



City Hospitals Sunderland **NHS**  
NHS Foundation Trust

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# SUNDERLAND NEONATAL UNIT

## ANNUAL REPORT

2015

## FOREWORD

This annual report for the calendar year 2015 is the third in the new format. Our aim is to demonstrate our unit performance in relation to both regional and national standards, you will see this reflected in this report. The Northern Network moved to reporting types of care by BAPM 2011 standards and our data reflects this for 2015.

We report on our performance regarding National Neonatal Audit Programme ( NNAP). We are above the national and NICU specific averages in 4 areas out of 5 (page 13). Progress however is still required in targeting admission temperatures (36.5°C - 37.5°C) and benchmarking audit measures such as BPD, CLABSI and Mother's milk. Movement of vulnerable babies between units requires a collaborative approach both locally and at a network level to show improvement in these specific areas. Also included for the first time is MBRRACE 2014 report (page 18) for the first time.

This year also marked the publication of the RCPCH review of neonatal services in the North East. We are pleased with the review outcome which stated that Sunderland will remain a Level 3 centre with all NICU modalities available including long term ventilation (all modes), therapeutic hypothermia and use of nitric oxide therapy. The RCPCH review team also suggested that all babies <25+6 weeks & below from Sunderland to be delivered with their early care provided at RVI Newcastle before repatriation. Sunderland in turn has been designated as a referral unit for all NICU care to babies 26 weeks and above from the Northern SCBU's.

I would like to thank Dr Majd Abu-Harb for giving me this opportunity and his ongoing support in presenting this report in the new layout.

Special thanks to -

Dr Lorna Gillespie (Badger data accuracy and document review)

Dr Geethanath (Term admissions and document review)

Mrs. Aarti Ullal & Sister Julie Harris (Maternal data)

Dr Imran Ahmed, September 2015



## **STAFF**

Pauline Palmer	Matron
Kristina Simmons	Neonatal Unit Manager

### **Consultant Neonatologists:**

Dr Majd Abu-Harb	Clinical Lead
Dr Imran Ahmed	
Dr Ruppa Geethanath	
Dr Lorna Gillespie	
Dr Osama Hamud	

### **Advanced Neonatal Nurse Practitioners (ANNP):**

Lesley Atkinson, Eileen Cornell, Susan Forth, Amie Luke, Gillian Reay, Ann Smith, Bernadette Taylor and Katherine Marshall.

### **Other Medical Staff**

There are 4 Level 1 specialist paediatric trainees (ST1-3) and 1 Level 2 (ST4-8) trainee.

### **Specialist Nurses:**

Sue Hindle	Lead for Breast Feeding
Tracey Gleghorn	Lead for Developmental Care
Janet Goodman	Lead for Nurse Education
Natalie Talbot	Research Nurse
Helen Nesbit	Lead Practice development nurse

### **Community Nurse Team**

This consists of 4 paediatric community liaison nurses who meet with the families prior to discharge and continue with specialist nursing input as required once home.

### **Specialist Therapies**

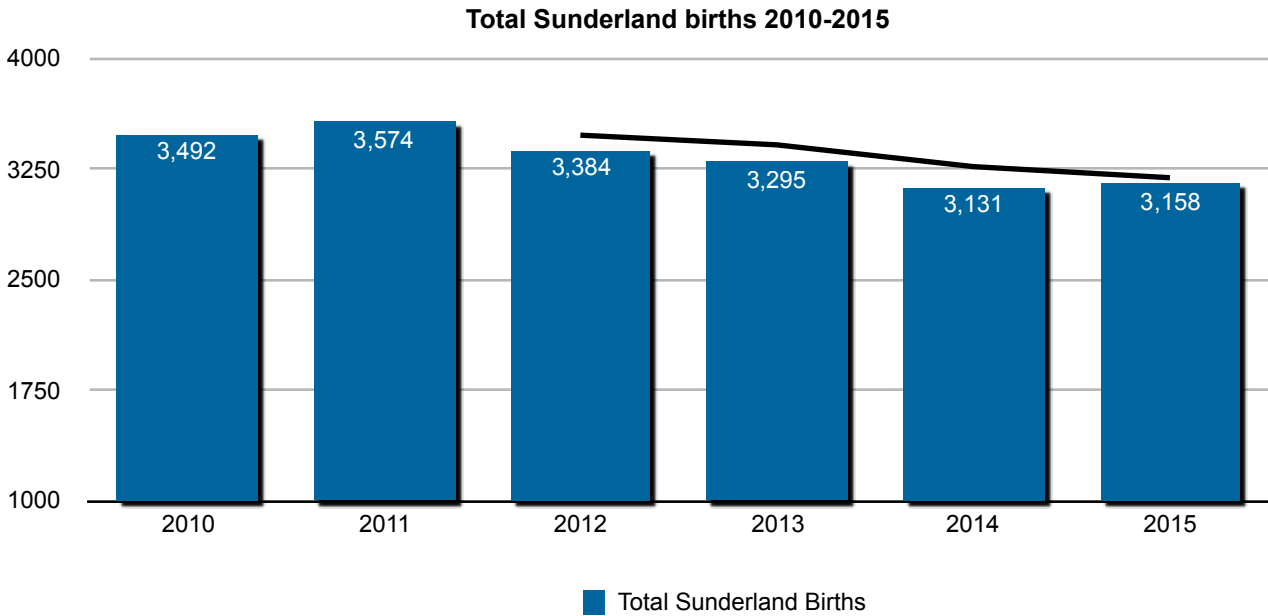
There is input from paediatric Speech and Language Therapists and paediatric Physiotherapists as required. These teams are also part of the developmental care group.

### **Ophthalmologist:**

Mr. Lawrence Gnanaraj

## Maternity Statistics

Data was gathered from the maternity services data collection tool and covers the last 6 years. The line shows 3 year rolling averages. Total includes all viable and non-viable births born at SRH.



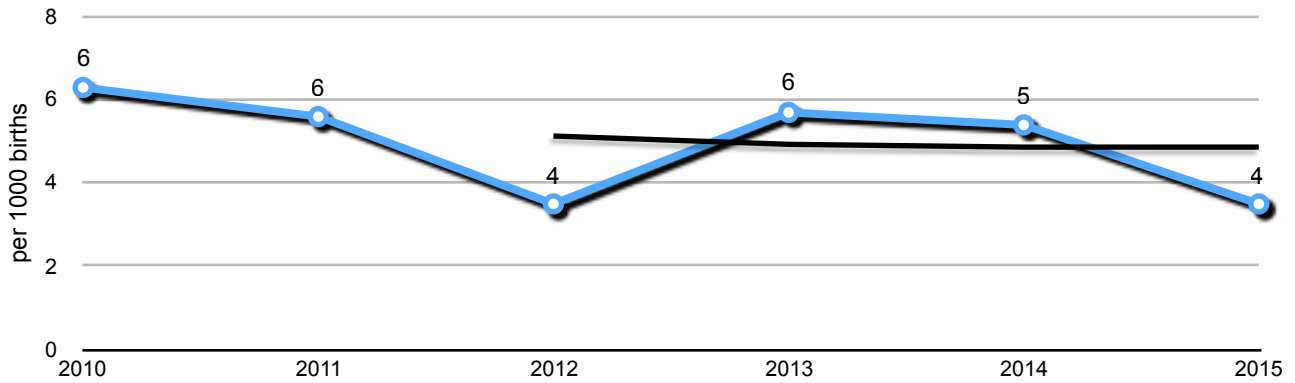
2015	Total	%
<b>Live Births</b>	3121	
<b>Twins</b>	39	1.3%
<b>Triplets</b>	1	
<b>Preterm &lt;37 weeks</b>	259	8.3%
<b>Birth Wt &gt;2500gms</b>	2763	88%
<b>Birth Wt &lt;2500gms</b>	222	7%
<b>Birth Wt &lt;1500gms</b>	41	2%



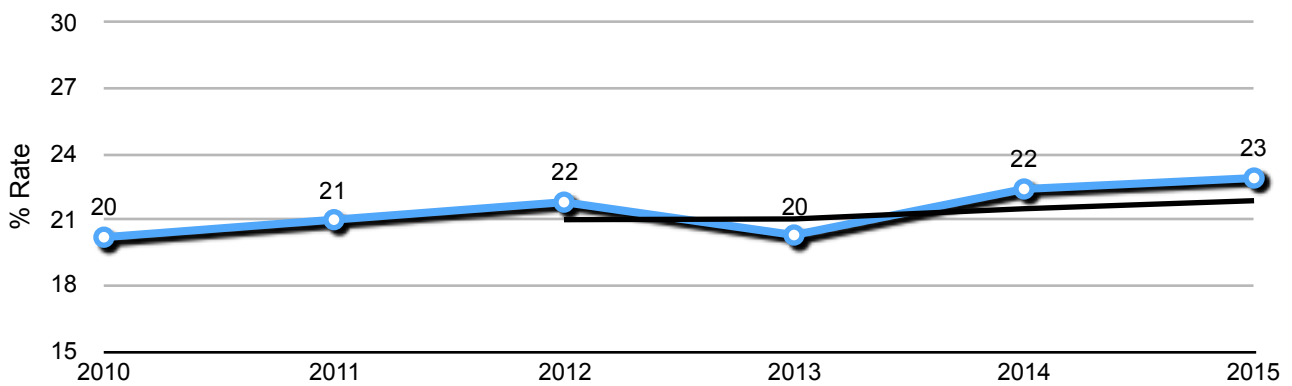
## Maternity Statistics

Data is shown below with 3 year rolling averages indicated by the trend line.

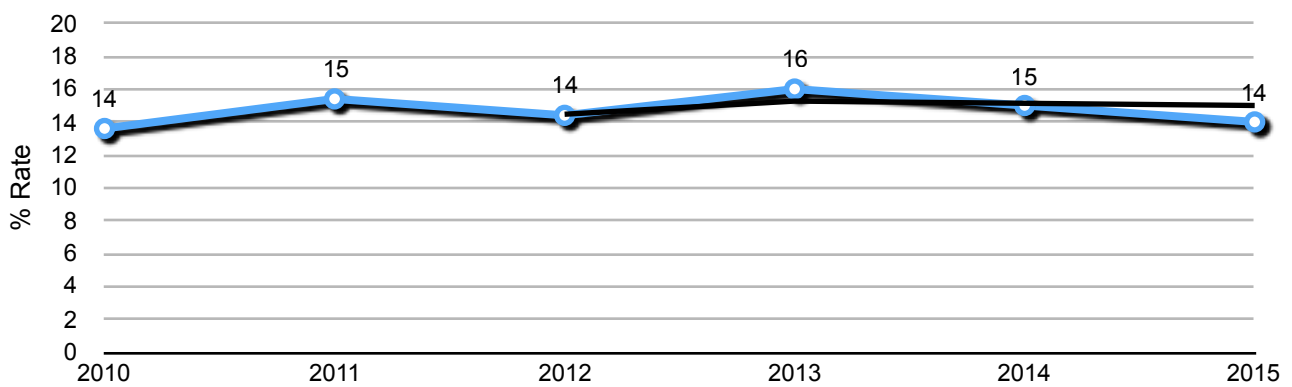
### Still births rate per 1000 2010 - 2015



### Total LSCS % rate 2010 - 2015



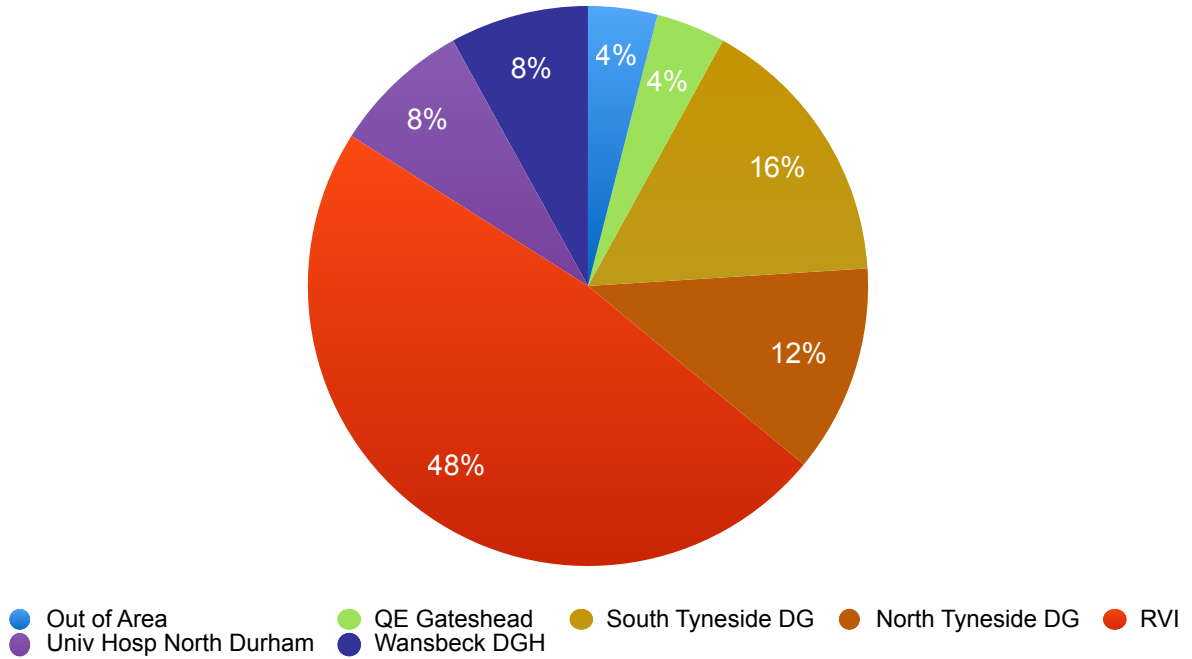
### Total Instrumental delivery % rate 2010 - 2015



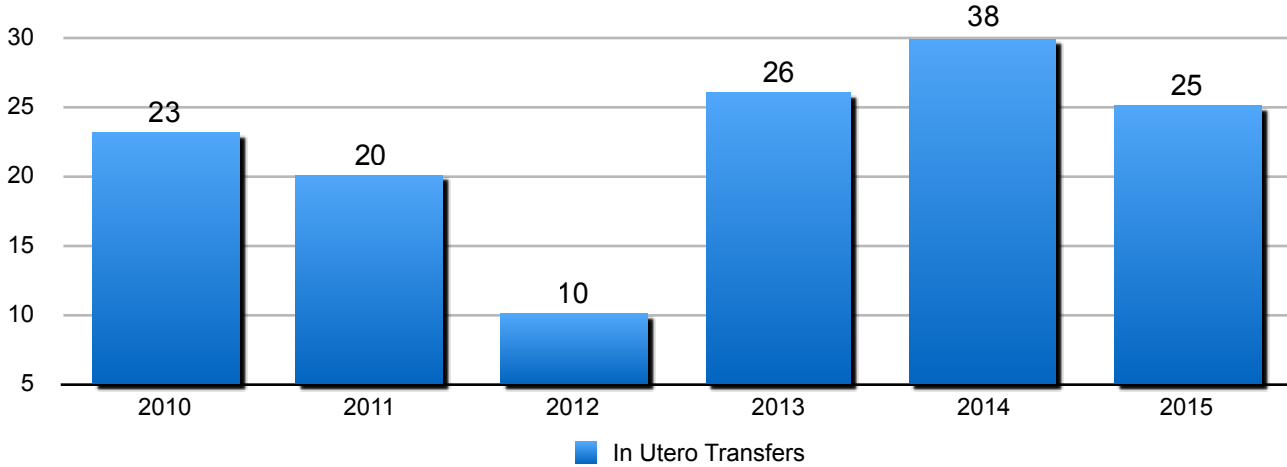
**In Utero Transfers**

This data was collected using Badgernet and so contains details of only those babies who were transferred in utero and subsequently admitted to the neonatal unit at SRH.

**All in-utero transfers that were admitted by referral hospital in 2015**



**All in-utero transfers that were admitted between 2010 - 2015**

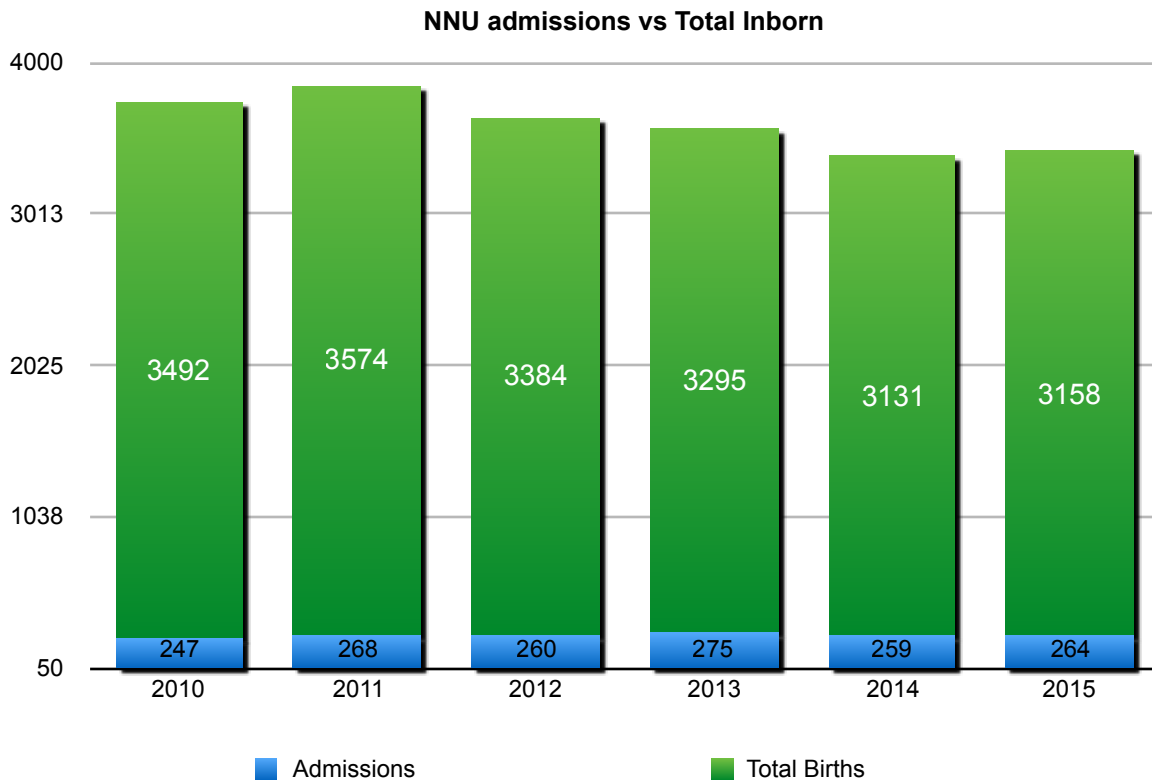
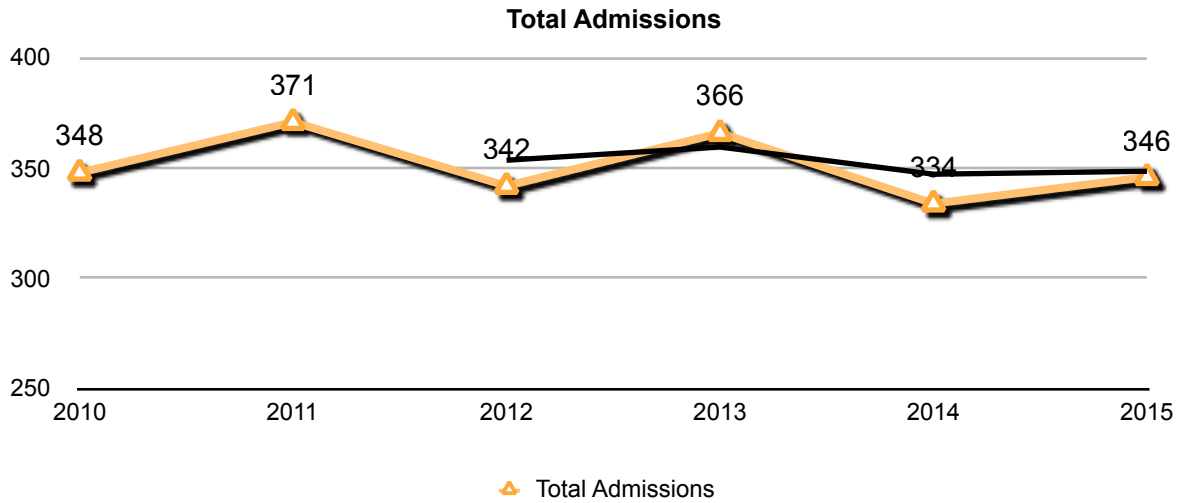


## Neonatal Activity

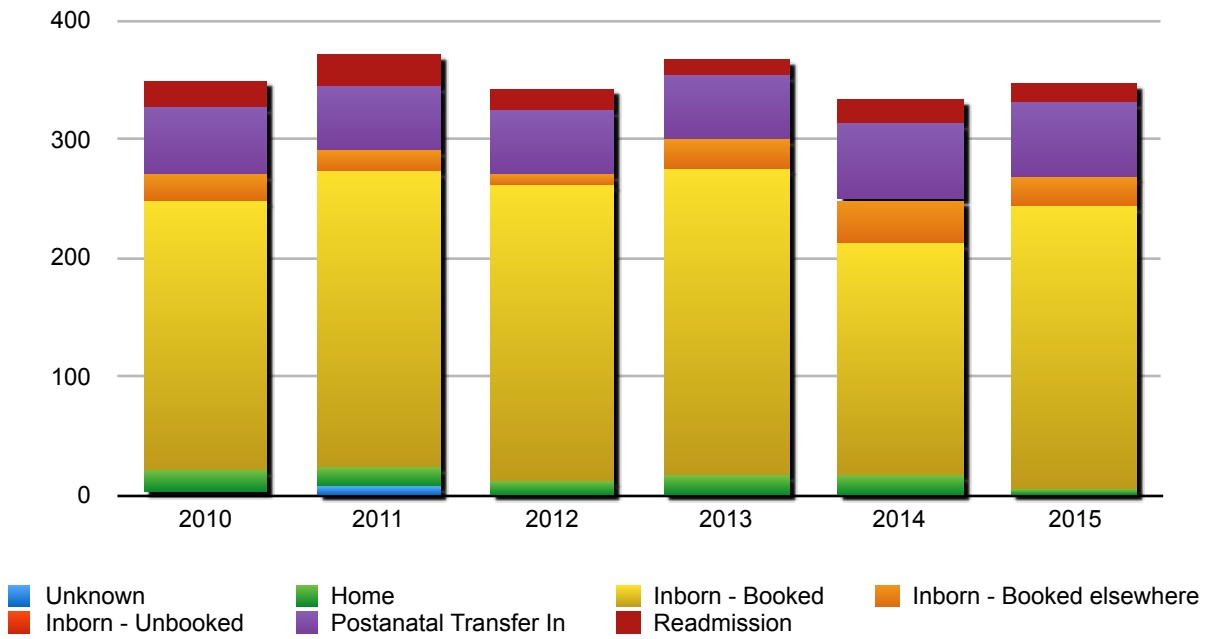
### Admissions to NICU, Sunderland Royal Hospital

Badgernet was used to collect the data presented in the following section. All admissions to the NICU at Sunderland Royal Hospital are included (both booked as well as in utero transfers). Readmission data includes babies who were readmitted to the unit following transfer to other sites for specialist care e.g surgery.

The 1st graph below shows total admissions with a 3 year moving average. Admission numbers remain the same in spite of challenges in staffing cots. The second graph shows proportion of inborn babies admitted to NICU (8.3%).



### Admissions by referral type

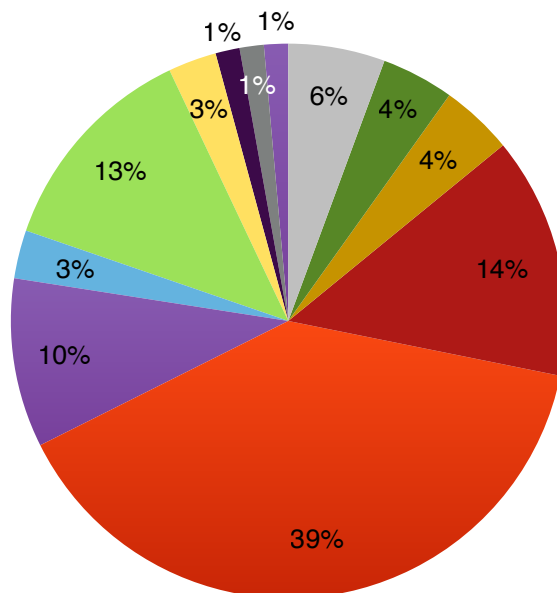


Both graphs show the distribution of NICU admissions by referral source and booked place of birth. Sunderland upgraded to the latest Badgernet system towards the end of 2014 it is likely that some differences in how data are represented will be apparent in this report.

	2010	2011	2012	2013	2014	2015
Home	18	16	11	14	15	4
Inborn - Booked	227	250	248	260	195	240
Inborn - Booked elsewhere	22	18	10	25	37	24
Inborn - Unbooked	0	0	0	0	1	0
Postnatal Transfer	57	54	53	54	63	62
Readmission	22	26	19	12	22	16
Unknown	2	7	1	1	1	0



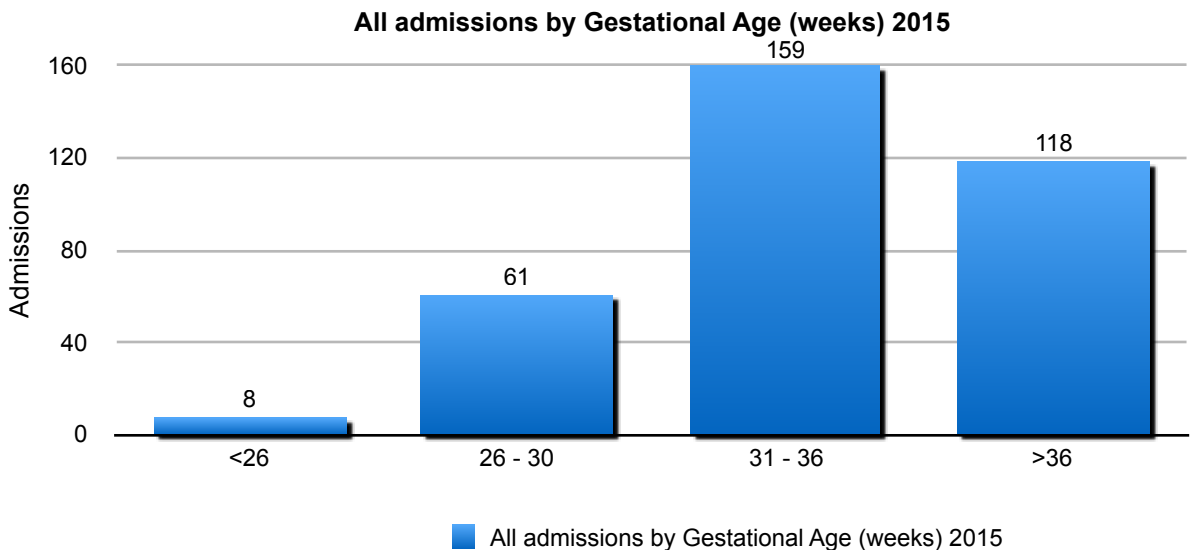
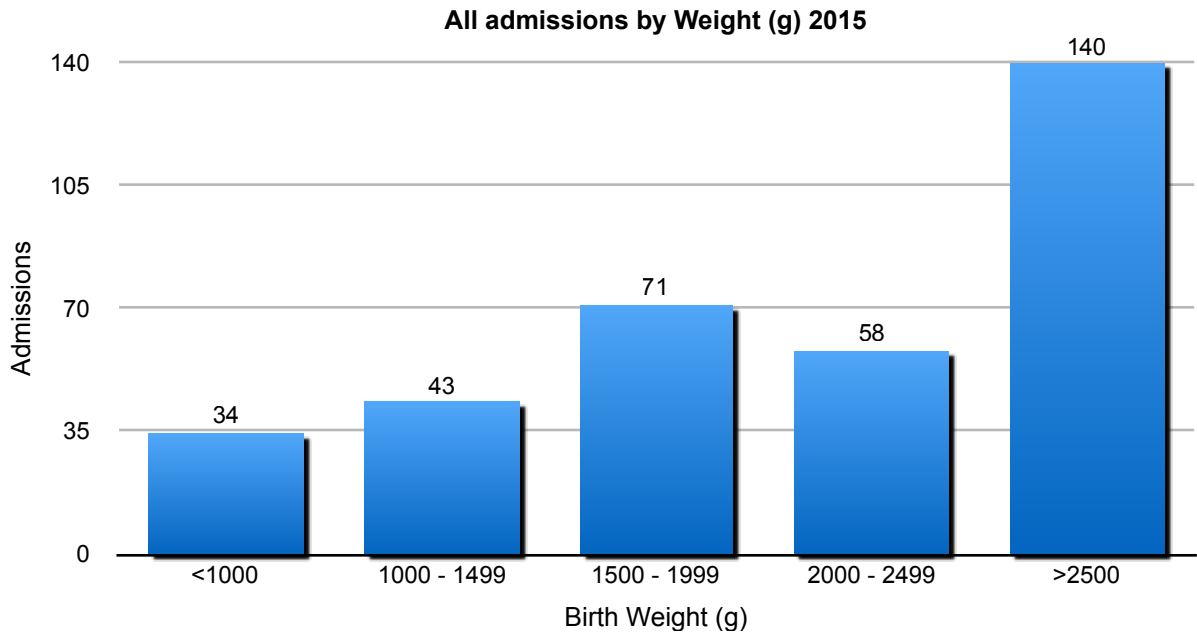
### Postnatal transfers into SRH by Hospital (2015)



- Cumberland Infirmary
- South Tyneside
- Univ Hosp North Tees
- Royal Inf Edinburgh
- QE Gateshead
- RVI
- Wansbeck DGH
- Bradford Teaching Hosp
- JCUH
- Univ Hosp of North Durham
- West Cumb Hosp
- Queen Charlotte's and Chelsea

### Postnatal transfers into SRH by Hospital (2010 - 2015)

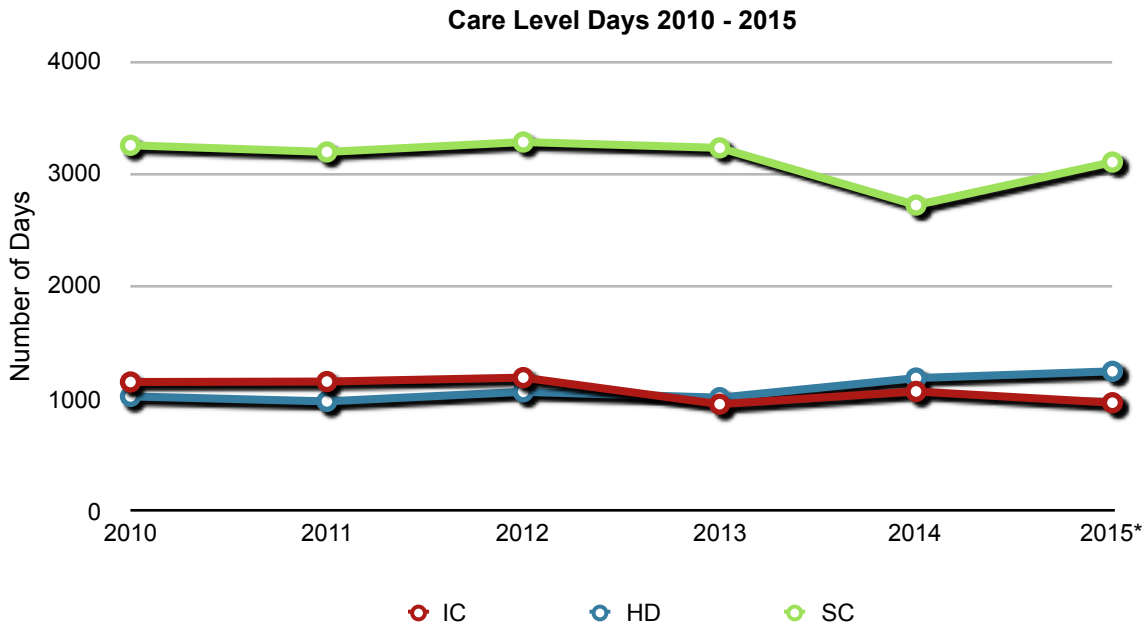
Booking Hospital	2010	2011	2012	2013	2014	2015
Cumberland Infirmary	3	3	4	3	5	4
Darlington Memorial	1	1	0	1	1	0
North Tyne Gen Hosp	1	1	0	0	0	0
QE Gateshead	12	3	0	3	11	3
James Cook Univ Hosp	0	1	0	3	0	3
South Tyneside	7	7	8	10	4	10
RVI	14	21	18	18	23	28
Unbooked	0	0	2	0	0	0
Univ Hosp of North Durham	8	9	3	7	12	7
Univ Hosp of North Tees	0	1	3	0	3	2
Unknown	0	2	0	1	0	0
Wansbeck DGH	6	2	4	4	9	9
West Cumb Hosp	2	4	3	1	3	2
Other Network	0	0	0	0	0	3
<b>Total</b>	<b>54</b>	<b>55</b>	<b>45</b>	<b>51</b>	<b>71</b>	<b>71</b>





### Care Level Days and Cot Occupancy

In 2015\* (BAPM 2011) activity of 2209 intensive and high dependency days with a total IC and HD cot occupancy of 87% averaged over the year (IC/HD 7 cots used for calculation).



2015\* IC/HD data is based on BAPM 2011 standards

### Care Level in Days 2010 - 2015

Year	IC	HD	IC & HD
2010	1149	1021	2170
2011	1153	977	2130
2012	1188	1062	2250
2013	952	1010	1962
2014	1065	1184	2249
2015*	965	1244	2209

### Refusals of Requests for Cot by type of referral

Demand for Intensive care (IC) and High dependency cots (HD) remains high in the region. Adequate and skilled nurse staffing continues to be the main reason for refusals. The unit is working towards BAPM 2011 compliance.

	2011	2012	2013	2014	2015
<b>In Utero (within network)</b>	32	27	39	25	43
<b>In Utero (other network)</b>	5	0	1	0	2
<b>Ex Utero (within network)</b>	9	8	14	29	44
<b>Ex Utero (other network)</b>	0	0	0	2	0
<b>Total</b>	46	35	54	56	89

### **Sunderland booked and Transferred out (2014 - 2015)**

	2014	2015
<b>In Utero (within network)</b>	8	4
<b>In Utero (other network)</b>	0	0
<b>Ex Utero (within network)</b>	2	1
<b>Ex Utero (other network)</b>	0	0

### **Sunderland booked babies by delivered and cared unit 2015**

Care Location	Number of Babies	Outcome	
		Repatriated	Other unit/Home
<b>James Cook Univ Hospital</b>	4	2	2
<b>RVI</b>	15	5	10
<b>Univ Hospital North Tees</b>	3	1	2
<b>QE Gateshead</b>	1	0	1
<b>Univ Hosp North Durham</b>	1	0	1
<b>South Tyneside</b>	1	0	1
<b>Other</b>	1	0	1
<b>Total</b>	26	8	18

## Outcome

### National Neonatal Audit Project (NNAP) data 2015

NNAP audit question	Standard	National (average)	National NICU (average)	Northern Network Average	Sunderland NNU
Do all babies <32 weeks gestations have their temperature taken within the first hour after birth?	98% - 100%	93%%	94%	96%	98%
What proportion of babies<32 weeks gestation had an admission temperature between 36.5-37.5?	90%	62%	62%	53%	57%
Are all mothers who deliver babies between 24+0 and 34weeks gestation given any dose of antenatal steroids?	85%	85%%	86%	85%	92%
Are all babies with a gestational age of <32+0 weeks or <1501g at birth undergoing 1st Retinopathy of Prematurity (ROP) screening in accordance with the current national guideline recommendations?	100%	93%%	93%	85%	98%
Is there a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission?	100%	88%	87%	93%	98%

### NNAP Audit Measures - Benchmarking

NNAP audit question	National (average)	National NICU (average)	Northern Network Average	Sunderland NNU
What proportion of babies <33+0 weeks gestation at birth are receiving any of their mother's milk when discharged home from a neonatal unit?	58%	55%	46%	42%
What is the proportion of babies born <32 weeks who develop Bronchopulmonary Dysplasia? (year of final discharge 2013-2015)	46%	54%	52%	56%
What proportions of eligible babies have received FU at 2 years corrected age?	63%	60%	64%	82%
How many blood stream infections are there on a NNU per 1000 days of central line care?	2.2	2.5	1.8*	5.9

## **Outcome**

We have additionally provided information for 3 key morbidities: Hypoxic Ischaemic encephalopathy (Grade 2 - 3 and requiring therapeutic hypothermia), Necrotising enterocolitis (suspected and transferred to surgical unit), retinopathy of prematurity (eligible and screened and those that required treatment).

It is difficult to provide meaningful interpretation for each of the key morbidities due to small numbers as well as problems with accurate denominator data. It will be more useful to report these key morbidities at a network level.

This data was extracted from Badgernet using “discharge diagnosis” of suspected or confirmed NEC. All neonatal notes are reviewed on discharge by one assessor to ensure accuracy.

### **Hypoxic Ischaemic Encephalopathy (HIE) requiring therapeutic hypothermia**

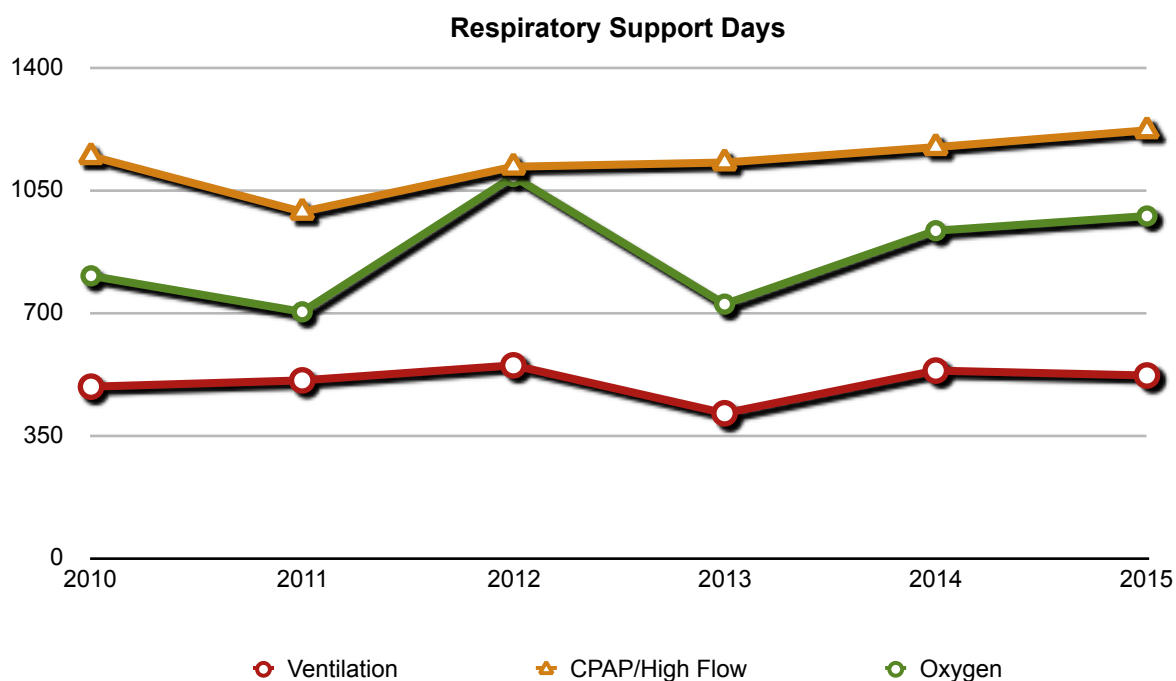
	<b>No of Babies</b>	<b>Discharged</b>	<b>Died</b>
<b>2014</b>	4	4	0
<b>2015</b>	2	1	1

### **Necrotising enterocolitis (NEC)**

	<b>Suspected &amp; transferred to Surgical Unit</b>	<b>Outcome at Surgical centre</b>	
		<b>Conservative management</b>	<b>Confirmed (Surgery/Post Mortem)</b>
<b>2014</b>	2	1 survived	1 died
<b>2015</b>	6	4 survived	2 died

### **ROP for responsible unit, screened and treated 2010 - 2015**

	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>%</b>
<b>Eligible &amp; Screened</b>	53	57	65	58	53	63	100
<b>Threshold ROP Treated</b>	3	0	2	0	2	3	



### Term Admissions to NNU

Reason for admissions %	2014	2015	National
<b>Respiratory disease</b>	52.7	52.4	30.1
<b>Social issues (foster care)</b>	11.5	14.6	1.1
<b>Jaundice</b>	4.6	0.9	5.2
<b>Infection</b>	3.8	0.9	9.1
<b>Hypoglycaemia</b>	3.8	0.9	9.6
<b>Poor feeding/weight loss</b>	3.8	2.7	3.8
<b>Congenital</b>	2.3	2.7	2.0
<b>Asphyxia</b>	1.5	0.9	3.1
<b>Other</b>	16	23.3	36.0

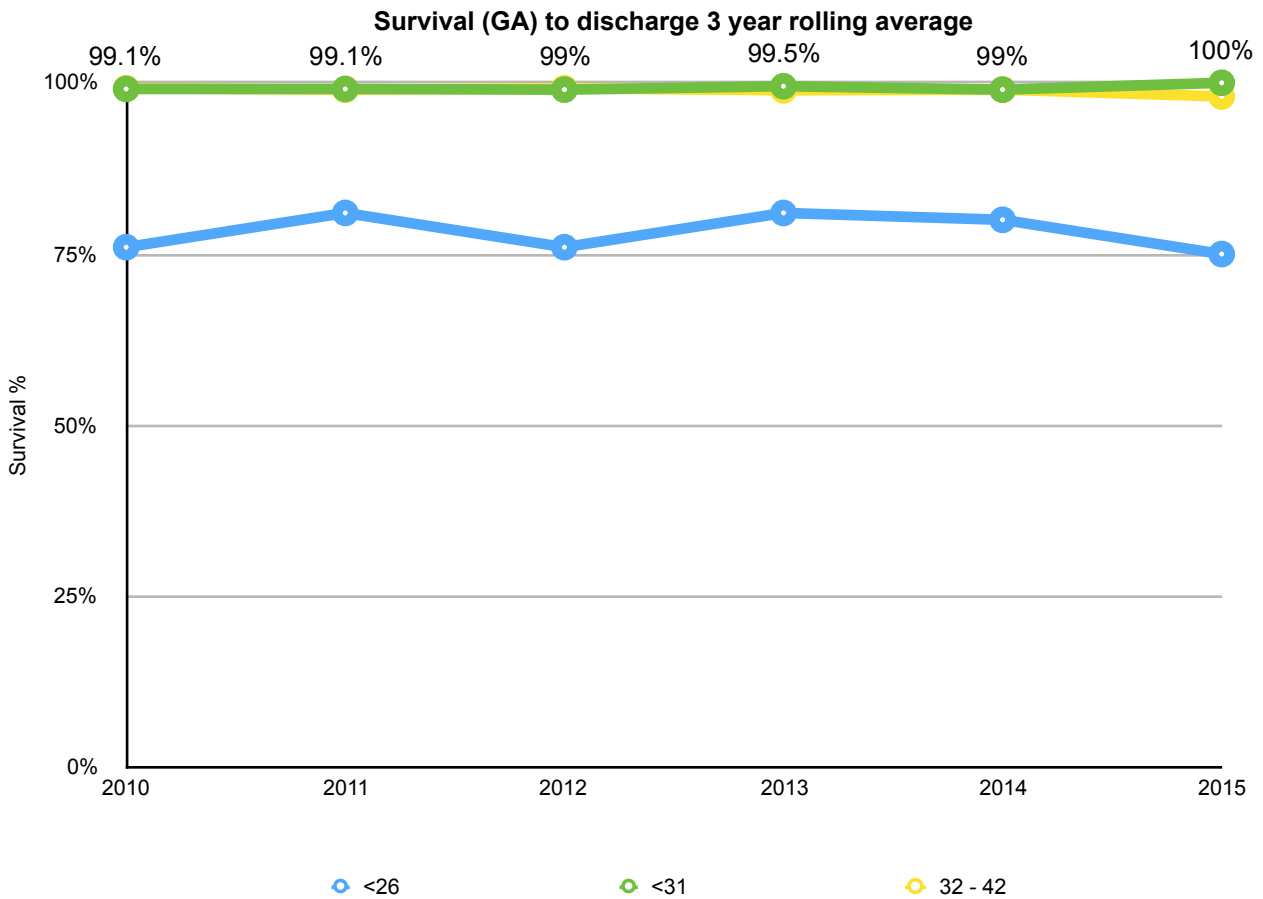
The main reasons for admissions to SRH were taken from discharge summaries on the Meditech V6 software. The results are compared against NHS England data. No patient was recorded as having more than one reason for admission. Sunderland doesn't not currently have a transitional care unit so it is likely that some of the babies admitted to NNU would have been cared for in transitional care if it was available when compared nationally.

There is a large difference in the time frames of these audits. The NHS England data is collated from 3 years of combined data in comparison to the SRH data which has only been a year in length both times. Although the separation of years for SRH allows analysis of trends over the years it does give a different view to the data when comparing it to a 3-year period. More comparison of the data should be completed to determine if the national trends shown by NHS England are replicated in the trends of SRH figures.

## Mortality

Mortality rate /1000 births (All Births 2010 – 2015)

Year	Total Births	Deaths				Mortality rate/1000 births			
		Still Births	<7 Days	7 - 28 Days	>28 Days	Perinatal	Early Neonatal	Late Neonatal	Post Neonatal
2010	3492	22	5	4	0	7.7	1.4	1.2	0
2011	3574	20	4	2	1	6.7	1.1	0.5	0.3
2012	3384	12	2	0	1	4.1	0.6	0	0.3
2013	3295	19	7	3	1	7.8	2.1	0.9	0.3
2014	3131	17	7	1	0	7.6	2.2	0.3	0
2015	3158	11	3	1	2	5.4	1.3	0.3	0.6





## Mortality

### Survival by GA 2015

Gestation	Total Admissions	Total Deaths	<7 Days	7 - 28 Days	>28 Days	Mortality %	Survival to Discharge%
< 26	8	2	1	0	1	25	75
26 - 30	61	0	0	0	0	0	100
31 - 36	159	2	0	1	1	1	99
> 36	118	2	2	0	0	2	98
<b>Total</b>	<b>346</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>98</b>

### Survival by Birth Weight 2015

Birth Weight	Total Admissions	Total Deaths	<7 Days	7 - 28 Days	>28 Days	Mortality %	Survival to Discharge
<499	1	1	0	0	1	100	0
500 - 999	33	1	1	0	0	3	97
1000 - 1499	43	1	0	0	1	2	98
1500 - 1999	71	0	0	0	0	0	100
2000 - 2499	58	1	0	1	0	2	98
2500 - 3000	53	0	0	0	0	0	100
>3000	87	2	2	0	0	2	98
<b>Total</b>	<b>346</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>98</b>

### Survival stratified by admission 2015

Referral Type	Total Admissions	Total Deaths	<7 days	7 - 28 Days	>28 Days	Mortality %	Survival to Discharge
Inborn - Booked	240	5	3	1	1	2	98
Inborn - Booked elsewhere	24	0	0	0	0	0	100
Postnatal Transfer In	62	1	0	0	1	2	98
Other	20	0	0	0	0	0	100
<b>Total</b>	<b>346</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>98</b>

**MBRRACE - UK : Mothers and Babies Reducing Risk through Audits and Confidential Enquiries across the UK**

**MBRRACE - 2014**

<b>GA</b>	<b>Booked</b>	<b>Type</b>	<b>Cause (Place)</b>
<b>24</b>	Sunderland	ENND	Medical (NNU)
<b>25</b>	Durham	ENND	Medical (NNU)
<b>26</b>	Durham	ENND	Medical (NNU)
<b>38</b>	Sunderland	ENND	Medical (NNU)
<b>38</b>	Sunderland	ENND	Congenital (NNU)
<b>39</b>	Sunderland	ENND	Congenital (NNU)
<b>Unknown</b>	Unbooked	ENND*	Unknown (Home)
<b>34</b>	Sunderland	LNND	Trauma (A&E)

**ENND: Early neonatal deaths,  
LNND: Late neonatal deaths  
NNU: Neonatal Unit, Sunderland**

Small number change makes a significant difference to our stabilised and adjusted mortality rates. Moreover our unit has a smaller birth population and is also a designated unit for intensive care from a wider catchment area. This is an area of concern to us and needs to be closely monitored.

MBRRACE includes deaths irrespective of whether they received neonatal unit care or not, 2 out of the 8 deaths attributed to our neonatal unit did not have any neonatal input. Furthermore 2 babies had fatal congenital anomalies diagnosed antenatally (50% of neonatal deaths that received neonatal unit care).