

**The College of
Emergency Medicine**

CEM Clinical Audits 2012-13

Feverish Children

Introduction

This report shows results from the audit of the treatment of feverish children (under 5 years of age) presenting to your Emergency Department (ED) with a medical condition against the clinical standards set by the College of Emergency Medicine (CEM) Clinical Effectiveness Committee (CEC). It compares your department with the other 179 departments that made audit returns.

Nationally, 8653 cases from 180 EDs (including 90% of relevant EDs in England) were included in the audit.

The CEM standards

- 1 Children presenting to Emergency Departments (EDs) with medical conditions should have respiratory rate, oxygen saturation, pulse, blood pressure/capillary refill, GCS/AVPU and temperature measured and recorded as part of the routine assessment
- 2 Discharged children in whom no diagnosis is found and with amber features, as defined in the NICE guideline, should be provided with an appropriate 'safety net'
- 3 90% of children with amber features and without an apparent source of infection should not be prescribed antibiotics
- 4 Children with fever and without an apparent source of infection but with one or more red features should have FBC, CRP, blood culture and urinalysis performed
- 5 EDs should have written advice to give to the carer/s of discharged children
- 6 EDs should have access to the NICE guideline Traffic Light System (See www.nice.org.uk/CG047)

The audits

Feverish children was one of three CEM clinical audits completed during 2012, the others being fractured neck of femur and renal colic. It assesses change since the previous audit of 2010.

In August 2012 letters were sent to nominated Consultant contacts and Audit Departments in each hospital asking them to participate in the latest round of audits. Audit tools were made available on the CEM website and sent directly by e-mail.

Participants were asked to collect data from ED notes of 50 or more children under the age of 5 presenting consecutively with a medical condition. The audit tool summarised the data entered automatically and the summaries were then e-mailed to the CEM for analysis.

It should be noted that from 2012 (including this audit) all data collected is shared with the Care Quality Commission (CQC) and placed in the public domain.

The format of this report

The table overleaf shows your ED's audit results (in the bright yellow cells). Comparative results from the 2010 audits are shown alongside (italicised in the paler shaded cells). National results are also shown (in the cells shaded blue) so that EDs can consider their performance against that of other departments.

By showing the lower and upper quartiles of performance as well as the median values, the table indicates the variations in performance between less well and better performing departments.

More detailed information about the distributions of key audit results and contextual information can be obtained from the charts on subsequent pages of the report. Please bear in mind the comparatively small sample sizes when interpreting the charts and results.

Results for this ED compared with national findings

Chart		CEM Standard	This department		National Results					
					Lower quartile		Median †		Upper quartile	
			2012	2010	2012	2010	2012	2010	2012	2010
Which vital signs were measured and recorded as part of the routine assessment? (% of audited cases)										
1	- Respiratory Rate	100%			84%	68%	92%	82%	96%	90%
	- Oxygen saturation	100%			92%	82%	96%	90%	99%	96%
	- Pulse	100%			94%	85%	98%	94%	100%	98%
	- Systolic blood pressure	100%			46%	25%	64%	44%	86%	68%
	- GCS score (or AVPU)	100%			68%	40%	84%	67%	96%	87%
	- Temperature	100%			100%	96%	100%	99%	100%	100%
Were these measurements taken within 20 mins of the patient's arrival in the ED? (% of measurements)										
2	- % within 20 mins of patient's arrival				56%	54%	67%	66%	77%	78%
Overall, what percentage of patients were prescribed antibiotics? (% of audited cases for which known)										
3	- % prescribed antibiotics				11%	10%	18%	17%	28%	28%
What was the risk profile of the audited patients?										
4	- High (red) risk				5%	4%	10%	8%	16%	16%
5	- Intermediate (amber) risk				24%	21%	35%	31%	46%	41%
6	- Low (green) risk				42%	44%	54%	59%	64%	72%
High (red) risk patients:										
	- % with NO apparent source of infection		*	*	24%	24%	40%	40%	60%	67%
Which tests were performed on red risk patients with no apparent source of infection? (% relevant patients)										
7	- FBC	100%	*	*	0%	0%	0%	50%	50%	62%
	- CRP	100%	*	*	0%	0%	6%	33%	43%	62%
	- Blood culture	100%	*	*	0%	0%	14%	14%	35%	46%
	- Urinalysis	100%	*	*	13%	12%	21%	33%	62%	67%
Intermediate (amber) risk patients:										
8	- % with NO apparent source of infection		*	*	15%	15%	27%	27%	44%	40%
Were amber risk patients with no apparent source of infection prescribed antibiotics? (% relevant patients)										
	- % prescribed antibiotics (<i>high is poor</i>)	<10%	*	*	0%	0%	0%	0%	8%	0%
Was an appropriate safety net provided for discharged amber risk patients? (% relevant patients)										
9	- % provided with safety net	100%	*	*	60%	66%	75%	83%	86%	100%
Does ED have: (% of EDs)										
	- written discharge advice for parents/carers?	Yes	*	*			74%	69%		
	- accessible copy of NICE traffic light system?	Yes	*	*			81%	81%		

† The median value of each indicator is that where equal numbers of participating EDs had results above and below that value. These median figures may differ from the "national" results quoted in the body of this report which are mean (average) values calculated over all audited patients.

* No values are shown where fewer than five patients relevant to the denominator of a specific indicator were included in the audit.

Vital signs measured & recorded as part of the routine assessment

Chart 1: Change in recording rates since the previous audits

NOTE: See last page for explanation of charts

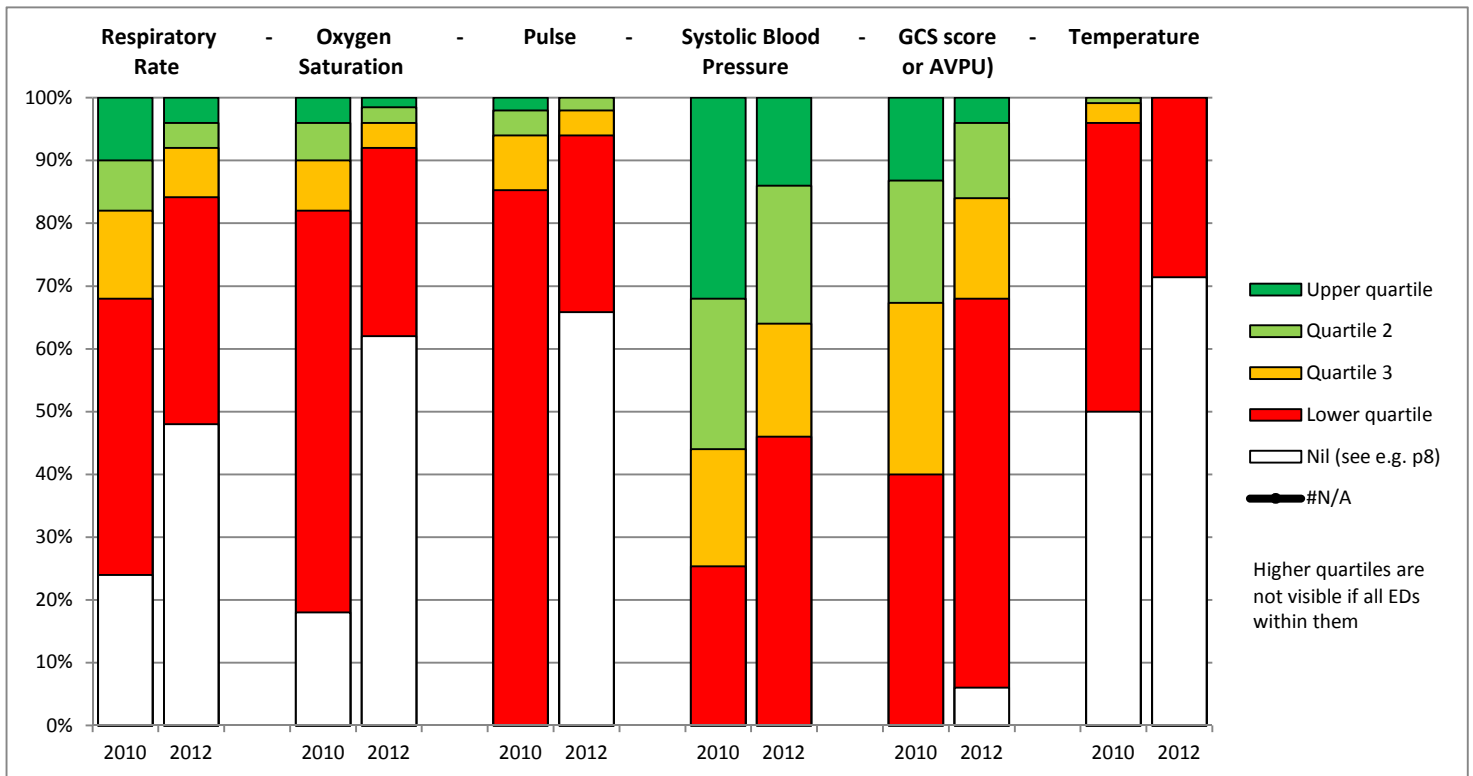
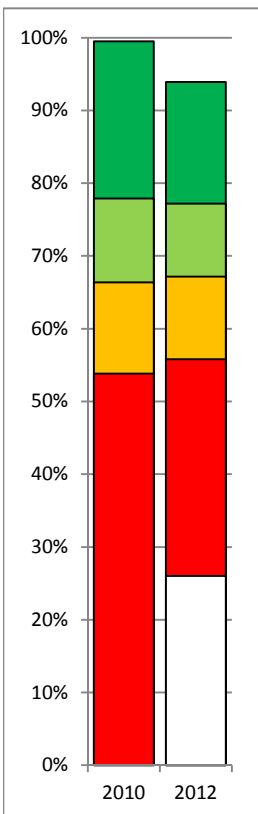


Chart 2: Percentage of vital signs measured within 20 mins of arrival in the ED



The CEM standard is that each of the vital signs shown in Chart 1 (above) should be measured and recorded as part of the routine assessment. If your ED submitted data in both 2010 and 2012, the black lines on the chart show how the performance in your ED has changed since the last audits - an upward slope indicates improvement. Your results are shown against coloured bars representing the range of performance in other EDs in the two audits. These bars show that nationally there have been improvements toward meeting the CEM standard, but that there are still marked differences between EDs in the recording of vital signs and also between the six categories of measurement:

- **Temperature** was recorded in the notes for **almost all** audited patients nationally, **pulse** for **96%** and **oxygen saturation** for **94%**.

- **Respiratory rate** was recorded for **89%** of audited patients nationally compared to **78%** in 2010. **90%** of EDs recorded this for at least three out of four audited cases.

- A **GCS Score (or AVPU)** was recorded for **79%** of audited patients nationally compared to **63%** in 2010. **66%** of EDs recorded this for at least three out of four audited cases.

- **Systolic blood pressure /capillary refill** remains the least well recorded of the six recommended vital signs, but this too has improved from **47%** in 2010 to **63%** in 2012. **73%** of EDs now record this for at least half of their cases compared to **45%** in 2010.

Chart 2 (left) uses a similar graphical representation to show how the promptness of measurement of vital signs on arrival changed nationally between 2010 and 2012.

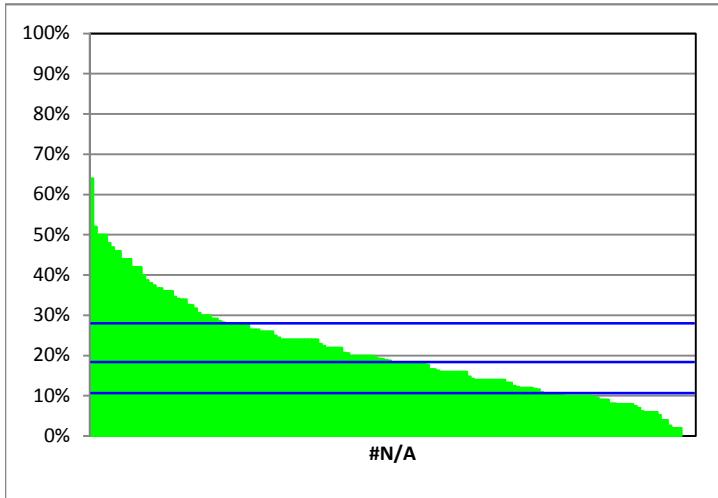
Comment & recommendations:

- The upward trend in achieving the recommended standards of care is commendable, and clearly demonstrates that departments are working to improve quality. Measurement of respiratory rate in **89%** of febrile children is particularly good.
- There has been little change in the proportion of vital signs recorded within 20 min of arrival: **66%** in 2012 compared to **65%** in 2010. This 'risk period' remains problematic for some EDs.
- In 2010 it was concerning that in 10% of departments only **7%** of patients had their GCS/AVPU measured within 20 min. This has risen to **18%** in 2012, but the best performing departments achieve **94%**.

If your ED is in the lower quartile you should assess the reasons for this, and take appropriate action where necessary.

Prescription of antibiotics

Chart 3: Overall percentage of patients prescribed antibiotics



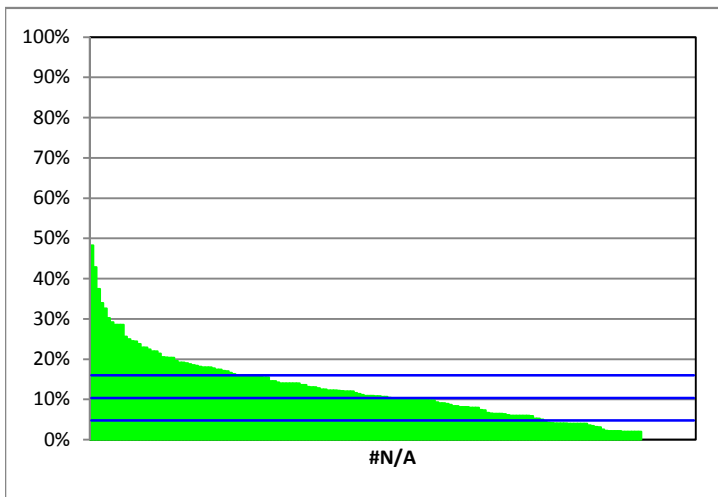
Nationally, antibiotics were prescribed in **21%** of audited cases in 2012 compared to 20% in 2010. Across departments this percentage ranged from 0% to 64%.

Comment & recommendation

- We recommend that departments with a prescription rate of greater than the median of 18% should review the practice of their ED and consider changes to reduce the antibiotic prescribing rate.

Risk profiles

Chart 4: Percentage of patients that were high (red) risk



Nationally, **11%** of patients were assessed as high (red) risk, **36%** as medium (amber) risk and **53%** as low (green) risk. These percentages are broadly the same as in 2010.

There was considerable variation between EDs in the casemix: for example the percentage of high risk patients included in the audit ranged from 0% to 48%; and the percentage of low risk patients from 0% to 100%.

Comment & recommendation

- This degree of variation raises questions regarding the consistency of risk assessment. However differences in case mix can help to explain the audit results for individual EDs.

Chart 5: Percentage that were medium (amber) risk

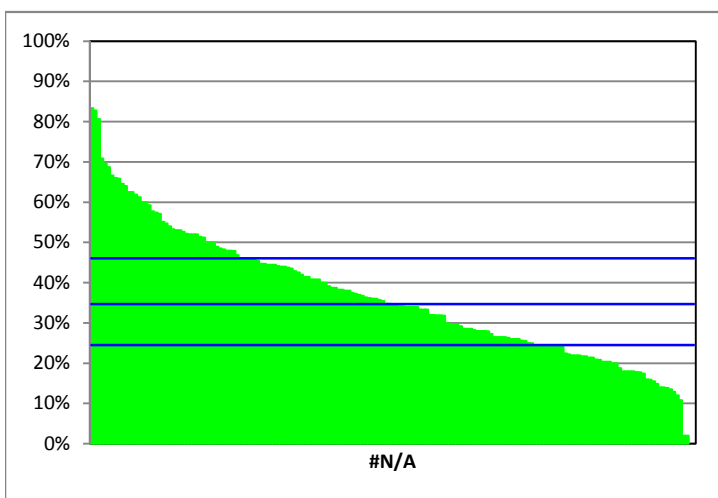
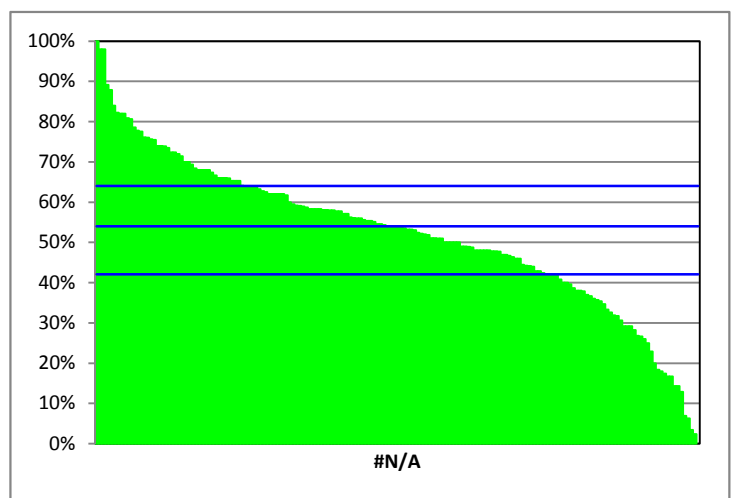
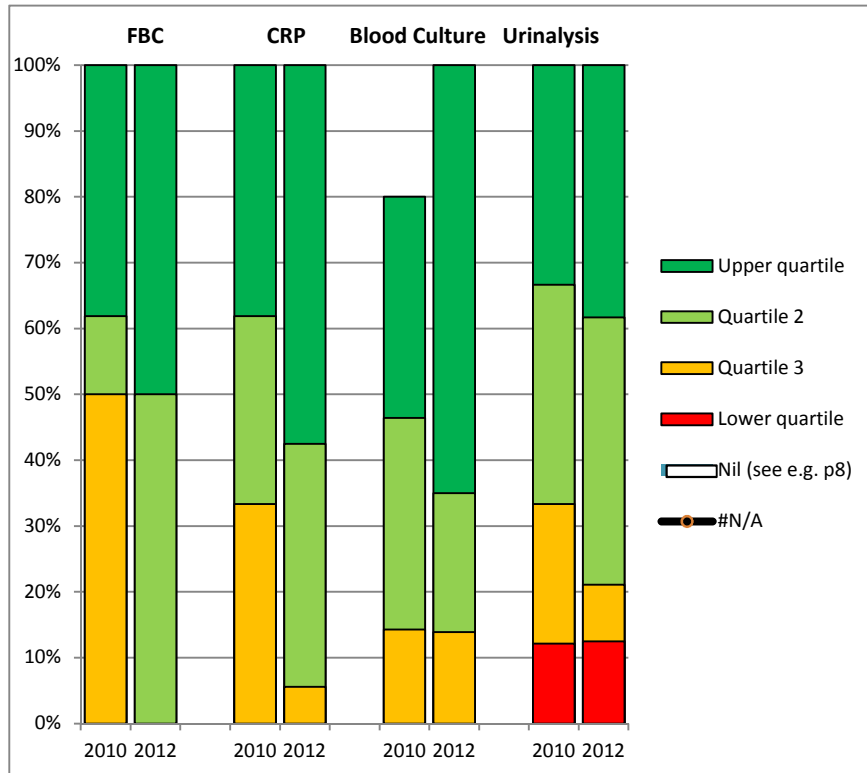


Chart 6: Percentage that were low (green) risk



High (red) risk patients with no apparent source of infection

Chart 7: Investigations carried out and results recorded



[No values are shown where fewer than five patients relevant to the denominator of a specific indicator were included in the audit]

Nationally:

- FBC and CRP results were recorded in **32%** of relevant cases (37% in 2010); in a further **26%** of cases the tests were performed but no result was recorded in the notes (25% in 2010).

- Blood culture results were recorded in **27%** of relevant cases (24% in 2010); in a further **29%** of cases the test was performed but no result was recorded in the notes.

- Urinalysis results were recorded in **39%** of relevant cases (the same percentage as in 2010); in a further **23%** of cases the test was performed but no result was recorded in the notes.

Comment and recommendation

- Recommended investigations were obtained in **58%** of high risk patients, though it is not evident if the results were checked in approximately **26%** of cases. It is good practice to record results in the notes as this demonstrates clearly that they have been checked by at least one person.
- These results suggest that in **42%** of departments red flags are not being recognised and / or the NICE guideline has not been fully implemented. This is the main indicator that has not improved in the last 2 years.
- Part of the problem is likely to be the natural reluctance to take blood from young children. If this is an issue it needs to be addressed.
- All departments, but particularly those below the 50th centile, should consider initiatives to teach and reinforce the importance of the NICE Guideline for both medical and nursing staff.

Nationally, **42%** of high risk patients had no apparent source of infection (41% in 2010), but this varied between EDs from 0% to 100%.

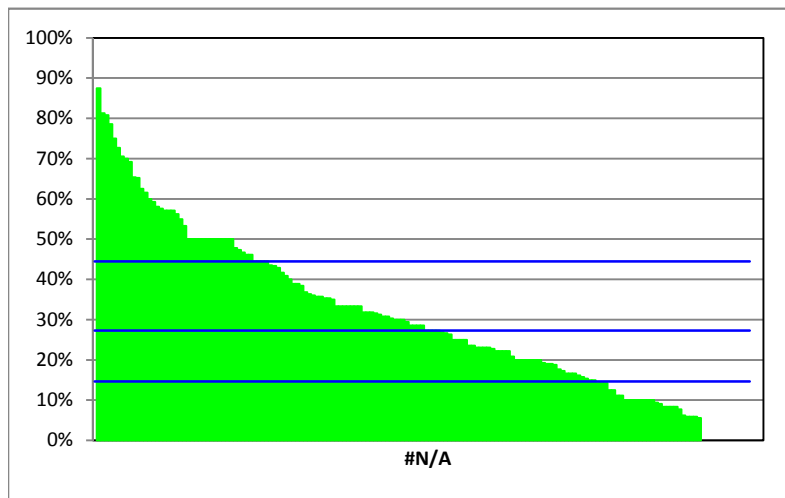
The CEM standard is that these patients should have FBC, CRP, blood culture and urinalysis performed.

Only a minority of participating EDs included enough relevant high risk patients in their audits to calculate meaningful results for individual EDs. If your ED submitted data for a sufficient number of high risk patients in both 2010 and 2012, the black lines on the chart show how the performance in your ED has changed since the last audits - an upward slope indicates improvement. Your results are shown against coloured bars representing the range of performance by other EDs in the two audits.

Some EDs commented that all high risk children went straight to paediatrics / a ward, so test results would be recorded there.

Intermediate (amber) risk patients

Chart 8: Percentage with NO apparent source of infection



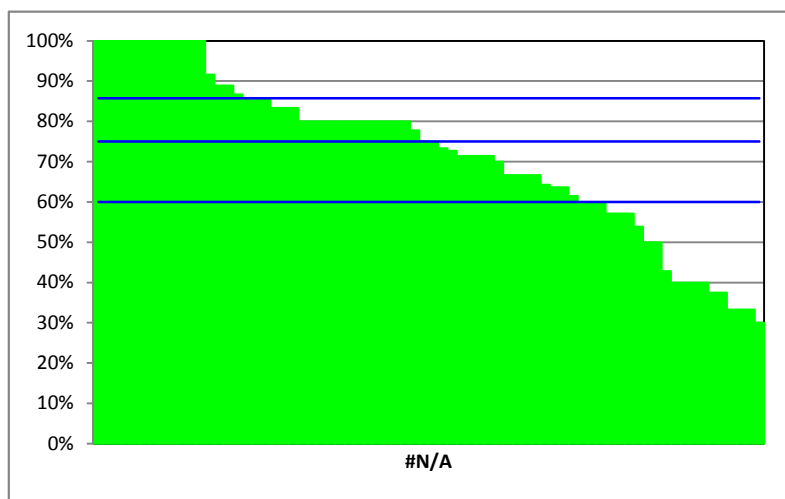
31% of intermediate risk patients had no apparent source of infection. The CEM standard is that 90% of children with amber risk features, (as defined in the NICE guideline) and without an apparent source of infection should NOT be prescribed antibiotics.

Nationally antibiotics were prescribed in only 5% of relevant cases. 77% of departments (excluding those that included less than five relevant cases in their audit) met the CEM standard compared to 81% in 2010.

Comment & recommendation

- The 2010 & 2012 audits demonstrate that antibiotics are being appropriately withheld in the majority of children.
- If your department is one of the 23% of departments not meeting the CEM standard, action should be considered to change practice.

Chart 9: Percentage of those discharged provided with safety net



The CEM standard is that discharged children in whom no diagnosis is found and with amber risk features should be provided with an appropriate 'safety net'.

A safety net was provided in 73% of cases (77% in 2010). 18% of EDs did so for at least 90% of relevant patients included in the audit, down from 36% in 2010, which is disappointing.

Comment & recommendation

- All departments should have a 'safety net' patient information leaflet.
- If your department is one of the 26% without a formal policy this should be addressed without delay.

n.b. Only EDs that included in their audit at least 5 patients for whom a safety net would have been appropriate are shown on the chart]

Advice for carers and access to NICE traffic light system

The percentage of EDs that have written discharge advice for parents/carers increased from 69% in 2010 to 74% in 2012.

The percentage of EDs with an accessible copy of the NICE traffic light system remained broadly constant at 81%.

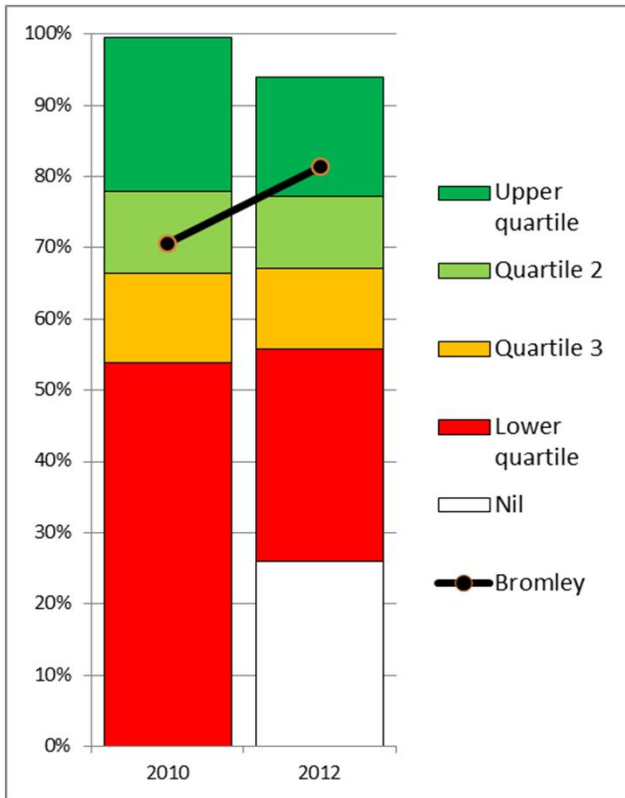
Thank you

for taking part in this national audit. We hope that you find the results useful.

Should you wish to make any comments on this report or feel that any of the figures or charts misrepresent the results of your audit, please contact the CEM by e-mailing philip.mcmillan@collemergencymed.ac.uk or telephoning 020 7067 1269.

Details of CEM national audit programmes can be found at:
<http://www.collemergencymed.ac.uk/Shop-Floor/Clinical Audit/Current Audits>

Example Chart



The columns display the range of performance achieved by EDs in the 2 audits conducted on feverish children (2010 and 2012).

The coloured bands display the range of performance per quartile. In 2010 the lowest performing quartile (red) for respiratory rate ranged from 0% to 54%. The upper quartile of performance (dark green) ranged from 78% to 100%.

You can see an overall improvement nationally in this example. The black line denotes your ED. In this example the performance improved from 71% in 2010 to 81% in 2012.

The bottom of column 2012 is white (nil). This indicates that no EDs achieved less than 26% of patients.

NOTE: On some charts the upper quartile may not be visible. This means all EDs in the upper quartile achieved 100% .