



H48 Hypothermia Deaths and Altered Mental Status

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Learning Overview: After attending this presentation, attendees will understand classic patterns that occur among hypothermia deaths related to altered mental status, as well as be able to consider future methods to reduce mortality from hypothermia in these populations.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by highlighting some of the inherent risks of hypothermia deaths related to altered mental status. Understanding these risks will set the stage so that preventive strategies may be further developed and implemented with the goal of reducing mortality within specific vulnerable populations.

Much of the United States experiences sub-freezing winters. While most people who have access to shelter would find themselves apt to seek shelter and safety indoors, those who are cognitively impaired have difficulty eliciting or acting on this reflexive behavior.¹

Hypothermia is a state in which core body temperature is approximately 33°C or below. Hypothermia from environmental exposure to the cold is termed “primary hypothermia,” and it can result in either focal or systemic injury. The risk of death from hypothermia is noteworthy and particularly high during prolonged exposures to sub-freezing temperatures, though it may also occur in higher temperatures or even indoors.²

This presentation provides a review of multiple cases of lethal hypothermia where the deaths were related to some form of altered mental status. Various causes of impaired judgment found include, but are not limited to, dementia, physiologic hormone or electrolyte imbalance, and drug use or abuse.¹ The context of each case differed from the others, but several classic morphologic stigmata of hypothermia were commonly seen, including gastric Wischnewski spots and “frost erythema.” Paradoxical undressing was another relatively common finding.

Among others, altered mental status is a well-known risk factor for hypothermia. Common causes of altered mental status include substance use as well as degenerative neurologic disorders, including various forms of dementia.¹ Though each examined death in this study was related to hypothermia, many of the decedents’ comorbidities often had coexisting physical manifestations; these may have played a contributing role in these deaths.

Hypothermia appears to be responsible for the deaths of seemingly healthy people who are unable to obtain help after being accidentally exposed to cold temperatures, especially in the winter in the Midwestern United States. While acute circumstances of altered mental status may appear to be the triggering event for the examined cases, it is critical to understand the decedents’ preexisting diseases. Considering comorbidities, such as atherosclerosis, respiratory disease, alcohol misuse, or metabolic disturbances, can provide insight to the inappropriate thought process and inability to seek shelter in cold conditions, which ultimately can lead to loss of consciousness and death.²

Reference(s):

¹ Jurkovich G.J. Environmental cold-induced injury. *Surg Clin North Am.* 2007;87:247–267.

² Palmiere, C., Teresiński, G., and Hejna, P. Postmortem Diagnosis of Hypothermia. *Int J Legal Med* (2014) 128: 607. <https://doi.org/10.1007/s00414-014-0977-1>.

Hypothermia, Freezing, Impaired