

Guideline on the use of Kanmed Baby Warmer

Ideally babies should be born into an environment (created by any method) that is warm enough to maintain the normal body temperature thereby minimizing oxygen consumption and calorie expenditure (Soll 2008), in other words a thermo neutral environment.

As a result of their small size compared to large surface area, babies can get cold very quickly. A small wet baby rapidly loses heat. In the first 10-20 minutes a newborn not kept warm may lose enough heat to drop its temp by 2-4°C (even further in the following hours). Cold stress and hypothermia may have serious metabolic consequences for all newborns. Hypothermia results in a variety of physiological stresses which include; increased oxygen consumption, metabolic acidosis, hypoglycaemia, decreased cardiac output, increased peripheral vascular resistance and respiratory distress. Non-shivering thermogenesis is the main mechanism of heat production in neonates but this has a large caloric demand on the baby, which could lead to hypoglycaemia in cold babies (Soll 2008, Waldron & McKinnon 2008).

Babies have already undergone the stress of labour and therefore preparation for their birth and the immediate attention to prevent heat loss is vital (SMMDP 2011). The room should be warm; the baby dried thoroughly including the head and placed skin to skin with mum, or if skin to skin not possible wrapped in pre warmed blankets. The temperature should be checked within 1 hour of birth (WHO 1997).

Clothe baby in a vest, baby-grow, cardigan and apply 2-3 double folded blankets. This amount of clothing would provide about 4.6 Tog insulation sufficient for air temperature 20-22°C. The addition of extra bedding will add an extra 0.1 Tog per layer of blanket patterns.

A hat may reduce heat loss in the first 2 hours after birth; however it is important to remove the hat once the temperature has reached normal range.

If temperature lower than 36.5

Term babies who have a temperature below 36.6 should be nursed skin to skin with their mother as long as the mother is warm, there is nothing between the skin of the baby and the skin of the mother and they are both dry. They are covered with 2 pre warmed blankets.

If skin to skin is not possible or mother is cold,

- Temp 36.4 – 36.5 °C → extra blanket may suffice, and recheck temp in 1 hour.
- Temp 36.3 °C or less → nurse in a hot cot set at 37°C (There should be only one layer of clothing between the hot cot mattress and baby, place 2 blankets over baby and tuck under mattress).

TO USE THE HEATED MATTRESS

1. Place the mattress into the cot on top of the cot mattress with the white circular air vents facing down with cable at the foot end of the cot.
2. Secure the control unit to the metal edge of the cot frame
3. Switch on mattress

To switch on the heated mattress press the green on/off button at the right hand side.

A system check will be carried out and an alarm will sound when complete.

The pre set temperature of 37 °C should appear on screen. The mattress will take around 5 minutes to heat up. While heating up the arrows on either side of the temp display will flash upwards.

When the temperature has been reached the arrows will flash inwards towards the temperature displayed.

If you need to adjust the temperature, it is done by pressing the up or down arrows on the left had side of the control unit.

Please not that there is no locking mechanism on these arrows, therefore it is easy for anyone to accidentally adjust the temperature, so it is important to check this temperature each time you assess the baby and record the mattress temperature on the observation chart as well as the baby's temperature.

Before using the hot cot please check that

- There is only one sheet between the mattress and the baby.
- The baby has only one layer of clothing between its body and the mattress.
- There is no need for a hat if over 2 hrs old.
- The baby is placed on its back.
- There are two double blankets over the baby to the level of the neck and tucked in around the mattress (not sitting on top of the baby or wrapped completely around the baby)

Ongoing observations

Recheck the temperature in hour.

If temperature is rising but not yet at 36.8 leave the baby and recheck in 1 hr.

Once maintaining temperature 36.8-37 for 2 hours in the hot cot

- Put on a vest, baby grow, and cardigan (all pre warmed), cover with at least 2 double blankets tucked in.
- Recheck temp in one hour from taking out of hot cot.
- If temperature maintained and feeding well then recheck in 4 hours

A normal term baby should be able to maintain their temperature 36.6 and above in an open cot for 4 hrs after removal from a hot cot before it can be allowed home.

Keypoints

1. Early feed should be given (WHO 1997)
2. If temperature not rising after one hour in the hot cot (but not falling) re check in 1 hour and if still not rising then transfer into a portable incubator.
3. If temperature falling whilst in hot cot (used appropriately) then transfer to portable incubator

4. If temperature is less than 35.8 or not rising in the hot cot → nurse in portable incubator. A Portable incubator set at the appropriate temperature should be used, this temperature would be determined by the weight of the baby as follows:

For weight	
2000-2500g	set incubator temp to 34°C
>2500	set incubator temp to 33°C

Keypoints

Remove all clothing except nappy and vest –recheck temp in 1 hr and hourly thereafter until temperature reaches 36.8.

If baby sweating then reduce incubator temp or consider putting in hot cot instead. Note: if a baby is sweating it will be cooling itself down and will not heat up.

Once the temperature has reached 36.8°C

- Put on a vest, baby grow, and cardigan (all pre warmed), move into open cot and cover with at least 2 pre warmed double blankets tucked in.
- Recheck temp in one hour from taking out of portable incubator.
- If temperature maintained and feeding well then recheck in 4 hrs

NOTE: Should baby's temperature does not come up to or above 36.6 in 4 hrs despite the above measures then please ask for medical review.

If there are any other signs of cold stress i.e. pale, lethargic, poor feeding, tachypnoeic (Waldron & McKinnon 2008), then please contact medical staff.

Consider other causes of hypothermia i.e. infection.

References

Department of Reproductive Health and Research (RHR), World Health Organization (1997) *Thermal Protection of the Newborn: A Practical Guide (WHO/RHT/MSM/97.2)*. World Health Organization: Geneva, 1997.

Hackman P, S. (2001) Recognizing and understanding the cold-stressed term infant. Neonatal Network. Vol 20 pp. 35–41.

McCall EM, Alderdice FA, Halliday HL, Jenkins JG, Vohra S (2005) Interventions to prevent hypothermia at birth in preterm and/or low birthweight babies. *Cochrane Database Syst Rev*, Issue 1.

NICE (2010) Routine postnatal care of women and their babies. Guideline 37.

SMMDP (2011) Scottish Neonatal Resuscitation Course Manual

Soll, R, F. (2008) Heat loss prevention in neonates. *Journal of Perinatology* Vol. **28**, S57–S59;

Waldron, S, MacKinnon, R. (2008) Neonatal Thermoregulation. *Infant* Vol. 3 (3) pp 1001-1004.

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