

# Guideline

## Use of the Tecotherm for active cooling during neonatal transfer

### 1 Scope

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

### 2 Purpose

To ensure the safe and proper use of the Tecotherm for active cooling during transfer.

### 3 Definitions

PaNDR Paediatric and Neonatal Decision Support and Retrieval Service  
ANNP advanced neonatal nurse practitioner

### 4 Undertaken by

The guideline is undertaken by members of the PaNDR team – qualified nurses, ANNPs and doctors who have successfully completed their Tecotherm competency.

### 5 Clinical equipment list

- Tecotherm and connective foam hose
- One litre bottle of sterile water and empty giving set bottle with female and male connectors
- Cooling mattress and cover
- Rectal probe
- Skin probe, steri-strips and reflective stickers for attaching probes

### 6 Setting up the Tecotherm

- Check that the mattress is pre-filled with water- visual inspection/ feel for 'plumpness'. If under-filled the Tecotherm will alarm continuously and will fail to cool efficiently.
- Fill the filling bottle completely to 500ml with sterile water, connect the filling bottle to the mattress tubing connectors (the orientation does not matter). Hold the mattress up and invert the filling bottle – the mattress will fill with fluid by gravity and air will be ejected automatically from the air release connector.

- Tilt the mattress one side to the other to release air trapped in the corners. Cooling cannot commence until all air is replaced by water.
- When all the air is removed, the fluid in the bottle stops bubbling and the mattress is visibly full, disconnect both connectors from the filling bottle.
- To fill the Tecotherm: connect the fill up set to refill port connectors. **Green** marked connector always fits into the right hand side 'in' port.
- Turn on the Tecotherm and select '**constant mattress mode**'
- Turn the filling bottle upside down and wait until the water level inside the bottle stops falling.
- Quit treatment mode.
- Attach the pre-filled mattress to the hose and connect to the lower device ports.
- Remove the left hand connector of the filling set from the Tecotherm.
- Select '**constant mattress temperature**' and fill the Tecotherm with another 100ml of water.
- Disconnect the fill up set and turn the Tecotherm off until ready to put the infant on it.

## 7 Placing the mattress

Place the mattress in the unheated transport incubator, ensuring that the connecting hose is threaded underneath the incubator so that it cannot get caught during transfer and that it is not kinked or trapped.

## 8 Applying the temperature probes

**The skin and rectal probes must be applied to the infant before the machine is turned on.**

Apply the skin temperature probe securely in the infant's **right axilla** and insert the rectal probe 2-3cm ensuring it is well secured to the infant's thigh with steri-strips.

Plug the probes into the Tecotherm sockets marked 'R' for rectal and 'S' for skin and turn the Tecotherm on. Place the baby on the mattress straight away.

**If the infant has successfully been passively cooled and is within target temperature there is no need to place him on the Tecotherm mattress until transfer to the transport incubator. If however, target temperature has not been reached, the Tecotherm should be placed underneath the baby in the unit incubator as a matter of urgency.**

## 9 Turning the Tecotherm on

When the power button is pressed, the machine will undertake a series of self-tests, during which alarms will be displayed. When these are completed, press 'yes' to confirm.

## 10 Adjusting the settings

- Once the system is checked to be functioning, scroll down the display screen using the right hand soft keys nearest the arrows, then select '**servo control complete treatment mode.**' This mode maintains the set temperature via the rectal temperature probe and starts the 72 hour countdown of cooling treatment, recording automatically the time that active cooling was commenced. This data can then be given to the team at the receiving unit who can programme their own cooling equipment to complete the remaining time required.
- The Tecotherm is pre-set to maintain a baby temp of 33.5°C.

## 11 Starting active cooling

- The Tecotherm will initially show the set, rectal, skin and mattress temperatures. After 60 seconds this will change to display the current rectal temperature in a large coloured number. If the rectal temperature is within 0.5°C of target temperature this will be **green**, if it deviates more than 0.5°C from the set point it will appear **red**.
- When the temperature deviates below 29°C or above 39°C, the Tecotherm will alarm and default to '**fall back mode**' which will ask which temperature you want the mattress to stay at whilst you trouble-shoot (eg check probe positions and make sure mattress hose is not kinked). Once the temperature comes back into range the machine will continue into servo treatment mode.
- If the fluid level in the machine becomes too low, a prompt will appear on the screen. To top up, attach the filling bottle **green** tip to the right hand port for a minute.

## 12 Moving the Tecotherm from the mains supply to the ambulance

- The Tecotherm does not have a battery therefore will not work if unplugged. If the mains power is turned off before the Tecotherm is powered down it will emit a constant high pitched alarm which cannot be silenced until mains power is restored.
- To move the Tecotherm from the mains supply to the ambulance, select '**options**' and scroll down to '**end treatment and save data**' then return to main menu and scroll down and select '**power off**'. Once in the ambulance, plug back in and restart as above.

## 13 Power failure

In the event of a power failure the system will shut down. Settings and patient data will be retained.

## 14 Cleaning the Tecotherm

The Tecotherm, hose and probes should be wiped with a hot soapy cloth or Tristel and dried thoroughly after use. The mattress should be washed in hot soapy water, dried thoroughly and stored rolled to prevent cracking.

## 15 Monitoring compliance with and the effectiveness of this document

- Compliance with this guideline will be monitored by regular competency assessment amongst the medical and nursing staff. Any concerns regarding staff competencies will be highlighted to the lead nurse and consultants and additional training provided.
- Critical incident reporting of equipment malfunction should serve to highlight incorrect use or misinterpretation of the guideline, which may need to be revised.

## Equality and diversity statement

This document complies with the Cambridge University Hospitals NHS Foundation Trust service equality and diversity statement.

## Disclaimer

It is **your** responsibility to check against the electronic library that this printed out copy is the most recent issue of this document.

## Document management

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