

National Neonatal Audit Programme Annual Report 2010

June 2011

Funded by the Healthcare Quality Improvement Partnership



Royal College of
Paediatrics and Child Health

Leading the way in Children's Health

Annual Report

National Neonatal Audit Programme 2010

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Funded by the Healthcare Quality Improvement Partnership

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We gratefully acknowledge the support of Clevermed in the provision of a managed service for the collection of the NNAP dataset.

Finally, we would like to thank the many doctors, nurses and others who have contributed data for all the hard work that goes into that collection.

Explanatory note

In this report, the various databases hosted by Clevermed Ltd are all referred to as the “BadgerNet”.

1. Introduction

Welcome to this fourth annual NNAP report looking at the calendar year of 2010.

This paper-based report is a briefer version of that found on the NNAP website www.rcpch.ac.uk/nnap which includes more detailed tables, graphs and interesting analyses performed in addition to those that answer the NNAP audit questions directly. The symbol  indicates that further analyses are available on line.

This year's report includes data from 98.8% of English neonatal units, an increase from 95.5% in last year's report, thanks to a further five units submitting data. There are now only two English neonatal units not contributing to this audit.

Key messages

- The approach has again been that if a process or outcome was not recorded, it was not done. In 2010 there has been an increase in the percentage of eligible babies having their temperature recorded within an hour of birth (up from 63% to 77%), eligible mothers receiving any dose of steroids (up from 70% to 75%) and parents/carers recorded as seen by a senior member of the neonatal team within 24 hours of admission (up from 45% to 67%).
- The amount of missing data continues to fall, with all audit questions showing an improvement. However, missing data for first senior staff consultation with parents/carers remains high at 28.8%. Many units have instigated new forms in their documentation to ensure that this first conversation with parents is recorded; these and other reported changes in practice are outlined in Appendix D. Each year we request that units let us know how participation in the NNAP has helped them change and improve, and these examples are there for us all to learn from. The reports this year do not say a lot about real changes in clinical practice. Recording and audit may be improving but next year we hope to hear more about improvements in practice and outcomes.
- The ROP data difficulties have been solved: now that these data are collected on an “episodic” form, the initial ROP screening date for each baby cannot be overwritten at a later date by the “first” screening date at a subsequent unit. The Project Board allowed for an additional two weeks to the screening window in this analysis; as ophthalmologists tend to visit units at fixed times, often at weekly intervals, it is recognised that most babies will be screened within a time window which is slightly wider than the guideline recommendations. Even given these more generous margins, only 53.8% of eligible babies received their first ROP screening “on time”.
- In 2010 we amended the audit question relating to breast feeding from reporting if eligible babies received any of their own mother's milk during their stay to asking if they were receiving any of their own mother's milk on discharge. It was

agreed that this would be a better measure of support for breast feeding preterm babies. In this first year, 44% of babies born <33 weeks were recorded as receiving their own mother's milk (either exclusively or in combination with formula) at final discharge. We will use this figure to benchmark subsequent years' data and, as some units already do considerably better than 44%, we expect to see this figure rise.

- We included only partial year data from the six units using the MANNERS system for part of 2010; these data, when merged with BadgerNet, contained many empty fields. The Project Board excluded these data as they would not give a true picture of these units, nor a true reflection of the completeness and accuracy of their data. All these units are now submitting NNAP data via BadgerNet and we should have full data for 2011.
- We have been unable to access 2010 denominator data (i.e. how many babies of a certain gestation/birth weight band were born in a hospital); this was previously collected by CMACE using a joint request form; due to funding changes the forms requesting 2010 data were not distributed. Consequently we have not been able to provide analysis for Question 7, "How many babies, born between 32–36 and ≥ 37 weeks gestation, receive care on neonatal units?". NNAP will request 2010 denominator data in the coming months and publish the results on the NNAP webpage. In future years we will work with the agency responsible for this denominator data collection to ensure that the items required for NNAP analysis are included.
- The two year health status questionnaire and data can only be completed once a baby has survived to 2 years post term. The two year post term analysis was carried out for all reported babies born less than 30 weeks gestation and discharged in 2008. Therefore the analysis will include some babies born in 2007. It also includes some born late in 2008 upon whom assessments have not yet been performed, and we will resolve this issue next year. Many units were not in NNAP in 2008 and therefore cannot contribute to this analysis. It has therefore been simplified to an analysis by network and this year the analysis to note in particular is the percentage of babies who had *any* data entered. This aspect of the audit will become more stringent in the future.

1.1 Background

The National Neonatal Audit Programme (NNAP) is funded by the Healthcare Quality Improvement Partnership (HQIP), run by the RCPCH Research and Policy Department and started collecting data from English neonatal units in 2006. The project was rolled out throughout England in 2007.

This fourth Annual Report presents the audit data collected between 1 January 2010 and 31 December 2010.

1.2 Aims of the audit

The key aims of the audit are:

- i To assess whether babies requiring neonatal care received consistent care across England in relation to the audit questions;
- ii, To identify areas for improvement in neonatal units in relation to delivery and outcomes of care; and
- iii. To provide a mechanism for ensuring consistent high quality care in neonatal services.

2. Methodology

2.1 Audit questions

The questions asked by the audit in 2010 were:

1. Do all babies of ≤ 28 weeks gestation have their temperature taken within the 1st hour after birth?
2. Are all mothers who deliver their babies between 24 and 34 weeks gestation given any dose of antenatal steroids?
3. Do all babies $< 1501\text{g}$ or gestational age at birth < 32 weeks and still an inpatient undergo 1st ROP screening as per the current guideline recommendations?
4. What proportion of babies < 33 weeks gestation at birth are receiving their mother's milk when discharged from a neonatal unit?
5. Is there a documented consultation with parents/carers by a senior member of the neonatal team within 24 hours of admission?
6. Are all babies accessing neonatal services treated in their own normal network clinical pathway (except where clinical reasons dictate)?
7. How many babies, born between 32 to 36 and ≥ 37 weeks gestation, receive care on neonatal units?
8. Are rates of normal survival at two years comparable in similar babies from similar units?

These questions are addressed by the collection of data items listed at Appendix A.

2.2 Participating units

There were 176 neonatal units in England in 2010; 98.8% (174) of these units contributed 2010 NNAP data for analysis in this report (unit levels 1, 2 and 3; Appendix B provides definitions of the different categories of care); 173 unit data submissions are included in this report as the results for James Cook University Hospital, Middlesbrough, include those of Friarage Hospital as these units submit one combined set of data for South Tees Hospitals NHS Trust. Participating units are listed at Appendix C.

Table 1.1 System used by units to contribute NNAP data

	Number of units
BadgerNet only	157
BadgerNet and The Neonatal Survey (TNS)	12
TNS only	4

Table 1.2 Units which did not submit data for analysis in this report:

Cumberland Infirmary West Cumberland Hospital	These units are not currently submitting data to any central data collection system
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Four units were collecting NNAP data for part of 2010 using the Maternal and Neonatal Electronic Recording System (MANNERS) data collection system (George Eliot Hospital, Manor Hospital, University Hospital Coventry and Warwick Hospital), but these MANNERS data were unable to be included in the analysis for this report for technical reasons. All of these units started using BadgerNet during 2010, and are therefore represented in this report by less than 12 complete months of data. Units with less than a complete year's data analysed for this report are identified in Appendix C.

2.3 Data quality and completeness

Quarterly data quality reports produced by the Project Team provide feed back to the units on data completeness on five audit questions. These reports allow each unit to benchmark their results against all other units nationally, and against units of the same level. They also encourage correction or completion of data prior to the annual report.

2.4 Data analysis

NNAP data entered by neonatal units on the BadgerNet and TNS systems are merged and anonymised (to remove patient identifiers) by Clevermed and submitted to NDAU, who are commissioned by NNAP to undertake data management and analysis.

The 2010 download included 75,795 completed episodes involving 64,546 babies who were discharged in 2010. The number of babies eligible for each audit question varies depending on the gestational age and the episode of care under consideration. In addition, numerators vary for data handling reasons; for example, in the analysis of Question 5, some babies born in 2009 (but discharged in 2010) may have had a first episode in 2009, and this episode may not appear in the analysis because the episode was not ended (with a 'discharge') in 2010.

3. Results

Question 1

Audit:	Do all babies ≤ 28 weeks gestation have their temperature taken within the 1st hour after birth?
Standard:	98 – 100%
Source of Standard:	NNAP Board

Results:

There were **3378** babies born at a gestational age of ≤ 28 weeks reported by **169** neonatal units (eligible babies). Of these, **77%** (2599/3378) of the babies had their temperature measured within the first hour following birth (Table 1.1). Missing data, where either temperature or time was not recorded, accounted for **2%** (66/3378) of eligible babies.

Table 1.1 Babies born at a gestational age of ≤ 28 weeks with their temperature taken within the first hour of birth.

NNAP, 1st January – 31st December 2010

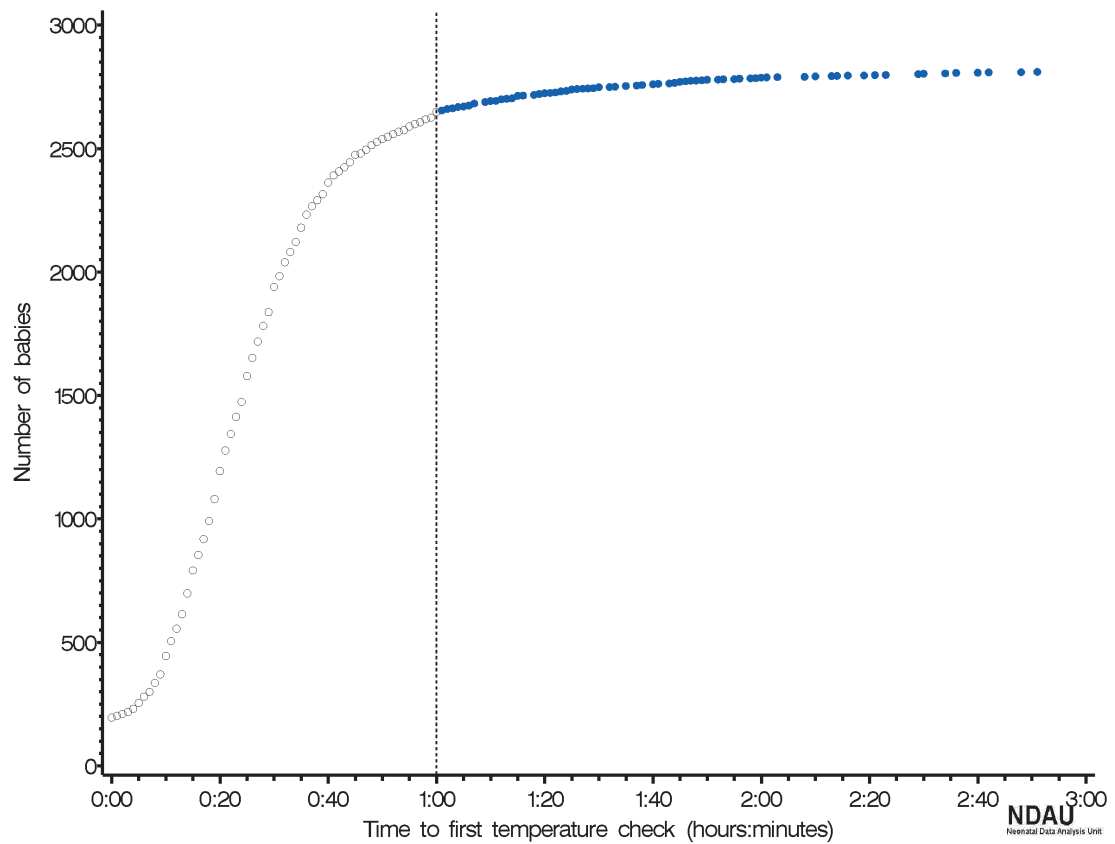
Unit Level	Eligible Infants	Infants with temperature measured within the first hour (as a percentage of eligible infants)	Infants with temperature measured after the first hour (as a percentage of eligible infants)	Missing data (as a percentage of eligible infants)
1	204	159 (78%)	35 (17%)	10 (5%)
2	1141	913 (80%)	208 (18%)	20 (2%)
3	1927	1509 (78.3%)	391 (20.2%)	27 (1.4%)
Other*	106	18 (17%)	79 (74.5%)	9 (8.5%)
Total	3378	2599 (77%)	713 (21%)	66 (2%)

**Babies are assigned to the hospital of birth or 'Other' if born at home, in transit, in an unknown location or in a non NNAP unit.*

The cumulative distribution of babies by time of first temperature measurement is shown in Figure 1.1. The proportion of eligible babies for whom the standard was met is shown for each neonatal unit in Figures 1.2.1, 1.2.2 and 1.2.3

Figure 1.1: Cumulative distribution of babies by time of first temperature recording

NNAP, 1st January – 31st December 2010



Black and white circles (○) indicate temperature measured within the first hour; blue circles (●) indicate temperature measured after the first hour.

Figure 1.2.1: The proportion of eligible babies who had their temperature taken within the first hour of birth for individual neonatal units: **Level 1**

NNAP, 1st January – 31st December 2010

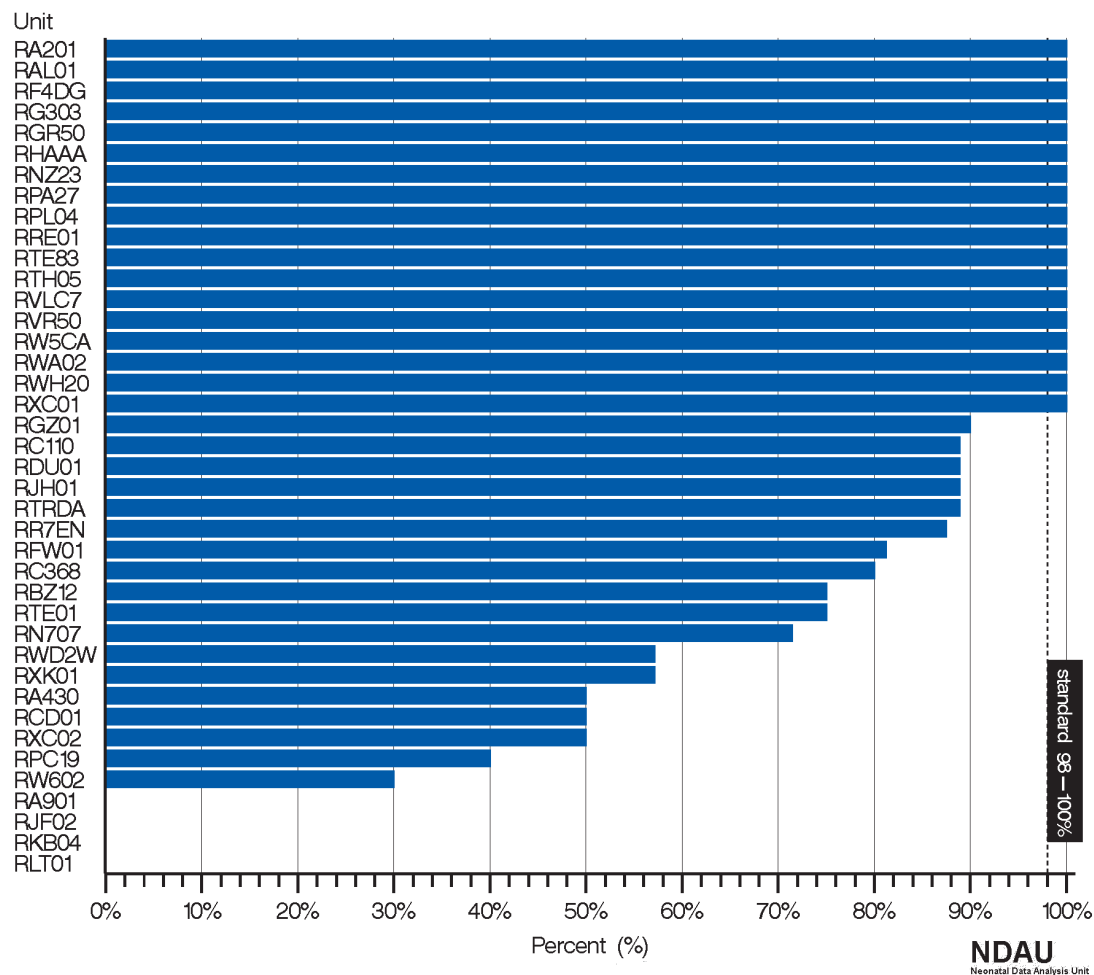


Figure 1.2.2: The proportion of eligible babies who had their temperature taken within the first hour of birth for individual neonatal units: **Level 2**

NNAP, 1st January – 31st December 2010

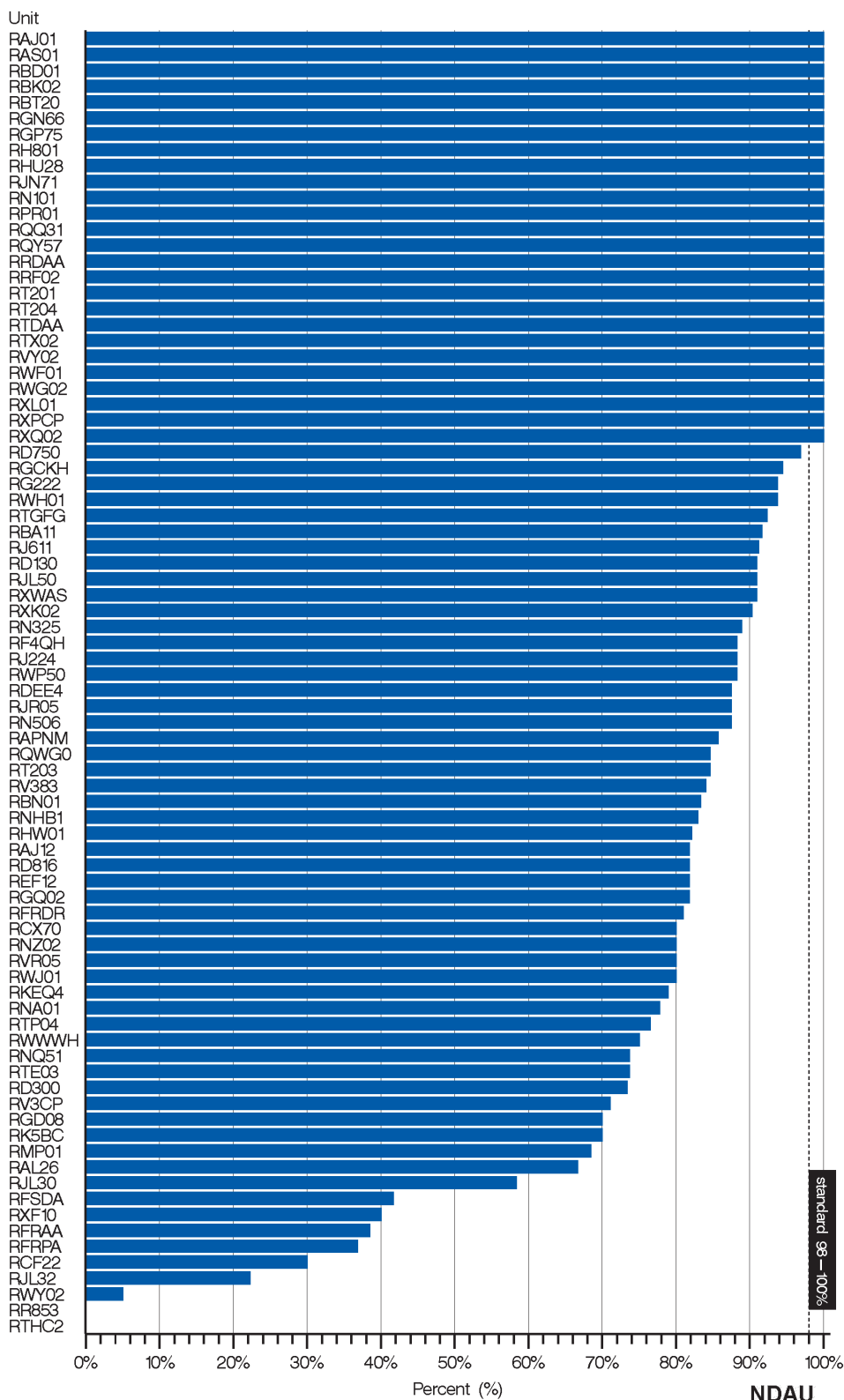
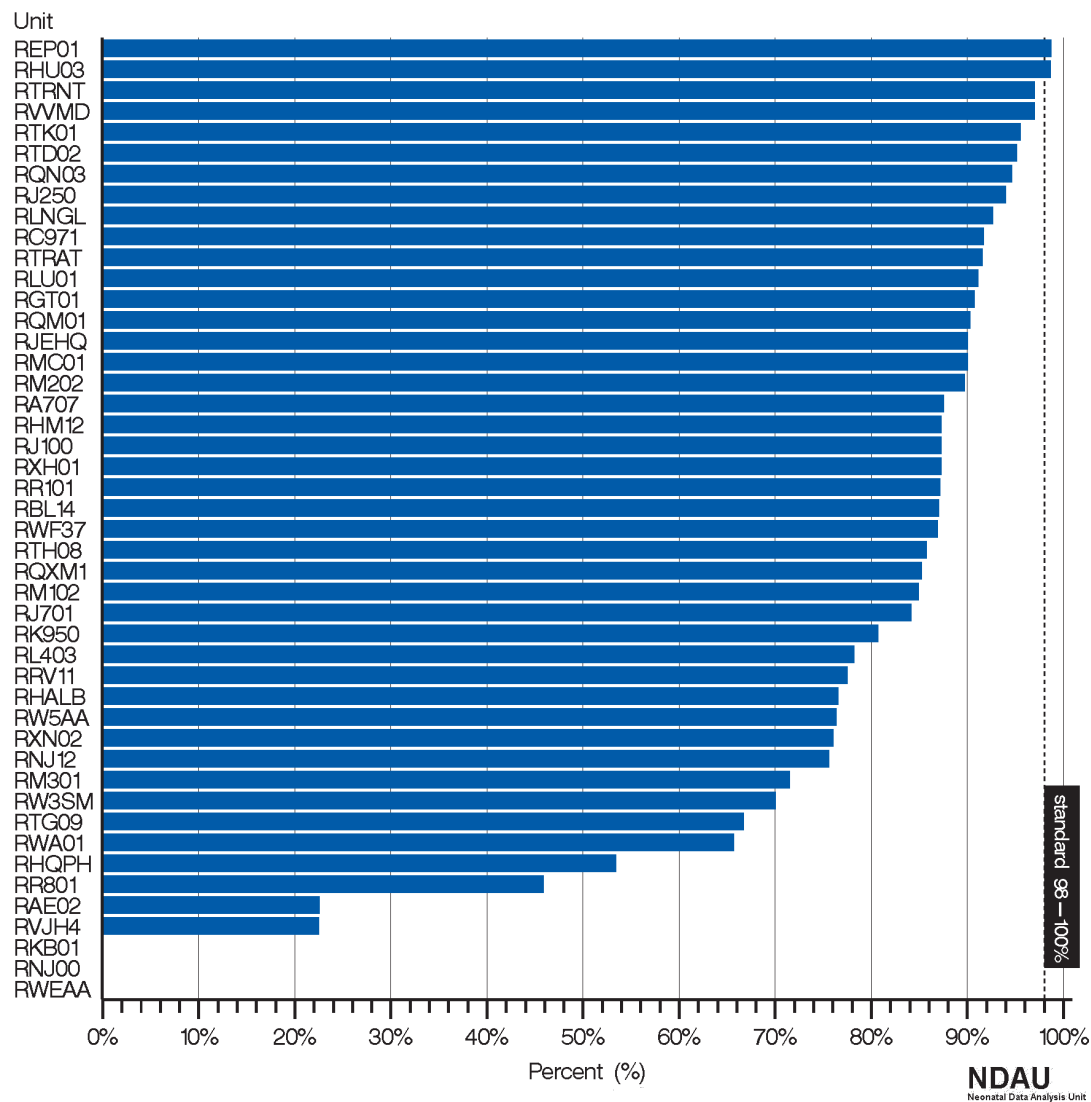


Figure 1.2.3: The proportion of eligible babies who had their temperature taken within the first hour of birth for individual neonatal units: **Level 3**

NNAP, 1st January – 31st December 2010



The number of eligible babies for each unit included in these and the other graphs in this report are available on line. [🔗](#)

Question 2

Audit:	Are all mothers who deliver their babies between 24 and 34 weeks gestation given ANY dose of antenatal steroids?
Standard:	85% of mothers to receive any dose of antenatal steroids
Source of Standard:	NNAP Board

Results:

There were **17199** mothers reported from **173** neonatal units who met the selection criteria (eligible cases). At least one dose of antenatal steroids was administered to **75%** (12911/17199) of mothers who delivered babies between 24 and 34 weeks gestation. Antenatal steroids were not administered in **21.3%** (3666/17199) of the cases and data were missing for **3.6%** (622/17199) (Table 2.1). Results are shown for each neonatal unit in figures 2.1.1, 2.1.2 and 2.1.3.

Table 2.1 Mothers who delivered their babies between 24 and 34 weeks and received ANY dose of antenatal steroids

NNAP, 1st January – 31st December 2010

Unit Level	Number of mothers (Eligible cases)	Number of mothers receiving any antenatal steroids (percentage of eligible cases)	Number of mothers not receiving any steroids (percentage of eligible cases)	Missing data (percentage of eligible cases)
1	1877	1293 (69%)	443 (23.6%)	141 (7.5%)
2	7469	5564 (74.5%)	1632 (22%)	273 (3.7%)
3	7422	5782 (77.9%)	1455 (19.6%)	185 (2.5%)
Other*	431	272 (63.1%)	136 (31.5%)	23 (5.3%)
Total	17199	12911 (75%)	3666 (21.3%)	622 (3.6%)

*Responses are assigned to the hospital of birth or 'Other' if born at home, in transit, in an unknown location or in a non NNAP unit.

Figure 2.1.1: The proportion of eligible mothers receiving any dose of antenatal steroids for individual neonatal units: **Level 1**

NNAP, 1st January – 31st December 2010

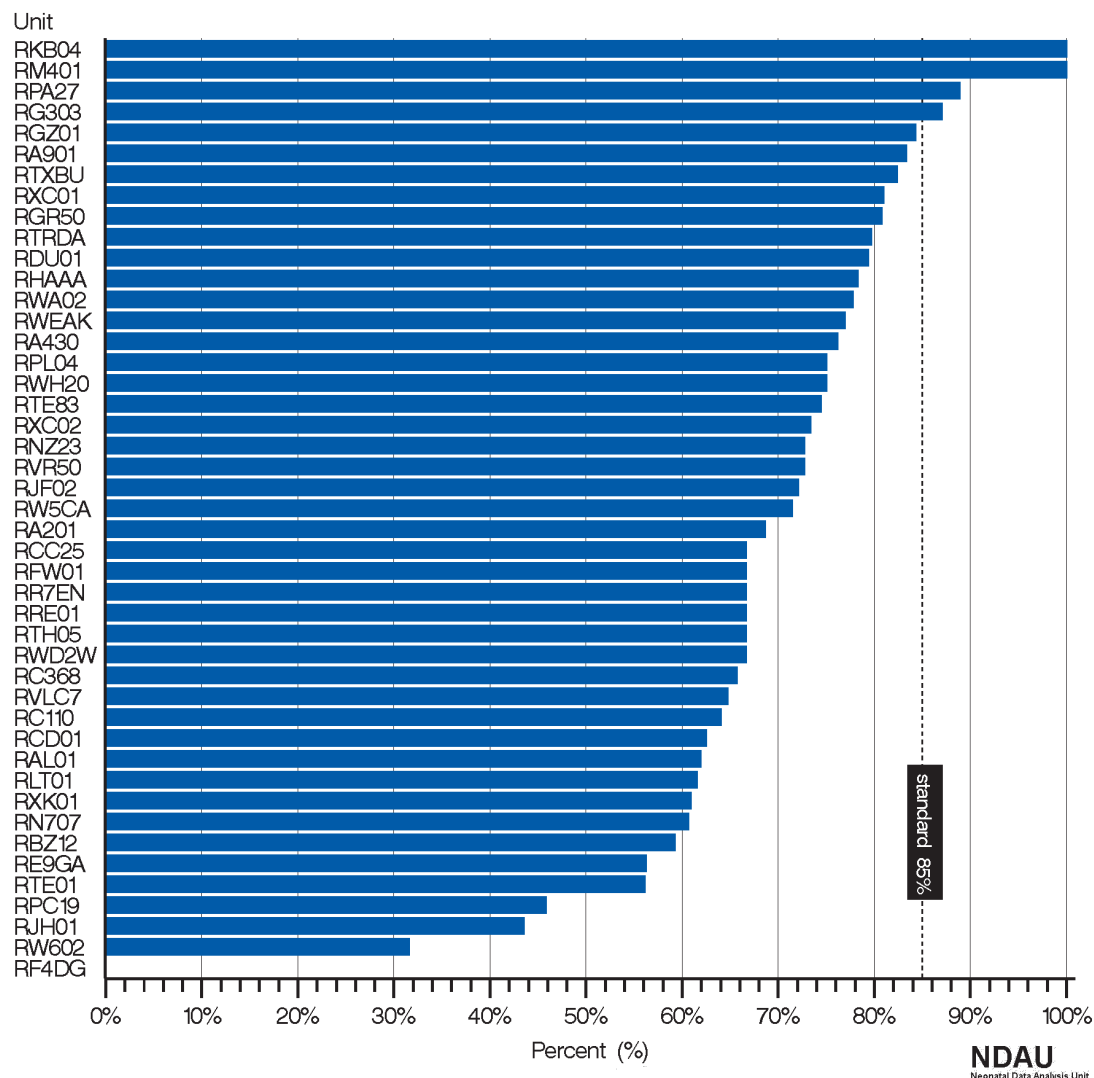


Figure 2.1.2: The proportion of eligible mothers receiving any dose of antenatal steroids for individual neonatal units: **Level 2**

NNAP, 1st January – 31st December 2010

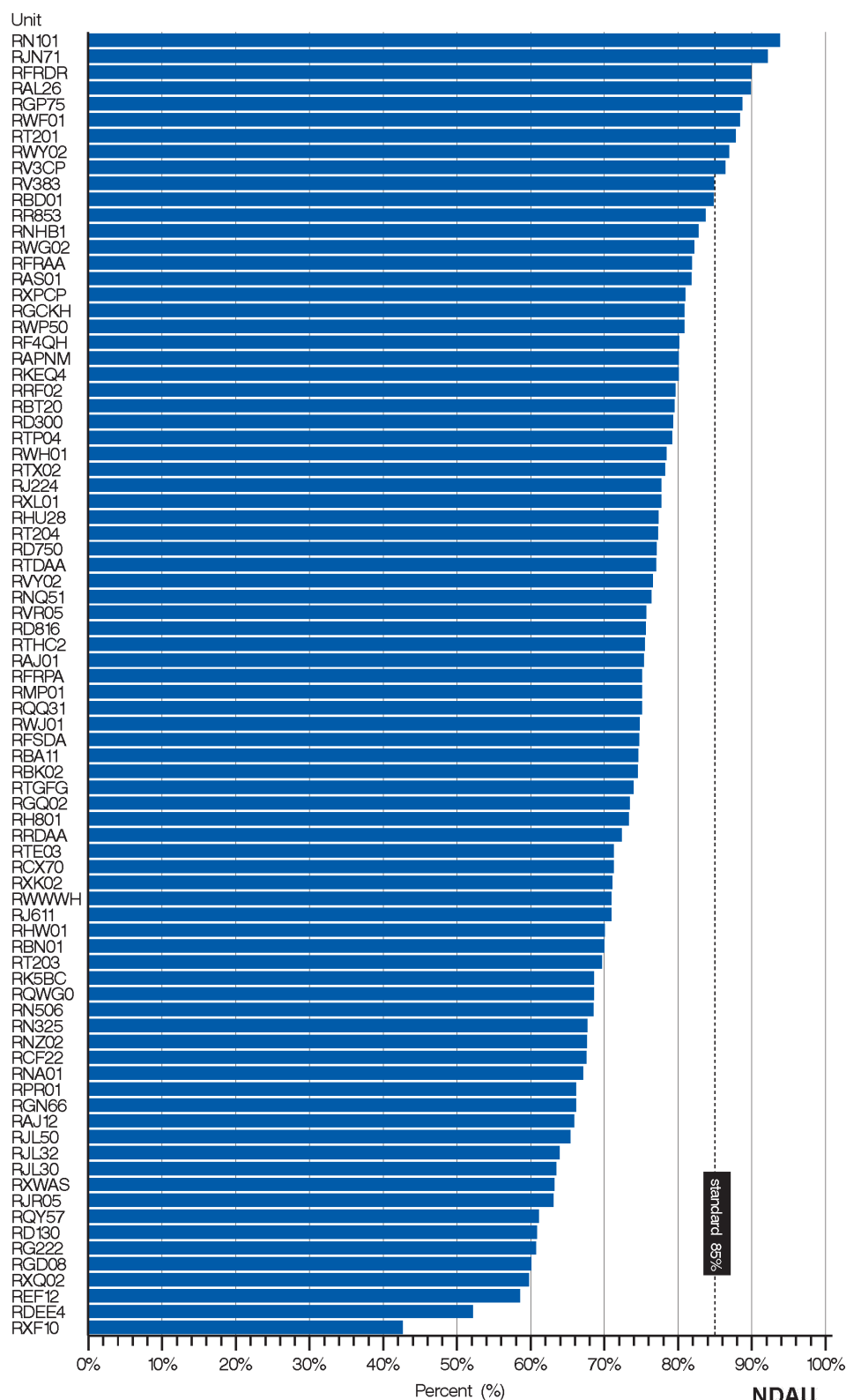
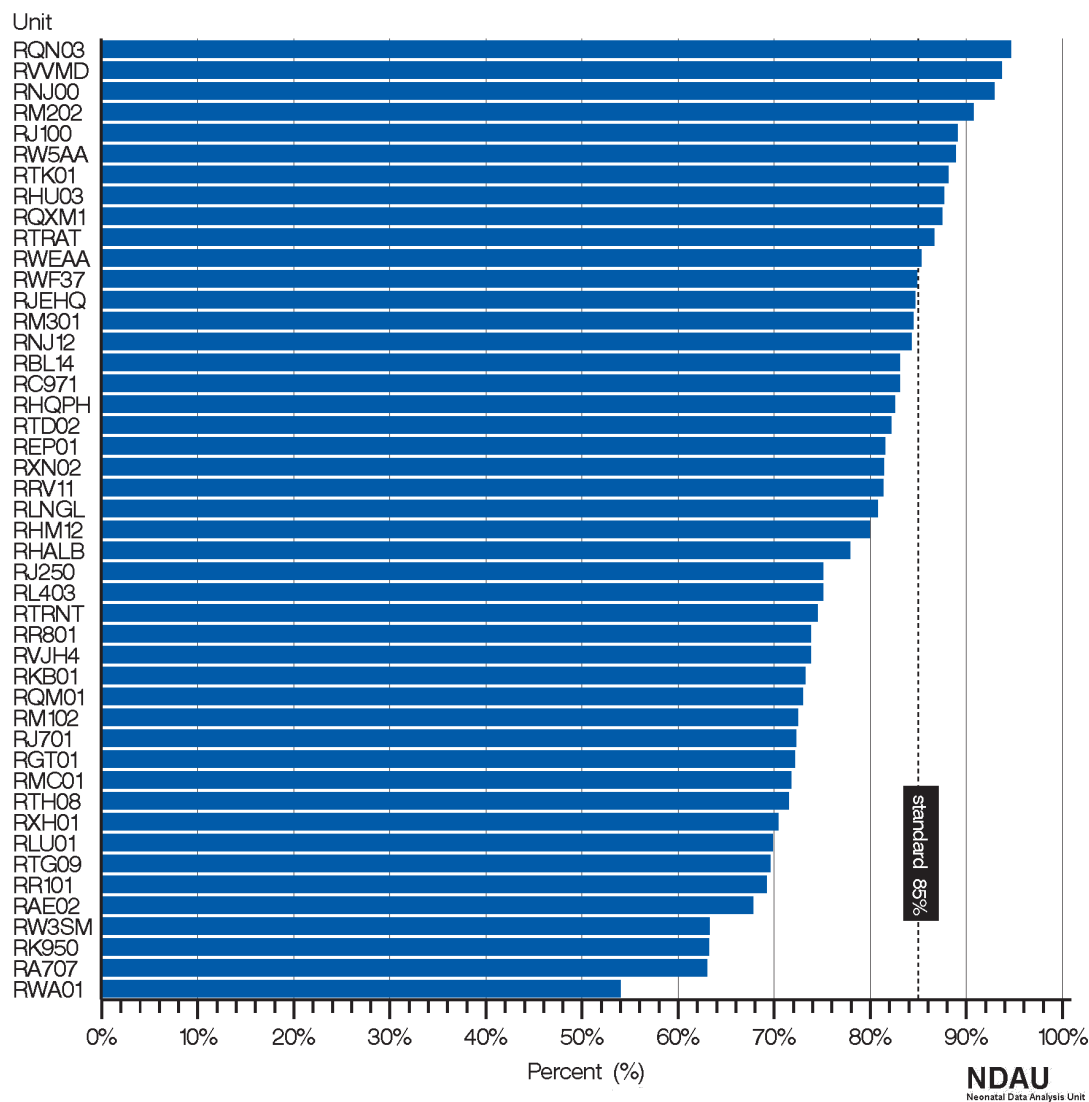


Figure 2.1.3: The proportion of eligible mothers receiving any dose of antenatal steroids for individual neonatal units: **Level 3**

NNAP, 1st January – 31st December 2010



A funnel plot of these data for individual units is available in the web-based report. [🔗](#)

Question 3

Audit: Do all babies <1501g or gestational age at birth <32 weeks and still an inpatient undergo the first Retinopathy of Prematurity (ROP) screening as per the current guideline recommendations?

Standard: 100% of eligible babies should receive their first ROP screening within the time windows recommended in the guidelines (see below).

Screening for ROP is indicated:

- If the infant's gestational age at birth is <27, the first screening should be between 30 and 31 weeks corrected gestation
- If the infant's gestational age at birth is >27 and <32 weeks, ROP screening should take place between 4 and 5 weeks of age
- If the infant's gestational age is >32 weeks but with a birth weight <1501g, ROP screening should take place between 4 to 5 weeks of age
- All babies <32 weeks gestational age or birth weight <1501 grams should have their first ROP screening examination prior to discharge

Source: National standard (RCPCH, RCOphth, BAPM & Bliss, *Guideline for the Screening and Treatment of Retinopathy of Prematurity, 2008*)

Note: an additional two-week screening window was designated by the Project Board for this report analysis as follows:

- If the baby's gestational age at birth is <27 weeks, the first screening should be between 29 and 32 weeks corrected gestation.
- If the baby's gestational age at birth is ≥ 27 and <32 weeks, ROP screening should take place between 3 and 6 weeks of age.
- If the infant's gestational age is ≥ 32 weeks but with a birth weight <1501g, ROP screening should take place between 3 to 6 weeks of age

Results:

There were **9352** babies born <1501g birth weight or gestational age at birth <32 weeks. Of the eligible babies a total of **1074** babies were excluded in this audit: **623** died before they were due for ROP screening and **451** (5.2% of the survivors) were discharged for continuing care (e.g. surgery, cardiac or specialist care) before they were due for screening and there are no ROP data for these babies. NNAP recognises that they too need ROP screening and will try to collect more data in the future

Babies are reported by the unit providing care when the baby became eligible for ROP screening. There were **8278** babies eligible for ROP screening reported by **171** neonatal units. Of these, **71%** were screened for ROP; **53.8%** (4455/8278) had their first screening on time, **3.6%** (297/8278) were screened early and **13.6%** (1127/8278) were screened late. Missing data accounted for **29%** (2399/8278) (Table 3.1). ROP screening for each neonatal unit is shown in figures 3.1.1, 3.1.2 and 3.1.3.

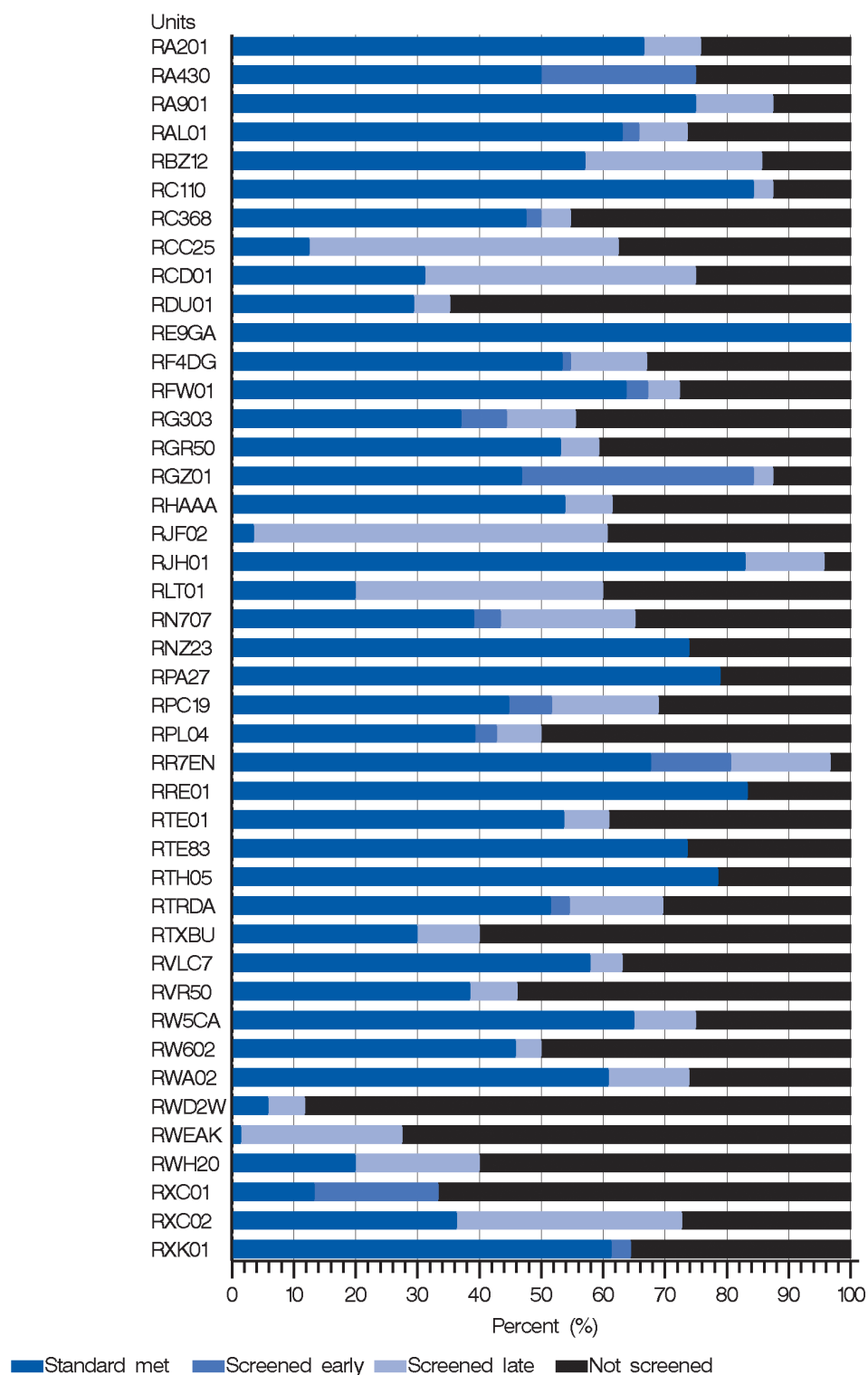
Table 3.1 Screening for ROP: babies born <1501g or gestational age at birth <32 weeks and present in a neonatal unit at the time of eligibility for ROP screening
NNAP, 1st January – 31st December 2010

Unit Level	Egible babies	ROP screening on time (percentage of eligible babies)	ROP screened early (percentage of eligible babies)	ROP screened late (percentage of eligible babies)	Missing data (percentage of eligible babies)
1	1093	546 (50%)	33 (3.1%)	132 (12%)	382 (35%)
2	3543	1904 (53.7%)	133 (3.8%)	421(11.9%)	1085 (30.6%)
3	3642	2005 (55%)	131 (3.6%)	574 (15.8%)	932 (25.6%)
Total	8278	4455 (53.8%)	297 (3.6%)	1127 (13.6%)	2399 (29%)

Tables showing numerical data for each unit and analysis by network are available in the web version of this report. [↗](#)

Figure 3.1.1: The proportion of eligible babies screened for ROP on time, early, late or missed, for individual neonatal units: **Level 1**

NNAP, 1st January – 31st December 2010



NDAU
Neonatal Data Analysis Unit

Figure 3.1.2: The proportion of eligible babies screened for ROP on time, early, late or missed, for individual neonatal units: **Level 2**

NNAP, 1st January – 31st December 2010

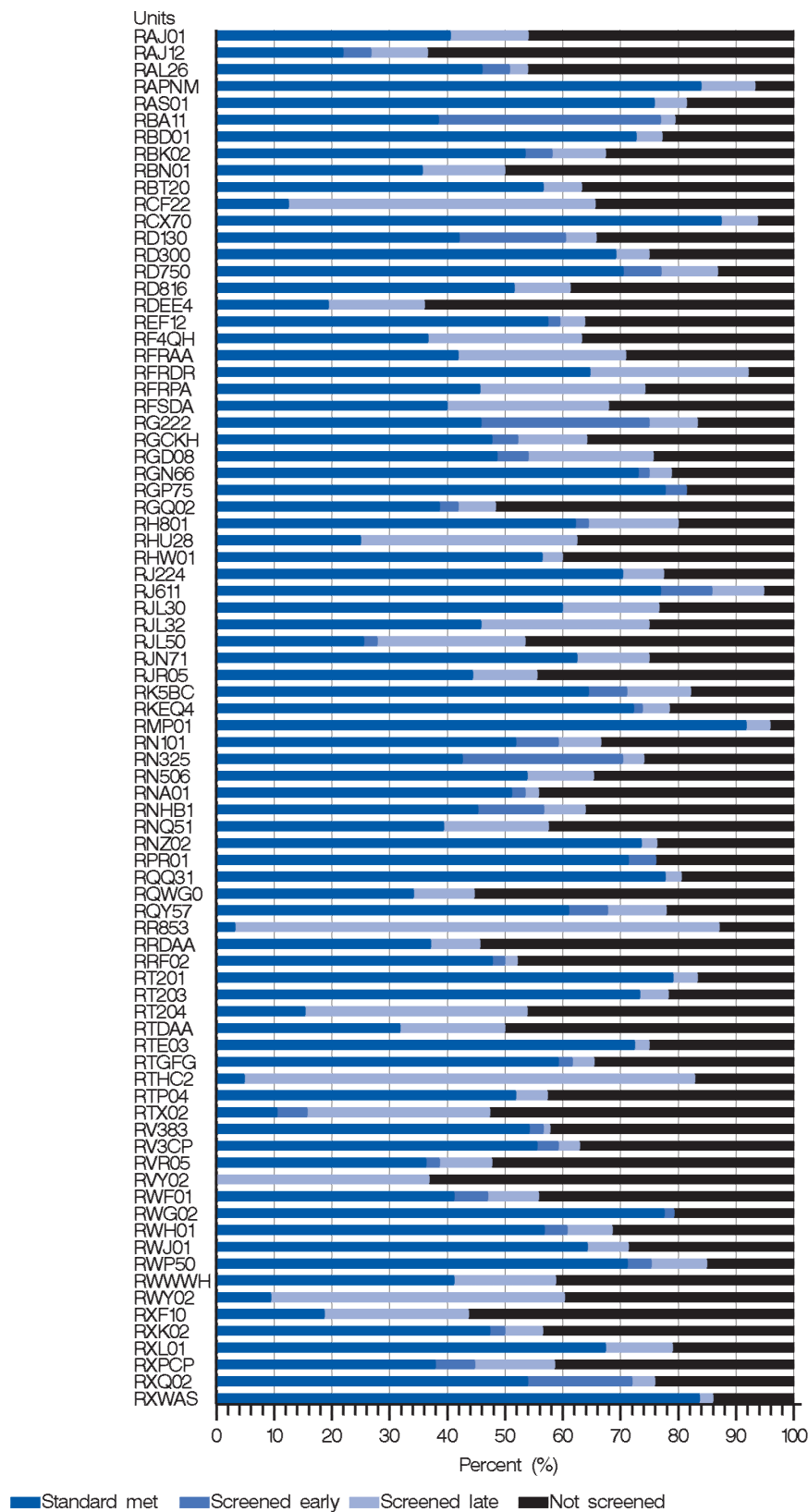
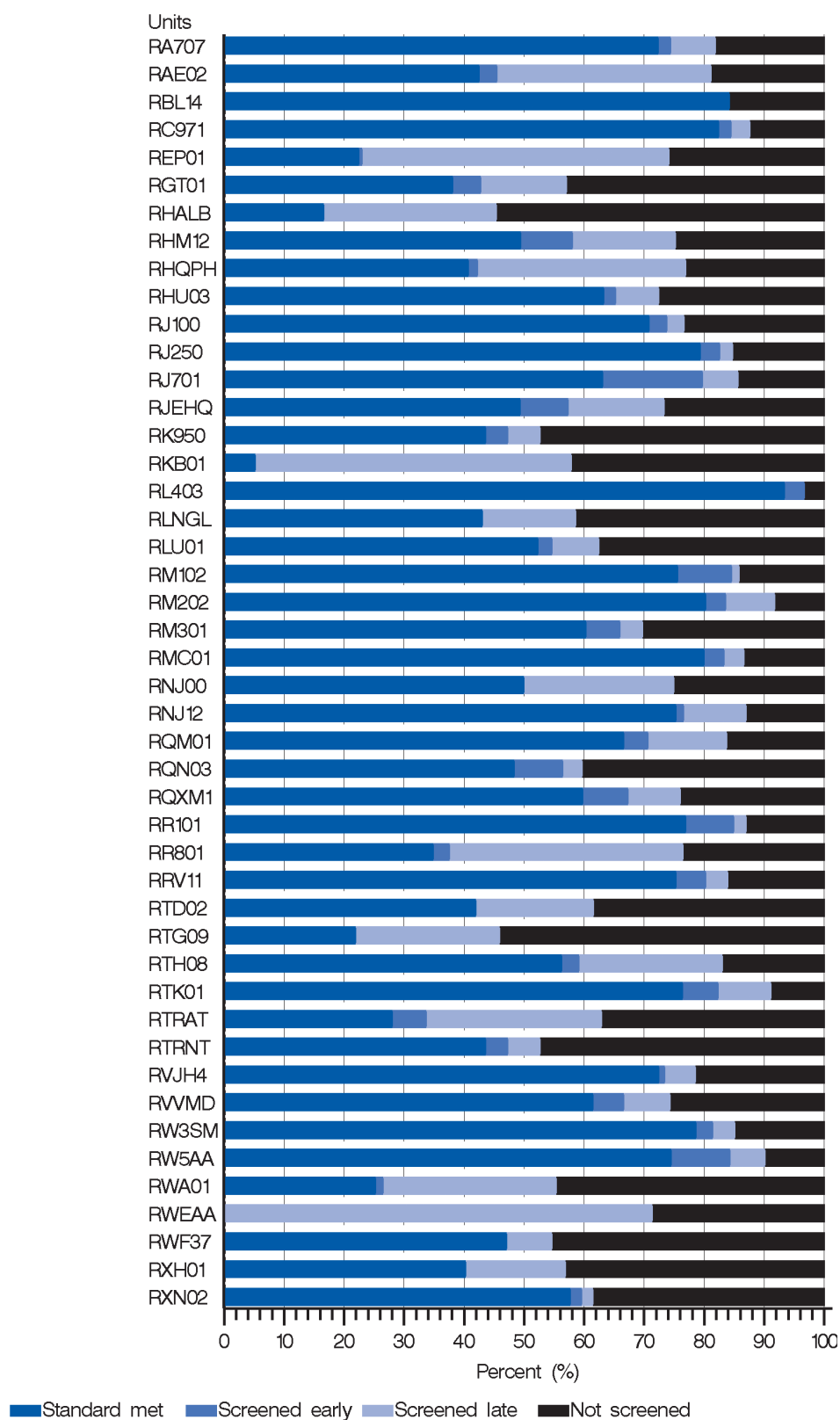


Figure 3.1.3: The proportion of eligible babies screened for ROP on time, early, late or missed, for individual neonatal units: **Level 3**

NNAP, 1st January – 31st December 2010



Question 4

Audit:	What proportion of babies <33 weeks gestation at birth were receiving any of their own mother's milk at final discharge from a neonatal unit?
Standard:	Benchmarking
Source of standard:	NNAP Board

Results:

There were **8518** babies born <33 weeks reported by **171** neonatal units who met the selection criteria (eligible babies); only babies who had a final discharge home or to a ward or who died are included in this analysis – babies on transfers are not included – and the babies are assigned to the unit from which they are discharged home or to a ward, even though it is recognised that some babies will have been transferred to that unit after they have stopped receiving their mother's milk. **44.1%** (3758/8518) were receiving their own mother's milk or a combination of mother's milk and formula at final discharge/death. Missing data accounted for **14.2%** (1207/8518); **41.7%** (3553/8518) were discharged receiving solely formula (Table 4.1).

Table 4.1 Babies born <33 weeks and receiving any of their mother's milk at final discharge from a neonatal unit by unit level

NNAP, 1st January – 31st December 2010

Unit Level	Eligible babies	Babies receiving any own mother's milk at discharge <i>(as a proportion of eligible babies)</i>	Babies receiving only formula milk at discharge <i>(as a proportion of eligible babies)</i>	Missing <i>(as a proportion of eligible babies)</i>
1	1342	647 (48.2%)	603 (45%)	92 (6.8%)
2	3834	1778 (46.3%)	1643 (42.9%)	413 (10.7%)
3	3342	1333 (39.9%)	1307 (39.1%)	702 (21%)
Total	8518	3758 (44.1%)	3553 (41.7%)	1207 (14.1%)

Babies receiving mother's milk at final discharge by unit level is shown in figure 4.1, by gestational age at birth in figure 4.2 and for each neonatal unit in figures 4.3.1, 4.3.2 and 4.3.3.

Figure 4.1: The proportion of babies receiving any of their mother's milk at final discharge, by unit level

NNAP, 1st January – 31st December 2010

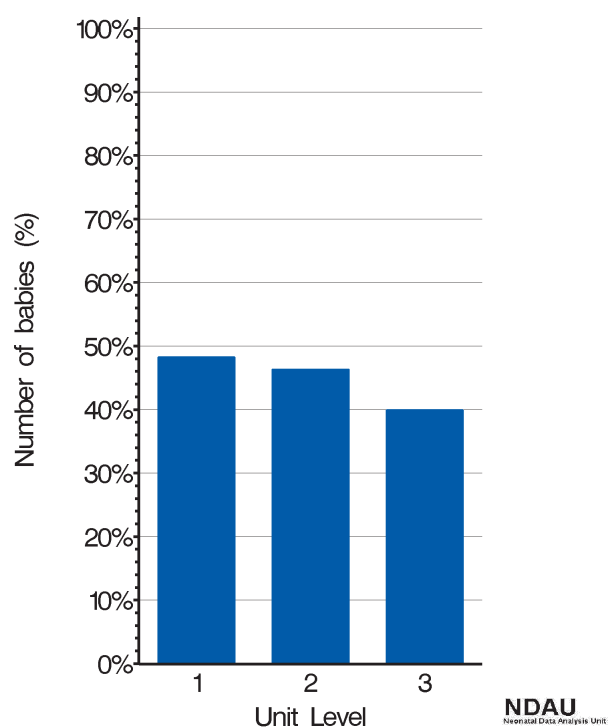


Figure 4.2: The proportion of babies receiving any of their mother's milk at final discharge, by gestational age

NNAP, 1st January – 31st December 2010

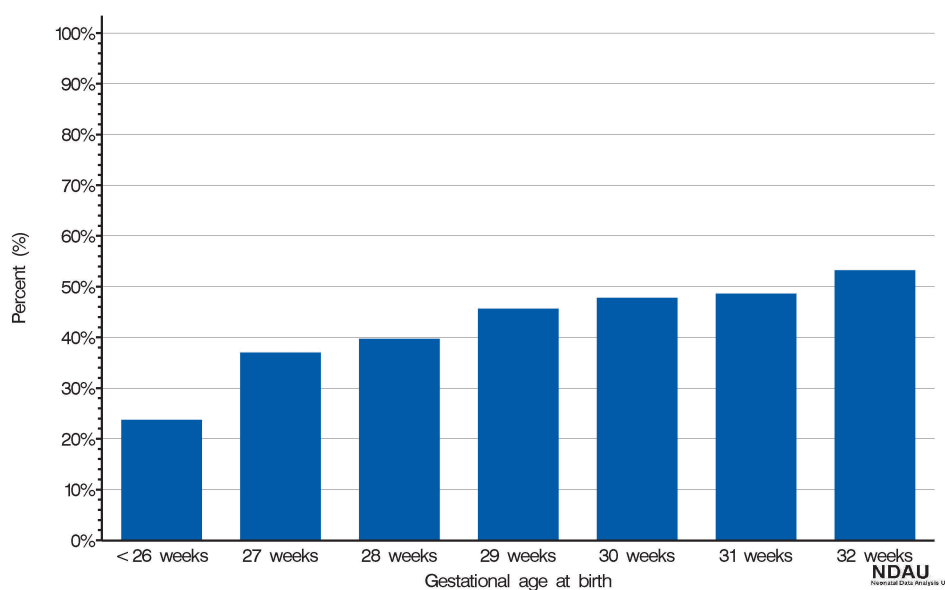


Figure 4.3.1: The proportion of eligible babies receiving any of their mother's milk at final discharge for individual neonatal units: **Level 1**

NNAP, 1st January – 31st December 2010

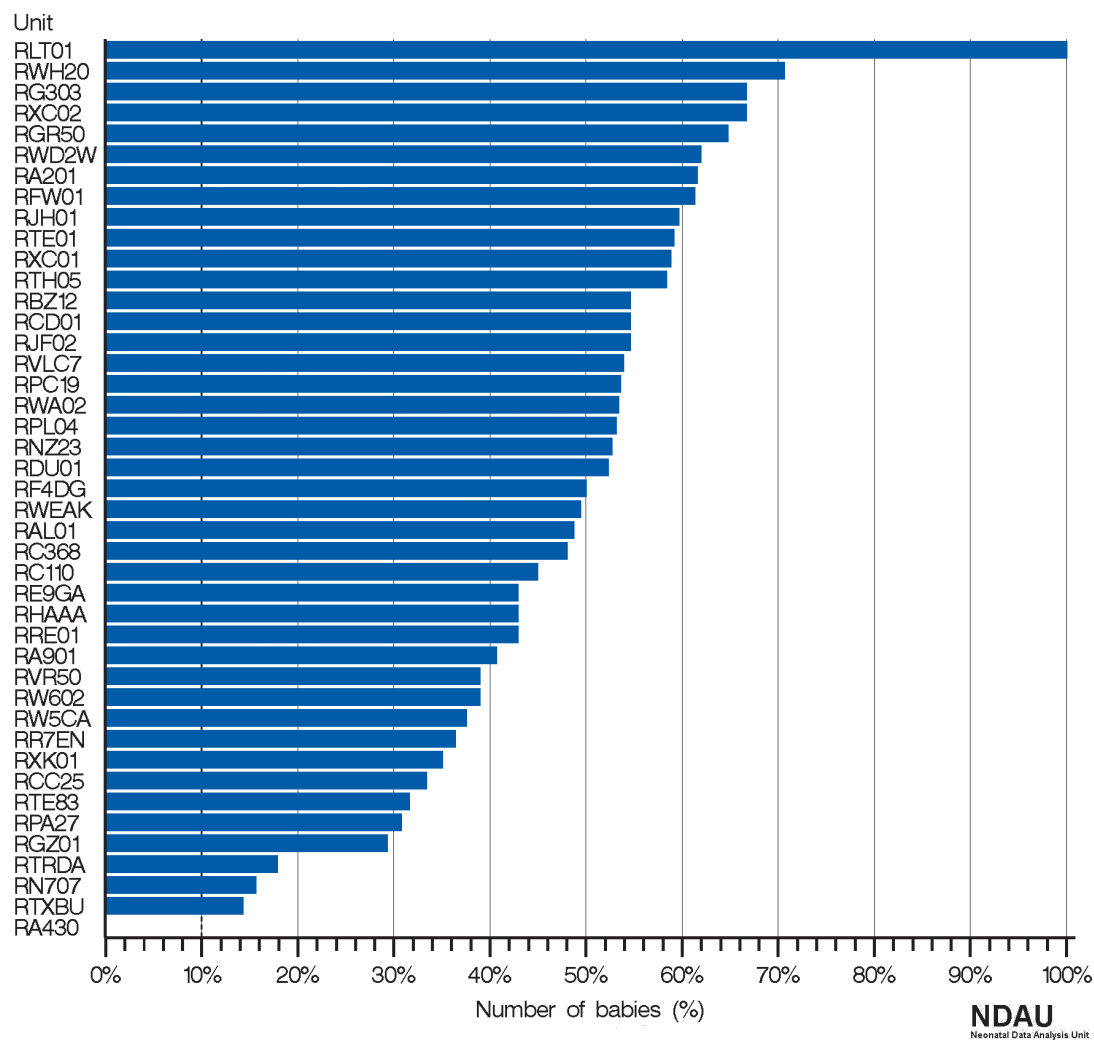


Figure 4.3.2: The proportion of eligible babies receiving any of their mother's milk at final discharge for individual neonatal units: **Level 2**

NNAP, 1st January – 31st December 2010

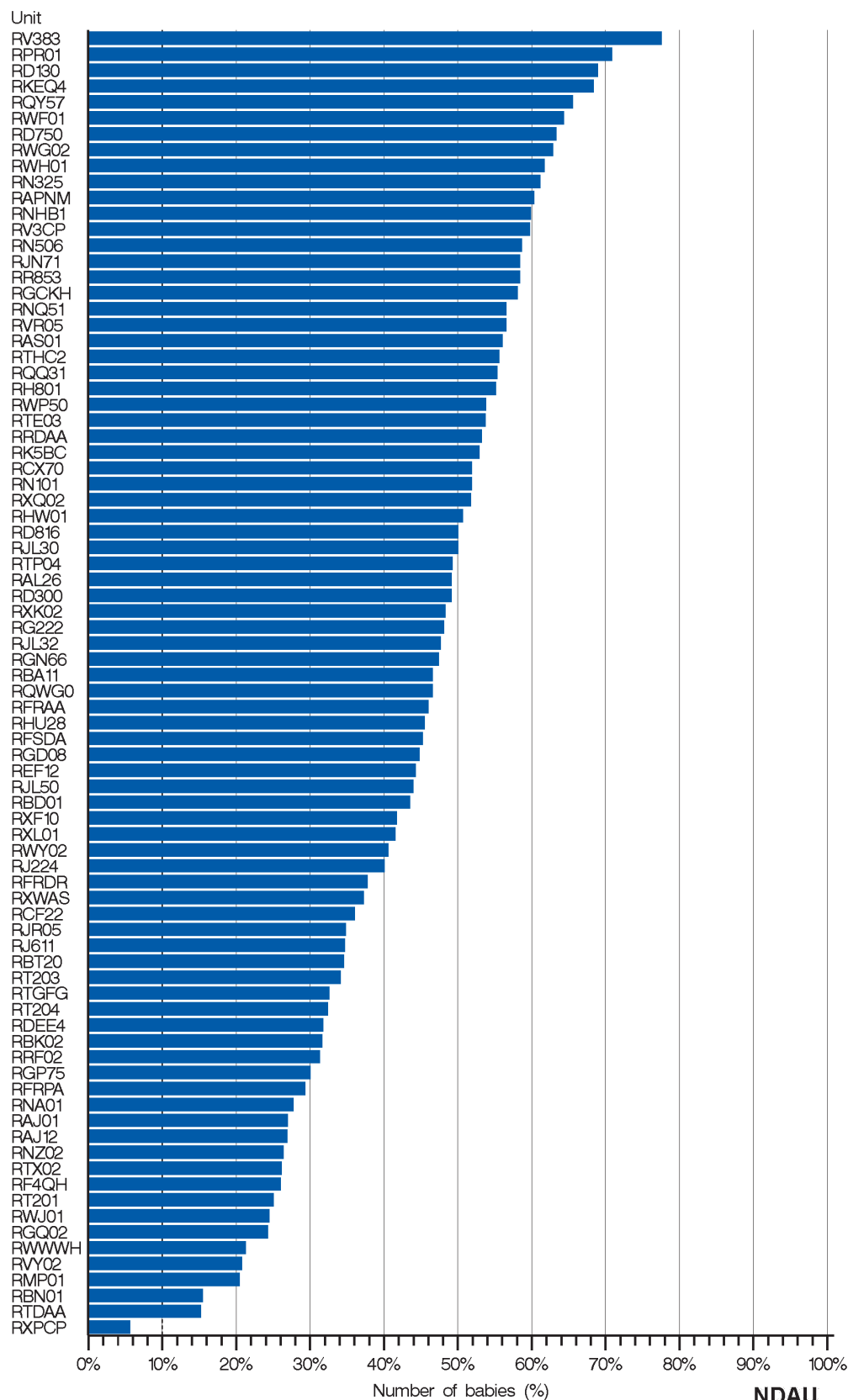
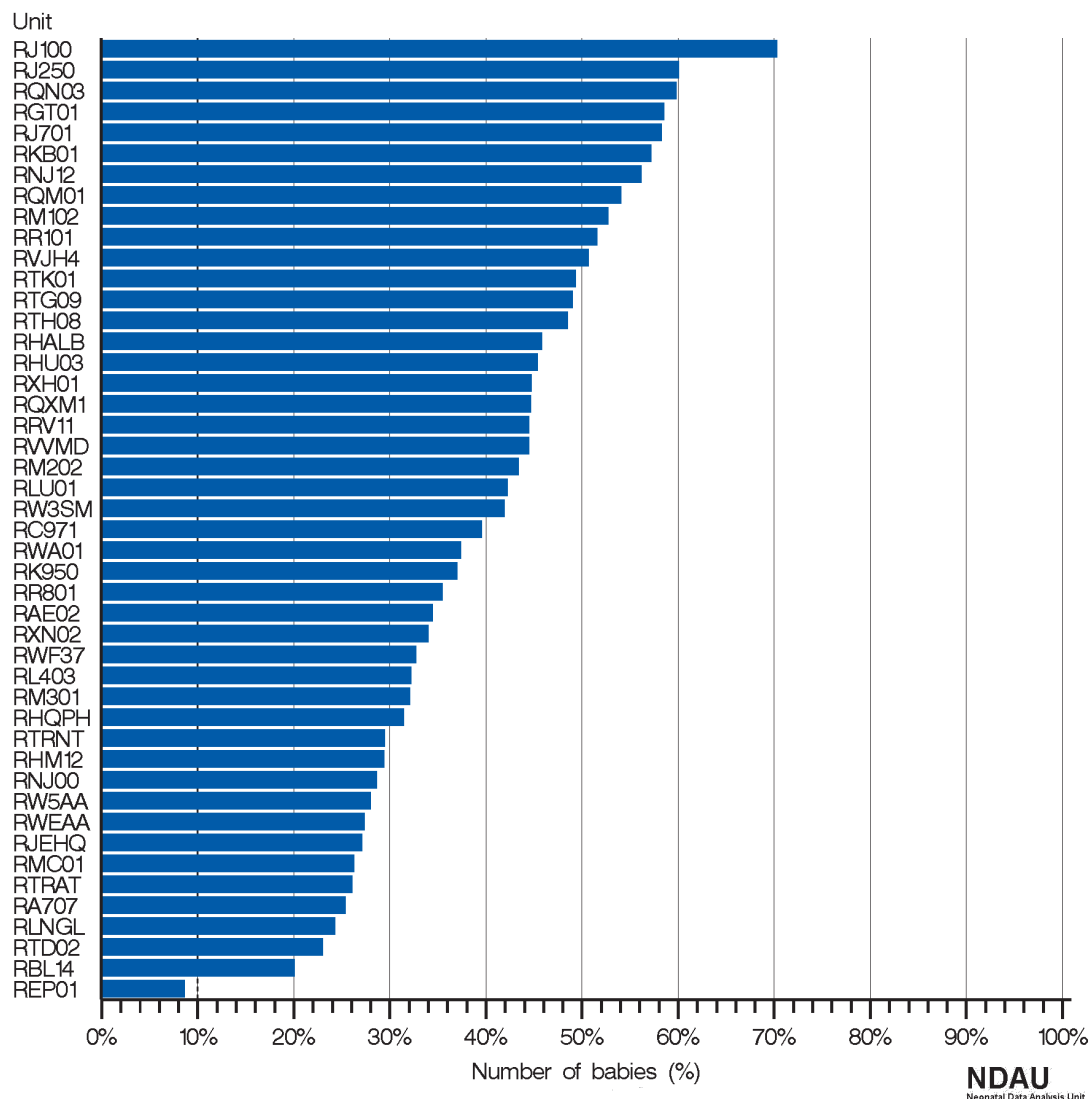


Figure 4.3.3: The proportion of eligible babies receiving any of their mother’s milk at final discharge for individual neonatal units: **Level 3**

NNAP, 1st January – 31st December 2010



Question 5

Audit:	Is there a documented consultation with parents/carers by a senior member of the neonatal team within 24 hours of admission?
Standard:	100%
Source of Standard:	NNAP Board

Results:

There were **62896** babies with a first episode reported by **172** neonatal units (eligible babies). A senior member of the team saw **66.9%** (42083/62896) of eligible cases within 24 hours of admission. Missing data accounted for **28.8%** (18153/62896) of cases and **4.2%** (2660/62896) were seen after 24 hours of admission. The percentage of all parents/carers who had a consultation with a senior member of staff is shown by level of unit (Table 5.1). Consultation by a senior member of the neonatal team by unit level (Figure 5.1), by gestational age at birth (Figure 5.2) and for each neonatal unit in figures 5.3.1, 5.3.2 and 5.3.3

Table 5.1 Numbers of parents/carers of babies seen by a senior member of the neonatal team within 24 hours of admission by unit level

NNAP, 1st January – 31st December 2010

Unit Level	Eligible Infants	Parents/carers of babies seen by senior member of the neonatal team within 24 hours of admission	Missing data
1	8897	5774 (64.9%)	2748 (30.9%)
2	27494	20017 (72.8%)	6415 (23.3%)
3	26505	16292 (61.5%)	8990 (34%)
Total	62896	42083 (66.9%)	18153 (28.8%)

Figure 5.1: Consultations by a senior member of the neonatal team within 24 hours of admission as a proportion of all eligible babies by level of neonatal unit

NNAP, 1st January – 31st December 2010

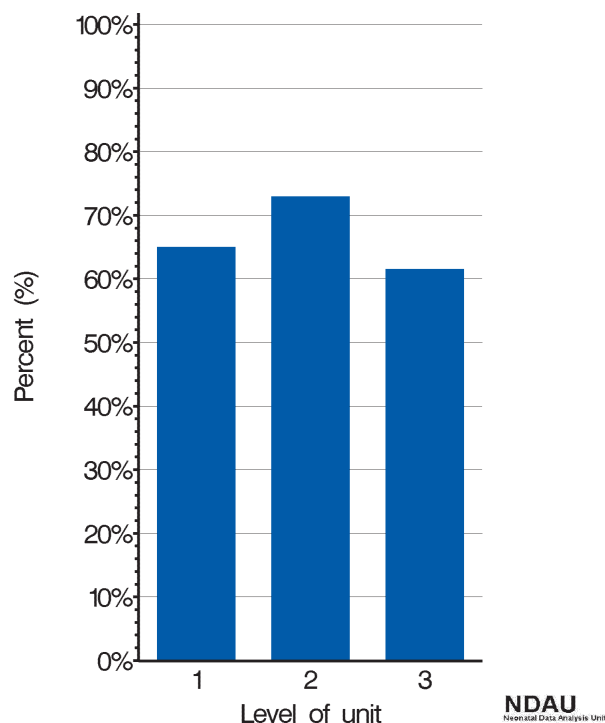


Figure 5.2: Consultations by a senior member of the neonatal team within 24 hours of admission as a proportion of all eligible babies by gestational age

NNAP, 1st January – 31st December 2010

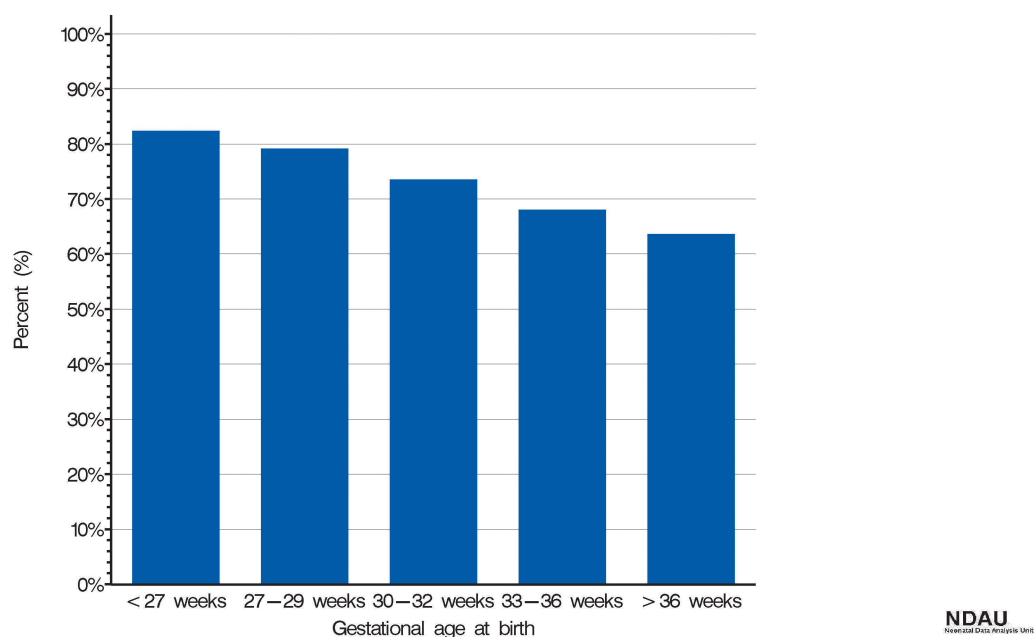


Figure 5.3.1: The proportion of eligible babies seen by a senior member of the neonatal team within 24 hours of admission for individual neonatal units: **Level 1**

NNAP, 1st January – 31st December 2010

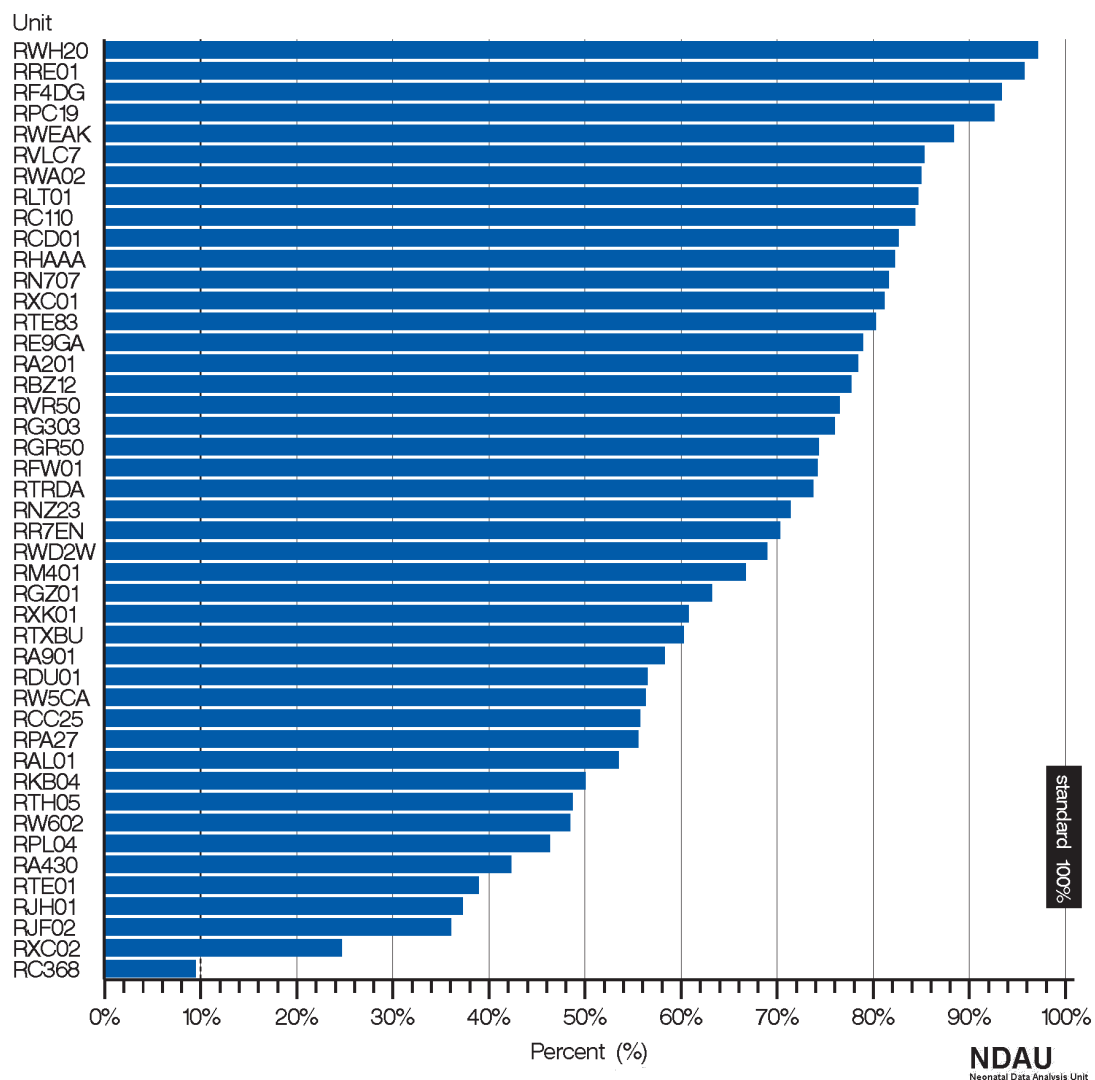


Figure 5.3.2: The proportion of eligible babies seen by a senior member of the neonatal team within 24 hours of admission for individual neonatal units: **Level 2**

NNAP, 1st January – 31st December 2010

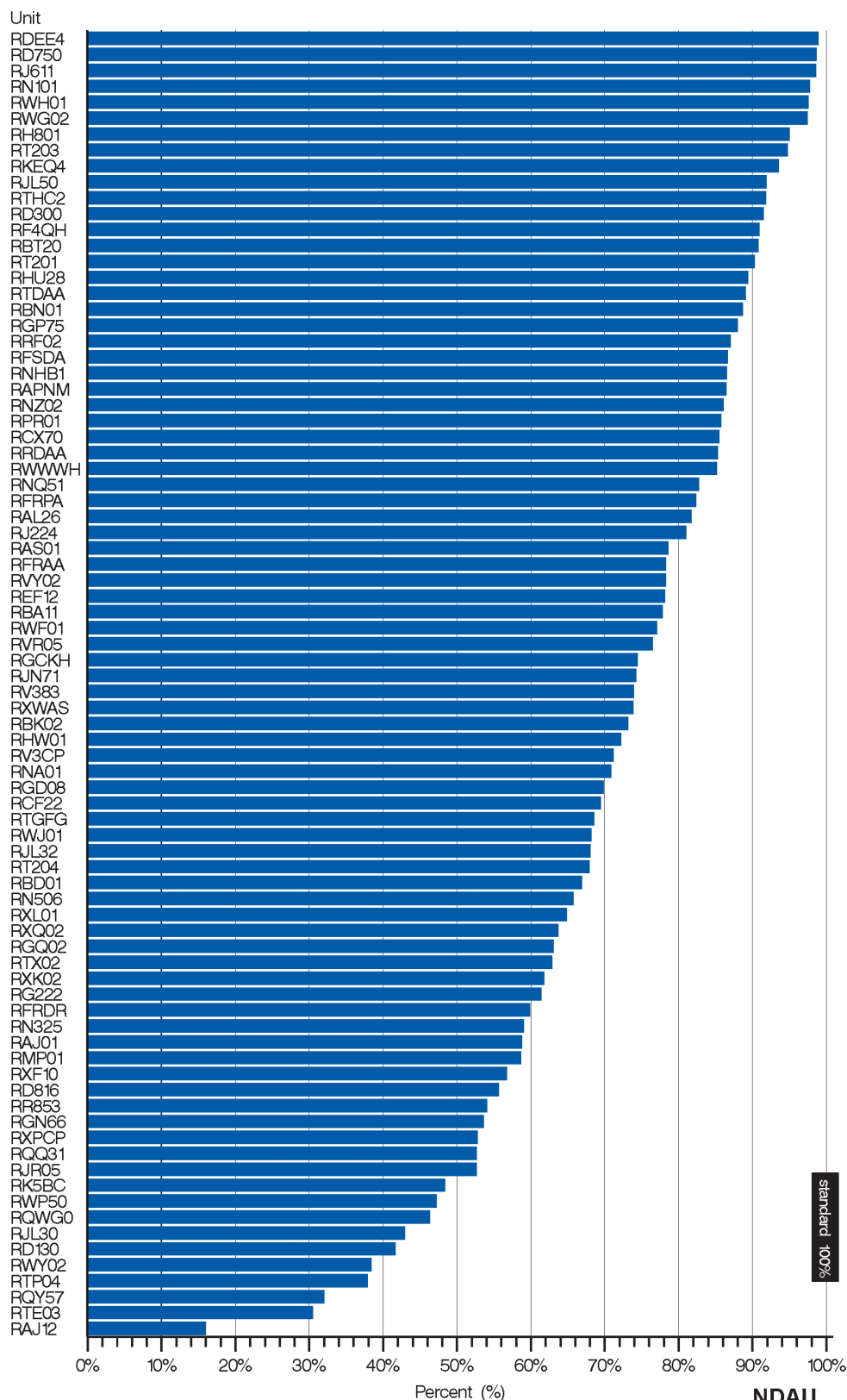
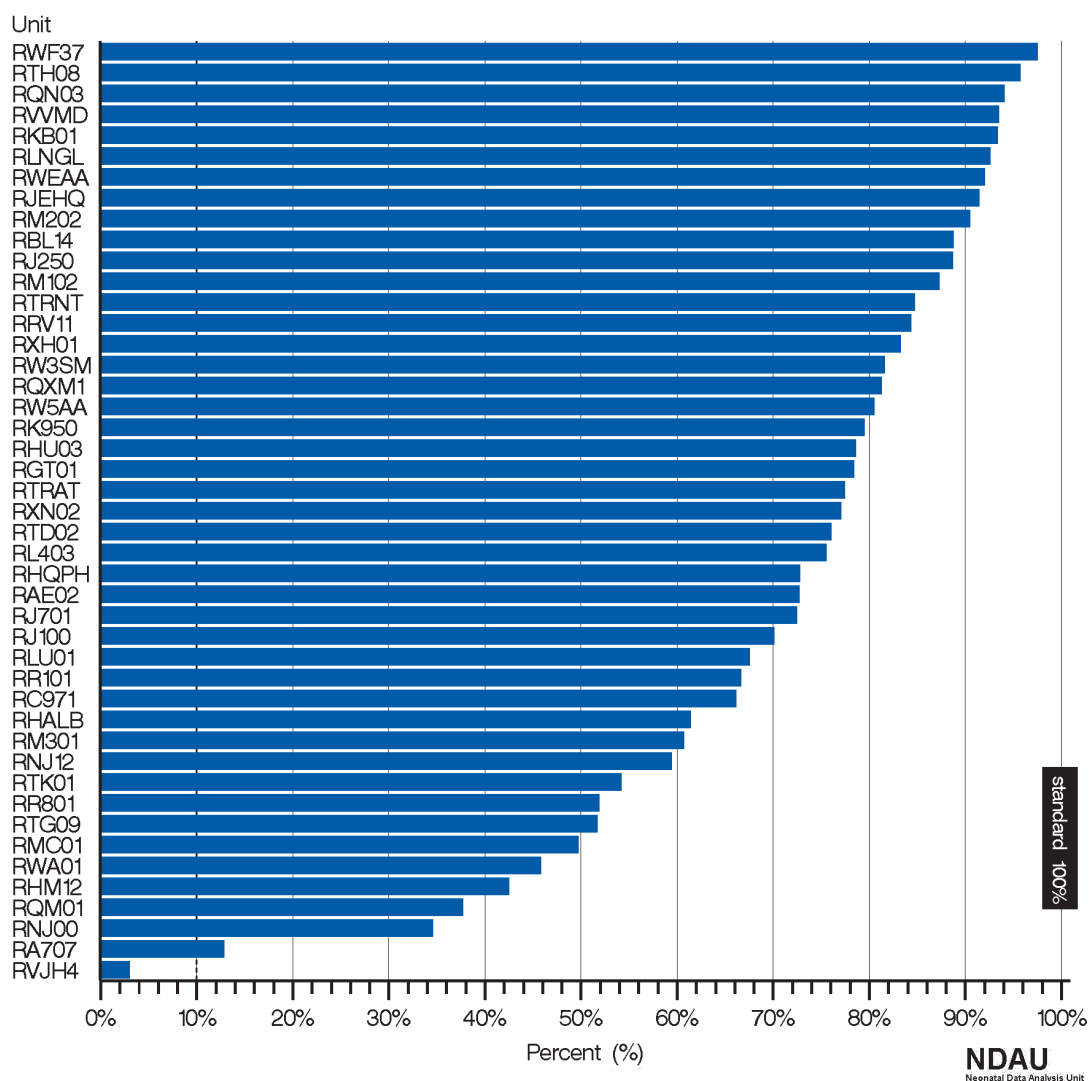


Figure 5.3.3: The proportion of eligible babies seen by a senior member of the neonatal team within 24 hours of admission for individual neonatal units: **Level 3**

NNAP, 1st January – 31st December 2010



Question 6

Audit: Are all babies who require transfer out of a unit kept within their own network, except where clinical reasons dictate otherwise?

Standard: >90% of the neonatal transfers

Source of standard: NNAP Board

Results:

The 2010 NNAP data file included **63969** babies from 173 neonatal units for whom all episodes of neonatal care were provided. There were **10948** transfers involving **7527** (11.8%) babies; **78%** (8527/10948) of transfers were within the network of birth and **22%** (2381/10948) outside. Please note that NNAP has not analysed network of birth against maternal postcode to determine what percentage of babies were born in 'their own' local network. The number of babies admitted in 2010 by neonatal network and the percentage who were transferred within or outside the network (Table 6.1)

In 2009, 19% of all babies admitted to a NNU had at least one transfer. In 2010 this had fallen to 11.8%% with 7,527 babies undergoing a total of 10,948 transfers. Unfortunately, incomplete and possibly incorrect data entry makes it impossible to be sure just what percentage of transfers were within the baby's network of birth. The data entered show that 22% (5 – 44%, 23%; range and median) of all transfers were outside the first network and that only 44% (24% – 63%, 37%) of these 'external' transfers were for clinical reasons. However, the very large ranges and the unexpectedly high percentage transfer outside a network suggests problems with data entry, and the figures should perhaps at best be considered a maximum number.

Table 6.1 Transfer of babies out of network by 'Network Provider of First Admission' for babies discharged in 2010

Network Provider of first admission	Total number of babies receiving neonatal care	Total number of babies transferred		Total number of transfers	Transfers within network of first admission		Transfers outside a neonatal network		Transfer outside of neonatal network					
		Number of babies	%		Number of transfers	%	Number of transfers	%	Due to clinical reasons		Due to other reasons		Reasons not completed	
									Number of transfers	%	Number of transfers	%	Number of transfers	%
Bedfordshire and Hertfordshire	2742	211	8%	335	228	68%	106	32%	67	63%	18	17%	21	20%
Cheshire & Merseyside	3028	168	6%	214	176	82%	38	18%	16	42%	6	16%	16	42%
Eastern	4939	402	8%	575	442	77%	132	23%	71	54%	19	14%	42	32%
Greater Manchester	3048	385	13%	606	520	86%	86	14%	32	37%	20	23%	34	40%
Kent	2093	200	10%	331	184	56%	147	44%	93	63%	22	15%	32	22%
Lancashire and South Cumbria	1185	153	13%	210	155	74%	55	26%	26	47%	12	22%	17	31%
London – North Central	1893	347	18%	482	348	72%	134	28%	50	37%	36	27%	48	36%
London – North West	2630	320	12%	446	357	80%	89	20%	21	24%	32	36%	36	40%

Network Provider of first admission	Total number of babies receiving neonatal care	Total number of babies transferred		Total number of transfers	Transfers within network of first admission		Transfers outside a neonatal network		Transfer outside of neonatal network					
		Number of babies	%		Number of transfers	%	Number of transfers	%	Due to clinical reasons		Due to other reasons		Reasons not completed	
									Number of transfers	%	Number of transfers	%	Number of transfers	%
London – South East	2358	223	9%	315	202	64%	112	36%	41	37%	25	22%	46	41%
London – South West	2025	195	10%	288	207	72%	81	28%	38	47%	13	16%	30	37%
Midlands – Central	937	238	25%	297	254	86%	43	14%	15	35%	13	30%	15	35%
Midlands – South West	3619	386	11%	527	428	81%	97	18%	36	37%	20	21%	41	42%
North Trent	2551	503	20%	747	618	83%	126	17%	66	52%	20	16%	40	32%
Northern	2584	318	12%	442	409	93%	32	7%	9	28%	1	3%	22	69%
Peninsula – South West	2604	212	8%	321	198	62%	123	38%	66	54%	26	21%	31	25%
South Central (North)	2377	219	9%	266	232	87%	34	13%	10	29%	9	26%	15	44%

Network Provider of first admission	Total number of babies receiving neonatal care	Total number of babies transferred		Total number of transfers	Transfers within network of first admission		Transfers outside a neonatal network		Transfer outside of neonatal network					
		Number of babies	%		Number of transfers	%	Due to clinical reasons		Due to other reasons		Reasons not completed			
							Number of transfers	%	Number of transfers	%	Number of transfers	%		
South Central (South)	3052	333	11%	453	411	91%	42	9%	13	31%	17	40%	12	29%
Staffordshire, Shropshire and Black Country Network	1939	110	6%	143	91	64%	52	36%	13	25%	20	38%	19	37%
Surrey and Sussex	3211	361	11%	566	403	71%	163	29%	88	54%	29	18%	46	28%
Trent	2514	572	23%	1013	592	58%	395	39%	130	33%	215	54%	50	13%
Western	6560	609	9%	847	803	95%	44	5%	15	34%	11	25%	18	41%
Yorkshire	2981	579	19%	811	721	89%	85	10%	43	51%	18	21%	24	28%
	63969	7527	12%	10948	8527	78%	2381	22%	1057	44%	627	26%	697	29%

All transfers

All transfers outside of network of first admission

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■ All transfers

■ All transfers outside of network of first admission

NNAP, 1st January – 31st December 2010

Question 7

Audit: How many babies born between 32 and 36 weeks and >37 weeks gestation receive care on a neonatal unit?

Standard: Benchmarking question

Results

Analysis for this question has not been possible due to the non-collection of 2010 denominator data by CMACE. Collection will be reinstated in 2011 by another agency, which will again allow this audit question to be addressed in the future.

Question 8

Audit:	Are rates of normal survival at two years comparable in similar babies from similar units? How many two year follow-ups were performed on eligible babies in 2010?
Standard:	Standard not set, benchmarking at present.
Source of standard:	NNAP Board

This year NNAP audits the numbers of eligible babies for whom a two year (corrected post term) health follow-up has been partially or completely reported. Eligible babies are those who were born at <30 weeks gestation, discharged from a neonatal unit in 2008 and who survived to the age of two (corrected post term) in 2010. This includes babies born in late 2007 as well as 2008 in order to capture those babies who were two years corrected post term in 2010. It also includes some born late in 2008 upon whom assessments would not have been performed prior to data download, and this issue will be resolved next year. For this analysis, two year health status is assigned to the organisation/unit which completed the follow-up form for each of these babies. However 258 babies were followed in the community and it was impossible from the data download to attribute a neonatal unit to these babies in this year's analysis. This will also be corrected for 2011.

Results:

This year's data have shown problems with data handling which should be correctable in time for next year's report.

Table 8.1 shows that initially there were 3764 babies <30 weeks gestation born in 2008. Of these 464 (12.3%) died before discharge. Of the 3300 discharged home, data analysis was not achieved at all in 1789 babies through a combination of obfuscatory transfers (1737) and missing data (52). This left 1511 babies (46% of the 3300 survivors) upon whom data analysis was achieved with confidence.

Of these 1511 babies, only 877 (58%) had any data entered at all. This meant that only 27% of the 3300 survivors had interpretable follow up data. A small proportion of the shortfall can be attributed to babies born late in 2008 whose 2 year health status had not been recorded by the time of the data download. There was great variation in the follow up rates between networks but the best are achieving follow up rates of 60 to 70% which should act as a benchmark for networks next year.

Of these 877 babies with data, **16.5%** (145/877) were reported as lost to follow-up and **7.4%** (65/877) died after discharge home. At least some data were entered for remaining **76%** (667/877) of children. Table 8.2 shows children followed up by neonatal network, expressed as a proportion of the total number of survivors

Table 8.1 Discharge status of babies in 2008 eligible for two year health follow-up in 2010

NNAP, 1st January – 31st December 2010

Discharge status	Eligible babies (2008)	Percent (%)
Total	3764	
Babies <30 weeks gestation discharged in 2008	3764	
Died before discharge	464	12.3
Eligible for follow up	3300	
Home/Ward	1511	40.1
Continuing care	1737	6.2
Missing/Unknown	52	1.4

Table 8.2 Two year (corrected post term) health follow-up recorded by neonatal network**NNAP, 1st January – 31st December 2010**

Network	Eligible babies (discharged in 2008)	Number (%) of children followed up in 2010
Bedfordshire and Hertfordshire	134	18 (13%)
Cheshire and Merseyside	230	4 (2%)
Eastern	236	39 (17%)
Greater Manchester	254	15 (6%)
Kent	145	19 (13%)
Lancashire and South Cumbria	116	7 (6%)
London – North Central	124	82 (66%)
London – North East	303	65 (21%)
London – North West	255	52 (20%)
London – South East	176	44 (25%)
London – South West	127	90 (71%)
Midlands – Central	-	1
Staffordshire, Shropshire and Black Country	40	13 (33%)
Midlands South West	65	23 (35%)
Northern	173	12 (7%)
North Trent	45	0
Peninsula	117	32 (27%)
South Central (North)	135	2 (1%)
South Central (South)	191	64 (34%)
Surrey and Sussex	132	21 (16%)
Western	123	16 (13%)
Trent	174	0
Yorkshire	5	0
Unknown*	-	258
Total	3300	877

* Babies are assigned to “unknown network” if the two year corrected post term health follow-up took place in a community centre, abroad or in a non-NNAP unit

4. Audit developments in 2010

4.1 Expansion of the audit

The audit team continued to work towards the goal of 100% participation by neonatal units in England.

The following English units which were not included in last year's report submitted 2010 NNAP data for this report:

- Gloucester Royal Hospital
- Liverpool Women's Hospital
- Queen Charlotte's Hospital
- St Mary's Hospital, Paddington
- South Tyneside District Hospital

By the end of 2010, only two English units were not collecting NNAP data (Cumberland Infirmary and West Cumberland Hospital).

4.2 Extended data set

Until the end of 2010 NNAP had permission to examine only 23 fields of data on each baby. This was unduly restrictive and prevented us from exploring questions that arose during the analysis of these 23 fields. During 2010 almost all units responded to our request to grant Caldicott Guardian permission that NNAP could examine all data fields on their system when necessary.

4.3 Changes in practice

In February 2011, all participating units were contacted and asked to complete a "Changes in Practice" survey form in order to ascertain if and how participation in the audit had led to changes in practice in each neonatal unit during 2010. The questionnaire requested details of any changes in clinical practice or changes made to support data accuracy and completeness which had been implemented as a result of participation in the audit or were planned for the future. Completed forms were received from 57 units (33%); a selection of the comments received is included at Appendix D. Although few units reported changes in clinical practice, many had made changes to their data recording procedures, undertaken internal audits and formally discussed NNAP reports and results.

5. Future plans

5.1 The next audit phase

The audit has received confirmation of funding from HQIP for the period 1 April 2011 to 31 March 2014. Priorities for the audit for this three year period include:

- Inclusion of all U.K. NNUs
- Extension of the data set
- Collaboration with PICUs for data collection
- Working with NCAAG and HQIP in recognising units with outlying performances
- alignment of the audit to the NICE Neonatal Quality Standards
- an improved on-line reporting service to units by working with Clevermed
- development of a parent-reported experience measure (PREM)
- inclusion of a new audit questions addressing surgical interventions

5.2 Changes to the audit questions

As a result of the recommendations of the Question Review Working Group, two new questions were added to the audit from January 2011:

- i) What percentage of babies admitted to a neonatal unit have:
 - a. one or more episodes of a pure growth of a pathogen from blood
 - b. one or more episodes of a pure growth of a pathogen from CSF
 - c. either a pure growth of a skin commensal or a mixed growth with ≥ 3 clinical signs at the time of blood sampling
- ii) What percentage of babies of more than or equal to 35 weeks gestation have an encephalopathy within the first 3 calendar days of birth?

The complete list of 2011 audit questions can be found at Appendix E.

During 2011, a Neonatal Quality Standards Working Group will be convened to assess which of the NICE Neonatal Quality Standards can be addressed by the audit and to develop suitable audit questions – and agree the required data definitions – for the 2012 audit.

5.3 Quality Improvement – detection and management of outliers

The notes in this section represent an abbreviated version of an NNAP document entitled “Quality Improvement” available on the NNAP webpage.

The National Clinical Audit Advisory group (NCAAG) has requested that all national audits move towards identifying outliers and NNAP will do this starting with the 2011 report.

(i) Detection of a potential outlier

NNAP will create funnel plots of different outcomes and approach those units whose performance is more than two standard deviations (SDs) from the mean with an ‘alert’ and those more than three SDs with an ‘alarm’. NNAP may also approach units whose performance is more than 2 SDs *above the mean* to check their data.

Some of the measures currently audited may provide a more robust measure of a unit’s performance than others, and these measures will be used for the detection of outliers:

- Measurement of temperature within an hour of birth in babies <28 weeks
- First ROP screening within one week of the window designated by national guidelines
- Breast milk feeding at discharge home for babies who stay in one unit all the time
- First consultation with parents within 24 hours of the baby’s admission

Funnel plots of the percentage of babies for whom the standard is achieved in each NNU will be created for each of these criteria. Consequently a number of units will fall two SDs below the mean for each criterion as would be expected on a purely statistical basis. As there are 4 measures, individual units will have between 0 and 4 criteria more than 2 SDs below the national mean. Depending upon the distribution of units under-performing on 0, 1, 2, 3 or 4 standards, NNAP will approach those under-performing on 4 standards, and possibly some underperforming on 3 standards if their performance has raised alarms (>3 SD below mean) in any of the 4 individual standards. It is therefore NNAP’s expectation that, using this approach, those units with a broad range of difficulties will be recognised and helped first.

In future annual reports there will be a table showing each unit’s percentage success rate for each of the four standards, and rates falling below two standard deviations will be highlighted.

Comparison of providers will take account of differences in the mix of patients between units/networks by adjusting for known, measurable factors that are associated with the performance indicator. These will include as a *minimum* – where appropriate – birth weight and gestation, sex and congenital abnormality.

(ii) Management of a potential outlier

Management of a potential outlier involves several groups and individuals:

- NNAP: the team responsible for managing and running the audit nationally
- Chair of the NNAP Project Board: person responsible for the audit
- Provider lead clinician: clinician contact for NNAP in provider organisation
- Provider clinical governance lead: responsible for clinical governance in provider. In addition, the provider medical director and chief executive may need to be involved.

(iii) Quality Improvement action plans

The NNAP team will contact all unit leads requesting that an action plan be developed in response to the results outlined in the annual report. Neonatal Network Managers & Network Leads will also be contacted to allow network-wide plans to be developed.

Both clinical and managerial staff will be involved in the development of local recommendations and the action. It is suggested that the clinical lead and audit lead provide a first draft action plan for discussion at unit level to ensure all are able to contribute to the process and agree on actions to be taken.

NNAP anticipates that it may become appropriate for NNAP to approach not just those units underperforming on a number of measures, but all units under-performing on any one audit measure in order to drive up performance.

(iv) Monitoring change

The responsible individual(s) in each unit formally approached by NNAP should regularly review the action plan to monitor progress. The leads for each action should report to the unit NNAP lead any delays or issues in implementing the recommendations and where necessary agree an alternative solution.

A copy of each unit's action plan will be returned to the NNAP team by the unit's NNAP lead. With the permission of the units in question, examples of good practice will be shared via the NNAP webpage. However, local change will always be a local responsibility. Units will have in place guidance on steps to take when results indicate that change is necessary and has not been implemented. There will be clear and transparent escalation routes e.g. to clinical director, medical director, healthcare governance and finally the board.

The central NNAP team will write to the network manager and clinical lead about any units that have been formally approached but do not submit action plans and updates. The

network manager and clinical lead will be asked to comment on the issues involved and to support the unit concerned. If, after 12 months, there is no adequate response, NNAP will write to the Trust's Chief Executive and Medical Director.

5.4 Development of a Parent Reported Experience Measure (PREM)

It is recognised that capturing the patient/parent experience is an essential part of the assessment of the overall quality of a clinical service. NNAP will work with Bliss, the national UK charity and parent advocacy organisation, who will engage with their well-established parent forums to advise on the outcomes they consider of principal importance. The possibility of adding a parent experience query to the neonatal electronic record captured on BadgerNet will be investigated, to reflect the parent experience at point of discharge by asking the parent to enter their response on the BadgerNet screen during their discharge discussion with staff.

5.5 Expansion of the audit

- i) Wales: During 2010, all 13 neonatal units in Wales installed the BadgerNet system. After data quality testing is completed, it is anticipated that these units will begin submission of NNAP data by late 2011.
- ii) Northern Ireland: The seven neonatal units will soon have the BadgerNet in place, and will be invited individually to join the audit during 2011.
- iii) Scotland: All units have been invited to join the audit; we are currently working with Clevermed to investigate ways of incorporating data from units not currently using the BadgerNet.
- iv) Specialist units: we will be working in 2011 towards allowing those units without inborn babies to contribute a reduced dataset to the audit.

Appendix A: 2010 Audit Dataset

Field	Comment
NHS number – Infant	Encrypted with key held by local unit
NHS number – Mother	Encrypted with key held by local unit
Birth Time	Birth year
Episode Number	
Fetus Total	Number of Infants
Birth order	
Gestation at birth	Weeks and days
Date & Time of Birth	Anonymised to year of birth only
Birth weight	
Total number of antenatal steroid doses	If between 24 & 34 weeks gestation
Steroids Given	Yes , No & Unknown
Admission time	Time of admission in minutes from birth
Intended Hospital place of delivery	NHS code
Source of Admission Hospital	NHS code
Gender	
Reason for transfer out	Clinical/non-clinical
Transfer inside/outside normal network pathway	
Date & time of 1st Temperature	Time in minutes from birth
Result of 1st Temperature	
Date & time of documented consultation with parent(s)/carer(s)	Time in minutes from birth
Feeding on discharge	
Date of 1st ROP Screening	If <1501g or gestational age at birth <32 weeks
Discharge time	Time in minutes from birth
Discharge Quarter	Format : Year – Quarter
Discharge destination	Home, died, another hospital (NHS code) Etc
Two year outcomes (separate table with 101 data items)	Only basic items analysed for 2010

Appendix B: Categories of Care

Neonatal intensive care units provide specialist care for preterm, low-birth-weight and ill newborn babies. Neonatal care is given in most district general hospitals in special care baby units or neonatal intensive care units. It is a requirement that all maternity units be able to provide facilities for resuscitating unexpectedly ill newborn infants.

The categories of neonatal units are defined as:

Level 1 (Local Special Care Service): Units providing Special Care but not aiming to provide any significant continuing High Dependency or Intensive Care.

Level 2 (Local Neonatal Service): Units provide High Dependency Care and some short-term Intensive Care as agreed within the network.

Level 3 (Neonatal Intensive Care Service): Units provide the whole range of medical neonatal care but not necessarily all specialist services such as neonatal surgery or cardiology

Categories of Care

These are the latest BAPM Categories of Care, currently in draft form only, as drafted by the BAPM Data Working Group, June 2010.

INTENSIVE CARE

General principle

This is care provided for babies who are the most unwell or unstable and have the greatest needs in relation to staff skills and staff to patient ratios.

Definition of Intensive Care Day

- Any day where a baby receives any form of mechanical respiratory support via a tracheal tube
- Day of surgery (including laser therapy for ROP)
- Day of death
- Any day receiving any of the following:
 - Any exchange transfusion
 - Presence of a chest drain
 - Dialysis (any type)
 - Cardioversion

- Therapeutic hypothermia
- Presence of an umbilical arterial line
- Presence of an umbilical venous line
- Presence of a peripheral arterial line
- Insulin (any infusion)
- Prostaglandin (any infusion)
- Presence of repleg tube
- Presence of epidural catheter
- Presence of silo for gastroschisis
- Presence of external ventricular drain
- BOTH non-invasive ventilation and parenteral nutrition

HIGH DEPENDENCY CARE

General principle

This is care provided for babies who require highly skilled staff but where the ratio of nurse to patient is less than intensive care.

Definition of High Dependency Care Day

- Any day where a baby does not fulfill the criteria for intensive care where any of the following apply:
- Any day where a baby receives any form of non invasive respiratory support (eg nasal CPAP, SIPAP, BIPAP, vapotherm)
- Any day receiving any of the following:
 - parenteral nutrition
 - continuous infusion of drugs (except specified Intensive care drugs)
 - presence of a central venous or long line (PICC)
 - presence of a tracheostomy
 - presence of a urethral or suprapubic catheter
 - presence of TAT
 - presence of NP airway/nasal stent
 - observation of seizures / CF monitoring
 - barrier nursing
 - ventricular tap

SPECIAL CARE

General principle

Special care is provided for babies who require additional care delivered by the neonatal service but do not require either Intensive or High Dependency care.

Definition of Special Care Day

- Any day where a baby does not fulfill the criteria for intensive or high dependency care and requires any of the following:
 - oxygen by nasal cannula
 - feeding by nasogastric, jejunal tube or gastrostomy
 - continuous physiological monitoring (excluding apnoea monitors)
 - care of a stoma
 - presence of IV cannula
 - baby receiving phototherapy
 - special observation of physiological variables at least 4 hourly

TRANSITIONAL CARE

General principle

Transitional care can be delivered in two service models, within a dedicated transitional care ward or within a postnatal ward. In either case the mother **must be resident with her baby and providing care**. Care above that needed normally is provided by the mother with support from a midwife/healthcare professional who needs no specialist neonatal training. Examples include low birth-weight babies, babies who are on a stable reducing programme of opiate withdrawal for Neonatal Abstinence Syndrome and babies requiring a specific treatment that can be administered on a post-natal ward, such as antibiotics or phototherapy.

Appendix C: Participating Units

Units represented in this report by less than 12 months complete data are indicated by an asterisk (*).

Institution	Unit Level	NHS Code	Completed episodes of care	Distinct Babies
Airedale General Hospital	2	RCF22	120	113
Alexandra Hospital	1	RNZ23	193	170
Arrowe Park Hospital	3	RBL14	334	318
Barnet Hospital	2	RAL26	470	435
Barnsley District General Hospital	2	RFRAA	260	186
Basildon Hospital	2	RAJ12	355	319
Basingstoke & North Hampshire Hospital	2	RN506	308	250
Bassetlaw District General Hospital	1	RHAAA	121	74
Bedford Hospital	1	RC110	287	265
Birmingham Heartlands Hospital	3	RR101	881	758
Birmingham Women's Hospital	3	RLU01	1177	1097
Bradford Royal Infirmary	3	RAE02	604	546
Broomfield Hospital	2	RRDAA	386	347
Burnley General Hospital ¹	1	RW5CA	181	116
Calderdale Royal Hospital	2	RWY02	166	105
Chase Farm Hospital	1	RVLC7	326	210
Chelsea & Westminster Hospital	3	RQM01	640	512
Cheltenham General Hospital	1	RTE01	293	239
Chesterfield & North Derbyshire Royal	2	RFSDA	327	266
City Hospital	2	RXK02	719	316
Colchester General Hospital	2	RDEE4	477	448
Conquest Hospital	1	RXC01	154	118
Countess of Chester Hospital	2	RJR05	420	390
Croydon University Hospital	2	RJ611	470	429
Darent Valley Hospital	1	RN707	389	336
Darlington Memorial Hospital	1	RTRDA	161	120
Derriford Hospital	3	RK950	933	817
Dewsbury & District Hospital	2	RXF10	214	114
Diana Princess of Wales Hospital	2	RJL30	628	560

Doncaster Royal Infirmary	2	RFRDR	372	265
Dorset County Hospital	2	RBD01	249	236
Ealing Hospital	1	RC368	257	240
East Surrey Hospital	2	RTP04	495	445
Eastbourne District General Hospital	1	RXC02	257	200
Epsom General Hospital	1	RVR50	206	142
Fairfield General Hospital	2	RT201	221	201
Frimley Park Hospital	1	RDU01	496	469
Furness General Hospital	1	RTXBU	105	84
George Eliot Hospital*	1	RLT01	28	14
Gloucestershire Royal Hospital	2	RTE03	380	226
Good Hope Hospital	1	RJH01	540	491
Great Western Hospital	2	RN325	349	301
Guy's & St Thomas' Hospital	3	RJ100	845	749
Harrogate District Hospital	1	RCD01	188	147
Hereford County Hospital	1	RTE83	206	179
Hillingdon Hospital	2	RAS01	383	369
Hinchingbrooke Hospital	2	RQQ31	252	204
Homerton Hospital	3	RQXM1	603	461
Horton Hospital	1	RTH05	210	191
Hull Royal Infirmary	3	RWA01	635	492
Ipswich Hospital	2	RGQ02	585	551
James Cook University Hospital ²	3	RTRAT	471	416
James Paget Hospital	2	RGP75	300	273
John Radcliffe Hospital	3	RTH08	678	540
Kettering General Hospital	2	RNQ51	462	337
King George Hospital	1	RF4DG	297	281
King's College Hospital	3	RJ250	696	627
King's Mill Hospital	2	RK5BC	572	425
Kingston Hospital	2	RQY57	438	365
Leeds Neonatal Service ³	3	RR801	1379	1003
Leicester General Hospital	1	RWEAK	184	36
Leicester Royal Infirmary	3	RWEAA	353	283
Leighton Hospital	2	RBT20	273	263
Lincoln County Hospital	2	RJL50	366	324
Lister Hospital	2	RWH01	614	550

Liverpool Women's Hospital	3	REP01	1197	1156
Luton & Dunstable Hospital	3	RC971	893	805
Macclesfield District General Hospital	2	RJN71	147	123
Maidstone General Hospital	1	RPA27	212	186
Manor Hospital*	2	RBK02	304	292
Medway Maritime Hospital	3	RVVMD	835	737
Milton Keynes Foundation Trust Hospital	2	RD816	332	320
New Cross Hospital	3	RL403	440	396
Newham General Hospital	2	RNHB1	463	423
Norfolk & Norwich University Hospital	3	RM102	815	706
North Devon District Hospital	1	RBZ12	230	199
North Manchester General Hospital	1	RW602	368	279
North Middlesex University Hospital	2	RAPNM	347	309
Northampton General Hospital	2	RTHC2	129	112
Northwick Park Hospital	2	RV383	540	451
Nottingham City Hospital	3	RHALB	554	519
Nottingham University Hospital (QMC)	3	RTG09	916	562
Ormskirk District General Hospital	2	RVY02	202	185
Peterborough City Hospital	2	RGN66	606	588
Pilgrim Hospital	1	RWD2W	451	343
Pontefract General Infirmary	2	RGD08	281	237
Poole General Hospital	2	RD300	356	327
Princess Alexandra Hospital	2	RQWG0	376	312
Princess Anne Hospital	3	RHM12	951	849
Princess Royal Hospital	1	RWA02	289	247
Princess Royal University Hospital	1	RG303	195	169
Queen Alexandra Hospital	3	RHU03	524	458
Queen Charlotte's Hospital	3	RQN03	506	355
Queen Elizabeth II Hospital	1	RWH20	353	264
Queen Elizabeth the Queen Mother Hospital	1	RPC19	220	196
Queen Elizabeth Hospital, Gateshead	1	RR7EN	236	212
Queen Elizabeth Hospital, King's Lynn	2	RCX70	369	346
Queen Elizabeth Hospital, Woolwich	2	RG222	416	405
Queen Mary's Hospital, Sidcup	1	RGZ01	299	260

Queen's Hospital, Burton on Trent*	1	RJF02	71	68
Queen's Hospital, Romford	2	RF4QH	612	402
Rochdale Infirmary	2	RT204	191	157
Rosie Maternity Hospital, Addenbrookes	3	RGT01	997	840
Rotherham District General Hospital	2	RFRPA	327	227
Royal Albert Edward Infirmary	2	RRF02	245	200
Royal Berkshire Hospital	2	RHW01	515	484
Royal Blackburn Hospital	3	RW5AA	307	267
Royal Bolton Hospital	3	RMC01	360	327
Royal Cornwall Hospital	2	REF12	682	622
Royal Derby Hospital	2	RTGFG	369	309
Royal Devon & Exeter Hospital	2	RH801	695	613
Royal Hampshire County Hospital	2	RN101	326	288
Royal Lancaster Infirmary	2	RTX02	146	134
Royal Oldham Hospital	2	RT203	308	259
Royal Preston Hospital	3	RXN02	445	368
Royal Shrewsbury Hospital	2	RXWAS	583	555
Royal Surrey County Hospital	1	RA201	253	234
Royal Sussex County Hospital	3	RXH01	519	308
Royal United Hospital	2	RD130	636	564
Royal Victoria Infirmary	3	RTD02	673	569
Russells Hall Hospital	2	RNA01	332	304
Salford Royal Hospital	3	RM301	359	334
Salisbury District Hospital	2	RNZ02	217	167
Sandwell General Hospital	1	RXK01	237	195
Scarborough General Hospital	1	RCC25	245	202
Scunthorpe General Hospital	2	RJL32	519	438
South Tyneside District Hospital*	1	RE9GA	79	76
Southend Hospital	2	RAJ01	294	276
Southmead Hospital	3	RVJH4	2522	2203
St George's Hospital	3	RJ701	574	481
St Helier Hospital	2	RVR05	686	623
St Mary's Hospital, IOW	2	RHU28	305	281St
Mary's Hospital, London	2	RV3CP	419	333
St Mary's Hospital, Manchester	3	RW3SM	802	639
St Michael's Hospital	3	RA707	2707	2604

St Peter's Hospital	3	RTK01	832	717
St Richard's Hospital	2	RPR01	292	238
Staffordshire General Hospital	1	RRE01	166	135
Stepping Hill Hospital	2	RWJ01	264	215
Stoke Mandeville Hospital	2	RXQ02	412	346
Sunderland Royal Hospital	3	RLNGL	351	327
Tameside General Hospital	2	RMP01	262	220
Taunton & Somerset Hospital	2	RBA11	468	369
The Jessop Wing, Sheffield	3	RHQPH	730	582
The Royal Free Hospital	1	RAL01	358	330
The Royal London Hospital – Constance Green	3	RNJ00	116	53
The Royal London Hospital – Elizabeth Ward	3	RNJ12	427	322
Torbay Hospital	1	RA901	346	305
Trafford General Hospital ⁴	1	RM401	10	9
Tunbridge Wells Hospital	2	RWF01	329	261
University College Hospital	3	RRV11	774	562
University Hospital Coventry*	3	RKB01	122	105
University Hospital Lewisham	2	RJ224	309	263
University Hospital of North Durham	2	RXPCP	256	199
University Hospital of North Staffordshire	3	RJEHQ	316	299
University Hospital of North Tees	3	RTRNT	355	290
University Hospital of South Manchester	3	RM202	304	272
Victoria Hospital, Blackpool	2	RXL01	218	190
Wansbeck General Hospital	2	RTDAA	428	368
Warrington Hospital	2	RWWWH	417	387
Warwick Hospital*	1	RKB04	3	3
Watford General Hospital	2	RWG02	967	897
West Middlesex University Hospital	1	RFW01	432	399
West Suffolk Hospital	1	RGR50	368	332
Wexham Park Hospital	2	RD750	527	507
Whipps Cross University Hospital	2	RGCKH	387	355
Whiston Hospital	2	RBN01	294	273
Whittington Hospital	2	RKEQ4	397	345

William Harvey Hospital	3	RWF37	405	331
Worcestershire Royal Hospital	2	RWP50	540	441
Worthing Hospital	1	RPL04	484	429
Yeovil District Hospital	1	RA430	184	175
York District Hospital	2	RR853	95	62

¹ *Royal Blackburn Hospital and Burnley Hospital merged in November 2010 to form the Lancashire Women and Newborn Centre. For this report, the data from these two units is shown separately and the data from the new merged unit is not included.*

² *James Cook University data includes that of Friarage Hospital*

³ *St James Hospital, Leeds and Leeds General Infirmary merged during 2010 to form the Leeds Neonatal Service*

⁴ *Trafford General closed during January 2010*

Appendix D: Examples of reported changes in practice

National Neonatal Audit Programme: Changes in practice prompted by participation in the audit as reported by units – some comments received	
Topic	Comment
General	“All staff receive regular feedback on the NNU’s performance and recommendations for areas of clinical and data quality improvement are discussed and formulated. The NNAP report is discussed at Child Health Directorate Audit meetings” “We are planning to review the audit results at our local neonatal forum meeting. We are currently discussing early care guidelines which will include early administration of surfactant and early measurement of temperature” “In the past 12 months we have worked on improving our documentation regarding consultation with parents within 24 hours and also on our documentation and support of breast feeding” “It has been beneficial in ensuring that things that are being audited are more formally documented and recorded. Previously they may have been done but not clearly documented or not recorded in an easily accessible form” “Staff are reminded to record dates and times for all observations and clinical entries, including discussions with parents”

National Neonatal Audit Programme: Changes in practice prompted by participation in the audit as reported by units – some comments received	
Topic	Comment
Temperature	“We have-audited our practice regarding admission temperature, and have designed flyers complemented with real-time pictures showing how to conserve body heat in preterm neonates in the delivery suite” “The number of babies with suboptimal temperatures has decreased as more emphasis is being placed on avoiding hypothermia post delivery” “Better attention to first temperature, with local root cause analysis form if <36.5C” “Temperature recorded within 1 hour – we scored 88%, however we felt this is actually done 100% of the time. Again, this is about accurate documentation of activities. This is being incorporated within the medical training and education schedule which should return more favourable percentages” “Redesign of admission forms to emphasise importance of temperature recording”
Receipt of mother’s milk	“We have encouraged mothers to express breast milk, even if they do not want to breast feed” “We scored 35% on babies under 33 weeks gestational age being discharged on breast milk. We have now arranged for two senior staff nurses and two nursery nurses to attend the UNICEF three day breastfeeding course this month. They will then be link nurses for breastfeeding. We have also arranged for the Early Start staff to visit the unit weekly. We hope to see significant improvement over the coming year” “We have identified lapses in breast feeding support and will try to enhance this in the future”

National Neonatal Audit Programme: Changes in practice prompted by participation in the audit as reported by units – some comments received	
Topic	Comment
Parental consultation	“We are now more consciously seeking out parents to talk to them after admission of their baby to the neonatal unit. We have also altered the neonatal documentation to ensure that there is a clear area to document the first conversation with the parents” “Senior team see parents within 24 hours of admission and after any significant change – we scored 68%. Local audit of communication records was undertaken by the senior nursing team” “The admission document includes a colour coded sheet for recording discussions with parents within the first 24 hours after admission. Plans are in place to photocopy this to give to parents to improve ongoing communication”
Retinopathy of Prematurity	“Ophthalmologists input all data relating to ROP to ensure it is clear and accurate”
Two-year follow-up	“Although we were following most <30 week babies for 2 years we now have a designated clinic and more rigorous data collection. The NNAP has facilitated this”

Appendix E: NNAP Audit Questions 2011

1. Do all babies of less than or equal to 28⁺⁶ weeks have their temperature taken within an hour after birth?

Of these temperatures taken within an hour of birth to be banded into:

- >37.5°C
- 36.6°C to 37.4°C
- 36°C to 36.5°C
- 32°C to 35.9°C

and the numbers of babies less than or equal to 28⁺⁶ weeks falling into these categories reported.

2. Are all mothers who deliver their babies between 24⁺⁰ and 34⁺⁶ weeks gestation given any dose of antenatal steroids?
3. Are all babies <1501 g or a gestational age of <32⁺⁰ weeks at birth and still an in-patient undergoing first ROP screening as per the current guideline recommendations?
4. What proportion of babies of <33⁺⁰ weeks gestation at birth are receiving their mother's milk when discharged from a neonatal unit?
5. Is there a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission?"
6. Are all babies accessing neonatal services treated in their own normal Network clinical pathway (except where clinical reasons dictate)?
7. How many babies born between 32⁺⁰ to 36⁺⁶ weeks gestation and more than or equal to 37⁺⁰ weeks gestation receive transitional care (HRG4*), special care on a neonatal unit (HRG3), high dependency care (HRG2) or intensive care (HRG1)?
8. Are rates of normal survival at 2 years comparable in similar babies in similar units? (*in 2011 we are auditing babies of <30⁺⁰ gestation at birth*)
9. What percentage of babies admitted to a neonatal unit have:
 - one or more episodes of a pure growth of a pathogen from blood
 - one or more episodes of a pure growth of a pathogen from CSF
 - either a pure growth of a skin commensal or a mixed growth with >3 clinical signs at the time of blood sampling
10. What percentage of babies of more than or equal to 35⁺⁰ weeks gestation have an encephalopathy within the first 3 calendar days of birth?

**Please note: HRG4 also includes babies receiving special care procedures (e.g. IV antibiotics) on the post-natal wards with mother caring for the baby as well as care in a designated transitional care area.*



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