

WELCOME to the final edition of the DeCon Multi-site Audit Newsletter.

This is the final edition for the Decreased Conscious Level Multi-site audit project's newsletter. It covers the following areas:

1. Clinical Audit Data returns
2. Audit Sample
 - Age
 - Gender
 - Grade of doctor reviewing the child at presentation to hospital
 - Actual working diagnosis within 4 hours of presentation
 - Outcome
3. Audit Standards
 - Question 1: Features of the clinical history
 - Question 2: Observations
 - Question 3: Modified GCS or AVPU used to assess level of consciousness
 - Question 4: Recommended frequency of GCS measurements
 - Question 5: Investigations and tests
 - Question 6: Working diagnosis within 4 hours of presentation to hospital
 - Question 7: Management plan within 4 hours of presentation to hospital
 - Question 8: Parental/Guardian involvement during initial resuscitation and management
4. Plans post-audit

- i. Data in this newsletter refers to cases in the online tool up to the 26 October 2011.
- ii. Note some percentage totals may not sum to 100% due to rounding.
- iii. Data analyses contained in this newsletter may be subject to change once the full data returns are obtained and data has been cleaned thoroughly.
- iv. **The median percent:** The middle value of the percentages of children and young people meeting the specific audit standard for all the trusts in other words the 50th percentile.
- v. **95% confidence intervals for the median:** This is used to indicate the reliability of the median percent and can be interpreted as the 95% probability that the median percent lies within the bounds of this interval.

1. Clinical Audit Data Returns

- 54 trusts (66 hospitals) are currently participating in the audit.
- 51/54 trusts have returned clinical audit data to date.
- The total number of submitted cases in the web portal up to the 26 October 2011 is 1019.
 - ◇ < 5 cases = 8 trusts
 - ◇ 5-10 cases = 11 trusts
 - ◇ 10-20 cases = 14 trusts
 - ◇ > 20 cases = 18 trusts

NEWS!- CLOSURE OF THE AUDIT

The audit closes on 31st October 2011.

The final report will be out in February 2012.

2. Audit Sample

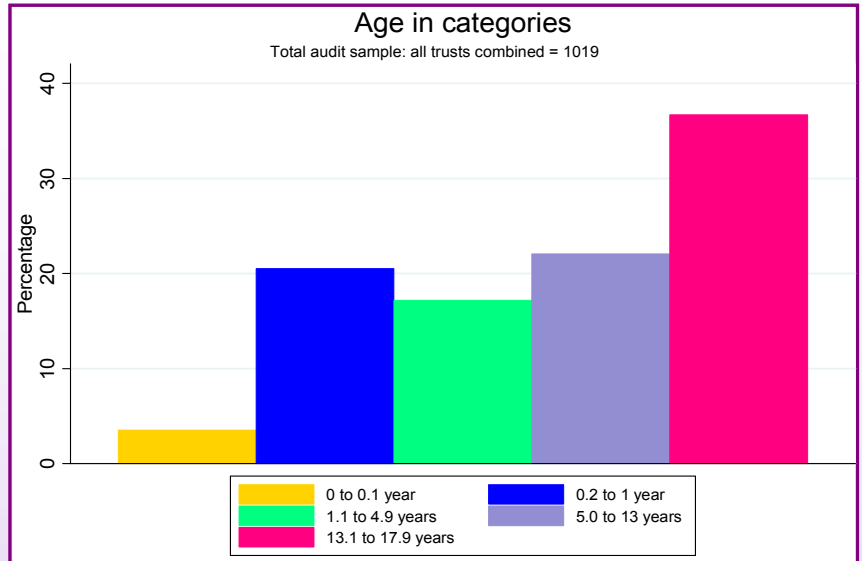
Age

Audit sample = 1019 cases
 Mean age = 8.2 years
 Standard deviation = 6.3 years
 Median age = 8 years
 25th Percentile = 2 years
 75th Percentile = 14 years

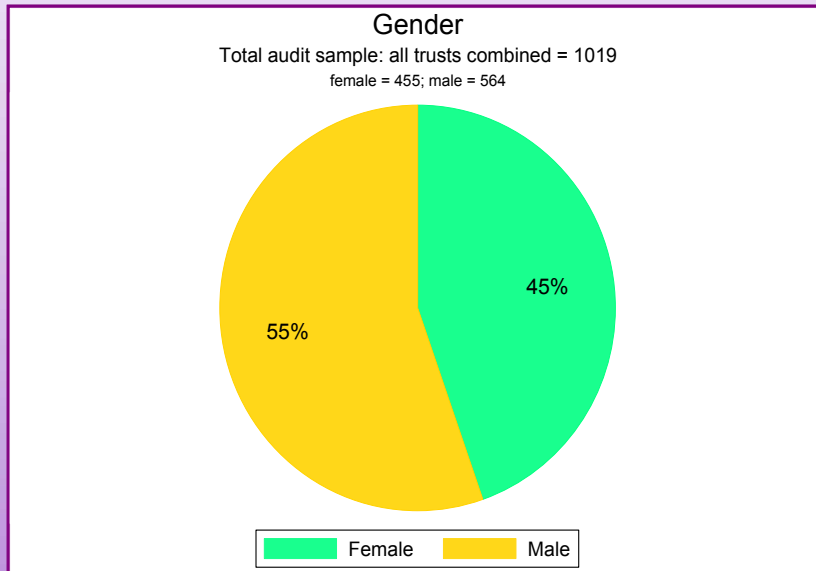
Age categories (adapted from Goldstein et al. 2005)

- ◇ 0.0 to 0.1 year (1 month) = 36 (3.5%)
- ◇ 0.2 to 1.0 year = 209 (20.5%)
- ◇ 1.1 to 5.0 years = 175 (17.2%)
- ◇ 5.1 to 13.0 years = 225 (22.1%)
- ◇ 13.1 to 17.9 years = 374 (36.7%)

Brahm Goldstein; Brett Giroir; Adrienne Randolph; and the Members of the International Consensus Conference on Pediatric Sepsis (2005) International pediatric sepsis consensus conference: Definitions for sepsis and organ dysfunction pediatrics *Pediatric Critical Care Medicine* 2005; 6(1):2-8



Gender



There are a greater number of males than females.

Audit sample = 1019 cases
 Female = 455 (45%)
 Male = 564 (55%)

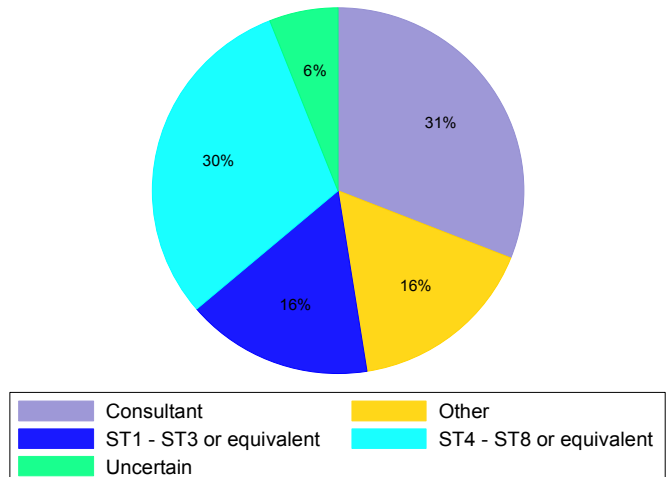
Grade of doctor reviewing the child or young person on presentation to hospital

The majority of children (61%) were reviewed by either a consultant or a doctor of ST4-ST8 grade.

- ◇ Consultant = 316 (31.0%)
- ◇ ST1-ST3 or equivalent = 166 (16.3%)
- ◇ ST4-ST8 or equivalent = 308 (30.2%)
- ◇ Other (associate specialist, clinical fellow, staff grade, F1, F2 or nurse) = 168 (16.5%)
- ◇ Uncertain of doctor's grade = 61 (6.0%)

Grade of doctor reviewing at presentation to hospital

Total audit sample: all trusts combined = 1019

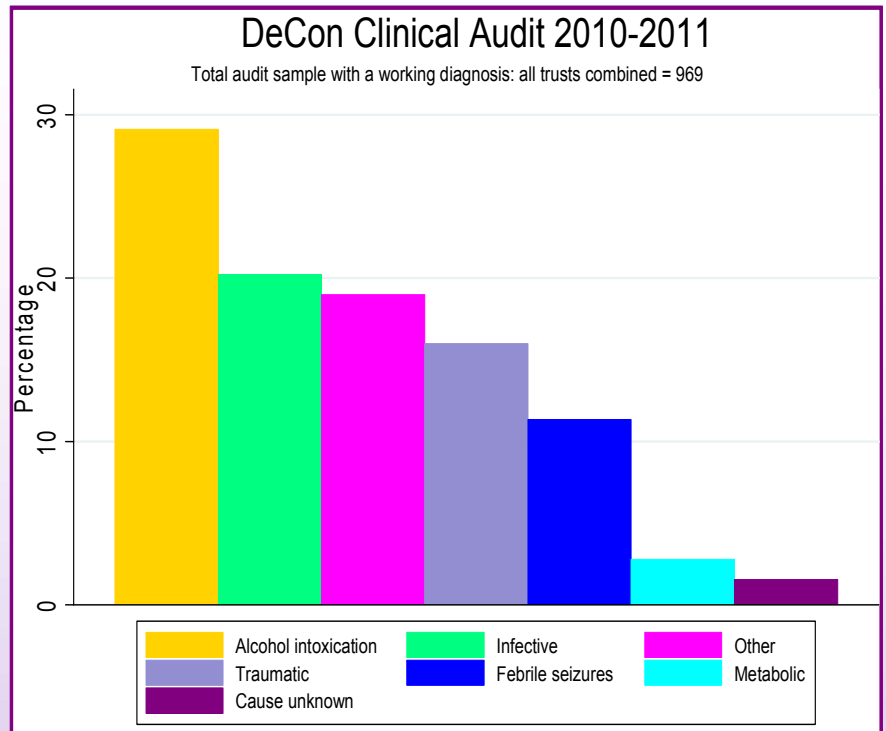


Working Diagnosis within 4 hours of presentation

969 (95.1%) of the total audit sample (1019 cases) have a working diagnosis within 4 hours of presentation to hospital.

Of those 969 children and young people, their actual diagnoses are as follows:

- ◇ Alcohol intoxication = 282 (29.1%)
- ◇ Infective causes = 196 (20.2%)
- ◇ Traumatic causes = 155 (16.0%)
- ◇ Febrile seizures = 110 (11.4%)
- ◇ Metabolic causes = 27 (2.8%)
- ◇ Other causes (fits, shock, haemorrhage etc.) = 184 (19.0%)
- ◇ Cause unknown = 15 (1.6%)



Outcome

The outcomes for the total audit sample (1019 cases) are as follows:

- ◇ Discharged from the area of hospital attendance = 442 (43.4%)
- ◇ Transferred to a ward area (paediatric or adult) = 413 (40.5%)
- ◇ Transferred to PICU = 105 (10.3%)
- ◇ Transferred to another hospital = 33 (3.2%)
- ◇ Died = 16 (1.6%)
- ◇ Other (self-discharge or discharged without medical consent) = 10 (1.0%)

3. Audit standards

There are 8 audit areas covered as part of this audit. They include the history of the clinical features, observations, physiological scoring system used, frequency of GCS measurements, capillary blood glucose within 15 minutes of presentation, working diagnosis and management plan within 4 hours of presentation along with parental/guardian involvement. The target performance for all of these standards with the exception of parent/guardian involvement audit standards is 90%.

Two types of graphs are used to illustrate performance: bar charts and funnel plots.

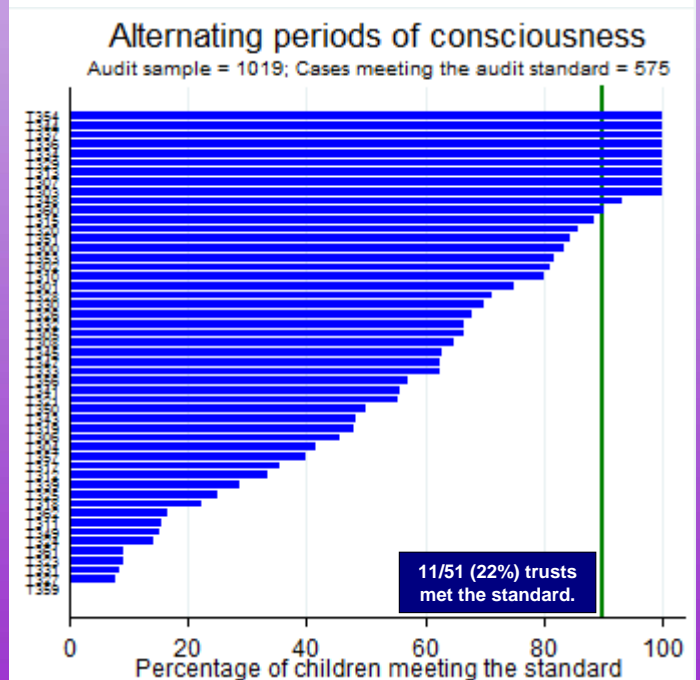
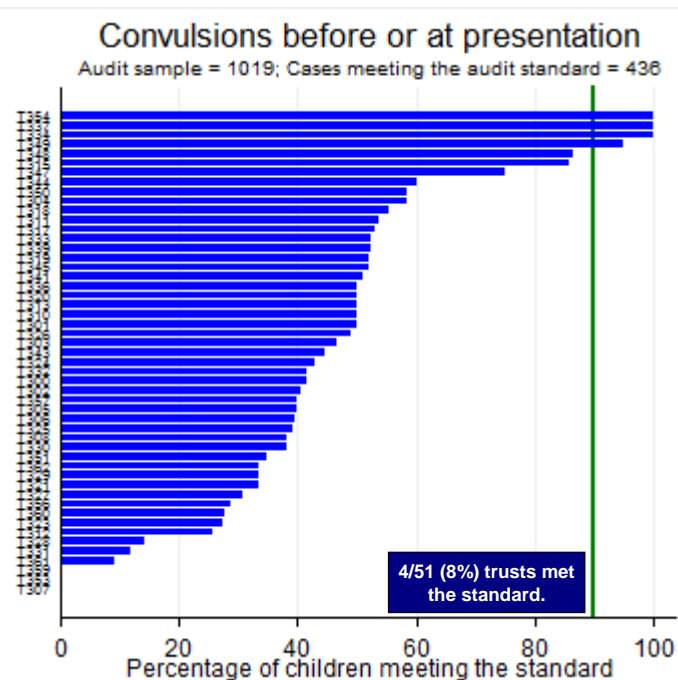
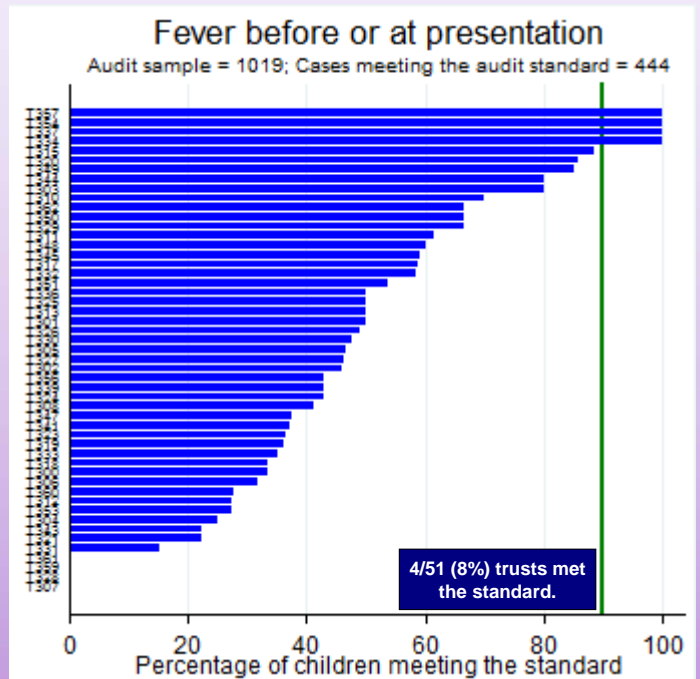
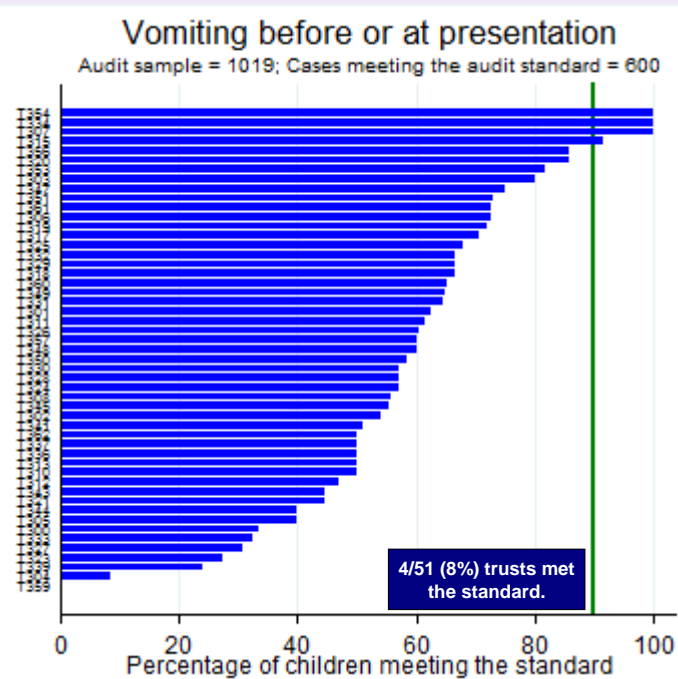
- ◇ A bar chart is a graph where the horizontal axis is the audit standard percentage and the vertical axis comprises the trusts with each bar representing a NHS trust and the length of the bar representing the % who meet the standard. If this percentage is zero, a bar is not shown on the graph.
- ◇ A funnel plot is a scatter plot of the percentage meeting the audit standard for the NHS trust on the vertical axis against its sample size on the horizontal axis. It contains control lines set at 95% (2 standard deviations) that narrow as the sample size gets bigger.

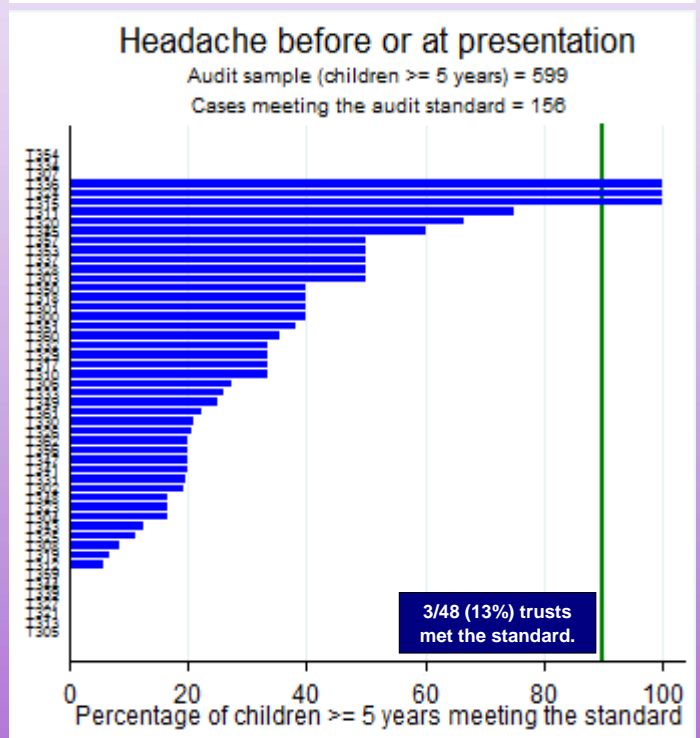
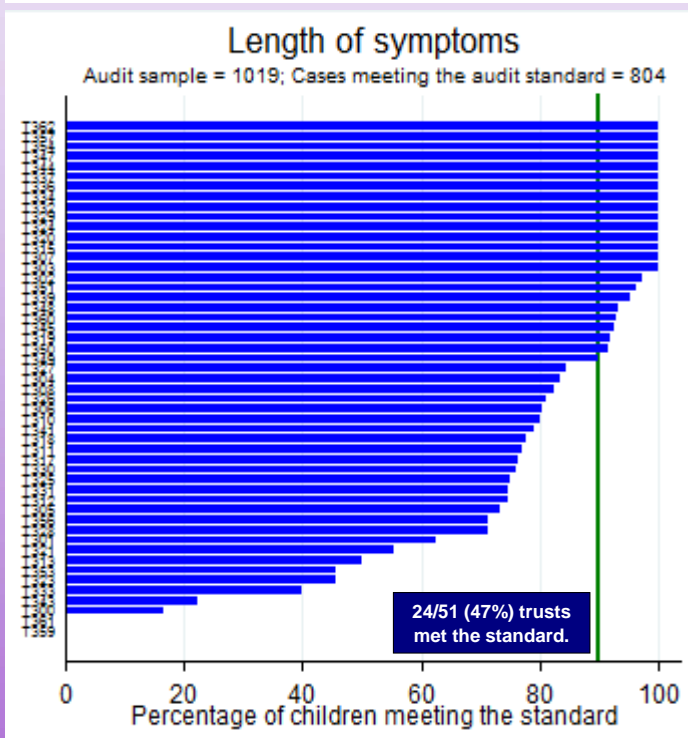
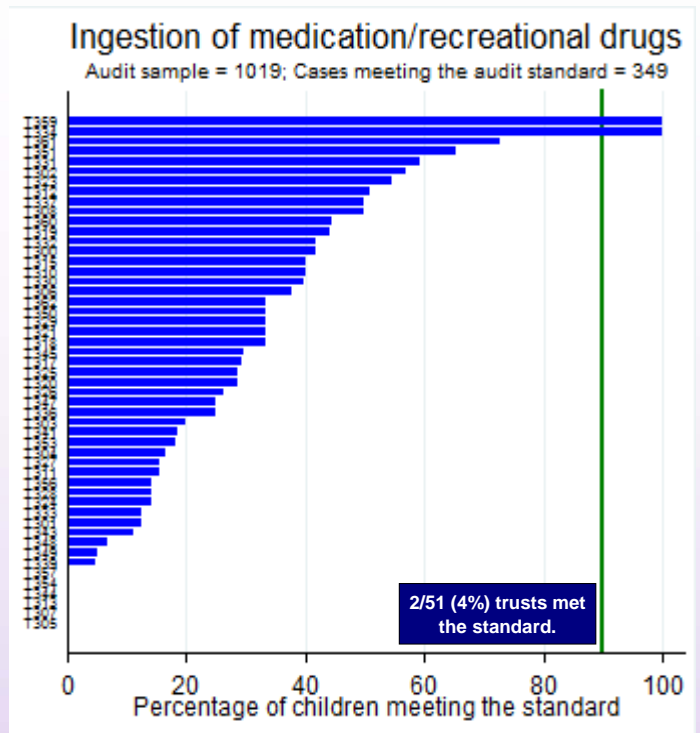
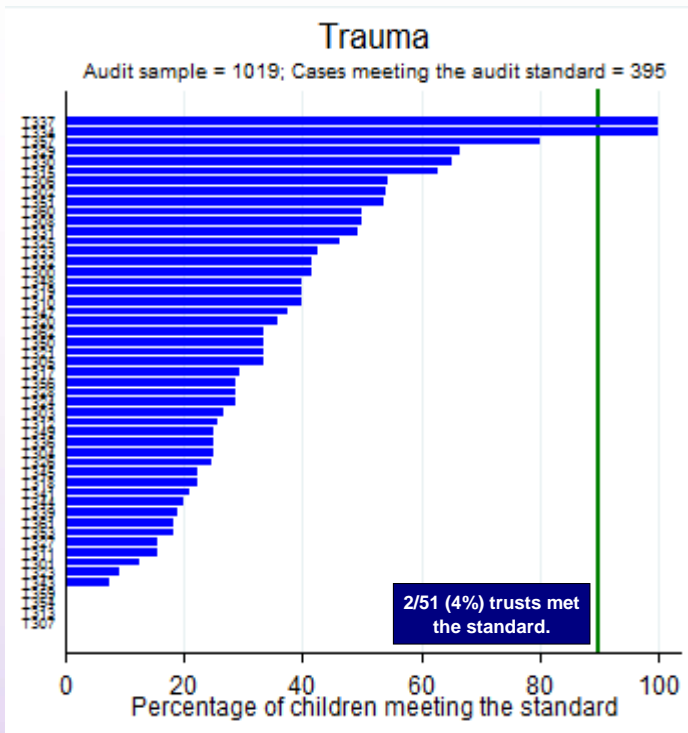
Question 1: Features of the Clinical History

Audit question: At presentation to hospital, was the presence or absence of the recommended features of the clinical history elicited and documented in the clinical record?

Standard: 90% of children presenting to hospital with a decreased conscious level should have the presence or absence of the recommended features of the clinical history elicited and documented in their clinical records.

Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Clinical History				
% vomiting on or before presentation	600	1019	60%	(54%, 65%)
% fever on or before presentation	444	1019	47%	(38%, 54%)
% convulsions on or before presentation	436	1019	44%	(39%, 50%)
% alternating periods of consciousness	575	1019	63%	(48%, 75%)
% trauma	395	1019	29%	(25%, 40%)
% ingestion of medication/recreational drugs	349	1019	29%	(18%, 33%)
% length of symptoms	804	1019	83%	(77%, 93%)
Clinical History (Age related - 48 out of 51 trusts possess eligible cases)				
% presence of medication in the child's home (under fives)	33	420	0%	(0% 5%)
% family history of previous infant deaths (under fives)	30	420	0%	(0% 0%)
% headache on or before presentation (five and over years)	156	599	24%	(20% 35%)





Other age-related clinical history features elicited and documented

Presence of Medication in the child's home (children < 5 years)

- ◇ Audit sample (children < 5 years) = 420 cases; Cases meeting the standard = 30
- ◇ 2/48 (4%) trusts met the standard.

Family history of previous infant deaths (children < 5 years)

- ◇ Audit sample (children < 5 years) = 420 cases; Cases meeting the standard = 33
- ◇ 0/48 (0%) trusts met the standard.

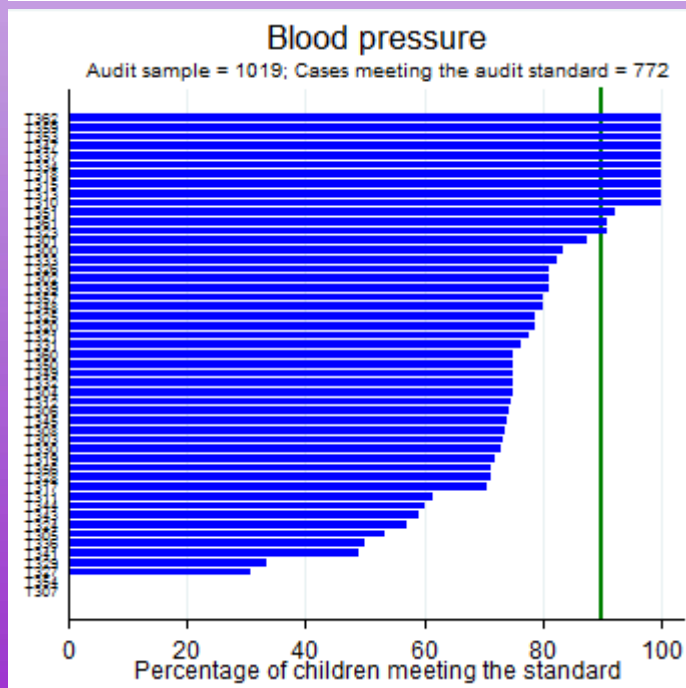
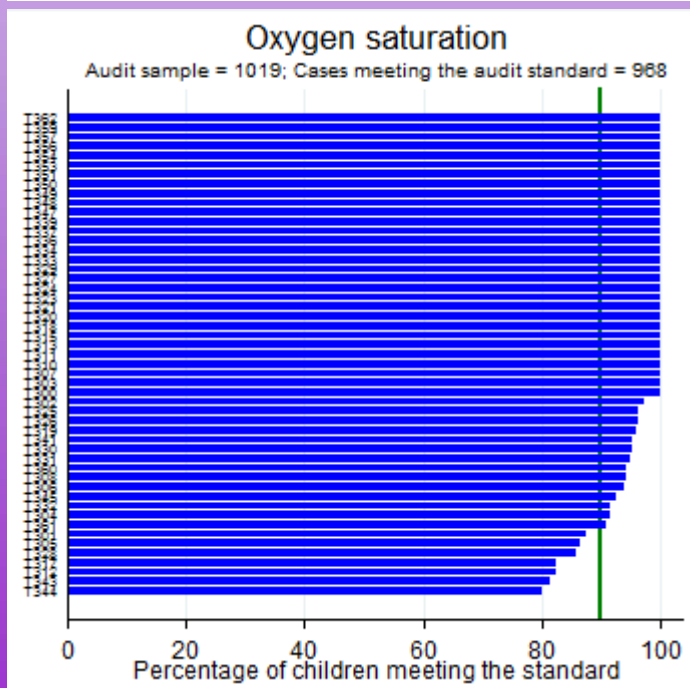
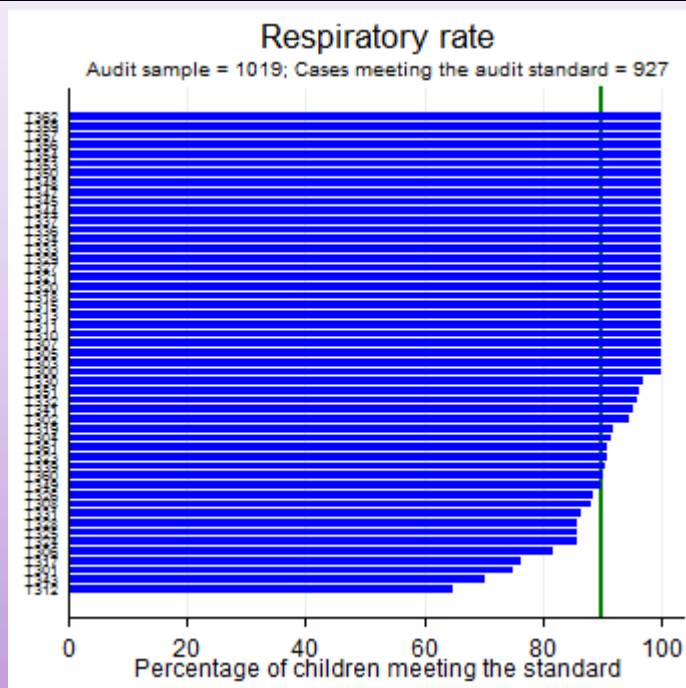
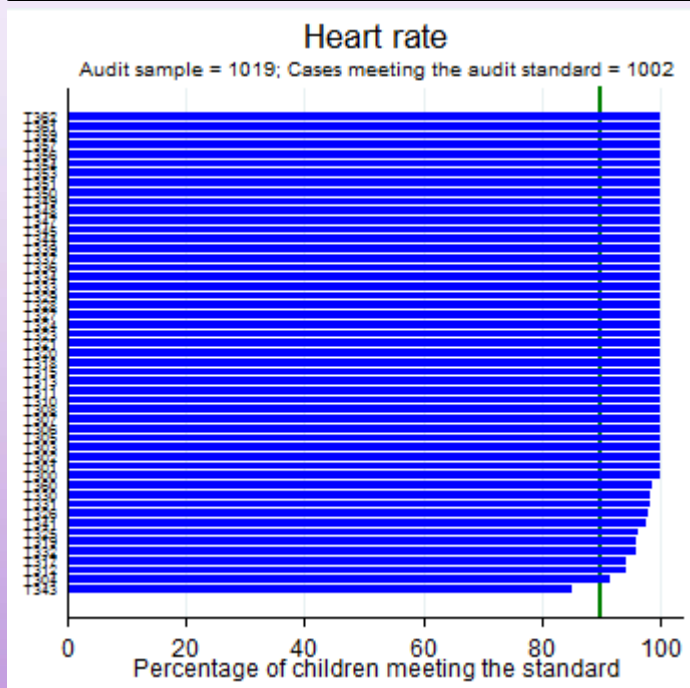
Comment: Generally, most trusts failed to meet the standards for the documentation of the clinical features in children presenting to hospital with a decreased conscious level.

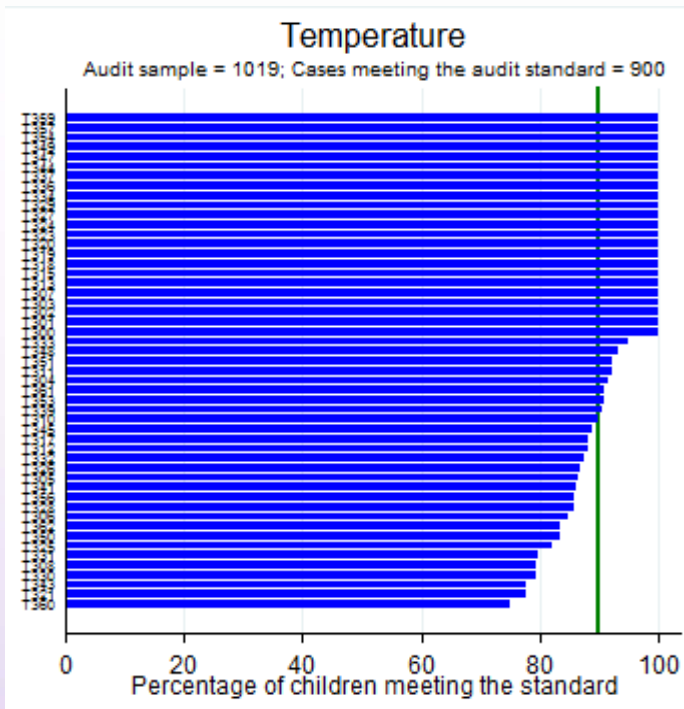
Question 2: Observations

Audit question: Were the recommended observations documented in the child's clinical record at their presentation to hospital?

Standard: 90% of children and young people presenting to hospital with a decreased conscious level should have the recommended observations measured and documented in their clinical records on presentation.

Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Observations				
% heart rate at presentation	1002	1019	100%	(100%, 100%)
% respiratory rate at presentation	927	1019	100%	(94%, 100%)
% oxygen saturation at presentation	968	1019	100%	(96%, 100%)
% blood pressure at presentation	772	1019	75%	(74%, 81%)
% temperature at presentation	900	1019	92%	(89%, 100%)





Question 2: Observations

- Heart rate:** 50/51 (98%) of trusts met the standard.
- Respiratory rate:** 40/51 (78%) of trusts met the standard.
- Oxygen saturation:** 44/51 (86%) of trusts met the standard.
- Blood pressure:** 13/51 (25%) of trusts met the standard.
- Temperature:** 32/51 (63%) of trusts met the standard.

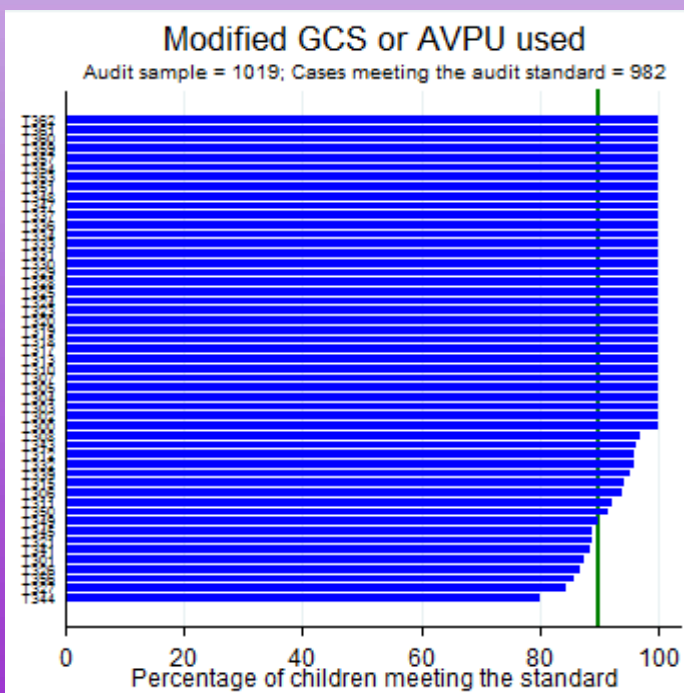
In trusts with small numbers of cases the performance for these standards may not offer a true picture of the measurement of vital signs in children presenting to hospital with a decreased conscious level.

Question 3: Physiological scoring system used

Audit question: Was either the modified Glasgow Coma Scale (GCS) or the AVPU (alert, voice, pain and unresponsive) scale or both documented in the clinical record as being used to evaluate the extent of the patient’s conscious level on presentation to hospital?

Standard: 90% of children and young people presenting to hospital with a decreased conscious level should have either a modified GCS or AVPU scale assessment performed and documented in order to assess the extent of their conscious level.

Audit standard	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Physiological scoring system				
% modified GCS or AVPU documented	982	1019	100%	(100%, 100%)



Question 3: Modified GCS or AVPU used to assess conscious level

43/51 (84%) of trusts met the standard.

The physiological scoring systems documented as being used by the cases are as follows:

- ◇ AVPU = 182/1019 (17.9%)
- ◇ GCS only = 595/1019 (58.4%)
- ◇ Both AVPU & GCS = 205/1019 (20.1%)
- ◇ None = 37/1019 (3.6%)

Question 4: Recommended frequency of GCS measurements

Audit question: Were GCS measurements performed and recorded in the clinical records within the recommended frequency of every 15 minutes if ≤ 12 or every hour if > 12 at presentation to hospital?

Standard: 90% of children and young people presenting to hospital with a decreased conscious level who had their GCS done should have the recommended frequency of GCS measurements performed and documented in their clinical records.

Audit standard	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Recommended frequency of GCS measurements - (49 out of 51 trusts have eligible cases)				
% recommended frequency of GCS measurements	391	800	44%	(36%, 50%)

Question 4: Recommended frequency of GCS measurements

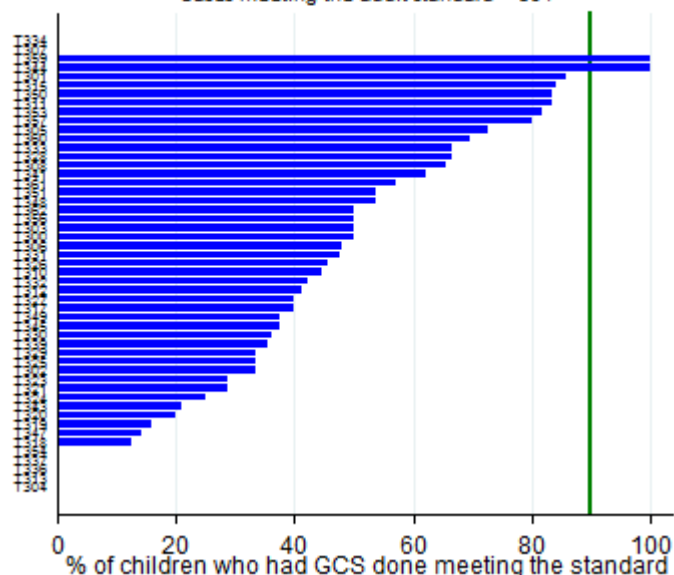
49/51 trusts had eligible cases. Of these 2/49 (4%) of trusts met the standard.

The frequency of GCS for the 800 cases who had GCS performed is as follows:

- ◇ Every 15 minutes = 149/800 (18.6%)
- ◇ Every 30 minutes = 135/800 (16.9%)
- ◇ Every 60 minutes (1 hour) = 175/800 (21.9%)
- ◇ Every 90 minutes (1 1/2 hour) = 20/800 (2.5%)
- ◇ Every 120 minutes (2 hours) = 32/800 (4.0%)
- ◇ Other (5 mins, 10 mins etc.) = 161/800 (20.1%)
- ◇ Uncertainty re. frequency of GCS measurements = 128/800 (16.0%)

Frequency of GCS measurements

Audit sample (children who had GCS done) = 800
Cases meeting the audit standard = 391



Question 5: Recommended core investigations

Audit question: Were the recommended investigations and tests undertaken within at least one hour of the child's presentation to hospital with a decreased conscious level?

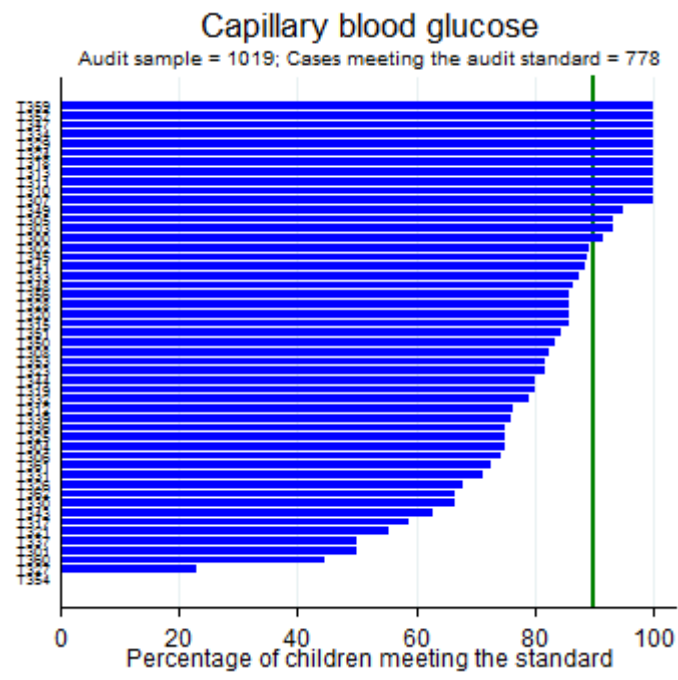
- ◇ *All cases:* Capillary blood glucose within 15 minutes of presentation– Performance target of 90% of cases meeting the standard
- ◇ *Metabolic cases:* Blood gases, laboratory blood glucose, urea and electrolytes, liver function test, plasma ammonia, full blood count and film, saved plasma, serum and urine– No performance target set
- ◇ *Infective cases:* Dipstick urinalysis and blood cultures– No performance target set

Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Investigations				
% capillary blood glucose taken with 15 mins of presentation	778	1019	83%	(76%, 88%)
Investigations- (Metabolic cases: 17 out of 51 trusts possess eligible cases)				
% blood gases taken and sent within 1 hour of presentation	24	27	100%	(100%, 100%)
% laboratory blood glucose taken and sent within 1 hour of presentation	18	27	83%	(0%, 100%)
% urea & electrolytes taken and sent within 1 hour of presentation	24	27	100%	(100%, 100%)
% liver function test taken and sent within 1 hour of presentation	18	27	100%	(0%, 100%)
% plasma ammonia taken and sent within 1 hour of presentation	4	27	0%	(0%, 0%)
% full blood count and film taken and sent within 1 hour of presentation	22	27	100%	(100%, 100%)
% saved plasma for later analysis taken within 1 hour of presentation	1	27	0%	(0%, 100%)
% saved serum for later analysis taken within 1 hour of presentation	2	27	0%	(0%, 0%)
% saved urine for later analysis taken within 1 hour of presentation	1	27	0%	(0%, 0%)
Investigations- (Infective cases: 46 out of 51 trusts possess eligible cases)				
% dipstick urine done within 1 hour of presentation	56	196	23%	(0%, 33%)
% blood cultures taken and sent within 1 hour of presentation	156	196	100%	(77%, 100%)

Capillary blood glucose taken within 15 minutes of presentation to hospital

Audit question: Was capillary blood glucose taken within 15 minutes of the child's presentation to hospital with a decreased conscious level?

Standard: 90% of children and young people presenting to hospital with a decreased conscious level should have their capillary blood glucose taken within 15 minutes of presentation.



Question 5: Investigations and tests: Capillary blood glucose within 15 minutes of presentation

15/51 (29%) of trusts met the standard.

Question 6: Working diagnosis within 4 hours of presentation

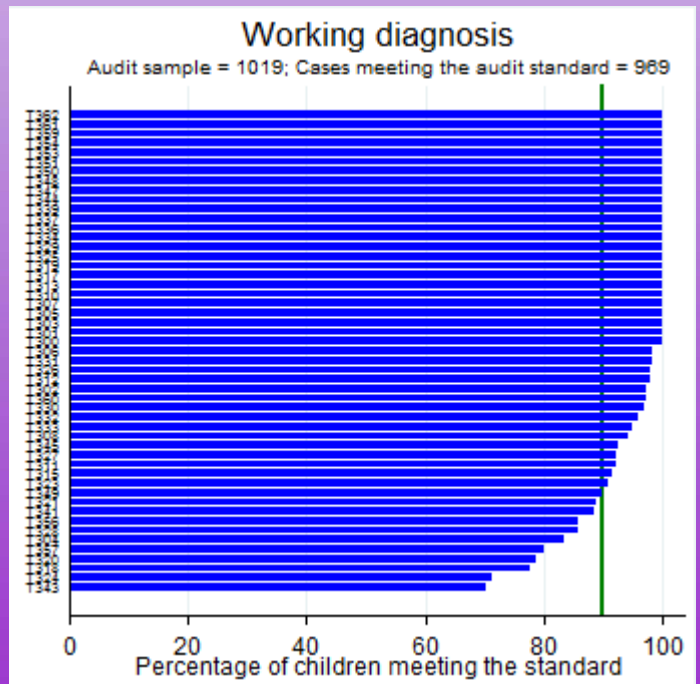
Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Working diagnosis within 4 hours of presentation				
% working diagnosis within 4 hours of presentation	969	1019	98%	(96%, 100%)

Question 6: Working diagnosis within 4 hours of presentation

Audit question: Did the patient have a working diagnosis (documented in the clinical record) within 4 hours of presentation to hospital?

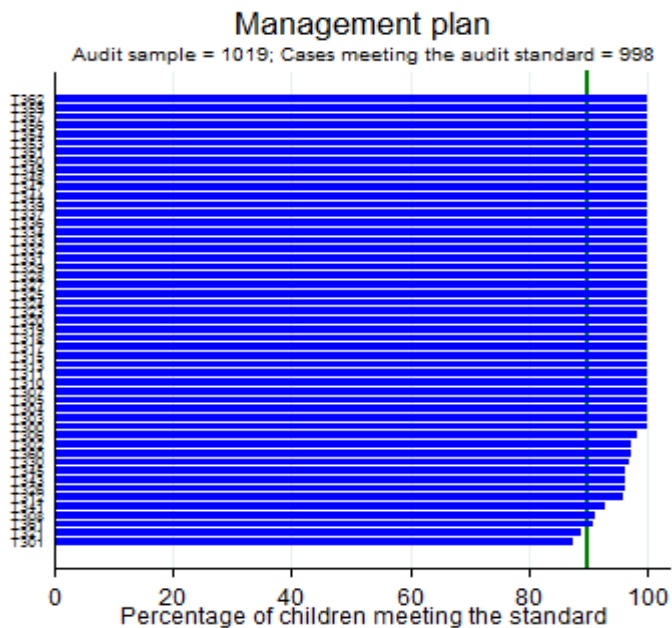
Standard: 90% of children and young people who present to hospital with a decreased conscious level should have the working diagnosis documented in their clinical records within 4 hours of presentation.

41/51 (80%) of trusts met the standard.



Question 7: Management plan within 4 hours of presentation

Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Management plan within 4 hours of presentation				
% management plan in place within 4 hours of presentation	998	1019	100%	(100%, 100%)



Question 7: Management plan within 4 hours of presentation to hospital

Audit question: Did the patient have a management plan in place (documented in the clinical record) within 4 hours of presentation to hospital?

Standard: 90% of children and young people who present to hospital with a decreased conscious level should have a management plan in place (documented in their clinical records) within 4 hours of presentation.

49/51 (96.0%) of trusts met this standard.

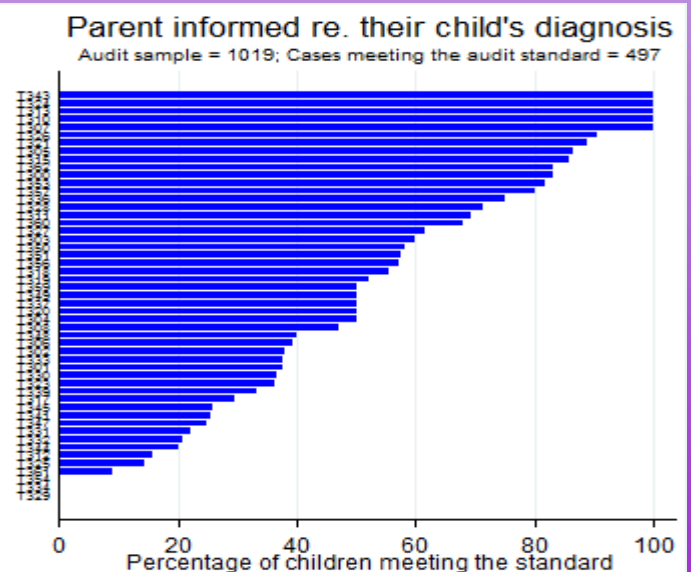
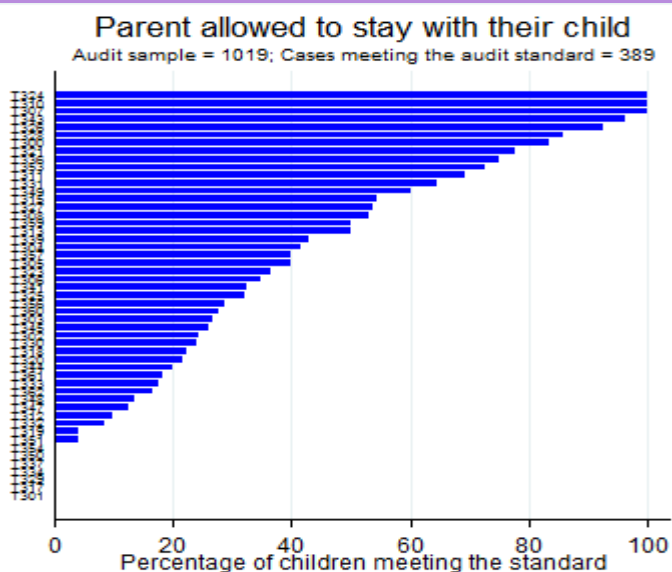
Question 8: Parental/guardian involvement

Audit Question: During the initial management and resuscitation of the child or young person presenting to hospital with a decreased conscious level, were their parent or guardian's involvement documented in the clinical record on the following areas:

- ◇ Parent/guardian allowed to stay with their child
- ◇ Parent or guardian informed regarding their child's diagnosis/treatments
- ◇ Parent or guardian informed regarding their child's prognosis

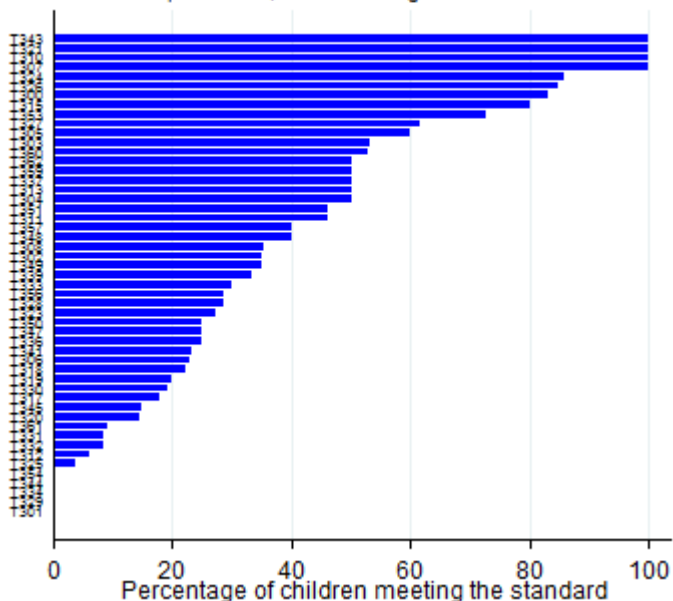
Standard: No performance targets set for these areas.

Audit standards	Cases meeting the standard (all trusts)	Audit sample (all trusts)	Median % (all trusts)	95 % confidence intervals of the Median %
Parental/Guardian involvement documented				
% parent or guardian allowed to stay with their child	389	1019	32%	(22%, 43%)
% parent or guardian informed re their child's diagnosis	497	1019	50%	(38%, 60%)
% parent or guardian informed re their child's prognosis	374	1019	33%	(25%, 46%)



Parent informed re. their child's prognosis

Audit sample = 1019; Cases meeting the audit standard = 374



Question 8: Parental/Guardian involvement during the initial management and resuscitation of the child or young person

Comment: Although no target performance has been set for these audit standards, there are relatively low percentages in these areas for the majority of trusts. .

4. Plans post-audit

The plans post-audit are as follows:

1. All trusts will be sent the following:
 - ◇ Trust specific report of their audit results
 - ◇ Excel dataset of their trust's audit data
 - ◇ Power point presentation of their trust-specific audit results to feedback locally
 - ◇ Excel database for use in re-audit locally to address any areas of poor performance.
2. The final published report of the aggregate findings will be sent out in February 2012.
3. The guideline will be updated, with plans to disseminate the revised guideline in 2012.

THANK YOU!

Thank you to everyone who participated in the audit, without all the help, hard work and support from the clinical and non-clinical staff, this project would not have led to a successful conclusion.

A special thank you to the National Reyes Syndrome Foundation for funding the audit, the DeCon Clinical Lead Dr Stephanie Smith and the DeCon Project Board Members: Mr Gordon Denney, Mr Jason Gray, Dr Monica Lakhanpaul, Dr Ian Maconochie, Mr Laurence Oates, Dr Asrar Rashid and Dr Rebecca Salter for all of their support and guidance.

Best wishes Carla.