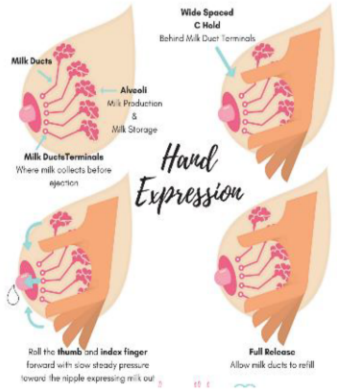
PRETERM Bundle for Babies at Risk of Hypoglycaemia following birth

PRETERM Hypoglycaemia Pathway Part one



Dry baby, put on red hat, place skin to skin and initiate feeding, keep warm
If not receiving skin to skin ensure appropriate clothing and incubator used

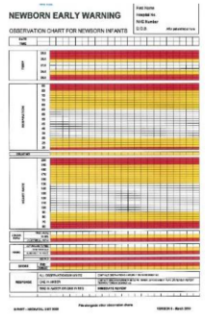
Identify at risk infants (see Box A) Notify neonatal team if multiple risk factors
Give and explain Parent information leaflet

Start NEWTTS chart and Hypoglycaemia Care plan and record symptoms/ lack of symptoms at every feed. Get Dextrose gel written up as PRN

First feed, **MUST** be given as early as possible within the first hour.
A breastfeeding baby may feed multiple times before first BG measurement taken
Record first temperature at 1 hour and instigate warming measures as required

Box A – Infants at risk

- IUGR (<2nd centile) or clinically wasted
- * Infants of diabetic mothers
- * Maternal beta blocker use
- * <37 weeks gestation
- Temp <36 C at any time
- Perinatal Asphyxia cord pH <7.1 AND BE > -12
- Rare Conditions/FH as directed
- Sepsis-known/clinical signs



Breast feeding
Put to breast but if ineffective feeding hand express and give colostrum

If NO EBM
Give dextrose gel and consider supplement of 5ml/kg formula if mother consents

Bottle feeding
Offer 10mls/kg, via bottle, syringe/cup

Is baby <37/40 weeks gestation at birth?

YES

Promote ongoing skin contact and give second feed **2 hours** after 1st feed at 2-3 hours of age
First glucose level should be checked pre **third** feed which should be **2 hours** after 2nd feed at 4-5 hours of age and follow
Preterm Infant Hypoglycaemia Pathway and Care Bundle

NOTE:
If a blood gas is being done before the first glucose level for anything other than hypoglycaemia then disable the glucose from the analysis to avoid capturing the normal physiological drop following birth.

PRETERM Infants Hypoglycaemia Pathway Part Two

Preterm infants have lower reserves than term infants and are more prone to slower establishment of feeds and difficulties with thermoregulation. Ensure availability of warmed incubator when not skin to skin

IF BG ≥ 2.6 mmol/L

Give 2 hourly feeds, support breast feeding. If expressing < 5mls consider topping up.
Give a minimum of 90mls/kg/24 hours (7.5mls/kg/feed 2 hrly).

Once **3 x BG ≥ 2.6 mmol/L on 2 hourly feeds** stay 2 hourly for 12 hours with no further BG monitoring **if feeding well and asymptomatic** before moving to 3 hourly feeds

After 3 consecutive pre feed BG measurements ≥ 2.6 mmol/L and if the infant is feeding well stop BG monitoring unless there are any abnormal clinical signs. Babies should be observed in hospital for a minimum of 24 hrs from the 1st 3 hourly BG>2.6mmol/L and reviewed by the neonatal team on the day of discharge

IF the BG is ≥ 1.4 mmol/L and < 2.6 mmol/L

Give Buccal dextrose gel 200mg/kg (0.5ml/kg)
Give 2 hourly feeds, support breast feeding. If expressing insufficient amounts of colostrum, consider topping up via NGT.
Give a minimum of 90mls/kg/24hrs(7.5mls/kg/feed 2 hrly)
Inform Neonatal team for review

Do a pre feed BG level

If **≥ 2.6 mmol/L** move to top of green pathway

If **≥ 1.4mmol/L and <2.6 mmol/L**

Repeat Buccal dextrose gel 200mg/kg (0.5ml/kg)
Insert an NG tube and give 90mls/kg/24 hours (7.5mls/kg/per feed) Continue to support breast feeding**. Inform Neonatal team for review, individual plan or possible admission to NICU**

Do a pre feed BG

BG ≥ 2.6mmol/L
Maintain on plan which achieved BG ≥ 2.6mmol/L for 3x BG ≥ 2.6mmol/L. Discuss further plan with neonatal team

3rd BG ≥ 1.4mmol/L and < 2.6mmol/L
Move to red pathway (right column) for urgent review and admission

IF ANY OF BELOW

- **Symptomatic at any time**
- **3 BG levels <2.6mmol/L in 1st 48 hours**
- **BG level < 1.4 mmol/L at any time**

Treat as a medical emergency
Give buccal dextrose 200mg/kg
Inform Neonatal team immediately and admit to NICU

Signs of Symptomatic hypoglycaemia

*Lethargy
*Abnormal feeding behaviour especially after a period of feeding well
*High pitched cry
*Altered level of consciousness.
*Hypotonia
*Seizures
*Hypothermia (<36.0°C)
*Cyanosis
*Apnoea

Hypoglycaemia Care Plan for Babies at risk of Hypoglycaemia following delivery

Ensure NEWTTS chart is completed for each assessment including TONE, COLOUR, RESPIRATORY RATE, HEART RATE, RESPONSIVENESS, TEMPERATURE

RISK FACTORS FOR HYPOGLYCAEMIA - PLEASE tick all that apply	
IUGR (<2nd centile)	
Infant of IDDM or GDM	
BW>98th centile/macrosomic (in baby of IDDM/GDM mother)	
Maternal betablockers in 3rd trimester or time of delivery	
Preterm (<37 weeks gestation)	
Preterm (<36 weeks gestation)	
Baby with hypothermia (<36 degrees at any time)	
Perinatal asphyxia (Cord pH <7.1 and BE>-12	
Baby with suspected/known sepsis	
Other Risk Factors – genetic or FH	

Addressograph

Date and Time of Birth

Feeding and BG monitoring

Date / Time	Route of feeding NGT/Bottle/Breast	Duration of feed	Type of milk	Volume	Vomit?	PU	BO	Blood Glucose	Signed
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
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22									
23									
24									

Neonatal Early Warning Tracking and Trigger Score Chart (NEWTTS)

Addressograph

Score	0	1	2	3
Tone	Normal			Stiff/Floppy
Colour	Pink			Blue/Grey/White
Conscious level	Alert			Unrousable/Unconscious
Grunting	Absent	Present		
Recession	Absent	Present		
Nasal Flaring	Absent	Present		

Note the scores from the box above in the columns below
White = Score 0,Yellow = Score 1,Amber = Score 2, Red = Score 3

Date															
Time															
Tone score															
Colour score															
Conscious level score															
Grunting score															
Recession score															
Nasal Flare score															
TEMPERATURE (degrees C) 38.5 or above															
38 - 38.4															
37.5 - 37.9															
37 - 37.4															
36.5 – 36.9															
36 – 36.4															
<36															
Temperature Score															
HEART RATE (Beats/minute) 180 or above															
170 to 179															
160 to 169															
140 to 159															
120 to 139															
100 to 119															
90 to 99															
80 to 89															
<80															
Heart Rate Score															
RESPIRATORY RATE (Breaths/minute) 80 or above															
70 to 79															
60 to 69															
50 to 59															
40 to 49															
30 to 39															
<30															
Respiratory Rate Score															
Total NEWTTS Score															
Initials															

NEWTTS Scores and Actions

Score 0	Continue normal care, continue NEWTTS observations for relevant duration
Score 1	Adjust thermal environment, repeat NEWTTS observations hourly until score =0 If NEWTTS persistently 1 at 4 hours, contact SHO/ANNP to review within 30 mins
Score 2	Contact SHO/ANNP. Baby should be reviewed within 30 mins. If not reviewed within 30mins, bleep SHO/ANNP to review within 15 mins. If baby is not admitted to neonatal unit, continue NEWTTS observations hourly until score is 0 again. If NEWTTS score is 2 after 4 hours, admit to NICU. If NEWTTS =1 at 4 hours bleep SHO/ANNP for review
Score 3	Urgent review needed within 15 mins. Complete assessment required – contact Neonatal team (SHO/ANNP/Registrar) and consider admission to neonatal unit. If not admitted to neonatal unit and NEWTTS score still 3 after 2 hours, admission to neonatal unit is necessary.

Condition	Frequency of Observations
SRC (Sepsis risk calculator) Observations Following completion of the Neonatal Early onset risk assessment and review from SHO/ANNP	These babies should be observed at the following hours after delivery: 1 hour 2 hours 4 hours 6 hours 8 hours 10 hours 12 hours Then 4 hourly until 24 hours of age
Babies receiving antibiotics for proven or suspected infection	As above, also at 0 hours when decision made to observe, then 4 hourly while on antibiotics
Babies showing signs of hypoglycaemia eg jitteriness, sweating, lethargy, seizures	Check blood glucose immediately and perform Observations
Babies at risk of hypoglycaemia – Follow hypoglycaemic pathway	Observations to be taken when conducting every blood sugar
Meconium stained liquor- if there has been significant meconium staining, and if the baby is in good condition, observe for signs of respiratory distress	**Thin Mec –** 1 hour 2 hours of age **Thick Mec –** Observations should be continued for 12 hours then stopped if all normal.
Instrumental deliveries	As above for 12 hours
Babies causing other concerns	Use clinical judgment and on paediatricians request

The NEWTTS chart is a minimum requirement but is not an alternative for clinical judgement, which should be used in every case

Buccal dextrose gel administration

Inclusion Criteria

- Buccal Glucose must be used in conjunction with a feeding plan
- Infants >34+6 gestation and younger than 48 hours after birth
- ALL babies symptomatic of hypoglycaemia with BG <2.6mmol/L whilst arranging urgent review and admission as an emergency

PRETERM Infants (35-36+6 weeks gestation)

- Blood Glucose 1.4-2.5mmol/L in an infant with no abnormal signs
- Blood glucose <1.4mmol/L in babies whilst arranging urgent review

Exclusion Criteria

- Babies <35 weeks gestation
- Babies >48 hours of age

Dose

200mg/kg (0.5mls/kg) of 40% dextrose gel

In the event that Dextrose Gel has not been prescribed at birth and a dose is required, it may be given by the midwife as per the SOP so that the dose is not delayed in a hypoglycaemia baby. Use the chart below to determine the dose needed and inform neonatal team so that it can be prescribed on the medication chart.

Weight of Baby (kg)	Volume of Gel (ml)
1.5-1.99	1ml
2.0-2.99	1.5ml
3.0-3.99	2ml
4.0-4.99	2.5ml
5.0-5.99	3ml
6.0-6.99	3.5ml

Administration

Draw up using a 2.5 or 5ml oral enteral syringe
Dry oral mucosa gently with a gauze swab and gently squirt with syringe into the inner cheek and gently massage using latex free gloves
Offer a feed (preferably breast milk) immediately after. Baby can also feed whilst dextrose gel is being drawn up

More than three doses should be discussed with the neonatal team
Up to six doses can be given on the postnatal ward

Caveat

If given as a temporising measure for symptoms of hypoglycaemia the baby must be admitted to the neonatal unit even if when seen by the paediatrician / neonatologist the symptoms of hypoglycaemia have resolved.