The Arctic Circle™ Program
Temperature Management Implementation Workbook
The success of Targeted Temperature Management has become one of the most important advances in critical care. It is through the work of many different people, working in all facets of the hospital, that the full potential of temperature management is realized. Upon completion of The Arctic Circle™ Clinical Training & Education Program, you become an important leader within your field operating at the center of the circle of care.

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The 24/7 Helpline is intended to assist healthcare professionals with technical questions they may have regarding the use of the Arctic Sun® Temperature Management System. The Helpline is not able to provide medical or nursing advice or prescribe treatment.
BARD is committed to providing training and education that result in safe and efficient utilization of the ARCTIC SUN® Temperature Management System. The ARCTIC CIRCLE™ Program is designed to develop clinical leaders within the hospital who are interested in championing the hospital’s temperature management program, and who will become resources for ongoing training of the nursing staff on the therapy and the ARCTIC SUN® Temperature Management System.

BARD has educated thousands of nurses with this program and has found it to be the best formula for success in creating a sustainable temperature management program. Nurses will not only receive hands-on competency with the equipment, they will also be prepared to train others through didactic presentations on targeted temperature management.

1 Who should attend

Clinical leaders and one-two staff members from each shift (2-4 per unit) who have the desire and the ability to train others.

2 What is Involved

Participants will complete 2 self-learning modules prior to attending the class

**Module 1 Basic ARCTIC SUN® Temperature Management System Training (self-learning)**
- Review Advanced Patient Care Module
- Complete the ARCTIC SUN® Temperature Management System online training and post-test

**Module 2 The Basics Behind Targeted Temperature Management (self-learning)**
- Pathophysiology of Cooling
- Patient Management

**Module 3 Hands On (3 hour workshop)**
- Hands-on workshop can be tailored to your needs
- Common questions on the ARCTIC SUN® Temperature Management System
- Troubleshooting the ARCTIC SUN® Temperature Management System
- Hands on group competency with case study scenarios
Value Added Services

Our mission is to provide Targeted Temperature Management solutions designed to reduce healthcare costs. Achieving this mission means going above and beyond selling a product.

- The Arctic Circle™ Clinical Training & Education Program
  - Comprehensive training program to develop in-house expertise on the Arctic Sun® Temperature Management System
  - Collaborative educational community designed to link clinicians worldwide to share best practices in the field of Targeted Temperature Management
  - Advanced training concepts

- Computer-based inservices where competency test results and clinician participation can be provided in a weekly report, upon request, to clinical educators

- 24/7 Helpline
  - Clinical support offered by on-staff critical care nurses
  - Technical support staffed by Bard Engineers

- Peer-to-Peer Education Sponsorship

- Product Excellence
  - Easy to service device
  - Filters are incorporated into the disposable portion of the product, which means less maintenance
  - Exemplary quality and safety track record
Measurements of Success

• Device does what we said it would:
  - Ease of use: [ ] Yes [ ] No
  - Time to target reached quickly: [ ] Yes [ ] No
  - Target temperature maintained appropriately: [ ] Yes [ ] No
  - Patient rewarmed in a controlled fashion: [ ] Yes [ ] No
  - Pads were radiolucent, no issues with procedures: [ ] Yes [ ] No
  - Pads stayed in place, did not interfere with nursing procedures: [ ] Yes [ ] No

• The training program was successful in yielding competent Arctic Sun® Temperature Management System users: [ ] Yes [ ] No

• Staff feel comfortable overall working with device: [ ] Yes [ ] No

• Staff feel comfortable with the therapy and patient care (critical thinking with management of side effects, shivering suppression, etc): [ ] Yes [ ] No

• Patients are identified and appropriately treated with the Arctic Sun® Temperature Management System: [ ] Yes [ ] No

• Protocol is followed: [ ] Yes [ ] No

• Staff feel comfortable with utilizing resources (internal staff and Bard Medical 24/7 Helpline): [ ] Yes [ ] No

• There is hospital “ownership” of the therapy (answers basic questions, inservices own staff, etc): [ ] Yes [ ] No
Key Logistics
to Creating a Targeted Temperature Management Program

- Will cooling/treatment be initiated in the ED?  Yes  No
  With: iced saline  ice  ARCTIC SUN® Temperature Management System? ____________
- Will there be a dedicated ICU for these patients?  Yes  No
  What happens if they do not have a bed? __________________________________________

- Who will serve as the Nurse and Physician Champions for this program? ____________

- Who will write the protocol? __________________________________________
  What committees must approve it? __________________________________________
  When do they meet? __________________________________________
- What other disciplines should be included in this program (Consider Pharmacy, Respiratory
  Therapy and Radiology)? __________________________________________

- Will a paging system be utilized to alert staff of incoming patient for this therapy?  Yes  No
- Who will serve as the resource staff to attend intensive training and assist with training others?

- Where will the ARCTIC SUN® System reside? ____________________________
- What type of probe will be used? ____________________________
- Where will the pads and probes be kept? ____________________________
- Is there an intensivist who will oversee this program?  Yes  No
  Who? __________________________________________
- Will the ARCTIC SUN® System be in use during additional procedures/additional locations?
  Yes  No
- Will they require training and education?  Yes  No
- When will the committee overseeing this therapy convene to discuss the progress?
  After every patient?  Once a month?  
- Consider creating a unit-based resource book on therapeutic temperature management with your
  protocol and ARCTIC CIRCLE™ Program resources.

# Therapeutic Hypothermia Supply Cart

**TOP SHELF**
- Cart restocking list
- Hypothermia protocol
- Glucometer and testing supplies

**DRAWER 1**
- Syringes
- Tubes for blood draws
- Needles for blood draws
- ABG kits

**DRAWER 2**
- IV insertion kit
- IV tubing
- Piggyback tubing
- PCA tubing
- Lactated Ringers
- Normal Saline

**DRAWER 3**
- Arterial line insertion kit
- Pressure tubing
- 3-way stop-cock
- Normal Saline
- Pressure bag
- ABG kit

**DRAWER 4**
- Suction tubing
- Oral suction tube
- Pulse oximeter probe
- PICC line or Central line insertion kit
- Multipurpose pads (pacer/defib)

**DRAWER 5**
- Bladder Temperature
- Esophageal/rectal probes
- Nasogatric tube
- Doppler and gel

**DRAWER 6**
- Arctic Sun® System backup temperature cable
- ArcticGel™ Pads X-Small
- ArcticGel™ Pads Small
- ArcticGel™ Pads Medium
- ArcticGel™ Pads Large
- Universal pads
# Probe Placement

## Site of Temperature Probe Placement

<table>
<thead>
<tr>
<th>Site</th>
<th>Level of Accuracy</th>
<th>Average time lag between site and gold standard</th>
<th>Specific Advantages, problems and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary Artery</td>
<td>High</td>
<td>NA Cannot be used with cooling devices</td>
<td>Highly precise and quick temperature registration. Insertion procedure required. Needs to be removed after 72-96 hours.</td>
</tr>
<tr>
<td>(gold standard)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esophagus</td>
<td>High</td>
<td>5 minutes (range 3-10)</td>
<td>Most quick and accurate reflection of gold standard. Moderate risk of downward dislocation to stomach; leading to an increase in time lag and slight drop in registered core temperature (13°C) which is unlikely to be noticed immediately (because the deviation from the “true” core will be relatively small). Can be prevented by precise insertion to a depth of 32-38cm. Potential interference of diagnostic/therapeutic procedures (transesophageal echocardiography, gastroscopy, insertion of gastric tubes/feeding probes, etc.). Occasionally problematic probe insertion procedure.</td>
</tr>
<tr>
<td>Bladder</td>
<td>Fair/High***</td>
<td>20 minutes (range10-60)*</td>
<td>Fairly easy probe insertion procedure. Low risk of dislocation. Combination with procedure (catheter insertion) that needs to take place anyway. Long time lag. Readings affected by rate of diuresis (which may be low in some patients after cardiac arrest). Probe movement into saline-filled balloon at tip of catheter, affecting temperature readings.</td>
</tr>
<tr>
<td>Rectum</td>
<td>Fair/High***</td>
<td>15 minutes (range 10-40)**</td>
<td>Quick and easy probe insertion procedure. High risk of dislocation (but dislocation is likely to be noticed quickly because the difference with “true” core temperature is large). Relatively long time lag.</td>
</tr>
<tr>
<td>Tympanic Membrane</td>
<td>Moderate/Fair</td>
<td>10 minutes (range 5-20) Cannot be used with cooling devices</td>
<td>Quick and easy probe insertion procedure. High risk of dislocation (but dislocation is likely to be noticed quickly because the difference with “true” core temperature is large). Relatively long time lag.</td>
</tr>
<tr>
<td>Axilla, groin, other peripheral sites</td>
<td>Completely inaccurate</td>
<td>No correlation with gold standard</td>
<td>Should not be used to guide hypothermia treatment.</td>
</tr>
</tbody>
</table>

*In case of severe shock, oliguria etc.

**In case of severe shock

***Usually high in maintenance phase when temperature is stable

Provided by Kees Polderman, M.D. Ph.D
## Clinical Evaluation

**Arctic Sun® Temperature Management System vs. Traditional Cooling Blankets**

### Clinical Performance

<table>
<thead>
<tr>
<th>Clinical Performance</th>
<th>Easily Achieved</th>
<th>Achieved</th>
<th>Did not achieve</th>
<th>Did not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were you able to reach and maintain target temperature?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Target temperature range in 1-3 hours? (Defined as: + or – 0.5°C from target)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Did the pads provide direct skin contact to maximize heat exchange?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Rate the following nursing functions during use of the cooling product:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central line care</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Auscultation of lung</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Auscultation of bowel</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Skin care</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dressing changes</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Maintain turning schedules</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Others: ___________________________________________________________________________</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### Ease of Use

<table>
<thead>
<tr>
<th>Ease of Use</th>
<th>Yes</th>
<th>No</th>
<th>Did not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were you able to transport the patient with the ArcticGel™ Pads (X-ray, MRI, CAT scan, surgery)?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Was the purge feature helpful during transport?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Did the ArcticGel™ Pads remain in place?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Were you able to manage anti-embolism boots or stockings while using the Arctic Sun® Temperature Management System?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Were you able to assess skin by peeling back the pads while using the product?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Was it more efficient to cool with the Arctic Sun® Temperature Management System than traditional cooling products you have tried?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Would you recommend continued use of the Arctic Sun® Temperature Management System at this hospital?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Did you attend the Arctic Sun® Temperature Management System In-service?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Others: ___________________________________________________________________</td>
<td>☐</td>
<td>☐</td>
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</table>
# Clinical Evaluation

**Arctic Sun® Temperature Management System vs. Invasive Cooling Catheters**

<table>
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<th>Easily Achieved</th>
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<th>Did not apply</th>
</tr>
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<tr>
<td>You were able to reach and maintain target temperature?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The patient was able to reach target temperature range in 1-3 hours? (Defined as: + or – 0.5°C from target)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the pads provide direct skin contact to maximize heat exchange?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rate the following nursing functions during use of the cooling product:
- Central line care
- Auscultation of breath sounds
- Auscultation of bowel sounds
- Skin care
- Dressing changes
- Maintain turning schedules
- Others: ____________________

<table>
<thead>
<tr>
<th>Ease of Use</th>
<th>Yes</th>
<th>No</th>
<th>Did not apply</th>
</tr>
</thead>
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<td>Were you able to easily transport the patient with the ArcticGel™ Pads (X-ray, MRI, CAT scan, surgery)?</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given comparable performance, are non-invasive cooling techniques preferred over invasive catheter cooling in this application?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would you recommend continued use of the Arctic Sun® Temperature Management System at this hospital?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you attend the Arctic Sun® Temperature Management System In-service?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others:______________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Indications for Use: The Arctic Sun® Temperature Management System is intended for monitoring and controlling patient temperature.

Warnings

- Do not use the Arctic Sun® Temperature Management System in the presence of flammable agents because an explosion and/or fire may result.

- Do not use high frequency surgical instruments or endocardial catheters while the Arctic Sun® Temperature Management System is in use.

- Do not place ArcticGel™ Pads over transdermal medication patches as warming can increase drug delivery, resulting in possible harm to the patient.

Cautions

- The Arctic Sun® Temperature Management System will monitor and control patient core temperature based on the temperature probe attached to the system. The clinician is responsible for correctly placing the temperature probe and verifying the accuracy and placement of the patient probe at the start of the procedure.

- The displayed temperature graph is for general information purposes only and is not intended to replace standard medical record documentation for use in therapy decisions.

- The Arctic Sun® Temperature Management System is for use only with the ArcticGel™ Pads.

- Do not place ArcticGel™ Pads on skin that has signs of ulceration, burns, hives or rash.

- Do not allow circulating water to contaminate the sterile field when patient lines are disconnected.

- Periodically check that pads remain moist and adherent. Replace pads when the hydrogel no longer uniformly adheres to the skin. Replacing the pads at least every 5 days is recommended.

- If accessible, examine the patient’s skin under the ArcticGel™ Pads often especially those at higher risk of skin injury. Skin injury may occur as a cumulative result of pressure, time and temperature. Do not place bean bag or other firm positioning devices under the ArcticGel™ Pads. Do not place positioning devices under the pad manifolds or patient lines.

- The rate of temperature change and potential the final achievable patient temperature is affected by many factors. Treatment application, monitoring and results are the responsibility of the attending physician.

- Due to underlying medical or physiological conditions, some patients are more susceptible to skin damage from pressure and heat or cold. Patients at risk include those with poor tissue perfusion or poor skin integrity due to diabetes, peripheral vascular disease, poor nutritional status, steroid use or high dose vasopressor therapy. If warranted, use pressure relieving or pressure reducing devices under the patient to protect from skin injury.

- Do not allow urine, antibacterial solutions or other agents to pool underneath the ArcticGel™ Pads. Replace pads immediately if these fluids come into contact with the hydrogel.

- Do not place ArcticGel™ Pads over the electrosurgical grounding pads. The combination of heat sources may result in skin burns.

Please consult package insert for more detailed safety information and instructions for use.
Territory Sales Manager

Clinical Manager

Customer Service/Technical Support
1-877-267.2314

To request reports of clinicians in your hospital that have viewed the electronic in-service:
customerservice@crbard.com

Submit testimonials, patient outcomes or best practices: customerservice@crbard.com

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Federal Law (USA) restricts this device to sale by or on the order of a physician.