Annual Report 2013

Department of Neonatology
Brighton & Sussex University Hospitals NHS Trust

Abbreviations	
AABR	Auditory Acoustic Brainstem Responses
ANNP	Advanced Neonatal Nurse Practitioner
BAPM	British Association of Perinatal Medicine
BSUH	Brighton and Sussex University Hospitals
CA	Corrected age
CDC	Child Development Centre
CEMACH	Confidential Enquiry into Maternal and Child Health
CLD	Chronic Lung Disease
CPAP	Continuous Positive Airway Pressure
CVL	Central venous line
DEBM	Donor expressed breast milk
EBA	Early Birth Association
ETT	Endotracheal tube
FTE	Full time equivalent
GA	Gestational age
HD	High dependency
HHFNC	Humidified High Flow Nasal Cannula
HIE	Hypoxic Ischaemic Encephalopathy
IC	Intensive care
IUGR	Intrauterine Growth Restriction
IVH	Intraventricular Haemorrhage
KSS	Kent, Surrey and Sussex
LW	Labour Ward
MRSA	Methicillin Resistant Staphlococcus Aureus
MSSA	Methacillin Sensitive Staphlococcus Aureus
NEC	Necrotising Enterocolitis
NNU	Neonatal Unit
OAE	Otoacoustic emissions
PDA	Patent Ductus Arteriosus
PPHN	Persistent Pulmonary Hypertension
PRH	Princess Royal Hospital
PROM	Premature Rupture of Membranes
RACH	Royal Alexandra Children's Hospital
RDS	Respiratory Distress Syndrome
ROP	Retinopathy of Prematurity
RSCH	Royal Sussex County Hospital
SC	Special Care
SCBU	Special Care Baby Unit
TOF	Tracheo-Oesophageal Fistula
TMBU	Trevor Mann Baby Unit
VRE	Vancomycin Resistant Enterococcus

Data used to compile this report has been collected from BadgerNet. Thanks go to Patricia Walker for data management. Thanks also to Kipp's mum for allowing us to use his photo on the front cover.

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This report can be found on the BSUH Neonatal website:
http://www.bsuh.nhs.uk/tmb

Introduction

The Department of Neonatology is based on the Trevor Mann Baby Unit at the Royal Sussex County Hospital and the Special Care Baby Unit at Princess Royal Hospital. In 2013, there were 3,292 deliveries at the Royal Sussex County Hospital and 2,536 deliveries at the Princess Royal Hospital.

The Trevor Mann Baby Unit, Brighton:

The TMBU is one of three intensive care units in the Kent, Surrey and Sussex Neonatal Network. It provides a tertiary, neonatal medical and surgical service for Brighton, East and West Sussex and a special care service for Brighton and Mid-Sussex. The Sussex Neonatal Transport Service is based at the TMBU and provides 24/7 cover alongside similar services in Kent and Surrey. We have a team of drivers, our own ambulance, and provide a dedicated consultant for the service during daytime hours.

There are 27 cots on the TMBU of which 9 are staffed for intensive care, 8 for high dependency care and 10 for special care. Current cot levels in Brighton are set to provide sufficient medical and surgical intensive care facilities for Sussex babies. Transitional care is provided on the postnatal wards at RSCH. The Neonatal Outreach Service has experienced a successful first year and parents have found the opportunity for earlier supported discharge very positive. Ongoing funding has been secured.

The Special Care Baby Unit, Haywards Heath:

The SCBU at Princess Royal Hospital is staffed for 8 special care cots. Transitional care is provided on the postnatal ward. The baby unit is one of two in the UK led by a team of ANNPs, supported by consultant neonatologists. Women likely to deliver at less than 34 weeks gestation or whose baby is likely to require high dependency or intensive care are transferred to the RSCH. There are facilities at PRH for short term ventilation and stabilisation of infants prior to transfer. Infants requiring short periods of care on CPAP or HHFNC are routinely managed at PRH.

Neonatal Surgery:

There is a high risk pregnancy unit for fetal assessment and fetal medicine, and referrals are accepted for perinatal care prior to neonatal surgery. There is a monthly antenatal surgical clinic. All neonatal surgery is performed on site at the RACH with a team of dedicated paediatric surgeons and paediatric anaesthetists. There is sufficient IC and HD capacity across the TMBU and RACH for neonatal surgery to be referred from around Sussex and a proportion of the Kent, Surrey and Sussex Neonatal Network.

Support services and ongoing care:

We benefit from the developing tertiary services at the RACH, including respiratory medicine, cardiology and gastroenterology. Infants with ongoing medical or surgical needs beyond the neonatal period are transferred to the 'Alex' as soon as possible. Our department is supported by a team of paediatric radiologists providing a 24/7 on call service. MRI, spiral CT and nuclear medicine investigations are all available on site. The neurophysiology department based at Hurstwood Park provides a mobile EEG service. We also have access to paediatric dietetics, physiotherapy, pharmacy, speech and language therapy, audiology, ophthalmology and a breast feeding advisor and maternity counselor. Dr Paul Seddon and the Community Paediatric Nursing Team continue to coordinate the discharge and follow-up of infants requiring home oxygen. There is a weekly multidisciplinary Family & Social Meeting on both units involving a nurse, health visitor or consultant in child protection and a paediatric social worker. We have access to a parent counselor and support from the chaplaincy team.

A perinatal pathology service is provided at St Thomas' Hospital, London, with visiting support from other tertiary specialists from the Evelina Children's Hospital including those from genetics, cardiology, nephrology and neurology.

Weekly neonatal follow-up clinics are held on both the RSCH and PRH sites. Monthly neurodevelopmental clinics at the RACH are used to follow preterm and birth asphyxiated babies. We aim to provide comprehensive follow-up of high risk infants until two years corrected age. The Seaside View and Nightingale Child Development Centres provide multi-disciplinary care for those infants needing ongoing neurodevelopmental support.

Future plans:

The department of neonatology won the BSUH Team of the Year for 2013. Currently nursing and medical staffing are at a good levels and more cross site working between the TMBU and SCBU at PRH is being introduced. A full programme of research, clinical governance and education is in place and our goal is to continue improving the quality and safety of clinical care through clinical governance, education and multidisciplinary working. A programme for simulation training commenced in 2013 is due to progress through 2014.

During 2014 there are plans to open a designated transitional care unit on the RSCH site. Building works will increase space in the nurseries on both sites and improve parent facilities at the TMBU. We hope these changes will maximize the chance to deliver best care to our babies and families.

We will continue to liaise closely with maternity colleagues to improve perinatal care. Funding for a co-located midwifery led birthing unit in Brighton and expansion of feto-maternal services is awaited.

Nurse development has been given priority over the last year with nurses completing the neonatal pathway, child protection modules, neonatal surgical modules, degree and master's programs, this will continue throughout 2014.

2014 is a year where we want to put a real focus on improving the family experience. We have put several projects in place to help us achieve this.

Firstly, Fabio the Frog will be introduced to both SCBU and TMBU in March. This is a real-time patient feedback tool which should allow us to gauge the opinion of parents and have the results instantaneously. The aim is to facilitate change within the unit helping us deliver more effective and efficient care and improve the experience of the families we care for.

SCBU has been chosen as one of the pilot sites for the BLISS Charity Family Friendly Accreditation scheme. This is a project that will be carried out with nursing staff, parents and BLISS working in partnership to achieve each of the standards. Once 90% of the standards are met, Family Friendly Accreditation will be awarded.

Staffing

Medical Staff

Consultant Neonatologists:

Dr Neil Aiton	Interest in Cardiology, One Stop Clinic
Dr Philip Amess	Lead Clinician, interest in Developmental Outcome
Dr Robert Bomont	Paediatric College Tutor, Training Programme Director
Dr Ramon Fernandez	Lead for Clinical Governance
Dr Cathy Garland	Transport Consultant
Dr Cassie Lawn	Transport Lead, interest in neonatal resuscitation
PD Dr Heike Rabe	Lead for Research, Vice President of the ESPR, Senior Lecturer
Dr Paul Seddon	Interest in Paediatric Respiratory Medicine
Dr Ryan Watkins	Honorary Clinical Senior Lecturer, Deputy Chief of Women & Children (Children), Deputy Chief of Safety (Children)

Consultant Radiologists: Dr Ian Kenney, Dr Lorraine Moon, Dr Ima Moorthy, Dr Lavanya Vitta

Consultant Ophthalmologist: Mr Dominic Heath, Miss Victoria Barrett

Consultant Audiologist: Mr Rob Low

Consultant Pathologist: Dr Jo Wyatt Ashmead (St Thomas' Hospital)

Consultant Obstetricians:

Mr Salah Abdu	Mr Tosin Ajala
Mr Rob Bradley	Miss Heather Brown
Mr Ayman Fouad	Mr Ani Gayen
Dr Sharif Ismail	Mr Richard Howell
Mr Greg Kalu	Mr Ehab Kelada
Mr Tony Kelly	Miss Julia Montgomery
Mr Onome Ogueh	

Consultant Paediatric Surgeons:
Mr Varadarajan Kalidasan
Miss Ruth Hallows
Miss Anouk van der Avoirt
Mr Anies Mohammed
Mr Bommaya Narayanaswamy
Miss Victoria Scott (locum appt)
Miss Alexandra Smith (Orthopaedics)
Mr Simon Watts, Mr Prodip Das (ENT)

Visiting Consultants:

Dr Owen Miller	Cardiology
Dr Shelagh Mohammed	Genetics
Dr Chris Reid	Nephrology
Dr Tammy Hedderly	Neurology

Junior and Middle Grades Medical Staff:

Tier 2:	Associate Specialist (Dr Michael Samaan)
	Specialist Doctor (Dr Fatou Wadda)
	4 Specialist Registrars
	4 Trust Clinical Fellows / 1 ANNP
Tier 1:	6 ST3, 1 Trust Clinical Fellow

Neonatal Nurses (TMBU)

Senior Nursing Staff

Helen O'Dell	Associate Chief Nurse Women & Children, Head of Midwifery
Lorraine Tinker	Head of Paediatrics and Neonatal Nursing
Jennifer Deeney	Matron Neonatology
Mrs Susanne Simmons	Lecturer Practitioner

Advanced Neonatal Nurse Practitioners

Jamie Blades
Maggie Bloom
Dee Casselden
Lisa Chaters
Naomi Decap
Karen Hoover
Caroline McFerran
Simone van Eijck
Nicola McCarthy
Sarah Quinton
Lisa Kaiser (Trainee)

Band 7

Clare Morfoot (Clinical Practice Educator)
Clare Baker (PRH)
Louise Barton (Transport Nurse)
Jackie Cherry
Sandra Hobbs
Karen Marchant
Judith Simpson
Judy Edwards (PRH, Outreach)
Carly Taylor
Clare Hunt

Support Staff

Unit Technician

John Caisley

Pharmacist

Mike Pettit

Speech and Language Therapists

Jane Pettigrew (post currently vacant)

Physiotherapy

Melanie Smith

Dietician

Carole Davidson

Counsellor

Sally Meyer

Secretarial support

Emma Morris, Alex Panton, Patricia Walker

Admissions, Activity and Mortality

Trevor Mann Baby Unit

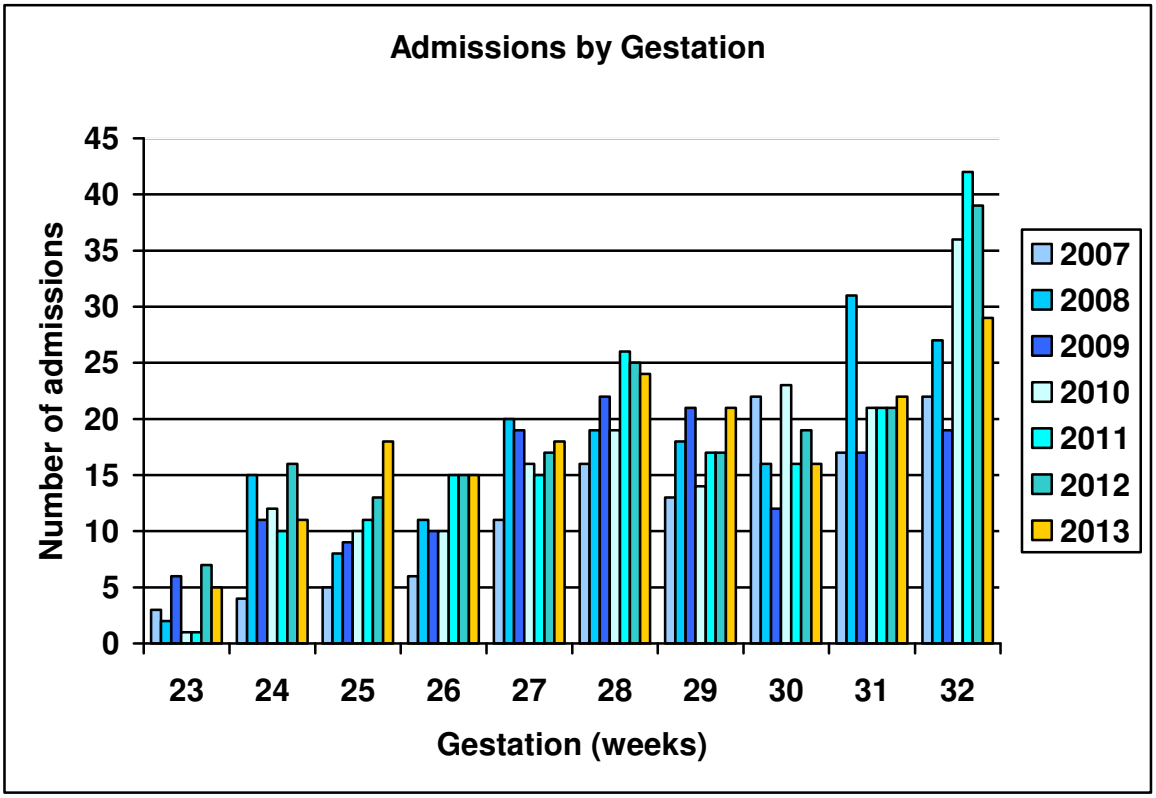
TMBU Admissions	Total Admissions per year
2001	424
2002	364
2003	450
2004	404
2005	444
2006	415
2007	465
2008	524
2009	456
2010	525
2011	562
2012	567
2013	**528**

Includes re-admissions

TMBU Admissions	2011	2012	2013
Total number of live births (RSCH)	3695	3569	**3292**
Total admissions (including re-admissions)	562	567	**528**
Inborn	390	403	**362**
Inborn booked RSCH	300	313	**299**
Inborn booked elsewhere	90	90	**68**
Outborn	133	126	**134**
Re-admissions	37	32	**28**
Admissions from home	2	6	**4**
Percentage inborn births admitted to TMBU	10.7	11.3	**11**

Admission details	2011		2012		2013	
Gestation (weeks)	**Babies**	**%**	**Babies**	**%**	**Babies**	**%**
23	1	<1	7	1	**5**	**1**
24	10	2	16	3	**11**	**2**
25	11	2	13	2	**18**	**3**
26	15	3	15	3	**15**	**3**
27	15	3	17	3	**18**	**3**
28	26	5	25	4	**24**	**4**
29	17	3	17	3	**21**	**4**
30	16	3	19	3	**16**	**3**
31	21	4	21	4	**22**	**4**
32	42	8	39	7	**29**	**5**
33-36	132	25	127	22	**135**	**25**
37-42	219	42	218	38	**182**	**34**
>42	0	0	1	<1	**7**	**1**
Birthweight (g)						
<500	1	<1	4	<1	**4**	**1**
<750	17	3	32	6	**27**	**5**
<1000	25	5	32	6	**43**	**8**
<1500	66	13	72	13	**66**	**12**
Multiple pregnancies (number of babies)						
Twins	100	20	83	15	**71**	**13**
Triplets	17	3	21	4	**6**	**1**

Inborn and exutero admissions: does not include re-admissions

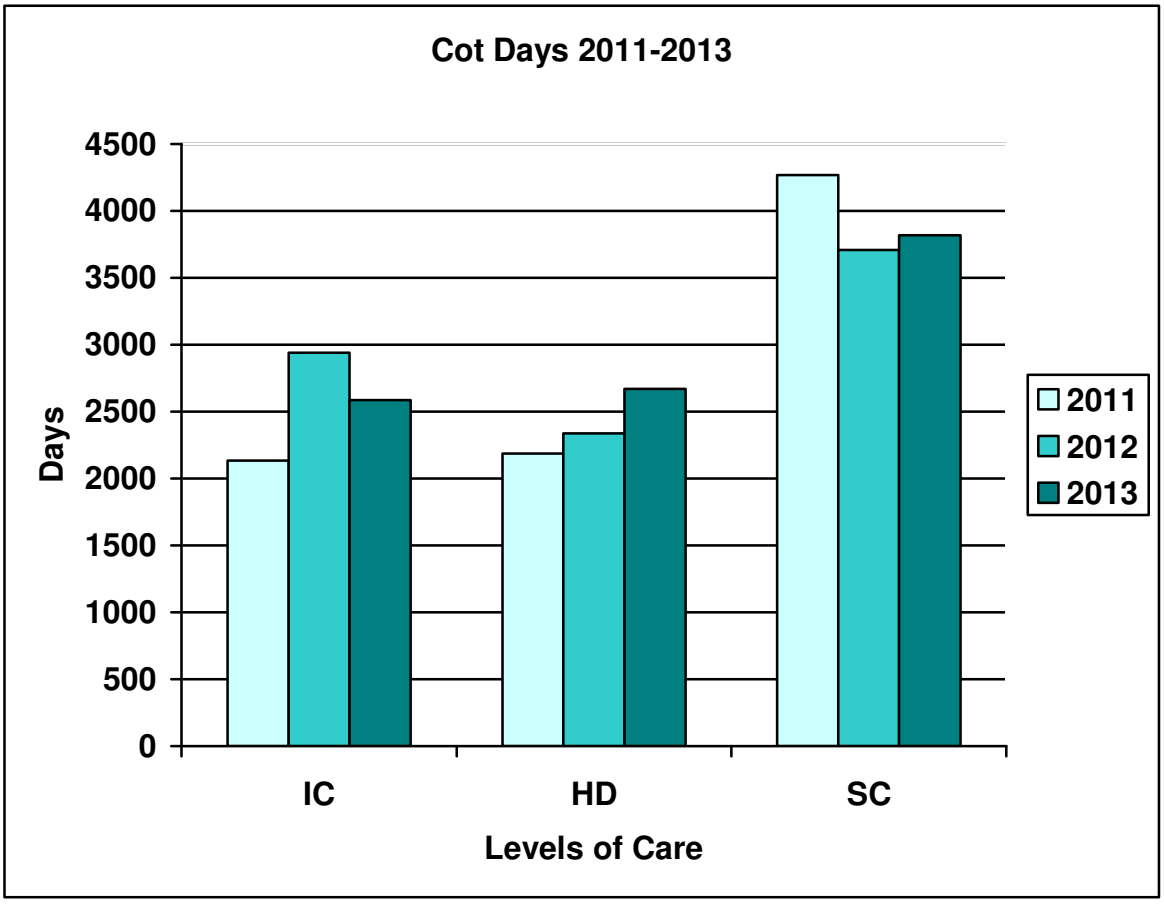


Transfers in	2011	2012	2013
In-Utero			
Babies delivered and admitted	90	90	**68**
Refused transfers in	96	170	**89**
Ex-Utero	133	126	**121**
Princess Royal Hospital	26	37	**24**
East Sussex Hospitals	36	29	**32**
West Sussex Hospitals	28	18	**23**
Other Network Hospitals	22	22	**26**
Outside Network	18	23	**16**
Refused transfers in	20	32	**29**

Does not include re-admissions or home births

Cot occupancy	2011		2012		2013	
Cots	**Days**	**% occ**	**Days**	**% occ**	**Days**	**% occ**
IC (Level 1)	2135	65	2941	90	**2585**	**79**
HD (Level 2 care)	2186	75	2337	80	**2669**	**91**
IC & HD (total)	4321	70	5278	85	**5254**	**85**
SC (Level 3, 4 & 5 care)	4267	117	3707	102	**3817**	**105**
Total	8588	87	8985	91	**9071**	**92**

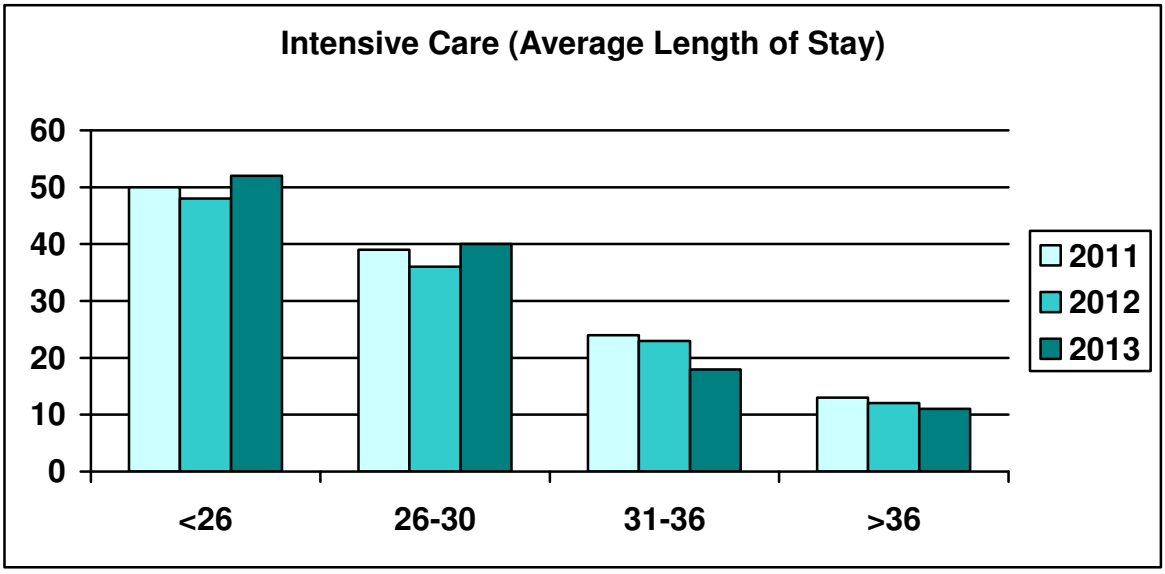
2001 BAPM definition for care levels

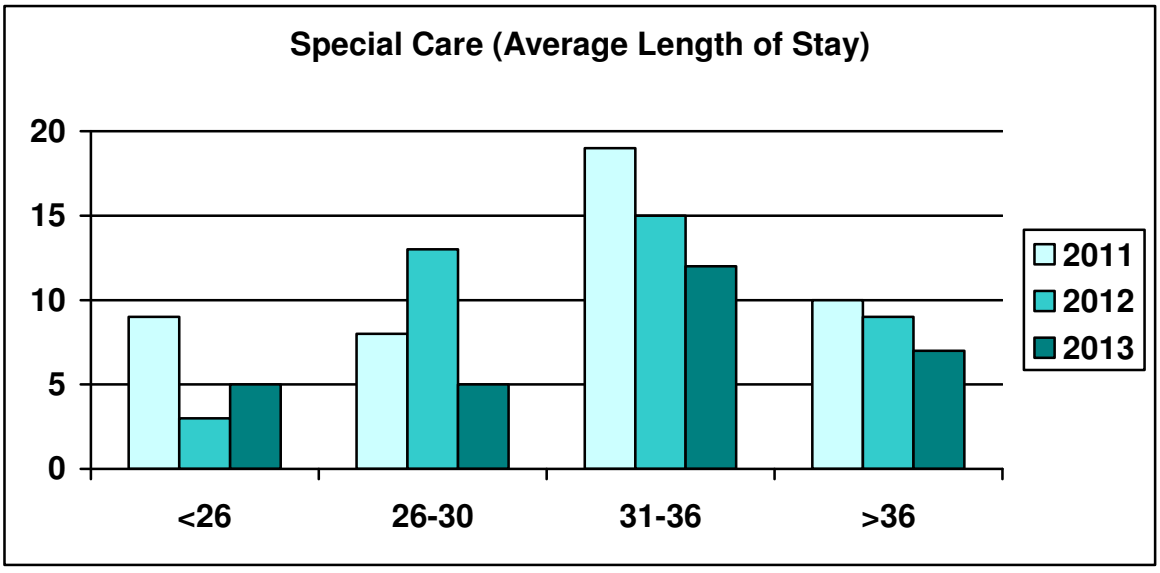


TMBU Care Categories 2013						
Gestation at birth (weeks)	IC		HD		SC only	
	Babies	Days	Babies	Days	Babies	Days (total days)
< 23	0	0	0	0	-	-
23	5	174	1	73	-	-
24	11	346	9	291	-	-
25	17	414	11	379	-	-
26	15	252	13	359	-	-
27	18	360	15	339	-	-
28	24	187	19	392	-	-
29	21	129	15	126	-	-
30	16	117	14	237	-	-
31	22	61	16	104	3	71
32	29	73	19	80	3	21
33	27	49	10	35	9	103
34 – 36	108	151	88	116	48	378
37 - 41	177	261	144	127	84	305
> 41	3	11	2	11	5	19
Total	**491**	**2585**	**376**	**2669**		

2001 BAPM definition for care levels

Average length of stay by gestation			
Gestation	2011	2012	2013
	IC days		
<26	50	48	**52**
26-30	39	36	**40**
31-36	24	23	**18**
>36	13	12	**11**
	HDU days		
<26	N/A	N/A	**5**
26-30	33	23	**27**
31-36	18	15	**18**
>36	10	8	**8**
	SC days		
<26	9	3	**5**
26-30	8	13	**5**
31-36	19	15	**12**
>36	10	9	**7**





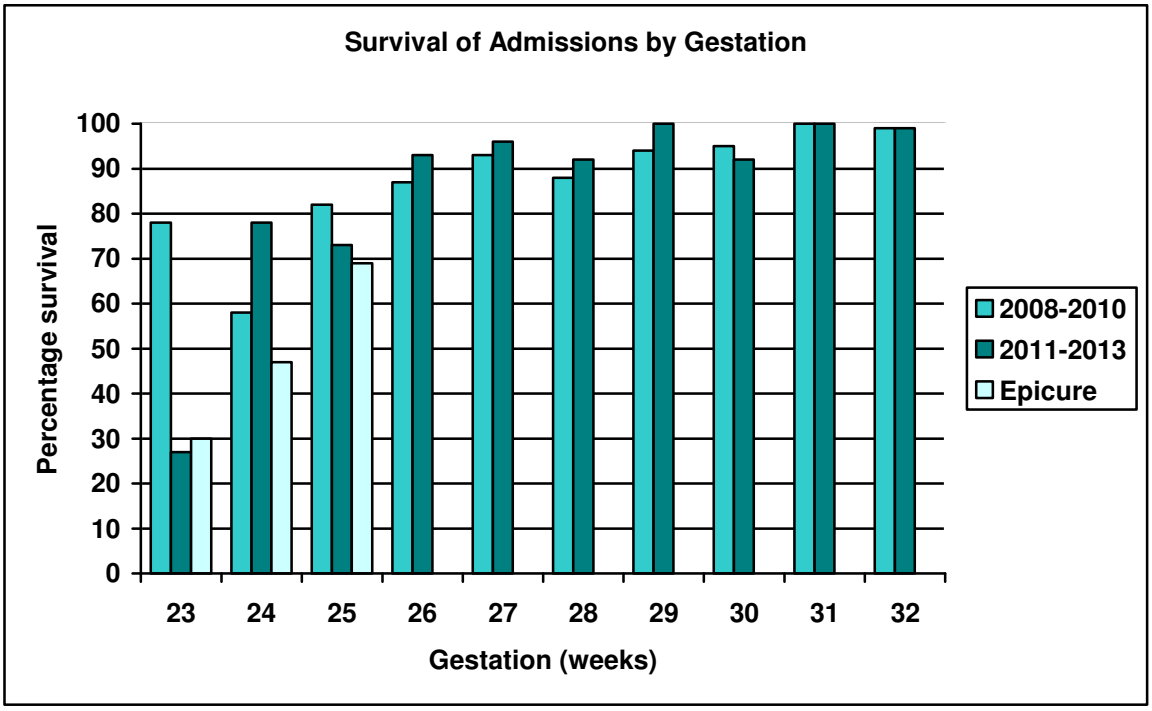
Transfers out	2011	2012	2013
Specialist medical care	15	14	**5**
Cardiac care	5	8	**21**
Discharges			
Home	158	155	**160**
Postnatal ward	150	157	**129**
Local hospital care	207	164	**170**
Princess Royal Hospital	50	62	**62**
RACH	23	15	**14**
East Sussex Hospitals	60	43	**36**
West Sussex Hospitals	28	20	**28**
Other KSS Network Hospitals	24	17	**24**
Other Hospitals Outside KSS Network	N/A	N/A	**6**
Delayed transfer out to local care (days)	106	77	**100**

Survival of all inborn live births by gestation 2013								
GA	**Live births**	**Admitted to TMBU***	**Died before admission**	**Died <7d**	**Died 7-28d**	**Died >28d**	**Total deaths**	**Admissions surviving to discharge**
23	3	3		1	2		3	**0**
24	5	5		1			1	**4**
25	12	12		1	2		3	**9**
26	10	10						**10**
27	11	11						**11**
28	19	19			1		1	**18**
29	12	12						**12**
30	10	10						**10**
31	15	15						**15**
32	22	22						**22**
33-36	189	113						**113**
37-42	2960	130		1			1	**129**
>42	20	0						**-**
Total	**3293**	**362**		**4**	**5**		**9**	**353**

Inborn (booked and unbooked) excluding lethal congenital abnormalities
Not including re-admissions

TMBU, 3 year rolling survival to discharge for extreme preterm admissions							
	2011		**2012**		**2013**		
GA	**Admitted**	**Died**	**Admitted**	**Died**	**Admitted**	**Died**	**Survival to discharge %**
23	1	1	7	4	**3**	**3**	**27**
24	10	5	16	1	**6**	**1**	**78**
25	11	4	13	3	**13**	**3**	**73**
26	15	3	15	0	**15**	**0**	**93**
27	15	1	17	1	**15**	**0**	**96**

Includes inborn and ex-utero transfers



Mortality Statistics (RSCH)	2008	2009	2010	2011	2012	2013
Total deliveries	3528	3345	3412	3721	3582	**3303**
Total livebirths	3516	3332	3389	3695	3569	**3292**
Total stillbirths	12	13	23	26	13	**11**
Deaths before admission*	N/K	4	3	4	0	**0**
Total neonatal deaths	29	21	12	22	23	**19**
Inborn	14	16	7	13	17	**11**
Outborn	15	5	5	9	6	**8**
Early neonatal deaths**	6	10	4	10	8	**5**
Late neonatal deaths**	4	4	3	2	4	**5**
Deaths >28 days**	4	3	2	1	5	**0**
Still birth rate	3.4	3.9	6.7	7.0	3.6	**3.3**
Perinatal mortality rate	5.1	6.9	7.9	9.7	5.9	**4.8**
Neonatal mortality rate**	2.8	4.2	2.1	3.2	3.4	**3.0**
Mortality Statistics (BSUH = RSCH + PRH)			**2010**	**2011**	**2012**	**2013**
Total deliveries			5886	6162	6057	**5841**
Total livebirths			5852	6126	6035	**5828**
Total stillbirths			32	36	22	**13**
Deaths before admission*			3	4	0	**0**
Early neonatal deaths**			4	11	8	**6**
Late neonatal deaths**			3	2	4	**5**
Deaths >28 days**			2	1	5	**0**
Still birth rate			5.4	5.8	3.6	**2.2**
Perinatal mortality rate			6.6	8.3	5.0	**3.3**
Neonatal mortality rate**			1.7	2.8	2.0	**1.9**

Terminations and deaths <23 weeks gestation not included.

****Inborn (booked and unbooked) excluding lethal congenital abnormalities***

TMBU deaths (inborn and ex-utero transfers) 2013					
Delivered	**GA**	**BW**	**Age d**	**PM**	**Cause of death, related factors**
Preterm Infants					
RSCH	23^{+4}	564	10	No	Extreme prematurity, severe RDS
RSCH	25^{+1}	681	9	Yes	Extreme prematurity, pulmonary hepatic and abdominal haemorrhage
RSCH	24	610	<1	No	Extreme prematurity, ruptured trachea
RSCH (Home)	25^{+5}	700	1	No	Extreme prematurity, PPHN, Grade 3 IVH
RSCH	25	401	<1	No	Extreme prematurity, VACTERL association
Worthing	29^{+3}	1340	<1	No	Pulmonary hypoplasia, PROM 22/40
Portsmouth	24^{+3}	680	>28	Yes	Extreme prematurity, CLD, candida sepsis
Eastbourne	24^{+5}	675	9	No	Extreme prematurity, pulmonary haemorrhage, Grade 4 IVH
Chertsey	23^{+4}	552	99	No	Extreme prematurity, CLD, ileal perforation, probable sepsis
Frimley	24	685	9	Yes	Extreme prematurity, NEC, Grade 3 IVH
NEC					
RSCH	28+6	1057	9	Yes	Fulminant NEC, IUGR
Sepsis					
RSCH	23^{+6}	496	21	No	Extreme prematurity, gram –ve sepsis, grade 3 IVH, hydrocephalus
RSCH	25	795	1	Yes	Extreme prematurity, gram –ve sepsis, NEC
RSCH	25^{+1}	714	23	No	Sepsis (died following PDA ligation)
Deaths related to perinatal asphyxia					
RSCH	41	4794	2	No	HIE Grade 3
PRH	40	3223	1	No	HIE Grade 3
Worthing	41	4130	4	Yes	HIE Grade 3
Term Infants (deaths related to other causes)					
RSCH	38^{+5}	2654	<1	Yes	Lung hypoplasia (died in A&E theatre)
RSCH	35^{+4}	1557	9	No	Edwards Syndrome (end of life care in Hospice)

Post Mortems	2011	2012	2013
Total deaths	22	23	**19**
Post Mortems performed (% deaths)	6 (27)	5 (22)	**7 (37)**

TMBU, 4 year rolling mortality											
	Total Admissions:					Deaths					Survival to discharge
	2010	2011	2012	2013	Total	2010	2011	2012	2013	Total	(%)
Inborn	361	390	402	362	1515	7	13	17	12	49	**96.8**
Outborn	128	133	133	134	528	5	9	6	7	27	**94.9**
<26 weeks	23	22	36	34	115	5	10	8	12	35	**70**
<28 weeks	25	30	32	57	144	1	4	1	0	6	**96**
<31 weeks	56	59	61	43	219	2	3	3	2	10	**95**
31+ weeks	390	414	406	353	1563	4	5	11	5	25	**98**
<500g	1	2	4	4	11	0	1	2	5	8	**27**
<750g	17	21	32	27	97	4	8	6	10	28	**71**
<1000g	25	34	32	43	134	2	5	1	0	8	**94**
<1500g	66	70	72	66	274	1	1	4	2	8	**97**
>1500g	386	398	395	354	1533	5	7	10	5	27	**98**

Admissions, Activity and Mortality
Special Care Baby Unit, Princess Royal Hospital

SCBU Admissions	2011	2012	2013
Total number of livebirths	2441	2466	**2536**
Total number of stillbirths	10	9	**2**
Total admissions*	246 (23)	279 (27)	**273 (20)**
Percentage of live births admitted	10%	11%	**11**

***Includes re-admissions**

Admission details	2011		2012		2013	
	Babies	%	Babies	%		%
Total admissions	223		252		**253**	
Inborn	178	80	195	77	**196**	**77**
Outborn	45	20	57	23	**54**	**21**
Gestation ( ) = babies born elsewhere and transferred back to PRH						
23	0		0		**0**	
24	1(1)		2(2)		**3(2)**	
25	0		1(1)		**2(3)**	
26	0		4(4)		**3(3)**	
27	3(3)		5(5)		**3(3)**	
28	0		7(7)		**3(2)**	
29	4(4)		1(1)		**7(7)**	
30	3(3)		4(4)		**7(6)**	
31	4(4)		5(5)		**7(6)**	
32	16(2)		15(15)		**7(5)**	
33-36	84(12)		80(23)		**62(6)**	
37-42	131(5)		128(12)		**149(142)**	
>42	0		0		**0**	
Birthweight (g) ( ) = babies born elsewhere and transferred back to PRH						
<500	0		0		**0**	
<750	1(1)		2(2)		**4(4)**	
<1000	3(3)		9(9)		**6(5)**	
<1500	10(9)		17(17)		**18(5)**	
Multiple births (number of babies)						
Twins	43		46		**28**	
Triplets	0		11		**0**	

Does not include re-admissions

Transfers	2011	2012	2013
Ex-Utero			
Transfers out to Brighton	29	36	**23**
Transfers out to elsewhere	4	7	**4**
Transfers in from Brighton	36	60	**60**
Transfers in from elsewhere	7	10	**5**
Transfers in from home	1	6	**14**

Cot occupancy	2011		2012		2013	
Cots	**Days**	**% occ**	**Days**	**% occ**	**Days**	**% occ**
IC	95	-	92	-	112	-
HD	95	-	106	-	231	-
SC	1765	-	2145	-	2035	-
Total	**1955**	**67**	**2343**	**80**	**2379**	**81**

Mortality Statistics (PRH)	2010	2011	2012	2013
Total deliveries	2474	2441	2475	**2538**
Total livebirths	2463	2431	2466	**2536**
Total stillbirths	9	10	9	**2**
Early neonatal deaths*	0	1	**0**	**1**
Late neonatal deaths*	0	0	**0**	**0**
Post neonatal deaths (>28 days)*	0	0	**0**	**0**
Still birth rate	3.6	4.0	3.6	**0.8**
Perinatal mortality rate	3.6	4.5	3.6	**1.2**
Neonatal mortality rate*	0	0.4	0	**0.4**

****Inborn (booked) excluding lethal congenital abnormalities***

PRH deaths 2013					
Delivered	**GA**	**BW**	**Age d**	**PM**	**Cause of death, related factors**
PRH	38	3223	1	No	HIE Grade 3 (transferred out and died on TMBU)

Summary of Clinical Activity
Trevor Mann Baby Unit

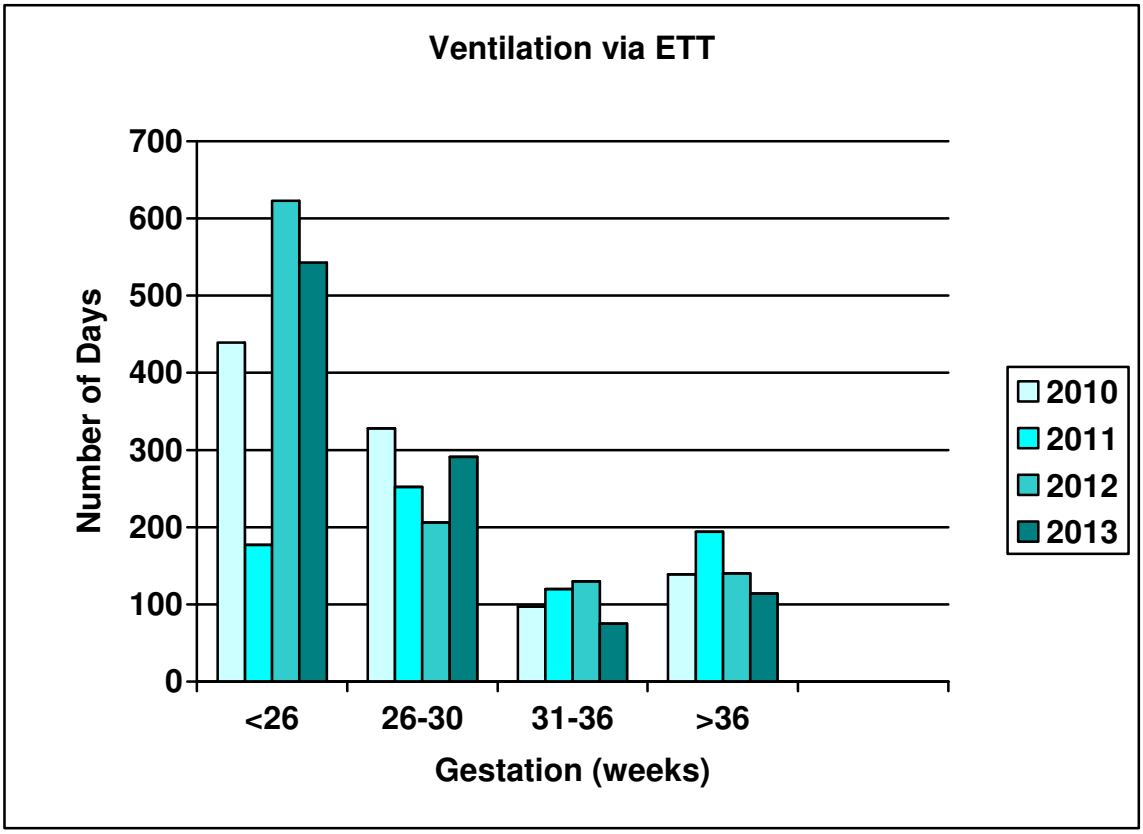
	2011		2012		2013	
	Days	Babies	Days	Babies	Days	Babies
Ventilation via ETT	827	187	1208	240	**1026**	**180**
CPAP and/or HFNC	2580	258	2987	290	**2832**	**270**
CPAP					**878**	**141**
HHFNC					**1954**	**200**
Oxygen therapy	837	133	501	106	**368**	**106**
Surfactant		105		116		**109**
Nitric Oxide (days / babies)	55	15	43	19	**36**	**14**

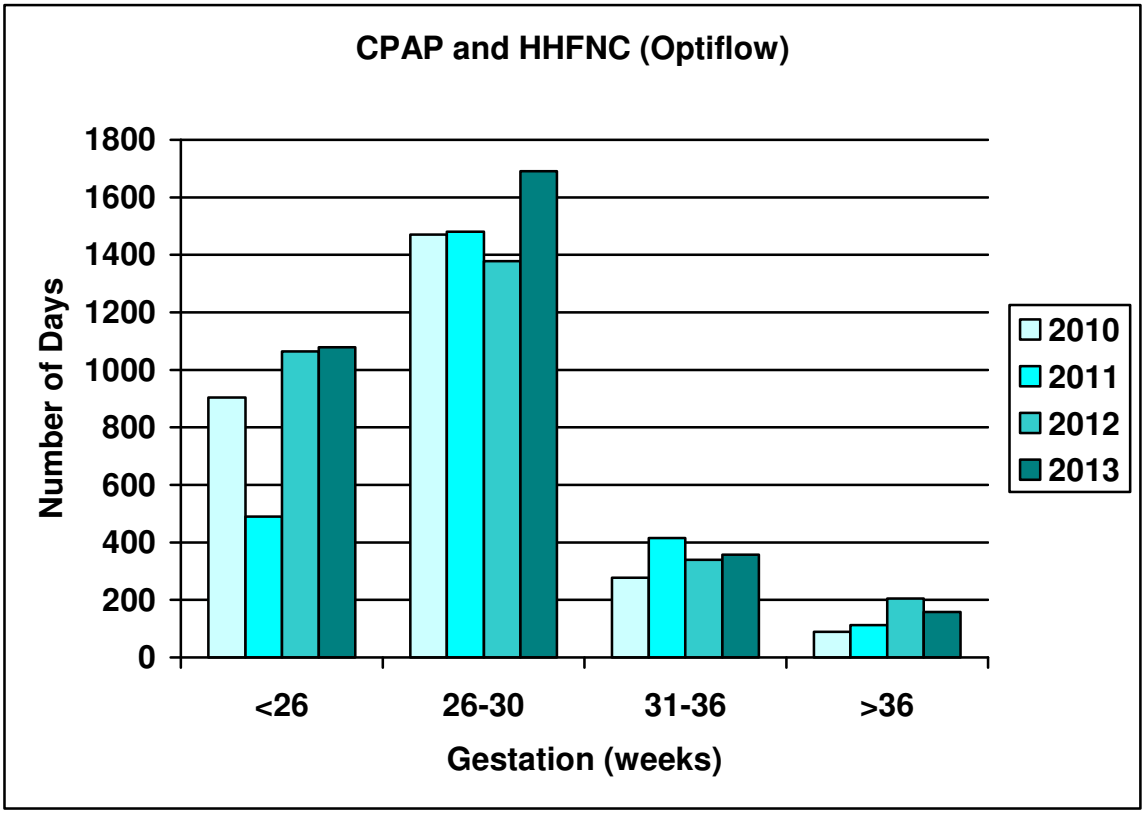
Respiratory diagnoses	Number of Babies		
	2011	2012	2013
Respiratory Distress Syndrome	195	176	**145**
Transient Tachypnoea	25	17	**9**
Persistent Pulmonary Hypertension	11	6	**18**
Pulmonary hypoplasia	1	3	**0**
Meconium aspiration	23	15	**14**
Cystic Fibrosis	0	0	**0**

Respiratory Complications	2011	2012	2013
Pulmonary haemorrhage	2	8	**7**
Pulmonary air leak requiring drain	15	15	**10**

Management of PDA	2011	2012	2013
Patent Ductus Arteriosus	30	53	**66**
PDA treated medically	11	30	**33**
PDA ligated	6	8	**11**

Infection	Positive Blood Cultures		
	2011	2012	2013
Group B streptococcus	3	1	1
Alpha haemolytic streptococcus	4	1	7
Haemophilus	0	0	1
Coagulase-negative staphylococcus	26	34	26
MSSA	2	0	2
MRSA	0	1	0
Enterococcus faecalis	0	6	2
Listeria	0	0	0
Escherichia Coli	4	1	3
Klebsiella species	0	0	1
Serratia species	0	2	2
Enterobacter species	0	1	2
Pseudomonas species	1	0	1
TOTAL	**40**	**47**	**48**


Ventilation via ETT
Number of Days
700
600
500
400
300
200
100
0
<26
26-30
31-36
>36
Gestation (weeks)
2010
2011
2012
2013


CPAP and HHFNC (Optiflow)
Number of Days
1800
1600
1400
1200
1000
800
600
400
200
0
<26
26-30
31-36
>36
Gestation (weeks)
2010
2011
2012
2013

Necrotising Enterocolitis	2011	2012	2013
	Cases	Cases	Cases
NEC (confirmed)	26	18	9 (6 ex-utero transfers)
NEC (suspected)			5 (medical treatment)
Perforated NEC	2	4	4
NEC treated surgically	8	8	7

Neonatal Surgical Cases (not NEC)	2011	2012	2013
	Cases	Cases	Cases
Gastroschisis	3	5	1
Exomphalos	2	0	3
Hirschsprungs	4	3	4
Malrotation	0	0	4
Meconium ileus	1	2	5
Gut perforation (not NEC)	1	3	4
Oesophageal Atresia / TOF	9	4	9
Intestinal atresia/obstruction	2	6	6
Inguinal hernia repair	4	4	8
Imperforate anus/rectal anomaly	9	3	5
Lung cyst/sequestration	2	2	0
Diaphragmatic eventration	1	1	1
Diaphragmatic hernia	3	2	2
TOTAL	**40**	**35**	**51**

Cranial Ultrasound Diagnoses	Number of Babies		
	2011	2012	2013
IVH with parenchymal involvement	7	9	4
Post haemorrhagic hydrocephalus requiring surgical intervention	1	0	2
Infarction without IVH	3	2	0
Periventricular ischaemic injury with cyst formation	2	2	4

All babies <32 weeks gestation have routine cranial ultrasound examination

Hypoxic Ischaemic Encephalopathy	2011	2012	2013
HIE grade 1	15	10	11
HIE grade 2	13	11	10
HIE grade 3	4	4	7
Hypothermia therapy	29	20	21
- *Inborn*	7	8	3
- *Outborn*	22	12	18

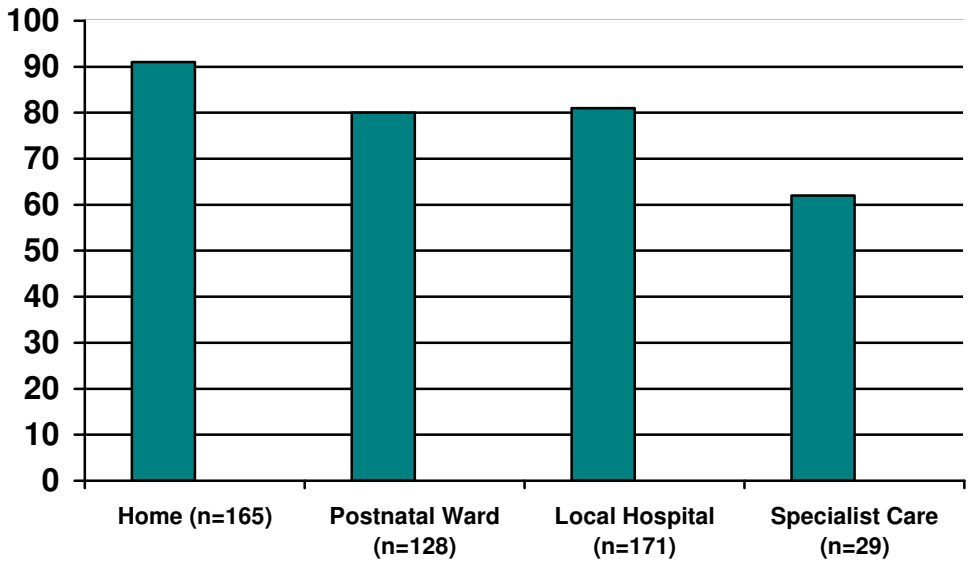
Retinopathy of Prematurity	2011	2012	
ROP grades 3/4	1	1	3
ROP treated with laser therapy	0	1	2

Screening as per recommendations from Royal College of Ophthalmologists

Neonatal Dashboard	2013		
	Eligible	Result	%
Antenatal steroids given 24 – 34 weeks gestation	156	142	91
Admission temperature <36 °C (from LW) <36 weeks gestation at birth <29 weeks gestation at birth	 221 61	 26 7	 12 11
Parent seen within first 24 hours of admission (first admission to NNU)	367	344	95
TPN commenced by day 2 <29 weeks gestation, <1000g BW	70	69	99
ROP screening <32 weeks gestation and or <1500g BW	85	81*	95
Breast milk at discharge <33 weeks discharge	53	31	58
Breast milk exclusively at discharge <33 weeks discharge	53	23	43

**** omitted screens all over 32 weeks gestation or >1500g BW***

Percentage of discharged babies receiving breastmilk during their admissions in 2013



Discharge Destinations

Summary of Clinical Incidents

We collect information on clinical incidents using the Datix system. Our trigger list includes:

Safety triggers:
Breach of safe delivery of care (insufficient staffing or other)
Failure or lack of equipment,
Poor communication or consent
Failure in documentation
Breach of confidentiality
Failure of child protection procedure.

Clinical Incident triggers:
Accidental extubation
Extravasation injury
Facial/nasal damage related to CPAP
Failure of infection policy
Cross infection
Medication and prescribing errors.

Transport triggers:
Low temperature on arrival (<36 ^{0}C)
Accidental extubation
No discharge summary prepared causing delay in transfer.

Clinical incidents are reviewed by the Neonatal Risk Panel with the aim of identifying common themes or trends and addressing issues of clinical risk. Findings are disseminated at clinical governance meetings and via the 'Baby Watch' leaflet.

Category	2008	2009	2010	2011	2012	2013
Access, admission, transfer, discharge	10	9	8	5	0	**8**
Clinical assessment (including diagnosis, scans, tests, assessments)	10	7	12	5	2	**6**
Consent, communication, confidentiality	18	9	9	8	7	**7**
Documentation (including records, identification)	20	14	15	18	9	**11**
Implementation of care and ongoing monitoring / review	3	0	4	5	5	**12**
Infection Control Incident	1	0	1	1	2	**1**
Infrastructure (including staffing, facilities, environment)	17	4	7	4	11	**16**
Medical device / equipment	24	11	16	19	9	**11**
Drugs and prescribing	69	47	72	80	53	**58**
Patient accident	1	0	1	1	0	**1**
Treatment, procedure	44	30	28	19	19	**12**
Other Incident	3	0	2	5	16	**42**
Total	**223**	**131**	**175**	**170**	**133**	**185**

Grade	2008	2009	2010	2011	2012	2013
No Harm: Impact Prevented	51	78	37	37	20	**12**
No Harm: Impact not Prevented	128	25	100	116	108	**150**
Low	37	25	35	16	12	**18**
Moderate	7	3	3	1	0	**5**
Severe	0	0	0	0	0	**0**
Total	**223**	**131**	**175**	**160**	**140**	**185**

Summary of Developmental Outcomes

Developmental follow-up takes place in baby clinic.

All babies who are likely to have developmental problems are referred to their local Child Development Centre.

All preterm infants born at < 29 weeks gestation and/or <1000g and cared for on the TMBU during the first 24 hours of life have been entered into a formal neurodevelopmental follow-up programme since 1st October 2002

Follow-up schedule for pre-term babies:

Prior to discharge / at term corrected age
- Physiotherapy and / or speech and language therapy assessment
- Audiology screening
- Screening for Retinopathy of Prematurity

At 3 months' corrected age
- Review of development and neurological assessment by consultant in baby clinic.
- Refer to specialist services as appropriate.

At 12 months' corrected age
- Hammersmith infant neurological examination
- Schedule of Growing Skills assessment
- Refer to specialist services as appropriate.

At 24 months' corrected age
- Bayley Scales of Infant Development III
- Health Status Questionnaire
- Refer to specialist services as appropriate or discharge if no concerns.

Since September 2006 Bayley III assessments have been undertaken at 24 months corrected age for preterm infants born at <29 weeks gestation and/or <1000g. Results have been analysed for 132 Sussex born babies cared for on the TMBU within the first 24 hours of life.

Outcome (%)	Locomotor	Fine Motor	Receptive Language	Expressive Language	Cognitive
Normal	67 (51)	100 (76)	81 (61)	82 (62)	107 (81)
Mild impairment	42 (32)	19 (14)	25 (19)	22 (17)	14 (11)
Moderate impairment	13 (10)	4 (3)	12 (9)	13 (10)	4 (3)
Severe disability	10 (8)	9 (7)	14 (11)	15 (11)	7 (5)

6 babies not assessed (SGS performed by HV for 2), 21 did not attend, 12 moved away.

Outcome according to gestation was as follows:

23 and 24 weeks gestation (n=16)

Outcome (%)	Locomotor	Fine Motor	Receptive Language	Expressive Language	Cognitive
Normal	7 (44)	9 (56)	8 (50)	7 (44)	10 (63)
Mild impairment	3 (19)	3 (19)	3 (19)	2 (12)	3 (19)
Moderate impairment	4 (25)	2 (12)	2 (12)	3 (19)	2 (12)
Severe disability	2 (12)	2 (12)	3 (19)	4 (25)	1 (6)

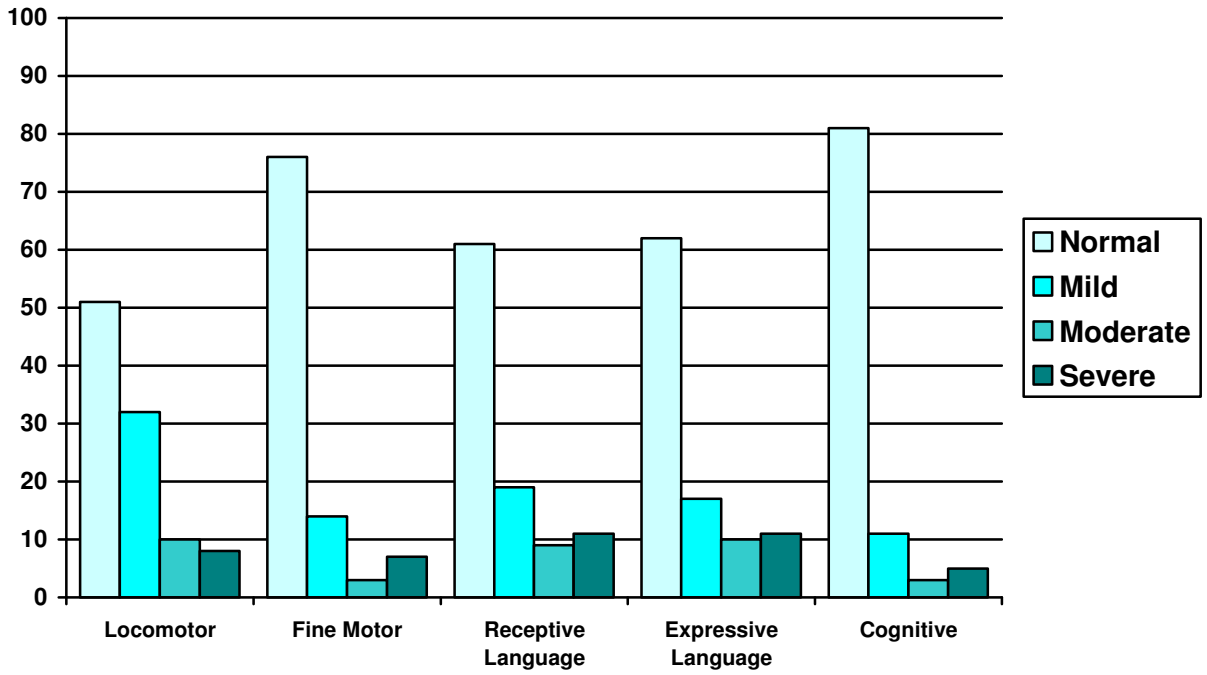
25 and 26 weeks gestation (n=24)

Outcome (%)	Locomotor	Fine Motor	Receptive Language	Expressive Language	Cognitive
Normal	10 (42)	16 (67)	10 (42)	12 (50)	17 (71)
Mild impairment	9 (37)	4 (17)	9 (37)	6 (25)	5 (21)
Moderate impairment	2 (8)	0	1 (4)	4 (17)	0
Severe disability	3 (12)	4 (17)	4 (17)	2 (8)	2 (8)

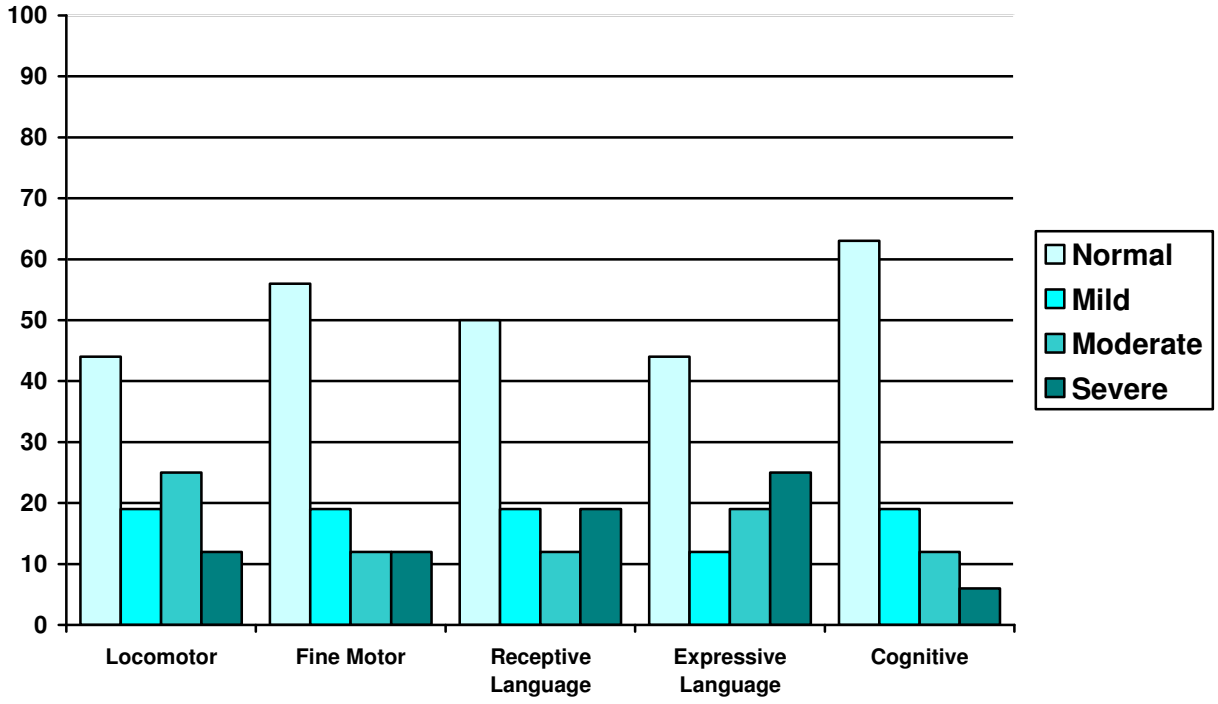
27 weeks gestation and above if <1000g (n=92)

Outcome (%)	Locomotor	Fine Motor	Receptive Language	Expressive Language	Cognitive
Normal	50 (54)	75 (82)	63 (68)	64 (70)	80 (87)
Mild impairment	30 (33)	12 (13)	13 (14)	13 (14)	6 (7)
Moderate impairment	7 (8)	2 (2)	9 (10)	6 (7)	2 (2)
Severe disability	5 (4)	3 (3)	7 (8)	9 (10)	4 (4)

Neurodevelopmental Outcome of Pre-term Infants
<29 wks at 24 months CA
(n = 132)



Neurodevelopmental Outcome of Pre-term Infants
23 & 24 weeks at 24 months CA
(n = 16)

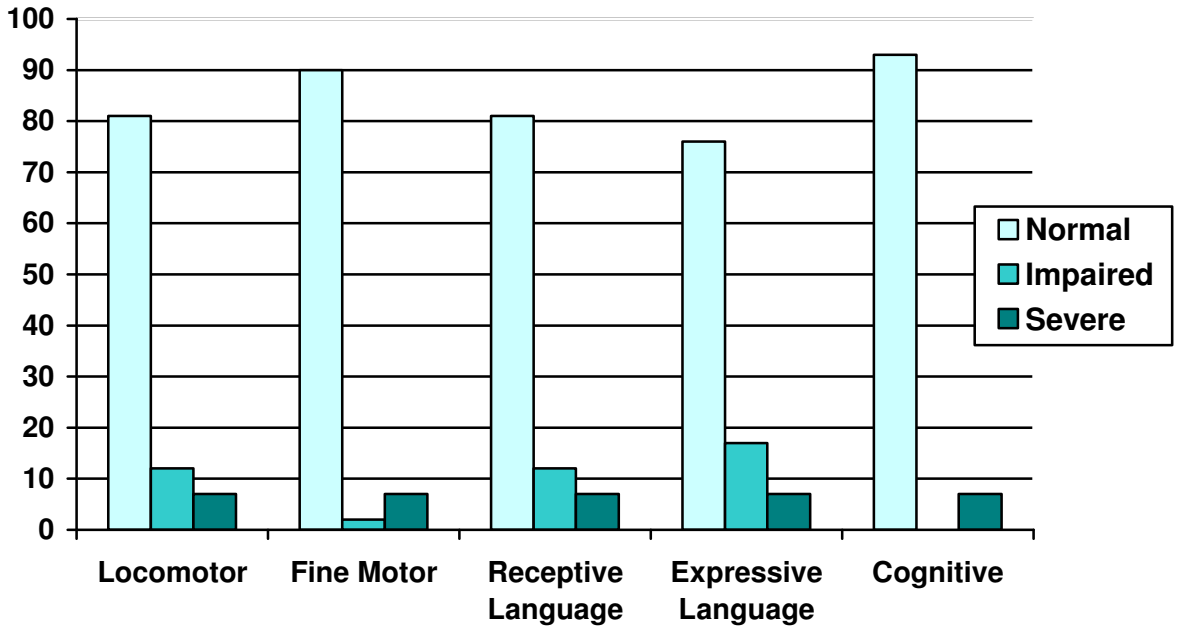


Since 2009 term babies who have received cooling therapy on the TMBU for hypoxic ischaemic encephalopathy have been assessed using Bayley III scales at 24 months.

Cooled babies from 2009	74
Assessments performed:	42
Died	19
Did Not Attend	5
Out of area (referred for assessment locally)	8

Neurodevelopmental Outcome of Cooled Babies (n=42)

Outcome (%)	Locomotor	Fine Motor	Receptive Language	Expressive Language	Cognitive
Normal	34 (81)	38 (90)	34 (81)	32 (76)	39 (93)
Impaired	5 (12)	1 (2)	5 (12)	7 (17)	0
Severe disability	3 (7)	3 (7)	3 (7)	3 (7)	3 (7)



Transport

The Sussex Neonatal Transport Service together with similar services in Kent and Surrey provide 24 hour cover across the KSS Neonatal Network.

Transports Undertaken	Referring Network			Grand Total
	Kent	Surrey	Sussex	
Unplanned	184	133	142	459
Planned	191	135	207	533
Grand Total	375	268	349	992

Team Availability	% Availability
Full Team Available	97
No Team Available	2
Doctor Only	0.4
Nurse Only	0.6

In 2013 there were 90 Sussex unplanned postnatal transfers for medical IC. 84.4% stayed within Sussex.

	Referring Network			Grand Total
	Kent	Surrey	Sussex	
Required medical IC and received outside region	12 (11.8%)	16 (22.9%)	14 (15.6%)	42 (16%)
Required medical IC and received within region	90 (88.2%)	54 (77.1%)	76 (84.4%)	220 (84%)
Total postnatal referrals for medical IC	102	70	90	262

Of the 126 unplanned surgical transfers referred postnatally, 100 originated in Kent & Surrey. 15 of these received surgical care in Sussex. Of the 20 referrals for postnatal transfers originating in Sussex, 18 stayed in Sussex for surgery

Receiving Network	Referring Network			Grand Total
	Kent	Surrey	Sussex	
Sussex	10	6	22	38
London	50	27	4	81
Surrey	1#	1*	0	2
Out of Region	0	5	0	5
Grand Total	61	39	26	126

***Frimley Park to St Peter's – Supraregional Service Transfer S11101301**
#Tunbridge Wells to Royal Surrey – Regional Surgery Transfer 30111301

Guidelines and Audit
(Appendix 3)

There is an active programme of clinical governance within the department including 3 monthly multidisciplinary clinical governance meetings and monthly perinatal mortality and morbidity meetings. Review of neonatal deaths occurs within departmental grand rounds and at overview meetings. There are common medical, nursing and drug protocols for both units with a rolling programme of guideline review. Guidelines are available on the departmental website http://www.bsuh.nhs.uk/tmbu. We are committed to audit and have a well developed programme under the supervision of Dr Fernandez.

Research
(Appendix 4)

There is an active departmental research programme. We have strong links with the Academic Department of Paediatrics, Brighton & Sussex Medical School.

There is an active team which supports the research portfolio:

Kate Moscovici	Lead research nurse
John Bell	Research midwife
Libby Emery	Research nurse
Cathy Olden	Research nurse
Sonia Sobowiec Kouman	Research nurse
Liz Symes	Research nurse
Hanna Butler	Data Manager
Hector Rojas	FP7 Project Manager
Liam Mahoney	PhD student

Suzanne Lee has left to take up the post as PhD student with City University, London. We have welcomed Liam Mahoney as PhD student and Hanna Butler as part time data manager.
We congratulate Kate Moscovici for receiving the runner-up award as team leader of the year in the BSUH Hospital Star Awards. Congratulations go to Dr Liam Mahoney who – under the supervision of Dr Fernandez -has won the prestigious Bengt Robertson Award of the European Society of Neonatology/European Society for Paediatric Research

In the past year the unit has participated in multi-centre studies as well as locally initiated projects.

Dr Rabe and Dr Rojas have worked intensively on the final protocol and regulatory approvals for the first clinical study to be performed as part of the European Commission's FP7 Health Research Project NEOCIRCULATION (NEO-CIRC €5.99m, 18 partners in 8 countries) (www.neocirculation.eu). The first pilot study will open in Spring 2014.

The unit has supported other European multicentre initiatives by taking part in EUROPAIN, which is part of the FP7 funded NeoOpioid project (www.europainsurvey.com). Dr Bomont has acted as local lead in this study as well as in the multi-centre European PANNA study which investigates the effects of anti-retroviral agents in HIV positive mothers and their babies (www.pannastudy.com).

The Department has been involved in several other studies which have completed recruitment: Prechtl movement observational study, solids v breastfeeding, the 3.5 year follow-up programme of the cord clamping trial, Go-Child Study, OPPTIMUM Trial viral

load immunity in congenital cytomegalovirus infection study, the PiPS Trial (trial of probiotic administered early to prevent infection and necrotising entercolitis) and Bilispect comparison study in jaundiced neonates.

Dr Seddon and his respiratory research team have started the NIHR-RfPB funded study of pulse oximetry and respiratory rate detection. Recruitment for the and neurodevelopmental follow-up studies of pre-term infants are ongoing.

Recruitment to multi-centre trials has been active. . The Neomero II Trial (Meropenem for meningitis in babies <3 months of age) is recruiting.

The Unit is also part of the NIHR programme grant for improving quality of care and outcome of very pre-term infants (Lead Prof. L Duley, Nottingham), together with other collaborators from the Department of Psychology, University of Sussex
(Dr Susan Ayers). We have successfully completed the final stage of our workpackage in which parents were interviewed about the care of their pre-term infant. As part of this workpackage a parent questionnaire on the care of their preterm infant at delivery has been developed and piloted. The work ahs just been accepted fro publication.

Joint multidisciplinary research meetings are held and links continued with various groups such as the Paediatric Respiratory Research Group at the RACH, the Obstetric team, the Department of Clinical Pathology, Department of Psychology (University of Sussex, City University of London) and with the School of Pharmacy & Biomolecular Sciences (University of Brighton).

All studies are performed in close collaboration with the BSUH Research and Development department and we express our thanks to Scott Harfield, Dr David Crook and the R&D team for their ongoing support.

The department is an active member of the Surrey & Sussex Paediatric and Neonatal Research Network. On behalf of the network, and in collaboration with the BSMS, we organized the seventh Regional Paediatric and Neonatal Research Day, which was again very well attended.

Education

Neonatal Nurse Pathway

The Neonatal Pathway was designed to acknowledge the recommendations from key documents relating to neonatal care, by offering nursing staff a qualification in the specialty. The aim is to address the significant shortfall in staff holding a neonatal qualification. The pathway promotes the opportunity for local neonatal units to develop highly skilled neonatal staff from among their current workforce.

The pathway is held at the University of Brighton and led by Senior Lecturer Susanne Simmons. It comprises two modules: a 20 credit work based learning module: Foundations in Neonatal Practice and a 30 credit taught module: Neonatal High Dependency and Intensive care.

Mentors (approved by the unit manager and pathway leader) support, supervise and assess students in practice. They meet with the student at the beginning of each module; supervise the student's completion of skills; meet with the student mid-way through the module to discuss progress; liaise with the pathway leader on the student's progress; and meet with the student at the end of the module to check completion of clinical skills.

Practice is assessed using clinical skills inventories. Students from level 1 and 2 units have a practice placement in a level 3 unit to gain experience in neonatal high dependency and intensive care.

Students on completion of the two neonatal modules receive a neonatal pathway certificate. They then have the opportunity to continue their studies to gain a degree in Acute Clinical Practice awarded by the University of Brighton.

Undergraduate Medical Education

The Department has continued its involvement in the delivery of module BSMS 305 Reproductive and Child Health. The students attend seminars on selected topics in Peri/Neonatology, neonatal teaching sessions, tutorials and ward rounds. They learn to carry out a structured newborn examination both at the RSCH and PRH sites. Consultants and registrars are involved in the student assessments at the end of the module and in the end of year three and year five OSCE's.

A number of students chose to undertake the student selected module (SSC) BSMS 404 in year 4. During this module they learn research related skills e.g. how to complete a structured literature search and an appraisal on a focused topic or join in one of the ongoing research projects.

The Department also supervises 5th year students during their Paediatric module to develop further their understanding of newborn medicine. Each year some students spend their end of year 5 module 505 in our department in order to gain in-depth experience in neonatal medicine.

Individual consultants have been supporting the Medical School in other tasks such as admission interviews, designing exam questions and online learning modules, organizing and supervising elective placements and tutoring small groups.

Dr Rabe, in her new role of Senior Clinical Lecturer, has taken over the module 305 lead for Paediatrics and Neonatology.

Postgraduate Education

The department continues its commitment to providing a high quality, structured training, assessment and appraisal programme for Neonatal Medical and Nursing Staff. In addition staff organise, host and deliver many additional educational sessions including Deanery simulation and PLEAT days. We host and direct the ALSG Neonatal Life Support and PaNSTAR courses. Dr Lawn is on the Board for the novel Resuscitation Council (UK) Advanced Resuscitation of the Newborn Infant Course.

We have a well established Local Faculty Group which overseas educational governance. Dr Bomont is Training Programme Director for Core Paediatric Trainees within KSS.

Speech & Language Therapy Service (SLT)

The service provides assessment and management of feeding difficulties for all babies admitted to the TMBU. Outpatient care and videofluoroscopy swallow studies are available.

Physiotherapy

TMBU has input from Melanie a band 7 physiotherapist for 12 hours per week.

Over the past year she has provided support for the team for children with a variety of conditions from chest infections to orthopaedic issues and neuro-developmental problems. In total she saw 228 patients and had patient contact for 217 hours.

The service has improved patient care by increasing the clinical decision making in regards to chest physiotherapy. She has completed training sessions for nurses at away days, afternoon in-service training, group teaching and 1:1 bedside training. She has also gone to the university and taught developmental care and chest physiotherapy to the NICU students. She has gone on a study day with other neonatal physiotherapists ensuring she is up to date with the latest evidence.

Dietetic Service

The dietician undertakes a weekly review of babies on the TMBU. In addition a nutrition meeting focuses on the most difficult cases. The service continues into neonatal and chronic lung disease outpatients. Babies with severe nutritional problems will often continue their care with the gastroenterology and surgical teams at the RACH.

Donor Breast Milk

Support is given to mothers so they are able to provide their own breast milk to feed their baby as soon as possible. There are however some circumstances where use of donor breast milk may be useful in promoting good infant health. As supply is limited and cost is significant use of donor milk is restricted according to unit guidelines.

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Outreach

The Neonatal Outreach team has been running since August 2012. It consists of a sister who works full time, and a nursery nurse who works 22.5 hours per week. Both play key roles in the discharge and support of the premature babies from TMBU and PRH SCBU. The nurses work with families and support them in feeding and caring for their baby prior to discharge home. Families may choose to feed babies nasogastrically at home: there is a higher success rate for breast feeding if this happens. The service supports the babies and their families for approximately 4 weeks post discharge or the expected due date, whichever comes first and most suits the needs of the baby. The Outreach team covers a wide area around both RSCH and PRH hospitals. The service not only saves the unit special care days but more importantly enables families to have their babies at home earlier.

Maternal Substance Misuse Clinic (One-Stop Clinic)

The One-Stop clinic is a multidisciplinary, multi-agency clinic which operates across both sites. No appointment is necessary and referrals can come from any source: health or social care professionals in the community, or clients themselves. The clinic was set up in January 2002 by Dr Aiton and representatives from other services to meet the increasing local need. The following staff contribute regularly to the clinic:

- 2 specialist midwives with responsibility for substance misuse

- A representative of the Substance Misuse service
- A representative of Brighton Oasis Project
- Liaison Health Visitor
- Social Worker from Dept, Social Care & Health
- Neonatal Nurse Practitioner
- Consultant Neonatologist

The aims of the clinic are:

- to offer an open-access service, offer appropriate advice to clients on substance misuse, harm minimisation, and to deal with the wide variety of issues surrounding substance misuse in pregnancy
- to provide the level and degree of care and support appropriate to the client during their pregnancy and to the newborn baby.

The clinic includes postnatal infants and their mothers with particular emphasis on babies prescribed medication to deal with symptoms of withdrawal.

Some mothers receive nearly all their antenatal and healthcare through the clinic, whereas others may only need to come for one appointment and continue to access routine services. A multi-disciplinary meeting takes place one hour before the RSCH clinic.

Clinics run on Thursday afternoons each month as follows:

Week 1	PRH One Stop Clinic – antenatal and postnatal
Week 2	RSCH One Stop Clinic – antenatal
Week 3	RSCH One Stop Clinic – baby appointments/antenatal prescribed medications
Week 4	RSCH One Stop Clinic – antenatal

In 2013 seven babies were admitted to Trevor Mann Baby Unit with Neonatal Abstinence Syndrome.

Counselling

There is a dedicated counsellor who works part time (0.6WTE) as part of the Department of Women & Children's Health and provides counselling services for maternity, gynaecology and parents on TMBU. The counsellor sees clients who have been referred by staff within the hospital or in the community and people can self refer. She offers a flexible service to parents with babies on TMBU, which might involve seeing them on the wards for some support. Couples or individuals can attend counselling throughout their baby's stay on TMBU. People can come back when they have left the unit or a baby has died. She also offers bereavement counselling and EMDR for processing traumatic experiences.

Parent Information

A wide range of information for parents is available. Around the time of admission, parents are given a booklet specifically about the TMBU or SCBU. In addition all parents receive a copy of the BLISS Parent Information Guide. Unfortunately both of these publications are only printed in English. However, we freely access the Trust funded Sussex Interpreting Service to facilitate communications with parents whose first language is not English.

A parent information area provides health promotion information leaflets on a variety of baby, maternal and family health issues. There is also Social Security benefits' information, and travel information for parents whose baby is transferred to London.

Information on consent and how to access the hospital Patients Advocacy and Liaison Service (PALS) is displayed in the information area alongside parent support group information. Planned future developments for the information area include internet access to enable parents to do supported literature searches and the installation of a TV and video/DVD for health promotion information.

Main stream diagnostic specific information is available on the TMBU but more unusual diagnosis information is obtained as required ensuring that it is up to date and accurate. The Contact-A-Family Directory is used regularly to access accurate contact details for parent support organisations.

Information packs are available for Down Syndrome and other information packs are complied as required.

The Trust supports the hiring of registered sign language interpreters and two members of staff have a basic knowledge of British Sign Language.

Where parent information is available in languages other than English these are downloaded from the Internet as required e.g. Reducing the Risks of Cot Death leaflet.

A small but growing Parents Library contains a selection of books on premature babies and neonatal units. There are also some books specifically for children of Special Care Babies.

Training sessions for parents on infant resuscitation techniques are held regularly.

When a baby dies parents are given an 'Annabel Harwood' pack which contains books, leaflets and contact details of support organisations to help and support parents following the death of their baby. This pack is complemented by a 'Memories Folder'.

Parent Forum

The Parent Forum has now been established for over 6 years and meets quarterly. The group represents parents of babies who have been on the TMBU and Special Care Baby Unit at Princess Royal Hospital.

The group contributes to the design of regular parent questionnaires which are sent to all parents who have experienced the service. The results of these questionnaires are shared with the group which assists with the identification and prioritisation of actions to respond to feedback received.

The group assists with the development of parent information leaflets used in the service. This includes those written to support a range of local and international research studies in which we participate.

The forum has helped with the development and review of our unit guidelines and protocols, including proposed changes to the uniform policy and visiting policy.

We share the Babywatch publication with the forum, seeking their views on how we can improve safety and quality in the service to further improve the experience of babies and their families and long term outcomes.

Early Birth Association and Fundraising

The Early Birth Association (EBA) is a registered charity (286727) formed of a group of parents who have had premature or sick babies in BSUH special care units. They realised the need to talk to someone who has been in a similar situation at this time was a great way to help with anxiety and any problems that the parents were facing. The EBA was formed on TMBU 32 years ago and offers help and support to both units and new parents who are facing the same worrying experiences that they once faced.

Money raised and donated to the EBA is spent on items for TMBU and PRH SCBU, ranging from vital pieces of equipment such as the transport resuscitaire, incubators, cooling mats, shawls (some of these are for bereaved parents so they will have a keepsake), incubator bonnets, triangular pillows and the fabric for covers. The list is endless.

As many parents want to maintain close ties with TMBU & PRH SCBU, the EBA publish quarterly newsletters that keep members informed of the various fundraising activities, invitations to social events and general updates about the unit. More information about the EBA is available on their website (http://www.earlybirth.co.uk/).

Rockinghorse Children's Charity

As a historical part of the Trevor Mann Baby Unit, Rockinghorse Children's Charity strengthened its links throughout 2013 by launching several new projects and fundraising initiatives.

In May 2013, Rockinghorse donated £17,500 for the purchase of a portable ultrasound machine which was officially 'launched' on site by Trevor Mann's daughter Rosamond Hallett, who also enjoyed a tour of the TMBU with representatives of the charity.

In November, Rockinghorse played a large part in the creation and launch of the new TMBU website and the linked Rockinghorse / TMBU Fund. In the same month, the charity also announced it is now actively fundraising for the Special Care Baby Unit at the Princess Royal Hospital. The Rockinghorse /SCBU Fund was then set up to accept donations online and an appeal has been launched to provide 10 new cots for the ward at a total of £5,600. So far, £1,000 has already been secured for this project.

Other projects for TMBU include the part funding by Rockinghorse of £3,600 towards the cutting-edge ARNI course equipment for the training of clinicians on the unit, to enable them to practice resuscitation techniques. This has been in collaboration with the Early Birth Association and future plans remain to keep working with the EBA charity for the mutual benefit of the unit and its patients.

Appendix 1

BAPM Categories of Neonatal Care 2001

Intensive Care
These babies have the most complex problems. They need 1:1 care by a nurse with a neonatal qualification. The possibility of acute deterioration is such that there should be the constant availability
of a competent doctor.

1. receiving any respiratory support via a tracheal tube and in the first 24 hours after its withdrawal
2. receiving NCPAP for any part of the day and less than five days old
3. below 1000g current weight and receiving NCPAP for any part of the day and for 24 hours after withdrawal
4. less than 29 weeks gestational age and less than 48 hours old
5. requiring major emergency surgery, for the pre-operative period and post-operatively for 24 hours
6. requiring complex clinical procedures:
   Full exchange transfusion
   Peritoneal dialysis
   Infusion of an inotrope, pulmonary vasodilator or prostaglandin and for 24 hours afterwards
7. any other very unstable baby considered by the nurse-in-charge to need 1:1 nursing: *for audit, a register should be kept of the clinical details of babies recorded in this category*
8. a baby on the day of death.

High Dependency Care
A nurse should not be responsible for the care of more than two babies in this category –

1. receiving NCPAP for any part of the day and not fulfilling any of the criteria for intensive care
2. below 1000g current weight and not fulfilling any of the criteria for intensive care
3. receiving parenteral nutrition
4. having convulsions
5. receiving oxygen therapy and below 1500g current weight
6. requiring treatment for neonatal abstinence syndrome
7. requiring specified procedures that do not fulfil any criteria for intensive care:
   Care of an intra-arterial catheter or chest drain
   Partial exchange transfusion
   Tracheostomy care until supervised by a parent
8. requiring frequent stimulation for severe apnoea.

Special Care
A nurse should not be responsible for the care of more than four babies receiving Special or Normal
Care.

- Special care is provided for all other babies who could not reasonably be expected to be looked after at home by their mother.
- Is provided for babies who themselves have no medical indication to be in hospital.

Appendix 2

Definitions according to CEMACH 2006	
Stillbirth	A baby delivered with no signs of life after 24 completed weeks of pregnancy is registered as a stillbirth. Any babies known to have died between 22-24 weeks gestation are reported as a late fetal loss. Any babies known to have died before 22 weeks gestation are not included in this report.
Early neonatal death	Death of a liveborn baby occurring less than 7 days from the time of birth.
Late neonatal death	Death of a liveborn baby occurring after the 7th day and before 28 completed days from the time of birth.
Stillbirth rate	Number of stillbirths per 1000 livebirths and stillbirths.
Perinatal mortality rate	Number of stillbirths and early neonatal deaths per 1000 livebirths and stillbirths.
Neonatal mortality rate	Number of neonatal deaths per 1000 livebirths.

Appendix 3

Clinical Governance

CLINICAL GOVERNANCE ELEMENT	COMPLETED/ IMPLEMENTED	PRESENTED	DATE	COMMENTS & ACTIONS	ACTIONS COMPLETED
International & National Guidance					
Audit of Respiratory Management at Birth Compared against European Consensus Guidelines on the Management of Neonatal RDS in Preterm Infants – 2013 Update	Yes	Yes, circulated via e-mail + discussed at senior staff meeting	5/2013	2006 - 2012 ▪ 23-26 wks all intubated and surfactant ▪ 27 wks approx. 20 % not intubated or surfactant ▪ 28 wks approx. 30 % not intubated or surfactant ▪ 29 wks approx. 40 % not intubated or surfactant ▪ Literature suggests 30-50% not needing intubation in this age range ▪ Review guideline	In progress
NICE Guidance Intrapartum Care CG 55/Antibiotics for Early-onset Neonatal Infection CG 149	Yes	Yes, circulated via e-mail + discussed at senior staff meeting	2/2013	▪ New guideline CG149 implemented and adherence audited ▪ All requirements fulfilled ▪ Compliance with guideline generally good ▪ Improve blood culture reporting system ▪ Improve follow-up CRP checks ▪ Audit of Gentamicin dosing schedule ▪ Present results at national or regional meeting/publish in peer-reviewed journal	In progress In progress Required Completed
NICE Guidance Postnatal Care CG 37/NIPE Guidance	Yes	No, circulated via e-mail + discussed at senior staff meeting		▪ Currently pilot site for NIPE ▪ Guidelines revised to meet BFI and NICE standards ▪ All requirements according to NIPE fulfilled except for	

				DDH screening ▪ Introduce selective DDH screening ▪ Move towards NIPE compliant DDH screening	 Completed In progress
Hypoglycaemia Guideline/NICE Guidance Diabetes in Pregnancy CG 63	Yes	No, circulated via e-mail + discussed at senior staff meeting		▪ Guideline amended for new WHO-UK growth charts ▪ Guideline revised to meet BFI standards ▪ All requirements fulfilled ▪ Audit of updated guideline	 Required
NICE Guidance Neonatal Jaundice CG 98	Yes	No, circulated via e-mail + discussed at senior staff meeting		▪ All requirements fulfilled ▪ Compliance with guideline generally good ▪ Audit of updated guideline	 Required
Therapeutic Hypothermia IPG 347	Yes	No, report awaited from Badgernet		▪ All requirements fulfilled ▪ TOBY register data entry now included in NNAP database (Badgernet) ▪ Local audit of practice	 Required
National Audits					
Maternal & Perinatal Mortality Notifications	Ongoing	Awaiting start of new system		▪ CEMACE was replaced by MPMN in April 2011. From the 1st January 2013, data collection will be the responsibility of MBRRACE-UK (to be launched in February) and will no longer be collected via the MPMN portal ▪ The last CEMACE Report on Perinatal Mortality 2009 showed that our neonatal mortality rate was below national average for surgical level 3 units ▪ Continue work on improving survival	 In progress
National Neonatal Audit Programme	Ongoing	Yes, circulated via e-mail + discussed at senior staff meeting	11/2012	▪ Overall good reporting quality ▪ 2013 national report outstanding ▪ Remind all members of staff in Neonatology and Obstetrics about the importance of antenatal steroids ▪ Improve ROP checks documentation through electronic transfer of information from Metavision to Badgernet	 Completed Completed

National Training Survey	Ongoing	No, circulated via e-mail + discussed at senior staff meeting		▪ Brighton identified as above outlier in access to educational resources, but below outlier in access to regional teaching ▪ Continue efforts to excel in all areas of trainee education ▪ Address need for better access to regional teaching	 In progress In progress
BLISS Survey of Parental Experiences 2010 - 2011	Completed	Yes, circulated via e-mail + discussed at senior staff meeting	11/2011	▪ TMBU scored in most areas above national average and in 5/7 areas above national average for similar units. ▪ TMBU was never lower than national average in any area ▪ Facilitate unit visits before delivery ▪ Provide written/visual information about TMBU before birth ▪ Aim for early feeding back about the child's condition	 Completed Completed In progress
National Programmes & Projects					
Neonatal Hearing Screening	Ongoing	No, report awaited		▪ Local audit/research project looking at current practice completed and presented at ESPR meeting	
Neurodevelopmental Outcome	Ongoing	No, reported separately in departmental annual report		▪ Follow-up continued for preterm infants < 29 weeks gestation: § Schedule of Growing Skills at 12 months CGA § Bayley III Developmental Assessment at 24 moths CGA ▪ Term newborns after cooling treatment: § Bayley III Developmental Assessment at 24 moths CGA	
Neonatal Transport Service	Ongoing	No, reported separately in departmental annual report		▪ Since September 2009 a 24/7 regional neonatal transport service is running, shared between the teams from Surrey, Kent and Sussex ▪ Develop standard electronic activity database ▪ Develop standard risk reporting system for KSS	 Completed Completed

				▪ Develop standard national incident reporting system	In progress
National HIV and Syphilis Surveillance	Ongoing	No, reported separately		▪ Top antenatal screening centre in the UK	
Trust Identified Projects					
Perinatal Mortality & Morbidity Meeting	Ongoing	Yes, Circulated via e-mail + discussed at senior staff meeting		▪ Monthly joint meeting with Obstetrics & Gynaecology mortality and morbidity meetings	
Neonatal Mortality & Morbidity Review	Ongoing	Yes, circulated via e-mail + discussed at senior staff meeting		▪ Quarterly presentation at Neonatal Clinical Governance Meeting ▪ Summary report available in departmental annual report	
Audit of Blood Cultures (Microbiology)	Ongoing	Yes, circulated via e-mail + discussed at senior staff meeting		▪ 6 monthly review ▪ Rate of positive gr+ blood cultures has significantly decreased back to level in 2011 ▪ CONS pos. blood cultures significantly decreased to level in 2011 ▪ Continue work on improving infection rates	In progress
Audit: Infection Control	Ongoing	No, circulated via intranet infection control dashboard		▪ Good compliance generally including hand hygiene and care bundles (94-100%) ▪ Documentation needs improvement	In progress
The Safety Thermometer	Ongoing	No, awaiting report		▪ National audit on nursing safety metrics, e.g. catheter care and pressure sores	
Review of Risks, Incidents, Complaints & Claims	Ongoing	Circulated via e-mail + discussed at senior staff meeting		▪ NCPAP nasal injuries increasingly a problem ▪ Medication errors still featuring high ▪ No major incidents otherwise ▪ Review risk panel structure and risk review process including deaths ▪ Explore new ways of improving medication errors and communication	In progress In progress
Survey: Parent Satisfaction	Ongoing	No, circulated via e-mail + discussed at		▪ Not completed as will be replaced by bespoke wireless	In progress

		senior staff meeting		real-time feedback system in 2014	
Specialty Identified Projects					
Evaluation of Positioning of Patient for X-rays after Central Line Placement	Completed	Yes, circulated via e-mail + discussed at senior staff meeting	5/2013	▪ Amendements in respective guidelines made and staff updated	Completed
Education Audit Chest Drain Insertion	Completed	No, circulated via e-mail + discussed at senior staff meeting		▪ Success of teaching package for new technique confirmed ▪ Present results at research meeting	In progress
Gastroschisis Audit	Completed	Circulated via e-mail + discussed at senior staff meeting	7/2013	▪ Outcome very good compared to national data ▪ Fine-tune care immediately after surgery ▪ Present data at conference	In progress In progress
NEC Audit	Completed	Circulated via e-mail + discussed at senior staff meeting	7/2013	▪ Improvements in outcome have been made with a brief setback in 2012 ▪ Continue to work on reducing NEC	In progress
Audit of Re-admissions to RAH	Completed (by Paediatric A&E Team)	Circulated via e-mail + discussed at senior staff meeting	11/2013	▪ Large proportion of babies are being readmitted with potentially avoidable problems like dehydration and jaundice ▪ Multidisciplinary approach to improve this problem required	In progress
Nurse Controlled Analgesia	Ongoing	Circulated via e-mail + discussed at senior staff meeting	2/2013	▪ Feasibility discussed and implementation considered	In progress
Guideline Vascular Emergencies	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ Management clarified and reinforced	
Update – Process for Dealing with Incorrect Administration of EBM	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In response to incident	
Update – Enteral Feeding Guideline	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In response to NEC rates 2012	

Update - Hepatitis B Guideline	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In line with new evidence	
Update - Perioperative Management Guideline	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In response to incidents	
Update - Central Line Insertion Guideline	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In response to incidents	
Update – Follow-up Guideline	Completed	Circulated via e-mail + discussed at senior staff meeting	2013	▪ In line with DDH screening changes	

Appendix 2

Research

Local Studies

Neurology
Standardized Follow-up of preterm infants (inborns, less than 29 weeks or less than 1000g)
Contact: Dr P Amess, Caroline McFerran

Cord Clamping Trial Follow-Up Programme 3.5 years
Neurodevelopmental Follow-up of Preterm Infants enrolled into the study on slight delay of cord clamping time versus milking of the cord
Contact: Dr H Rabe, Libby Emery

Go-Child
Influence of Genetic and Environmental factors on Childhood Diseases
Contact: Prof S. Mukhopadyay, Becky Allen

Bilirubin Study: Bilispect device
Comparison of Bilirubin Measurements by laboratory Dumas Method with non-invasive white light spectroscopic Method in preterm and term neonates
Contact: Dr H Rabe, Sonia Sobowiec, Kate Moscovici

New waveform analysis of lung function and pulse oxymetry in children with wheeziness
Contact: Dr P Seddon, Dr H Rabe, Cathy Olden

Multicentre Trials

Europain Survey
European survey of sedation and analgesia practice for newborns admitted to intensive care units.
Contact: Dr R Bomont

PANNA
Pharmakokinetics in HIV infected pregnant women.
Contact: Dr R Bomont

Neomero II
Meropenem for meningitis in babies < 3 months of age.
Contact: Dr H Rabe, Dr C Bevan, Libby Emery

PiPS
Trial of probiotic administered early to prevent infection and necrotizing enterocolitis.
Contact: Dr R Fernandez

OPPTIMUM
Progesterone prophylaxis to prevent pre-term labour
Contact: Mr Tony Kelly, Suzanne Lee, Dr H Rabe

VICC
Viral Load immunity in congenital cytomegalovirus infection study
Contact: Dr H Rabe, Sonia SobowiecKouman

NIHR-Programme Grant (Duley et al)
Improving quality of care and outcome at very preterm birth
Contact persons: Dr H Rabe, Liz Lance, Susan Ayers

Peer reviewed Papers

Sawyer A, Rabe H, Abbott J, Gyte G, Duley L, Ayers S; on behalf of 'The Very Preterm Birth Qualitative Collaborative Group'. Parents' experiences and satisfaction with care during the birth of their very preterm baby: a qualitative study. BJOG. 2013; 120(5):637-43. doi: 10.1111/1471-0528.12104

Arnold L, Sawyer A, Rabe H, Abbott J, Gyte G, Duley L, Ayers S on behalf of the "Very Preterm Birth Qualitative Collaborative Group": "A roller coaster of emotions": a qualitative study of parents very first experiences with their preterm baby
BMJ Open 2013 Apr 2;3(4). pii: e002487. doi: 10.1136/bmjopen-2012-002487

Sawyer A, Ayers S, Abbott J, Gyte G, Rabe H, Duley L: Measures of satisfaction with care during labour and birth: a comparative review.
BMC Pregnancy Childbirth. 2013;13:108. doi: 10.1186/1471-2393-13-108.

Wertheim D, Olden C, Symes L, Rabe H, Seddon P: Monitoring respiration in wheezy preschool children by pulse oximetry plethysmogram analysis. Med Biol Eng Comput (2013) 51:965-970 doi 10.1007/s11517-013-1068-z

Ghavam S, Batra D, Mercer J, Kugelman A, Hosono S, Oh W, Rabe H, Kirpalani H: Effects of Placental Transfusion in Extremely Low Birth Weight Infants: Meta-analysis of Long and Short term outcomes. Transfusion 2013; doi (in print)

Fernandez Alvarez R, Gandhi RS, Amess PN, Mahoney L, Watkins R, Rabe H: Heated humidified High Flow Nasal Cannula versus Low Flow Nasal Cannula as Weaning Mode from Nasal CPAP in Infants ≤ 28 Weeks Gestation
European Journal of Pediatrics 2014; 173:93-98 doi: 10.1007/s00431-013-2116-2

Reviews

Farrugia R, Rojas H, Rabe H: The diagnosis and management of hypotension in neonates. Future Cardiol (2013) 9:669-79 doi 10.2217/FCA.13.59

Book Chapter

Rabe H, Saint-Raymond A: Paediatric regulation. In: Griffin JP, Posner J, Barker GR: The Textbook of Pharmaceutical Medicine 7th edition, BMJ Books 2013

Presentations at national and international meetings

Russell G, Ayers S, Sawyer A, Abbot J, Gyte G, Duley L, Rabe H on behalf of the Very Preterm Birth Qualitative Collaborative Group: Care of Preterm Babies in Neonatal Intensive Units: A Qualitative Analysis of the Factors Determining Parents' Satisfaction. PAS annual meeting, Washington, DC 4.-7.5.2013

Ayers S, et al: A qualitative study of parents very first experiences with their preterm baby.
International Society for Psychosomatic Obstetrics and Gynaecology, Berlin, May 2013

Sawyer A, Duley L, Abbott J, Gyte G, Rabe H, Ayers S: Parent's experiences and satisfaction with care at the birth of their very preterm baby. RCOG World Congress, Liverpool 24.-26.6.2013

Faust K, Härtel C, Rabe H, Roll C, Wieg C, Wilke M, Szabo M, Herting E, Göpel W: Arterielle Hypotension bei sehr kleinen Frühgeborenen am ersten Lebenstag. GNPI annual conference, Freiburg, Germany 6.-8.6.2013

Hemida OH, Fernandez R: Audit of Neonatal Hypothyroidism: Diagnosis, Treatment and Follow-up of Newborns Admitted to the Department of Neonatology. Clinical Evidence Live 13, Oxford

Mitchell C, Lawn C, Fernandez R: Audit of NICE Guidance CG149: Antibiotics for Early-Onset Neonatal Infection. Europediatrics, Glasgow, 2013

A Saha, R Fernandez: Audit on Optimal Positioning of Peripherally Inserted Central Catheters in Neonates. Europediatrics, Glasgow, 2013.doi:10.1136/archdischild-2013-304107.067

T Hunt, L Mahoney, N Aiton, R Bomont, H Rabe, R Fernandez: Prophylactic Intubation and Surfactant vs Bubble NCPAP and Selective Surfactant at 2-4 Hours of Age in Preterm Infants < 30 Weeks. ESPR 54th annual meeting, Porto, Portugal 10.-14.10.2013

Mahoney L, Hunt T, Rabe H, Garland C, Watkins R, Fernandez R: Time of birth and risk of respiratory illness in preterm infants < 30 weeks gestation (GA): A retrospective matched-pair cohort study. **Bengt Robertson Award**, ESPR 54th annual meeting, Porto, Portugal 10.-14.10.2013

Invited Lectures

Rabe H: Cord clamping – any news?
5th European Symposium Delivery Room Management, Dresden, Germany, 22.2.2013

Rabe H: Delayed Cord Clamping in Preterm Infants.
Rosie Maternity University Hospital, Perinatal Meeting, Cambridge 28.2.2013

Rabe H: Enhancing placental transfusion at the delivery of preterm infants: Benfits and Effects. Xth Congress of the Romanian Association of Perinatal Medicine. Cluj, Romania 24.-25.5.2013

Rabe H: Placento-fetal transfusion at the delivery of preterm infants. Neonatal Grand Round. University College Hospital, London, 4.6.2013

Rabe H: Neue Methoden für die Zukunft. Circulation workshop "Messung von Geweboxygenierung und Mikrozirkulation." GNPI 39th annual conference, Freiburg, Germany 6.-8.6.2013
[New methods for the future. Circulation workshop: Measurement of tissue oxygenation and microcirculation. Society of Neonatology and Paediatric Intensive care 39th annual conference]

Rabe H: Spätabnabelung, Volumen oder Bluttransfusion? Strategien bei der Hypovolämie des Frühgeborenen. GNPI annual conference, Freiburg, Germany 6.-8.6.2013
[Delayed cord clamping, volume therapy or blood transfusion? Strategies at the treatment of hypovolaemia in preterm infants. Society of Neonatology and Paediatric Intensive Care 39th annual conference]

Rabe H: The right medicine for neonates. BSMS Research Day, Falmer, UK 4.9.2013

Rabe H: Dobutamine, what is it good for? ESPR [European Society for Paediatric Research] 54th annual meeting, Porto, Portugal 10.-14.10.2013

Rabe H: What do we know about clinical impact of delayed cord clamping? ESN [European Society of Neonatology] Course Day 1: Stabilisation of the Preterm Infant after Birth. ESPR 54th annual meeting, Porto, Portugal 10.-14.10.2013