

CLINICAL UPDATE

20th December 2021

Thermoregulation of the Newborn and use of the TransWarmer® Mattress

Thermoregulation of the Newborn

Hypothermia is an independent predictor of increased mortality and morbidity, which is particularly pertinent for infants born out of hospital. Their small size and relatively large surface area make them susceptible to hypothermia, especially if they remain wet and in a cool environment ¹. It can be particularly challenging for us to maintain a normal temperature within the pre-hospital and DSA settings.

For every minute that passes where a newborn is exposed, their core temperature can drop by approximately 0.1°C - 0.3°C.² and for every degree drop in core body temperature, the risk of **mortality (susceptible to death) increases by 28%**³. It is therefore essential that we as pre-hospital clinicians are vigilant and take necessary actions to reduce the risk of hypothermia, particularly in this patient group.

Since 2018, The Healthcare Safety Investigation Branch (HSIB)⁴ for Maternity has identified “cooled babies” as one of the top reasons for investigation.

Therefore, in order to reduce the chance of newborn infants becoming hypothermic prior to arrival at hospital, the following must be undertaken as a minimum in all cases:

- Rigorously dry the newborn (for up to 30 seconds) including the head and
- Cover with a clean dry blanket (do not use the same towel/blanket as was used to dry)
- Place a **hat** on the newborn (or cover the head with the blanket if there is no hat available)

- Encourage skin to skin contact where the newborn and mother are clinically stable (it is essential that both mother and baby are monitored for any sign of deterioration whilst skin to skin is being undertaken)
- Ensure that windows are closed, and doors are not left open any longer than necessary and prevent air flow which may compound hypothermia
- Ensure that the ambulance heaters are on maximum heat, and it is as warm as possible in the rear of the vehicle prior to transferring the baby (whilst also ensuring vehicle security)

Where necessary take additional steps to maintain a normal body temperature (i.e., between 36.5°C and 37.3°C)³ by utilising the **TransWarmer® Infant Warming Mattress.**

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TransWarmer® Infant Warming Mattress

The Warming Mattress will be stocked on all front line DSA & LOM resources. The TransWarmer® is a self-warming heat pad that reaches 38°C in one minute and is designed for use with young infants and neonates where there is a risk of hypothermia.

The full product brochure is found

<https://www.draeger.com/Products/Content/transwarmer-pi-9050736-en-gb.pdf>

It is not expected that babies born at normal gestation following a normal delivery always will require the TransWarmer®. In these cases, the emphasis must remain on the steps documented above.

The TransWarmer® should be used, in **addition to standard warming measures**, for:

- Neonatal resuscitation (does not impede resuscitation efforts)
- Any reason which prevents skin-to-skin contact from being appropriate or achieved
- For all Newborn transportation to hospital please use Neomate® Paediatric Harness System. **Skin to skin should not be used for transportation to hospital.** A second DSA should be requested to transport mum if clinically indicated (both patients require treatment/observation). If the mother is clinically stable and does not require monitoring or intervention they can travel in a seated position.
- Where skin to skin contact is appropriate and achievable but the temperature of the newborn is unable to be maintained.
- Neonates with any level of environmental exposure whilst wet
- Prevention of hypothermia in young infants/Newborns during treatment which requires exposure.
- For use in all premature Newborns as they will all require transportation to hospital.



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TransWarmer® Infant Warming Mattress

Instructions for use:

1. Locate metal disc and grasp with thumb and forefingers of both hands.
2. Flex (bend) disc rapidly until crystals begin to form.
3. Massage pack to soften and to increase the activation rate.
4. After pack is fully activated, indent centre with palm to form a small nest.
5. Lay infant in nest on the non-woven fabric surface, either in a nappy only or with a single layer of cotton (sheet/ vest/ baby grow) between the baby and the Transwarmer®. Lay a blanket on top of baby to minimise heat loss.
6. Check infant skin regularly for redness and monitor infant core temperature.
7. We recognise that not all thermometers used within the trust have age precision technology therefore cannot monitor the temperature of the neonate. In view of this to assess the temperature of the neonate, feel their chest, and down the

back of their neck. They should feel warm to touch. It is not appropriate to use the peripheries to assess temperature due to the centralisation of circulation the occurs resulting in cool to touch hands and feet.

Video guide to usage: <https://www.youtube.com/watch?v=voJ8Jc7JyEs>

The TransWarmer® Mattress MUST NOT be used in conjunction with incubators or other direct heat sources.

Standard Trust warming blankets MUST NOT be used as an ad-hoc replacement for a TransWarmer® mattress.

The Transwarmer® is a single use item and should be disposed of in clinical waste upon cessation of use.

Documentation

In addition to the mother's ePCR, ensure that a new clinical record is opened and completed for all newborn babies, ensure all interventions are documented within the ePCR (to include all standard warming measures and the use of the TransWarmer® Mattress).

Ordering

The Procurement team have placed an order for all vehicles and will allocate stock to AGM areas once received. Further orders following their use can be via the stores order list **L025**

Actions

Operations Officers and MRO please ensure that all front line vehicles are stocked with a TransWarmer® Mattress and stored alongside the Maternity Pack and pads of Maternity Action Card's.

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TransWarmer® Infant Warming Mattress

All staff please Ensure the TransWarmer® is present and in date as part of the daily VDI.

Please ensure you are familiar with the product instructions and criteria for use. Document use of the TransWarmer® mattress or rationale for not doing so in the ePCR.

References:

1. Newborn Life Support; JRCALC, 2019
<https://jrcalcweb.netlify.app/#/tab/guidelines/details/G0160>
2. Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants (nih.gov)
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6491068/>
3. Guidelines: Resuscitation and support of transition of babies at birth (RCUK) <https://www.resus.org.uk/library/2015-resuscitation-guidelines/resuscitation-and-support-transition-babies-birth#10-references>
4. The Healthcare Safety Investigation Branch trends for Maternity, 2020