

COLD WEATHER INJURIES

Includes frostbite, hypothermia, immersion injuries and other effects of reduced temperature.

Background

This case definition was developed by the Armed Forces Health Surveillance Division (AFHSD) for the purpose of epidemiological surveillance of cold weather injuries among active duty service members. Prolonged or intense exposures to cold can have a significant impact on the health, well-being, and operational readiness of service members and their units. Because military operations are conducted in diverse geographic regions and weather conditions, the U.S. military has developed comprehensive countermeasures to mitigate the threats associated with training and operating in low-temperature environments.¹

Clinical Description

Cold injuries include a range of serious physical conditions caused by exposure to cold temperatures. These injuries are generally divided into two categories: non-freezing injuries, such as chilblains and immersion foot (also known as trench foot), and freezing injuries, such as frostbite. Additionally, hypothermia, or systemic cold injury, is a clinical state defined by a drop in core body temperature to 35°C (94°F) or lower, leading to progressive multi-organ dysfunction. The clinical severity of these injuries is primarily dictated by the ambient temperature, the rate of heat loss, and the total duration of exposure.

Case Definition and Incidence Rules *(September 2026 - present)*

For surveillance purposes, a case of cold weather injury is defined as:

- *One hospitalization* with a case-defining diagnosis of a cold weather injury (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; or
- *One outpatient or Theater Medical Data Store (TMDS) medical encounter* with a case-defining diagnosis of a cold weather injury (see ICD9 and ICD10 code lists below) in the *first* diagnostic position; or
- One record of a reportable medical event (RME) of a cold weather injury.

Incidence rules:

For individuals who meet the case definition:

- The incidence date is considered the date of the first RME, hospitalization, or outpatient medical encounter that includes a case-defining diagnosis of a cold weather injury.
- An individual is considered an incident case *once per cold year*, defined as 1 July through 30 June, (i.e., one cold weather injury of any type per individual per cold year).

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¹ Armed Forces Health Surveillance Branch. Update: Cold Weather Injuries, Active and Reserve Components, U.S. Armed Forces, July 2011-June 2016. *MSMR*. 2016; 623(10): 12-20.



Case Definition and Incidence Rules *(continued)*

- If data on a specific *type* of cold weather injury is required, an individual is considered an incident case *once per type of injury per cold year* (i.e., one of each type of cold injury per individual per cold year).

Exclusions:

- None

Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Superficial frostbite	<i>T33 (superficial frostbite)</i>	<i>991 (effects of cold temperature)</i>
	T33.0 (superficial frostbite of <i>head</i>)	991.0 (frostbite of face)
	T33.01 (superficial frostbite of <i>ear...</i>)	
	- T33.011A (<i>right ear</i> , initial encounter)	
	- T33.012A (<i>left ear</i> , initial encounter)	
	- T33.019A (<i>unspecified ear</i> , initial encounter)	
	T33.02 (superficial frostbite of <i>nose...</i>)	
	- T33.02XA (initial encounter)	
	T33.09 (superficial frostbite of <i>other part of head...</i>)	
	- T33.09XA (initial encounter)	
	T33.1 (superficial frostbite of <i>neck...</i>)	991.3 (frostbite of other and unspecified sites)
	- T33.1XXA (initial encounter)	
	T33.2 (superficial frostbite of <i>thorax...</i>)	
	- T33.2XXA (initial encounter)	
	T33.3 (superficial frostbite of <i>abdominal wall, lower back, pelvis...</i>)	
	- T33.3XXA (initial encounter)	
	T33.4 (superficial frostbite of <i>arm...</i>)	
	- T33.40XA (<i>unspecified arm</i> , initial encounter)	
	- T33.41XA (<i>right arm</i> , initial encounter)	

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- T33.42XA (<i>left</i> arm, initial encounter)	
T33.5 (superficial frostbite of <i>wrist, hand and fingers...</i>)	991.1 (frostbite of hand)
T33.51 (superficial frostbite of <i>wrist...</i>)	
- T33.511A (<i>right</i> wrist, initial encounter)	
- T33.512A (<i>left</i> wrist, initial encounter)	
- T33.519A (<i>unspecified</i> wrist, initial encounter)	
T33.52 (superficial frostbite of <i>hand...</i>)	
- T33.521A (<i>right</i> hand, initial encounter)	
- T33.522A (<i>left</i> hand, initial encounter)	
- T33.529A (<i>unspecified</i> hand, initial encounter)	
T33.53 (superficial frostbite of <i>finger(s)...</i>)	
- T33.531A (<i>right</i> finger(s), initial encounter)	
- T33.532A (<i>left</i> finger(s), initial encounter)	
- T33.539A (<i>unspecified</i> finger(s), initial encounter)	
T33.6 (superficial frostbite of <i>hip and thigh...</i>)	991.3 (above)
- T33.60XA (<i>unspecified</i> hip and thigh, initial encounter)	
- T33.61XA (<i>right</i> hip and thigh, initial encounter)	
- T33.62XA (<i>left</i> hip and thigh, initial encounter)	
T33.7 (superficial frostbite of <i>knee and lower leg...</i>)	
- T33.70XA (<i>unspecified</i> knee and lower leg, initial encounter)	
- T33.71XA (<i>right</i> knee and lower leg, initial encounter)	
- T33.72XA (<i>left</i> knee and lower leg, initial encounter)	
T33.8 (superficial frostbite of <i>ankle, foot, and toe(s)</i>)	991.2 (frostbite of foot)
T33.81 (superficial frostbite of <i>ankle...</i>)	
- T33.811A (<i>right</i> ankle, initial encounter)	
- T33.812A (<i>left</i> ankle, initial encounter)	
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	- T33.819A (<i>unspecified</i> ankle, initial encounter)	
	T33.82 (superficial frostbite of <i>foot</i> ...)	
	- T33.821A (<i>right</i> foot initial encounter)	
	- T33.822A (<i>left</i> foot, initial encounter)	
	- T33.829A (<i>unspecified</i> foot, initial encounter)	
	T33.83 (superficial frostbite of <i>toe(s)</i> ...)	
	- T33.831A (<i>right</i> toe(s) initial encounter)	
	- T33.832A (<i>left</i> toe(s), initial encounter)	
	- T33.839A (<i>unspecified</i> toe(s), initial encounter)	
	T33.9 (superficial frostbite of <i>other and unspecified sites</i> ...)	
	T33.90 (superficial frostbite of unspecified sites)	
	- T33.90XA (initial encounter)	
	T33.99 (superficial frostbite of other sites)	
	- T33.99XA (initial encounter)	
		991.3 (above)

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Frostbite with tissue necrosis	<i>T34 (frostbite with tissue necrosis)</i>	<i>991 (above)</i>
	T34.0 (frostbite with tissue necrosis of <i>head</i>)	991.0 (above)
	T34.01 (frostbite with tissue necrosis of <i>ear</i> ...)	
	- T34.011A (<i>right</i> ear, initial encounter)	
	- T34.012A (<i>left</i> ear, initial encounter)	
	- T34.019A (<i>unspecified</i> ear, initial encounter)	
	T34.02 (frostbite with tissue necrosis of <i>nose</i> ...)	
	- T34.02XA (initial encounter)	
	T34.09 (frostbite with tissue necrosis of <i>other part of head</i> ...)	
	- T34.09XA (initial encounter)	
	T34.1 (frostbite with tissue necrosis of <i>neck</i> ...)	
	- T34.1XXA (initial encounter)	
	T34.2 (frostbite with tissue necrosis of <i>thorax</i> ...)	991.3 (above)
	- T34.2XXA (initial encounter)	
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T34.3 (frostbite with tissue necrosis of <i>abdominal wall, lower back, pelvis...</i>)	
- T34.3XXA (initial encounter)	
T34.4 (frostbite with tissue necrosis of <i>arm...</i>)	
- T34.40XA (<i>unspecified</i> arm, initial encounter)	
- T34.41XA (<i>right</i> arm, initial encounter)	
- T34.42XA (<i>left</i> arm, initial encounter)	
T34.5 (frostbite with tissue necrosis of <i>wrist, hand and fingers</i>)	991.1 (above)
T34.51 (frostbite with tissue necrosis of <i>wrist...</i>)	
- T34.511A (<i>right</i> wrist, initial encounter)	
- T34.512A (<i>left</i> wrist, initial encounter)	
- T34.519A (<i>unspecified</i> wrist, initial encounter)	
T34.52 (frostbite with tissue necrosis of <i>hand...</i>)	
- T34.521A (<i>right</i> hand, initial encounter)	
- T34.522A (<i>left</i> hand, initial encounter)	
- T34.529A (<i>unspecified</i> hand, initial encounter)	
T34.53 (frostbite with tissue necrosis of <i>finger(s)...</i>)	
- T34.531A (<i>right</i> finger(s), initial encounter)	
- T34.532A (<i>left</i> finger(s), initial encounter)	
- T34.539A (<i>unspecified</i> finger(s), initial encounter)	
T34.6 (frostbite with tissue necrosis of <i>hip and thigh</i>)	991.3 (above)
T34.60 (frostbite with tissue necrosis of <i>unspecified hip and thigh...</i>)	
- T34.60XA (initial encounter)	
T34.61XA (frostbite with tissue necrosis of <i>right</i> hip and thigh, initial encounter)	
T34.62XA (frostbite with tissue necrosis of <i>left</i> hip and thigh, initial encounter)	
T34.7 (frostbite with tissue necrosis of <i>knee and lower leg</i>)	
T34.70 (frostbite with tissue necrosis of <i>unspecified knee and lower leg...</i>)	
- T34.70XA (initial encounter)	

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	T34.71XA (frostbite with tissue necrosis of <i>right</i> knee and lower leg, initial encounter)	
	T34.72XA (frostbite with tissue necrosis of <i>left</i> knee and lower leg, initial encounter)	
	T34.8 (frostbite with tissue necrosis of <i>ankle, foot, and toe(s)</i>)	991.2 (above)
	T34.81 (frostbite with tissue necrosis of <i>ankle...</i>)	
	- T34.811A (<i>right</i> ankle, initial encounter)	
	- T34.812A (<i>left</i> ankle, initial encounter)	
	- T34.819A (<i>unspecified</i> ankle, initial encounter)	
	T34.82 (frostbite with tissue necrosis of <i>foot...</i>)	
	- T34.821A (<i>right</i> foot, initial encounter)	
	- T34.822A (<i>left</i> foot, initial encounter)	
	- T34.829A (<i>unspecified</i> foot, initial encounter)	
	T34.83 (frostbite with tissue necrosis of <i>toe(s)...</i>)	
	- T34.831A (<i>right</i> toe(s), initial encounter)	
	- T34.832A (<i>left</i> toe(s), initial encounter)	
	- T34.839A (<i>unspecified</i> toe(s), initial encounter)	
	T34.9 (frostbite with tissue necrosis of <i>other and unspecified sites</i>)	991.3 (above)
	T34.90 (frostbite with tissue necrosis of <i>unspecified sites...</i>)	
	- T34.90XA (initial encounter)	
	T34.99 (frostbite with tissue necrosis of <i>other sites...</i>)	
	- T34.99XA (initial encounter)	

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Other effects of reduced temperature	<i>T68 (hypothermia...)</i>	991.6 (hypothermia)
	- T68.XXXA (initial encounter)	
	<i>T69 (other effects of reduced temperature)</i>	991.8 (other specified effects of reduced temperature)
	T69.0 (immersion <i>hand and foot</i>)	
	T69.01 (immersion <i>hand...</i>)	
	- T69.011A (<i>right</i> hand)	
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	- T69.012A (<i>left hand</i>)	
	- T69.019A (<i>unspecified hand</i>)	
	T69.02 (<i>immersion foot...</i>)	991.4 (<i>immersion foot or trench foot</i>)
	- T69.021A (<i>right foot</i>)	
	- T69.022A (<i>left foot</i>)	
	- T69.029A (<i>unspecified foot</i>)	
	T69.8 (<i>other specified effects of reduced temperature...</i>); <i>see Code Set Determination and Rationale below.</i>	991.8 (<i>above</i>)
	- T69.8XXA (<i>initial encounter</i>)	
	T69.9 (<i>effect of reduced temperature, unspecified...</i>); <i>see Code Set Determination and Rationale below.</i>	991.9 (<i>other unspecified effects of reduced temperature</i>)
	- T69.9XXA (<i>initial encounter</i>)	

Development and Revisions

- *Surveillance population:* Beginning with the 2022-2023 cold season, the *Medical Surveillance Monthly Report (MSMR)* began classifying Space Force service members as a separate population due to the integration of new data sources in January 2023. Prior to this season, Space Force personnel were grouped under the Air Force.
- In December of 2016 the case definition was updated to include ICD10 codes.
- This case definition was originally developed in 2000 by the Army Medical Surveillance Activity (AMSA) staff for a *MSMR* article on cold weather injuries in active duty soldiers.²

Case Definition and Incidence Rule Rationale

- None

Code Set Determination and Rationale

Incidence rates and trends over time reported in the *MSMR*'s annual cold weather injury report will reflect the following methodology and code set changes.

- *Nonspecific and unspecified codes associated with the effects of reduced temperature.*
 - In December 2025, the *MSMR* expanded its surveillance of cold weather injuries to include diagnoses related to the effects of reduced temperature. Accordingly, they reincorporated the previously excluded ICD10/9 codes T69.8 / 991.8 (other specified effects of reduced temperature) and ICD10/9 T69.9 / 991.9 (effect of reduced temperature, unspecified) back into their annual cold weather injury report for more comprehensive case ascertainment.³

² Army Medical Surveillance Activity (AMSA). Cold Weather Injuries, Active Duty Soldiers, 1997-2000. *MSMR*. 2000; 6(10): 2-3.

³ Armed Forces Health Surveillance Division. Update: Cold Weather Injuries Among the Active and Reserve Components of the U.S. Armed Forces, July 2020-June 2025. *MSMR*. 2025; 32(12): 3-16.



- From 2018-2024, the *MSMR* excluded ICD10/9 codes T69.8 / 991.8 and ICD10/9 T69.9 / 991.9 from its annual cold weather injury report to better align with *DoD Reportable Medical Event Guidelines and Case Definitions (RME Guidelines)* which mandate the reporting of cases of frostbite, hypothermia, and immersion injuries only, not general or unspecified effects of cold.
- In 2004, ICD10/9 code 69.1/ 991.5 (chilblains) was removed from the code set because the condition is common, infrequently diagnosed as an illness or injury, usually mild in severity, and unlikely to have a significant medical, public health, or military impact.
- The *RMEs Guidelines* require the reporting of cases of frostbite, hypothermia, and immersion injuries only; they do not report on chilblains (T69.1/991.5), “other specified effects of reduced temperature” (T69.8 / 991.8) or “effects of reduced temperature, unspecified” (T69.9 / 991.9).

Reports

The AFHSD reports on cold weather injuries in the following reports:

- Annual *MSMR* update.
- The Defense Centers for Public Health-Aberdeen (DCPH-A) publishes a monthly RME Report which can be obtained by sending an email to: dha.apg.Pub-Health-A.mbx.disease-epidemiologyprogram13@health.mil. A link to this email is also available on the Defense Health Agency (DHA) website; <https://www.health.mil/Military-Health-Topics/Health-Readiness/Public-Health/AFHSD/Reports-and-Publications/Armed-Forces-Reportable-Medical-Events>. Accessed September 2026.

Review

Sep 2026	Case definition reviewed and updated by <i>MSMR</i> staff; approved by the AFHSD Surveillance Methods and Standards (SMS) working group.
Dec 2016	Case definition reviewed and updated by the Armed Forces Health Surveillance Branch (AFHSB) SMS working group.
Feb 2011	Case definition reviewed and adopted by the Armed Forces Health Surveillance Center (AFHSC) SMS working group.
Dec 2000	Case definition originally developed by AMSA staff; adopted by AFHSC <i>MSMR</i> staff.

Comments

- Cold weather injuries are reportable medical events in the *Armed Forces Reportable Medical Events* surveillance system.

