Frimley Health
NHS Foundation Trust

Neonatal Hypoglycaemia (Management on Maternity Wards)

Key Points

- This guideline is for cross site and need to be used in conjunction with neonatal hypoglycaemia on neonatal unit as the complete pathway
- Do NOT do a Blood Glucose (BG) before baby is 2 hours old unless there are clinical signs
- BG >2.0mmol/L in an asymptomatic baby is normal.
- BG 1.0-2.0mmol/L in an asymptomatic baby may represent transition –follow Flowchart B
- BG <1.0mmol/L should be treated as an emergency as per Flowchart C
- BG <2.5mmol/L accompanied by abnormal clinical signs requires treatment as per Flowchart C

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Abbreviations

AGA	Appropriate for gestational age
BAPM	British Association of Perinatal Medicine
BG	Blood glucose
BW	Birth weight
EBM	Expressed breast milk
HIE	Hypoxic ischemic encephalopathy
MCADD	Medium chain acyl-coA dehydrogenase deficiency
NEWTT	Newborn Early Warning Trigger & Track
NNU	Neonatal Unit
SGA	Small for gestational age

Contents

Normal neonatal metabolic adaptation

- Term, well grown, healthy infants are able to adapt to periods of low blood glucose levels. There is good evidence that ketone bodies are an alternative cerebral energy source in the neonatal brain whilst feeding is being established in the first 24 - 48 hours.
- Blood glucose measurements taken prior to 2 hours of age are not informative in well term babies and hence should not be done.
- Prolonged, severe hypoglycaemia is associated with neurological dysfunction and long term neurodevelopmental sequelae.
- **The tables and appendices used in this guideline are taken directly from the BAPM guidance. Although they were written for babies of (≥37 weeks) it is agreed that they can be used for all babies cared on Maternity Wards.**
- **Use other relevant local guidance for particular groups of babies as appropriate (small for dates and preterm pathway)**

Identification of infants at risk of impaired metabolic adaptation and recognition of clinical signs

1. **The following groups are at risk of neurological sequelae of neonatal hypoglycaemia, and measures should be in place to identify them at birth for early milk / energy provision and monitoring of blood glucose concentration:**

    - Fetal growth restriction: as indicated by birth weight <2nd centile (small for gestational, Table 1) or clinically wasted (e.g., >2 centiles discrepancy between occipital frontal circumference (OFC) and weight, using age and sex normalised charts).
    - Infants of mothers taking beta-blockers such as propanolol, labetalol in the third trimester and / or at time of delivery.
    - Preterm (<37 weeks gestation).
    - Maternal diabetes (all types, including gestational diabetes).
    - Hypothermia.
    - Infection - clinically suspected or confirmed early onset neonatal infection (but not babies who have undergone infection screens for risk factors only).
    - Hypoxic Ischemia Encephalopathy.
    - Large dysmorphic baby (birth weight 91st centile or above, Table 2).
    - Polycythaemia.
    - Family history of MCADD or history of first degree relative with a heritable disorder associated with neonatal hypoglycaemia, e.g., pituitary / adrenal insufficiency or inborn errors of metabolism. Where possible, this should be planned before birth so that parents and staff are prepared.

Table 1. Second centile birth weights for boys and girls by week of gestation (from BAPM Newborn Early Warning Trigger and Track Framework)

Birth weight 2nd centile (kg) according to WHO charts		
Gestational age / weeks	Boys	Girls
37	2.10	2.00
38	2.30	2.20
39	2.50	2.45
40	2.65	2.60
41	2.80	2.75
42	2.90	2.85

Table 2. 91st centile birth weights for boys and girls by week of gestation.
(For use in dysmorphic babies only)

Birth weight 91st centile (kg) according to WHO charts		
Gestational age / weeks	Boys	Girls
37	3.450	3.400
38	3.700	3.600
39	3.950	3.800
40	4.150	4.000
41	4.350	4.150
42	4.500	4.250

2. **Measurement of blood glucose concentration should be performed for any infant who has one or more of the following diagnoses or clinical signs:**

   - Perinatal acidosis (cord arterial or infant pH <7.1 and base deficit ≥ -12mmol/l)
   - Hypothermia (<36.5 ^{0}C) not attributed to environmental factors
   - Suspected / confirmed early onset sepsis
   - Cyanosis
   - Apnoea
   - Altered level of consciousness
   - Seizures
   - Hypotonia
   - Lethargy
   - High pitched cry
   - Abnormal feeding behaviour especially after a period of feeding well may be indicative of hypoglycaemia and should prompt a full clinical assessment and consideration of BG measurement. Use BAPM NEWTT2 chart BAPM Newborn Early Warning Trigger and Track Framework.

   Signs of abnormal feeding behaviour include:
   - Not waking for feeds: babies may only wake for feeds 3-5 times in the first 24 hours; after the first 24 hours babies should feed at least 8 times in 24 hours.
   - Very frequent feeding: Babies who breastfeed frequently without appearing satisfied, frequent breastfeeds where baby tires rapidly or stops feeding within the first five minutes.
   - Not sucking effectively: weak suck or inability to suck.

   Jitteriness, defined as excessive repetitive movements of one or more limbs, which are unprovoked and not in response to a stimulus, is common and is not by itself an indication to measure blood glucose.

Midwives to check prior to feeds:

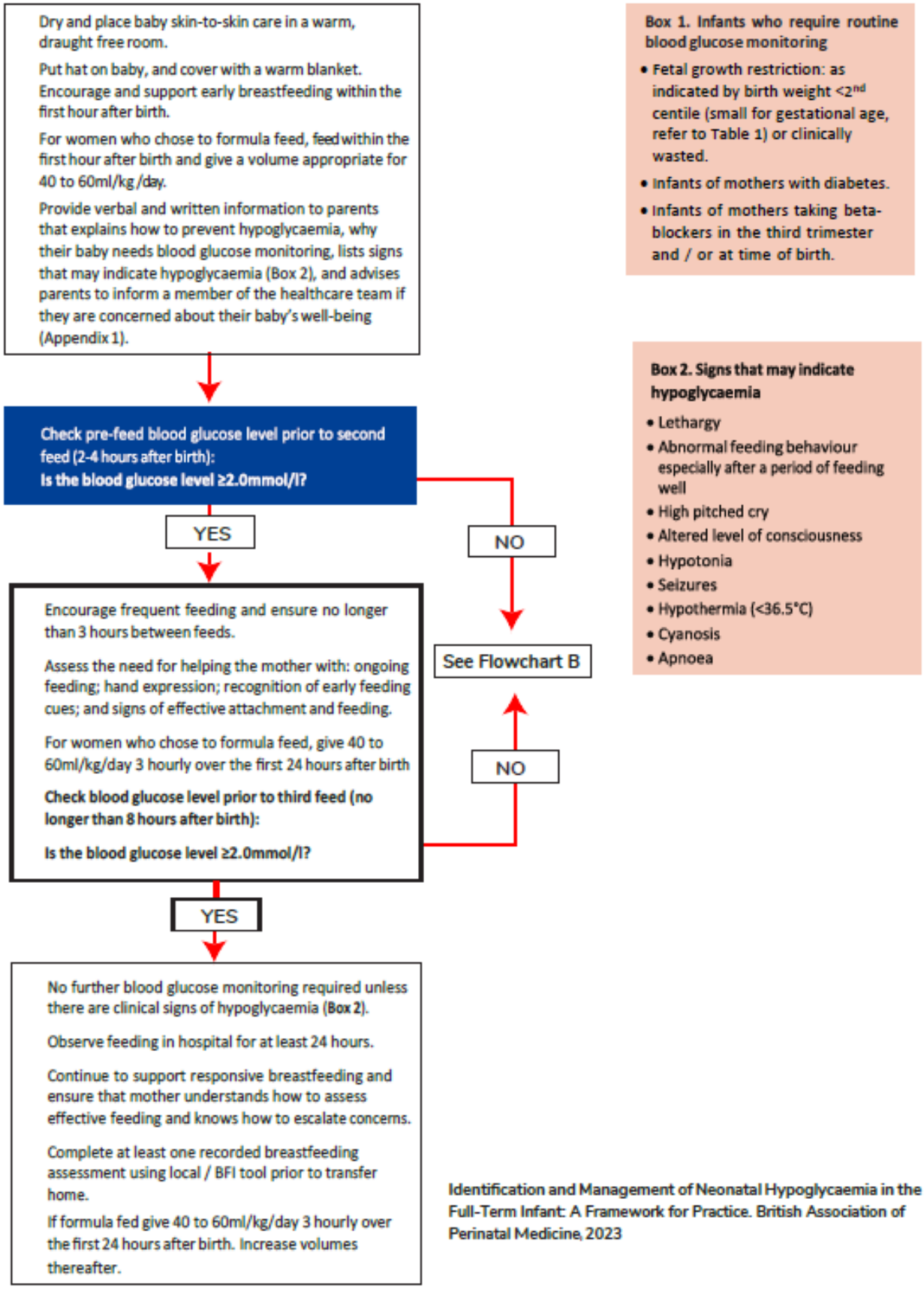
- Level of consciousness
- Tone
- Temperature
- Respiration
- Colour/perfusion

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.

Summary

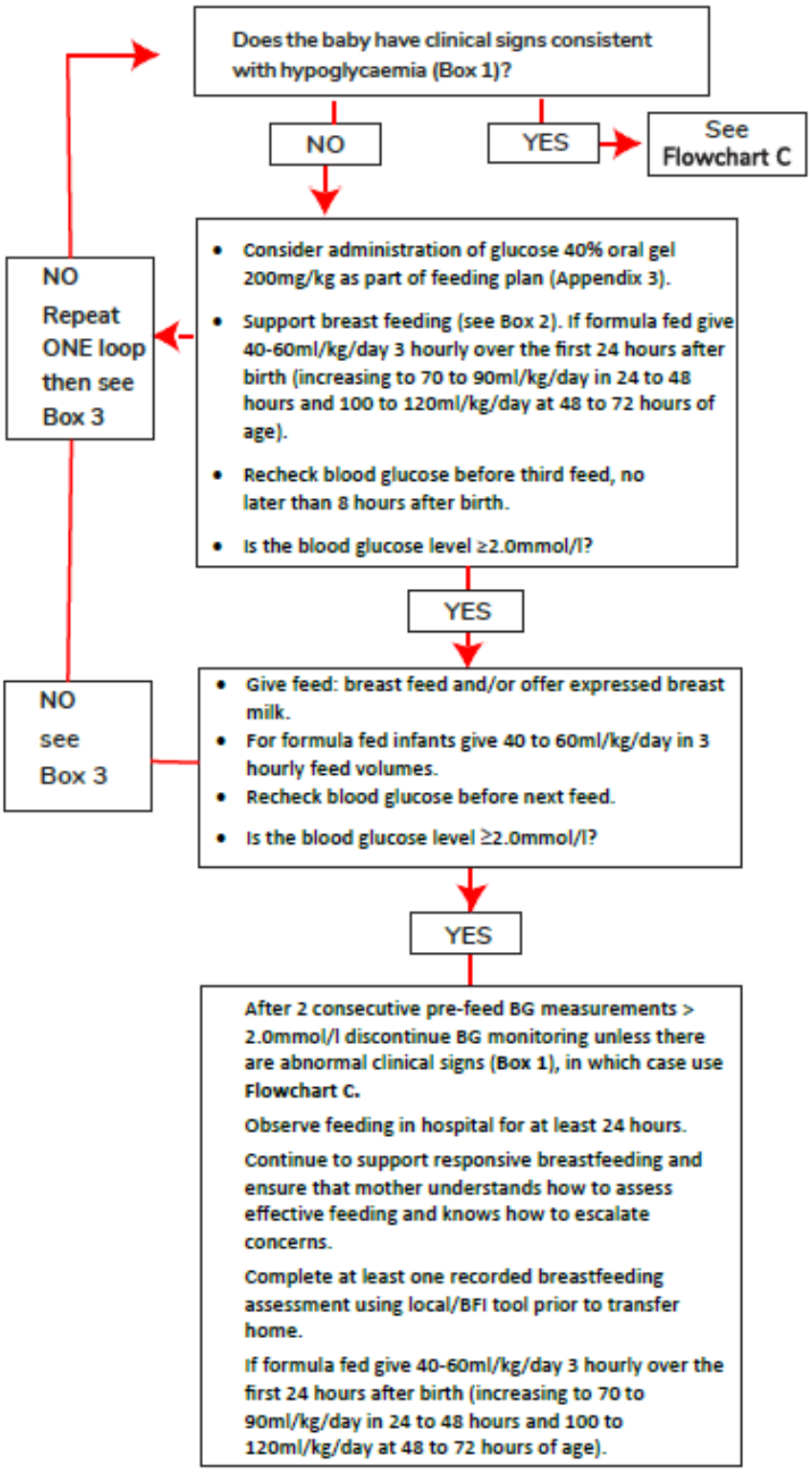
- Infants at risk of impaired metabolic adaptation and hypoglycaemia should be identified at birth and placed on a care pathway that includes early provision of energy, regular assessment of feeding and clinical condition, and blood glucose (BG) monitoring.
- Breast milk is the ideal source of energy during postnatal metabolic adaptation. Women should be supported to establish effective breastfeeding.
- 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.
- 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.
- 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
- 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.
- 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

Flowchart A: Management of term infants and near term (33-37weeks) at risk of hypoglycaemia (Box 1)



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

Flowchart B: Pre-feed BG 1.0 – 1.9mmol/l and no abnormal clinical signs



Box 1. Signs that may indicate hypoglycaemia

- Lethargy
- Abnormal feeding behaviour especially after a period of feeding well
- High pitched cry
- Altered level of consciousness
- Hypotonia
- Seizures
- Hypothermia (<36.5°C)
- Cyanosis
- Apnoea

Box 2. Supporting breast feeding

- Encourage skin-to-skin contact.
- Offer breast feed and if not feeding effectively teach mother to hand express.
- Give colostrum obtained to baby by the method suitable toparents.
- Continue to encourage hand expression at least 8-10 times in 24 hours and support feeding on the breast until infant is feeding effectively.

Box 3. If more than 2 measurements 1.0-1.9mmol/l, inform neonatal team.

- Investigate for causes of hypoglycaemia, consider sepsis.
- Consider increased feed frequency, nasogastric tube insertion or IV infusion of 10% glucose.

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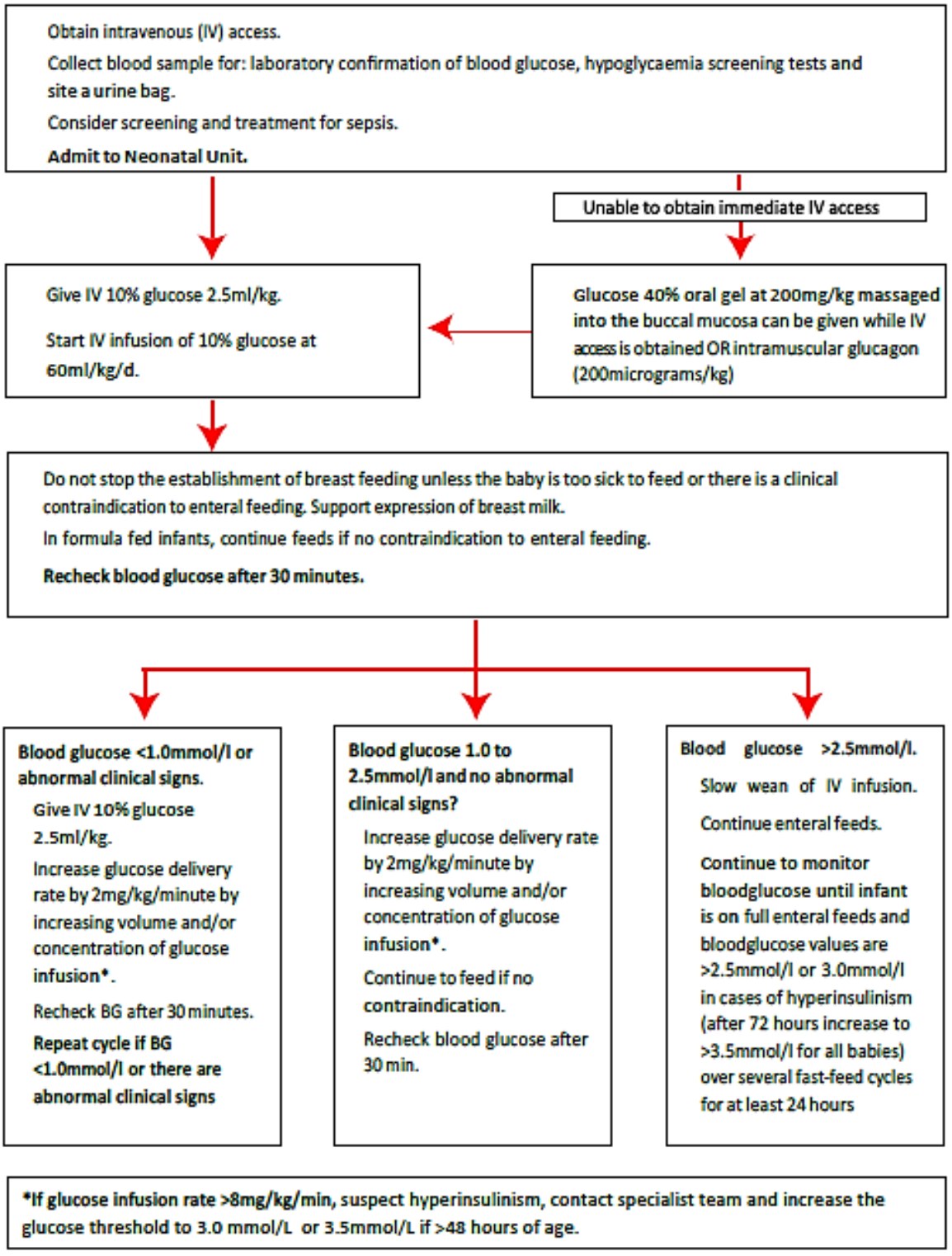
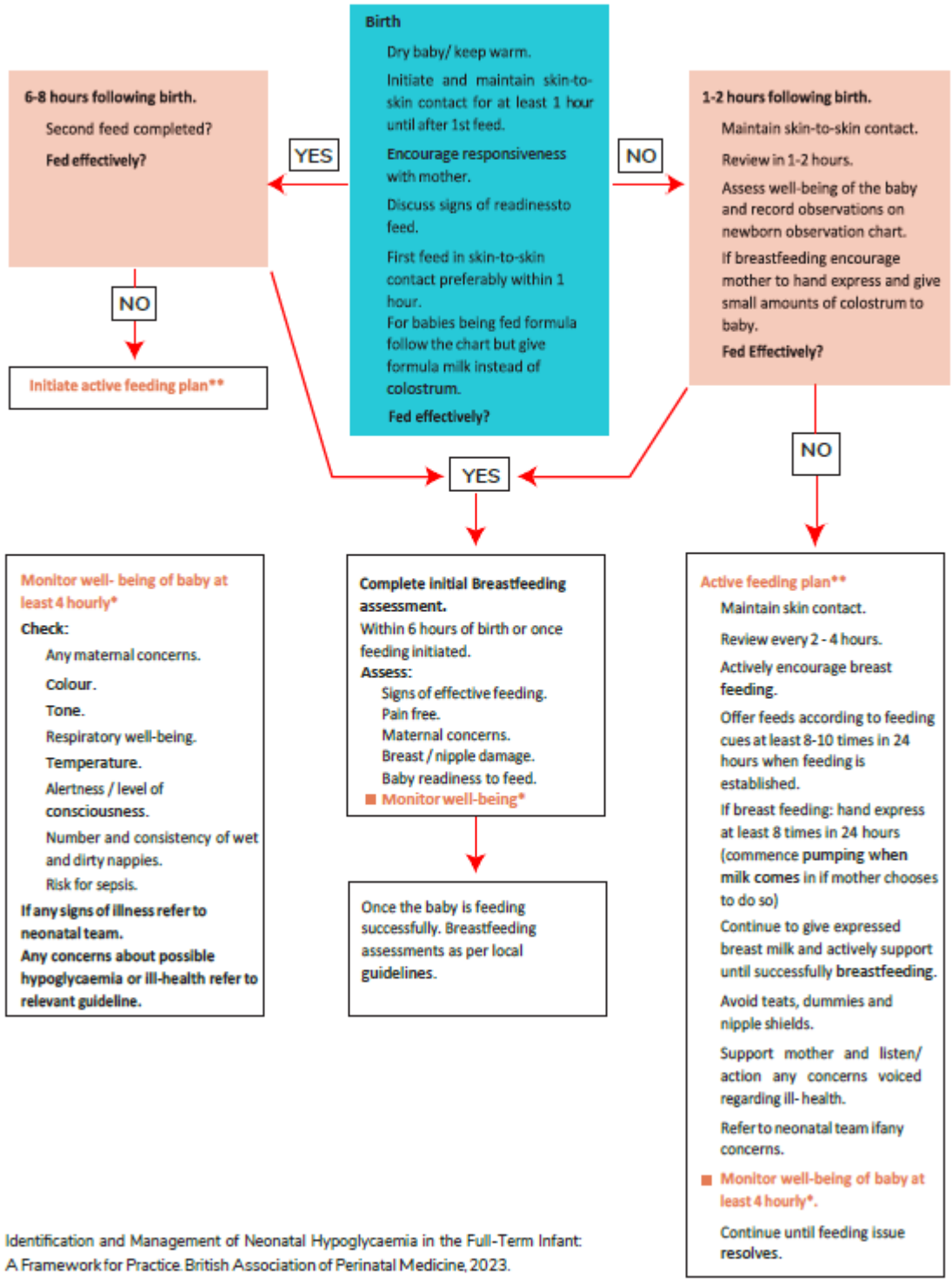
Flowchart C: Blood glucose<1.0 mmol/L and / or clinical signs consistent with hypoglycaemia



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

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

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: Management of reluctant feeding in healthy infants ≥ 37 weeks at risk of hypoglycaemia

- Provide parents with verbal and written information that explains why their baby is receiving extra support and blood glucose monitoring; how the likelihood of hypoglycaemia can be minimized; the signs that could indicate that baby is becoming unwell; and how to raise concerns about their baby's well-being or feeding pattern to staff. A parent information sheet should be given to parents. **See Appendix 6**
- Immediately after birth the baby should be dried and a hat put on. He / she should be placed in skin-to-skin contact with the mother to provide warmth and to facilitate the initiation of feeding. Ensure that ambient temperature is warm, the room is free from draughts, show mother safe positioning of the baby, and commence observations using the BAPM Newborn Early Warning Trigger and Track Framework (NEWTT2). Note that NEWTT2 classes BG 2.0 to 2.5mmol/L with a yellow trigger and suggests repeating in 1 hour, this differs from this FfP in well infants where repeating prior to the next feed is appropriate. ***Begin care pathway in Flowchart A***.
- Ensure that baby is offered the breast within the first 60 minutes and assess the need for helping the mother with:

    1. breastfeeding support;
    2. recognition of early feeding cues (rapid eye movements under the eye lids, mouth and tongue movements, body movements and sounds, sucking on a fist); and
    3. signs of effective attachment.

- Assess and document feeding cues and feeding effectiveness at each feed.
- Offer the breast in response to feeding cues as often as possible. Do not allow more than three hours to pass between feeds, until blood glucose measurements have been above 2.0mmol/l on two consecutive occasions. Continue feeding support until mother and midwife are satisfied that effective feeding is established.
- If the baby is not showing signs of effective feeding encourage continuous skin-to-skin contact and teach the mother to hand express. Any colostrum expressed should be fed immediately to the baby, using a method that is best suited to the infant's capabilities and parent's preferences and consistent with local policy. Continue to express at least 8-10 times per 24-hour period until baby is feeding effectively and provide active feeding support until breastfeeding is established. If no colostrum is available and after discussion with the mother, consider supplementing with formula milk. Formula will be required in larger volumes than colostrum as it is possible that the baby's ability to utilize ketone bodies may be limited by the use of infant formula (40 to 60ml/kg/per day during the first 24 hours; 70 to 90 ml/kg/per day 24-48 hours; 100-120 ml/kg/per day 48 to 72 hours; until colostrum/breastmilk is available). Support to resume breast milk feeds as soon as possible. For the period the mother is expressing she should see increasing volumes of colostrum/ milk expressed day by day. Using a breast pump alongside hand expressing may be helpful.
- There is a lack of evidence regarding the use of donor breastmilk as part of a hypoglycaemia pathway in the term population hence no recommendation is made.
- For women who choose to formula feed, offer a feed within the first hour after birth at a volume of 40 to 60 ml/kg/day for the first 24 hours. 1 and plan to feed 3 hourly. Depending on BG measurement, increase the volume of infant formula if necessary. It is possible that the baby's ability to utilize ketone bodies may be limited by the use of infant formula milk.

Feeds should be increased with age to 70 to 90 ml/kg/per day at 24 to 48 hours; 100 to 120 ml/kg/per day 48 to 72 hours. Feed responsively when blood glucose measurements have been above 2.0mmol/l on two consecutive occasions. If the baby does not show feeding cues, i.e., is a reluctant feeder and has no signs of illness, refer to ***Flowchart D***

- Measure the blood glucose level before the second feed (2-4 hours after birth). If the baby shows feeding cues before 2 hours do not restrict feeding and allow baby to feed. Measure blood glucose immediately if there are clinical signs suggestive of hypoglycaemia. Note: babies who feed for very long periods or have long periods of lots of shorter feeds may not have accurate pre-feed BG and may require more prolonged monitoring.
- Based on the result of the first blood glucose (BG) measurement, place the baby on one of the following care pathways:
    - Flowchart A, if BG >2.0mmol/L
    - Flowchart B, if first pre-feed BG is 1.0 to 1.9mmol/L, and no abnormal signs
    - Flowchart C if first pre-feed BG <1.0mmol/L, and / or clinical signs consistent with hypoglycaemia at higher BG concentration.
- All infants at risk of hypoglycaemia including infants of mothers with diabetes, should remain in hospital for a minimum of 24 hours. Do not transfer babies with risk factors for impaired metabolic adaptation and hypoglycaemia to community care until you are satisfied that the baby is maintaining blood glucose levels >2.0mmol/l on at least two consecutive occasions and is feeding well and till he mother and staff are satisfied that effective feeding has been established and maintained over several fast-feed cycles.

Consideration of special treatments

- Infants being managed using the pathway in Flowchart A are fed within the first 60 minutes and must have a BG level measured prior to the second feed. If the first BG is 1.0 to 1.9mmol/L or there is a subsequent BG measurement <2.0mmol/L, glucose 40% oral gel (200mg/kg) may be given alongside feeding support (Flowchart B, Appendix 3).
- If BG is <1.0mmol/L, arrange for urgent medical review which will include siting an intravenous (IV) cannula for treatment with IV glucose. If there is a delay in obtaining IV access, consider either glucose 40% oral gel (200mg/kg) (appendix 3) or IM glucagon (200micrograms/kg, maximum 1mg as a single dose).
- If BG is <1.0mmol/L, glucose 40% oral gel should only be used as an interim measure while arranging for treatment with IV glucose
- A newborn with persistent (more than 2 BG measurements <2.0mmol/L within the 72 hours of birth) or severe hypoglycaemia (<1.0mmol/L at any time), and infants with signs of acute neurological dysfunction and BG <2.5mmol/L should be referred urgently to a paediatrician / neonatal team for investigation
- If a BG is measured for a non-indicated reason, e.g., as part of a blood gas read-out and is low, then the clinical team should be alerted to make an urgent assessment about treatment and further testing. Infants with severe hypoglycaemia or abnormal neurological signs should be admitted to the neonatal unit for neurocritical care, investigations, and monitoring.

Appendix 2: Use of dextrose gel

Indications

- Blood glucose 1.0-1.9mmol/l in infant with no abnormal clinical signs
- Severe hypoglycaemia (BG <1.0mmol/L) where there is no intravenous access.
- Infants ≥ 35 weeks' gestational age and younger than 48 hours after birth

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) use oral dextrose gel only as an interim measure while arranging for urgent medical review and treatment with IV glucose

Dose

- Use 200mg/kg dextrose gel (0.5 ml/kg of 40% dextrose gel), up to maximum of six doses of buccal dextrose gel in 48 hours.

Weight of baby (kg)	Volume of gel (ml)
1.5-1.99	1
2.0-2.99	1.5
3.0-3.99	2.0
4.0-4.99	2.5
5.0-5.99	3.0
6.0-6.99	3.5

Method of administration

- Draw up correct volume of 40% dextrose gel syringe (purple oral syringe - no needle)
- Dry oral mucosa with gauze, gently squirt gel with enteral (purple oral syringe - no needle) onto the inner cheek and massage gel into the mucosa using latex-free gloves
- Offer a feed preferably breast milk, immediately after administering dextrose gel
- Repeat blood sugar measurement as requested
- Repeat oral dextrose gel if baby remains hypoglycaemic according to flow chart

Up to 6 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 3rd dose is administered.

Appendix 3: Care of babies of diabetic mothers

- Infants of diabetic mothers are at increased risk of hypoglycaemia due to transient hyperinsulinism; the risk is reduced but not completely eliminated by good glycaemic control.

- All infants of diabetic mothers, irrespective of the type of diabetes, should be monitored for hypoglycaemia.

- Babies of women with diabetes should be kept with their mothers unless there are clinical complications or there are abnormal clinical signs that require admission to NNU.

- Babies should feed as soon as possible after birth and then at frequent intervals (at least every 2-3 hours).

- Blood glucose testing of babies should be carried out prior to the second feed within 4-6 hours of birth.

- If the blood glucose ≤2.0mmol/L on two consecutive occasions despite maximum support for feeding, the baby should be reviewed by the neonatal doctor and given 40% dextrose oral gel up to a maximum of 3 times in 24 hrs up to 6 times in 48 hours.

- Babies of women with diabetes who present with clinical signs of hypoglycaemia should be considered for admission to NNU.

- Blood tests for polycythaemia, hyperbilirubinemia, hypocalcaemia and hypomagnesaemia should be carried out on babies with clinical signs.

- Babies of women with diabetes should not be transferred home until they are at least 24 hours old, feeding well and have blood glucose of ≥2.0mmol/L on two consecutive occasions.

Appendix 4: Persistent or recurrent low blood glucose measurement

- Persistent or recurrent hypoglycaemia (>2 measurements 1.0-1.9mmol/l during the first 48 hours after birth) can be the first presentation of an underlying disorder of glucose metabolism. Early detection of this group of infants is important because specific interventions designed to reduce the risk of brain injury may be required. These babies need to be admitted to neonatal unit for further management.

- Detailed clinical assessment and screening investigations should be performed urgently.
- Although most infants with Hyperinsulinaemic Hypoglycaemia have no other abnormal clinical signs, the condition is associated with several recognizable syndromes so careful clinical assessment can be informative for guiding subsequent tests.

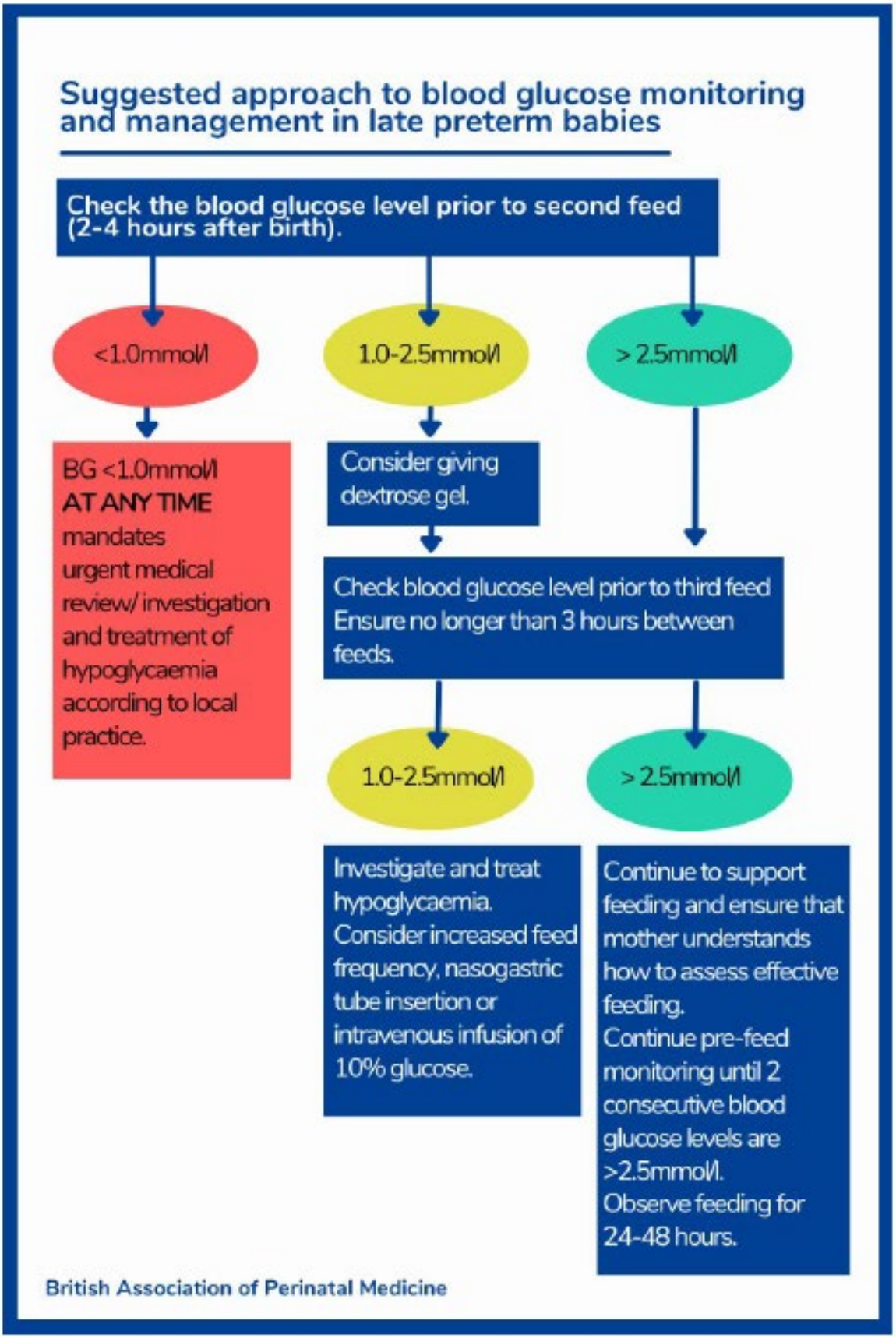
    - Beckwith Wiedemann syndrome
    - Turners syndrome
    - Costello syndrome
    - Prader-Willi syndrome
    - Sotos syndrome
    - Kabuki syndrome

- Non-syndromic genetic disorders of congenital Hyperinsulinaemic Hypoglycaemia and other rare disorders cause persistent hypoglycaemia and may require specific long-term treatment and management; these include metabolic disorders of glycogen storage, fatty acid oxidation and gluconeogenesis, hypopituitarism and adrenal insufficiency leading to deficiencies in growth hormone and cortisol. Sometimes there may be diagnostic clues such as hyperpigmentation of the skin suggesting the diagnosis of familial glucocorticoid deficiency (FGD), or ambiguous genitalia, but typically no other signs are present and extensive laboratory evaluation is required, guided by specialist advice.
- In cases of suspected or confirmed hyperinsulinism, aim to maintain BG concentration >3.0mmol/L in the first 48 hours and >3.5mmol/L after 48 hours from birth. Liaise with specialists as soon as possible. Whilst awaiting specialist input take into consideration that metabolic transition occurs over several days; healthy babies have BG levels which increase over the first 18 hours and remain stable to 48 hours before increasing to values normal for the paediatric population by day 4 when they will have completed their metabolic transition.

Appendix 5: Late preterm: 34+0 – 36+6 weeks of gestation

- Develop a feeding plan
  - Support families to optimise lactation and the transition to breastfeeding or formula feeding as per the family's choice
  - Instigate early feeding, ideally within one hour of birth.
  - Support a modified responsive feeding approach (8-10 feeds per 24 hours)
  - Some babies may require support to maintain adequate blood glucose levels with naso-gastric tube feeding and will need support in their transition to oral feeding. A cues-based feeding approach will assess feed readiness and progression to full oral feeds

- Monitor blood glucose levels: Please note that a normal blood glucose level is >2.5mmol/l for late preterm babies, because of their greater vulnerability and immature counter-regulatory responses to hypoglycaemia.
  - Measure a blood glucose level before the second feed (2-4 hours after birth) to allow for the physiological nadir in the first 1-2 hours.
  - If the baby shows clinical signs suggestive of hypoglycaemia, measure the blood glucose immediately.
  - Normal blood glucose levels (>2.5mmol/l) should be consistently demonstrated (at least two consecutive measurements) over 24-48 hours prior to transfer to community care.
  - Early discharge before 48-72 hours is not advised. At least 24 hours of successful feeding should be observed prior to discharge.



From BAPM Early Postnatal Care of the Moderate-Late Preterm Infant: A Framework for Practice (2023)

Appendix 6: Parent information Sheet
From BAPM Identification and Management of Neonatal Hypoglycaemia Framework for Practice

Maternity and Neonatal Units
Frimley Park and Wexham Park Hospitals

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 hypoglycemia).

Babies who are small, premature, unwell at birth, or whose mothers are diabetic 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 in order 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 done while you are holding 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. During skin-to-skin contact your baby should wear a hat and be kept warm with a blanket or towel.
- Keep your baby warm
- Put a hat on your baby for the first few days while he / she is in hospital. Keep your baby in skin contact on your chest covered with a blanket and look into your baby’s eyes to check his / her well-being in this position, or keep warm with blankets if left in a cot.
- 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 possible in the first few days
- 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, offer your baby a feed. Don’t wait for your baby to cry – this can be a late sign of hunger.
- **Feed for as long, or as much, as your baby wants**.

- To ensure your baby gets as much milk as possible.
- **Feed as often as baby wants but do not leave your baby more than 3 hours between feeds.**
- If your baby is not showing any feeding cues yet, hold him/her skin-to-skin and start to offer a feed about 3 hours after the start of the previous feed.
- **Express your milk (colostrum).**
- 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"). 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.

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 so know your baby best. **It is important that you tell staff if you are worried** that there is something wrong with your baby, as parents' instincts are often correct.

The following are signs that your baby is well

- **Is your baby feeding well?**
  In the first few days your baby should feed effectively at least every 3 hours, until 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 he / she 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 between 36.5^0C and 37.5^0C inclusive.
- **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, they 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. 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. 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.
- **Is your baby's colour normal?**
  Look at the colour of the lips and tongue – they should be pink.
- **Is your baby breathing easily?**
  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 continuous period (more than 60 breaths per minute), 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.

Who to call if you are worried

- In hospital, inform any member of the clinical staff.
- At home, call your community midwife and ask for an urgent visit or advice.
- Out of hours, call NHS 111 or the MAMMAs line number 0300 013 2004
- If you are really worried, take your baby to your nearest Paediatric A&E or dial 999.

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

If the blood glucose test result is low, you should feed your baby as soon as possible and provide skin-to-skin contact. If the 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 he / she is happy that your baby is well, s/he 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 he / she 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 changes in the colour of dirty nappies and number of wet/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 he / she 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 he / she shows feeding cues and observe for signs that he / she wants a break. Don't necessarily expect your baby to finish a bottle – let him / her take as much milk as he / she wants.

Once you are home, no special care is needed. 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 at all about your baby.

For a translation of this leaflet or for accessing this information in another format:

Please contact (PALS) the Patient Advice and Liaison Service on:

Frimley Park Hospital
Telephone: 0300 613 6530
Email: fhft.palsfrimleypark@nhs.net

Wexham Park & Heatherwood Hospitals
Telephone: 0300 615 3365
Email: fhft.palswexhampark@nhs.net

Frimley Park Hospital	**Heatherwood Hospital**	**Wexham Park Hospital**
Portsmouth Road, Frimley, Surrey, GU16 7UJ	Brook Avenue, Ascot, Berkshire, SL5 7GB	Wexham Street, Slough, Berkshire, SL2 4HL
Hospital switchboard: 0300 614 5000		**Website:** www.fhft.nhs.uk

Title of Leaflet	Protecting your baby from low blood glucose				
Adapted from Identification and Management of Neonatal Hypoglycaemia in the Full Term Infant - A Framework for Practice. British Association of Perinatal Medicine, April 2017			**Frimley Health Contacts**	Dr S Edate, Dr R Sanghavi, Neonatal Unit Consultants Danielle Perkins, Midwifery Matron	
Ref. No	P/055/1	**Issue Date**	August 2024	**Review Date**	August 2027

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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.

Reference

Adapted from

- Identification and Management of Neonatal Hypoglycaemia in the Full Term Infant - A Framework for Practice. British Association of Perinatal Medicine, January 2024 .
- Early Postnatal Care of the Moderate-Late Preterm Infant A Framework for Practice British Association of Perinatal Medicine, January 2023

Full version control record

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This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt, contact a senior colleague or expert. Caution is advised when using guidelines after the review date.

This guideline is for use in Frimley Health Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version Control Sheet

Version	Date	Guideline Lead(s)	Status	Comment
1.0	Sept 2015	S Coxon, Z Jones J. Valimohamed, N. Rose-Stone, H Whapshott,	Final	Joint guideline development
2.0	October 2021	Sujata Edate, Consultant Paediatrician	Final	Joint guideline review
2.1	February 2022	Sujata Edate, Consultant Paediatrician	Draft	Amendment to key points only (identified by author)
3.0	October 2024	Sujata Edate, Consultant Paediatrician, WPH	Final	Approved at Cross Site Clinical Governance Meeting, 1st October 2024