

# Review:

**Use of antenatal steroids and magnesium sulphate in maternity settings across Yorkshire and the Humber**



# **Review: The use of antenatal steroids and magnesium sulphate in maternity settings across Yorkshire and the Humber**

Version number: 1

First published: July 2018

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Acknowledgement:

We are grateful for the support of Charlotte Bradford and the Neonatal ODN throughout the process of this review and for supplying the neonatal data used for data comparison.

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# 1 Introduction

There is an increasing focus on the use and uptake of magnesium sulphate as “*Antenatal magnesium sulphate therapy given to women at risk of preterm birth substantially reduced the risk of cerebral palsy*” (Doyle et al, 2009). The potential benefits of giving magnesium sulphate means that it is now NICE guidance for women between “*24+0 and 29+6 weeks of pregnancy who are: in established labour or having a planned preterm birth within 24 hours*”, NICE (2015).

NICE (2015) also have clear guidance on the use of antenatal steroids stating they should be offered between gestations of 26+0 and 33+6 weeks of pregnancy where preterm labour or birth is suspected, diagnosed or established, or where the membranes have ruptured. Between 24+0 and 25+6 weeks steroids should be considered for the same cohort of women and between 23+0 and 23+6 steroids may be offered to a woman “*in the context of her individual circumstances*”, NICE (2015).

The Y&H Neonatal ODN record the administration of antenatal steroids and magnesium sulphate as part of their Neonatal Dashboard, with data collected from BadgerNet. The data is RAG rated with the target levels set locally by neonatal clinical leads. The target levels have been raised since April 2018. To achieve a green rating, antenatal steroids need to be administered in 95% or more eligible cases. To achieve a green rating for magnesium sulphate, this should be administered in 50% or more eligible cases.

A question was posed to the Yorkshire and the Humber Clinical Network about whether or not the use of antenatal steroids and magnesium sulphate could be added to the Yorkshire and the Humber Maternity Dashboard. Consideration as to whether this would be duplicating data already collected by the Neonatal ODN was discussed at the Y&H Maternity Neonatal Joint Forum. A discussion followed around whether the neonatal data recordings of the use of antenatal steroids and magnesium sulphate would be comparable to the same data collected by the maternity information systems.

It was agreed by the Yorkshire and the Humber Maternity Clinical Expert Group (CEG) that a review of the use of antenatal steroids and magnesium sulphate to achieve optimum fetal condition where pre-term birth is anticipated should be undertaken. The primary aim of this piece of work was to see if the data captured within maternity services, regarding the use of antenatal steroids and magnesium sulphate, matched the neonatal data. Members of the Maternity CEG also requested for predictive testing to be included in the review, to provide an overview of practice across Y&H.

A small working group, including CEG members, clinicians, a Neonatal ODN representative and the Clinical Network team, met to plan how the review would be undertaken. Two documents were developed and sent to Trusts for their completion.

## 1. Survey (see Appendix 1)

The first document was a survey around the guidance and policies within the Trust relating to antenatal steroids and magnesium sulphate. Questions were included around predictive testing for pre-term birth, as this is increasingly identified as having a role in achieving optimum conditions for pre-term infants

(NICE, 2015). For Trusts with more than one maternity unit they were asked to complete the information for each site.

2. Case Study (see Appendix 2)

The second document was a case study template to be completed for each pre-term birth that took place between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017. It is seen in this report that not all Trusts have been able to review all their case studies in this period. Accessing notes and retrieving information appears to have been a challenge for some Trusts.

## 2 Survey

- There are 13 NHS Trusts in Yorkshire and the Humber providing maternity services, with 16 obstetric units and 16 neonatal units.
- Survey responses from 12 Trusts, covering 15 neonatal units, were received.
- Surveys and case studies relate to the period Q3 2017/18 (October – December 2017).
- The surveys indicated that there were 317 births between 23+0 and 33+6 weeks gestation in the stated time period.

### 2.1 Antenatal steroids

**Question:** Does your maternity unit have a guideline which includes administration of antenatal steroids in pre-term births?

**Answer:** All 12 Trusts said **Yes**

**Question:** Do all mothers who deliver between 23+0 and 33+6 receive antenatal steroids?

**Answer:** 9 out of 12 Trusts said **Yes** this was their policy (where practically possible to administer)

3 Trusts had a variation in their policy, as detailed below.

- *“From 23+0 to 23+6 weeks steroids are considered on a case by case basis and the decision jointly made by the consultant and the woman. From 24+0 to 25+6 weeks steroids are considered with suspected or confirmed preterm labour, women with PPRM or undergoing a planned pre-term birth”*
- *“It is our guideline that 24wks - 34+6 wks thought to be at risk of preterm delivery are offered steroids”*
- *“Maternal corticosteroids may be used, with caution, where birth is likely between 23+0 and 23+6. This decision should be made after full discussion of the potential benefits and risks multidisciplinary review of the case including the obstetric and paediatric consultant. A decision to actively treat with steroids should include a plan for in utero transfer and resuscitation (see Management of Extremely Premature Infants Guideline)”*

### 2.2 Magnesium sulphate

**Question:** Does your maternity unit have a guideline which includes administration of magnesium sulphate for fetal neuroprotection in pre-term births?

**Answer:** All 12 Trusts said **Yes**

**Question:** Are mothers who deliver babies below 30 weeks gestation given magnesium sulphate in the 24 hours prior to delivery?

**Answer:** All 12 Trusts said **Yes** (or indicated this was the intended practice)

**2** Trusts gave exceptions to this,

- *“Our guideline is to offer magnesium sulphate to women 24 wks - 32 completed weeks”*
- *“24 to 33+6 weeks”*

### 3 Case studies – Yorkshire and the Humber overview

All **13** Trusts, covering **16** obstetric units returned case studies.

The BadgerNet data suggested there were **346** births between 23 weeks and 33 weeks 6 days between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017.

Maternity case study data was returned for **321** babies born pre-term between 23 weeks and 33 weeks 6 days between October 1st 2017 and December 31st 2017.

For some maternity units obtaining the data for the case studies was challenging from within their current systems. The detail on returned case studies is given by Trust within this chapter.

#### 3.1 Defining a data match

The primary aim of this review was to establish if the maternity information system data agrees with neonatal BadgerNet. With this in mind it was agreed that what constituted a data match needed to be specific.

For the use of antenatal steroids a positive data match was identified where the number of courses of steroids was the same in both the maternity and neonatal data (including if this was a matching 'no steroids given' entry).

For example, if the neonatal data said the mother had received two courses of steroids but the maternity data thought the mother had only received one dose, or one course, this was not a data match.

For magnesium sulphate, data matching took place for the babies born under 30 weeks gestation, based on the NICE guidance (2015). As some of the maternity case studies returns did not state when the magnesium sulphate was given it has been impossible to analyse whether or not the magnesium sulphate was received in the 24 hour period prior to birth.



## 3.2 Yorkshire and the Humber data matching overview

### 3.2.1 Antenatal steroids

Across Yorkshire and the Humber there was a data match for steroids in **88%** of the cases reported.

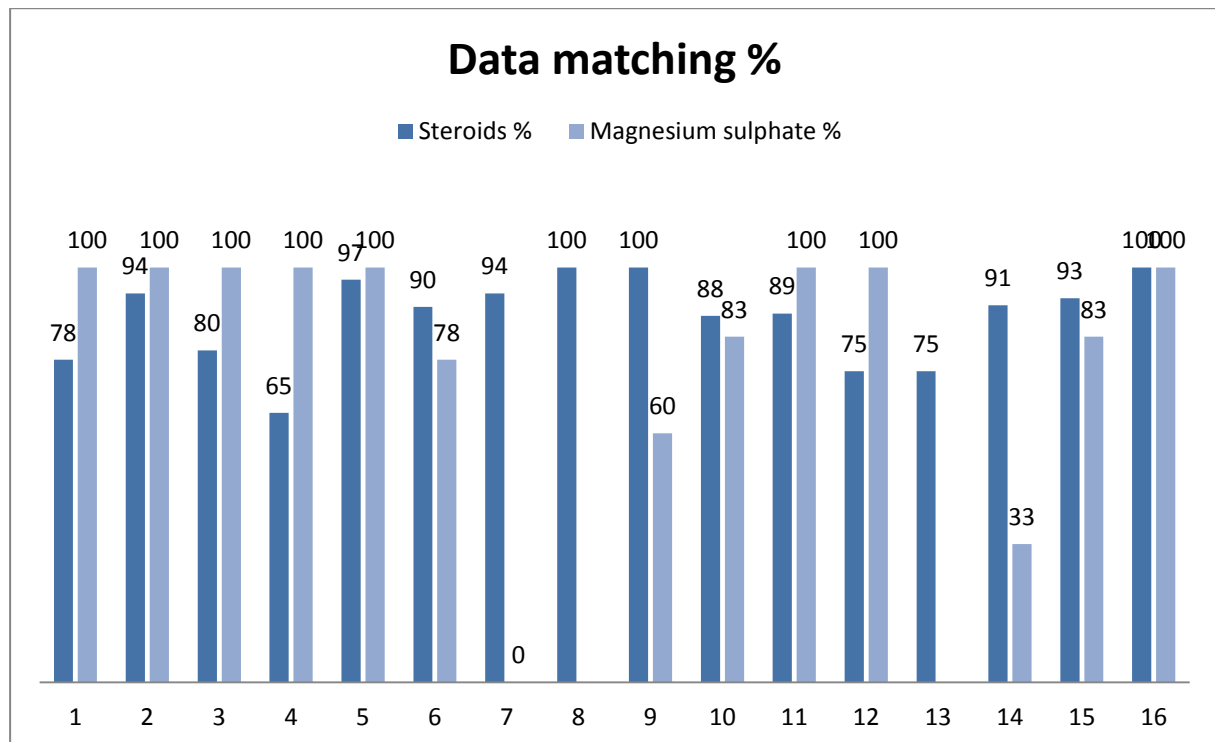
**83%** of babies born between 23 weeks and 33 weeks 6 days received at least one dose of antenatal steroids.

### 3.2.2 Magnesium sulphate

Across Yorkshire and the Humber there was a data match for magnesium sulphate in **85%** of the cases reported.

**57%** of babies born at less than 30 weeks gestation received magnesium sulphate in the antenatal period.

The Trust level data matching is represented in the following graph.



#### Maternity units.

1. Airedale 2. Barnsley 3. Bassetlaw 4. Bradford 5. Calderdale 6. Doncaster 7. Grimsby 8. Harrogate 9. Hull 10. Leeds 11. Pinderfields 12. Rotherham. 13. Scarborough 14. Scunthorpe 15. Sheffield 16. York

*NB. Harrogate and Scarborough had no babies born under 30 weeks gestation that would be eligible for magnesium sulphate.*

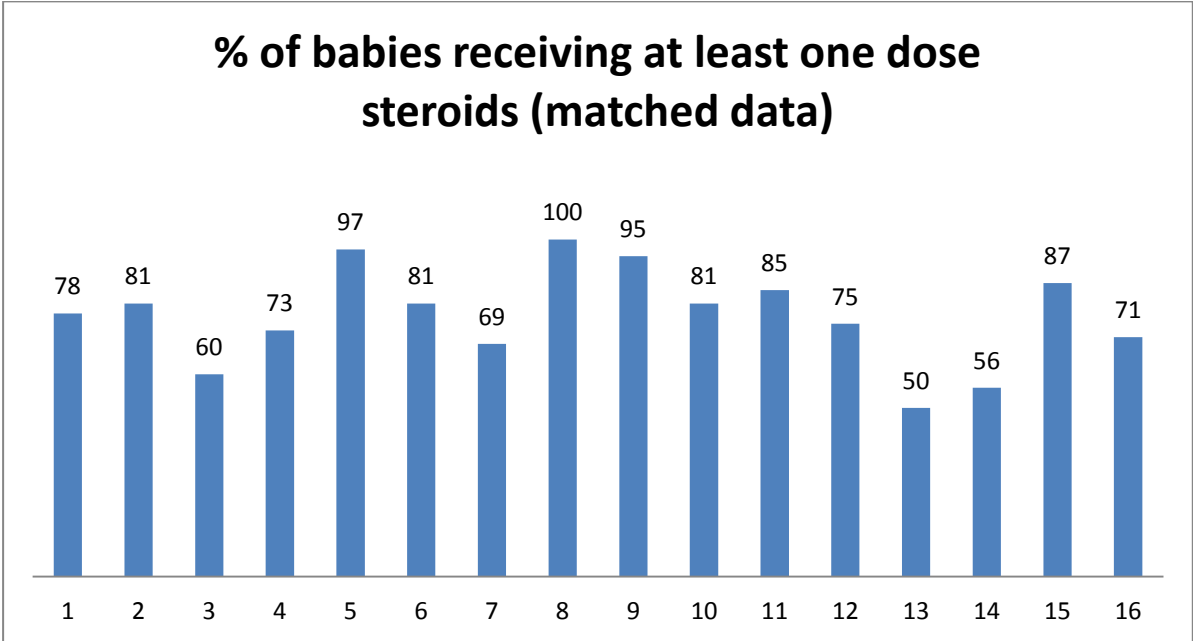
### 3.3 Use of antenatal steroids

Maternity case study data was analysed for **321** babies born pre-term between 23 weeks and 33 weeks 6 days between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017.

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data – **283 (88%)**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data – **279 (87%)**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) – **266 (83%)**



#### Maternity units

1. Airedale 2. Barnsley 3. Bassetlaw 4. Bradford 5. Calderdale 6. Doncaster 7. Grimsby 8. Harrogate 9. Hull 10. Leeds 11. Pinderfields 12. Rotherham. 13. Scarborough 14. Scunthorpe 15. Sheffield 16. York

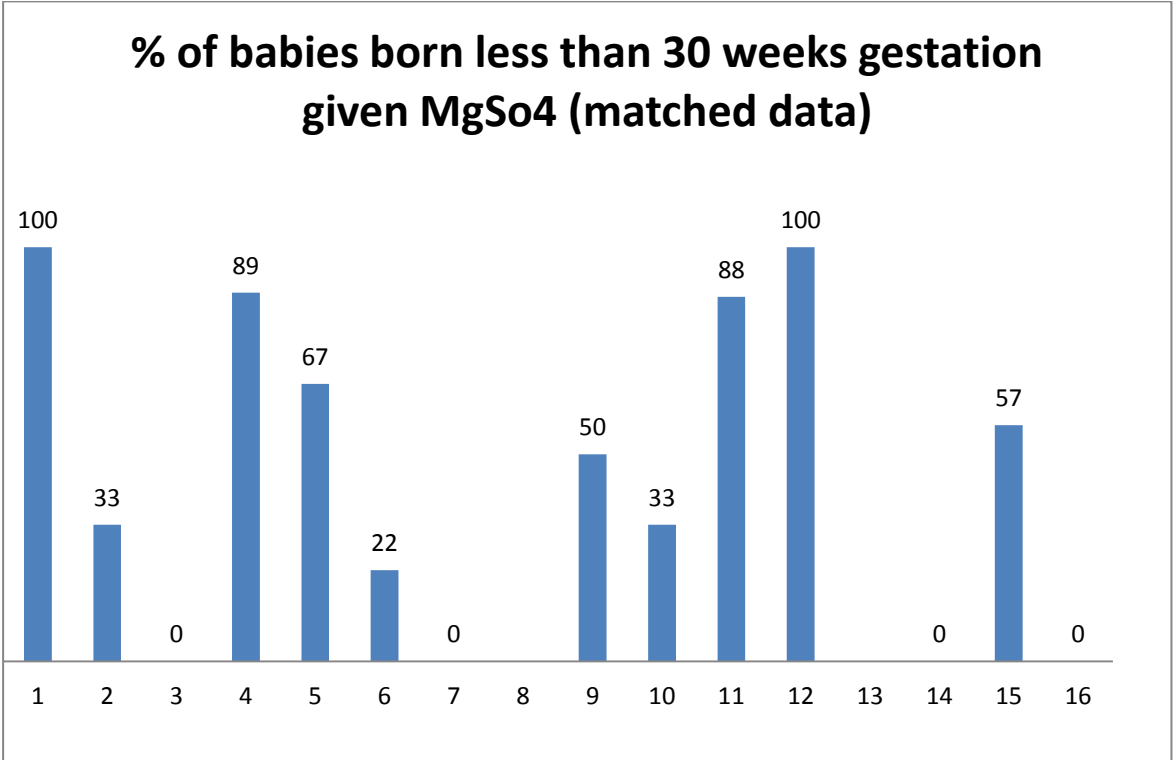
### 3.4 Use of magnesium sulphate

From the maternity case studies returned, **110** of the pre-term births were between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data – **69 (63%)**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data – **71 (65%)**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **63 (57%)**



Maternity units

- 1. Airedale 2. Barnsley 3. Bassetlaw 4. Bradford 5. Calderdale 6. Doncaster 7. Grimsby 8. Harrogate 9. Hull 10. Leeds 11. Pinderfields 12. Rotherham 13. Scarborough 14. Scunthorpe 15. Sheffield 16. York

*NB. Harrogate and Scarborough had no babies born under 30 weeks gestation that would be eligible for magnesium sulphate.*

## 4 Case Studies – Humber, Coast and Vale Local Maternity System

### 4.1 Hull and East Yorkshire Hospitals NHS Trust

#### 4.1.1 Overview

BadgerNet identified **36** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Hull Royal Infirmary.

The survey returned by the maternity service recorded **36** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **22** case studies to inform this review for the given time period.

#### 4.1.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data – **21**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **21**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **21**

#### 4.1.3 Magnesium sulphate

From the maternity case studies returned **10** of the pre-term births were between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **6**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data - **7**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **5**

### 4.2 Northern Lincolnshire and Goole Hospitals NHS Foundation Trust

#### 4.2.1 Overview

North Lincolnshire and Goole NHS Foundation Trust have maternity and neonatal units at two separate hospitals. These are Scunthorpe General Hospital and Diana, Princess of Wales Hospital in Grimsby.

BadgerNet identified **20** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Diana, Princess of Wales Hospital.

BadgerNet identified **18** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Scunthorpe General Hospital.

The survey returned by the maternity service recorded **35** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, across both maternity units.

The maternity services submitted **27** case studies to inform this review for the given time period. **16** were from Diana, Princess of Wales Hospital. **11** were from Scunthorpe General Hospital.

#### **4.2.2 Antenatal steroids – Diana, Princess of Wales Hospital**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **13**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **12**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **11**

#### **4.2.3 Magnesium sulphate – Diana, Princess of Wales Hospital**

From the maternity case studies returned **1** of the pre-term births was between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **1**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data - **0**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **0**

#### **4.2.4 Antenatal steroids – Scunthorpe General Hospital**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **10**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **10**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **10**

#### **4.2.5 Magnesium sulphate – Scunthorpe General Hospital**

From the maternity case studies returned **3** of the pre-term births were between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **2**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data - **0**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **0**

## 4.3 York Teaching Hospitals NHS Foundation Trust

### 4.3.1 Overview

York Teaching Hospitals NHS Foundation Trust have maternity and neonatal units at two separate hospitals. These are Scarborough Hospital and York Hospital. Scarborough Special Care Baby Unit is a level 1 unit that was open for babies greater than 32 weeks gestation only during the period studied. York has a level 2 Special Care Baby Unit that was open for babies greater than 30 weeks only during the period studied.

BadgerNet identified **4** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Scarborough Hospital.

BadgerNet identified **7** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at York Hospital.

The survey returned by the maternity service recorded **10** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, across both maternity units.

The maternity services submitted **10** maternity case studies to inform this review for the given time period. **4** were from Scarborough Hospital. One of the York cases was identified as twins during the data matching and so data for **7** preterm births was comparable for this review.

### 4.3.2 Antenatal steroids – Scarborough Hospital

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **2**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal maternity data - **2**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **2**

### 4.3.3 Antenatal steroids – York Hospital

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **5**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **5**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **5**

### 4.3.4 Magnesium sulphate – York Hospital

From the maternity case studies returned **2** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **0**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **0**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **0**

## 5 Case Studies – South Yorkshire and Bassetlaw Local Maternity System

### 5.1 Barnsley Hospital NHS Foundation Trust

#### 5.1.1 Overview

BadgerNet identified **16** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Barnsley Hospital.

The survey returned by the maternity service recorded **16** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **16** case studies to inform this review for the given time period.

#### 5.1.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **14**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **13**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **13**

#### 5.1.3 Magnesium sulphate

From the maternity case studies returned **3** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **1**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **1**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **1**

### 5.2 Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust

#### 5.2.1 Overview

Doncaster and Bassetlaw NHS Foundation Trust have maternity and neonatal units at two separate hospitals. These are Doncaster Royal Infirmary and Bassetlaw Hospital.

BadgerNet identified **5** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Bassetlaw Hospital.



BadgerNet identified **21** babies born between October 1<sup>st</sup> 2017 and December 31<sup>s</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Doncaster Royal Infirmary.

The survey returned by the maternity service recorded **24** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, across both maternity units. No babies were born under 30 weeks gestation at Bassetlaw Hospital.

The maternity services submitted **26** case studies to inform this review for the given time period. **5** were from Bassetlaw Hospital. **21** were from Doncaster Royal Infirmary.

### **5.2.2 Antenatal steroids – Bassetlaw Hospital**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **3**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **4**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **3**

### **5.2.3 Antenatal steroids – Doncaster Royal Infirmary**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **19**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **17**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **17**

### **5.2.4 Magnesium sulphate – Doncaster Royal Infirmary**

From the maternity case studies returned **9** of the pre-term births were between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **2**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data - **4**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **2**

## **5.3 Rotherham NHS Foundation Trust**

### **5.3.1 Overview**

BadgerNet identified **9** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Rotherham Hospital.

The maternity services submitted **8** case studies to inform this review for the given time period.

### 5.3.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data – **7**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **6**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **6**

### 5.3.3 Magnesium sulphate

From the maternity case studies returned **2** of the pre-term births were between 23 weeks and 29 weeks 6 days.

Number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **2**

The number of babies born where the mother received any magnesium sulphate, according to the maternity data - **2**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **2**

## 5.4 Sheffield Teaching Hospitals NHS Foundation Trust

### 5.4.1 Overview

BadgerNet identified **55** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at The Jessop Wing.

The survey returned by the maternity service recorded **48** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **49** case studies to inform this review for the given time period. As some of the Sheffield cases were identified as twins during the data matching, data for **54** preterm births was comparable for this review.

### 5.4.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **50**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **48**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **47**

### 5.4.3 Magnesium sulphate

From the maternity case studies returned **30** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **17**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **21**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **17**

## 6 Case Studies – West Yorkshire and Harrogate Local Maternity System

### 6.1 Airedale NHS Foundation Trust

#### 6.1.1 Overview

BadgerNet identified **10** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Airedale.

The maternity services submitted **9** case studies to inform this review for the given time period.

#### 6.1.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **7**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **8**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **7**

#### 6.1.3 Magnesium sulphate

From the maternity case studies returned **4** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **4**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **4**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **4**

### 6.2 Bradford Teaching Hospitals NHS Foundation Trust

#### 6.2.1 Overview

BadgerNet identified **40** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days at Bradford Royal Infirmary.

The maternity services submitted **40** case studies to inform this review for the given time period.

#### 6.2.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **29**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **38**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **29**

### **6.2.3 Magnesium sulphate**

From the maternity case studies returned **19** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **17**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **17**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **17**

## **6.3 Calderdale and Huddersfield NHS Foundation Trust**

### **6.3.1 Overview**

BadgerNet identified **34** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Calderdale Royal Hospital.

The survey returned by the maternity service recorded **31** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **33** case studies to inform this review for the given time period. An additional case of twins was identified during the data matching and so data for **34** preterm births was comparable for this review.

### **6.3.2 Antenatal steroids**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **34**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **33**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **33**

### **6.3.3 Magnesium sulphate**

From the maternity case studies returned **6** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **4**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **4**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **4**

## 6.4 Harrogate and District NHS Foundation Trust

### 6.4.1 Overview

BadgerNet identified **4** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Harrogate District Hospital.

The survey returned by the maternity service recorded **4** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **4** case studies to inform this review for the given time period. No babies were born under 30 weeks gestation at Harrogate District Hospital.

### 6.4.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **4**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **4**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **4**

## 6.5 Leeds Teaching Hospitals NHS Trust

### 6.5.1 Overview

BadgerNet identified **47** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Leeds Teaching Hospitals NHS Trust.

The survey returned by the maternity service recorded **36** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **36** case studies to inform this review for the given time period. Some of the cases were identified as twins during the data matching. A total of **43** cases were reviewed and data matched.

### 6.5.2 Antenatal steroids

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **40**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **35**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) - **35**

### 6.5.3 Magnesium sulphate

From the maternity case studies returned **12** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **6**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **4**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **4**

## **6.6 The Mid Yorkshire Hospitals NHS Trust**

### **6.6.1 Overview**

BadgerNet identified **27** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days, at Pinderfields Hospital.

The survey returned by the maternity service recorded **27** babies born between October 1<sup>st</sup> 2017 and December 31<sup>st</sup> 2017, gestation 23 weeks to 33 weeks 6 days.

The maternity services submitted **27** case studies to inform this review for the given time period.

### **6.6.2 Antenatal steroids**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the Neonatal ODN data - **24**

The number of babies born where the mother received at least one dose of antenatal steroids, according to the maternity data - **24**

The number of babies born where the mother received at least one dose of antenatal steroids (where the maternity and neonatal data was in agreement) – **23**

### **6.6.3 Magnesium sulphate**

From the maternity case studies returned **8** of the pre-term births were between 23 weeks and 29 weeks 6 days.

The number of babies born where the mother received any magnesium sulphate, according to the Neonatal ODN data - **7**

Number of babies born where the mother received any magnesium sulphate, according to the maternity data - **7**

Number of babies born where the mother received any magnesium sulphate (where the maternity and neonatal data was in agreement) – **7**

## 7 Predictive testing

In addition to the review of antenatal steroid and magnesium sulphate use in pre-term births, the Maternity CEG suggested the role and use of predictive testing were also considered.

Questions were added to the survey sent to maternity units about predictive testing.

There are 13 Trusts in Yorkshire and the Humber, with 16 neonatal units  
Survey responses were received from 12 Trusts, covering 15 neonatal units.

All 12 Trusts said YES to offering predictive testing.

- 7 Trusts offer Fetal Fibronectin testing
- 5 Trusts offer Actim Partus (1 Trust uses both)
- 1 Trust offers Amnisure / Partosure
- 9 Trusts have cervical length scanning available

It should be noted that whilst Rotherham NHS Foundation Trust did not return the survey for this review, their case studies showed that predictive testing had been used. Therefore, it can be deduced that all the maternity services in Yorkshire and the Humber offer predictive testing.

NICE (2015) guidance for diagnosing preterm labour for women with intact membranes recommends the following:-

*“If the clinical assessment suggests that the woman is in suspected preterm labour and she is 30+<sup>0</sup> weeks pregnant or more, consider transvaginal ultrasound measurement of cervical length”*

*“Consider fetal fibronectin testing as a diagnostic test to determine likelihood of birth within 48 hours for women who are 30+<sup>0</sup> weeks pregnant or more if transvaginal ultrasound measurement of cervical length is indicated but is not available or not acceptable”*

*“Do not use transvaginal ultrasound measurement of cervical length and fetal fibronectin testing in combination to diagnose preterm labour”*

### 7.1 Training

The survey asked what training was offered in relation to predictive testing. **11** Trusts responded about their training for predictive testing.

- **3** respondents indicated that they had formal training only.
- **3** respondents offered informal training.
- **2** respondents had initial training with the supplier and then adopted an internal cascade approach.
- **1** respondent said they had an SOP and followed manufacturer’s instructions.
- **1** respondent said they offered peer training.
- **1** respondent said they had a guideline available with a test procedure and timing flow chart.



- From the **321** returned case studies from maternity units:
  - **23** preterm babies were born to mothers who had a predictive test.
  - In **5** cases Fetal Fibronectin testing was used
  - In **13** cases Actim Partus testing was used
  - In **3** cases cervical length scanning was used
  - In **2** cases Partosure was used

The results of the tests are tabled below and also the interval between the test date and the date of birth.

Test	Result	Number of days before birth
Actim Partus	Positive	0
Actim Partus	Positive (twin)	1
Actim Partus	Positive (twin)	1
Actim Partus	Positive	1
Actim Partus	Positive	1
Actim Partus	Positive	2
Actim Partus	Positive	3
Actim Partus	Positive	3
Actim Partus	Positive	4
Actim Partus	Positive	4
Actim Partus	Positive	9
Actim Partus	Negative	8
Actim Partus	Negative	10
Fetal Fibronectin	Positive (twins)	1
Fetal Fibronectin	Positive (twins)	1
Fetal Fibronectin	Positive	1
Fetal Fibronectin	>500	3
Fetal Fibronectin	Negative	0
Cervical length scanning	Shortening of cervix, progesterone pessaries	68 (Baby born at 27 weeks 6 days gestation)
Cervical length scanning	Funnelling	5
Cervical length scanning	Shortening & funnelling	12
Partosure	Negative	51
Partosure	Negative	0

## 8 Key findings

- Some variations noted in antenatal steroid administration policies in relation to the gestation steroids are offered.
- Whilst all Trusts have a magnesium sulphate policy in place, 2 Trusts extend the gestation for administration past 30 weeks.
- Case studies were submitted for 321 out of 346 babies.
  - 83% received antenatal steroids (matched data)
  - 57% of those born at less than 30 weeks gestation received magnesium sulphate (matched data)
- All 13 Trusts offer predictive testing.
- There is variation in how Trusts train staff to use predictive testing.
- 23 preterm babies were born to mothers where a predictive test had been undertaken.
- There were several incidences through the maternity and neonatal data where other information given did not match eg. Gestation and time of birth.

## 9 Recommendations

1. Trusts to review local policies to ensure national guidance is followed.
2. Findings to be presented and discussed at the Maternity and Neonatal Joint Forum.
3. Consider the statistical significance of the data match and the potential inclusion for the data to be collected on the Y&H Maternity Dashboard.
4. Discussion to be held at Maternity CEG to consider the benefit of looking at the use of magnesium sulphate in more detail. Not all the case studies gave the timing of the magnesium sulphate so how many babies received this in the 24 hours before birth is unknown.
5. Discussion to be held at the Maternity CEG meeting to consider the benefit of a more detailed review of predictive testing.
6. Report to be circulated to the Y&H Maternity CEG group, Y&H Neonatal Executive Board and the Local Maternity Systems.
7. Report to be shared with the Academic Health Science Network who will be leading the PReCePT work for Yorkshire and the Humber.

## 10 References

Doyle, L.W. et al. 2009. 'Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus'. *Cochrane Database System Review*

NICE. 2015. Preterm labour and birth. *NICE*

## 11 Appendix 1

The use of antenatal steroids and magnesium sulphate in maternity services: October 1 <sup>st</sup> 2017 – December 31 <sup>st</sup> 2017	
<i>(Please complete for each unit if your Trust has maternity services on more than one site)</i>	
Name of Trust:	
Name /Level of Unit:	
Name of Person completing survey:	
Job title:	
Contact details:	
Preterm births	
How many preterm births (23+ <sup>0</sup> to 33+ <sup>6</sup> ) took place in your maternity unit for the time period Oct 1 <sup>st</sup> 2017 – Dec 31 <sup>st</sup> 2017?	
Antenatal steroids	
Does your maternity unit have a guideline which includes administration of antenatal steroids in preterm births?	
Do all mothers who deliver between 23+ <sup>0</sup> and 33+ <sup>6</sup> receive antenatal steroids?	
If not, what is the gestation in your local guideline for offering antenatal steroids?	
Magnesium Sulphate	
Does your maternity unit have a guideline which includes administration of Magnesium Sulphate for fetal neuroprotection in preterm births?	
Are mothers who deliver babies below 30 weeks gestation given Magnesium Sulphate in the 24 hours prior to delivery?	
If not, what is included in your local guideline?	
Predictive testing	

	<i>Name of predictive test</i>	<i>Yes/No</i>	<i>If yes, how do you interpret your results?</i>
	Fetal fibronectin		
	Actim Partus		
	Cervical length scanning		
	Other (please state)		
<p>If yes, to any of the above, what training do you offer around predictive testing?</p> <ul style="list-style-type: none"> <li>• Formal</li> <li>• Informal</li> <li>• None</li> </ul>			

## 12 Appendix 2

Preterm birth: Case review template	
For all babies born 1 <sup>st</sup> Oct 2017 – 31 <sup>st</sup> Dec 2017 between 23+ <sup>0</sup> weeks and 33+ <sup>6</sup> weeks gestation	
Date and time of birth	
Gestation at birth	
<b>Antenatal steroids</b>	
Date and time of the last dose of antenatal steroids	
Was the course of steroids completed?	
Had more than one course of steroids been administered during the pregnancy? If yes, please provide details	
If antenatal steroids were not given during the pregnancy, please give a reason for this	
<b>Magnesium Sulphate</b>	
Was antenatal Magnesium Sulphate given for fetal neuroprotection?	
Date and time last (or only) infusion of Magnesium Sulphate commenced?	
Date and time last (or only) infusion of Magnesium Sulphate completed?	
If Magnesium Sulphate was not given, please give a reason why (if known)	
<b>Predictive testing</b>	
Was any predictive testing undertaken?	
If yes, what predictive testing was undertaken? (Fetal fibronectin, Actim Partus, cervical length scanning or other)	
What was the result of the predictive test?	
Date and time of predictive test	