

## Summary of BAPM guidance for Management of Hypoglycaemia of the newborn

Reference no.: CG-PAEDS/1296/24 : H7

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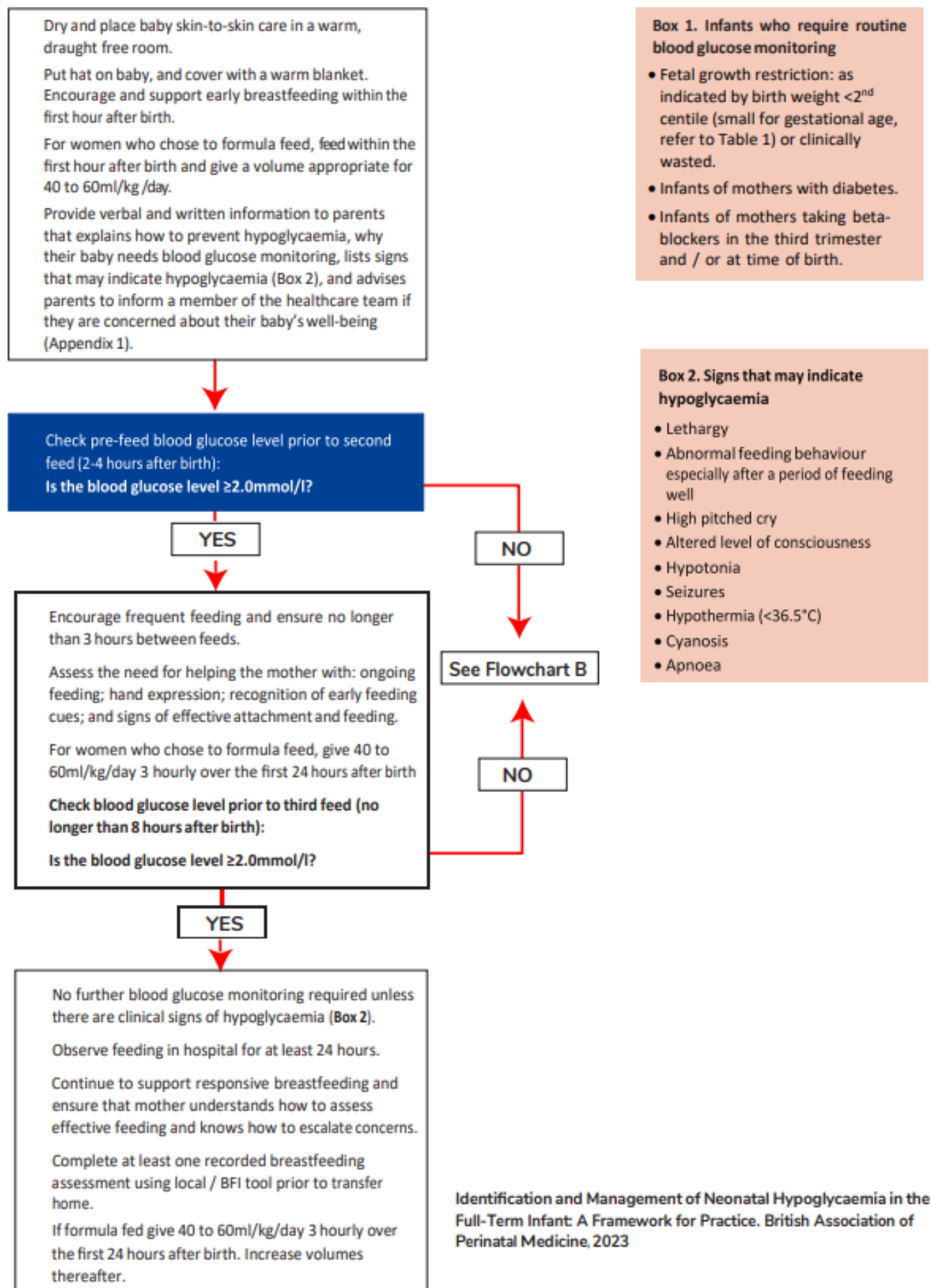
All information is copied directly from the BAPM guidance for 'Identification and management of Neonatal Hypoglycaemia in the full-term infant (Birth - 72 hours) A BAPM Framework'.

This document is a summary of the useful information for clinical care and should be read in conjunction with the full guidance as found on KOHA via the link. [Click here](#)

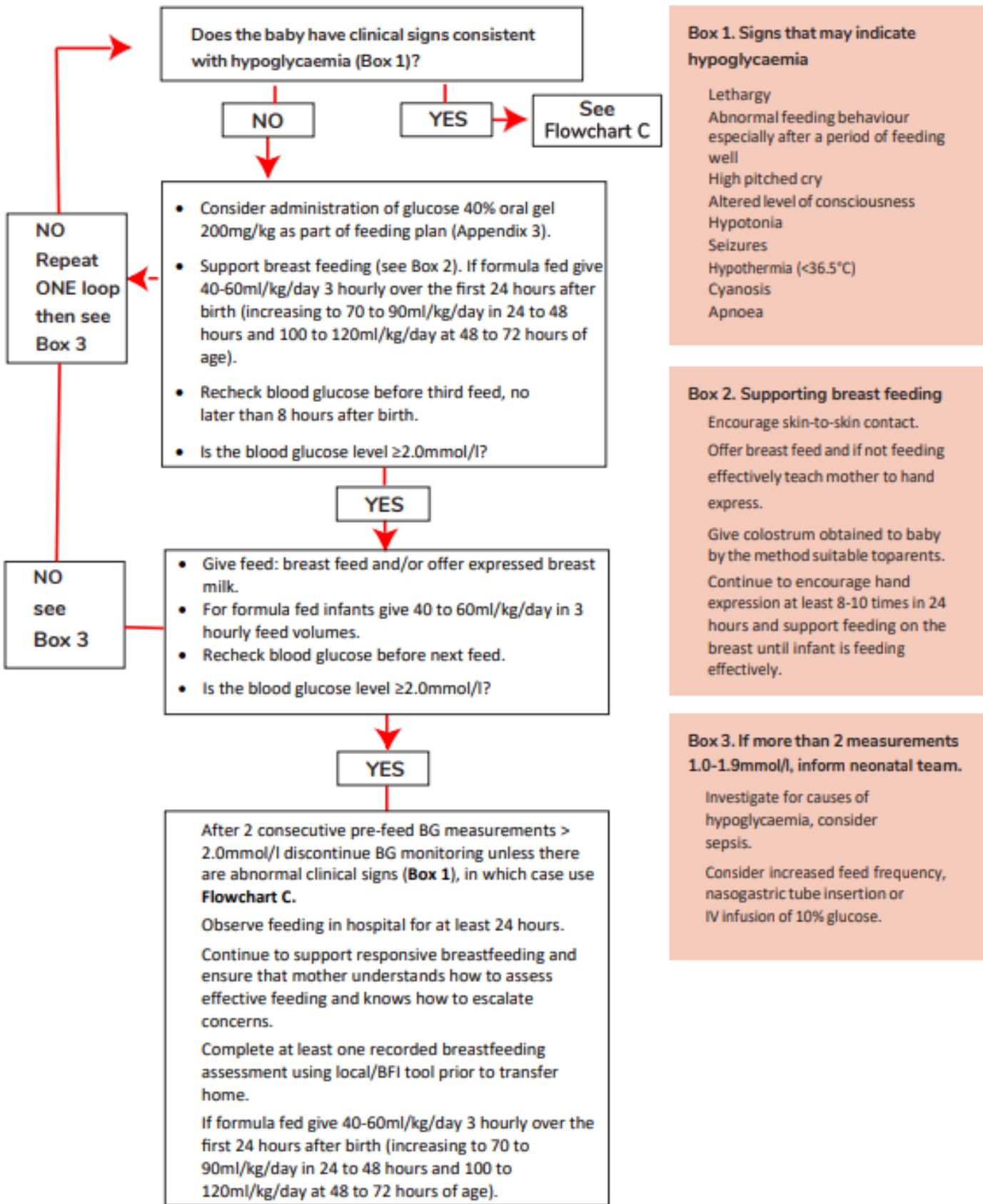
## Executive Summary of Recommendations

1. Full Term infants (born at or after 37+0 weeks' gestation) at risk of hypoglycaemia and impaired metabolic adaptation (the process of transition from a constant transplacental energy supply in the form of glucose to a variable fuel supply from milk-feeding and utilization of adipose and glycogen stores) include infants of mothers with diabetes, infants whose mothers have taken beta-blockers, and infants with fetal growth restriction (FGR). FGR should be defined using gestational age and sex specific 2<sup>nd</sup> centile values (i.e. babies who are small for gestational age), and / or clinical wasting (e.g. >2 centiles discrepancy between occipital frontal circumference (OFC) and weight using age and sex normalised charts).
2. Infants at risk of impaired metabolic adaptation and hypoglycaemia should be identified at birth and placed on a care pathway that includes early provision of energy, regular assessment of feeding and clinical condition, and blood glucose (BG) monitoring.
3. Breast milk is the ideal source of energy during postnatal metabolic adaptation. Women should be supported to establish effective breastfeeding.
4. Parents are partners in the care of infants at risk of impaired metabolic adaptation and hypoglycaemia. Parents should be given verbal and written information that describes why their baby is receiving extra support and BG monitoring; how to reduce the likelihood of hypoglycaemia; the signs that indicate when a baby is becoming unwell; and how to raise concerns about their baby's well-being or feeding pattern. A parent information sheet is provided ([Appendix 1](#)).
5. Ward based blood gas analysers provide accurate and rapid measurement of neonatal BG concentration, which supports real-time clinical decision making. Many handheld glucose meters are not sufficiently accurate in the range of 0 - 2.0mmol/L. These should be used in consultation with and approval of the local point of care test (POCT) team. Further information on point of care testing (POCT) devices is given in [Appendix 5](#).
6. An operational threshold approach should be used to guide interventions intended to raise BG:
  - A value <1.0mmol/L at any time
  - A single value <2.5mmol/L in a neonate with abnormal clinical signs
  - More than two measurements <2.0mmol/L in a baby with a risk factor for impaired metabolic adaptation and hypoglycaemia but without abnormal clinical signs
7. Buccal administration of glucose 40% oral gel may be used in conjunction with a feeding plan when the BG is 1.0 to 1.9mmol/L.
8. Severe (BG <1.0mmol/L) or persistent hypoglycaemia (>2 measurements < 2.0mmol/L in the first 48 hours after birth) requires urgent medical review and investigation.
9. Practitioners need skills to distinguish between infants with abnormal feeding behaviours that can occur with other signs to suggest illness, and infants who are well but reluctant to feed. A plan for supporting reluctant feeders and their mothers is given in [Appendix 2](#), Flowchart D

## Flowchart A. Management from birth - 24 hours of term infants at risk of hypoglycaemia (Box 1)

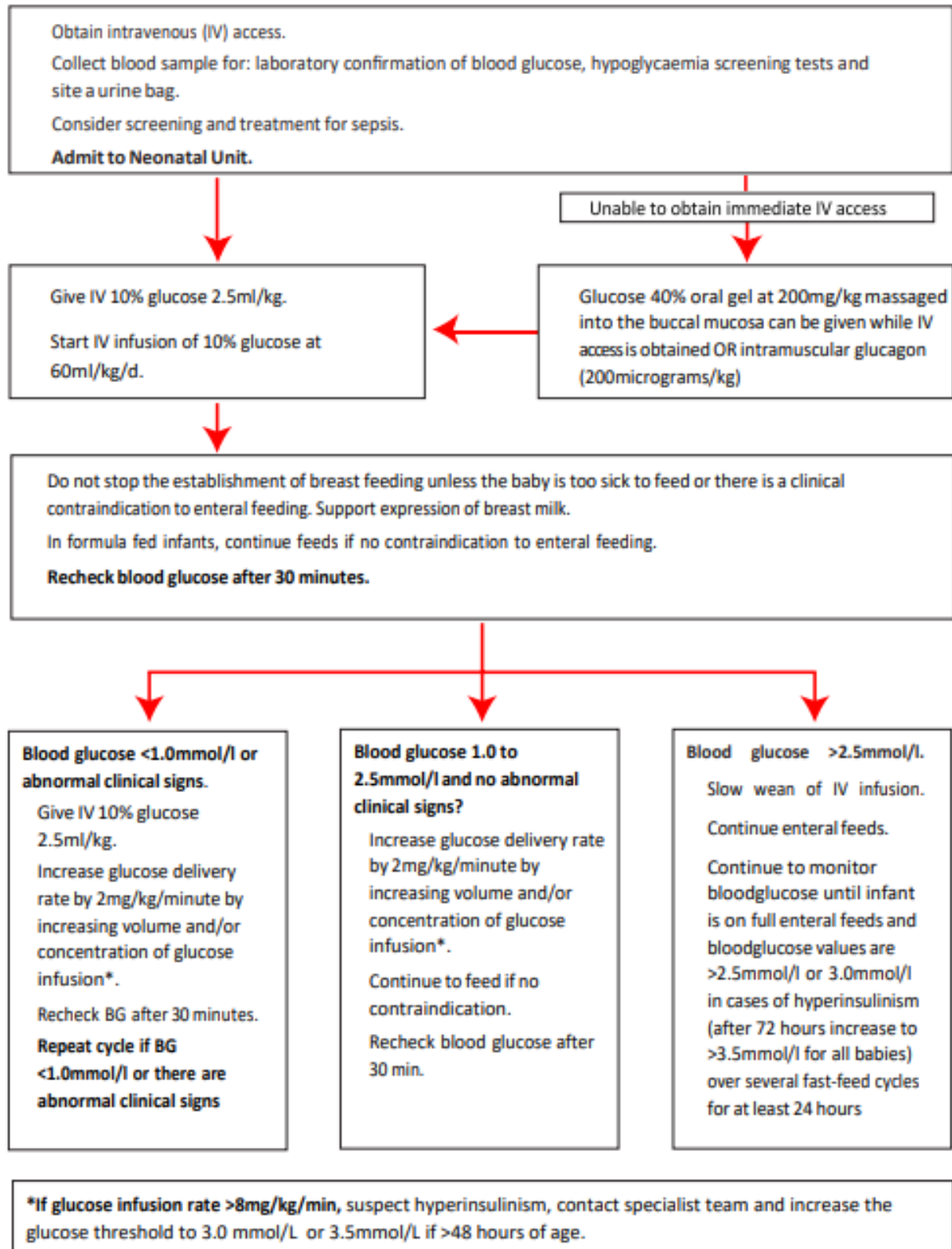


**Flowchart B. Pre-feed BG 1.0 to 1.9mmol/l and no abnormal clinical signs (birth to 72 hours)**



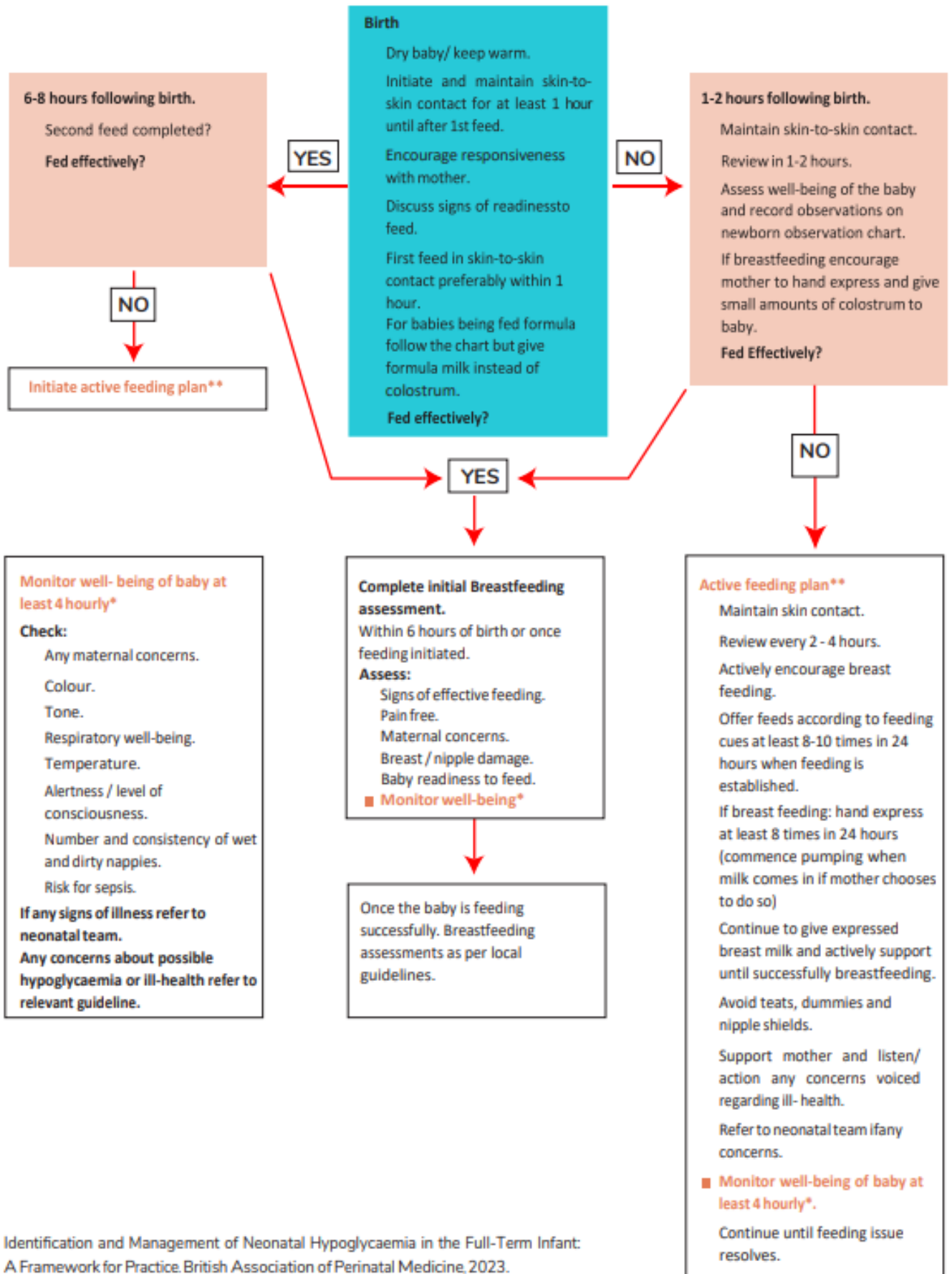
Identification and Management of Neonatal Hypoglycaemia in the Full-Term Infant: A Framework for Practice. British Association of Perinatal Medicine, 2023.

## Flowchart C. Blood glucose < 1.0mmol/l and / or clinical signs consistent with hypoglycaemia



Identification and Management of Neonatal Hypoglycaemia in the Full-Term Infant: A Framework for Practice. British Association of Perinatal Medicine, 2023.

Flowchart D. Management of reluctant feeding in healthy term infants ≥ 37 weeks



Identification and Management of Neonatal Hypoglycaemia in the Full-Term Infant: A Framework for Practice. British Association of Perinatal Medicine, 2023.

## Appendix 1. Parent Information Sheet: Protecting your baby from low blood glucose

### What is low blood glucose?

You have been given this leaflet because your baby is at increased risk of having low blood glucose (also called low blood sugar or hypoglycaemia).

Babies who are small, premature, unwell at birth, or whose mothers have diabetes or have taken certain medication (beta-blockers), may have low blood glucose in the first few hours and days after birth, and it is especially important for these babies to keep warm and feed as often as possible to maintain normal blood glucose levels.

If your baby is in one of these 'at risk' groups, it is recommended that they have some blood tests to check their blood glucose level. Extremely low blood glucose, if not treated, can cause brain injury resulting in developmental problems. If low blood glucose is identified quickly, it can be treated to avoid harm to your baby.

### Blood glucose testing

Your baby's blood glucose is tested by a heel-prick blood test. A very small amount of blood is needed, and it can be taken with your baby in skin-to-skin contact. The first blood test should be done before the second feed (2-4 hours after birth) and repeated until the blood glucose levels are stable. You and your baby will need to stay in hospital for the blood tests. You will know the result of the test straight away.

### How to avoid low blood glucose

- **Skin-to-skin contact**

Skin-to-skin contact with your baby on your chest helps keep your baby calm and warm and helps establish breastfeeding. Lie in a position where your head and shoulders are raised (not flat on your back). Have baby in a position where you can look into their eyes, and you can check that baby is well in this position.

- **Keep your baby warm**

During skin-to-skin contact your baby should wear a hat and be kept warm with a blanket or towel. Once you go home from hospital your baby will no longer need to wear a hat indoors. If your baby is in a cot, keep baby warm with blankets.

- **Feed as soon as possible after birth**

Ask a member of staff to support you with feeding until you are confident, and make sure you know how to tell if breastfeeding is going well, or how much formula to give your baby.

- **Feed as often as your baby wants, but do not leave more than 3 hours between feeds**

Feed your baby whenever you notice "feeding cues" which include rapid eye movements under the eyelids, mouth and tongue movements, body movements and sounds, sucking on a fist. Don't wait for your baby to cry – this can be a late sign of hunger. Let your baby feed for as long as they want and offer both breasts if you are breastfeeding. If your baby is not showing any feeding cues yet, hold baby in skin-to-skin and offer a feed. To reduce the risk of low blood glucose your baby should have a feed within three hours of the beginning of the last feed. Your midwife will talk to you about when you can move to responsive feeding.

- **Express your milk (colostrum)**

If you are reading this leaflet whilst you are pregnant you may wish to hand express some colostrum before your baby is born. We suggest you talk to your midwife to discuss if this is the right thing for you and they can talk to you about how to express milk antenatally.

If you are breastfeeding and your baby struggles to feed, try to give some expressed breast milk. A member of staff will show you how to hand express your milk or watch the UNICEF hand expression video (search "UNICEF hand expression"). You may also consider using a breast pump alongside hand expressing. If possible, it is good to have a small amount of expressed milk saved in case you need it later, so try to express a little extra breast milk in between feeds. Ask your midwife how to store your expressed milk and for support with using a breast pump if you still need to express milk after the first couple of days.

### Don't hesitate to tell staff if you are worried about your baby

If your baby appears to be unwell, this could be a sign that they have low blood glucose. As well as doing blood tests, staff will observe your baby to check he / she is well, but your observations are also important, as you are with your baby all the time and know your baby best. **It is important that you tell staff if you are worried** that something is wrong with your baby. Parents' instincts are often correct.

### Signs that your baby may be unwell

- **Your baby is not feeding well**  
In the first few days your baby should feed effectively at least every 3 hours, until their blood glucose is stable, and then at least 8 times in 24 hours. Ask a member of staff how to tell if your baby is attached and feeding effectively at the breast, or how much formula your baby needs. If your baby becomes less interested in feeding than before, this may be a sign they are unwell, and you should raise this with a member of staff.
- **Is your baby warm enough?**  
Your baby should feel slightly warm to touch, although hands and feet can sometimes feel a little cooler. If you use a thermometer the temperature should be 36.5°C and 37.5°C inclusive. If your baby is cold this can lead to low blood sugar. If they are too hot this can be a sign of infection which can also lead to low blood sugar.
- **Is your baby alert and responding to you?**  
When your baby is awake, he/she will look at you and pay attention to your voice and gestures. If you try to wake your baby, he/she should respond to you in some way.
- **Is your baby's muscle tone normal?**  
A sleeping baby is very relaxed but should still have some muscle tone in their body, arms, and legs and should respond to your touch. It can be normal to make brief, light, jerky movements. Ask a member of the team if you are not sure about your baby's movements. If your baby feels completely floppy, with no muscle tone when you lift their arms or legs, or if your baby is making strong repeated jerky movements, this is a sign they may be unwell.
- **Is your baby's colour normal?**  
Look at the colour inside your baby's lips and tongue – they should be pink.
- **Is your baby having difficulty with breathing?**  
Babies' breathing can be quite irregular, sometimes pausing for a few seconds and then breathing very fast for a few seconds. If you notice your baby is breathing very fast for a longer, continuous period, or seems to be struggling to breathe with very deep chest movements, nostrils flaring or making noises with each breath out – this is not normal. Call the emergency number given to you by your midwife.



## Who to call if you are worried

- In hospital, inform any member of the clinical staff.
- At home, call the emergency number given to you by your midwife.
- Out of hours, call NHS 111 or [local number for urgent assessment]
- If you are really worried, take your baby to your nearest Paediatric A&E or dial 999.  
[Insert local information]

## What happens if your baby's blood glucose is low?

If the blood glucose test result is low, your baby should feed as soon as possible and provide skin-to-skin contact. If the blood glucose level is very low the neonatal team may advise urgent treatment to raise the blood glucose and this could require immediate transfer to the Neonatal Unit.

Another blood glucose test will be done before the next feed or within 2-4 hours.

If you are breastfeeding and your baby does not breastfeed straight away, a member of staff will review your baby to work out why. If they are happy that your baby is well, they will support you to hand express your milk and give it by oral syringe / finger / cup / spoon.

If your baby has not breastfed, and you have been unable to express any of your milk, you will be advised to offer infant formula.

In some hospitals the team may prescribe a dose of dextrose (sugar) gel as part of the feeding plan because this can be an effective way to bring your baby's glucose level up.

If you are breastfeeding and advised to give some infant formula, this is most likely to be for one or a few feeds only. You should continue to offer breastfeeds and try to express milk as often as possible to ensure your milk supply is stimulated.

Very occasionally, if babies are too sleepy or unwell to feed, or if the blood glucose is still low after feeding, he / she may need to go to the Neonatal Unit / Special Care Baby Unit. Staff will explain any treatment that might be needed. In most cases, low blood glucose quickly improves within 24-48 hours and your baby will have no further problems.

## Going home with baby

It is recommended that your baby stays in hospital for 24 hours after birth. After that, if your baby's blood glucose is stable and your baby is feeding well, you will be able to go home.

Before you go home, make sure you know how to tell if your baby is getting enough milk. A member of staff will explain the normal pattern of wet and dirty nappies and changes in the colour of dirty nappies. For further information, if you are breastfeeding, see 'How you and your midwife can recognise that your baby is feeding well' (Search 'UNICEF Baby Friendly assessment tool').

It is important to make sure that your baby feeds well **at least 8 times every 24 hours** and most babies feed more often than this. There is no need to continue waking your baby to feed every 2-3 hours as long as your baby has had at least 8 feeds over 24 hours unless this has been recommended for a particular reason. You can now start to feed your baby responsively. Your midwife will explain this.

If you are bottle feeding, make sure you are not overfeeding your baby. Offer the bottle when baby shows feeding cues and observe for signs that baby wants a break. Don't necessarily expect your baby to finish a bottle – let them take as much milk as they want.

Once you are home, as with all newborn babies, you should continue to look for signs that your baby is well and seek medical advice if you are worried about your baby.

## Appendix 2. Management of reluctant feeding in healthy term infants

See Flowchart D.

### Managing breastfed healthy term infants

Healthy term babies may feed enthusiastically at birth and then sleep for many hours. To prevent a potential negative effect on a baby's wellbeing, establishment of feeding and the stimulation of lactation follow the flow chart overleaf from birth for all well, term babies.

#### Feeding Cues

Feeding cues indicate the beginning of feeding readiness when babies are more likely to latch on and suck and can occur during periods of light sleep as well as when a baby is awake. Cues include rapid eye movements under the eyelids, mouth and tongue movements, body movements and sounds, sucking on a fist. Crying can be a way of indicating that the feeding cues have been missed. If this doesn't occur, support should be provided and documented until effective feeding is established.

#### Assisted feeding (cup, spoon, oral syringe)

Occasionally it may be helpful to give a baby small amount of colostrum using a cup, spoon or oral syringe.

To give a cup feed safely, hold baby in an upright position, ensuring that baby's neck and shoulders are well supported. Make sure baby is fully awake, calm and alert. Half-fill the cup and hold it so that it just touches baby's mouth. It should reach the corners of the baby's mouth and rest lightly on the bottom lip. Allow the baby to take a small sip, to encourage drinking – do not pour the milk into the baby's mouth. Tip the cup just enough so that the baby can lap the milk. Keep the cup in this tilted position and allow the baby to start again when ready.

To give a syringe feed safely, the calm and alert baby should be held in the mother's arms slightly upright, not flat. The oral syringe is gently placed in between the gum and cheek and a little colostrum gently instilled, no more than 0.2ml at a time. Allow the baby time to taste and enjoy the milk. Stop if the baby starts sucking, allow time to swallow, then give a little more. Move onto cup or paced bottle feeding depending on local policy and parental choice once you have more than 5ml to give. If there is a clinical indication to provide formula or a mother makes an informed choice to provide formula this can also be given in a cup depending on local policy. A nasogastric tube may be required if the baby shows no cues in response to assisted feeding methods.

#### Boosting confidence

You can help and support the mother and boost her confidence by teaching her to hand express. Give her a supply of oral feeding syringes and feeding cups, encourage skin contact, especially in the laid-back position and help her to recognize her baby's feeding cues. Encourage the mother to offer her breast to her baby when ready, and to feed her baby expressed breast milk until baby is breastfeeding actively and effectively.

If baby does not establish breastfeeding, support the mother to continue expressing. Ensure increasing volumes of colostrum/ expressed milk day by day to meet baby's nutritional requirement. We suggest expressing at least 8-10 times in 24 hours, including at night with no long intervals. Some mothers can

find it helpful to use an electric breast pump alongside hand expressing.

### If the mother cannot or chooses not to express colostrum

The length of labour and the type of birth may influence the mother's feelings about hand expressing and giving colostrum intensively for the first few hours. The mother may ask to give formula instead. If the mother cannot or chooses not to express her colostrum it is the responsibility of the midwife to ensure this is an informed decision based on awareness of the benefits of breastfeeding and the risks of formula. This will be documented by the midwife in the woman's notes. Infant formula can be given by cup or by pacing bottle feeds depending on local policy and parental choice. Volumes should be offered appropriate to the baby's age i.e. 0 to 24 hours 40 to 60 ml/kg/ per day.

Once lactation is established infant formula top ups should be replaced with expressed breastmilk, if the mother wants to. Parents should be supported to recognise effective breastfeeding, so they can identify when a top up is or is not required. Avoid giving large volumes of infant formula once lactation is established, we suggest not exceeding 20ml of formula per feed in addition to breastfeed, if needed.

### Recognising effective feeding

The baby should be alert, actively sucking but settled at the breast; the baby should end breastfeeding spontaneously and remain settled for a short period until the next feed. The feed should be pain free and the baby should demonstrate adequate wet and dirty nappies appropriate to age. For further information see the Baby Friendly Breastfeeding assessment tool<sup>5</sup>.

## Appendix 3: Use of glucose 40% oral gel

### Indications

- Blood glucose 1.0 to 1.9mmol/L in infant with no abnormal clinical signs.
- Severe hypoglycaemia (BG <1.0mmol/L) where there is no intravenous access.

### Notes

- Must be given by buccal route.
- Must be used in conjunction with a feeding plan.
- For babies with severe hypoglycaemia (BG <1.0mmol/L) should be only used as an interim measure while arranging for urgent medical review and treatment with IV glucose.

### Dose

- Use glucose 40% oral gel 200mg/kg, up to two doses given 30 minutes apart per episode of hypoglycaemia and a maximum of six doses of buccal gel in 48 hours.
- Glucose 40% oral gel contains approximately 400mg/ml of glucose. A dose of 200mg/kg is approximately equivalent to 0.5ml/kg. Practitioners may decide that variations in glucose content per 1 ml glucose 40% oral gel are unlikely to be clinically significant; advice from the local pharmacist can be sought.
- Table 2 provides a practical volume to administer the 200mg/kg/dose for babies within specific weight bands.

Table 2. Volume and dose of glucose 40% oral gel by baby's weight bands

Weight of baby	Volume of glucose 40% oral gel	Dose of glucose
1.5 to 1.99 kg	1 ml	400 mg
2.0 to 2.99 kg	1.5 ml	600 mg
3.0 to 3.99 kg	2 ml	800 mg
4.0 to 4.99 kg	2.5 ml	1000 mg
5.0 to 5.99 kg	3 ml	1200 mg
6.0 to 6.99 kg	3.5 ml	1400 mg

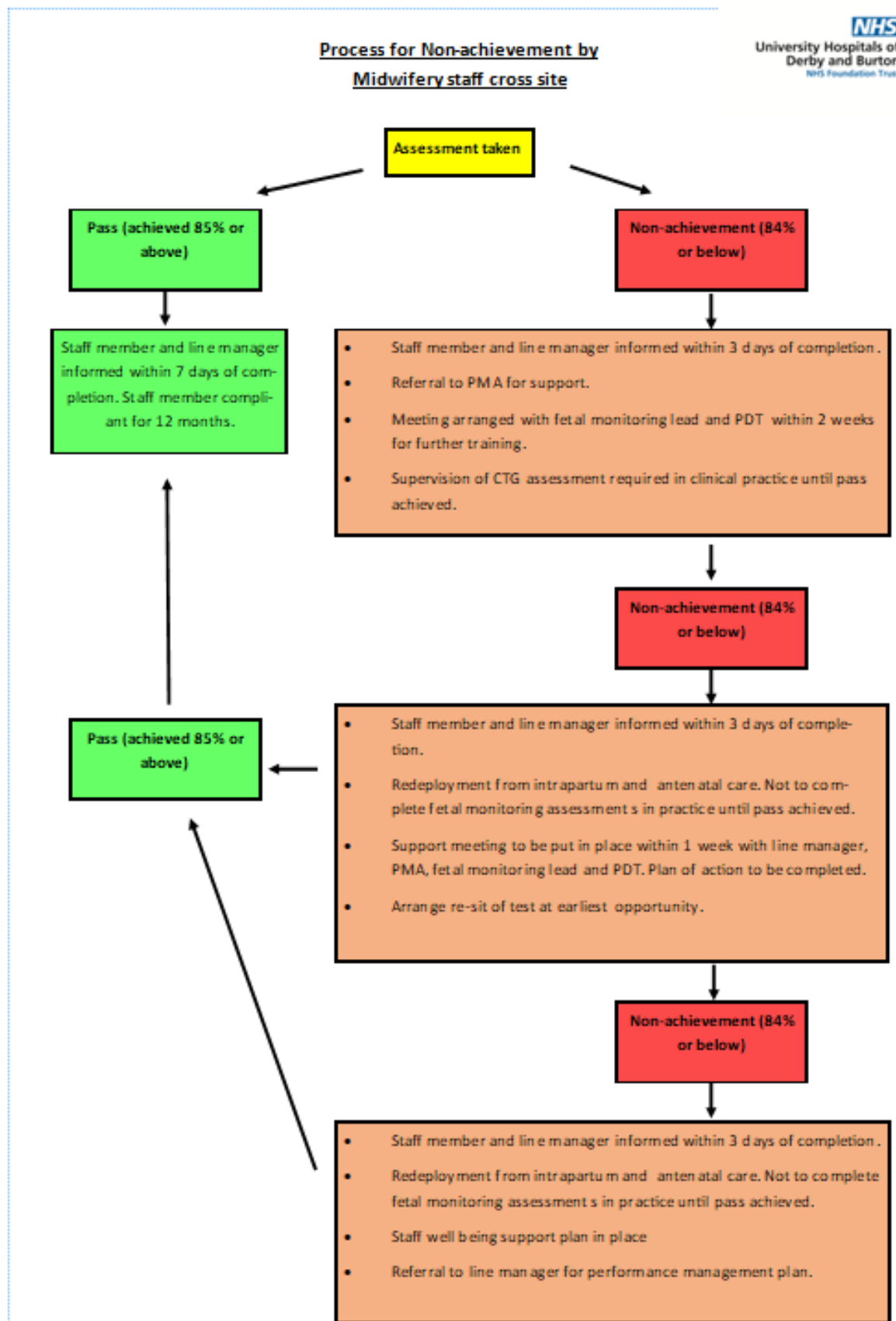
### Method of administration

- Draw up correct volume of glucose 40% oral gel using a 2.5 or 5ml oral / enteral syringe.
- Dry oral mucosa with gauze, gently squirt gel with syringe (no needle) onto the innercheek and massage gel into the mucosa using latex-free gloves.
- Offer a feed, preferably breast milk, immediately after administering glucose gel.
- Repeat oral glucose gel if baby remains hypoglycaemic according to flow chart B.

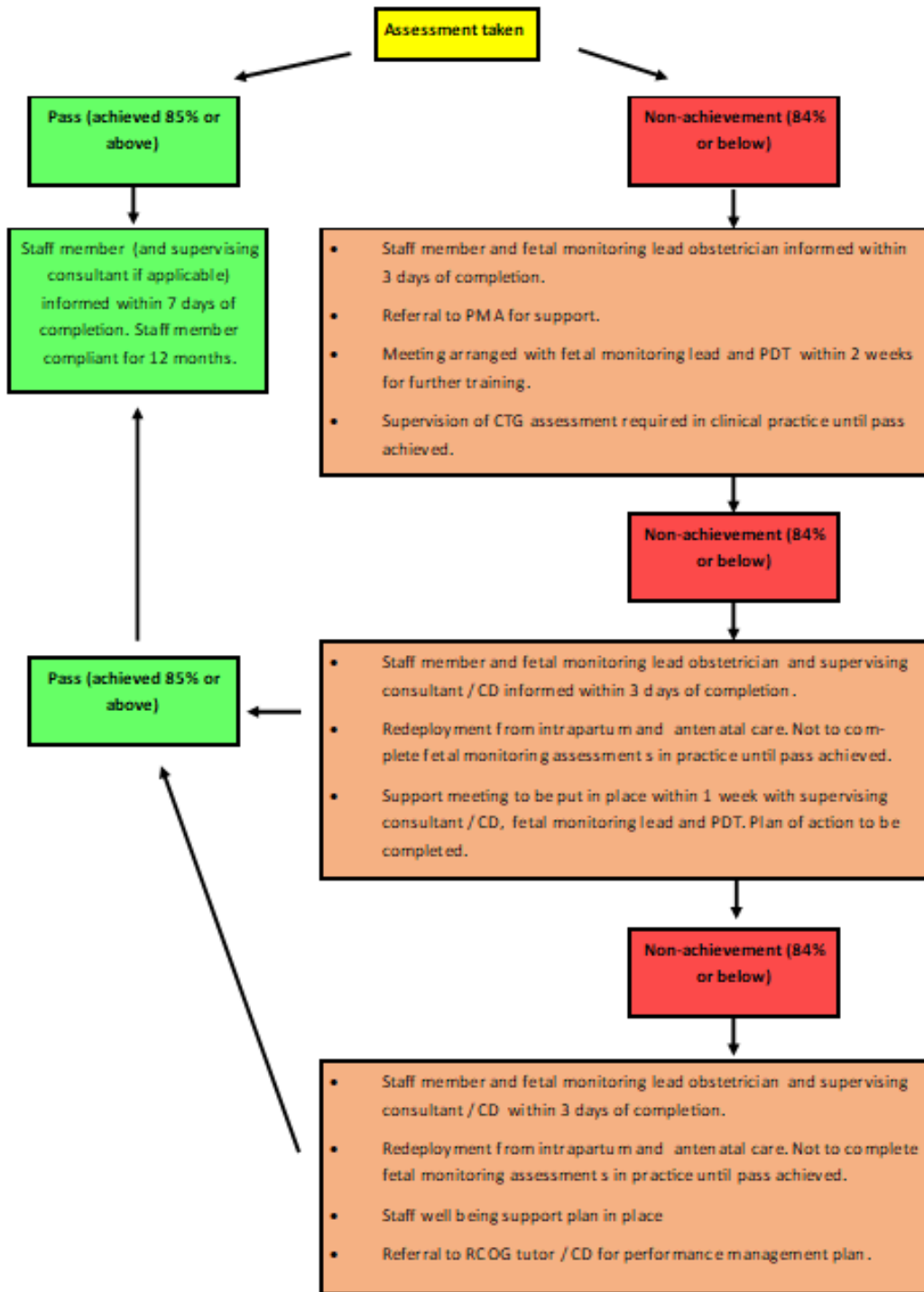
Up to six doses can be given over a 48-hour period but any more than one dose should be discussed with the neonatal team, and it is advisable for the baby to be examined before the third dose is administered.

## Documentation Control

<b>Reference Number:</b>	<b>Version:</b> UHDB Version 1	<b>Status:</b> FINAL	
Version 1	February 2024	Miss Shalini Ojha - Paediatric consultant BAPM guidance	Summary of BAPM guidance - Copied and pasted from BAPM link to aid clinical care provision.
<b>Intended Recipients:</b> Maternity and neonatal staff			
<b>Training and Dissemination:</b>			
<b>To be read in conjunction with:</b> BAPM guidance on management of hypoglycaemia of the newborn			
<b>Keywords:</b> Hypoglycaemia, neonatal, hypo, glucogel, BM, blood sugar, reluctant feeding, Baby of a diabetic mother			
Mandatory Consultation with:	Maternity - 09/04/2024		
Business Unit sign off:	From Paediatric guidelines lead - externally ratified document  -		
Divisional sign off:	Extracted from externally ratified document		
Implementation date:	29/04 /2024		
Review Date:	January 2027		
Key Contact:	Paediatric guidelines group		



**Process for Non-achievement by  
Obstetric staff cross site**





**Evidence of process followed for non-achievement of standard 84% and below**

This document must be utilised in line with the relevant pathway.

The document must be completed and retained by the assessor.

Candidate Name: .....  
 Role: .....  
 Area of work: .....  
 Date of initial assessment: ...../...../..... Mark achieved: .....%  
 Target Deadline ...../...../.....

**Communication/ Meeting Log**

Date	Form of communication	People present/involved	Reason for communication/meeting	Details

Date re-sit completed  
 ...../...../.....

Achieved 85% or above	
Not achieved (84% or below)	

Date of completion: ...../...../.....  
 Assessor name & role: .....  
 Assessor signature: .....  
 Action (if applicable):