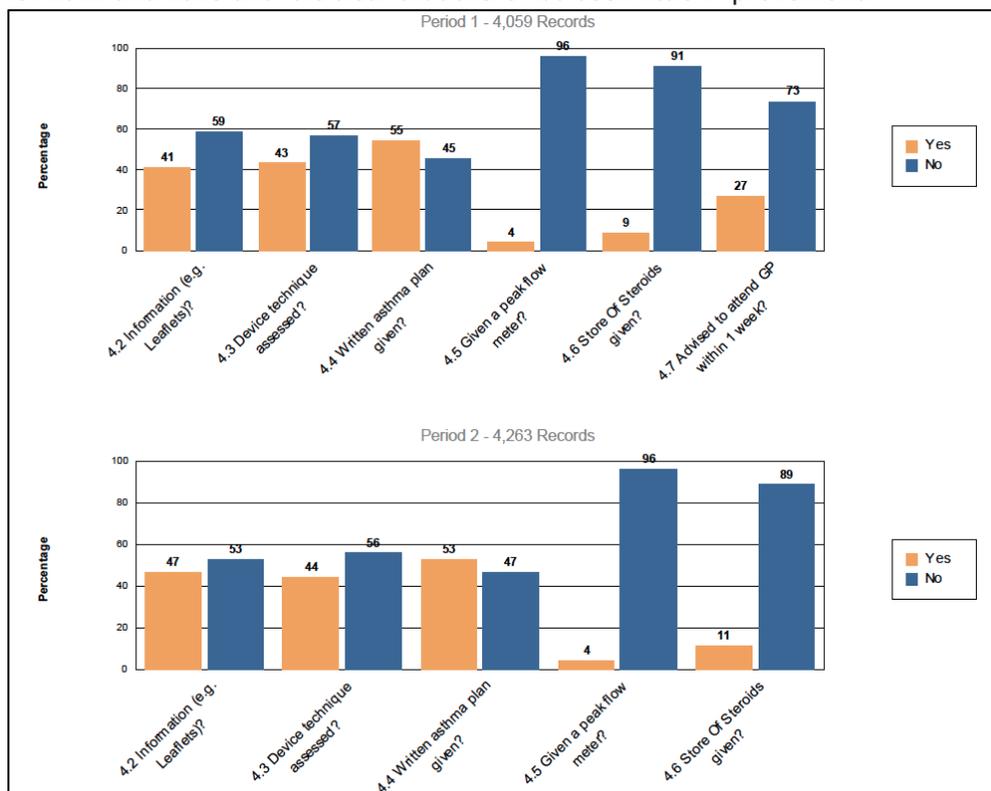


Figure 4: Proportions of children receiving different components of discharge planning in 2012 (Period 1) and 2013 (Period 2)

The importance of discharge planning, particularly about whether a written asthma plan was provided, is given particular force by the findings of the recently published National Review of Asthma Deaths (NRAD) (2). In NRAD, detailed information was available on 28 children (10 <10yrs, 18 10-19yrs; youngest 4yrs) who were considered to have died of an asthma attack during the year of the confidential inquiry (2012). Of these children, 80% of under 10 years and 72% in the 10-19 years age range died before reaching hospital. Only 4/28 of the children who died had a record of being provided with an asthma action plan.

Providing structured education on how to recognise an asthma attack and when to seek help in an emergency as well as on optimal treatment and how to prevent relapse, summarised in a written personal action plan, was a key recommendation from NRAD.

Improving the audit for the future

Through the period of the audit, we continue to receive thoughtful questions and feedback. This has led to some of the new questions included in the last few years and continued improvement of the audit.

The BTS continues to explore how the audit data may be better used to drive up standards of asthma care. Once again, it is important to acknowledge the enormous amount of work by Sally Welham and the audit team at the BTS for their excellent support of audit in paediatric respiratory medicine. The rising number of units entering data is a tribute to their hard work.

If you have comments or suggestions the audit team would be pleased to hear from you.

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References

1. BTS/SIGN Guideline for the Management of Asthma, 2012: <https://www.brit-thoracic.org.uk/guidelines-and-quality-standards/asthma-guideline/>
2. National Review of Asthma Deaths 2014: <http://www.rcplondon.ac.uk/projects/national-review-asthma-deaths>