

## **Yorkshire and Humber ODN (SOUTH) Network Clinical Guideline**

**Title: Management of a neonate at risk of being affected with a congenital bleeding disorder**

**Authors:** Dr Jeanette Payne, Dr Rhona Maclean

**Date written:** June 2012, July 2015, May 2019, June 2022

**Review date:** June 2027

**Date Ratified:** Y&H Neonatal Executive Meeting - September 2022

**This clinical guideline has been developed to ensure appropriate evidence-based standards of care throughout the Yorkshire and Humber Neonatal ODN (South). The appropriate use and interpretation of this guideline in providing clinical care remains the responsibility of the individual clinician. If there is any doubt discuss with a senior colleague.**

**Best practice recommendations represent widely used evidence-based practice and high- quality standards that all Neonatal Units across the Network should implement. Subsequent suggested recommendations may be put into practice in local units. However, alternative appropriate local guidelines may also exist.**

1. Background.

Congenital bleeding disorders are rare, and often diagnosed after the neonatal period. Some infants will be known to have a diagnosis (as a result of antenatal screening) or be potentially affected as a result of a family history of bleeding disorder.

2. Aim

The guideline is intended for use in the management of neonates who are known to have, or who are at risk of being diagnosed with, a congenital bleeding disorder, who are born at the Jessop Hospital for Women, Sheffield. It is for guidance in the management of neonates born elsewhere.

3. Areas outside remit

Infants with disseminated intravascular coagulation and other acquired coagulopathies are not covered by this guideline.

4. Core Guideline (Index)

- 1 Diagnoses covered
- 2 Labour and delivery
- 3 Diagnosis
- 4 Management of bleeds
- 5 Vitamin K
- 6 Cranial Imaging
- 7 Prophylaxis with clotting factors- who/what

- 8 Clinical review
- 9 Follow up
- 10 Immunisations
- 11 Contact details (Sheffield)

#### **4.1 Diagnoses**

##### **Moderate/Severe Bleeding disorders:**

Moderate/severe haemophilia A ( FVIII <0.05iu/ml)

Moderate/severe haemophilia B ( FIX <0.05 iu/ml)

Type 2 and Type 3 Von Willebrand's disease

Rare severe congenital factor deficiencies e.g II, V, VII, X, XIII

Severe platelet function defect e.g Glanzmann's thrombasthenia, Bernard Soulier Syndrome.

##### **Mild Bleeding disorders**

Mild Haemophilia A (FVIII >0.05iu/mL)

Mild Haemophilia B (FIX >0.05iu/mL)

Female carriers of haemophilia A or B [may have low FVIII or FIX levels]

Type 1 von Willebrand disease

Factor XI deficiency (variable bleeding phenotype)

Mild deficiencies of other congenital factor deficiencies eg II, V, VII, X, XI, XIII

Mild Platelet function disorders (eg storage pool disease)

#### **4.2 Labour and delivery**

When it is known that the mother is a carrier for, or the father affected with one of these conditions, an antenatal and delivery plan will be agreed between the haematologist and the obstetrician caring for the mother. A written plan should be available in the mother's notes. Antenatal care and delivery of a neonate potentially affected with a severe bleeding disorder should be arranged at the Jessop Wing with involvement of the haemophilia clinicians at STH, where specialist coagulation factor investigations can be undertaken in a timely fashion. Such patients should be seen at the joint haematology/obstetric clinic at Jessop Wing. Those potentially affected with a moderate bleeding disorder may be advised to deliver at the Jessop Wing dependent on expected bleeding phenotype. Antenatal diagnosis (often by amniocentesis in the third trimester) will have been offered where it is possible that a baby will be affected by severe haemophilia; in such circumstances it will be known prior to delivery if a baby is affected.

#### **4.3 Diagnosis.**

Where a diagnosis of a moderate or severe coagulation factor deficiency is considered (see appendix 1), cord blood samples should be taken as indicated at delivery (citrated-blue top bottle filled to the line) and sent with a request form for the appropriate urgent investigation to the coagulation laboratory at STH. This request should be discussed with the coagulation laboratory (ext 12955 or bleep out of hours). Results will be available the same day (usually within a few hours) and if abnormal should be discussed with the haematology ST or Haemophilia consultant on-call at STH.

Where a diagnosis of a severe platelet function defect is considered (see appendix 1), a cord blood sample should be taken in a bottle containing EDTA (purple top at STH) and sent to the haematology laboratory at STH for FBC and glycoproteins- discuss with haematology SpR or Haemophilia consultant on call at STH.

#### **4.4 Management of bleeds**

Any bleeding including cephalohaematoma/ facial bruising should be discussed promptly with the STH haematology ST or Haemophilia consultant on-call since prompt factor replacement is likely to be indicated.

#### **4.5 Prophylaxis with clotting factors**

Short-term prophylactic clotting factor treatment with the intention of reducing the risk of intracranial haemorrhage associated with delivery should be considered in neonates with severe bleeding disorders (see Appendix 1) with one or more the following risk factors:

1. prematurity ( <36 weeks)
2. instrumental delivery
3. prolonged second stage of labour i.e. active pushing (Primigravida >2hrs; Parous >1hr)
4. superficial cranial bruising

Advice should be taken from the Haemophilia consultant on call.

#### Prophylaxis regime.

Where prophylaxis is indicated, at least 2 doses, each of 250 units factor VIII or IX, will generally be given for severe haemophilia A or B respectively. Where indicated, the first dose should be given as soon as possible following delivery after confirmation of the diagnosis. Alternate day dosing will generally be adopted for neonatal prophylaxis

#### **4.6 Vitamin K**

Vitamin K should be given by the oral route if at risk of a moderate/severe bleeding disorder (See appendix 1). Once results are available, if baby unaffected, can have an IM dose prior to discharge.

#### **4.7 Cranial imaging**

Where indicated (see Appendix 1), a cranial ultrasound scan should be undertaken on the next working day to assess for any intracranial haemorrhage. Any abnormality on the cranial ultrasound should be discussed with the STH haematology ST or Haemophilia consultant on-call so that bleeds are treated promptly.

Urgent CT/MRI scanning should be considered if there is suspicion of a bleed on the ultrasound scan, or should there be symptoms or signs suggestive of an intracranial haemorrhage. If there is clinical concern regarding a possible intracranial haemorrhage this should be discussed as an emergency with the STH Haemophilia consultant so that immediate treatment can be arranged. Treatment should not be delayed whilst waiting for definitive imaging studies. A cranial USS may be the most immediately available form of imaging but if there is clinical concern of a bleed consideration should be given to more detailed imaging.

#### **4.8 Clinical review**

The initial diagnostic work up and immediate management will be coordinated by the Haemophilia consultant at STH.

When a baby is found to be affected with a congenital bleeding disorder the paediatric haematology consultant at Sheffield Children's Hospital should also be informed.

Factor concentrate, and advice on administration, will be provided by the Haemophilia team at the Royal Hallamshire Hospital.

Where possible, when a neonate has been diagnosed with a moderate/ severe bleeding disorder, clinical review will be undertaken by the STH Haemophilia consultant/Haematology ST and Dr Jeanette Payne (consultant paediatric haematologist, Sheffield Children's Hospital) and a joint treatment plan agreed. If Dr Payne is unavailable ongoing care will be provided by the STH Haemophilia team.

Where possible Carly Bell or Cheryl Hall (Haemophilia Specialist Nurses, Sheffield Children's Hospital) will visit the parents of neonates diagnosed with a moderate/ severe bleeding disorder to provide support and information and contact details prior to discharge.

#### **4.9 Follow-up**

All neonates with confirmed congenital bleeding disorders or where the diagnosis has not been excluded (e.g type 1 VWD, mild haemophilia) should be formally referred at discharge to Dr Jeanette Payne, Sheffield Children's Hospital and will be seen as in Appendix 1.

#### **4.10 Immunisations**

For neonates affected with congenital bleeding disorders the parents and GP should be advised that immunizations should be given by the subcutaneous route.

#### **4.11 Contact details**

Sheffield Haemophilia Centre (Royal Hallamshire Hospital) ext 0114 2713211  
(working hours only 8-5pm Mon - Fri)

Coagulation Laboratory (Royal Hallamshire Hospital)  
0114 2712955  
Out of hours bleep via switchboard

Sheffield Teaching Hospital Haematology ST and Haemophilia Consultant- contactable via switchboard (0114 2434343)-.

Consultants: Dr Mike Makris  
Dr Rhona Maclean  
Dr Joost van Veen  
Dr Eddie Hampton  
Dr Giorgia Saccullo  
Dr Clare Samuelson

Sheffield Children's Hospital  
Paediatric Haematology consultant on-call- contact via switchboard

Dr Jeanette Payne ext 0114 2717477/0114 2717349, bleep via switchboard  
Carly Bell or Cheryl Hall Haematology Specialist Nurses ext 0114 2717329, bleep 123 via switchboard

## **5. References**

Chalmers, E., Williams, M., Brennan, J., Liesner, R., Collins, P. Richards, M. and on behalf of the Paediatric Working Party of the United Kingdom Haemophilia Doctors' Organisation (2011), Guideline on the management of haemophilia in the fetus and neonate. British Journal of Haematology, 154: 208-215

Pavord S, Rayment R, Madan B, Cumming T, Lester W, Chalmers E, Myers B, Maybury H, Tower C, Kadir R on behalf of the Royal College of Obstetricians and Gynaecologists. Management of Inherited Bleeding Disorders in Pregnancy. BJOG 2017; 124:e193-e263

Mumford AD, Ackroyd S, Alikhan R, Bowles L, Chowdary P, Grainger J, Mainwaring J, Mathias M, O'Connell N; BCSH Committee. Guideline for the diagnosis and management of the rare coagulation disorders: a United Kingdom Haemophilia Centre Doctors' Organization guideline on behalf of the British Committee for Standards in Haematology. *Br J Haematol.* 2014 Nov;167(3):304-26. doi: 10.1111/bjh.13058. Epub 2014 Aug 6. PMID: 25100430.

Laffan MA, Lester W, O'Donnell JS, Will A, Tait RC, Goodeve A, Millar CM, Keeling DM. The diagnosis and management of von Willebrand disease: a United Kingdom Haemophilia Centre Doctors Organization guideline approved by the British Committee for Standards in Haematology. *Br J Haematol.* 2014 Nov;167(4):453-65. doi: 10.1111/bjh.13064. Epub 2014 Aug 12. PMID: 25113304; PMCID: PMC4283483.

### Appendix 1: Management of neonates potentially affected by inherited bleeding disorders after delivery

\*Coagulation factor levels should be interpreted against age adjusted reference ranges

| Neonate at risk of:  | Cord blood (test at birth)?   | Cranial Ultrasound?  | Vitamin K  | Primary prophylaxis?   | To be seen at SCH   |
|--|---|--|--|--|---|
| Severe/<br>Moderate<br>Haemophilia<br>A or B   | Yes for male babies only  | Yes, if diagnosed with severe haemophilia.<br><br>Consider MRI if symptoms or signs suggestive of ICH.       | Male babies only-<br>Oral vitamin K.<br>Once results available, if unaffected, give IM vitamin K before discharge. | Consider if affected and increased risk of bleeding due to trauma at delivery or prematurity | Urgent referral if affected. See before discharge. Female Neonates: Potential carriers – refer to SCH at discharge. Will see at any time if symptomatic/ need surgery otherwise will see at school age. |
| Mild<br>Haemophilia<br>A or B  | Males only<br>Haem A- cord blood ok<br>Haem B- peripheral venepuncture post Vit K is preferable | No   | Male babies only-<br>Oral vitamin K.<br>Once results available, if unaffected, give IM vitamin K before discharge. |  | Refer if low levels. Timing of review will depend on level compared with age appropriate normal range   |
| Type 3 von Willebrand Disease  | Yes   | Yes, if diagnosed with Type 3 vWD.<br><br>Consider MRI if symptoms or signs suggestive of ICH.               | Oral vitamin K.<br>Once results available, if unaffected, give IM vitamin K before discharge.                      | Consider if affected and increased risk of bleeding due to trauma at delivery or prematurity | Urgent referral if affected.<br><br>See before discharge  |
| Type 2 von Willebrand Disease  | Yes   | Not routinely  | Oral vitamin K.<br>Once results available, if unaffected, give IM vitamin K before discharge.                      |  | Refer at discharge.<br>If affected will be seen soon.<br>If normal results will see from 6m for repeat  |
| Type 1 von Willebrand Disease  | No  | No   | Intramuscularly  | No   | Refer at discharge.<br>Will see from 1yr onwards unless symptomatic/need for surgery<br>Routine screen around school age  |
| Factor XI deficiency   | No, (unless at risk of homozygosity or compound heterozygosity)                                 | No   | Intramuscularly unless severe deficiency   | No   | Refer at discharge.<br>Will see from 1yr onwards unless symptomatic/need for surgery<br>Routine screen around school age  |
| Other factor deficiencies:<br><br>Fibrinogen (associated with bleeding)<br>II, V,VII, X, XIII, V+VIII combined | Yes (if thought at risk of severe deficiency),<br><br>Otherwise No                              | Yes, if diagnosed with severe factor deficiency.<br><br>Consider MRI if symptoms or signs suggestive of ICH. | Oral if considered to be at risk of severe deficiency (see delivery plan).<br><br>IM in all others                 | Consider if affected and increased risk of bleeding due to trauma at delivery or prematurity | Urgent referral if severely affected.<br><br>See before discharge<br><br>Refer to SCH at discharge. Will see mildly affected at any time if symptomatic/ need surgery otherwise will see at school age. |

| Neonate at risk of:             | Cord blood (test at birth)?   | Cranial Ultrasound? | Vitamin K  | Primary prophylaxis? | To be seen at SCH  |
|---------------------------------|---|---------------------|--|----------------------|--|
| Bernard-Soulier Syndrome        | Yes if at risk of being severely affected (platelet glycoproteins and FBC)  | Yes if affected     | Oral vitamin K if at risk of being severely affected. Once results available, if unaffected, give IM vitamin K before discharge. | No                   | Urgent referral if affected.<br><br>See before discharge   |
| Glanzmann's thrombasthenia      | Yes if at risk of being severely affected (platelet glycoproteins)<br><br>Measure platelet count<br><br>If maternal alloimmunisation, there is risk of fetal thrombocytopenia and neonatal ICH<br><br>Repeat platelet count d3-5 if at risk of thrombocytopenia | Yes if affected     | Oral vitamin K if at risk of being severely affected. Once results available, if unaffected, give IM vitamin K before discharge. | Platelets if <30     | Urgent referral if affected.<br><br>See before discharge   |
| Other platelet function defects | No  | No                  | intramuscular  | No                   | Refer to SCH at discharge. Will see at any time if symptomatic/ need surgery otherwise will see at school age. |