Immediate Care and Observations of the Newborn – Maternity / Neonatal Full Clinical Guideline

Reference no.: UHDB/NEONATE/07:23/N5

Joint Maternity and Children's Guideline

Contents

1. Introduction

Maternity staff need to assess and deliver appropriate care to newborn babies to minimise avoidable harm which includes recognition of anomalies and taking the appropriate actions to minimise poor outcomes.

Healthy babies should have normal skin colour for their ethnicity, maintain a stable body temperature, and pass urine and stools at regular intervals. They initiate feeds, suck well on the breast (or bottle) and settle between feeds. They are not excessively irritable, tense, sleepy or floppy.

Maternity staff need to be aware that hypothermia in newborns is very common and they need to be supported to maintain an optimum temperature.

2. Purpose and outcomes

Enable all staff, irrespective of role, to recognise babies at risk and give appropriate care. This includes

- the prevention detection and management of hypoglycaemia and hypothermia,
- the management of the newborn with meconium at delivery,
- the management of Group B streptococcus (GBS) present in either mother or baby,
- the management of babies born to a mother who is known to have misused substances, including alcohol, in pregnancy.
- To reduce the admissions of babies to NICU/SCBU with hypothermia and hypoclycaemia

3. Abbreviations and definitions

NICU (RDH)	-	Neonatal Intensive Care Unit
SCBU (QHB)	-	Special Care Baby Unit
GBS	-	Group B Streptococcus
NEWTT	-	Newborn Early Warning Trigger and Track
NIPE	-	Newborn and Infant Physical Examination
PU	-	passed urine
BO	-	bowels opened
Hypothermia:		temperature < 36.5°C
Severe Hypothermia:		temperature < 32.0°C
Hyperthermia:		temperature >37.5°C

4. Documentation

Please ensure all assessments and individual plans of care are documented clearly in the appropriate records which may include some or all of those listed below

- medical records
- maternity hand held records
- maternity clinical system special instructions page
- Baby notes
- Newborn Early Warning Trigger and Track (NEWTT2)
- Electronic record

5. Key Roles and Responsibilities

All staff involved in the care of the newborn should have the required competency to assess for any anomaly and to give care in line with the appropriate guideline. Staff must complete a Datix (incident reporting form) whenever there is an unanticipated admission to NICU/SCBU.

6. At birth

Aim to deliver the following care unless prevented by circumstances (e.g. BBA or due to condition of mother or baby)

- The baby should be delivered where ever possible, onto the mother's abdomen promoting skin to skin contact
- Dry the baby immediately
- Place a clean warm blanket over mother and baby (uninterrupted skin to skin contact). Alternatively, wrap baby in either a clean warm towel or blanket.
- Aim for delayed (optimal) cord clamping if clinically appropriate (see care in labour guideline)
- Record and document the Apgar score at 1 and 5 minutes of age
- Any resuscitation measures necessary must be documented in the Baby Notes / relevant (electronic) clinical system. See guideline Resuscitation of the Newborn
- Secure 2 identification bands on baby
- Complete Newborn Risk Assessment to identify risk factors (Appendix A) within the first hour of birth, document management plan and contact neonatal team if indicated
- Offer initiation of breastfeeding or artificial feeding whilst maintaining skin to skin contact (condition of baby allowing). First feed should be within the first 60 minutes of birth and should be prioritised with compromised babies
- Allow a minimum of 1 hour of uninterrupted skin to skin contact before separating for any routine postnatal procedures. These should be avoided in this time unless requested by the mother, or are necessary for the immediate care of the baby. Bear in mind that if you have a cold mother it is likely to reduce the temperature of the baby and that skin to skin can be given to baby by the partner if mother is unwell/cold/etc.
- Inform parents of the Thermal Care Safety bundle (coloured hats), provide an appropriately coloured hat to identify the care pathway and place the hat on baby with parental consent
- Preferred method of transfer of a baby to the postnatal ward is by maintaining skin to skin contact. Alternatively dress baby with an additional layer. Ensure baby is covered or wrapped in a blanket and wearing a hat.
- Body temperature should be checked within 1 hour of birth (per axilla) and then just prior to transfer to the postnatal ward / home

7. Newborn Risk assessment at birth

- Complete and sign the risk assessment at birth to identify babies at increased risk
- Complete management plan that includes:
    - The need for NEWTT observations,
    - The need for blood glucose monitoring
    - Escalation and/or monitoring of babies at increased risk of early onset Neonatal infections including GBS

Identify risk factors for early onset neonatal infection (EONI) as part of the initial risk assessment following birth. In case of 1 red flag or 2 or more non-red flag risk factors, request urgent review by the neonatal team to start investigations and antibiotic treatment.

Clinical indicator risk flags may arise at any time following birth and during the NEWTT observations. Follow the guidance for EONI that can be found on the back of the NEWTT2 chart or click here for the full EONI guideline (neonatal guideline).

Babies may have some mild respiratory distress in the first 4 hours after birth. This can be due to normal physiological transition from in utero respiration through the placenta to breathing in air. Babies can have mild increase in respiratory rate, and occasional intermittent grunting in this period.

However, if the baby has features of respiratory distress and the NEWTT2 score indicates, escalation to neonatal team review should be done and the baby reviewed as per the NEWTT2 guidance. Babies with such mild respiratory distress may not need to be screened for infections immediately if they are otherwise well but should be kept under close observation using the NEWTT2 charts. If the respiratory distress worsens or there are other risk factors or clinical indicators for early neonatal infection, tests for infection and antibiotics should be considered as per the Early Onset Neonatal Infections guidelines.

a. NEWTT observations and escalation

NEWTT is based upon the ability to 'track' the behaviours and observations over time to identify trends. When variables fall outside of the defined 'normal' range then actions are 'triggered' based upon the degree/magnitude of the deviation.

Use the guidance on the NEWTT2 chart (appendix B) on frequency of observations to be carried out (as a minimum); how to calculate scores; determine the level and timelines of escalation.
Healthcare professional concern can initiate a neonatal review at any time regardless of the zone colour of an observation or total score.

Use the SBAR stickers designed for NEWTT (appendix C) to document escalation.

8. Prevention of baby falls

- Complete risk assessment tool for preventing baby falls following delivery and on admission to the ward. This risk assessment can be completed by msw's, nursing and midwifery staff.
- Reassess level of risk where circumstances change e.g admission to HDU following altered state of consciousness. Mobility returns
- Ensure provision of an appropriate level of supervision for the level of risk and time of day e.g curtains open lights on
- Low risk 0-7 - Safe sleep conversation, advise partners to support with cot transfers and ensuring baby is in a safe place when mothers and birthing people are fatigued. Ensure equipment e.g. buzzers are in easy reach. A daily reminder at postnatal checks.
- Moderate risk 8-12 - consider all of the above and consider curtains open, lights on, clear clutter free environment.
- High risk 12 or more-document assessment 4 hourly until risk is reduced.
- Communicate assessment risk between caregivers, ensure level of risk is communicated with parents and caregivers.

9. Meconium

See reverse of NEWTT chart (Appendix A) for guidance on NEWTT observation click here for full clinical guidelines 'meconium stained liquor'

10. Hypothermia

A newborn baby only has a limited ability of protection against heat loss and without external support will lose heat, causing a drop in their body temperature.

- The normal temperature of a neonate should be 36.5°C - 37.5°C
- A core temperature of less than 36.5°C increases the risk of death in very low birth weight babies
- Admission temperatures of less than 32°C are associated with more than 80% mortality.
- Extra utilisation of glucose because of increased metabolism can lead to hypoglycaemia
- Even a brief period of hypothermia is associated with impaired surfactant synthesis and surfactant spreading within the lungs, pulmonary hypotension, hypoxia and coagulation defects. Acidosis and hypoxia further inhibit surfactant production.

10.1 Prevention of Hypothermia: management at birth

The temperature of the environment during delivery and the postnatal period has a significant effect on the risk to the newborn of developing hypothermia.

- The room temperature (including obstetric theatre and recovery) should be ≥25°C
- Efforts must be made to exclude draughts (close windows and doors / turn off fan).
- In case there is a need to place baby on a resuscitaire, make sure it has warmed up
- Use warm towels

For Thermal Care Safety Bundle overview see Appendix C.

Initiate the Thermal Care Safety Bundle shortly after birth:

- Establishing the appropriate level of care with matching colour hat based on initial assessment
- Document using a sticker (Appendix D)

On-going process of risk assessment:

- Increase to higher level of care as soon as additional risk identified
- Document using a new sticker
- Change hat to different matching colour
- No need to step down if on ‘red’ or ‘amber’ (so can be discontinued without stepping down to green first if all criteria are met)

Once criteria met to remove coloured hat, please advise parents on thermoregulation in order to prevent both overheating and under heating of their baby. Consider the following advice:

- Advise skin to skin prior to feeding
- Postpone bathing and advise on alternative i.e. topping and tailing for baby
- Keep mother and baby together in the early postnatal period
- Appropriate clothing outdoors and on transport home: an additional layer of cloths to what parents are wearing

Document in notes using pre-printed stickers and allow parents to replace the coloured hat with a personal hat if they wish to do so.

10.2 Management of Hypothermia

1. Cold stress: <36.5°C but at least 36.0°C:

- Improve environmental factors:
  - Use skin to skin contact
  - Ensure baby is wearing a hat and is covered with (warm) dry towels/blankets
  - Optimise the environmental temperature
  - Provide feeding support.
- Re-check temperature in 1 hour:
  - If temp persisting <36.5°C: proceed as 'hypothermia' under 2 immediately
  - If baby is at home following a home birth, discuss with the on call paediatrician to arrange appropriate place of admission and arrange transfer

Transfer to the postnatal ward should not be delayed as the environmental temperature may actually be higher there (consider optimum transfer alternatives to maintain warmth, see above advice).

2. Hypothermia: below 36.0°C or <36.5°C but at least 36.0°C persisting despite improved environmental factors as above:

- Inform the Neonatologist on duty
- Increase care bundle to RED (document, place RED sticker in notes and change hat)
- Check blood glucose and commence hypoglycaemia protocol
- Place the baby on a Kanmed heater in the cot and ensure:
  - The temperature is set at **37°C**
  - The baby is:
    - wearing well-fitting clothing and a hat
    - Is covered with a thermal/woollen blanket
- Recheck the temperature in 1 hour:
  - if < **36°C** inform the neonatologist
  - If ≥36°C recheck the temperature 2 hourly with NEWTT2
- After 6 hours of stable temperature (≥36.5°C) reduce the Kanmed bed temperature.
- Reduce by **0.5°C** and continue to recheck the baby's temperature 2 hourly. Do not reduce the Kanmed bed temperature below **36°C**
- If the temperature remains stable (≥36.5°C) on 2 consecutive measurements then care for baby in a normal cot. Keep baby dressed with a hat and covered with thermal/woollen blanket.
- Continue to monitor temperature 3 hourly for a minimum of 24 hours.

Any concerns must be discussed with a neonatologist.

11. Additional Care of Preterm / Sick / compromised Babies when poor condition at birth anticipated

- As babies in this group are more at risk of hypothermia, the temperature of the delivery room / theatre should normally be at least 25 degrees Celsius
- It is important to ensure a resuscitaire with overhead radiant heater is prepared, i.e., checked and pre-warmed if resuscitation is anticipated. Draughts must be excluded.
- Neonatal medical staff must be called to attend the birth if neonatal problems are anticipated. NICU/SCBU must be informed of anticipated problems and the need for imminent transfer.
- If the baby is born in poor condition (the Apgar score at 1 minute is 5 or less), then the time to the onset of regular respirations should be recorded and the cord double-clamped to allow paired cord blood gases to be taken.

The Apgar score should continue to be recorded in the baby notes until the baby's condition is stable.

- If admission to NICU/SCBU is anticipated the cord length left attached to the baby should be a minimum of 5 cm (2 inches).
- All babies of 32 weeks gestation and below should be transferred to NICU in occlusion wrapping, i.e., the wet body of the baby is wrapped in a plastic bag and blankets to prevent heat loss by evaporation and a hat worn**.**

12. Initial Routine Check of the baby

An initial routine check on the baby should be carried out by a midwife to identify any major physical anomalies that require neonatal referral. All babies should be examined by a midwife as soon as possible after birth and the skin to skin period.

- The check should be explained to the parents and verbal consent obtained
- Infection control measures should be followed

Examination to include:

- Overall appearance (skin colour)
- Tone / movements
- Fontanelles
- Palate: use tongue depressor and light to visualise
- Genitalia
- Extremities: check all fingers/thumbs/toes, any extra digits, webbed fingers/toes
- Spine
- Minor deviations from normal such as caput/moulding, bruises/abrasions, 'blue spot' (Dermal Melanocytosis)
- Patent anus
- Passed Meconium?

Document that the check has taken place in the baby notes.

Any suspected anomalies should be documented, including adding to the body map, and if significant reported promptly to the duty Neonatal Specialist Registrar or Consultant on call for the labour ward.

A NIPE (Newborn and Infant Physical Examination) check should be carried out within 72 hours following birth. If baby is discharged prior to a NIPE check an appointment should be made and parents made aware of this appointment prior to discharge.

13. Vitamin K

Babies are born with lower levels of Vitamin K than those found in older children and adults. This can reduce the ability of the baby's blood to clot, thereby causing bleeding (known as Haemorrhagic Disease of the Newborn). This bleeding ranges from being very minor to life-threatening. The incidence of the disease is approximately 1 in 10,000 live births.
The information and consent leaflet for Vitamin K is given to all women at the booking appointment following discussion. Confirm the parents consent to Vitamin K, give as protocol and document in the baby notes.

14. Hypoglycaemia

Some babies are born with insufficient alternative energy stores or are not able to access those they do have. These babies are in a high risk group and require early and regular feeding. These babies cannot be relied upon to feed responsively, so a proactive approach

is needed to ensure they receive enough breast milk. It should not be assumed that only breastfed babies are at risk. Click here for full guidelines: hypoglycaemia in the newborn

15. Group B Haemolytic Streptococcus

See reverse of NEWTT chart (Appendix A) for guidance on NEWTT observation

16. Babies born to mothers known to misuse substances (including alcohol) in pregnancy

See reverse of NEWTT chart (Appendix A) for guidance on NEWTT observation
Click here for full guidelines for Neonatal Abstinence Syndrome

17. Monitoring Compliance and Effectiveness

Monitoring requirement	Adherence to NEWTT2 observations: identification of risk, escalation and management plan
Monitoring method	Retrospective case note review or as part of QI project
Report prepared by	Named individual undertaking audit
Monitoring report sent to:	Maternity Development Committee
Frequency of report	Within 6 month of implementation

18. References

NICE CG190; Intrapartum Care for healthy women and babies; 03 Dec 2014; last updated 21 Feb 2017. National Institute of Clinical Excellence

British Association of Perinatal Medicine (BAPM). Newborn Early Warning Trigger & Track (NEWTT2) – a Framework for Practice

British Association of Perinatal Medicine (BAPM). Indentification and Management of Neonatal Hypoglycaemia in the Full Term Infant – a Framework for Practice. April 2017

The Prevention, Assessment and Management of in-Hospital newborn Falls and Drops. A Framework for Practice for Consultation - Consultation period 22 Jan - 4 March 2020

Risk assessment at birth

Newborn Risk assessment to identify risk factors		NEWT	Glucose	EONI	Placenta
For babies with the below risk factors NEWTT observations are required one and two hours following birth, then every two hours until baby is 12 hours old. If hypoglycaemia protocol is continued after 12 hours: to complete full NEWTT observations at every blood glucose measurement. Placenta for histopathology (full criteria in labour notes): S (sent) or F (in fridge) Early Onset Neonatal Infection (EONI): any red flag 🚩 OR 2 or more non-red-flag 🚩 risk factors or clinical indicators during NEWTT observations: for immediate neonatal review / investigations / start of antibiotic treatment (see NEWTT2 chart)					
List is NOT exhaustive NOR intended to replace competent clinical judgement Tick white boxes (I/A) and refer to observations/examinations to be initiated					
GBS	HVS in current pregnancy and NO adequate antibiotics in labour: <4 hours prior to birth)				
	HVS in current pregnancy WITH adequate antibiotics in labour (≥4 hours prior to birth):	*		🚩	
	MSU in current pregnancy (regardless of antibiotics during labour)				
	Previously affected baby with Group B Strep				
Prolonged Ruptured Membranes	>24 hours before onset of labour at term			🚩	
	>18 hours before a preterm birth				
Maternal temperature	≥38.0°C in labour: placenta if strong suspicion of chorioamnionitis; EONI if there is suspected/confirmed bacterial infection or confirmed chorioamnionitis			🚩	
Multiple pregnancy	Suspected or confirmed infection in other multiple pregnancy baby			🚩	
Meconium Aspiration	Significant meconium				
	Non-significant meconium but requiring intervention at birth				
	Non-significant in good condition at birth (*observations may be discontinued if stable	*			
Perinatal Asphyxia	Arterial cord gasses: pH ≤7.1 or Base Deficit ≤-12.0				
	Apgar score ≤7 @5 minutes				
	IPPV ≥5 minutes				
Preterm	<37 weeks gestational age (EONI following spontaneous labour only)			🚩	
Fetal growth restriction	Birth weight <3rd centile on Intergrowth21st				
	Birth weight <10th centile on Intergrowth21st with evidence of placental dysfunction: abnormal Uterine Artery Doppler and/or abnormal Umbilical Artery Doppler (absent or reversed end diastolic flow or Pulsatility Index >95th centile)				
Maternal Diabetes	For all types of Diabetes including Gestational Diabetes				
Maternal hypertension	Beta-blockers in pregnancy after 28 weeks				
Hypothermia not environmental related	Temperature <36.0°C on one occasion or ≥36.0°C but <36.5°C on two consecutive occasions				
↑ **lactate**	**>4** (cord/neonatal blood); if >8 for Neonatal team assessment and care plan				
Other risk factors identified with specific care plans: tick plan identified					√
Baby requiring I.V. antibiotics	NEWTT observations as standard until baby is 12 hours old, then 4-hourly until 48 hours of age, then 8-hourly until treatment completed. Hypoglycaemia protocol per consultant decision only as may not be indicated (e.g. ↑CRP with NO clinical signs of infection)				
Neonatal Abstinence	NEWTT at 1 hour following birth, then 4-hourly until paediatric discharge				
Maternal h/o hyperthyroidism	Contact neonatal team. NEWTT at 1 and 6 hours following birth, then 6-hourly until baby is at least 24 hours old. NOTE: woman may currently be hypothyroid or euthyroid following treatment so always check history, usually Grave's disease				
Completed by:	Name: Signature:	☐ no risk			

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NEWTT2 chart

University Hospitals Derby and Burton NHS Foundation Trust				NEWTT2	
Name:	Date of birth:			NHS number:	
How to use the Newborn Trigger and Track tool to determine the level and timelines of escalation					
Calculate and document the total NEWTT2 score for a set of observations by adding together the individual scores (0-2) for every individual observation entered in a single column of the chart					
Check the total against NEWTT2 escalation tool and follow instructions in the escalation table for that set of observations					
Healthcare professional concern can initiate a neonatal review at any time regardless of the zone colour of an observation of total score					
For a score of zero continue routine care					
Thresholds and Triggers					
	Score 1	**Score 2-3**	**Score 4-5**	**Score ≥6**	**Any critical observation**
	Inform shift leader—consider SpO_2 ± blood glucose if not done already				
Primary Escalation & Response	Repeat observations in <1 hour	Refer to paediatric / neonatal Tier 1 doctor / ANNP	Refer to paediatric / neonatal Tier 1 doctor / ANNP	Refer to paediatric / neonatal doctor / ANNP tier 1 and inform tier 2	Refer to paediatric / neonatal Tier 1 AND Tier 2 doctor / ANNP
Review timings	Escalate as for score 2-3 if repeat score remains 1	Request a review within 1 hour	Request a review within 15 minutes	Request immediate review	Immediate review (consider neonatal emergency 2222)
Take steps to avoid any obvious concerns					
Secondary contact	If no review within expected time frame, escalate to Tier 2 doctor / ANNP and inform shift leader. If still no response within required time frame, escalate to consultant			**If no review within expected time frame, escalate to consultant and shift leader**	
When the primary team member(s) contacted is unable to attend or fails to attend within the expected time for the level of clinical concern, escalation to the secondary contact is required. The secondary contact would be expected to attend within the initial review timing, calculated from the documented time of primary escalation					

Early Onset Neonatal Infection (EONI)

Red flag risk factors	**Red flag clinical indicators**
• Suspected or confirmed infection in another baby in case of a multiple pregnancy	• Apnoea (temporary stopping of breathing); seizures; need for cardiopulmonary resuscitation; need for mechanical ventilation; signs of shock
Non-red flag / other risk factors	**Non-red flag / other clinical indicators (purple for doctors remit)**
• Invasive GBS infection in previous baby; maternal GBS colonisation/bacteriuria/infection in current pregnancy • Preterm birth following spontaneous labour <37 weeks' gestation • Confirmed ruptured membranes for >18 hours before a preterm birth • Confirmed prelabour rupture of membranes at term for more than 24 hours before onset of labour • Intrapartum fever higher than 38°C if there is suspected or confirmed bacterial infection • Clinical diagnosis of chorioamnionitis	• Altered behaviour or responsiveness • Altered muscle tone (for example floppiness) • Feeding difficulties (for example, feed refusal) • Feed intolerance, including vomiting, excessive gastric aspirates and abdominal distension • Abnormal heart rate (bradycardia or tachycardia) • Signs of respiratory distress (including grunting, recession, tachypnoea) • Hypoxia (for example, central cyanosis / reduced O_2 sats) • Jaundice within 24 hours of birth • Temperature abnormality (<36°C or >38°C) unexplained by environment • Persistent pulmonary hypertension of newborns • Signs of neonatal encephalopathy • Unexplained excessive bleeding; thrombocytopaenia; abnormal coagulation
In infants with any red flag or with 2 or more "non-red flag" risk factors or clinical indicators: • NEWTT score <2: escalate for review and investigations within 30 minutes • NEWTT score ≥2: escalate for immediate review to senior paediatrician (ST4/ANNP)	

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NEWTT2 score 1 2 3	A score for each vital sign is required at each entry													
ANY critical (PURPLE) observation—immediate escalation. Consider 2222														
Reason for Observations			Signed				Print name & GMC/NMC No.							
Frequency and duration														
Date:														
Time:														
Temperature °C	39.0							2							39.0
								2							
	38.0							2							38.0
								1							
	37.0							0							37.0
								0							
	36.0							1							36.0
								2							
								2							
Temperature alert: Implement thermal control measures and re-check within 1 hour														
Respirations Breaths/min	80							2							80
								1							
	70							1							70
								1							
	60							1							60
	50							0							50
	40														40
	30							1							30
	20							2							20
Grunting present?								1							
Heart rate Beats/min	180							2							180
								2							
	170							1							170
								1							
	160							1							160
	150							0							150
	140														140
	130							0							130
	120														120
	110														110
	100							1							100
	90							1							90
								1							
	80							1							80
								2							
	60							2							60
Colour	SpO_2 <90% / very pale/ blue														
	SpO_2 90-94%							1							
	SpO_2 ≥95% (or pink/normal)							0							
Neuro	Unrousable/Floppy/?Seizure														
	Jittery / Irritable / Poor tone							1							
	Responsive / Good tone							0							
Feeds	Not feeding							2							
	Feeding reluctantly							1							
	Feeding well							0							
Carer	High parental concern							2							
	Some parental concern							1							
	No parental concern							0							
Glucose	< 1.0 mmol/l														
	1.0-1.9 mmol/l							2							
	2.0-2.5 mmol/l							1							
	≥ 2.6 mmol/l							0							
Glucose when measured -should be considered if baby feeding reluctantly/poorly/observations suggest unwell														
NEWTT2 total														TOTAL
Monitoring frequency														Frequency
Escalation of care YES / NO														Escalation
Initials														Initials
NEWTTv2 2023	Refer to front page for thresholds and triggers													Page 2 of 2

NEWTT2 escalation sticker

NEWTT2 Escalation Record

Date: ___/___/____ Time: ____:___**NEWTT2 score** ____

[ ] Score 1-3 (Request Tier 1 review within 1 hour)

[ ] **Score 4-5** (request Tier 1 review within 15 minutes)

[ ] **Score ≥ 6** (request Tier 1 review immediately and inform Tier 2)

Consider a **2222** call if there are any **critical observations for Tier 1 AND Tier 2 review**

[ ] Shift Leader Informed [ ] SBAR referral to Paediatric/Neonatal team

S:

B:

A:

R: I have already done_____

Agreed action _____ & review within_____

Referral Accepted by: [ ] Tier 1 Doctor/ANNP [ ] Tier 2 Doctor/ANNP

Referrer Name: _____ Signature: _____

Grade :_____ NMC: _____

Intergrowth birth weight centile lines

	Intergrowth - Boy		Intergrowth - Girl	
	3rd	10th	3rd	10th
35	1700	1950	1710	1920
35+1	1740	1990	1740	1960
35+2	1770	2020	1770	1990
35+3	1800	2050	1800	2020
35+4	1830	2090	1830	2050
35+5	1870	2120	1860	2080
35+6	1900	2150	1890	2110
36	1930	2180	1920	2140
36+1	1960	2210	1950	2170
36+2	1990	2240	1980	2200
36+3	2020	2270	2000	2230
36+4	2050	2300	2030	2250
36+5	2080	2330	2060	2280
36+6	2110	2360	2080	2310
37	**2130**	**2380**	**2110**	**2330**
37+1	2160	2410	2140	2360
37+2	2190	2440	2160	2380
37+3	2220	2470	2180	2410
37+4	2240	2490	2210	2430
37+5	2270	2520	2230	2460
37+6	2290	2540	2250	2480
38	**2320**	**2570**	**2280**	**2500**
38+1	2340	2590	2300	2530
38+2	2370	2620	2320	2550
38+3	2390	2640	2340	2570
38+4	2420	2670	2360	2590
38+5	2440	2690	2380	2610
38+6	2460	2710	2400	2630
39	**2490**	**2730**	**2420**	**2650**

39+1	2510	2760	2440	2670
39+2	2530	2780	2460	2690
39+3	2550	2800	2480	2710
39+4	2570	2820	2500	2730
39+5	2590	2840	2510	2740
39+6	2610	2860	2530	2760
40	**2630**	**2880**	**2550**	**2780**
40+1	2650	2900	2560	2800
40+2	2670	2920	2580	2810
40+3	2690	2940	2600	2830
40+4	2710	2960	2610	2840
40+5	2730	2980	2630	2860
40+6	2750	2990	2640	2870
41	**2760**	**3010**	**2650**	**2890**
41+1	2780	3030	2670	2900
41+2	2800	3050	2680	2910
41+3	2820	3060	2690	2930
41+4	2830	3080	2710	2940
41+5	2850	3090	2720	2950
41+6	2860	3110	2730	2960
42	**2880**	**3120**	**2740**	**2980**

Following birth:

- Aim to keep baby warm (consider environmental factors such as draught), encourage skin to skin contact and early feeding (within 60 minutes from birth)
- Check baby's temperature and consider risk factors as per NEWTT2
- Initiate Newborn Thermal Care Safety Bundle, discuss with parents and offer to put a hat on baby in the colour matching the care bundle

Green hat care bundle No risk factors and meeting all the following criteria:	**Yellow hat care bundle** Any of the following risk factors but NO red care bundle risk factors	**Red hat care bundle** Any of the following risk factors. Please note this list is not exhaustive. If in doubt, start red hat care bundle and consult neonatal team.
☐ Uncomplicated NVD ≥37 weeks ☐ Birth weight ≥10th centile or between 3rd-10th (on Intergrowth21st) but NO suspected IUGR (see NEWTT) ☐ Clear liquor ☐ <24 hours ruptured membranes prior to the onset of established labour ☐ No GBS/EONI risk factors ☐ Normal skin colour ☐ No additional observations needed ☐ Apgar score ≥7 @ 5 minutes	☐ Birth weight between 3rd-10th (on Intergrowth21st) with suspected IUGR (see NEWTT) ☐ LSCS/instrumental delivery ☐ Complications during labour (e.g. shoulder dystocia) ☐ Non-significant meconium ☐ > 24 hours ruptured membranes prior to the onset of established labour but *no* signs of infection ☐ One non-red flag EONI risk and NO red flag ☐ NEWTT observations for reasons other than red care bundle risk factors	☐ <37 weeks gestational age ☐ Birth weight ≤3rd centile (on Intergrowth21st) ☐ Mother significantly unwell at time of birth ☐ Offensive liquor, significant meconium or non-significant but requiring intervention at birth ☐ (suspected) chorioamnionitis ☐ >24 hours ruptured membranes prior to the onset of established labour *with* signs of infection ☐ GBS: in MSU in current pregnancy, previous baby affected or on HVS in current pregnancy *without* adequate prophylactic ABX (<4 hours prior to birth) ☐ Score of 2 amber or 1 red on NEWTT ☐ Blood glucose <2.0 on blood gas monitor ☐ One red flag or 2 non-red flag EONI risk factors ☐ Perinatal asphyxia: Arterial cord gasses: Ph ≤7.1 or Base Deficit ≤ -12.0, Apgar score ≤7 @ 5 min or IPPV ≥5 min ☐ Unwell baby or (suspected) maternal sepsis: follow early onset neonatal infection and escalation on NEWTT2

Plan if temperature <36.5°C:

1. Cold stress: temperature <36.5°C but at least 36°C:

☐ Improve environmental factors:
- Use skin to skin contact
- Ensure baby is wearing a hat and is covered with warm dry towels/blankets
- Optimise environmental temperature
- Provide feeding support

☐ Re-check temperature in 1 hour:
- If temperature persisting <36.5°C: increase care as per **2. Hypothermia** immediately
- If baby is at home following a home birth, discuss with the on call neonatologist to arrange appropriate place of admission and arrange transfer

2. Hypothermia: temperature <36°C *or* ≥36°C but <36.5°C persisting despite improved environmental factors:

☐ Inform the neonatologist on duty
☐ Place red hat care plan sticker in notes if currently on green or yellow
☐ Check blood glucose and commence hypoglycaemia protocol with NEWTT
☐ Place the baby on Kanmed heater in cot and ensure:
- The temperature is set at 37.0°C
- Baby is wearing well-fitting clothing and a red hat
- Baby is covered with a thermal/woollen blanket

☐ Recheck temperature in 1 hour:
- If < 36.0°C inform the neonatologist
- If ≥36.0°C recheck the temperature 2 hourly with NEWTT

☐ After 6 hours of stable temperature ≥36.5°C reduce the cot temperature by 0.5°C and continue to check baby's temperature 2 hourly. Do not reduce the Kanmed bed temperature below 36.0°C.

☐ If baby's temperature remains stable ≥36.5°C on 2 consecutive measurements continue to care for baby in a normal cot. Keep baby dressed with a hat and covered with thermal/woollen blanket.

☐ Continue to monitor baby's temperature 3 hourly for a minimum of 24 hours

Any concerns must be discussed with a neonatologist

Green hat care plan	Yellow hat care plan	Red hat care plan
☐ Observe and assess effectiveness of second or later feed	☐ Observe and assess effectiveness of two or more feeds	☐ Increase feeding support and encourage modified responsive feeding to cues ☐ Commence NEWTT observations ☐ Commence blood glucose monitoring if indicated ☐ Inform Neonatologist

Discontinuation of the care bundle when:

- ✔ Baby is feeding effectively and appears well
- ✔ Baby is maintaining temperature ≥36.5°C (check prior to discharge home or prior to leaving following home birth)
- ✔ Woman is self-caring and baby is suitable to be cared for at home
- ✔ If applicable; baby has been discharged by the neonatologist and NEWTT is discontinued

Community midwives: do not leave a home following a birth at home if baby's temperature is <36.5°C. Always measure prior to leaving.

Early discharge: always check temperature prior to transfer home. If baby's temperature is <36.5°C do not transfer home.

Thermal Care stickers

GREEN HAT CARE BUNDLE

☐ No risk factors identified ☐ Meeting all criteria for Green hat care bundle ☐ Temperature ≥ 36.0°C

GREEN HAT CARE PLAN

☐ Observe and assess effectiveness of second or later feed
☐ Take temperature prior to transfer or discharge

1. Cold stress: temperature <36.5°C but at least 36°C:

☐ Improve environmental factors:
- Use skin to skin contact
- Ensure baby is wearing a hat and is covered with warm dry towels/blankets
- Optimise environmental temperature
- Provide feeding support

☐ Re-check temperature in 1 hour:
- If temperature persisting <36.5°C: increase care as per **2. Hypothermia** immediately
- If baby is at home following a home birth, discuss with the on call neonatologist to arrange appropriate place of admission and arrange transfer

2. Hypothermia: temperature <36°C *or* ≥36°C but <36.5°C persisting despite improved environmental factors:

☐ Increase care to Red Hat Care bundle:
- Replace green coloured hat with red coloured hat
- Place Red Hat Care plan sticker in notes

☐ Inform the neonatologist on duty and continue care as outlined on Red Hat Care plan under **Hypothermia**

YELLOW HAT CARE BUNDLE

Indication:

☐ Is NEWTT chart indicated? ☐ Is Hypoglycaemia protocol indicated?

CARE PLAN

☐ Observe and assess effectiveness of two or more feeds

1. Cold stress: temperature <36.5°C but at least 36°C:

☐ Improve environmental factors:
- Use skin to skin contact
- Ensure baby is wearing a hat and is covered with warm dry towels/blankets
- Optimise environmental temperature
- Provide feeding support

☐ Re-check temperature in 1 hour:
- If temperature persisting <36.5°C: increase care as per **2. Hypothermia** immediately
- If baby is at home following a home birth, discuss with the on call neonatologist to arrange appropriate place of admission and arrange transfer

2. Hypothermia: temperature <36°C *or* ≥36°C but <36.5°C persisting despite improved environmental factors:

☐ Increase care to Red Hat Care bundle:
- Replace yellow coloured hat with red coloured hat
- Place Red Hat Care plan sticker in notes

☐ Inform the neonatologist on duty and continue care as outlined on Red Hat Care plan under **Hypothermia**

RED HAT CARE BUNDLE

Indication:

☐ NEWTT chart commenced Is Hypoglycaemia protocol indicated? YES / NO

CARE PLAN

- Inform Neonatologist
- Commence NEWTT chart, including hypoglycaemia protocol if indicated
- Attempt to support as many feeds as feasible until successful feeding established

1. Cold stress: temperature <36.5°C but at least 36°C:

- Improve environmental factors:
  a. Use skin to skin contact
  b. Ensure baby is wearing a hat and is covered with warm dry towels/blankets
  c. Optimise environmental temperature
  d. Provide feeding support
- Re-check temperature in 1 hour:
  a. If temperature persisting <36.5°C: increase care as per **2. Hypothermia** immediately
  b. If baby is at home following a home birth, discuss with the on call neonatologist to arrange appropriate place of admission and arrange transfer

2. Hypothermia: temperature <36°C *or* ≥36°C but <36.5°C persisting despite improved environmental factors:

- Inform the neonatologist on duty
- Check blood glucose and commence hypoglycaemia protocol
- Place the baby on Kanmed heater in cot and ensure:
  - The temperature is set at 37.0°C
  - Baby is wearing well-fitting clothing and a red hat
  - Baby is covered with a thermal/woollen blanket

☐ Recheck temperature in 1 hour:
  - If < 36.0°C inform the neonatologist
  - If ≥36.0°C recheck the temperature 2 hourly with NEWTT

☐ After 6 hours of stable temperature ≥36.5°C reduce the cot temperature by 0.5°C and continue to check baby's temperature 2 hourly. Do not reduce the Kanmed bed temperature below 36.0°C.

☐ If baby's temperature remains stable ≥36.5°C on 2 consecutive measurements continue to care for baby in a normal cot. Keep baby dressed with a hat and covered with thermal/woollen blanket.

☐ Continue to monitor baby's temperature 3 hourly for a minimum of 24 hours

Any concerns must be discussed with a neonatologist

Appendix G

Risk Assessment Tool for Preventing Baby Falls

University Hospitals of Derby and Burton NHS Foundation Trust

Patient ID label.

Mode of delivery		**Conscious level**	
Normal Vaginal	0	Alert	0
Instrumental	2	Drowsy	2
Caesarean Section	4	Unresponsive	4
Mobility		**Additional factors**	
Independent	0		
Restricted	2	Medical history eg diabetes,	
Immobile	4	epilepsy, physical disability	2
Pain relief in labour		Hb 9.5g/dl or less	2
Nil	0	BMI 40 or more	2
Entonox	1	Language barrier	2
Opiates in last 12h	2		
Spinal or GA	4	Known substance	2
Other	1-4	abuse/methadone use	
(specify)		Sedative medications	2

Patient Risk level

The higher the total score the higher the risk of an infant fall
Provide appropriate surveillance for level of risk
Reassess level of risk where circumstances change
Ensure awareness of level of risk by providing information for parents

Date and time	Score	Risk	Additional comments	Staff Signature

Use of Tool and Information for Staff

Prevention of Baby Falls

Complete risk assessment tool for preventing baby falls following delivery and on admission to the ward. This risk assessment can be completed by msw's, nursing and midwifery staff.

Reassess level of risk where circumstances change e.g. admission to HDU following altered state of consciousness. Mobility returns

Ensure provision of an appropriate level of supervision for the level of risk and time of day e.g. curtains open lights on.

Low risk 0-7 - Safe sleep conversation, advise partners to support with cot transfers and ensuring baby is in a safe place when mothers and birthing people are fatigued. Ensure equipment e.g. buzzers are in easy reach. A daily reminder at postnatal checks.

Moderate risk 8-12 - consider all of the above and consider curtains open, lights on, clear clutter free environment.

High risk 12 or more-document assessment 4 hourly until risk is reduced.

Communicate assessment risk between caregivers, ensure level of risk is communicated with parents and caregivers.

Documentation Control

Version: **UHDB version 2.1**		**Status: FINAL**	**Reference Number:** UHDB/Neonate/07:23/N5
Version	Date	Author	Reason
1	Sept 2003		
2	Dec 2009	Dr J McIntyre Cons Neonatologist R. Mclean Infant Feeding Advisor G Taylor - CNST Midwife	Incorporating Routine Check of the Newborn E2 Care of the Newborn inc Hypothermia H6
3	Nov 2011	Dr J McIntyre Cons Neonatologist R. Mclean Infant Feeding Advisor	Review
4 Replacement of neonatal observation chart with NEWS chart Oct 2013		Dr Gitika Joshi	To reflect the standardisation of neonatal observations
5	SEP 2016	C Meijer - Guidelines and Audit RM K. Payne - Specialist RM Guidelines Group	Review, implementation of Thermal Care Safety Bundle
5.1 5.2	April 2018	C Meijer - Guidelines and Audit RM	Update to the Thermal Care Safety Bundle On June 27th centiles added to appendices
5.3	Dec 2018	C Meijer - Guidelines and Audit RM	Update to the NEWTT chart (Appendix A)
5.4	Feb 2020	C Meijer - Guidelines and Audit RM	Amendment to page 6 section 9 as per action plan
UHDB 1	Oct 2020	C Meijer - Guidelines and Audit RM, Maternity Guidelines Group	Review and merge of clinical practice on all sites. Paediatric hypoglycaemia guideline incorporated
UHDB2	April 2023	C Meijer - Lead midwife guidelines, audit and digital	Review in line with NEWTT2 and NICE early onset Neonatal Infection
2.1	April 2024	Dr S Ojha -Consultant Neonatologist Hayley Butler -Deputy HOM Jenny Lovelace - Postnatal & Antenatal Ward Manager	Clarification surrounding respiratory distress Addition of Risk Assessment for preventing Baby Falls
Intended Recipients: All staff caring for the newborn infant			
Training and Dissemination: Cascaded through lead midwives/doctors; Published on Intranet, NHS.net circulation list; posters and stickers introduced early; Training sessions			
To be read in conjunction with: Management of the neonate with meconium stained liquor in all care settings. **(R2)** **Early onset neonatal infection** Management of the infant born to the drug using mother (**S7**), Hypoglycaemia in the newborn (**H7**).			
Consultation with:		Neonatology BAPM consultant	
Business Unit sign off:		02/05/2023: Maternity Guidelines Group:– Miss S Rajendran - Chair 09/04/2024: V2.1 Maternity Guidelines Group: - Miss A Josji - Chair 19/06/2023: Maternity Governance Group - Mr R Deveraj 11/04/2024: V2.1 Maternity Governance Group - Mr R Deveraj	
Notification Overview sent to TIER 3			

Divisional Quality Governance Operations & Performance: 20/06/2023 V2.1: 16/04/2024	
Implementation Date:	05/09/2023 V2.1: 18 /04 /2024
Review Date:	July 2026
Key Contact:	Joanna Harrison-Engwell