

MATERNITY GUIDELINES

The Thermal Care Bundle – Prevention of hypothermia in the neonate

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1. Introduction

The likelihood of the newborn developing hypothermia is linked to the temperature of the environment during delivery, and the postnatal period.

Hypothermia of the newborn occurs throughout the world and in all climates and is surprisingly common. Neonates lose most of their heat from their head, especially if they are premature, have low birth weights, a low Apgar score or are delivered by LSCS. This can lead to poor feeding and increased weight loss and can contribute to neonatal mortality and morbidity.

A newborn baby has limited ability to protect itself against heat loss and without external support they lose heat which causes a drop in their body temperature.
The thermal care safety bundle aims to prevent avoidable hypothermia and admissions to TCW/NICU.

2. At Birth

- The room temperature (including obstetric theatre recovery) should be $\geq 25^{\circ}\text{C}$ and efforts must be made to exclude draughts (close windows and doors / turn off fan).
- Where baby is placed on a resuscitaire, make sure it has warmed up and use warm towels.
- Adopt the 'HOBNOB' approach (**H**at **O**n **B**aby **N**aked **O**n **B**ody). The baby should (wherever possible) be delivered onto the mother's abdomen promoting skin to skin contact and covered in pre-warmed towels to prevent heat loss by evaporation.
- Aim for delayed cord clamping (see labour guideline)
- Dry the baby immediately
- Observe baby for onset of respiration and assess heart rate at birth.
- The Apgar score is assessed at 1 and 5 minutes of age and recorded in the Baby Notes and the intrapartum notes. Any resuscitation measures must be documented in the baby's buff notes on the Maternal and Baby Information document.
- Inform parents of the **thermal care bundle** with the coloured hats and give them a leaflet. Provide an appropriately coloured hat to identify the care pathway and place the hat on baby with parental consent
- Whilst in skin to skin contact secure two identification bands as per guideline
- Offer initiation of breastfeeding or artificial feeding whilst maintaining skin to skin contact
- Allow parents time alone with their newborn baby

Initiate the **thermal care bundle** shortly after birth by establishing the appropriate colour hat based on initial assessment and complete documentation (use sticker if available). Please note that a change in colour of a baby's hat can be considered at any time when risk factors are identified, as it is an ongoing process. **There is no need to 'step down' to a green hat prior to removal and discontinuation of the care bundle.**

Once criteria are met to remove the coloured hat, advise parents on thermoregulation and management 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
- Keep mother and baby together in the early postnatal stages
- Provide advice on appropriate clothing outdoors and on transport home: babies are encouraged to have an additional layer of clothes to the parents.

Document your conclusions in the baby's notes using pre-printed stickers (if available) and allow parents to replace the coloured hat with a warm personal hat if they wish to do so.

3. 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.
- The neonatal team including Neonatal Tier 1 & 2 and NICU nursing staff must be called to attend the birth if neonatal problems are anticipated. NICU sister 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 stabilised.

- If admission to NICU is anticipated the cord length should be about 2 inches.
- All babies of 30 weeks gestation and below should be transferred to NICU in occlusive 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.

4. Management of Hypothermia

Definitions:

Hyperthermia: >37.5 °C

Hypothermia: <36.5 °C (axillary, aim for ≥36.7°C)

Aim for a maintained minimum temperature of at least 36.5°C (preferably ≥36.7°C) but <37.5°C

Although hypothermia is described as a baby with an axillary temperature < 36.5°C it is anticipated that a baby will not automatically be transferred to NICU. Refer to hypoglycaemia policy and:

If between 36.0 and 36.5 (cold stress):

- Inform senior midwife/neonatal tier 1 (bleep 0423).
- Use skin to skin contact with the mother, ensure that baby is wearing a hat and is covered with warm towels/blankets. Increase the environmental temperature and provide feeding support. Transfer to Argyll ward/TCW should not be delayed as the environmental temperature may actually be higher on the ward (consider optimum transfer alternatives to maintain warmth, see above advice).

Re-check temperature in 30 minutes.

1. If there is no improvement or there is deterioration: inform the Neonatal Tier 1 (bleep 0423)/Tier 2 and continue in the same manner as for a baby with a temp below 36.0°C.
2. If the baby is at home then the baby will need to be transferred in to UHP and this should be discussed with the Neonatal Tier 2 carrying the post-natal bleep (0421) to arrange an appropriate place of admission.

If below 36.0°C or not responding to skin to skin care:

- Inform the Neonatal Tier 1 (bleep 0423).
- Place the baby on a Kanmed/heated mattress in the cot (e.g. trans warmer)
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 30 minutes, if < 36°C inform Neonatal Tier 1
 - If >36°C recheck the temperature hourly until >36.5°C then after 6 hours of stable temperature consider reducing the Kanmed/trans warmer temperature. Reduce by 0.5°C and continue to recheck the baby's temperature 3 hourly. Do not reduce the Kanmed/trans warmer temperature below 36°C
- If the temperature remains stable for a further 6 hours 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 until 24 hours of age.

Any concerns must be discussed with a neonatologist.

Thermal Care Bundle to help avoid preventable admissions to NICU			
Home birth	Green hat care bundle	Yellow hat care bundle	Red hat care bundle
	<ul style="list-style-type: none"> o ≥37 weeks o >2nd centile 	<ul style="list-style-type: none"> o ≥37 weeks <i>plus</i> any of the following o On the 2nd centile 	<ul style="list-style-type: none"> o <37 weeks o <2nd centile
<ul style="list-style-type: none"> o ≥37 weeks o No sign of SGA o No complications during labour o Clear liquor o No GBS/Sepsis risk factors o Normal skin colour o Apgar score ≥7 @ 5 minutes 	<ul style="list-style-type: none"> o NVD o No complications during labour o Clear/meconium liquor <i>not</i> requiring resus o <18 hours ruptured membranes prior to the onset of established labour o No GBS/Sepsis risk factors o Normal skin colour o Temperature ≥36.5°C o No additional observations needed o Apgar score ≥7 @ 5 minutes 	<ul style="list-style-type: none"> o LSCS/instrumental o Complications during labour (e.g. shoulder dystocia) o Meconium liquor <i>with</i> resus required o >18 hours ruptured membranes prior to the onset of established labour but <i>no</i> signs of infection o GBS <i>with</i> adequate prophylactic ABX o Temp <36.5°C o Additional observations needed e.g.: <ul style="list-style-type: none"> • Kaiser/NEWTT/NAS • Hypoglycaemia • Other (as clinically indicated) 	<ul style="list-style-type: none"> o Mother significantly unwell at time of birth o Offensive liquor o Meconium aspiration o >18 hours ruptured membranes prior to the onset of established labour <i>with</i> signs of infection o GBS without adequate prophylactic ABX or colonisation o Temp <36.0°C o Score of 2 amber or 1 red on NEWTT o Glucose <2.0 o Early (suspected) neonatal (GBS) infection o Baby on IV ABX o Apgar score <7 @ 5 minutes o Unwell baby - above list is NOT exhaustive and if in doubt, start red care bundle and inform neonatologist
PLAN OF CARE			
<p>Follow birth check temperature and encourage:</p> <ul style="list-style-type: none"> o Hat on o Skin to skin contact o Early feeding <p>If temp <36.5°C:</p> <ul style="list-style-type: none"> o Attempt to warm baby with warm blanket/towel and consider improvement of environmental factors (draft etc.) o Recheck after 1 hour, if still <36.5°C to contact neonatologist and consider transfer in 	<ul style="list-style-type: none"> o Observe and assess effectiveness of second or later feed o Take temperature prior to transfer or discharge and/or 6 hours of age <p>If temp <36.5°C move to yellow pathway</p> <p>Continue to assess wellbeing and commence yellow or red care bundle if risk factors identified</p>	<ul style="list-style-type: none"> o Observe and assess effectiveness of two or more feeds o Check temperature on transfer to ward, on arrival to ward and at 6 hours of age <p>If temp <36.5°C</p> <ul style="list-style-type: none"> o Inform Neonatal T1/ANNP/Senior MW o Attempt to warm baby: skin to skin with warm blanket/towel and feeding o Recheck after 30 minutes o If after 30 minutes <i>no</i> improvement: <ul style="list-style-type: none"> • Change to red hat care bundle • Inform Neonatal T1 /ANNP and consider transfer to TCW/NICU <p>Initiate hypoglycaemia protocol as per guideline</p>	<ul style="list-style-type: none"> o Inform Neonatal Tier 1/ANNP for review o Attempt to support as many feeds as feasible until successful feeding established o Check temperature on transfer to ward, on arrival to ward and at 6 hours of age <p>If temp <36.5°C:</p> <p>Inform Neonatal Tier 1/ANNP</p> <ul style="list-style-type: none"> o Place the baby skin to skin/ on Kanmed/trans heater in cot o Recheck after 30 minutes o If after 30 minutes <i>no</i> improvement: <ul style="list-style-type: none"> • Request review and consider TCW/NICU admission • Initiate hypoglycaemia protocol <p>Once stable without Kanmed/trans heater, to monitor temp 3 hourly until 24 hours old.</p>
DISCONTINUATION OF CARE BUNDLE			
<p>Recheck temperature prior to leaving home. Do not leave if temp <36.5°C!</p> <p>Please discuss thermoregulation with parents including environment/bedding to support baby to maintain a good temperature.</p> <p>Remove hat or replace with their own.</p>	<p>Review after 6 hours. If feeding and temp ≥36.5, please discuss thermoregulation with parents and remove coloured hat or replace with their own.</p>	<p>When all criteria above are met, please document in notes, discuss thermoregulation with parents and remove coloured hat (or replace with their own)</p> <ul style="list-style-type: none"> o Baby feeding effectively o Baby maintaining temperature ≥36.5°C o Woman is self-caring o Transfer home considered <p>If applicable:</p> <ul style="list-style-type: none"> o Observations are signed on NEWTT chart, discontinued and reason discontinued documented in notes i.e. 24 hours NEWTT observations completed and within normal ranges o Discharged by Neonatal medical / ANNP team 	

Appendix 1. Thermal Care Bundle Assessment Chart

Monitoring and Audit

Auditable standards:

All neonates have a documented thermal care assessment
 A correct thermal care assessment has been made for every neonate
 Correct escalation procedures have been followed where a hypothermic baby has been identified

Reports to:

Maternity Assurance Group – responsible for action plan and implementation of recommendations from audit

Frequency of audit: Annual

Responsible person: Clinical Governance & Risk Management Committee

Cross references

Maternity Hand Held Notes, Hospital Records and Record Keeping:
<http://staffnet.plymouth.nhs.uk/Portals/1/Documents/Clinical%20Guidelines/Maternity/Maternity%20hand%20held%20notes%20and%20hospital%20records.pdf?timestamp=1538986494694>

References

Temperature reference NLS Resuscitation council

<https://www.resus.org.uk/library/2015-resuscitation-guidelines/resuscitation-and-support-transition-babies-birth#:~:text=Unless%20you%20have%20decided%20to,measuring%20temperature%20during%20the%20resuscitation.>

Author	Sarah Saxby, Audit and Guideline Midwife	
Work Address	Maternity Unit, Derriford Hospital, Plymouth, Devon, PL6 8DH	
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