Warming Patient using Forced Air Warmer

Site Applicability: MSJ and SPH

Skill Level: **Basic**

- All RN's in critical care (SPH and MSJ)
- RN's and LPN's on the following units: surgical day care (SPH and MSJ), operating room (SPH and MSJ), maternity, medicine and surgical units at SPH only

Clinical Indications:

- Pre-operative and intra-operative warming for enhanced recovery after surgery (ERAS) patients,
- Intra-operative and post-operative promotion of comfort and normothermia,
- Treatment of hypothermia.

Need To Know:

Hypothermia is defined as a core body temperature less than 36° Celsius(C). Patients undergoing surgery will have a core temperature heat loss of 1 to 3°C on average. Perioperative hypothermia leads to adverse physiologic outcomes such as myocardial ischemia, surgical site infection and intra-operative bleeding. Therefore, active warming of patients is considered pre-operatively to help reduce inadvertent perioperative hypothermia in at risk patients.

Body temperature can vary between sites being monitored therefore it is recommended that only one method of monitoring temperature be used for more accurate trending and comparison. Core temperature sites (rectal, temporal artery, tympanic, bladder) tend to read 0.6°C higher than oral temperature, while oral temperature tends to read 0.6 to 1°C higher than axilla.

See *Appendix A* for more pathophysiology behind hypothermia.

Equipment and Supplies:

1. Thermometer
2. 1 flannelette sheet
3. Temperature management blanket
4. Warming Unit

Procedure:

STEPS	RATIONALE
1. On medicine units only: ○ Ensure Prescriber's Order is present ○ Contact Clinical Resource Nurse (pager 33658)	Prescriber's Order must be reviewed to determine what temperature goal should be obtained with forced air warming device. Clinical Resource nurse will help with initial set up.

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2. Position warming unit (Bair Hugger) next to patient and plug in to power source, be mindful of cord placement to avoid tripping hazards.	Placing the cord under stretcher or bed prevents injury. In the OR, use cord covers to prevent injuries.
3. Select the appropriate size blanket, i.e. upper, lower, or full body. Place the temperature management blanket over the patient with the perforated side next to the patient's skin. A single flannel may be positioned on top of the warming blanket when "on" for purpose of holding blanket in place. **Note:** 1. Ensure that the air hose is not placed directly against the patient's skin as this may lead to burns or pressure sores. 2. Use caution with patients with open sores and consult with IPAC and/or attending physician prior to Bair Hugger use.	It is not recommend using the Bair Hugger on patients with open skin lesions.
4. Insert the end of the warming unit hose into the hose port of a temperature management blanket. Use a twisting motion to ensure a snug fit. There is a marker located around the mid section of the hose end to help guide the depth of hose insertion.	
5. Switch on by selecting appropriate temperature. It is suggested to place on maximum fan speed and temperature and to titrate down as necessary, be sure to use your clinical judgment.	
6. Check patient temperature Q30 MIN and monitor for signs of overheating.	Ensure patient does not develop hyperthermia. Signs of overheating include: flushed skin, diaphoresis or patient verbalizing overheating.
7. Remove blanket, or turn unit off, when the oral temperature reaches 37^0 C, the patient reports an acceptable level of warmth, hypothermia is absent, signs of overheating, **OR**, if on medicine units: when goal temperature is reached.	
8. Document use of warming device per department standards on appropriate	

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record. Documentation should include indication, start and stop time, temperature setting, skin integrity and temperature.	
Note: Blankets are single patient use only. When the patient no longer requires forced air warming dispose of temperature management blanket.	Infection prevention and control.

Patient Education & Resources:

Decrease patient anxiety by explaining the most successful intervention for hypothermia is the use of forced air warming. This proves most effective as approximately 70% of the body surface is exposed to the warm air that is circulating in a blanket.

Documentation:

Record all assessments and interventions on the appropriate documentation for the clinical setting

1. Critical Care Flow Sheet (*IC037)*
2. PACU Patient Record –SPH (PHC-PA015), MSJ *(GF5032M)*
3. OR Record – PHC *(PHC-OR016)*
4. Pre-Assessment Clinic/Surgical Daycare Patient History Record PHC *(PHC-PA002)*
5. Nurses Notes PHC (*NF035*) / Interdisciplinary Progress Notes (NF205)
6. 24 Hour Vitals Documentation Flowsheet *(PHCNF403)*

References:

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Approved/Reviewed/Revised:

August 1994
Revised: January 2006
January 2010
December 2013
October 2017

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Appendix A Hypothermia – Pathophysiology

Body temperature is a balance between heat production and heat loss. Heat is generated as a byproduct of cellular metabolism and heat is lost by the skin and lungs by the following processes:

Conduction	The transfer of heat to an adjacent cooler object
Convection	The transfer of heat into surrounding air
Radiation	The transfer of heat through space from one surface to another with no direct contact
Evaporation	The transfer of heat through vaporization of water by insensible losses and sweat

Hypothermia can be caused by a number of different etiologies:

- Increased heat loss may be due to:
  - Environmental exposure
  - Induced vasodilation from drugs and alcohol
  - Skin disorders such as burns
  - Iatrogenic such as blood transfusion
  - Surgery
  - Cardiopulmonary bypass
  - Continuous renal replacement therapy

- Decreased heat production may be a result of:
  - Endocrinologic disease
  - Insufficient nutrition
  - Neuromuscular inefficiency such as extremes of age, impaired shivering and inactivity

- Impaired heat regulation can be a result of:
  - Neuropathies
  - Diabetes mellitus
  - Cerebrovascular accident
  - Spinal cord transection
  - Hypothalamic dysfunction
  - Sepsis
  - Trauma
  - Vascular insufficiency
  - Several medications such as antidepressants, antipsychotics, anesthesia, opioids, oral antihyperglycemics and beta blockers

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