

## CosyTherm™ Warming Systems in NICU

### Procedure Responsibilities and Authorisation

<b>Department Responsible for Procedure</b>	NICU
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<b>Document Facilitator Title</b>	CNM NICU
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<b>Document Owner Title</b>	CNM NICU
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### Procedure Review History

Version	Updated by	Date Updated	Description of Changes
1	Joyce Mok	Dec 2010	New procedure
2	Chantelle Hill	April 2014	3 yearly update
3	Chantelle Hill	Oct 2017	3 yearly update

## CosyTherm™ Warming Systems in NICU

### 1. Overview

#### 1.1 Purpose

To assist stabilisation of an infant's temperature by providing a neutral thermal environment for healthy preterm/vulnerable infants who may be prone to temperature maintenance problems due to immature thermoregulatory mechanisms.

#### 1.2 Scope

For neonates

#### 1.3 Definitions

<b>CosyTherm™ Systems</b>	The use of the CosyTherm™ Systems is to provide safe and controlled warming to assist infants to maintain normal body temperature.
<b>CosyTherm™ Mattress</b>	The heated mattress is an external conductive device that provides an even temperature over the whole surface. It is water and solvent resistant, and has been tested for bio-compatibility to allow skin contact during care. It has a thermal protector that will not allow the mattress to overheat. A pressure relief pad is integrated into the mattress, underneath the flexible warming surface, that prevents pressure sores without any attenuation of the warming performance

### 2. Clinical Management

#### 2.1 Competency required

- Registered Nurse who has completed Level II orientation.
- Enrolled Nurse who has completed level II orientation, and under the direction and delegation of a Registered Nurse.

#### 2.2 Equipment:

- Cot
- CosyTherm™ integrated control unit with connection cable
- CosyTherm™ mattress
- One cot sheet for the mattress
- Clothes for infant: vest or stretch suit, hat, booties
- No more than 2 blankets

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### 2.3 Procedure:

#### 1. Assess infant criteria for use

- For use within NICU Levels I,II, and III
- Well preterm: **weight of 1400g or greater**, or small for gestation age (SGA) infants gaining average 15-25g /kg/day
- Well premature infants or low birth weight (LBW) babies who maintain their axillary temp between 36.6 - 37.2 while in an incubator set at  $\leq 32^{\circ}\text{C}$  for 24hours
- Tolerating full enteral feeds (intermittent or continuous)
- Infants not requiring respiratory support
- Infants who are hypothermic on admission
- No apnoea or bradycardias requiring stimulation
- Term infants who are hypothermic on admission, **but only for initial warming** as the term infant may become too warm in a heated cot
- Infants ready to be moved from incubator to cot (refer to: Lippincott procedures: *Thermoregulation during transition to open crib, neonatal*)

#### Rationale:

- Treatment on the CosyTherm™ mattress can promote calm and comfort, prolong rest periods and reduce thermal stress.
- To provide greater accessibility to their infant for parents. This can promote emotional attachment and confidence in handling their infant.
- Maternal perception of the wellbeing of their infant improves when nursed on a warming mattress compared to an incubator.

#### 2. Checking warming mattress before use

- Ensure the surface of the mattress has no folds or creases, is clean and undamaged, and the equipment is in working condition.
- Check cables and connectors are clear and undamaged.
- Ensure the mattress is connected by a connection cable to provide power and control signals between the mattress and the control unit.
- **NB:** Do not use if there is any sign of damage or wear.

#### 3. Placement of mattress and control unit

- Place the mattress with the printed side underneath, away from the patient, and the plain surface uppermost.
- Clamp the warming control unit on the cot to prevent the control unit from toppling over.

#### 4. Power supply

- Connect the unit to the electricity supply, and position the mains lead so it does not cause a hazard.
- Wrap any excess length of the mains lead around the cable stowage channel on the control unit.

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### 5. Self-test start-up cycle

- Turn on the power switch (green button) on the side of the unit and ensure the switch illuminates to indicate power on.
- Bleep will be heard when switched on.
- The system will conduct a self-test cycle to ensure the system is functioning.

### 6. Preparing warming mattress

**NB: The mattress contains a special conductive heating material and the heat will only be felt by the user/infant when applying pressure/weight to the mattress.**

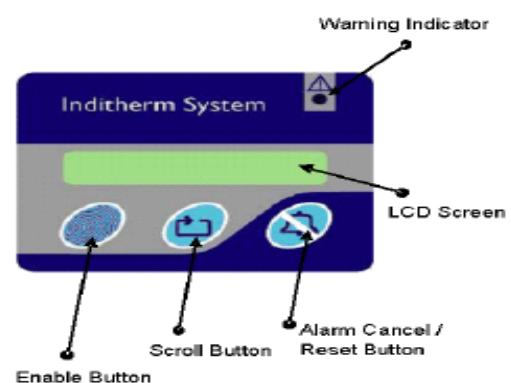
- Cover the mattress with a single layer cot sheet. Excessive layers of linen will cool down the mattress and decrease the infant's temperature.
- The mattress will be warm within 5 minutes when infant is lying on it.
- Alternatively, pre-warm the mattress by putting a 1 litre bag of IV fluid on top of the mattress and check it feels warm before using.
- It is normal that the mattress does not feel particularly warm to touch when left uncovered.
- The control unit will show the temperature of the mattress once it is warm.
- Start the CosyTherm™ at 37°C.

### 7. Temperature range

- Temperature range is from 33°C to 37°C in steps of 0.5°C. The selected range is appropriate for infants in NICU.
- If the maximum temperature is exceeded the over temperature alarm will sound.
- The control unit monitors the temperature performance, and when the mattress reaches the desired temperature, the control unit will stop heating the mattress.
- An internal safety cut-out temperature system will operate if any fault condition causes the mattress to exceed temperature of 44°C.
- **Any concerns, stop using the system and send it for checking by technician.**

### 8. Temperature selection and adjustment

- Press and hold down the **Enable** button and then press and release the **Scroll** button to set the required temperature.
- The unit will cycle sequentially through the temperatures each time the scroll button is pressed and released.
- When the required temperature is displayed release the **scroll** and **Enable** buttons.



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### 9. Clothing for infant

- **Do not swaddle** because swaddling will prevent the mattress from warming the infant by conductive heat and could also lead to overheating of the infant.
- Only one layer of clothing
- Clothes for the infant: vest or stretch suit, hat, booties.
- Cover the infant up to the shoulder with 2 blankets tucked into the sides to prevent heat loss. Overheating is often caused by covering the infant too much.

### 10. Temperature monitoring of infant

- Monitor the temperature of the infant **one hour** after being placed onto the mattress and **again one hour later**.
- Check 3-hourly once temperature is stable within normal range (36.6 –37.2°C)
- Monitor infant's temperature regularly, i.e. 3-4 hourly to determine his/her reaction to the mattress temperature.

### 11. Weaning mattress temperature

- When the infant's temperature has **risen to 37°C**, reduce the mattress temperature because a mattress that is too warm can overheat the infant.
- Reduce the temperature in stages e.g. **reducing by 0.5°C** at a time no faster than 3-hourly until the **mattress temperature is set at 35°C**.
- If the infant's temperature begins to drop during weaning of the mattress temperature, the mattress temperature should be adjusted to a level at which the infant is able to maintain his/her temperature to prevent the infant from getting cold.
- Once the infant is able to maintain his/her temperature for 24 hours, the mattress temperature may be reduced again gradually by 0.5°C until the infant is assessed as ready to maintain temperature in an ordinary cot in the nursery.

### 12. Transferring to a cot

- When the infant, who is lightly dressed and covered, and is able to maintain the body temperature with a mattress temperature set at about 35°C, then the infant is usually ready for an ordinary cot.
- Check the infant's temperature **one hour** after the infant has been placed into an ordinary cot and at least 3-hourly for 24 hours to ensure the infant is managing to maintain his/her temperature.

### 13. Transferring to an incubator

- If the infant cannot maintain temperature in the CosyTherm™ set at maximum 37°C, then infant must go into an incubator.
- **If the infant's temperature does not respond to warming on the CosyTherm™ mattress** and the axilla temperature remains <36.5° C but >36°C for 4 consecutive temperatures over 4 hour period, or if the temperature <36°C, the infant **must** go into an incubator.

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### 14. Cleaning

**Must be cleaned by nurses between babies or when equipment has been soiled.**

#### Control Unit

- Unplug the mains cable from the electrical socket to ensure electrical safety.
- Wipe the unit with care using Tuffie Wipe.
- Dry thoroughly.

#### Mattress

- Clean mattress with care using Tuffie Wipe.
- Dry thoroughly.
- Check for damage after cleaning.

### 15. Storage and care of CosyTherm™

- Must be stored **flat**.
- Do not fold the mattress.
- Do not put other objects on top of the mattress.
- Avoid direct sunlight.
- Do not allow sharp objects to penetrate the mattress.
- Check the mattress for signs of damage before each use.
- Store in equipment room in designated area after cleaning.

## 3. Evidence-Base

### 3.1 Associated documents

- Lippincott Procedures: Thermoregulation during transition to open crib, neonatal
- NICU service specific nursing procedure: Temperature Control (1476)

### 3.2 References

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