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In Reply to Dr Podsiadło et al

To the Editor:

We thank Podsiadło et al¹ for recognizing the value of the Cold Card² as a useful field tool for refreshing knowledge concerning hypothermia recognition and care.

The Cold Card was primarily designed for wilderness search and rescue teams and medical responders (although it would be valuable to the lay adventurer as well). The goal for users of the Cold Card is to use as much advice as their experience and equipment allow. The Cold Card is concise and consistent with the Wilderness Medical Society (WMS) practice guidelines (PGs) for hypothermia.³ Therefore, by necessity, background or advanced information is not included, and choices are minimized; rather, use of this decision aid would be optimized by experience, training, and/or familiarization with the PGs.³

It is assumed that responders who have the Cold Card will likely have at least the minimal equipment prescribed on the "Care for Cold Patient" side with which to create a hypothermia wrap. We acknowledge that medical equipment such as intravenous (IV) fluid or cardiac monitoring in the field are rare but possible (eg, military operations or helicopter delivery of a rescue team and equipment). The Cold Card simply advises what to do if these resources are available.

The Cold Card avoids advice that requires choices because this would require the user to know and understand background information, make proper analysis of the data, and then engage in correct decision-making, a process that is often unsuccessful for users without advanced training.

Podsiadło et al seem to have little disagreement with the substance of the Cold Card. Rather, they present a concern related to perceived delays in evacuation and make suggestions regarding the amount of detail to include on the card.

First, they state, "the Cold Card suggests placing every victim in mild hypothermia in a sitting or lying position for 30 min. The 2014 Wilderness Medical Society Practice Guidelines highlighted that applying this recommendation should be limited to nonwalking victims when shelter and rewarming is available. Leaving a hypothermic patient sitting or lying down in a cold environment would probably lead to further heat loss. There is no evidence for delaying the evacuation of a healthy, mildly hypothermic victim from a hostile environment."

In response, nowhere in the guidelines or the Cold Card is it implied that a cold patient should be left uninsulated in the cold, nor should evacuation be delayed. It will normally take some time to coordinate evacuation equipment (eg, insulation, stretcher) and personnel. If during this preparation period (eg, 30 min of proper care and monitoring) the patient's condition improves and he or she seems able to self-ambulate, he or she can do so under supervision. If not, the patient should be immediately evacuated by rescue personnel. Also, please note that a "cold-stressed but not hypothermic" person (who

is likely shivering moderately) is encouraged to exercise to create heat and/or to seek shelter. We contend, however, that a mildly hypothermic patient is not “healthy,” and care must be taken to prevent the patient’s condition from deteriorating.

Podsiadlo et al also state, “No rescue collapse has been reported in mildly hypothermic victims without trauma or other comorbidities.”¹ We have demonstrated a mild case of circumrescue collapse after only 2.5 min of swimming in 10°C water.⁴ There are plenty of examples of conscious, ambulatory victims collapsing and/or dying after either climbing up onto a rescue vessel or after being hoisted into a rescue helicopter; some victims were only mildly hypothermic.⁵ We have also reported 2 levels of circumrescue collapse (unconsciousness and death) in 3 members of a group of rowers rescued after 50 min in 4°C water; their condition deteriorated from moderate hypothermia to severe hypothermia during a rough 13-min transport to shore with little insulation.⁶

Thus, we are confident in the WMS PG recommendation that “A shivering patient who may be hypothermic should be kept as warm as possible, given calorie replacement, and observed for at least 30 min before exercising. The patient should be monitored closely. An alert patient may be allowed to stand. If the patient can stand without difficulty, exercise intensity should start low and increase gradually as tolerated (1C).”³ As always, with any decision aid, common sense and the current situation ultimately dictate what to do. Obviously, if it is not possible to insulate, shelter, or carry a mildly hypothermic patient (eg, on a mountainside), the patient may have to walk or climb independently. However, the responders should be aware that the patient’s condition could deteriorate quickly under these circumstances.

Second, we agree that the “availability of flow warmers of intravenous fluids in emergency medical services and mountain rescue teams is very limited”¹ and difficult to implement. The difficulties and procedures are covered in depth in the WMS guidelines.² However, it is possible that some groups may have IV fluid supplies for use either in the field (eg, military) or during intermediate stages of transport (eg, ambulance). This item is included in the Cold Card to ensure that any users are aware that the all IV fluid *must* be warmed.

Finally, Podsiadlo et al make 2 recommendations: “The measurement of blood glucose in hypothermic patients with altered mental status should be mandatory. Prolonged shivering may lead to the depletion of glycogen stores and, subsequently, to hypoglycemia.”¹

I agree with the sentiment of this comment. Indeed, the WMS PGs state that “Hypoglycemia and hyperglycemia have been reported in hypothermia. Point-of-care glucose testing is routine in patients with an altered level

of consciousness, but may not be available in an out-of-hospital setting. Recommendation. Glucose should be administered to a hypothermic patient who is hypoglycemic (1A). Insulin is not initially indicated for hyperglycemia (1B). If glucose testing is not available, IV glucose can be administered empirically to a hypothermic patient with altered mental status (1C).”³

Glucose testing has not been included in the Cold Card for 2 main reasons: It is assumed that caregivers with the ability to measure blood glucose who have access to required supplies would have an advanced level of knowledge and training and would be familiar with the guidelines included in the WMS PGs. Furthermore, this procedure cannot be adequately summed up in 1 simple point (as is the general goal of the Cold Card). Issues that require decisions, choices, and judgment are generally left for compressive reading of the PGs.

The final recommendation is to add “Early notification of facility with extracorporeal life support”¹ to the Cold Card. This also is a very good point that is explained fully in the WMS PGs but not included in the Cold Card at this time.

Thank you again for these excellent observations. The Cold Card has undergone continued review and improvement and should not be considered “set in stone.” An update of the WMS PGs for hypothermia is currently underway, and I will ensure these concerns are considered by the authorship who initially approved both the Cold Card design and content.

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