NHS Resolution

Maternity Conference
#SaferBirthsNHS22

Learning from claims related to neonatal Group B Streptococcal (GBS) infection

Dr Rachel Walsh
Consultant Neonatologist/National Neonatal Fellow, *NHS Resolution*

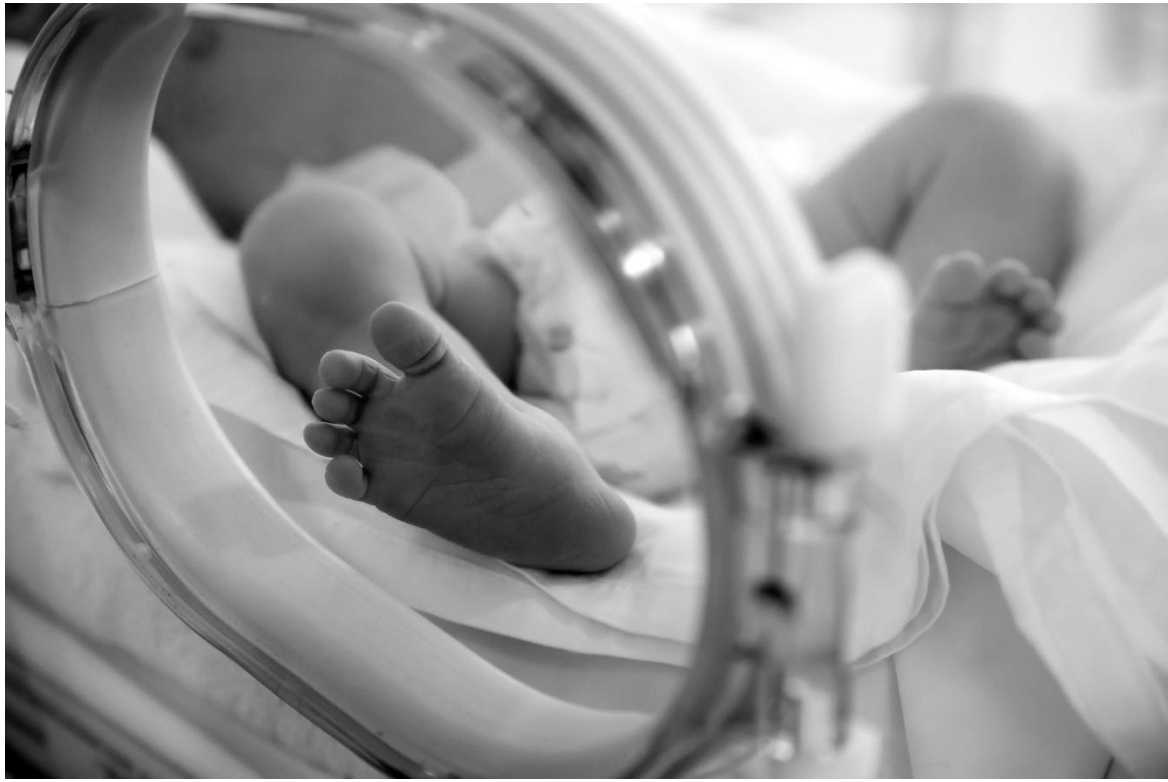
@NHSResolution

Advise / Resolve / Learn

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Objectives

- To appreciated the significance of GBS sepsis in the neonatal population
- To understand how this may result in claims
- To consider learning that can be found in past claims



Scope of this project

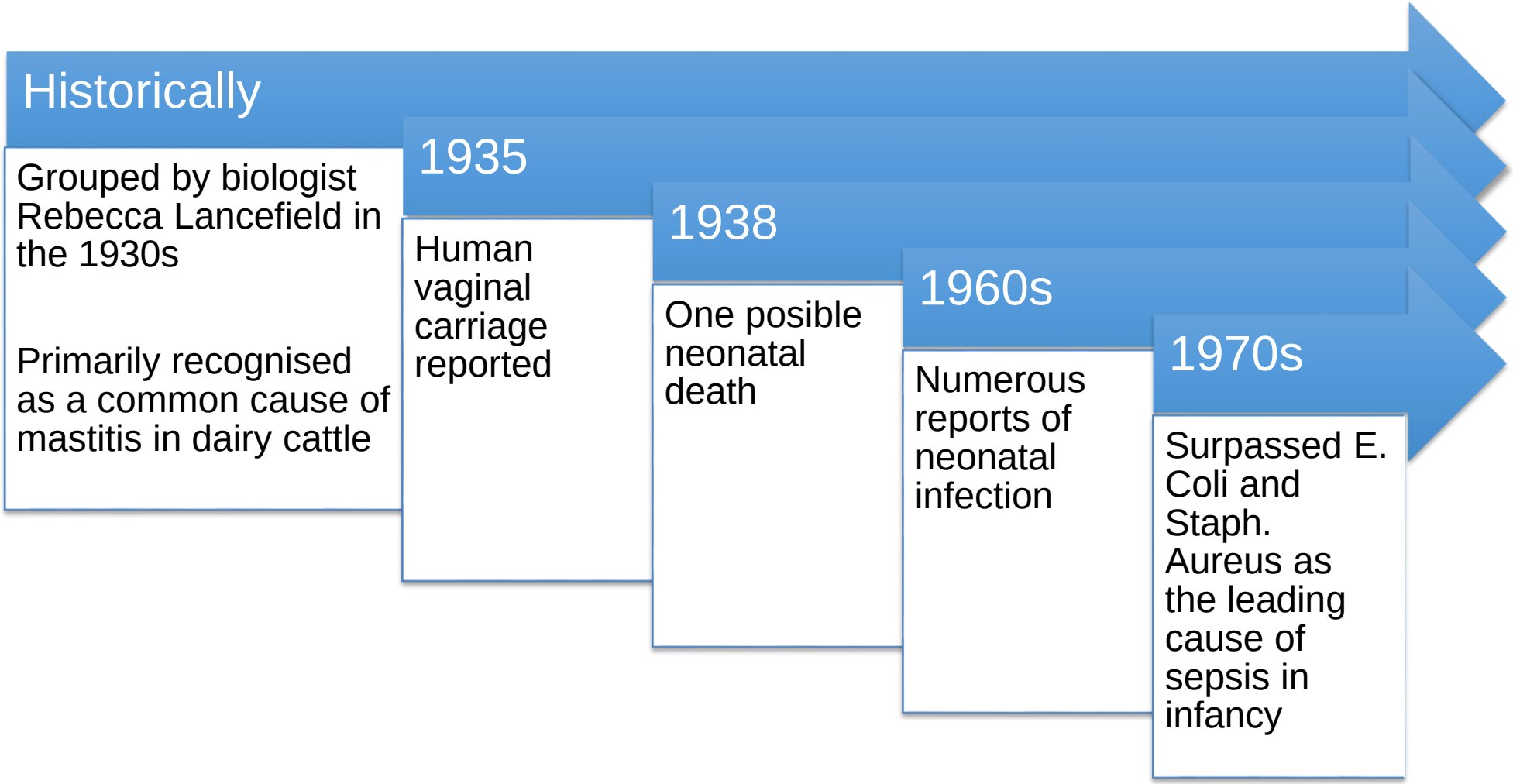
- Two distinct presentations of GBS sepsis in infants:
  - *Early onset GBS (EOGBS)* seen within the first week of life
  - *Late-onset GBS (LOGBS)* seen in infants between 1 week and 3 months of age.

- This talk concerns EOGBS

- The reason for this focus is the potential for modification of EOGBS risk factors within maternity care.

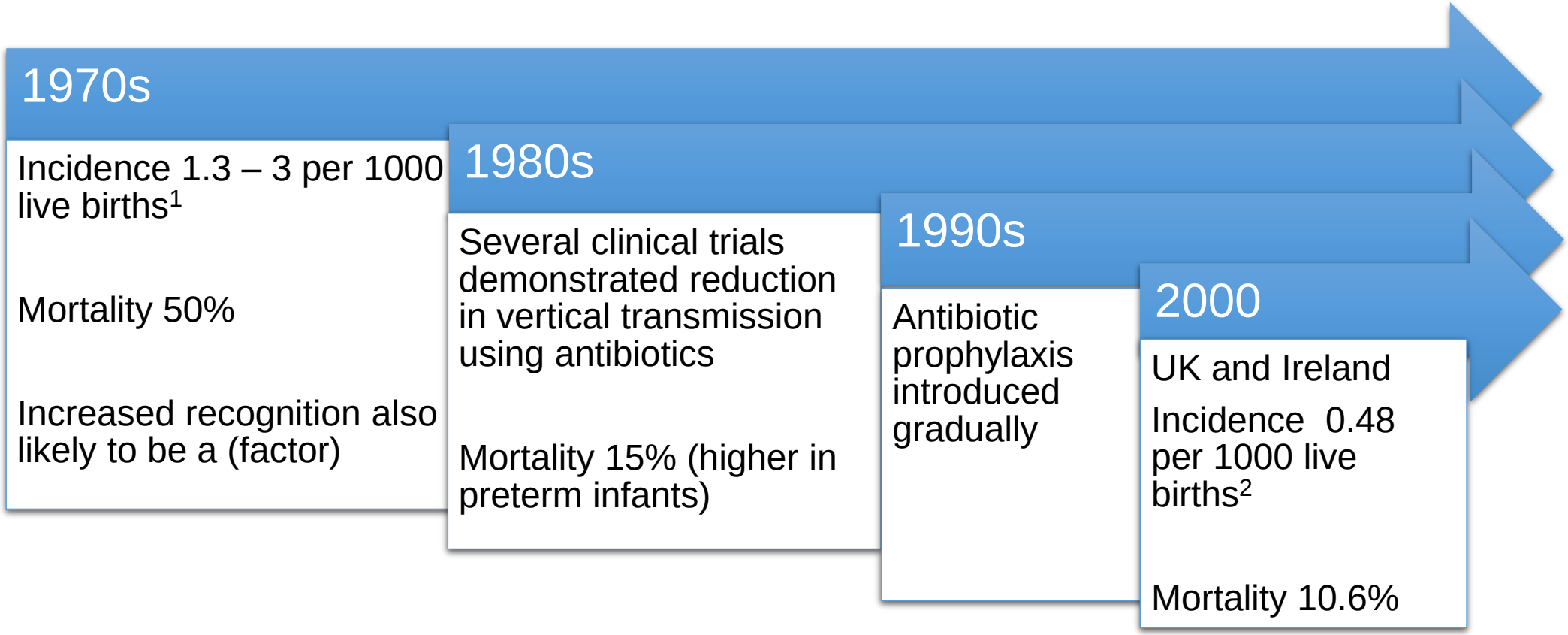
The history of GBS

NHS Resolution | Maternity Conference #SaferBirthsNHS22



The history of GBS

NHS Resolution | Maternity Conference #SaferBirthsNHS22



1. Anne Schuchat, Group B Streptococcal Disease: From Trials and Tribulations to Triumph and Trepidation, *Clinical Infectious Diseases*, Volume 33, Issue 6, 15 September 2001, Pages 751–756)
Boyer KM. Maternal screening in prevention of neonatal infections: current status and rationale for group B streptococcal screening. *J Hosp Infect*. 1988;11 Suppl A:328-333. doi:10.1016/0195-6701(88)90207-1

2. Heath PT, Balfour G, Weisner AM, et al. Group B streptococcal disease in UK and Irish infants younger than 90 days. *Lancet*. 2004;363(9405):292-294. doi:10.1016/S0140-6736(03)15389-5

The Current Impact of GBS

- Remains the most common cause of serious bacterial infections in the first week of life.

- May present as
  - Pneumonia
  - Meningitis
  - Septicaemia

NHS Resolution | Maternity Conference #SaferBirthsNHS22

The history of GBS

1970s

Incidence 1.3 – 3 per 1000 live births[1]

Mortality 50%

Increased recognition also likely to be a (factor)

1980s

Several clinical trials demonstrated reduction in vertical transmission using antibiotics

Mortality 15% (higher in preterm infants)

1990s

Antibiotic prophylaxis introduced gradually

2000

UK and Ireland

Incidence 0.48 per 1000 live births[2]

Mortality 10.6%

2015

UK and Ireland

Incidence 0.57 per 1000 live births[3]

Mortality 5.2%

1.Anne Schuchat, Group B Streptococcal Disease: From Trials and Tribulations to Triumph and Trepidation, *Clinical Infectious Diseases*, Volume 33, Issue 6, 15 September 2001, Pages 751–756)
Boyer KM. Maternal screening in prevention of neonatal infections: current status and rationale for group B streptococcal screening. *J Hosp Infect*. 1988;11 Suppl A:328-333. doi:10.1016/0195-6701(88)90207-1
2.Heath PT, Balfour G, Weisner AM, et al. Group B streptococcal disease in UK and Irish infants younger than 90 days. *Lancet*. 2004;363(9405):292-294. doi:10.1016/S0140-6736(03)15389-5
3. O'Sullivan CP, Lamagni T, Patel D, et al. Group B streptococcal disease in UK and Irish infants younger than 90 days, 2014-15: a prospective surveillance study. *Lancet Infect Dis*. 2019;19(1):83-90.

The Current Impact of GBS

Significant cause of morbidity (disability at follow up)

- Severe impairment in 19% of those with meningitis[4]
- 7.4% of those with GBS sepsis[5]

4. Libster R, Edwards KM, Levent F, et al. Long-term outcomes of group B streptococcal meningitis. *Pediatrics*. 2012;130(1):e8-e15. doi:10.1542/peds.2011-3453

5. O'Sullivan CP, Lamagni T, Patel D, et al. Group B streptococcal disease in UK and Irish infants younger than 90 days, 2014-15: a prospective surveillance study. *Lancet Infect Dis*. 2019;19(1):83-90. doi:10.1016/S1473-3099(18)30555-3

Part of NHS Resolution's maternity **campaign** 2022-25

NHS Resolution

Maternity Conference
#SaferBirthsNHS22

Prevention strategy

Advise / Resolve / Learn

Prevention Strategy

There remains controversy about the best strategy to prevent EOGBS disease.

Two key strategies:

1) Universal screening
2) Risk based screening

Current USA guidelines recommend universal screening for maternal colonisation between 36 and 38 weeks of pregnancy

Current guidelines in the UK, The Netherlands and New Zealand recommend risk based protocols

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Concerns regarding universal screening

- Anaphylaxis
- Increased medicalisation of labour and the neonatal period
- Infection with antibiotic-resistant organisms

NHS Resolution | Maternity Conference #SaferBirthsNHS22

GBS3 Trial

GBS3 ROUTINE TESTING FOR GROUP B STREP

NOTTINGHAM CLINICAL TRIALS UNIT

- Led by Professor Jane Daniels and Dr Kate Walker from the Nottingham Clinical Trials Unit (NCTU) at the University of Nottingham.
- Funded by the National Institute for Health Research
- Supported by Group B Strep Support (GBSS), and by the National Childbirth Trust (NCT).

- 48 Hospitals across the UK
- Randomised to either:
  - Normal management
  - Routine screening by ECM at 35 – 37 weeks
  - Routine bedside test at start of labour

NHS Resolution

Maternity Conference
#SaferBirthsNHS22

Learning from Claims

- Online E-Learning Module
- GBS 10 year review

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Background

- 2nd Early Notification Scheme Report (2022)
- HSIB GBS report (2020)

Common themes

1. Maternal information provision
2. Patient records
3. Follow-up of results
4. Labour and delivery plans
5. Missed / delayed IAP
6. Maternal observations and neonatal sepsis recognition

NHS Resolution | Maternity Conference #SaferBirthsNHS22

What can we add?

- Slightly different cohort
- Captures cases where learning may be possible irrespective of outcome
- Strengthens current knowledge

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Learning from Claims

- **Online E-Learning Module**
- GBS 10 year review

NHS Resolution

Maternity Conference #SaferBirthsNHS22

Online E-Learning Module

- Sarah's Story
- Illustrative
- Constructed based on themes drawn from a range of claims

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Sarah, 27y

- Primagravida
- Booked for midwifery led care

- Pregnancy progressed uneventfully
- Minor PV bleeding at 28 weeks

NHS Resolution

Maternity Conference
#SaferBirthsNHS22

Sarah's story

- High vaginal swab (HVS) taken as part of assessment at local maternity unit
- Swab result not available prior to Sarah's discharge
- Subsequently reported positive for Group B Streptococcus (GBS)

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Sarah's story

- Routine antenatal appointments at 31, 34 and 36 weeks

- No further concerns and no discussion of earlier admission

NHS Resolution

Maternity Conference #SaferBirthsNHS22

Sarah's story

- Presented in labour at 38+3 weeks
- Sarah was unsure when her membranes had ruptures but thought it may have been the day before
- Admitted
- No review of online results or previous admission

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Sarah's story

- Baby born in good condition by SVD later that day
- Baby placed on a normal postnatal care pathway
- Baby reviewed at 1 hours of age for intermittent grunting and a temperature of 36.3 which normalised quickly

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Sarah's story

- The paediatric doctor asked Sarah about illnesses and infection during pregnancy but she not recall any episodes of either

- The doctor concludes that this is a well-baby with no risk factors for sepsis whose only concerning feature is intermittent grunting.

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Risk factors

- Maternal GBS
- Likely PROM

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Sarah's story

- 3 hours later the baby was found to be lethargic, floppy and cyanosed
- Neonatal crash call
- He had a severe mixed acidosis on capillary gas and was admitted to the neonatal unit for ongoing resuscitation

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Neonatal Progress

- Ventilated for 6 days
- High oxygen requirement – persistent pulmonary hypertension
- Required infusions of dobutamine and adrenaline for 5 days
- 1 red blood cell transfusion
- 2 platelet transfusions
- Treatment with cryoprecipitate, and additional IV vitamin K

Neonatal Progress

- First CRP 78 (peaked at 190 on day 3 of treatment)
- Clinical and electrical seizures day 2 – 5 (treated with phenobarbitone, midazolam and Keppra)
- Significant acute kidney injury.
- Anuric for 24 hours
- Required treatment for hyperkalaemia

Neonatal Progress

- GBS cultured in blood and cerebrospinal fluid
- Completed 21 days of benzylpenicillin and gentamicin

- Discharged home at 4 weeks of age
  - Failed newborn hearing test
  - Continues to require NG tube feeding
  - Abnormal tone.

- Likely to have ongoing morbidity

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Learning points

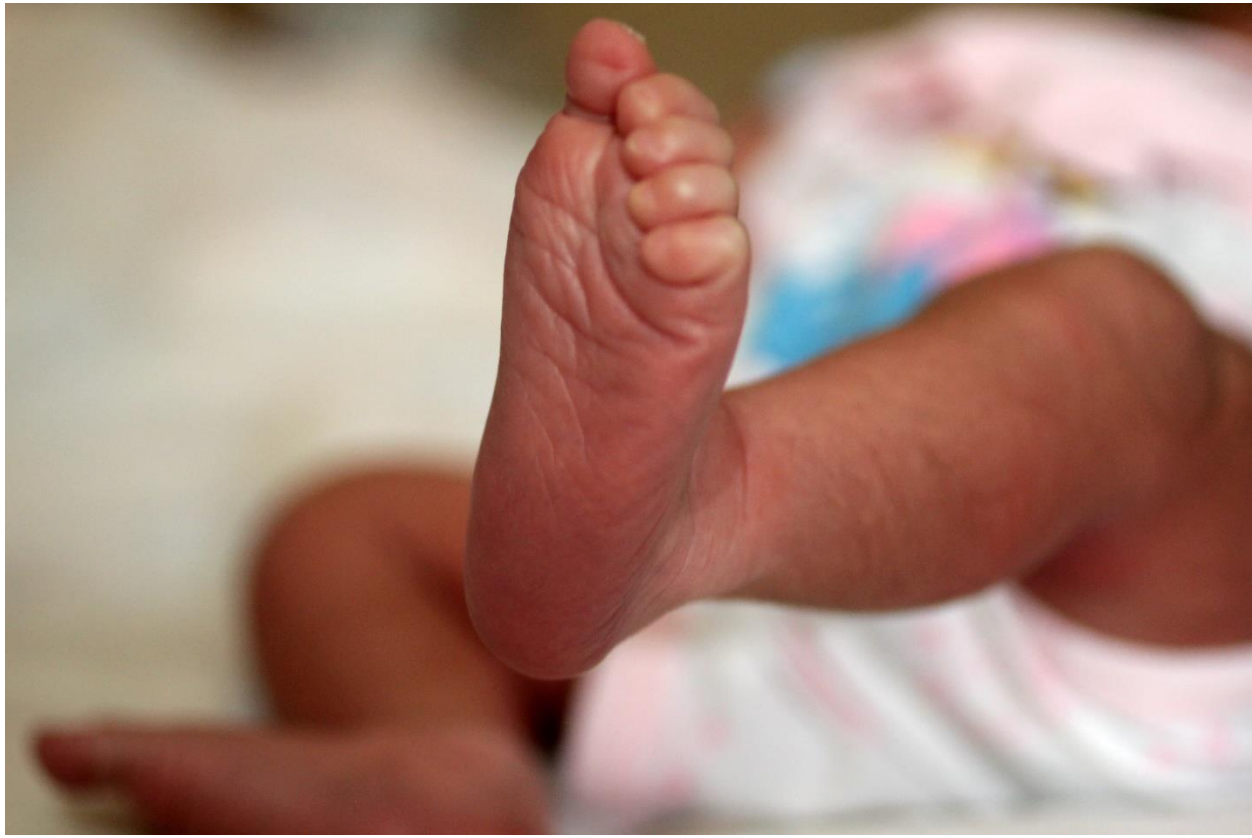
- Swab results missed
- Missed IAP
- Missed PROM and mat GBS
- Lack of communication between midwives and neonatal doctor
- Wrong care pathway for baby (no regular observations)
- Missed early antibiotics for baby

NHS Resolution

Maternity Conference
#SaferBirthsNHS22

Learning from Claims

- Online E-Learning Module
- **GBS 10 year review**



GBS 10 year review

Interim findings:

- 36 cases between Jan 2012 – Dec 2021
- Damages paid in 24
- Average cost per case (damages and legal costs) £467,943.30

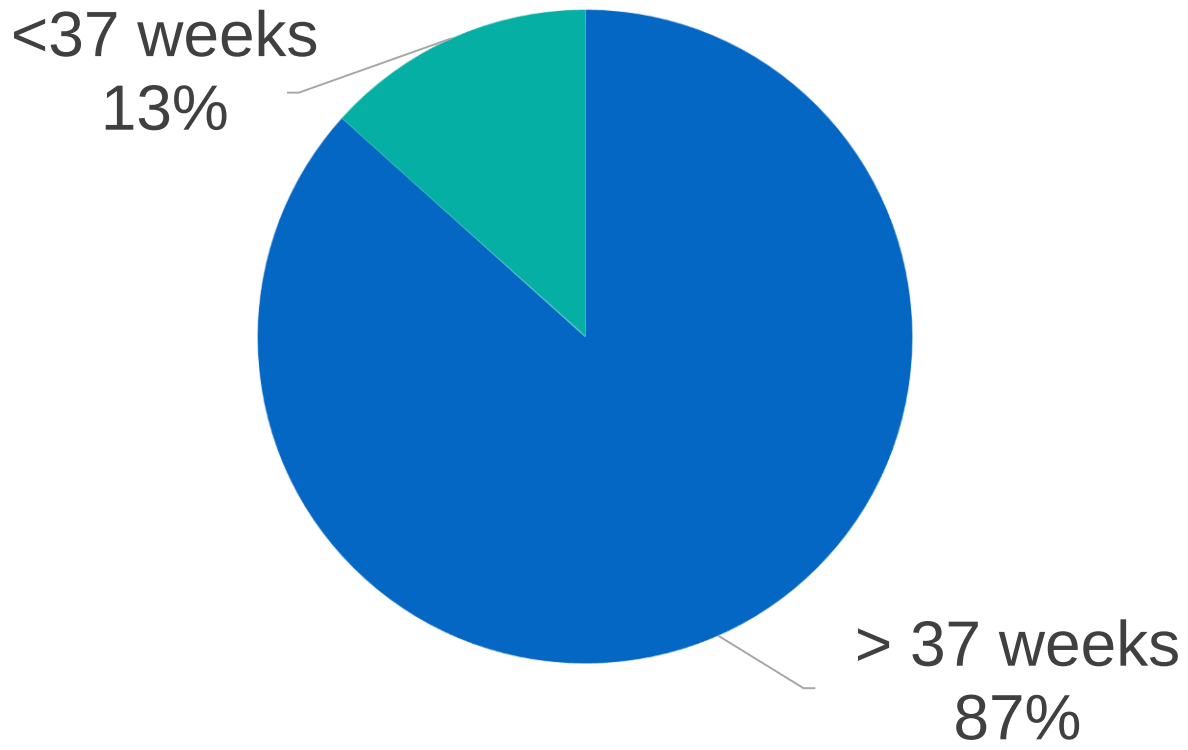
NHS Resolution

Maternity Conference #SaferBirthsNHS22

Interim progress (claims 2015 – 2021)

- 15 (of 36) cases
- Mortality in 16%

GBS claims by gestation

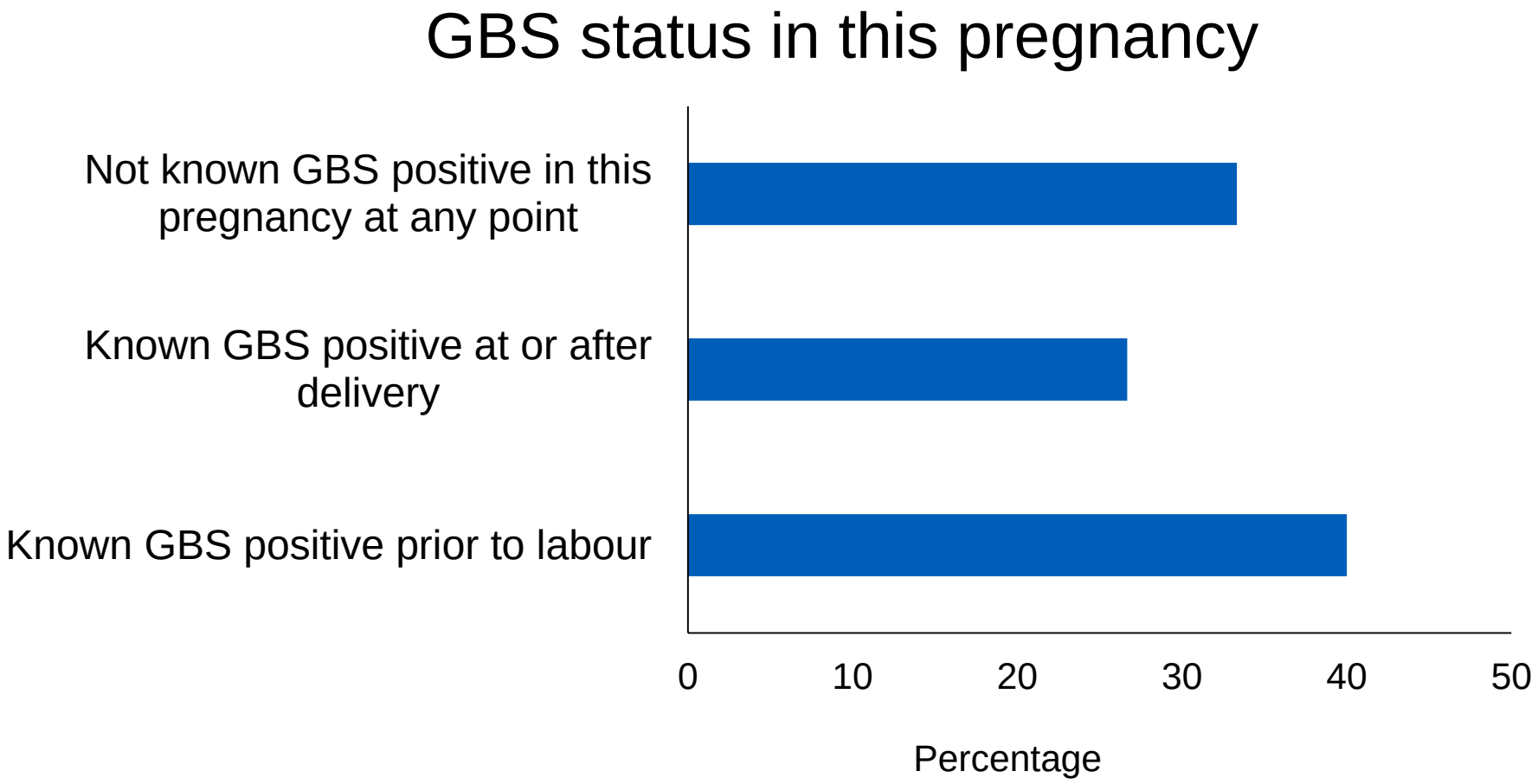


NHS Resolution

Maternity Conference #SaferBirthsNHS22

Interim progress (claims 2015 – 2021)

- 15 (of 36) cases



NHS Resolution | Maternity Conference #SaferBirthsNHS22

Early themes

- Missed IAP
- Delay in swab result availability
- Management of chorioamnionitis
- Poor communication between maternity and neonatal teams
- Delayed / Missed baby antibiotics
- Recognition of neonatal sepsis

Conclusions

- Number of claims related to EOGBS is low
- Outcomes can be devastating
- Claim value high

- Approximately 1/3 relate to each of:
  - undiagnosed GBS carriage
  - cases where GBS carriage was diagnosed at the point of labour
  - GBS carriage was diagnosed earlier in pregnancy

Conclusions

- Likely to be learning points relating to:
  - Screening
  - Intrapartum management
  - Postnatal management
  - Recognition of neonatal sepsis

- Unlikely that a simple change in 1 area will be sufficient

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Possible approaches

- Parental resources
- Patient record management
- Clinical Training
- Guidelines

Take home messages

- How can we make results chasing more robust?
- How can we keep patients well informed about their care and investigations?
- How can we optimise communication between maternity and neonatal services?

Take home messages

Neonatal claims related to EOGBS are small in number but significant in financial and human impact.

If there is learning to be found among a small cohort of cases we should continually seek and share it.

NHS Resolution | Maternity Conference #SaferBirthsNHS22

Thank you

Questions?

rachel.walsh23@nhs.net