



Neonatal Intensive Care Outcomes Research

& Evaluation (NICORE)

Neonatal Care in

Northern Ireland, 2015

DATA REPORT

Produced on behalf of the Neonatal Network Northern Ireland (NNNI) by:

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NNNI Clinical Information Lead

Foreword

Since our last NICORE report we have been focusing primarily on improving the quality of our neonatal data particularly for key major neonatal morbidity outcomes associated with very preterm infants. I am therefore pleased to report demonstrable improvements and wish to thank neonatal staff for their sustained efforts in achieving this goal.

BadgerNet is now recognised as a useful tool to inform clinical practice across the NNNI with regular performance feedback driving our two ongoing quality improvement initiatives namely, the Thermal Education and Management Programme (T.E.M.P) and the Breastfeeding Initiative. The newly established 'Admission, Discharge and Transfers' Task and Finish Group' will also utilise the standardised reporting function in BadgerNet for ongoing monitoring of progress against agreed targets, particularly around decreasing term admissions to neonatal units in line with national priorities.

Our newly appointed Allied Health Professionals (AHPs) are also using BadgerNet to identify babies for assessment and to record each specialist review. Going forward, the NICORE team will work with AHPs and Clevermed to tailor the BadgerNet to AHP professional information and reporting needs.

We continue to export data to the Vermont Oxford Network (VON) very low birthweight (VLBW) database and your VON Centre report will supplement this 2015 NICORE data report. However, remember VON datasets are collected in a different way to NICORE data and therefore the two datasets cannot be directly compared. A NNNI information day is planned for next year to explore how we can make better use of the wealth of available perinatal information.

The data presented in this NICORE report once again focuses on key activities, processes of care and outcomes for infants born in 2015 and admitted to a neonatal unit within NNNI. We present survival with no major neonatal morbidity data for 2015 infants < 32 weeks' gestation and will build on this in subsequent years. Our NNNI quality dashboard will continue to evolve in line with local and national priorities and will be available within the BadgerNet system for quarterly network reporting.

We are currently looking at ways to directly download BadgerNet data from Health & Social Care (HSC) Trusts to the secure data warehouse at Public Health Agency (PHA). This will provide exciting opportunities for further quality dashboard development and for conducting collaborative, longitudinal outcome studies using data linkage to other datasets via the Honest Broker Service.

This year, to complement the clinical data presented we also report on the key findings of the NNNI parental engagement survey which showcases the extremely high quality of neonatal care provided in Northern Ireland despite increasing pressures within the National Health Service (NHS). Parental feedback has been integrated into service improvement at unit level across NNNI and these positive changes to enhance parents' experiences are highlighted in Section 6.0 of this report. NNNI parents and professionals have also collaborated with Queen's University Belfast and TinyLife to develop a web resource to support parents of infants discharged home from a neonatal unit.

We hope that you make use of this report. As always, we welcome your feedback and suggestions for improving the content of this report in terms of both relevance and clarity.

Said helen

Dr David Millar Clinical Information lead NNNI

Summary of Main Findings

1. Key NICORE clinical issues

• Quality dashboard - NNAP (National Neonatal Audit Programme)¹

Term admissions: Regionally 4.0% of live born term (\geq 37 weeks' gestation) infants were admitted to a neonatal unit. This equated to 706 Intensive Care (IC) days, 1025 High Dependency Care (HDC) days, 2666 Special Care (SC) days and 100 Normal Care (NC) days provided for 894 infants. Reducing term admissions to neonatal care is a key indicator for the NHS outcomes framework 2016 to 2017.² Four key areas relating to term admissions, identified nationally as most frequently reported reasons for admissions are hypoglycaemia, jaundice, respiratory conditions and Hypoxic Ischaemic Encephalopathy (HIE) suspected or confirmed.³

National figures, based on NNUs in England 2011 to 2014³ demonstrated that the primary reason reported for term admissions to neonatal care was 12% for hypoglycaemia (NNNI 2015 6.2%); 6% management of jaundice (NNNI 2015 2.8%); and 25% for management of respiratory symptoms (NNNI 2015 36.2%). During 2017/18 the NNNI 'Admission, discharge and Transfer Task and Finish Group' will be looking at ways to reduce preventable term admissions to neonatal thereby avoiding separation of the mother and baby.

Location of birth for infants < 27 weeks' gestation: Regionally, 68.8% of infants < 27 weeks' gestation were born in RMH.

Antenatal Steroids: Regionally, where reported 89.2% of mothers who delivered between 24 and 34 weeks' gestation received antenatal steroids. This figure is above the NNAP performance of 85.7%. However, when missing data are included in this calculation the figure drops to 76.4% which is below the NNAP performance of 85.1% during the same time frame (NNAP standard: 85%).⁴

Antenatal Magnesium Sulphate: Regionally, where reported 65.9% of infants < 30 weeks' admitted to a neonatal unit were exposed to antenatal magnesium sulphate within 24 hours of

birth. From 2016 onwards this audit measure will be included in NNAP and recommended performance standards will be set.

Temperature taken within one hour of birth: Regionally, where reported 59.8% of infants < 32 weeks' gestation had their temperature recorded as being taken within one hour at birth. This falls below the NNAP performance of 94.2%. However, when missing data are included in this calculation the figure drops to 52.8% which is below the NNAP performance of 93.7% during the same time frame (NNAP standard: 98 to 100%).⁴

Normothermia (36.5 to 37.5 °C): Regionally, where temperature was recorded within one hour of birth, less than half (47.7%) of infants < 32 weeks' gestation were normothermic. This falls below the NNAP performance of 61.7% (NNAP Standard: 90%).⁴ In July 2015, the Thermal Education and Management Programme (T.E.M.P) study was established with an aim to increase normothermia on admission to a neonatal unit by 5% per year to a 90% performance target. A standardised thermoregulation BadgerNet report was compiled and the T.E.M.P study formally commenced in January 2016.

Screening for Retinopathy of Prematurity (ROP): Regionally, 96.6% of eligible infants, (who survived to ROP screen due date and were in hospital at that time) had at least one ROP screen recorded on BadgerNet. NNAP data for 2015 showed that 97.5% of eligible infants had at least one screening for ROP recorded with 93% of infants screened 'on time' including 13% of infants who were screened after neonatal discharge. (NNAP Standard: 100% of eligible infants screened within the time windows).⁴

Blood/Cerebrospinal fluid (CSF) Cultures: Regionally, 58.4% of infants < 32 weeks' gestation had at least one blood culture (58.8% blood culture or CSF) recorded on BadgerNet. This is not felt to accurately reflect practice. This is an issue which is not exclusive to NNNI. During the same time-period NNAP reported a total of 71181 blood and CSF cultures taken recorded for 95325 infants (109376 admissions) with significant concerns reported relating to the completeness and quality of the data.³ In an attempt to increase compliance the NNAP requested a declaration from units that all blood culture results were entered onto BadgerNet which facilitated comparisons between units where data were known to be complete. Until data quality improves in NNNI, we will not be reliably able to derive sepsis and infection

data. It should be noted that sepsis information entered onto BadgerNet in 'free text' for inclusion in the discharge letter is not downloaded to NICORE for analyses.

Mother's own milk at discharge: Regionally, where reported 37.9% of infants of < 33 weeks' gestation (single admission to a neonatal unit) were receiving their own mother's milk (any) when discharged home. This is below the NNAP performance of 58.9%. However, when missing data are included in this calculation the NNNI figure drops slightly to 36.1%. This is substantially lower that the NNAP performance of 58.4% during the same time period (NNAP Standard: not set yet).⁴ A NNNI Breast feeding initiative is ongoing and improvements in breastfeeding support have been implemented across units in response to parent feedback. It is anticipated that these efforts will be reflected in our 2016 data report.

Consultation with parents: Regionally, 65.8% of infants had documented evidence of a consultation with parents by a senior member of the neonatal team of which 85.7% took place within 24 hours of first admission giving an overall performance figure of 48%. In comparison to NNAP, 88.3% of infants had a documented consultation within 24 hours (NNAP Standard: 100%).⁴ A senior member of the neonatal team should be defined as a consultant or second tier medical trainee, or a nurse practitioner operating in such a role. This may be a reflection of record of consultation not being entered onto BadgerNet.

• Mortality, key morbidities and survival with no major morbidity

As highlighted before, key neonatal morbidity data in some areas have been inadequately coded on BadgerNet. The data for 'cause of death' are, on the whole, missing. This concern will be raised at NNNI Board level. We have added, for the first time, survival free of major neonatal morbidity in gestational age cohorts and this analysis is dependent on key neonatal morbidity data being accurately coded.

• Activity

Regionally, there has been a small increase in the number of infants receiving neonatal care from 1790 (2014) to 1851(2015). The proportion of live born infants receiving neonatal care has also increased slightly from 7.3% (2014) to 7.6% (2015). The total number of recorded level of care days has fallen by 12.4% since 2014, from 27590 days (2014) to 24180 (2015) days. However, during 2015, for discharged infants, the total level of care days registered on

BadgerNet was 24125 compared to 28783 days generated from admission and discharge dates. In addition, 342 admissions had no levels of care days recorded on BadgerNet.

2. Key NICORE data quality issues

Within the 2015 data set, quality issues persist with respect to recording of daily data and therefore the subsequent derivation of levels of care days. Completeness of 'ad hoc' events such as cranial ultrasound requests and results; blood and CSF culture requests and results; and ROP screens and results, require attention. Data quality with respect to: consultation with parents, cause of death and necrotising enterocolitis are also below acceptable standards. Arrangements should be made at local level to ensure data completeness. Lack of robust data in these areas lowers the usefulness of these data to inform decision making particularly if missing data are considered 'not done' in performance calculations for the neonatal quality dashboard. This includes reporting of administration of antenatal steroids, magnesium sulphate, temperature taken within one hour of birth and documented evidence of consultation with parents all of which had more than 10% missing data. However, it is anticipated that as a result of continued efforts to improve data robustness progress in data quality will be evident in the 2016 dataset.

3. Parental engagement

Across NNNI neonatal staff are to be congratulated for delivery of a high quality service despite increased pressures within neonatal units and the wider NHS. Changes in response to parental feedback are reported across NNNI and further opportunities for improvement have been identified. For 2017/18 the primary focus will be on breastfeeding support, increasing caregiver confidence, provision of information on help with expenses and improved communication.

4. The way forward

Under the umbrella of the NNNI, the NICORE team will continue to:

- Process regional discharge surveys and to feedback to neonatal units annually;
- Collate Vermont Oxford Network (VON) VLBW datasets; and
- Develop relevant dashboards and reports in liaison with neonatal units and Clevermed Ltd.

Section 1.0 Introduction

1.1 Scope

This report provides information and analyses for all infants who were born between 1st January 2015 (00:01) and 31st December 2015 (23:59) and admitted to a neonatal unit (NNU), within the Neonatal Network Northern Ireland (NNNI), for intensive care (IC), high dependency care (HDC) or special care (SC). This report excludes neonatal unit (NNU) admissions during 2015 where the infant was born in 2014 and includes NNU admissions during 2016 for those infants born in 2015. Denominator data for live births (resident and non- resident live infants born in NI hospitals, at home or en-route) have been sourced from the Northern Ireland Maternity Administration System (NIMATS) held by the Public Health Agency (PHA). All infants are allocated to calendar year by date of birth.

1.2 Categories of Neonatal Unit and abbreviations⁵ (Appendix One)

Neonatal Intensive Care Unit (NICU): Royal Maternity Hospital (RMH).

Local Neonatal Unit (LNU): Altnagelvin Area Hospital (ALT), Antrim Area Hospital (ANT), Craigavon Area Hospital (CAH), Ulster Hospital (ULST).

Special Care Unit (SCU): Daisy Hill Hospital (DH), South West Acute Hospital (SWA).BNNS: BadgerNet Neonatal System.

1.3 Report focus

- Data Completeness & Quality Assurance
- Neonatal Activity & Workloads
- NNNI Quality Dashboard
- Neonatal Short-term Outcomes: Mortality and Morbidity
- Parental Engagement
- Conclusions & Recommendations

This report should be read in conjunction with the Vermont Oxford Network (VON) report for your neonatal unit, particularly for nosocomial sepsis rates, cranial ultrasounds on or before 28 days of life and screening for retinopathy of prematurity (ROP). For data definitions you should refer to BNNS data dictionary which is available via the BadgerNet platform.

Section 2.0 Data Completeness & Quality Assurance

2.1 Scope

This section provides an overview of data completeness and quality for infants born during 2015 and admitted to neonatal care. These findings should be considered when interpreting the neonatal data presented.

2.2 Data completeness summary

- Regionally, 2129 of 2193 (97%) of admissions were registered on BNNS, with range 76.8% to 100% across NNUs. Two NNUs appeared to have duplicate entries equating to four records on BNNS. Across NNUs these findings are similar to 2014.
- Overall, 2128 of 2129 (99.95%) of admissions registered on BNNS were also discharged on BNNS (i.e. date and time of discharge were recorded). Compared to 2014 data, this represents a statistically significant improvement of 2.05% with only one admission not discharged on BNNS. X² (1, N = 4196) = 48.838, p < 0.01).
- In total, 1835 of 1850 (99.2%) of infants registered on BNNS had a complete infant journey (i.e. all episodes of care/admissions). In one case the destination on discharge was unknown.
- 2120 of 2129 (99.6%) of admissions had health and care (H&C) numbers recorded on BNNS. This has improved from 2010 of 2067 (97.2%) for 2014 data. However, for 2013 data we achieved 100% H&C numbers recorded on BNNS.
- Across units 343 of 2129 (16.1%) of admissions (episodes of care) did not have any level of care days recorded. These admissions correlated to 3269 days as generated by BNNS Length of stay.
- There has been a decrease in the number of coding errors for 'Normal Care' from 1171 days (2014) to 289 days (2015).

- Discharge destination after first admission to neonatal care was missing for one of 1851 (0.05%) cases. This is greatly improved from 2.2% in 2014.
- The proportion of missing data was ≥ 10% for cause of death (71.4%), consultation with parents within 24 hours (34.2%), antenatal magnesium within 24 hours of birth < 30 weeks' gestation (25.4%), antenatal steroid administration to mothers who delivered between 24 and 34 weeks' gestation (14%), admission temperature taken within one hour of birth for infants < 32 weeks' gestation (11.6%) and supplemental oxygen on discharge home/postnatal/foster care (11.7%). Overall, 33.2% of infants < 32 weeks' gestation had no record of a cranial image in BNNS with six infants diagnosed with IVH having no recorded cranial image. No record of a blood cultures was recorded for 58.6% of infants < 32 weeks' gestation.

2.3 Admissions and Discharges

Table 1	Admissions	(episodes	of	care)	registered	on	BNNS	compared	to
	NNU admiss	ion books.							

NNU	Episodes Admission book	Episodes BNNS
ALT	310	310 (100%)
ANT	292	295 (duplicates)
CAH	370	347 (93.7%)
DH	177	136 (76.8%)
RMH	586	583 (99.5%)
SWAH	128	127 (99.2%)
ULST	330	331 (duplicates)
NNNI	2193	2129 (97.1%)

Table 2Complete infant journey registered on BNNS.

Episodes of care (admissions) Registered on BNNS.	2129	
Infants Registered on BNNS	1851	
Episodes (admissions) Registered and Discharged on BNNS.	2128 of 2129	
	(99.95%)	
Completed infant journey i.e. all episodes of care (admissions)	1835/1850 (99.2%)	
for that infant registered on BNNS.	1 NK	

• Discharge

Overall, 2128 of 2129 (99.95%) of admissions registered on BNNS were also discharged on BNNS (i.e. date and time of discharge were recorded).

• Length of Stay (LOS)

In 1313 of 2129 (61.7%) admissions (episodes of care) the total level of care days registered was equal to the length of stay generated by BNNS from "age in minutes at discharge minus age in minutes at admission". A further 351 of 2129 (16.5%) admissions (episodes of care) were one level of care day short when compared to length of stay. In 342 cases there were no levels of care days recorded for the full admission (episode of care). The total length of stay calculated by BNNS for these cases was 3364 days ranging from one to 429 days with mean (SD) 9.78 (25.69), mode (2 days) and median (5 days).

For discharged infants, the total level of care days registered on BNNS was 24125 compared to 28783 days generated from BNNS from 'age in minutes on discharge minus age in minutes on admission.' Individual NNU data are available from NICORE upon request.

Section 3.0 Neonatal Activity & Workloads

3.1 Scope

This section describes the population of infants admitted to neonatal care in terms of gestation, birthweight and levels of care provided. During 2015, 1851 live-born infants were admitted to a neonatal unit for specialist care. This equates to 76 infants per 1,000 live births in NI. For those infants admitted 48 (2.6%) were extremely preterm (< 28 weeks' gestation), 202 (10.9%) were very preterm (28 to 31 weeks' gestation), 229 (12.4%) were moderately preterm (32 to 33 weeks' gestation) and 485 (26.2%) were late preterm (34 to 36 weeks' gestation). The remaining 894 infants (48.3%) were term (\geq 37 weeks' gestation). In terms of birthweight 65 (3.5%) were < 1,000 g, 129 (6.9%) were 1000 to 1499 g, 623 (33.7%) were 1500g to 2499g and 1033 (55.8%) were \geq 2500 g. Birthweight was unavailable for one infant. The majority of infants 1577 (85.2%) were singletons and 269 infants (14.5%) were from multiple pregnancies (244 twins and 25 triplets). One-hundred and seventy-nine (58.3%) of infants were male.

Table 3	Live born infants in NI & number of infants admitted to neonatal care by
	gestation (completed weeks).

Gestation	*Live born infants	Infants
	NI	receiving neonatal care
<22	7	0
22	1	0
23	10	3
24	8	5
25	10	9
26	18	15
27	17	16
Sub-total EPT	71	48 (67.6%)
28	34	32
29	33	34
30	53	53
31	86	83
Sub-total VPT	206	202 (98.1%)
32	97	91
33	132	131
Sub-total MPT	229	222 (96.9%)
34	255	204
35	388	144
36	663	137
Sub-total LPT	1306	485 (37.1%)
#≥37 T	22,657	894 (4.0%)
Total	24,469	1851 (7.6%)

*NIMATS via Business Objects (PHA, Health Intelligence), January 2016, ~ Discrepancies across data sources

Key: gestational age categories⁶

Extremely preterm (less than 28 weeks' gestation) EPT
Very preterm (28 to 31 weeks' gestation) VPT
Moderately preterm (32 to 33 weeks' gestation) MPT
Late preterm (34 to 36 weeks' gestation) LPT
Term (greater than or equal to 37 weeks' gestation) T

For extremely preterm infants < 28 weeks' gestation, 48 of 71 (67.6%) received neonatal care. It is important to note that this figure includes eight infants \leq 22 weeks' gestation. When these infants are removed, 48 of 63 (76.2%) infants 22 to 27 weeks' gestation received neonatal care. When data for this group are limited to those infants \geq 24 weeks' gestation, 45 of 53 (84.9%) infants 24 to 27 weeks' gestation received neonatal care. During the 2015 data collection for VON (birthweight 401 to 1500g or 22(0) or 29(6) weeks' gestation, 21 delivery room deaths were reported for the five participating centres (ALT, ANT, CAH, RMH and ULST).

Table 4BAPM (2011) level of care day one of first admission to neonatal care by
NNU.

NNU	Infants	Level 1 (IC)	*Level 2 (HDC)	Level 3 (SC)	Normal Care	Not known
ALT	286	63	60	163	0	0
ANT	258	94	70	93	0	1
CAH	288	70	94	123	0	1
DH	90	5	21	50	2	12
RMH	533	230	119	141	1	42
SWA	112	2	13	97	0	0
ULST	284	95	165	19	0	5
NNNI	1851	559	542	686	3	61

* Babies awaiting admission swab results have been coded level 2 in ULST.

	First Admissions	Subsequent	All
		Admissions	Admissions
Medical IC	826 (44.6%)	56 (20.2%)	882 (41.4%)
Medical HDC	591 (31.9%)	74 (26.7%)	665 (31.3%)
Medical SC	395 (21.3%)	105 (37.9%)	500 (23.5%)
Surgical care	8 (0.4%)	7 (2.5%)	15 (0.7%)
Cardiac care	11 (0.6%)	2 (0.7%)	13 (0.6%)
Tertiary specialist investigation	4 (0.2%)	0	4 (0.2%)
Social care	0	2 (0.7%)	2 (0.1%)
Back transfer continuing medical IC	0	3 (1.1%)	3 (0.1%)
Back transfer continuing medical HDC	0	7 (2.5%)	7 (0.3%)
Back transfer for continuing SC	0	19 (6.9%)	19 (0.9%)
Transitional Care	1 (0.1%)	0	1 (0.0%)
Other	15	2 (0.7%)	17 (0.8%)
Missing	0	1	1
NNNI	1851	278	2129

Table 5NNNI admission type (category of care at the time of start of episode):first admissions, subsequent admissions and all admissions to NC.

Table 6NNNI NC admissions (episodes) & activity (BAPM 2011 levels of care)
by NNU – all admissions.

NNU	Total Episodes	Episodes where no levels of care recorded	Level 1 (IC) days	*Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
ALT	310	45 (14.5%)	486	1084	2231	0	3801
ANT	295	25 (8.5%)	478	718	2648	63	3907
CAH	347	52 (15.0%)	427	822	2846	46	4141
DH	136	18 (13.2%)	40	189	862	25	1116
RMH	583	119 (20.4%)	1764	2237	2377	59	6437
SWA	127	27 (21.3%)	4	73	840	0	917
ULST	331	57 (17.2%)	504	1028	2233	96	3861
NNNI	2129	343 (16.1%)	3703	6151	14037	289	24180

*Multiple admissions across NNUs. * Babies awaiting admission swab results have been coded level 2 in ULST.

NNU	Infants	Level 1	*Level 2	Level 3	Normal	Total
		(IC) days	(HDC) days	(SC) days	Care days	LOC
						days
ALT	286	457	579	2050	0	3086
ANT	258	455	499	2025	49	3028
CAH	288	392	590	2012	43	3037
DH	90	25	102	385	19	531
RMH	533	1626	1992	2265	57	5940
SWA	112	4	19	646	0	669
ULST	284	484	560	1657	66	2767
NNNI	1851	3443	4341	11040	234	19058

Table 7NNNI NC admissions & activity (BAPM 2011 levels of care days) by
NNU – first admissions to neonatal care.

* Babies awaiting admission swab results have been coded level 2 in ULST.

Table 8Live born infants, NNNI infants admitted to Neonatal Care, admissions
(episodes) & activity (BAPM 2011 levels of care) by gestational age
group (completed weeks).

Gestational	Live	Infants	Episodes	Level	*Level	Level	Normal	Tot
age group	born	Admitted		1	2	3	Care	LOC
	infants	to NNU		(IC)	(HDC)	(SC)	days	days
				days	days	days		
< 28	71	48	84	740	1272	852	3	2867
\geq 28 & \leq 31	206	202	293	1394	2318	4717	33	8462
\geq 32 & \leq 33	229	222	263	449	729	2749	57	3984
\geq 34 & \leq 36	1306	485	528	414	807	3053	96	4370
≥37	22657	894	961	706	1025	2666	100	4497
NK	0	0	0	0	0	0	0	0
NNNI	24469	1851	2129	3703	6151	14037	289	24180

~ Length of stay 3 days no LOC recorded. * Babies awaiting admission swab results have been coded level 2 in ULST.

Table 9NNNI activity (BAPM 2011 Levels of care) by gestational age group
(completed weeks) – first admissions.

Gestational age group	Episodes	Level 1 (IC) days	*Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total Level of Care days
< 28	48	695	791	321	1	1808
\geq 28 & \leq 31	202	1325	1433	3214	25	5997
\geq 32 & \leq 33	222	429	613	2386	45	3473
\geq 34 & \leq 36	485	397	670	2795	79	3941
≥37	894	597	834	2324	84	3839
Total	1851	3443	4341	11040	234	19058

* Babies awaiting admission swab results have been coded level 2 in ULST.

Table 10	NNNI activity (BAPM levels of care) by birthweight group – first
	admissions to neonatal care.

Birth weight Group (g)	*Live Born Infants NI	NNU Infants	ALT	ANT	САН	DH	SWA	RMH	ULST	NNNI
≤999	79	65	4	5	5	0	1	44	6	65
1000 to 1499	134	129	26	19	28	3	0	39	14	129
1500 to 2499	1318	623	115	91	125	18	26	157	91	623
\geq 2500	22912	1034	141	143	130	69	85	294	172	1034
NK	26	1	0	0	0	0	0	0	1	1
Total	24469	1851	286	258	288	90	112	534	284	1852

*NIMATS via Business Objects (PHA, Health Intelligence), January 2016.

Table 11	First admissions to NNU by location of birth (inborn (IB) / Out-born
	(OB)).

NNU	IB	OB	NK	Total
ALT	281	5	0	286
ANT	239	19	0	258
CAH	279	9	0	288
DH	88	2	0	90
RMH	501	29	3	533
SWA	110	2	0	112
ULST	278	6	0	284
NNNI	1776	72	3	1851

Table 12	BAPM 2011 level of care on first day of admission to neonatal care
	inborn infants.

NNU	Not	Level 1	Level 2	Level 3	Level 4	Total
	known	(IC)	(HDC)	(SC)	(NC)	Infants
ALT	0	61	59	161	0	281
ANT	1	89	67	82	0	239
CAH	1	62	93	123	0	279
DH	12	5	20	49	2	88
RMH	37	215	111	137	1	501
SWA	0	2	11	97	0	110
ULST	5	94	160	19	0	278
NNNI	56	528	521	668	3	1776

Table 13BAPM 2011 level of care first day of admission to neonatal care
out-born infants.

NNU	Not known	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Level 4 (NC)	Total Infants
ALT	0	2	1	2	0	5
ANT	0	5	3	11	0	19
CAH	0	8	1	0	0	9
DH	0	0	1	1	0	2
RMH	4	13	8	4	0	29
SWA	0	0	2	0	0	2
ULST	0	1	5	0	0	6
NNNI	4	29	21	18	0	72

Table 14BAPM 2011 levels of care for out-born infants	- first admissions.
-------------------------------------------------------	---------------------

NNU	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Level 4 (NC)	Total
ALT	13	6	36	0	55
ANT	35	46	150	3	234
CAH	25	11	95	0	131
DH	2	5	4	0	11
RMH	135	122	68	4	329
SWA	0	4	11	0	15
ULST	7	47	52	0	106
NNNI	217	241	416	7	881

Table 15	BAPM 2011	levels of care	for out-born	infants -	all admissions.
	DIN NI AVII	ic vers of care	IOI Out-DOI II	manus -	an aumosions.

NNU	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Level 4 (NC)	Total
ALT	41	463	192	0	696
ANT	58	264	734	17	1073
CAH	59	233	683	2	977
DH	14	69	412	6	501
RMH	224	266	152	5	647
SWA	0	50	187	0	237
ULST	26	489	580	23	1118
NNNI	422	1834	2940	53	5249

Altnagelvin Local Neonatal Unit (ALT)

Table 16Neonatal activity by gestational age group (completed weeks) – all
admissions ALT.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC)	Level 2 (HDC) days	Level 3 (SC)	Normal Care days	Total LOC days
			days		days		
< 28	7	0	52	309	72	0	433
\geq 28 & \leq 31	41	1	270	492	656	0	1417
\geq 32 & \leq 33	41	5	66	62	528	0	656
\geq 34 & \leq 36	85	18	39	52	546	0	637
≥37	136	21	59	170	429	0	658
NK	0	_	0	0	0	0	0
Total	310	45	486	1084	2231	0	3801

QA: 45 of 310 (14.5%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 17Neonatal activity by gestational age group (completed weeks) – first
admissions ALT.

Gestational age group	Episodes	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	2	40	129	59	0	228
\geq 28 & \leq 31	33	260	272	586	0	1118
\geq 32 & \leq 33	39	66	31	494	0	591
\geq 34 & \leq 36	80	32	43	522	0	597
≥37	132	59	104	389	0	552
NK	0	0	0	0	0	0
Total	286	457	579	2050	0	3086

Antrim Local Neonatal Unit (ANT)

Table 18Neonatal activity by gestational age group (completed weeks) – all
admissions ANT.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	11	0	29	139	181	2	351
\geq 28 & \leq 31	41	2	195	343	953	16	1507
\geq 32 & \leq 33	38	5	81	60	525	16	682
\geq 34 & \leq 36	89	10	91	89	615	17	812
≥37	116	8	82	87	374	12	555
NK	0	0	0	0	0	0	0
Total	295	25	478	718	2648	63	3907

QA: 25 of 295 (8.5%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 19Neonatal activity by gestational age group (completed weeks) – first
admissions ANT.

Gestational age	Episodes	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Normal Care	Total LOC days
group		days	days	days	days	
< 28	3	13	19	28	0	60
\geq 28 & \leq 31	27	191	256	620	12	1079
\geq 32 & \leq 33	35	78	59	496	12	645
\geq 34 & \leq 36	83	91	89	568	15	763
≥37	110	82	76	313	10	481
NK	0	0	0	0	0	0
Total	258	455	499	2025	49	3028

Craigavon Local Neonatal Unit (CAH)

Table 20Neonatal activity by gestational age group (completed weeks) – all
admissions CAH.

Gestational age group	Episodes	Episodes Total LOC	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Normal Care	Total LOC
		days = 0	days	days	days	days	days
< 28	17	1	65	278	312	1	656
\geq 28 & \leq 31	56	7	159	295	999	10	1463
\geq 32 & \leq 33	69	9	71	89	707	21	888
\geq 34 & \leq 36	88	13	42	80	422	10	554
≥37	117	22	90	80	406	4	580
NK	0	0	0	0	0	0	0
Total	347	52	427	822	2846	46	4141

QA: 52 of 347 (15.0%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 21Neonatal activity by gestational age group (completed weeks) – first
admissions CAH.

Gestational age	Episodes	Level 1 (IC)	Level 2 (HDC)	Level 3 (SC)	Normal Care	Total LOC days
group		days	days	days	days	
< 28	8	61	142	73	1	277
\geq 28 & \leq 31	43	158	228	741	10	1137
\geq 32 & \leq 33	57	63	72	613	19	767
\geq 34 & \leq 36	80	40	77	334	10	461
≥37	100	70	71	251	3	395
NK	0	0	0	0	0	0
Total	288	392	590	2012	43	3037

Daisy Hill Special Care Unit (DH)

Table 22Neonatal activity by gestational age group (completed weeks) – all
admissions DH.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	6	0	4	10	65	0	79
\geq 28 & \leq 31	22	3	7	55	286	3	351
\geq 32 & \leq 33	14	2	6	17	117	3	143
\geq 34 & \leq 36	33	2	10	56	226	8	300
≥37	61	11	13	51	168	11	243
NK	0	0	0	0	0	0	0
Total	136	18	40	189	862	25	1116

QA: 18 of 136 (13.2%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 23Neonatal activity by gestational age group (completed weeks) – first
admissions DH.

Gestational age group	Episodes	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	1	1	0	0	0	1
\geq 28 & \leq 31	0	0	0	0	0	0
\geq 32 & \leq 33	7	3	8	49	1	61
\geq 34 & \leq 36	25	9	50	177	7	243
≥37	57	12	44	159	11	226
NK	0	0	0	0	0	0
Total	90	25	102	385	19	531

Royal Maternity Neonatal Intensive Care Unit (RMH)

Table 24Neonatal activity by gestational age group (completed weeks) – all
admissions RMH.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	37	7	571	485	132	0	1188
\geq 28 & \leq 31	79	15	582	555	739	2	1878
\geq 32 & \leq 33	49	4	110	361	359	7	837
\geq 34 & \leq 36	124	21	147	386	542	27	1102
≥ 37	294	72	354	450	605	23	1432
NK	0	0	0	0	0	0	0
Total	583	119	1764	2237	2377	59	6437

QA: 119 of 583 (20.4%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 25Neonatal activity by gestational age group (completed weeks) – first
admissions RMH.

Gestational	Episodes	Level 1	Level 2	Level 3	Normal	Total LOC
age		(IC)	(HDC)	(SC)	Care	days
group		days	days	days	days	
< 28	32	566	485	132	0	1183
\geq 28 & \leq 31	73	550	514	717	2	1783
\geq 32 & \leq 33	42	104	331	319	7	761
\geq 34 & \leq 36	117	140	286	521	26	973
≥37	269	266	376	576	22	1240
NK	0	0	0	0	0	0
Total	533	1626	1992	2265	57	5940

South West Acute Special Care Unit (SWA)

Table 26Neonatal activity by gestational age group (completed weeks) – all
admissions SWA.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	2	0	0	7	28	0	35
\geq 28 & \leq 31	4	0	0	21	98	0	119
\geq 32 & \leq 33	7	2	0	19	59	0	78
\geq 34 & \leq 36	37	6	1	12	357	0	370
≥37	77	19	3	14	298	0	315
NK	0	0	0	0	0	0	0
Total	127	27	4	73	840	0	917

QA: 27 of 127 (21.3%) admissions (episodes of care) had no levels of care recorded for the full stay in the neonatal unit.

Table 27Neonatal activity by gestational age group (completed weeks) – first
admissions SWA.

Gestational age group	Episodes	Level 1 (IC) days	Level 2 (HDC) days	Level 3 (SC) days	Normal Care days	Total LOC days
< 28	0	0	0	0	0	0
\geq 28 & \leq 31	1	0	4	11	0	15
\geq 32 & \leq 33	2	0	0	0	0	0
\geq 34 & \leq 36	36	1	8	351	0	360
≥37	73	3	7	284	0	294
NK	0	0	0	0	0	0
Total	112	4	19	646	0	669

Ulster Local Neonatal Unit (ULST)

Table 28Neonatal activity by gestational age group (completed weeks) – all
admissions ULST.

Gestational age group	Episodes	Episodes Total LOC days = 0	Level 1 (IC) davs	*Level 2 (HDC) days	Level 3 (SC) davs	Normal Care davs	Total LOC davs
< 28	4	0	19	44	62	0	125
\geq 28 & \leq 31	50	1	181	558	986	2	1727
\geq 32 & \leq 33	45	3	115	121	454	10	700
\geq 34 & \leq 36	72	10	84	132	345	34	595
≥37	160	43	105	173	386	50	714
NK	0	0	0	0	0	0	0
Total	331	57	504	1028	2233	96	3861

* Babies awaiting admission swab results have been coded level 2 for two days.

Table 29Neonatal activity by gestational age group (completed weeks) – first
admissions ULST.

Gestational age	Episodes	Level 1 (IC)	*Level 2 (HDC)	Level 3 (SC)	Normal Care	Total LOC days
group		days	days	days	days	
< 28	2	14	16	29	0	59
\geq 28 & \leq 31	25	166	159	539	1	865
\geq 32 & \leq 33	40	115	112	415	6	648
\geq 34 & \leq 36	64	84	117	322	21	544
≥37	153	105	156	352	38	651
NK	0	0	0	0	0	0
Total	284	484	560	1657	66	2767

* Babies awaiting admission swab results have been coded level 2 for two days.

Gestational	ALT	ANT	CAH	DH	SWA	RMH	RVH	ULST	MT	CW	LV	H/ER	DW	Other	NK	NNNI
age group																
< 28	2	3	9	2	0	27	0	3	0	2	0	0	0	0	0	48
\geq 28 & \leq 31	33	25	39	5	0	69	1	24	0	3	0	1	0	2	0	202
\geq 32 & \leq 33	39	33	54	10	2	41	0	39	0	2	0	0	0	2	0	222
\geq 34 & \leq 36	78	80	80	26	35	115	1	64	0	4	0	1	0	1	0	485
\geq 37	129	98	99	57	73	251	0	149	5	19	4	3	3	0	3	894
NK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	281	239	281	100	110	503	2	279	5	30	4	5	3	5	3	1851

Table 30Location of birth by gestational age group (completed weeks).

H/ER: at home/en-route, MT: Mater, CW: Causeway, LV: Lagan Valley, DW Downe.

Table 31Location of birth by birthweight group, BWG (g).

BWG (g)	ALT	ANT	CAH	DH	SWA	RMH	RVH	ULST	MT	CW	LV	H/ER	Other	NK	NNNI
≤ 999	4	5	6	2	1	37	0	7	0	3	0	0	0	0	65
1000 to 1499	25	17	26	7	0	36	1	13	0	2	0	0	2	0	129
1500 to 2499	114	87	122	21	26	153	1	90	0	4	0	3	1	1	623
\geq 2500	138	130	127	70	83	277	0	168	5	21	4	2	2	2	1033
NK	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	281	239	281	100	110	503	2	279	5	30	4	5	5	3	1851

H/ER: at home/en-route, MT: Mater, CW: Causeway, LV: Lagan Valley.

	Place of	of Birth							
NNU 1 st	ALT	ANT	CAH	DHH	RMH	SWA	ULST	CW	Total
Admission									
ALT	0	0	0	0	0	0	0	0	0
ANT	0	2	0	0	0	0	0	0	2
САН	0	0	2	0	0	0	0	0	2
DHH	0	0	0	0	0	0	0	0	0
RMH	0	0	1	1	22	0	1	2	27
SWAH	0	0	0	0	0	0	0	0	0
ULST	0	0	0	0	0	0	1	0	1
Total	0	2	3	1	22	0	2	2	32
CW. Causa									

Table 32 Location of birth and first neonatal care for infants < 27 weeks' gestation.

CW: Causeway

KAQ: Location of birth and first neonatal care for infants < 27 weeks' gestation.

22 of 32 (68.8%) infants < 27 weeks' gestation were born in Royal Maternity.

27 of 32 (84.4%) infants < 27 weeks' gestation received their first admission to neonatal care in Royal maternity.

	Place o	of Birth							
NNU 1 st	ALT	ANT	CAH	DHH	RMH	SWA	ULST	CW	Total
Admission									
ALT	0	0	0	0	0	0	0	0	0
ANT	0	2	0	0	0	0	0	0	2
САН	0	0	2	0	0	0	0	0	2
DHH	0	0	0	0	0	0	0	0	0
RMH	0	0	0	1	11	0	0	0	12
SWAH	0	0	0	0	0	0	0	0	0
ULST	0	0	0	0	0	0	1	0	1
Total	0	2	2	1	11	0	1	0	17

Table 33 Location of birth and first neonatal care for infants < 26 weeks' gestation.

KAQ: Location of birth and first neonatal care for infants < 26 weeks' gestation.

11 of 17 (64.7%) infants < 26 weeks' gestation were born in Royal Maternity.

12 of 17 (70.6%) infants < 26 weeks' gestation received their first neonatal care in Royal Maternity.

Primary Reason	All Infants	Term Infants (> 37 weeks'	Term Infants
		(<u>2</u> 57 weeks	(<u>-</u> 57 weeks
		IB/OB	IB
Preterm	532 (28.8%)	1 (0.1%)	1 (0.1%)
Respiratory Disease	595 (32.2%)	322 (36.2%)	304 (35.8%)
Cardiovascular disease	54 (2.9%)	48 (5.4%)	46 (5.4%)
Failed oximetry testing	1 (0.1%)	1 (0.1%)	1 (0.1%)
Infection suspected/confirmed	119 (6.4%)	111 (12.5%)	108 (12.7%)
Jaundice	34 (1.8%)	25 (2.8%)	25 (2.9%)
Poor feeding or weight loss	33 (1.8%)	20 (2.2%)	20 (2.4%)
Hypoglycaemia	99 (5.4%)	55 (6.2%)	52 (6.1%)
Convulsions suspected/confirmed	13 (0.7%)	13 (1.5%)	13 (1.5%)
Other neurological disease	5 (0.3%)	5 (0.6%)	4 (0.5%)
Congenital anomaly suspected/confirmed	59 (3.2%)	46 (5.2%)	44 (5.2%)
Social issues/foster care	4 (0.2%)	4 (0.4%)	4 (0.5%)
Surgery	18 (1.0%)	12 (1.3%)	11 (1.3%)
Investigation	23 (1.2%)	22 (2.5%)	22 (2.6%)
Monitoring-short observation	102 (5.5%)	89 (10.0%)	87 (10.3%)
Poor condition at birth	50 (2.7%)	44 (4.9%)	38 (4.5%)
NAS suspected/confirmed	8 (0.4%)	7 (0.8%)	7 (0.8%)
HIE suspected/confirmed	27 (1.5%)	26 (2.9%)	24 (2.8%)
IUGR/SGA	31 (1.7%)	7 (0.8%)	7 (0.8%)
Birth trauma injury	8 (0.4%)	8 (0.9%)	7 (0.8%)
Maternal admission/emergency	9 (0.5%)	6 (0.7%)	6 (0.7%)
GIT disease	9 (0.5%)	8 (0.9%)	8 (0.9%)
Other metabolic disease	2 (0.1%)	1 (0.1%)	1 (0.1%)
Continuing care	7 (0.4%)	4 (0.4%)	4 (0.5%)
Re-admission	1 (0.1%)	1 (0.1%)	1 (0.1%)
Other	3 (0.2%)	3 (0.3%)	3 (0.4%)
Total	1846	889	848
Missing	5	5	5
Total	1851	894	853

Table 34Primary clinical reason for admission (first admissions to neonatal care).

Discharge destination First admission to NC	Infants
	First
	discharge
Home	956 (51.6%)
Foster care	14 (0.8%)
Ward	540 (29.2%)
Died	42 (2.3%)
Transfer to another hospital for continuing care/ higher medical care	176 (9.5%)
Transfer to another hospital for specialist care	16 (0.9%)
Transfer to another hospital for surgical care	50 (2.7%)
Transfer to another hospital for cardiac care	29 (1.6%)
Transfer to another hospital for ECMO	1 (0.1%)
Transferred to another hospital due to lack of equipment/cot space	3 (0.2%)
Transferred to another hospital for repatriation/closer to home	23 (1.2%)
Total	1850
NK	1
Total	1851

Table 35Discharge destination after <u>first admission</u> to neonatal care.

Section 4.0 NNNI Quality Dashboard

Benchmarking Key Audit Question	NNNI	NNAP ⁴
How many infants, live born at \geq 37 weeks' (term) gestation, received care in NI	894/22657 (4.0%)	-
NNUs?		
How many infants < 27 weeks' gestation were born outside the regional centre?	10/32 (31.3%)	-
How many infants < 27 weeks' gestation were born and received their first neonatal	5/32 (15.6%)	-
care outside the regional centre (Royal Maternity)?		
Were all mothers who delivered between 24 and 34 weeks' gestation given any dose	*514/576 (89.2%), 97 NR	15910/18550 (85.7%), 137 NR
antenatal steroid? Note: Three infants of 23 weeks' gestation (excluded).	514/673 (76.4%)	15910/18687 (85.1%)
How many live horn behing at < 20 weaks' contains admitted to a neopetal unit were	56/85 (65 09/) 20 NP	
now many live boll bables at < 50 weeks gestation admitted to a neonatal unit were avposed to antenatal magnesium within 24 hours of hirth	56/114 (49 1%)	-
Did all babies < 32 weeks' gestation have temperature taken within one hour of	100/333 (50 8%) <i>AA</i> NR	7351/7801 (94 2%) 57 NR
birth?	199/377 (52.8%)	7351/7846 (93.7%)
Temperature on admission $< 36^{\circ}$ C or un recordable	44/199 (22.1%)	648/7351 (8.8%)
Temperature on admission 36 to $36 4^{\circ}C$	53/199 (26.6%)	1403/7351 (19.1%)
Temperature on admission 36.5 to 37.5°C	95/199 (47.7%)	4537/7351 (61.7%)
Temperature on admission $> 37.5^{\circ}C$	7/199 (3.5%)	760/7351 (10.3%)
Did all babies <1501 g or gestational age < 32 weeks' gestation at birth undergo 1 st	Eligible 286/1851 (15.5%), 1 NR	
ROP screening as per the current guideline recommendations (survivors to screen	For survivors & in hospital at screen	8604/8821 (97.5%)
due date).	due date: 201/208 (96.6%).	Includes post discharge screens
At least one blood culture (BC) per infant (all)	726/1851 (39.2%)	
At least one blood culture (BC) or CSF culture per infant (all)	766/1851 (41.4%)	-
At least one blood culture (BC) per infant (\leq 32 week's gestation)	146/250 (58.4%)	
At least one blood culture (BC) or CSF culture per infant (< 32 weeks' gestation)	147/250 (58.8%)	
What proportion of infants < 33 weeks' gestation at birth, were receiving their own	72/190 (37.9%), 9 NR	3693/6268 (58.9%), 55 NR
mother's milk when discharged home from neonatal care? (Note: single admission)	72/199 (36.1%)	3693/6323 (58.4%)
Consultation with parents: Was there a documented consultation with parents by a	1219/1851 (65.8%) documented	51300/55840 (92%), 2237 NR
senior member of the neonatal team within 24 hours of admission (first episodes of	866/1011 (85.7%) within 24 hours	51300/58077 (88.3%) within 24
care)?	OI IIISt admission 26 (invalid time) 182 missing time	(Not comparable analysis)
	20 (mvand tine), 102 missing tine.	(1101 comparable analysis)

NNAP: National Neonatal Audit Programme; *Proxy – Mother received Magnesium Sulphate.

4.1 Scope

This section provides performance against agreed NNNI standards for key area of practice. Benchmarking with NNAP is presented where comparable data were available. The main dashboard data are expanded upon for three key indicators: normothermia on admission to a neonatal unit, mothers' milk at discharge home and screening for retinopathy of prematurity (ROP).

4.2 Normothermia on admission to a Neonatal Unit

Admission temperatures were recorded in 2008 of 2129 (94.3%) episodes of care. Overall, 1224 of 2008 (61.0%) infants were normothermic (core body temperature 36.5 to 37.5° C). One third (33.9%) of infants were hypothermic (admission temperature < 36.5 ° C), 226 (11.3%) (admission temperature < 36° C or unrecordable) and 454 (22.6%) (admission temperature 36 to 36.4° C). One-hundred and four infants (5.2%) were hyperthermic (admission temperature > 37.5). Table 38 provides a summary of achievement of admission normothermia for first admission neonatal care (split by location of birth) and for subsequent admissions.

Temperature C	First admission	s location of b	oirth	Subsequent admissions	Total
	Inborn	Outborn	Μ		
< 36 or unrecordable °C	203 (11.8%)	16 (22.5%)	0	7 (3.3%)	226 (11.3%)
36 to 36.4 °C	430 (24.9%)	5 (6.9%)	0	19 (9.1%)	454 (22.6%)
Hypothermic < 36.5 °C	633 (36.7%)	21 (29.5%)	0	26 (12.5%)	680 (33.9%)
Normothermic 36.5 to 37.5 °C	1009 (58.5%)	45 (63.4%)	2	168 (80.4%)	1224
					(61.0%)
Hyperthermic > 37.5 °C	83 (4.8%)	5 (6.9%)	1	15 (7.2%)	104 (5.2%)
Valid Total	1725	71	3	208	2008
Missing	51	1	0	69	121
Total	1776	72	3	278	2129

Table 36Normothermia on admission to a neonatal unit

M = Missing

4.3 Feeding at discharge home

Table 37 provides feeding data across NNNI for infants with a single admission to a NNU and subsequent discharge home.

NNU	Breast Milk	Breast milk	Any	Formula	Other	NR	Total
		& Formula	Breast Milk				
ALT	10	2	12 (31.6%)	25	1	1	39
ANT	9	2	11 (29.7%)	26	0	1	38
CAH	5	13	18 (40.9%)	26	0	1	45
DH	-	-	-	-	-	-	-
RMH	7	2	9 (26.5%)	25	0	3	37
SWA	0	0	0	1	0	0	1
ULST	9	13	22 (61.1%)	14	0	3	39
NNNI	40	32	72 (37.9%)	117	1	9	199

Table 37	Mother's milk at discharge home: single admission to NNU with direct
	discharge home for infants < 33 weeks' gestation by NNU.

4.4 Screening for retinopathy of prematurity (ROP)

Data for ROP screening were derived from 'individual ROP screen entries' and from the ROP audit form compiled by Ophthalmologists on discharge of an infant from Ophthalmology. Therefore these data may contain outpatient ROP screens. The BNNS standardised ROP report for NNNI data (for infant born in 2015) is available in Appendix Two. In all, 286 of 1851 (15.5%) (one birthweight not recorded) of infants admitted to NNUs were eligible for ROP screening. Twenty infants did not survive to the date that ROP screening was due (in line with Northern Ireland) guidance. For survivors to screen due date, 240 of 266 (90.2%) of infants had at least one ROP screen recorded on BNNS. Twenty-six infants had no record of an ROP screen. Of these, seven survived to ROP screen due date and were in a neonatal unit at the time: Ulster (4 infants), Royal maternity (3 infants – all died), 17 infants were discharged home or to foster care before the screen due date and two infants were discharged to another hospital (RBHSC and Letterkenny General Hospital). Overall, for survivors who were inpatients at screen due date: 201 of 208 (96.6%) had at least one ROP screen recorded on BNNS.

Note: Timing of ROP screen has not been considered in this analyses, however this is addressed in the BNNS standardised report (Appendix Two).

Section 5.0 Neonatal Outcomes: Mortality & Morbidities

5.1 Scope

This section provides an overview of mortality and key morbidity outcomes for infants born in 2015 and admitted to an NNNI neonatal unit.

5.2 Survival to discharge from NNNI neonatal units

Information on final outcome was available for 1836 (99.1%) of infants. Where information was available, the overall survival rate for infants born in 2015 and admitted to a neonatal unit was 97.3%. As expected survival was lowest at lower gestations, with 66.7% survival in extremely preterm infants (< 28 weeks' gestation) compared to 98.2% for term infants (\geq 37 weeks' gestation). For very low birth weight infants (< 1500 g birthweight) 88.0% survived to discharge from NNNI neonatal units, information was unavailable for two infants.

Gestation	2015 Infants	2015 Infants	2015 VLBW	2015 VLBW
	receiving NC	receiving NC Survivors	(< 1500g)	(< 1500g)
	C C			Survivors
23	3	1(33.3%)	3	1 (33.3%)
24	5	2 (40.0%)	5	2 (40.0%)
25	9	2 (22.2%)	9	2 (22.2%)
26	15	13 (86.7%)	15	13 (86.7%)
27	16	14 (87.5%)	16	14 (87.5%)
Sub-total EPT	48	32 (66.7%)	48	32 (66.7%)
28	32	28 (90.3%), 1NK	32	28 (90.3%), 1 NK
29	34	33 (100.0%), 1 NK	27	26 (100.0%), 1 NK
30	53	52 (98.1%)	32	31 (96.9%)
31	83	81 (97.6%)	21	21 (100%)
Sub-total VPT	202	194 (97.0%)	112	106 (96.4%)
		(2 NK)		(2 NK)
32	91	89 (97.8%)	16	14 (87.5%)
33	131	127 (98.5%), 2 NK	7	6 (75.0%)
Sub-total MPT	222	216 (98.2%)	23	20 (87.0%)
		(2 NK)		
34	204	202 (99.0%)	6	6 (100%)
35	144	139 (97.9%), 2 NK	2	2 (100%)
36	137	133 (98.5%), 2 NK	0	0
Sub-total LPT	485	474 (98.6%)	8	8 (100%)
		(4 NK)		
≥ 37 T	894	870 (98.2%), 8 NK	3	3 (100%)
Total	1851	1786/1835 (97.3%) (16 NK)	194	169 (88.0%) (NK)

Table 38Complete infant Journey: Number of infants admitted to NC & VLBWinfants by gestation (completed weeks) & gestational age category.4

Extremely preterm (less than 28 weeks' gestation) EPT, Very preterm (28 to 31 weeks' gestation) VPT, Moderately preterm (32 to 3 weeks' gestation) MPT, Late preterm (34 to 36 weeks' gestation) LPT, Term (greater than or equal to 37 weeks' gestation) T.



Figure 1: Survival to discharge from NNNI neonatal units by gestational age 2013, 2014, 2015 and combined 3 year survival data.

Note: Figures are based on complete infant journeys on BNNS and where destinations on discharge are recorded.

5.3 Cause of death

During 2015, there were 49 of 1836 (2.7%) reported infant deaths prior to discharge from NNNI neonatal units. Information on final outcome was unavailable for 16 infants. This figure excludes delivery room deaths and deaths which may have occurred after transfer out of neonatal care in NI.

Table 39Cause of death.

Cause of death – contributing factors	Infants
Birth Asphyxia	
Congenital abnormality	
Prematurity	2
Reorientation of care	
Other fetal reason	3
Not recorded	35 (71.4%)
Total deaths	49

Cause of death was not recorded in 71.4% of cases. Consent for post-mortem was given in 10 cases. Information was unavailable in 14 cases. The recording of cause of death in BNNS is not to standard and requires to be addressed by the NNNI teams.

5.4 Short-term neonatal morbidity outcomes

This section focuses on major neonatal morbidity outcomes as defined by bronchopulmonary dysplasia (Oxygen at 36 weeks' gestation); major brain injury seen on scan (intra ventricular haemorrhage grade 3 or 4 or ventricular dilation or porencephalic cyst or cystic periventricular leukomalacia (PVL) or post haemorrhagic hydrocephalus); treatment for retinopathy of prematurity (laser or AntiVeG) or surgery for necrotising enterocolitis.

NEC surgical procedures were defined as:

- Laparoscopy (diagnostic, with/without biopsy)
- Laparotomy (diagnostic or exploratory, with/without biopsy)
- Jejunostomy, ileostomy, enterostomy, colostomy for intestinal diversion (with or without bowel resection, with or without fistula creation)
- Small bowel resection with or without primary anastomosis
- Large bowel resection
- Primary peritoneal drainage for NEC, suspected NEC, or intestinal perforation.

Table 40Neonatal morbidity outcomes.

Respiratory System	Infant (%)
Supplemental Oxygen at 36 weeks' corrected gestational age for infants \leq 32 weeks' gestation.	28/341 (8.2%)
Supplemental Oxygen on discharge from neonatal care (home, post- natal	7/1489 (0.5%)
ward or foster care). "Requiring intermittent or continuing supplementation with oxygen on the	(197 NK)
day of discharge and to be continued following discharge."	
Gastrointestinal System	
Necrotizing Enterocolitis (NEC) – confirmed (Infonts of ≤ 24 works' gostation or ≤ 1500 g high works)	4/681 (0.6%),
(infants of ≤ 34 weeks gestation of $< 1500g$ birth weight)	26 suspected.
NEC Treatment for suspected or confirmed	$\frac{30/001}{4.4\%}$
(Infants ≤ 34 weeks' gestation or ≤ 1500 g birth weight)	2 confirmed NEC 1
(Infants <u>-</u> 54 weeks gestation of < 1500g of the weight)	suspected
NEC Surgery (as defined above)	2
(1 confirmed NEC, 1 suspected NEC)	
Colonoscopy & amp; biopsy, Rectal biopsy - suction, Colonoscopy & amp;	
biopsy,Rectal biopsy - suction	
Exploratory laparotomy, Exploratory laparotomy.	
(NEC Treatment: Yes (1) Missing (1)).	
Central Nervous System	
Infants undergoing cranial imaging (CI) during stay (< 32 weeks' gestation)	167/250 (66.8%)
USS recorded in procedures.	
Periventricular-intraventricular haemorrhage any episode of care	45/250 (18.0%) any
(P-IVH) present (< 32 weeks' gestation)	grade.
	12/250 (4.8%) Severe.
Worst grade (P-IVH) (< 32 weeks' gestation) any episode of care	Grade 1: 21
	Grade 2: 12
Note: 6 of 45 (13.3%) of infants diagnosed with IVH did not have a record	Grade 3: 4
of a Cranial Image on BNNS: grade 1 (2), grade 2 (2) and grade 4 (2).	Grade 4: 8
Cystic-periventricular leukomalacia (CPVL) (<32 weeks' gestation) any	4/250 (1.6%)
*Major brain injury (< 22 weeks' gestation)	22/250 (8.8%)
*Major brain injury VI BW infants (< 1500 g hirthweight)	$\frac{22}{230}(8.8\%)$
*Major Brain Injury all infants	28/1852 (1.5%)
Hypoxic ischaemic encenhalonathy (HIF) for infants \geq 36 weeks'	49/1031 (4.8%)
Typoxie isolatenile encepturopathy (TIL), for infants = 50 weeks	Grade 1: 16
	Grade 2: 23
	Grade 3: 10
Hypoxic ischaemic encephalopathy (HIE), for infants \geq 35 weeks'	50/1175 (4.3%)
	Grade 1: 17
	Grade 2: 23
	Grade 3: 10
Therapeutic hypothermia \geq 35 weeks' gestation	31/1175 (2.6%)
NNU where cooling initiated	ULST (9), CAH (4),
	RMH (9), ANT (4)
	ALT (4), DHH (1)
Seizures (all infants)	48/1851 (2.6%)

Retinopathy of prematurity (ROP)	
Infants Eligible for ROP screening	286/1851 (15.5%), 1
	NR
Survivors to Screen Due date	266/286 (93.0%)
Survivors to Screen Due Date & in hospital	240/286 (83.9%)
Survivors to Screen Due Date & in hospital – at least one screen	201/208 (96.6%)
ROP present – all eligible infants	49/286 (17.1%)
Worst grade ROP	Grade 1: 20
	Grade 2: 14
	Grade 3: 14
	Grade 4: 1
ROP Treatment (cryosurgery and/or laser)	10 infants
Anti – VEGF therapy	No recorded
	AntiVegF
Surgery	
Major Surgery	22/1852 (1.2%)
Transfers out for surgical care	65 transfers
Transfers out for cardiac care	33 transfers

4.5 Congenital malformations

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Overall, for infants born during 2015 and admitted to a neonatal unit, 220 of 1851 (11.9%) were recorded as having at least one congenital malformation (119 per 1,000 infants admitted to neonatal care). Congenital Malformations were individually categorised manually by the NNNI Clinical Information Lead. These infants accounted for 917 level 1 days (IC), 1414 level 2 days (HDC) and 1639 level 3 days (SCD) which equates to 24.8% (IC days), 22.9% (HDC days) and 11.7% (SC days) of total activity for all infants admitted to neonatal units.

Table 41Categories of congenital malformations.

Category of congenital malformation	Infants	
Recognised trisomy/chromosomal syndromes	42	
Respiratory system	12	
(e.g. pulmonary hypoplasia, diaphragmatic hernia, other respiratory)		
Cardiovascular system	106	
Central nervous system	23	
(e.g. neural tube defect, other)		
Gastrointestinal	34	
(e.g. gastroschisis, exompholos, other)		
Recognised malformation syndromes	5	
(e.g. vater, CAA, potter's sequence)		
Genito-urinary	29	
Musculo-skeletal	17	
Undiagnosed dysmorphic syndromes	0	
Hydrops fetalis	0	
(non-immune, iso-immunisation)		
Endocrine	0	
Uncategorised	17	
Total number of malformations	285	
Total number of infants with at least one of the above congenital malformations NI.	220 (11.9%)	

Table 42Survival with no major neonatal morbidity for infants < 32 weeks'
gestation.

Gestation	2015 Infants	2015 Infants receiving NC Survivors	2015 Infants Survival to discharge
	receiving	_	with no *major neonatal
	NC		morbidity
23	3	1(33.3%)	0
24	5	2 (40.0%)	1 (20.0%)
25	9	2 (22.2%)	1 (11.1%)
26	15	13 (86.7%)	7 (46.7%)
27	16	14 (87.5%)	9 (56.3%)
Sub-total EPT < 28 weeks'	48	32 (66.7%)	18 (37.5%)
gestation			
28	32	28 (90.3%), 1NK	16 (51.6%), 1NK
29	34	33 (100.0%), 1 NK	26 (78.8%), 1 NK
30	53	52 (98.1%)	48 (90.6%)
31	83	81 (97.6%)	77 (92.8%)
Sub-total VPT 28 to 31	202	194 (97.0%) (2 NK)	167 (83.5%), 2NK
weeks' gestation			
Total < 32 week' gestation	250	226/248 (91.1%)	185 (74.6%)

***Definition of major neonatal morbidity:** bronchopulmonary dysplasia (Oxygen at 36 weeks' gestation); major brain injury seen on scan (intra ventricular haemorrhage grade 3 or 4 or ventricular dilation or porencephalic cyst or cystic periventricular leukomalacia (PVL) or post haemorrhagic hydrocephalus); treatment for retinopathy of prematurity (laser or AntiVeG) or surgery for necrotising enterocolitis.

Section 6.0 Parental Engagement Survey Key Findings

6.1 Introduction

This section presents a 3-year summary of NNNI parental experiences of neonatal care highlighting consistent high quality performing domains, improved quality domains and domains where there is an opportunity to enhance quality. NNNI Infographics are provided in Appendix Three.

 Table 43 Overall NNNI coverage (live discharges) and performance score

NNNI	14/15	15/16	16/17
Coverage (Response Rate)	615 (31.2%)	678 (32.0%)	737 (33.5%)
Overall Parental Satisfaction	97.8%	98.3%	97.1%

About Your Baby's Care	14/15 N = 615	15/16 N = 678	16/17	How did we do since
	N = 013	N = 078	1 = 737	15/16?
1. When you visited the unit, did staff caring for your	97.2%	98.8%	97.8%	- 1.0%
baby introduce themselves to you?				
2. When you first visited the unit, did staff show you	91.4%	96.3%	92.1%	- 4.2%
how to wash your hands using the 7 step technique?				
3. Did a member of neonatal staff talk to you about your	93.8%	97.2%	96.7%	- 0.5%
baby's condition and treatment after the birth?				
4. In the first few days, were you given enough	91.8%	96.4%	96.2%	- 0.2%
information about the neonatal unit?				
5. Were you given information about help you could get	60.7%	63.6%	59.4%	- 4.2%
with travelling expenses, parking costs or food				
vouchers?				
6. Was the equipment surrounding your baby explained	87.2%	90.9%	91.3%	+ 0.4%
fully to you?				
7. Did you feel you were able to talk to staff on the unit	94.6%	94.9%	96.1%	+ 1.2%
about your worries and concerns?				
8. Were health professionals on the NNU sensitive to	93.8%	95.7%	95.0%	- 0.7%
your emotions & feelings?				
9. Did staff keep you up to date with your baby's	94.9%	97.7%	96.9%	- 0.8%
condition and progress?				
10. Was there good communication between neonatal	91.6%	96.7%	95.7%	- 1.0%
staff about the care of your baby?				
11. When any member of neonatal staff spoke to you		95.8%	94.6%	-1.2%
about your baby's care was it easy to understand?				
12. If you (and/or your partner or companion) wanted to		92.7%	91.6%	- 1.1%
stay overnight did the hospital offer you comfortable				
accommodation?				

About Your Baby's Care	2014/15	15/16	16/17	How did we do since
13. Were you able to contact the NNU by telephone whenever you needed to?	97.9%	97.6%	97.8%	+0.2%
14. While you were there, did staff wash their hands/ use hand gel before touching baby?	99.3%	99.4%	99.6%	+ 0.2%
Feeding				
15. If you wanted to express breast milk, were you given the support you needed from NNU Staff?	97.7%	96.8%	95.2%	- 1.6%
16. If you wanted to breast feed your baby, were you given enough support from the NNU staff to do this?	94.5%	96.1%	91.1%	- 5.0%
17. Were you happy with the breast feeding facilities within your unit?	94.4%	94.6%	93.9%	-0.7%
18. If you wanted to bottle feed your baby were you given enough support from the NNU staff to do this?	95.7%	98.4%	96.7%	-1.7%
Day-to-Day Care				
*19. Were you and your partner or companion involved in the day-to-day care of your baby?			97.0%	++
Nappy changing	93.8%	86.7%		
Feeding	93.4%	85.9%		
Skin-to-Skin	87.2%	75.9%	84.0%	+ 8.1%
20. Overall, did staff help you feel confident in caring for your baby?	97.2%	98.1%	96.3%	- 1.8%
Discharge				
21. Did you feel prepared for your baby's discharge from this unit?	93.9%	93.3%	94.4%	+ 1.1%
22. Were you informed that you could contact the neonatal unit for advice and reassurance in the initial discharge period?	92.8%	92.5%	92.4%	-0.1%

6.2 Summary of findings parental feedback

Consistent high-quality: +/- 0.5%

- Q6. Explaining equipment (+0.4%)
- Q13. Ease of contacting NNU by telephone during stay (+0.2%)
- Q14. Washing hands/using gel before touching baby (+0.2%)
- Q22. Informing parents that they could contact NNU for advice & reassurance in initial discharge period (-0.1%)
- Q4. Information provision in first few days (about neonatal unit) (-0.2%)
- Q3. Talking to parents about baby's condition after birth (-0.5%)

Improvements more than 0.5% increase

- Q19. Involvement in day-to-day care of baby ++ Skin-to-Skin (+8.1%)
- Q7. Talking to parents about worries or concerns (+1.2%)
- Q21. Helping parents to feel prepared for baby's discharge (+1.1%)

Opportunities to enhance quality more than 0.5% decrease

- Q16. Support for breast feeding (-5.0%)
- Q2. 7-step technique Hand Washing (-4.2%)
- Q5. Help with expenses (-4.2%)
- Q20. Increasing parental confidence in caring for baby (-1.8%)
- Q18. Support for bottle feeding (-1.7%)
- Q15. Support for expressing (-1.6%)
- Q11. Ease of understanding staff (-1.2%)
- Q12. Offering parents overnight hospital accommodation (-1.1%)
- Q1. Staff Introductions (-1.0%)
- Q10. Communication between neonatal staff about baby's care (-1.0%)
- Q9. Keeping parents Up-to-Date with Baby's condition and Progress (-0.8%)
- Q8. Health professional sensitivity to emotions & feelings (-0.7%)
- Q17. Satisfaction with breast feeding facilities (-0.7%)

6.3 Examples of changes in response to parental feedback across neonatal units

NNUs should share ideas for improvement across the NNNI thereby contributing to overall network performance.

• Breastfeeding

Expressing room split in two with curtains for increased privacy (ALT), appointment of infant feeding lead (ANT), focus on breastfeeding and better chairs for mothers (CAH) and 'Thanks for the milk mummy labels' (RMH).

• Expenses

Concessionary parking charges (SWA) and a 2-week renewable parking voucher (ALT), provision of food (all day/overnight) (ALT).

• Caring confidence

Parent education classes for discharge started earlier to avoid bombarding parents with information (ANT), focused discharge planning (CAH) and increased resuscitation training available to parents (CAH).

• Communication

Encourage parents to be present for ward round at least once a week (SWA), dedicated information station and parent notice board (ALT), nursing handovers now include parents (ULST), pre-birth meeting and tour of NNU for expected pre-term parents aimed at reducing anxiety (CAH) and 'purple butterfly' placed beside cot card on cot/incubator to indicate if a sibling from a multiple birth has died (CAH).

• Peer support

Facilitation of 'parent get together' once a week with TinyLife link (ALT) and extracts 'common parent reactions to NICU in waiting area for parents to read (CAH).

• Facilities

Designated parent room with facilities (CAH), portable screen to protect parents while they are with their babies during breastfeeding/ skin-to-skin adjacent to where an X-ray is being taken (RMH) and recliner chairs for skin-to-skin (RMH).

• Other

'Parents in partnership' quality improvement programme 'champions' to improve parental experience of neonatal journey (ULST), and open grandparent visiting with parents (remains 2 persons per cot) (ULST).

Section 7.0 Conclusions & Recommendations

7.1 Key messages derived from the 2015 NICORE data report are as follows:

- Within the 2015 data set, quality issues persist with respect to recording of daily data and therefore the subsequent derivation of levels of care days. Completeness of 'ad hoc' events such as cranial ultrasound requests and results; blood and CSF culture requests and results; and ROP screens and results, require attention.
- As highlighted before, key neonatal morbidity data in some areas have been inadequately coded on BadgerNet. The data for 'cause of death' are, on the whole, missing. This concern will be raised at NNNI Board level. We have added, for the first time, survival free of major neonatal morbidity in gestational age cohorts and this analysis is dependent on key neonatal morbidity data being accurately coded. Generally data coding is improving but further work is required at neonatal unit level.
- Lack of robust data in these areas lowers the usefulness of these data to inform decision making, particularly if missing data are considered 'not done' in performance calculations for the neonatal quality dashboard. This includes reporting of administration of antenatal steroids, magnesium sulphate, temperature taken within one hour of birth and documented evidence of consultation with parents all of which had more than 10% missing data. However, it is anticipated that as a result of continued efforts to improve data robustness progress in data quality will be evident in the 2016 dataset.
- Where data are recorded, benchmarking continues to show good rates of antenatal steroid administration and there is some improvement in infants discharged receiving any mothers' breast milk (< 33 weeks' gestation & single admission to neonatal care).
- Continuing quality improvement initiatives for increasing normothermia on admission to a neonatal unit and for increasing breastfeeding ran through 2016 and we await data to present in the NICORE 2016 data report.

Activity levels are relatively stable. Regionally, there has been a small increase in the number of infants receiving neonatal care from 1790 (2014) to 1851(2015). The proportion of live born infants receiving neonatal care has also increased slightly from 7.3% (2014) to 7.6% (2015). The total number of recorded level of care days has fallen by 12.4% since 2014, from 27590 days (2014) to 24180 (2015) days. However, during 2015, for discharged infants, the total level of care days registered on BadgerNet was 24125 compared to 28783 days generated from admission and discharge dates. In addition, 342 admissions had no levels of care days recorded on BadgerNet.

7.2 Key messages derived from the Parental Engagement data report are as follows:

- Health Professionals caring for infants and families on the neonatal unit need to be mindful of and sensitive to parents' emotions and feelings and should introduce themselves if they are not already known to the families. Effective communication between neonatal staff about baby's care and keeping parents up-to-date using language and terminology that is easy to understand is of paramount importance. In Ulster NNU nursing handovers now include parents and in SWA SCBU parents are encouraged to be present on ward rounds once a week.
- The NNNI quality initiative to support breastfeeding is ongoing and it is hoped that demonstrable improvements in support for breastfeeding and expressing will be evident in subsequent quarterly reports 2017/18. A number of improvements have been implemented across neonatal units for example, in Antrim NNU an infant feeding lead has been appointed; in Craigavon NNU Trust there is a renewed focus on breastfeeding support and better chairs for breastfeeding have been provided and RMH NNU have introduced 'Thanks for the milk, mummy' labels to promote breast milk.
- The NNNI will discuss the ongoing issue of help with expenses while an infant is in a neonatal unit with a view to provide information in a timely manner and to standardise procedures across the network. Altnagelvin NNU have introduced a two-week renewable parking pass for parents.

- Throughout the NNNI, staff are also undertaking a number of practices to support parents in gaining caring confidence in preparation for discharge home. These include earlier parent education classes in Antrim NNU, increased resuscitation training in Craigavon NNU and 'parents in partnership champions' in Ulster NNU. These are reflected in a 1.1% improvement in helping parents to feel prepared for baby's discharge. Ninety-seven percent of parents felt that they were involved, as much as they wanted to in the day-to-day care of baby and there was an 8.1% increase in parents receiving as much skin-to-skin care as they wanted. RMH NNU have recently purchased more recliner chairs to facilitate more skin-to-skin care.
- We are pleased to see that 99.6% of parents reported that while they were there, staff on the NNUs used hand gel before touching babies.

7.3 **Recommendations**

- Sustained efforts should continue to further improve infant admission temperature and breastfeeding/ expressing rates.
- Continued education is needed to raise data quality to acceptable standards especially with respect to mortality (cause of death) and key morbidities.
- The Parental Engagement Survey should continue to evolve through the work of the NNNI PEG group. Demonstrable changes led by parent feed-back have been highlighted in this report. We would recommend that this process continues.

Under the umbrella of the NNNI, the NICORE team will continue to:

- Process regional discharge surveys and to feedback to neonatal units annually.
- Collate Vermont Oxford Network (VON) VLBW datasets within the five participating centres.
- Develop relevant dashboards and reports in liaison with neonatal units and Clevermed Ltd.

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APPENDIX ONE

Categories of Neonatal Unit⁵

Special Care Units (SCUs) provide special care for their own local population. Depending on arrangements within their neonatal network, they may also provide some high dependency services. In addition, SCUs provide a stabilisation facility for babies who need to be transferred to a neonatal intensive care unit (NICU) for intensive or high dependency care, and they also receive transfers from other network units for continuing special care.

Local neonatal units (LNUs) provide neonatal care for their own catchment population, except for the sickest babies. They provide all categories of neonatal care, but they transfer babies who require complex or longer-term intensive care to a NICU, as they are not staffed to provide longer-term intensive care. The majority of babies over 27 weeks of gestation will usually receive their full care, including short periods of intensive care, within their LNU. Some networks have agreed variations on this policy, due to local requirements. Some LNUs provide high dependency care and short periods of intensive care for their network population. LNUs may receive transfers from other neonatal services in the network, if these fall within their agreed work pattern.

Neonatal intensive care units (NICUs) are sited alongside specialist obstetric and feto-maternal medicine services, and provide the whole range of medical neonatal care for their local population, along with additional care for babies and their families referred from the neonatal network. Many NICUs in England are co-located with neonatal surgery services and other specialised services. Medical staff in a NICU should have no clinical responsibilities outside the neonatal and maternity services.

APPENDIX TWO

ROP Screening Data 2015 BadgerNet Standard Report

		On ti	ime	Ear	ly	Late		No ROP Screen	
Neonatal Unit	Eligible	Count	%	Count	%	Count	%	Count	%
Altnagelvin	48	42	88	1	2	3	6	2	4
Antrim	42	42	100	0	0	0	0	0	0
Craigavon	40	33	83	0	0	5	13	2	5
Daisy Hill	18	8	44	0	0	7	39	3	17
Royal Jubilee Maternity	68	32	47	1	1	30	44	5	7
South West Acute	5	3	60	0	0	0	0	2	40
Ulster	48	32	67	1	2	1	2	14	29
Total	269	192	71.2	3	0.1	46	17.1	28	10.4

Neonatal National Report - ROP

Care provided for babies discharged in 2015

Data Source:	BadgerNet Standardised Reporting.
Date Report:	07/09/2017.
Timeframe:	1 st January 2015 to 31 st December 2015.
Eligible babies:	Birthweight 401 to 1500g OR Gestation < 32 weeks.

For these babies the numbers (%) are broken down by whether their screening was on time/ early/ late based on NNAP criertia.⁴

APPENDIX THREE

Infographics Parental Experiences of Neonatal Care NNNI Regional Level Data 2016/2017

Relationships with Neonatal Staff 'Yes, definitely'



"Most of staff were approachable and supportive, but a few not so much....very intense people...made myself feel uncomfortable asking about my own baby well-being..."



Day-to-Day Care 'Yes, definitely'

95.2% 91.1%

93.9% 96.7%

	Expressing
ort	Breast feeding
	Breastfeeding facilities
	Bottle feeding



"I would have liked more skin-to-skin especially in the initial few days. The environment did not always lend itself to Breastfeeding comfortably . . . "

84.0%

99.6%

" On occasion I felt a little interrogated by a staff memberand being organised for home...quick fire round of questions against the clock..."

Involvement in Day-to-Day Care 97.0%

".....the fact I was allowed to be hands on with my son when I was in NICU, so I am confident when feeding, handling and changing him knowing what to look for...."

Preparation for Home 'Yes, definitely'



Confident in caring for baby	96.3%
Prepared for baby's discharge	94.4%
Contact unit for advice & reassurance initial discharge period	92.4%
Overnight accommodation	91.6%



"As new parents of twins we are heading home with a small amount of trepidation but full of confidence which has been instilled in us by the staff of the neonatal unit."

"After a couple of nights staying in the neonatal unit with my husband and our baby we feel much more confident about bringing him home"

What did we change?

SWAH:

- Increased awareness of available concessionary parking charges.
- Encourage parents to be present for ward round at least once a week, other parents happy to leave room to maintain confidentiality.

Altnagelvin:

- Free parking voucher (2 week renewable pass) parents can sign up for.
- If parents in unit all day a meal is arranged; if staying overnight all meals are included.
- Facilitation of 'parent get together' once a week with TinyLife link.
- Re-organised dedicated 'information station' & parent notice board.
- Expressing room split in two with curtains for privacy.

Antrim:

- Parent education classes for discharge are started earlier to avoid bombarding parents with information.
- Infant feeding lead has been appointed and it is anticipated that this will translate into more parental satisfaction with feeding support.



FREE



What did we change?

Ulster:

- "Parents in partnership" quality improvement programme "champions." Aim: to improve parental experience of neonatal journey.
- Nursing handover now includes parents.
- To change grandparent visiting from 2 designated time slots to open visiting with parents (remains 2 person / cot).

Craigavon:

- Designated parent room with kitchen facilities.
- Focused discharged planning & focus on supporting breastfeeding.
- Better chairs for breastfeeding mothers/ for parents staying over.
- Increasing Resuscitation training available for parents.
- Pre-birth meeting for expected pre-term parents aiming to reduce anxiety & guide them around the NNU.
- **Purple butterfly** placed beside cot card on cot/incubator to indicate if a sibling from multiple birth has died.
- Extracts 'common parent reactions to NICU' in waiting area for parents to read <u>https://www.healthychildren.org/preemie.</u>







What did we change?

RMH:

- Bought a portable screen to protect parents while they are with their babies during breast feeding / skin-to-skin adjacent to where an X-ray is being taken.
- Purchased more recliner chairs to ensure maximum number of parents have an opportunity for skin-to- skin and to facilitate comfort.
- Introduced 'Thanks for the Milk, Mummy' labels for mums to promote breast milk.



Thanks

NNNI Word Cloud 2016/2017

