JTTS CLINICAL PRACTICE GUIDELINES FOR
HYPOTHERMIA PREVENTION, MONITORING AND MANAGEMENT

1. **REFERENCES**:
a. DoD Directive 6000.12, "Health Services Operations and Readiness", 29 Apr 96
b. DoD Instruction 6430.2, "DoD Medical Standardization Board", 17 Mar 97
c. HA Policy: 06-005, "Defense-wide Policy on Combat Trauma Casualty Hypothermia Prevention and Treatment", 16 Feb 06
d. Marine Corps Center for Lessons Learned, "Hypothermia Incidence in Trauma Patients and Prevention/Mitigation Measures: Analysis of data and information from Operation Iraqi Freedom, September 2003 to November 2005", 5 Jan 06

2. **PURPOSE.** The purpose of this clinical practice guideline is to establish guidance for prevention and management of hypothermia. These recommendations are guidelines only and are not a substitute for clinical judgment.

3. **APPLICABILITY.** This memorandum applies to personnel assigned or attached to CENTCOM theatre who are involved in the management of patients.

4. **BACKGROUND.**
a. Hypothermia is increasingly prevalent in our casualties during winter and is deadly
b. In order to best prevent hypothermia, situational awareness must be raised regarding the problem as well as proven preventive and treatment strategies

5. **RESPONSIBILITIES.**
a. **All Health Care Providers and Medics will:**
(1) Become familiar with the guidelines for prevention, monitoring and management of hypothermia
(2) Become familiar with the guidelines for hypothermia prevention as it applies to evacuation of casualties, including during tactical combat casualty care phase.
(3) Become familiar with alternative and field expedient hypothermia prevention and treatment devices and methods mentioned in guidelines.
(4) Provide feedback on these guidelines and suggestions for changes to the JTTS.
b. **The Theater Trauma Director will:**
(1) Be the subject matter expert on the guidelines to be used in the entire OIF theatre for prevention, monitoring and management of hypothermia
(2) Update the guidelines on an as-needed basis.

6. **PROPONENT.** The proponent for these guidelines is the CENTCOM JTTS.

APPROVED:
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BLUF:

-The following measures must be immediately implemented across the theater of operations until further notice:

-temp dots on all immediate/urgent litter casualties (forehead) at Level II and during CASEVAC to Level III

-keep EMT/OR temp 78-90 degrees F during casualty resuscitation

-use warmed IV fluids and warm blanket and where available, forced air warming devices (Bair Huggar) as applicable (see details below)

-implement mandatory documentation of patient temperature on arrival to and discharge from all Level II and III facilities (if non-core temp [axilla, tympanic] is high or low, use core temp [rectal, esophageal] measurement for best accuracy)

-mandatory use of Hypothermia Prevention/Management Kits (HPMK) for all rotary wing evac/ground evac for Urgent Litter or intubated or Immediate triage category casualties (Level I to II and Level II to III)

Background:

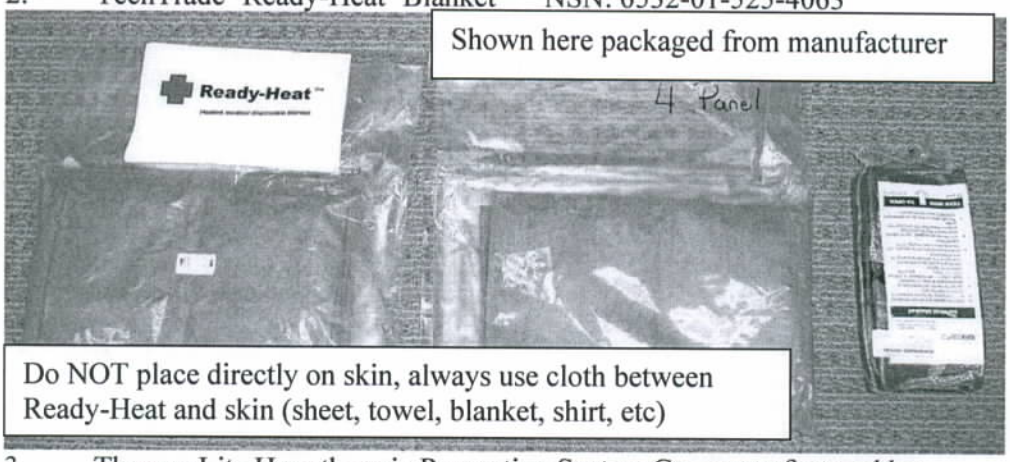
Hypothermia, acidosis, and coagulopathy constitute the "bloody vicious cycle" in trauma patients. The association of hypothermic coagulopathy with high mortality has been well described. As many as 66% of trauma patients arrive in emergency departments manifesting some degree of hypothermia (temperature < 96.8°F or 36°C). Over 80 % of non-surviving patients have had a body temperature of less than 34°C. This level of hypothermia causes dysfunction of coagulation proteins, thus exacerbating hemorrhage. The mortality in combat casualties with hypothermia is double that of normothermic casualties with similar injuries.

Prevention of hypothermia should be emphasized in military and especially combat operations. Hypothermia occurs irrespective of the ambient temperature and occurs in both hot and cold climates. Attention to hypothermia prevention will decrease the negative effects of heat loss and decrease death from uncontrolled hemorrhage. Because of the difficulty, time and energy required to actively re-warm casualties significant attention should be paid to preventing hypothermia from occurring in the first place. Prevention of hypothermia is much easier than treatment of hypothermia. Therefore prevention of heat loss should start as soon as possible after wounding. This will be optimally accomplished in a layered fashion, with rugged, lightweight, durable products located as close as possible to the point of injury and then utilized at all subsequent levels of care, including ground and air evacuation through the Level I, II and III echelons of care.

Measurement of patient temperature and documentation on standard forms is one measure of compliance with hypothermia prevention and treatment guidelines. While core temperatures are most accurate, obtaining them is not always necessary. Many casualties with relatively minor wounds can have adequate temperature measurement performed using an oral, tympanic or axillary route. The use of Temp Dots on the forehead of casualties, while not as accurate as some other measurements, can help to identify trends in patient body temperature as well as act as a constant reminder to maintain appropriate hypothermia preventive posture. In any casualty in which these measurements are outside of an expected range (<97 or >100 degrees F), core temperature should be taken for best accuracy.

The following equipment should be used in a layered fashion across the evacuation chain.

1. Blizzard Rescue Blanket NSN: 6532-01-524-6932
2. TechTrade 'Ready-Heat' Blanket NSN: 6532-01-525-4063



3. Thermo-Lite Hypothermia Prevention System Cap, manufactured by Encompass Techstyles (item # 5110-100)
4. Space Blanket (Heavy duty)
5. Wool Blanket (green)
6. Hypothermia Prevention and Management Kit ™ (HPMK) North American Rescue Products Part Number: 80-0027 NSN: 6515-01-532-8056 (comprised of 1-3 above)
7. Temp Dots (100/box) NSN 579609404M
8. Thermal Angel NSN:6515-01-500-3521
9. Belmont FMS 2000 NSN: 6515-01-370-5019
10. Bair Hugger NSN: 6530-01-463-6823
11. Foley Kit, Temp Sensing w/16FR Catheter (10/case) DeRoyal Industries Item # 81-080516 & NSN: 603481080516 (requires Interface Cable, YSI series 400, 12 foot Item # 81-101400 & NSN: 603481101400) http://www.deroyal.com

Numbers 1-7 do not require power, are used to prevent heat loss and should be used as far forward as possible. Numbers 8 & 9 are fluid warmers that require power, and consequently deliver heat to the casualty. They are used during transport or at surgical sites. The Belmont device is very easy to use, requires little training and provides warmer fluids at higher rates than other fluid warmers. The combination of these devices will both prevent and treat hypothermia. They represent a progression of complexity and power requirements and can be utilized in a layered fashion. Ideally these devices will be utilized during initial treatment and through evacuation. These devices should be either disposable or PMI, exchanged upon transport. They should be used on any patient that has suffered hypotension (systolic blood pressure< 90 mmHg), is intubated, has received more than 1000 cc of fluid or has received a blood transfusion.

The following outlines some general recommendations and how to use specific products at the different Levels of care found on the battlefield.

1. A coherent hypothermia prevention and reversal strategy is required during pre-mission planning
2. A layered approach taking into account weight, cube, power requirements, clinical effectiveness and usability should be utilized.
3. All devices should be either disposable or PMI and utilized at all levels of care and available on any evacuation platform.

At Level 1 utilize

1. Hypothermia Prevention and Management Kit ™ (HPMK) North American Rescue Products Part Number: 80-0027 NSN: 6515-01-532-8056 **or**
2. Blizzard Rescue Blanket NSN: 6532-01-524-6932 **and**
3. TechTrade 'Ready-Heat' Blanket NSN: 6532-01-525-4063 **and**
4. Thermo-Lite Hypothermia Prevention System Cap, manufactured by Encompass Techstyles (item # 5110-100)
5. Tactical Combat Casualty Care principles should be followed while preventing hypothermia:

Care under Fire:

a. Get the patient to cover.
b. Stop any life threatening external bleeding

Tactical Field Care:

a. In this phase of care of the patient, all attention should be directed towards preventing heat loss.
b. Stop bleeding and resuscitate appropriately. If available warm fluids should be used. This will start generating internal heat, facilitating rewarming.
c. Place the Thermo-Lite Hypothermia Prevention System Cap on the casualties head, decreasing heat loss from this exposed site
d. Place the patient on the Blizzard Rescue Blanket.
e. Remove any wet clothing and replace with dry clothes, if possible.
f. Place the Ready-Heat Blanket on the torso and back of the casualty with a layer of clothing or a sheet between the casualty's skin and the Ready-Heat Blanket: This is a self heating blanket that requires no special activation. Once the ingredients are exposed to the air they instantly start to heat up to a max temperature of 104°F (40°C) for 8 hours.
g. Wrap the Rescue blanket around the casualty, effectively retaining the heat generated by the warming blanket next to the casualty.

h. If you do not have a survival blanket of any kind then find dry blankets, poncho liners, space blankets, sleeping bag, or body bag or anything that will retain heat and keep the casualty dry.
i. Place a temp dot on the forehead of the patient. This will assist in monitoring changes in the patients response to treatment and will serve as a visual "q" to remind providers to monitor the patients temperature throughout the evacuation process

At Level IIa utilize

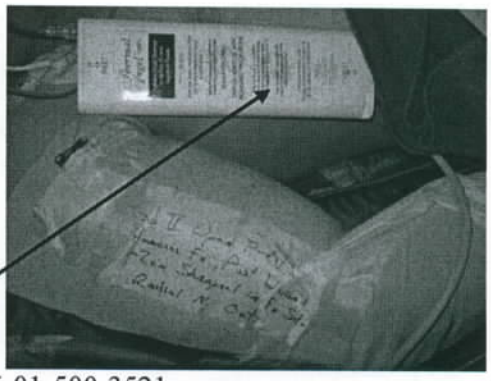
1. Blizzard Rescue Blanket NSN: 6532-01-524-6932 **and**
2. TechTrade 'Ready-Heat' Blanket NSN: 6532-01-525-4063 **and**

3. Thermo-Lite Hypothermia Prevention System Cap, manufactured by Encompass Techstyles (item # 5110-100)
4. Thermal Angel NSN:6515-01-500-3521 **and**
5. Bair Hugger NSN: 6530-01-463-6823
6. Temp Dots (100/box) NSN 579609404M

At Level IIb and III utilize

1. Keep EMT/OR temp 78-90 degrees F; use warmed IV fluids and blankets **and**
2. TechTrade 'Ready-Heat' Blanket NSN: 6532-01-525-4063 **and**
3. Thermo-Lite Hypothermia Prevention System Cap, manufactured by Encompass Techstyles (item # 5110-100)

4. Bair Hugger NSN: 6530-01-463-6823 **and**



5. Thermal Angel NSN:6515-01-500-3521 **or**
6. Belmont FMS 2000 NSN: 6515-01-370-5019

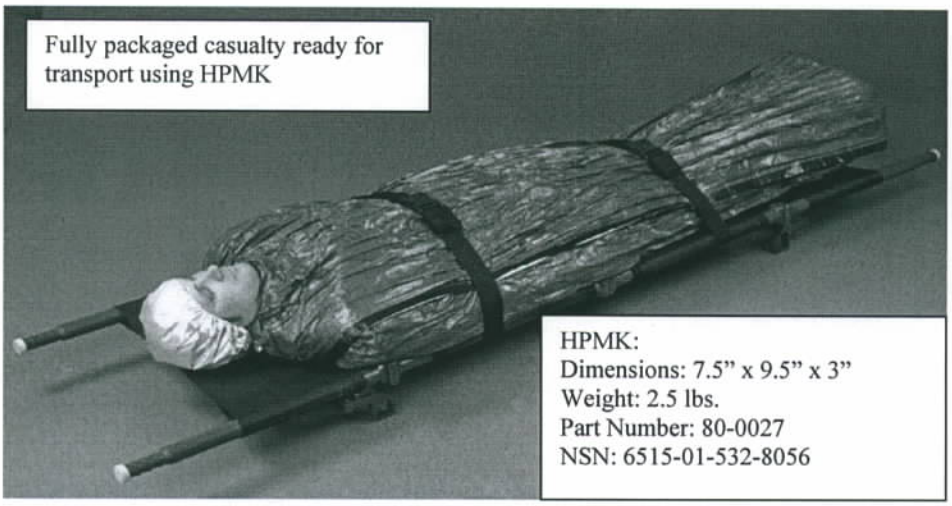
7. Blizzard Rescue Blanket NSN: 6532-01-524-6932
8. Foley Temp Sensing Kit NSN: 603481080516
9. Temp Dots (100/box) NSN 579609404M

On any evacuation platform utilize the:

1. Hypothermia Prevention and Management Kit ™ (HPMK) North American Rescue Products Part Number: 80-0027 NSN: 6515-01-532-8056 **or**
2. Blizzard Rescue Blanket NSN: 6532-01-524-6932 **and**
2. TechTrade 'Ready-Heat' Blanket NSN: 6532-01-525-4063 **and**
3. Thermo-Lite Hypothermia Prevention System Cap, manufactured by Encompass Techstyles (item # 5110-100)
4. Thermal Angel NSN:6515-01-500-3521
6. Temp Dots (100/box) NSN 579609404M
5. CASEVAC considerations:

a. During CASEVAC, the patient should remain wrapped in the Ready-Heat Blanket, Blizzard Rescue Blanket and hypothermia cap.
b. If these items were not available in the other phases of care then check with the air crew to see if they have them or any other similar items that can be used to prevent heat loss and rewarm the patient. This will require pre-mission planning and coordination with air crews.
c. Wrap the casualty in dry blankets and try to keep wind from open doors blowing over or under the casualty.
d. Utilize the Thermal Angel or other portable fluid warmer on all IV sites.

Field Expedient 'Tricks of the Trade' when not all the 'parts' are available:

Warm IV fluids using two MRE heaters:

Transport 'hot pocket' using wool blanket, space blanket and body bag: