



atain

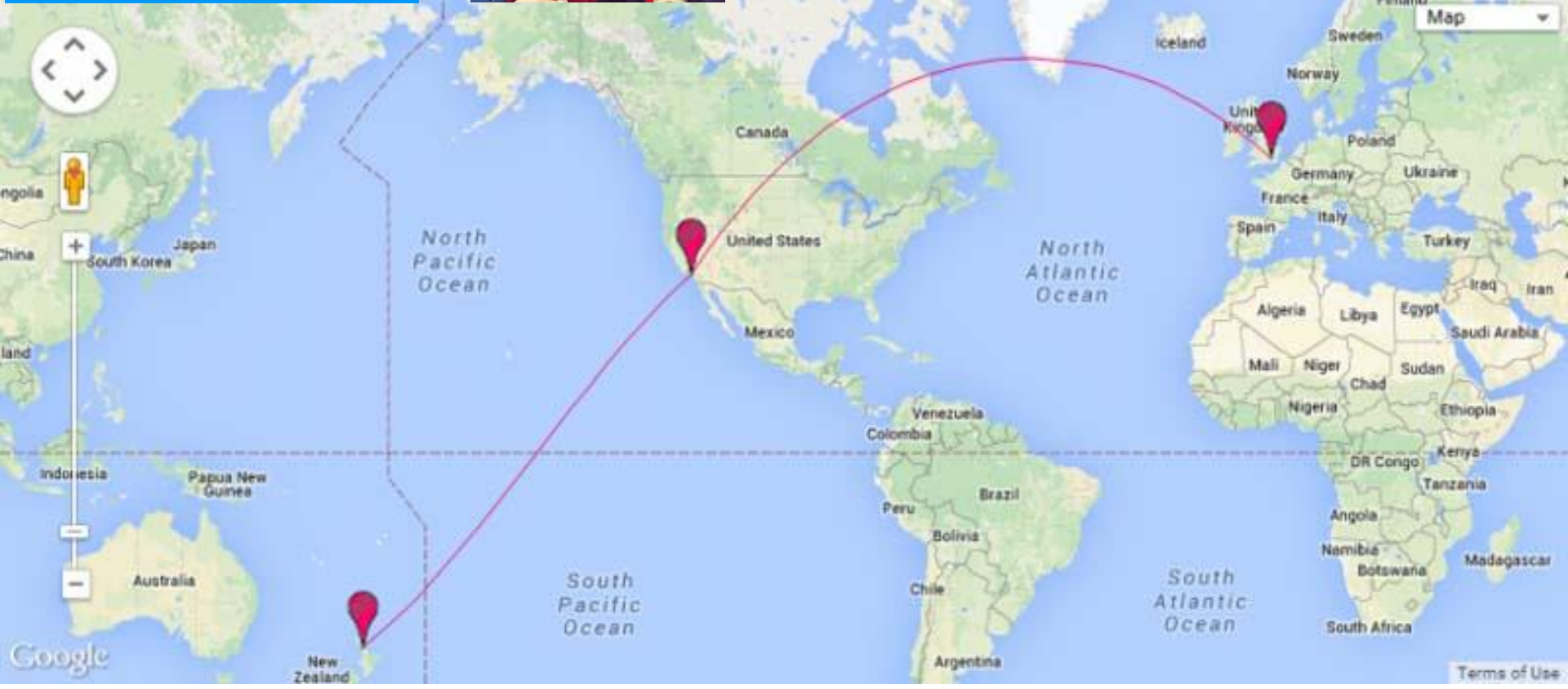
Changing practice to keep
mother & baby together



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**2017 NNCA
Conference
Wellington NZ**



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- South West Neonatal Network
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Aims/Objectives

- Describe the ATAIN project
- Discuss term admissions to NICU
- Describe strategies to identify 'at risk' newborn babies
- Outline strategies to reduce term admissions



ATAIN (an acronym for 'avoiding term admissions into neonatal units') programme of work led by clinical experts to reduce harm leading to avoidable admission to a neonatal unit for infants born at term, ie $\geq 37+0$ weeks gestation.

NHS Improvement, 'Reducing harm leading to avoidable admission of full-term babies into neonatal units, Findings and Resources for improvement', February 2017

Why is ATAIN this important?

- Seen as a signal of sub-optimal care during antenatal, intrapartum or post natal period – few fully grown babies should need neonatal services
- Signal that avoidable harm might have been caused
- Effects of infant maternal separation at birth can be profound and lasting: *maternal mental health, bonding, breastfeeding, long term morbidity mother and child*
- Significant but avoidable cost to NHS/Health care systems and families

Data sources to inform understanding

NHS

Improvement

**National Neonatal
Research
Database –
‘primary reason
for admission’**

**National Reporting
and Learning
System – patient
safety data**

**NHSLA – claims in
relation to term
babies**

Parent stories

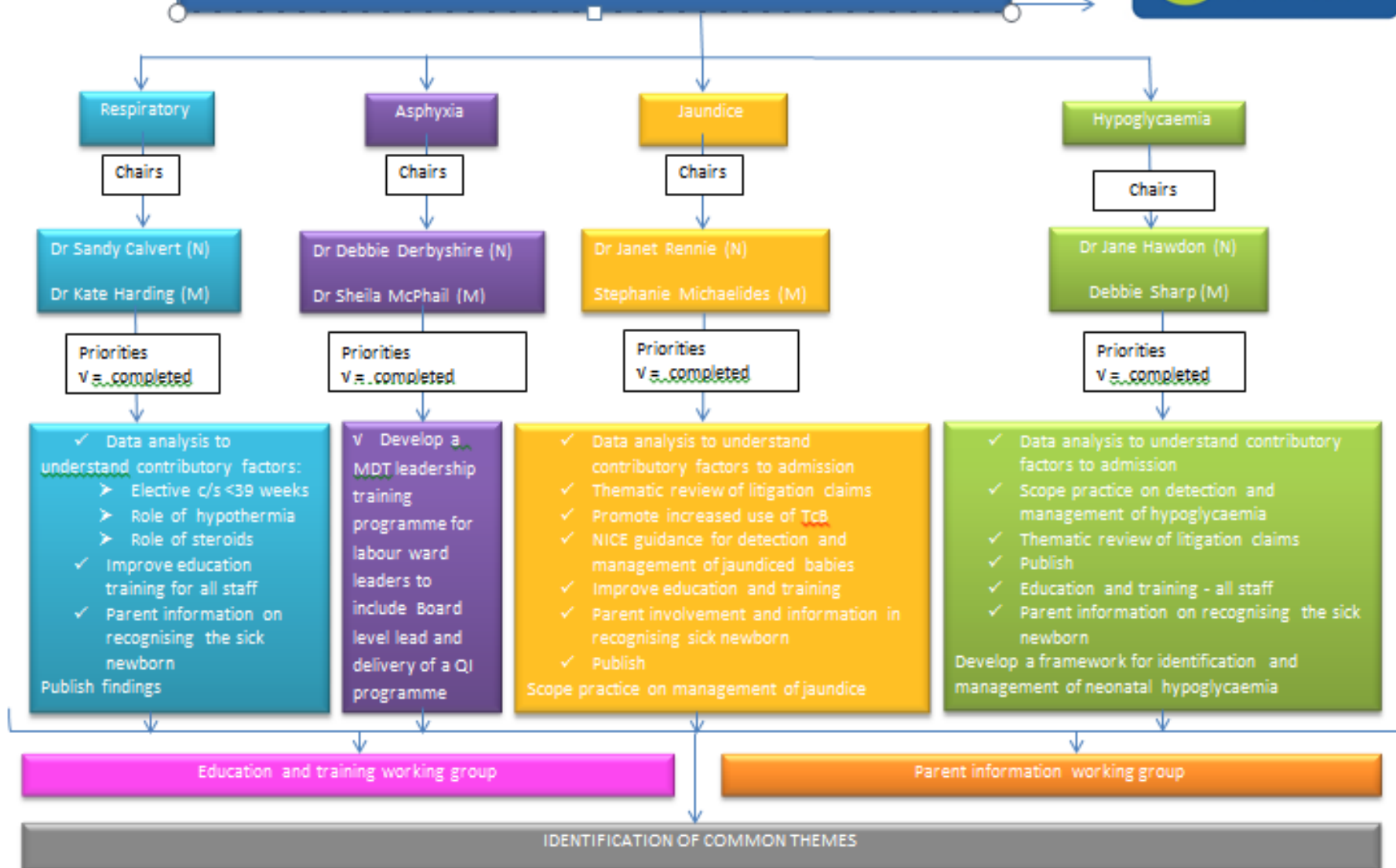
**Clinical frontline
experts**

Triangulation of data

- 1. Asphyxia/HIE**
- 2. Kernicterus**
- 3. Hypoglycaemia**
4. Respiratory
5. Infection

- Indicator grounded in avoiding severe harm =
 - 1, 2, 3
- Four working groups set up
- Obstetric and neonatal clinical chairs led each work stream

Avoiding harm leading to Term Admissions Into Neonatal Units



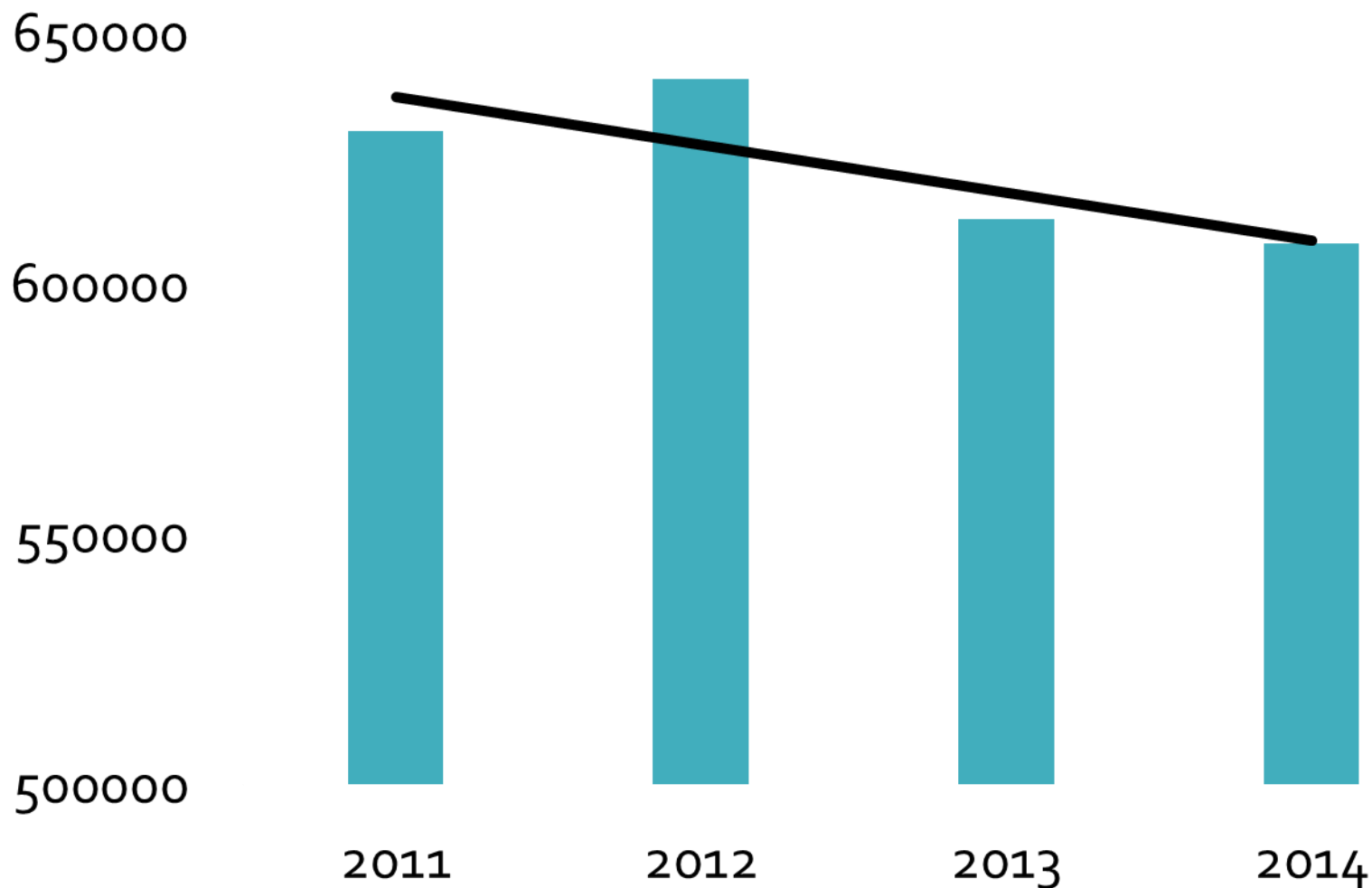
What we know

Term live births in England (2011-2014)

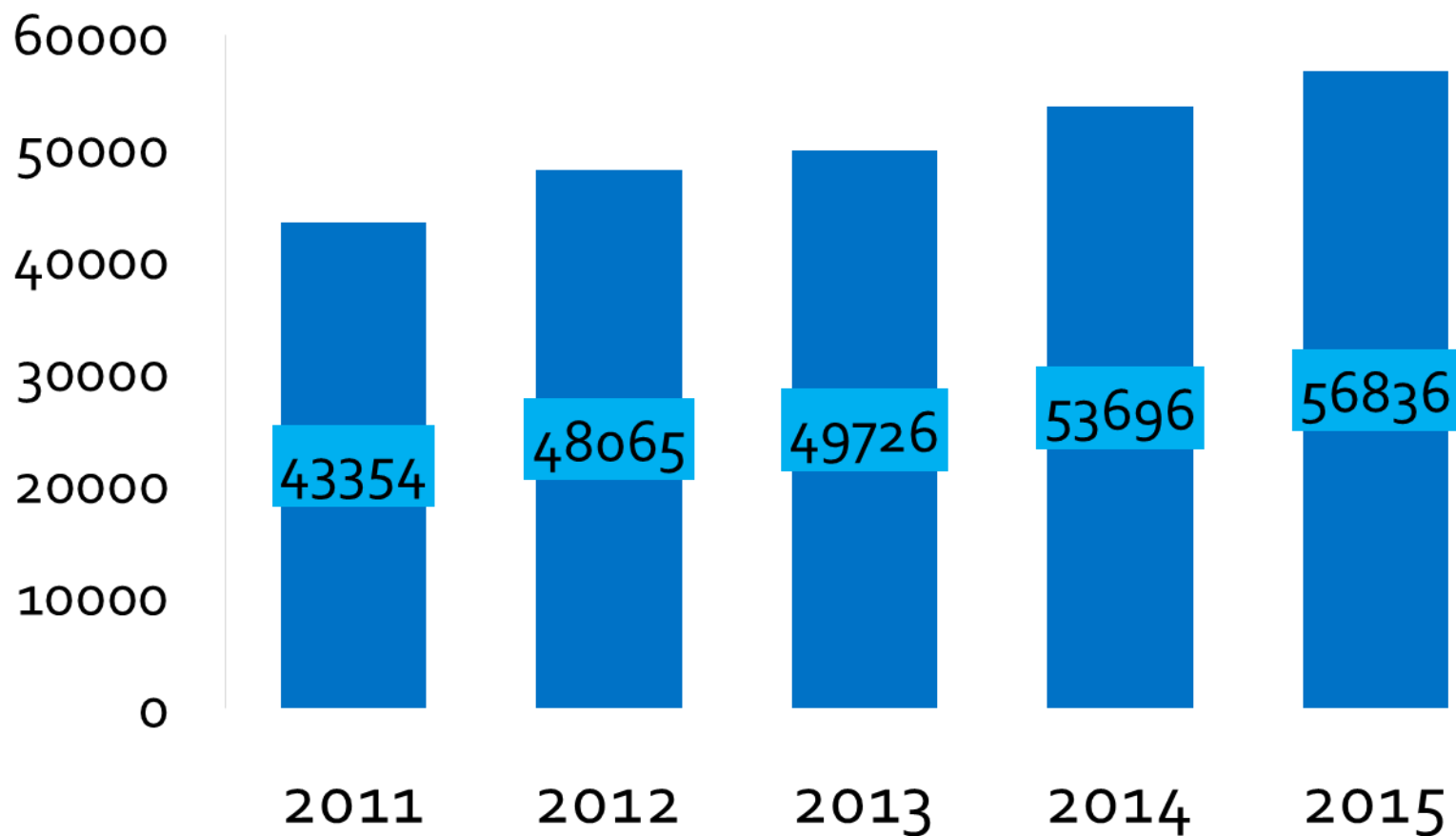
↓ 3.6%

NHS

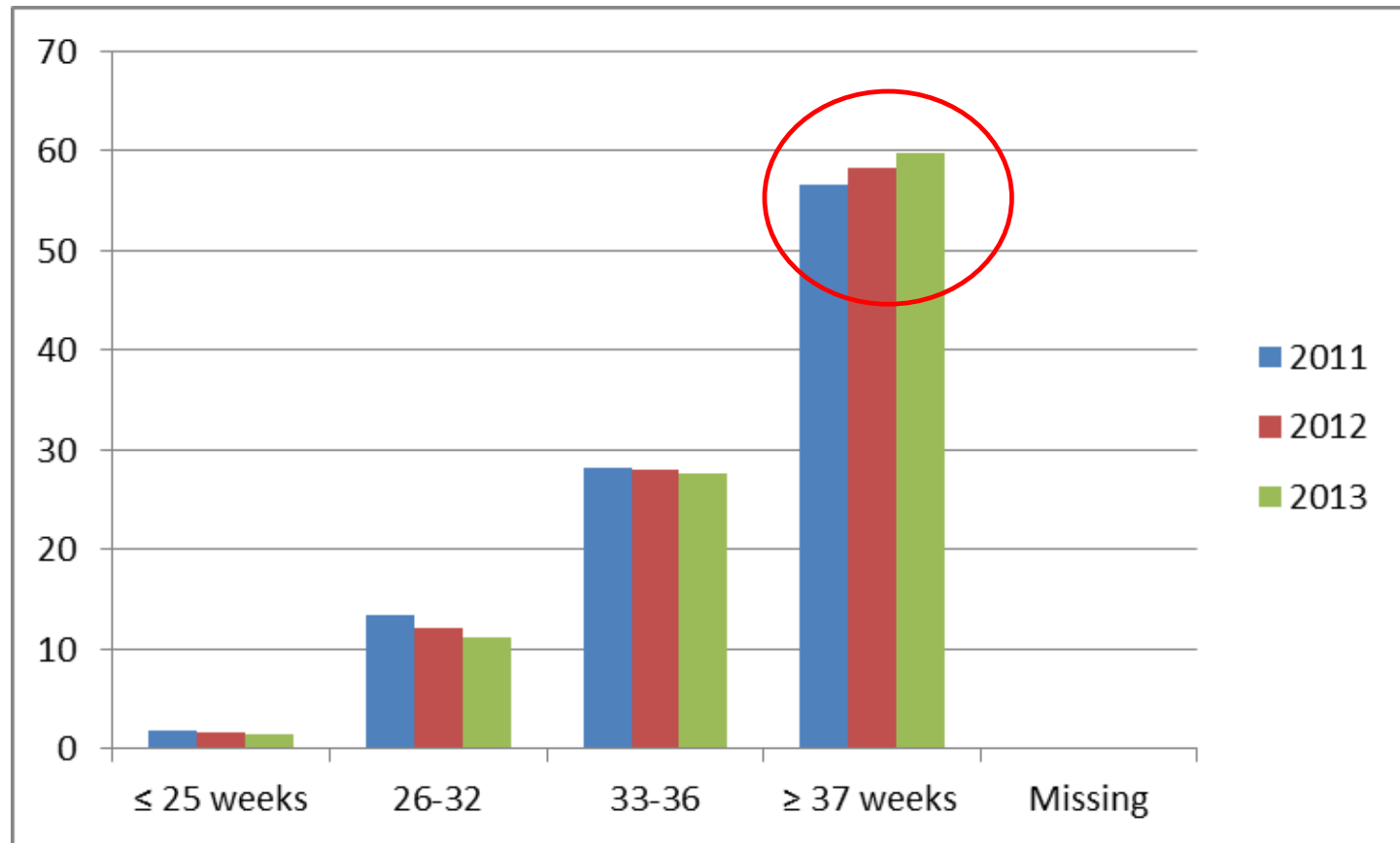
Improvement



Care days for term admissions (↑31%) (>60%)

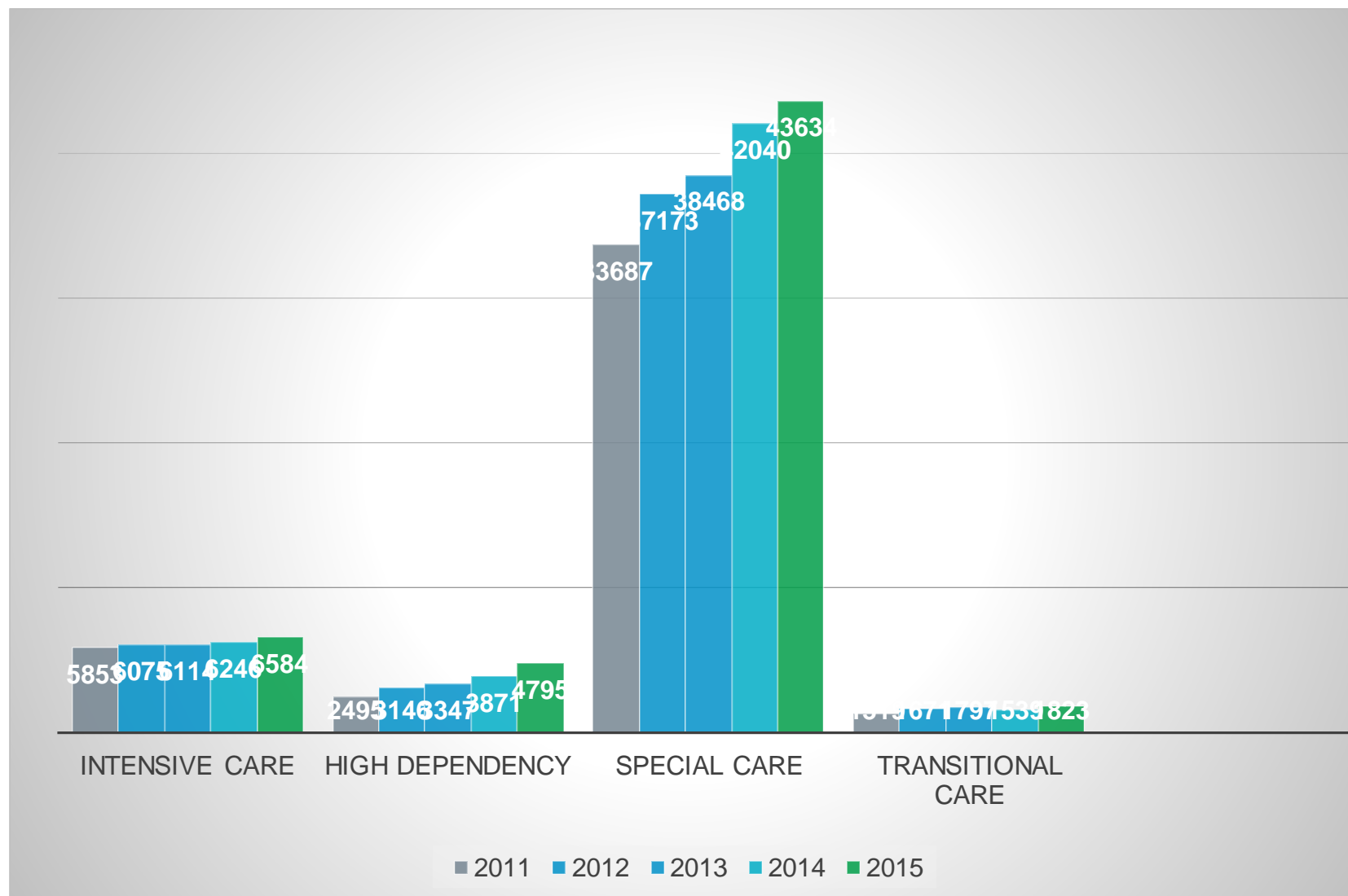


What we know - NNRD



Term Admissions rising: Office National Statistics denominator.

Changes in care activity on first day of admission



Why are the numbers increasing?

- Are there more sick babies?
- Less experienced doctors?
- Fail-safe decision-making?
- Have changes in practice and/or culture increased pressure to admit babies?
- Guidelines?
- Early discharge or transfer of mothers post partum?
- Public expectations?
- How many are 'avoidable'?
- How many could be cared for outside NNU?

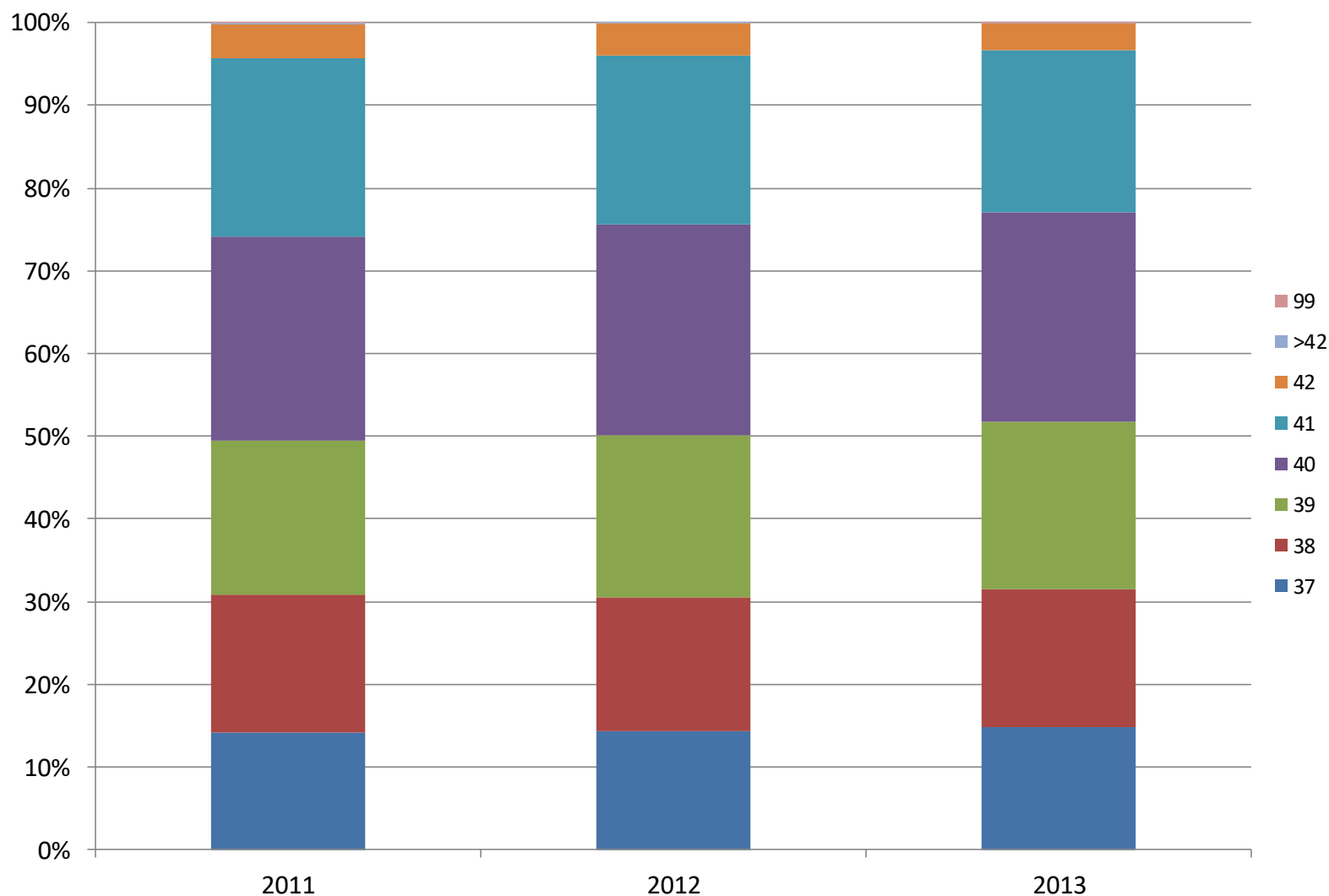
Conclusions from NHSI

- Despite falling term birth cohort – term activity increasing relentlessly.
- Increase across all categories of care but especially in special care
- Additional 10,000 care days delivered for term babies in 2015 compared to 2011
- The increased activity across all types of units but especially marked in NICUs (L3) and LNUs (L2)
- Increase remains unexplained
 - ... except by changes in care practices

Data findings and considerations for practice

Gestation of babies admitted with respiratory symptoms by year

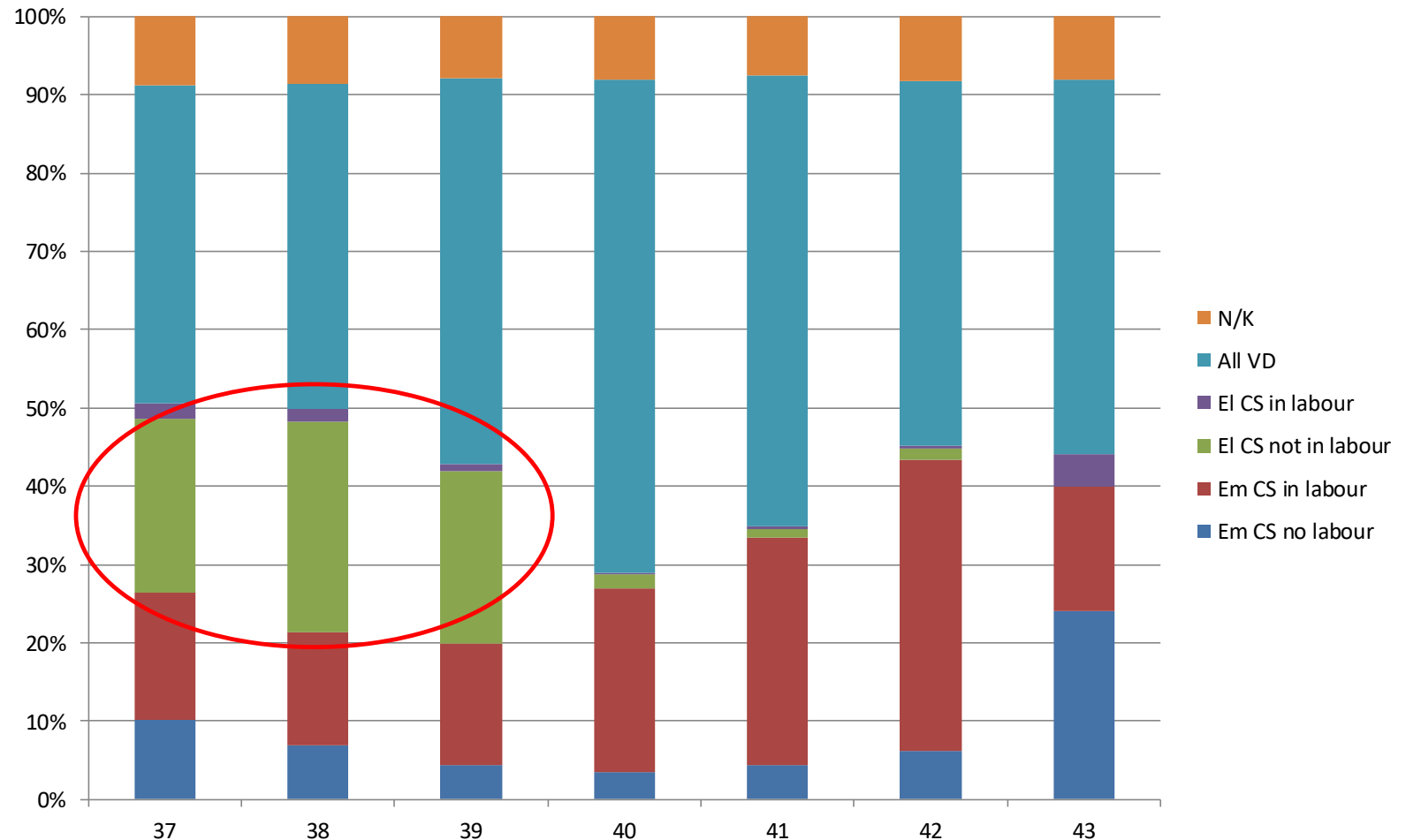
2011-2013 = 24%



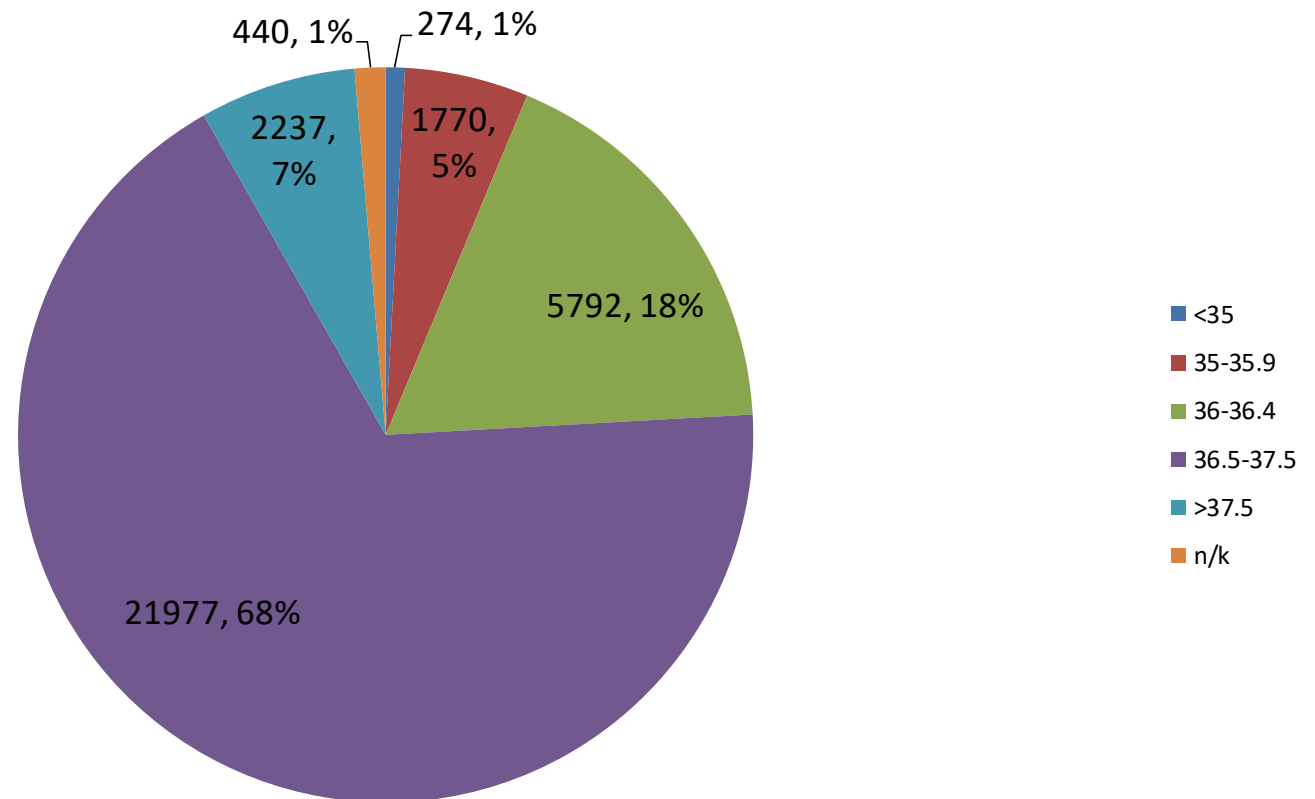
Mode of delivery of babies admitted with respiratory symptoms – 25% LSCS & not in labour



Improvement



Respiratory admissions and temperature



Data findings: hypoglycaemia

- 44% of all admissions for hypoglycaemia were directly from birth room or theatre
 - Babies born by CS were over-represented, accounting for 48% of all hypoglycaemia admissions
 - increased to 71% among those admitted before 4 hours of age
 - 86% of infants of diabetic mothers admitted before 4 hours of age
 - 41% of babies of women with diabetes had admission blood glucose above the operational threshold
 - IV glucose **not needed** in 75% of babies admitted within an hour of birth
- *Suggestive of 'prophylactic' admissions.*
 - *Insufficient time for postnatal feeding and thermoregulation interventions to succeed*
- ***Inappropriate delivery room management & apparent lack of 'physiology of transition at birth knowledge' by team (midwifery & neonatal)***


Data findings: overall findings

- 20%–30% of all babies admitted to L1, 2 or 3 care received ***no intervention which could not have been delivered by keeping them with their mothers***
- 31% of babies were admitted for <48 hours and received no high dependency or intensive care intervention – only special care
- 4% of term admissions are from home/community
 - 20% with jaundice
- Babies born at 37-38 weeks (*early term*) were twice as likely to be admitted to neonatal services as those born at 39-42 weeks gestation


Data findings: jaundice

- 6% of term infants admitted for jaundice (3000/annum)
 - Most common reason for admission from home (approximately 20% each year)
- Admission day for infants admitted from home vs hospital for jaundice is statistically significantly later – median age is 3 vs 5 (home)
- Median days of phototherapy is 2 for both home and hospital

Patient Safety Resource Alert – issued 23rd February 2017



NHS
Improvement



Patient Safety Alert

Resources to support safer care for full-term babies

23 February 2017

Alert reference number: [NHS/PSA/RS/2017/001](#)

Resource Alert

It is a priority for the NHS to reduce avoidable harm that can lead to full-term babies (babies born after 37 weeks of pregnancy) being admitted to neonatal units.¹ The number of unexpected admissions to neonatal units is seen as a proxy indicator that preventable harm may have been caused at some point along the maternity or neonatal pathway.

NHS Improvement has been working with parents, front line clinicians, data analysts and subject specialist experts to understand factors contributing to admission of full-term babies. After a thorough review of patient safety reports, neonatal hospital admission data and litigation claims data this work has focused on four key areas:

- hypoglycaemia
- jaundice
- respiratory symptoms
- asphyxia/brain injury due to lack of oxygen during or soon after birth.

While some term baby admissions are entirely appropriate (for example babies born with a congenital abnormality), up to 30% of neonatal unit admissions between 2011 and 2013 were considered avoidable. We found that the need for improved identification of babies at risk of deterioration was a common theme. Although we focused on avoiding harm requiring admission, we also identified learning in relation to babies whose care could have been managed in a setting that kept mother and baby together in hospital or in the community.

Admission to a neonatal unit can lead to unnecessary separation of mother and baby. There is overwhelming evidence that separating mother and baby at or soon after birth can adversely affect the mother-child attachment process,² maternal perinatal mental health, and neonatal physical wellbeing and neurodevelopment. Preventing separation, except for compelling medical indications, is essential in providing safe maternity services.

To support staff in preventing avoidable admissions of full-term babies NHS Improvement has produced a resource (<https://improvement.nhs.uk/resources/preventing-avoidable-admissions-full-term-babies>) that:

- explains our findings, and how they can be used to identify local improvement priorities
- provides suggestions for local case review after unplanned admissions of full-term babies
- signposts a range of resources, academic journal publications, guidelines and e-learning from organisations including the British Association of Perinatal Medicine, the National Institute of Health and Care Excellence, Health Education England, Royal College of Midwives, Royal College of Obstetricians and Gynaecologists and the Care Quality Commission
- provides links to open access journal articles.

We will continue to build on and update the resources on our website.

Actions

Who: All providers of NHS-funded maternal and neonatal care

When: To begin as soon as possible and be completed by 23 August 2017

1. Review the resource signposted in this alert and identify how your maternity and neonatal teams can use it to improve the safety of care and keep mothers and babies together whenever it is safe to do so.
2. Develop an action plan to ensure any relevant resources are introduced into clinical practice.
3. By circulating this alert or through local alternatives (such as newsletters or local awareness campaigns) ensure that staff are aware of factors contributing to admission of full-term babies and the availability of this resource (or local equivalents).

Sharing resources and examples of work

If there are any resources or examples of work developed in relation to this alert you think would be useful to others, please share them with us by emailing patientsafety.enquiries@nhs.net.

Patient Safety
improvement.nhs.uk/resources/patient-safety-alerts

See page two for references, stakeholder engagement and advice on who this alert should be directed to.

NHS Improvement (February 2017) Contact us: patientsafety.enquiries@nhs.net Publication code: P1 23/17

NHS
Improvement

Reducing harm leading to avoidable admission of full-term babies into neonatal units

Findings and resources for improvement

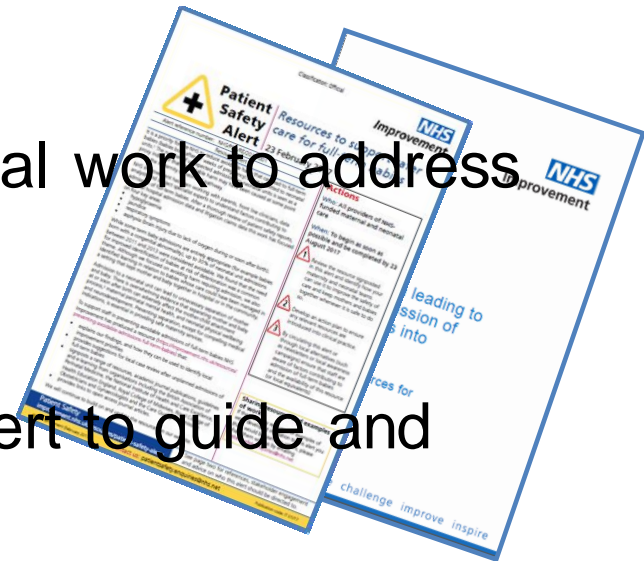
February 2017

support collaborate challenge improve inspire



Approach to ATAIN NHS target of 5%

- Address as a joint midwifery / neonatal network priority
- Appoint ATAIN leads in every unit – maternity & neonatal
- Baseline using BadgerNet data to understand current situation
- Draw on national guidance and regional work to address relevant issues
- Draw on the NHS Improvement PS Alert to guide and inform



Examples of good practice in postnatal and early neonatal care

‘Focus on keeping mum & baby together’



#RightBabyRightCotRightTime

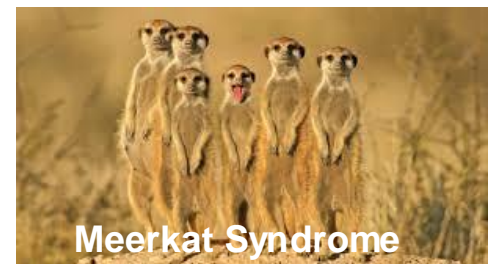


Baby must prove need for admission to NICU rather than prove to be discharged



Strategies to reduce term admissions to NNU

- Collaborative working
 - Parents / families
 - Midwives
 - Obstetricians
 - Neonatologists
 - Nurses
 - Ancillary staff
 - AHP
- Education
 - Parents, trainee doctors, midwives, nurses, ancillary staff
- Tools
 - SOPs, Guidelines (hypoglycaemia / jaundice / sepsis)
 - CULTURE.....
 - positive 'can do' attitudes
- Neonatal Transitional Care (NTC)
 - facility / ethos of care / concept




PHNT Obstetric / Midwifery management of newborn

1. Delayed cord clamping
2. Skin to Skin with mother
3. 1st Breast Feed
4. THEN...
 - Baby is
 - Transferred to examination surface under radiant warmer & has midwife exam + weight + HC + labels
 - Careful not to overheat.....
 - Transferred BACK to mother for more skin to skin & breast feed

No cots in delivery room – baby kept skin to skin with parents

- **Target 'at risk' population**

- | | | | |
|---|------|--|--|
|  | | Surname
First Name
Hospital No.
NHS Number
D.O.B. | |
| <h1 style="margin: 0;">NEWBORN EARLY WARNING</h1> | | Affix patient label here | |
| <h2 style="margin: 0;">OBSERVATION CHART FOR NEWBORN INFANTS</h2> | | | |
| DATE | TIME | | |
| TEMP | | 39.0 | |
| | | 38.0 | |
| | | 37.0 | |
| | | 36.0 | |
| | | 35.0 | |
| | | RESPIRATION | |
| 80 | | | |
| 75 | | | |
| 70 | | | |
| 65 | | | |
| 60 | | | |
| 55 | | | |
| 50 | | | |
| 45 | | | |
| 40 | | | |
| 35 | | | |
| 30 | | | |
| 25 | | | |
| 20 | | | |
| GRUNTING | | | |
| HEART RATE | | 200 | |
| | | 190 | |
| | | 180 | |
| | | 170 | |
| | | 160 | |
| | | 150 | |
| | | 140 | |
| | | 130 | |
| | | 120 | |
| | | 110 | |
| | | 100 | |
| | | 90 | |
| | | 80 | |
| | | 70 | |
| 60 | | | |
| COLOUR (SpO ₂) | | PINK (>94%) | |
| | | 80-94%
DUSKY/BLUE (<90%) | |
| | | | |
| NEURO | | ACTIVELY TO FEED | |
| | | HYPERMOTILE
FLOPPY/DIFF TO ROUSE | |
| | | | |
| | | | |
| SCORE | | RED | |
| | | AMBER | |
| RESPONSE | | ALL OBSERVATIONS IN WHITE | |
| | | ONE IN AMBER | |
| | | TWO IN AMBER OR ONE IN RED | |
| | | CONTINUE OBSERVATIONS 4 HOURLY OR AS REQUESTED
CONTACT SHO/ANP/SENIOR MIDWIFE, VERBAL MANAGEMENT PLAN OR REVIEW. REPEAT OBSERVATIONS IN 30 MINUTES. | |
| | | IMMEDIATE REVIEW | |

ARNI guideline



Neonatal Intensive Care Unit Guidelines

At risk newborn infants (ARNIs)

Aim

To identify a group of infants who are at increased risk of medical problems in the immediate perinatal period and provide a mechanism for their early assessment and planned ongoing care.

Background

Some infants require immediate admission to the neonatal intensive care unit (NICU) or the Transitional Care Ward (TCW) as per departmental guidelines. However, a small group of infants will need a brief period of assessment before a decision is made regarding the best place for ongoing care. This must be undertaken on the Delivery Suite by both the midwifery and medical teams within the first half hour after birth.

Indications

Any infant with one or more of the following risk factors must be observed:

Antenatal / Intrapartum

Pathological cardiotocogram (CTG)
Scalp pH < 7.0
Thick meconium

Postnatal

Cord pH < 7.0
Ventilatory support for > 3 min
External cardiac massage
5 min APGAR < 8 (if < 5 requires admission to NICU)
Grunting / respiratory distress

Clinical judgement must be used when deciding if any other infant requires formal observation. Consider the following additional risk factors:

- Maternal risk factors for infection
- Reduced foetal movements
- Non-reassuring CTG
- Significant placental infarction or abruption

Observations

Formal observations must include:

- | | |
|---------------------------------|---|
| • Colour | Central cyanosis, pallor |
| • Tone | Floppy |
| • Signs of respiratory distress | Respiratory rate > 60 resp/min, grunting, nasal flaring, recession or gasping |
| • Heart rate | > 160 b/min |
| • Saturations | < 95% in air |

These observations must be repeated at 15-minute intervals by the midwife and recorded in the infant's hospital notes on a newborn early warning (NEW) score sheet. The midwife must ask for an immediate review if there are concerns. A member of the neonatal team must return within 30 minutes to reassess the infant - consider a saturation reading and / or blood gas at this time.

If the infant has not been reviewed within 30 minutes, a senior member of the neonatal team (middle grade or above) must be informed to decide upon appropriate placement.

Cautions

These guidelines are not all encompassing and it is important that clinical acumen is used in the assessment of infants who may warrant assessment or care over and above the norm.

Cross references

Deliveries to attend
Resuscitation and stabilisation
Meconium Delivery
Group B Strep
Guidelines for current obstetric management - #54 – Paediatrics
Admissions to the Neonatal Unit
Admissions to the transitional care ward

Monitoring and Audit

Auditable standards: That at risk infants are receiving appropriate monitoring

Frequency of audit: Three yearly

Reports to: Neonatal clinical governance group

Responsible person: NICU clinician

Author	Julia Lilley, Consultant Neonatologist		
Work Address	NICU, Level 5, Maternity Wing, Derriford Hospital		
Date Ratified	9 th May 2006 Reviewed April 2010 Reviewed April 2015	Valid Until Date	April 2018

NEWTT

<http://www.bapm.org/publications/documents/guidelines/NEWTT%20framework%20final%20for%20website.pdf>


Newborn Early Warning Trigger and Track (NEWTT)

Action		Continue observations as planned		Escalate concern to senior midwife and review 30 mins		Immediate escalation to ANNP / Doctor		Immediate escalation to ANNP / Doctor	
Reason for Observations		Signed		Patient label					
Frequency and Duration of Observations									
Date									
Time									
Temperature	38								
	37								
	36								
Heart Rate	180								
	170								
	160								
	150								
	140								
	130								
	120								
	110								
	100								
	90								
Respirations	80								
	70								
	60								
	50								
	40								
	30								
Grunting									
SpO ₂ / color	Pale or Blue or SpO ₂ < 90%								
	SpO ₂ 91 – 94% Pink > 95%								
Behaviour	Floppy/ not feeding								
	Jittery/ irritable/ poor feeding								
	Active/ feeding well								
	Blood Glucose								
	Bilirubin								
Initials									

Newborn Early Warning Trigger and Track (NEWTT)

At Risk Infants – Please tick box as appropriate. Record reason for observation, frequency and duration overleaf .

Sepsis

 ☐

PROM > 18 hours Preterm ☐

PROM > 24 hours Term ☐

Maternal Temperature > 38°C ☐

Chorioamnionitis ☐

Maternal GBS in vaginal swab/ or MSU ☐

Confirmed invasive GBS sepsis in previous baby ☐

Intrapartum

Meconium Stained Liquor (requiring intervention) ☐

Cord arterial pH ≤ 7.1 ☐

Base Excess ≤ - 12 mmol/l ☐

APGAR ≤ 7 at 5 minutes ☐

Other – Specify reason

Metabolic : Blood Sugar Monitoring

Maternal Diabetes ☐

Maternal β Blockers ☐

Birthweight < 2nd centile ☐

Other – Specify reason

Other

IPPV > 5 minutes ☐

Maternal pethidine < 6 hours before delivery ☐

< 37 weeks gestation ☐

Other – Specify reason

Weight on 2nd centile in Kg.

GA	Boys	Girls
35	1.65	1.60
36	1.90	1.80
37	2.10	2.00
38	2.30	2.20
39	2.50	2.45
40	2.65	2.60
41	2.8	2.75
42	2.9	2.85

Infants that need immediate review by Doctor /ANNP

Jaundice < 24 hours

Bilious Vomiting

Abnormal Movements

Hypoglycaemia

Apnoea

These criteria are a guide only to increase surveillance on infants of potential concern. It can be expanded upon to meet local requirements and guidelines.

Spotting the worrying baby

Colours as Clues

Red – plethora, rashes, sepsis

Yellow – jaundice in first 24 hours

Green – bilious vomiting, meconium delivery

Blue/cyanosis – cardiac or respiratory



Purple – bruising/bleeding

White/pale – sepsis, anaemia

NTC Criteria for admission – Term >37/40

- **Low birth weight:** 1500 - 2500 grams
 - (infants that are <2nd centile for weight and / or have abnormal antenatal Doppler studies should be admitted to the Neonatal Unit for initial assessment)
- **Respiratory problems:** Infants with mild respiratory distress
 - (respiratory rate <80/minute, mild recession and grunting) and with normal oxygen saturations in air may be observed initially. *Admit to NICU if symptoms persist or worsen.*
- **Infants requiring 4 hourly observations for a prolonged period (> 24 hours)**
- **Infection:** infants requiring iv antibiotics
- **Congenital abnormalities:** Requiring specialist nursing care e.g. trisomies
- **Hypoglycaemic infants:** glucose <2.6 mmol/l despite adequate feeding.
- **Infant of diabetic mother (insulin or diet controlled)**
- **Maternal drug and alcohol dependency**
- **Infants at risk of early jaundice** e.g. Maternal haemolytic antibodies
- **Infants requiring phototherapy**
- **Safeguarding concern:** Infants for adoption and those subject to care proceedings
- **Community referrals <10/7**

Result of implementation of Strategies to *ATAIN*



- Early identification of pathologies
 - infection, infarction, cardiac, metabolic
- Enhanced midwifery knowledge through implementation process of NEWs & education by ANNPs
- Avoiding separation of mother & baby
- PHNT achieving NHS target of 5% **ATAIN**

Spotting the worrying baby Colours as Clues

Red – plethora, rashes, sepsis

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Green – bilious vomiting, meconium delivery

Blue/cyanosis – cardiac or respiratory



Purple – bruising/bleeding

White/pale – sepsis, anaemia

South West Neonatal Network



Network	Unit	<u>Live Births</u>	<u>Term admissions</u>	
			n	% live births
South West Neonatal ODN 2017 1 ST QUARTER	SCU – Level 1	338	38	11%
	SCU – Level 1	603	59	10%
	SCU – Level 1	347	31	9%
	LNU – Level 2	1622	58	4%
	LNU – Level 2	1052	38	4%
	LNU – Level 2	980	64	7%
	LNU – Level 2	989	58	6%
	LNU – Level 2	1055	79	7%
	LNU – Level 2	765	45	6%
	Derriford Hospital NICU Level 3	987	29	3%
	NICU – Level 3	1566	109	7%
	NICU – Level 3	1239	90	7%



Summary

- Term newborn baby admissions to NNU *is* avoidable
- Imperative to collaborate with all stakeholders
 - Families, Midwives, Doctors, Nurses, Hospitals & Community
- Education of whole team will see success