

Guideline

Thermoregulation during neonatal transfer

1 Scope

For use with Paediatric and Neonatal Decision Support and Retrieval Service (PaNDR) for the East of England.

2 Purpose

To provide guidance for the PaNDR team in maintaining good thermoregulation of infants during transfer.

3 Definitions

Z-Flo Neonatal Fluidized Positioner: positioning device used for transfer

Squishon: thick gel mattress used for transfer

Transwarmer: self- heating chemical gel mattress

Neohelp™: a specially manufactured plastic sleeping suit with integral hood and heat retaining padded under-layer

4 Introduction

- One of the primary clinical responsibilities of the transport team throughout transfer is to maintain the infant's temperature within a safe range dependent on age, weight and condition.
- If sick or small infants become cold it can decrease their chances of survival, increase the severity of their illness and may slow their rate of growth.
- The preterm infant is vulnerable to thermal stress because of increased heat loss, immature or absent thermoregulatory mechanisms and small body size.
- The transport process involves several possible disturbances to the infant's temperature, moving from cot to transport incubator and vice versa.
- The external environment can be extremely variable; less controlled than within a neonatal unit and can affect the temperature within the incubator.



5 Before departure

- The incubator should always be plugged in, turned on and set at 36°C when at base to ensure it is ready for immediate use and to keep the Squishon mattress or Z-Flo Neonatal Fluidized Positioner warm.
- If the Squishon mattress is allowed to become cold it can take several hours to reheat within the incubator. To reheat it quickly it can be soaked in hot water for five minutes.
- At referral, or as soon as possible afterwards, the incubator should be set to a temperature appropriate to the infant's weight, gestation and clinical condition.
- When moving the incubator into the ambulance ensure that the incubator is running from battery and then plug into the vehicle power supply to ensure that the incubator remains at the set temperature and to reduce the drain on the battery.

6 Arrival at the referring unit

- On arrival plug the incubator into a mains power supply, communicate with referring staff with regards to current and recent temperature management.
- Check and document the infant's axilla temperature, consequently adjust the incubator temperature according to current readings, present incubator settings and any anticipated needs.
- **If temperature is below 36.5°C**

Aim to restore the temperature to within the normal range, or a clearly improving trend before transfer into transport incubator.

- Check that present temperature management is appropriate eg. all equipment working correctly and the infant is not lying on wet bedding.
- Attempt to minimize handling until an improving temperature trend is observed.
- Request that the vehicle is pre-warmed in anticipation of departure.
- Any infant with worsening or unresponsive hypothermia should be assessed and discussed with the transport consultant with regards to suitability to transfer.
- Consider use of Transwarmer mattress or Neohelp™ suit (see section 10 below).
- **If temperature is above 37.2°C**

- Consider the degree of hyperthermia and the likelihood of its persistence - a mild hyperthermia may correct itself during transfer between incubators
 - If necessary decrease the temperature of the current incubator temperature and undress if appropriate
 - With a persisting hyperthermia only reduce the incubator in one degree intervals and allow time for effect, thus preventing over cooling.
- **If temperature is 36.5°C – 37.2°C**
 - Do not adjust the incubator temperature unless excessive handling is anticipated
 - Be mindful that the infant's temperature may drop on transfer between incubators.

7 Transfer into the transport incubator

- Meticulous preparation of the transfer should ensure that it is carried out as quickly and smoothly as possible to minimize heat loss
- All infants undergoing transfer should have continuous skin temperature monitoring via a probe secured by a gel adhesive sticker. This should be placed in the right axilla so that skin temperatures recorded on every transfer have the same point of reference
- An axilla temperature check should be made following transfer into the incubator to record the infant's temperature, assess if the skin probe is reading accurately and that it is correctly placed
- Check that the temperature alarm limits on the monitor are set at appropriate levels.

8 During transfer

- Ensure that the ambulance is warm and plug the transport incubator into the vehicle's power supply
- Ensure the portholes remain closed as much as possible during transfer and keep handling to a minimum
- All small or very sick infants should wear a hat to minimize heat loss. They can also be nursed in a NeoHELP™ suit bag to further minimize heat loss, whilst maintaining the ability to observe the infant
- The quilted incubator cover adds insulation and helps minimize any heat loss through the incubator walls. Equally direct sunlight onto the incubator can increase the infant's temperature without necessarily increasing air temperature

- Record the infant's skin temperature every 15 minutes with observations and if necessary adjust the incubator settings accordingly.

9 Arrival at receiving unit

- Plug the incubator into the mains power supply
- Communicate to receiving staff the current temperature of the infant, the measures required to achieve this i.e.: incubator temp, use of Transwarmer etc. and recent trends, to enable continuation of temperature management
- Record a final temperature before transfer out of the transport incubator and document the admission temperature recorded by the receiving team once the infant is settled into the unit incubator.

10 Use of Transwarmer mattress and/ or Neohelp™ suit

- Never place the Transwarmer mattress into the incubator before activating the gel as this can cause overheating
- The mattress should be activated according to the manufacturer's instructions
- Infants should lie on the woven side of the mattress which when activated chemically produces heat
- It is recommended to check the infant's skin occasionally for redness
- The Transwarmer and/ or Neohelp™ suit should be considered for all infants weighing less than 1.5kg
- The Neohelp™ suit should be used for all infants requiring a humidified atmosphere to maintain skin integrity and minimize heat loss as there is no means of providing humidity within the transport incubator.
- Transwarmer should not be used in conjunction with another heat source (BAPM safety issue Jul 2019) <https://www.bapm.org/articles/44-safety-issue-transwarmer-mattresses>

11 Monitoring compliance with and the effectiveness of this document

The PaNDR team will monitor compliance with this document by undertaking regular audits which will be reported back to the consultants and lead nurse.

The effectiveness of the document will be monitored by review of any reported incidents via the lead nurse for risk.

12 Associated documents

- Draeger incubator user's manual
- Transwarmer user notes - supplied with every mattress
- Neonatal thermoregulation – Rosie Hospital NICU guidelines
- Developmental care in transport – PaNDR guideline
<http://pandreastofengland.co.uk>

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