




Emergency Medical Responder

# HEAT AND COLD EMERGENCIES



The body loses heat in five ways:

- 1) Convection
- 2) Conduction
- 3) Radiation
- 4) Evaporation
- 5) Respiration





## Hypothermia Risk Factors

- Medical condition of patient
- Drugs, alcohol, poisons
- Age of patient



**Wind Chill Calculation Chart**

Actual Air Temperature	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
Wind Speed at 10 metres in km/h												
5	4	-2	-7	-13	-19	-24	-30	-36	-41	-47	-53	-58
10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63
15	2	-4	-11	-17	-23	-29	-35	-41	-48	-54	-60	-66
20	1	-5	-12	-18	-24	-31	-37	-43	-49	-56	-62	-68
25	1	-6	-12	-19	-25	-32	-38	-45	-51	-57	-64	-70
30	0	-7	-12	-19	-25	-33	-38	-45	-52	-59	-64	-70
35	1	-7	-14	-20	-27	-33	-40	-47	-53	-60	-66	-73
40	-1	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68	-74
45	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63	-70	-76
50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63	-70	-76
55	-2	-9	-15	-22	-29	-36	-43	-50	-57	-63	-70	-77
60	-2	-9	-16	-23	-30	-37	-43	-50	-57	-64	-71	-78
65	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79
70	-2	-6	-16	-23	-30	-37	-44	-51	-59	-66	-73	-80
75	-3	-10	-17	-24	-31	-38	-45	-52	-59	-66	-73	-80
80	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81

**Thresholds:**

- Risk of frostbite in prolonged exposure: -25
- Frostbite possible in 10 minutes: -35
- Frostbite possible in 2 minutes: -60

Warm skin, suddenly exposed. Shorter time if skin is cool at the start.

Warm skin, suddenly exposed. Shorter time if skin is cool at the start.

Source: Environment Canada

**Figure 16-2** Wind Chill Calculation Chart.

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## CHAPTER 16 - HEAT AND COLD EMERGENCIES

### Signs and Symptoms of Hypothermia

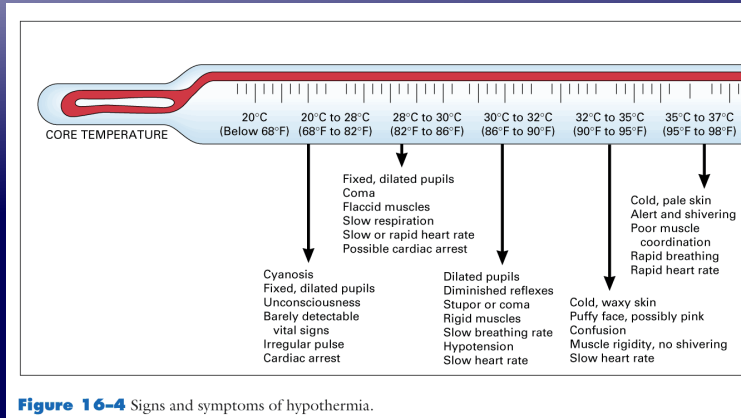


Figure 16-4 Signs and symptoms of hypothermia.



### Emergency Care

- 1) Remove the patient from the cold environment
- 2) Administer oxygen, if allowed
- 3) Remove all wet clothing and cover patient with a blanket
- 4) Handle the patient very gently
- 5) Comfort and reassure the patient





- Mild Hypothermia Signs and Symptoms

- 1) Increased breathing rate
- 2) Increased pulse rate and blood pressure
- 3) Slow, thick speech
- 4) Staggering walk
- 5) Sluggish pupils
- 6) Uncontrollable shivering



- Severe Hypothermia- Signs and Symptoms

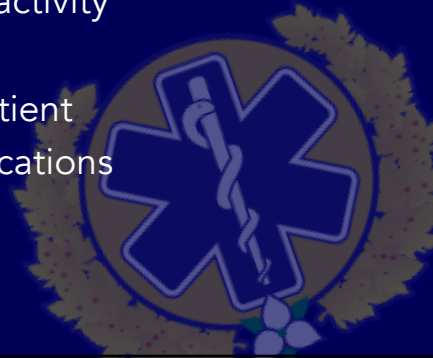
- 1) Extremely slow breathing rate
- 2) Extremely slow pulse rate
- 3) Unconsciousness
- 4) Fixed and dilated pupils
- 5) Rigid extremities
- 6) Absence of shivering





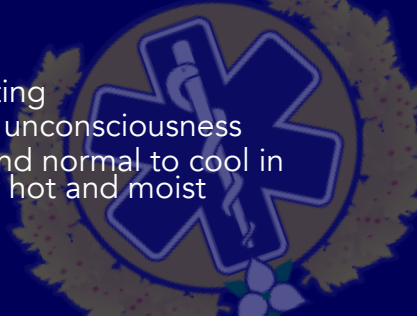
## Hyperthermia Risk Factors

- 1) Heat and humidity
- 2) Exercise and strenuous activity
- 3) Age of patient
- 4) Medical condition of patient
- 5) Certain drugs and medications



## Signs and Symptoms of a Heat Emergency

- 1) Muscle cramps
- 2) Weakness, exhaustion
- 3) Dizziness, faintness
- 4) Initially rapid pulse that gives way to a weaker one as damage progresses
- 5) Headache
- 6) Seizures
- 7) Loss of appetite, nausea, vomiting
- 8) Altered mental status, possibly unconsciousness
- 9) Skin that may be moist, pale, and normal to cool in temperature, or hot and dry, or hot and moist





### Signs and Symptoms of Heat Cramps or Heat Exhaustion

- 1) Muscle cramps
- 2) Stiff abdomen
- 3) Weakness, exhaustion, dizziness, faintness
- 4) Rapid heartbeat
- 5) Normal blood pressure
- 6) Normal mental status
- 7) Possible nausea and vomiting
- 8) Normal temperature
- 9) Hot, sweaty skin



### Emergency care for patients with moist, pale, and normal to cool skin temperature

- 1) Remove patient from the hot environment
- 2) Administer oxygen, if allowed
- 3) Cool the patient
- 4) Position the patient
- 5) Monitor the patient





## Emergency Care for Patient with Hot Skin

- 1) Loosen or remove clothing
- 2) Apply cold packs to the neck, armpits, and groin
- 3) Keep the skin wet by applying water with wet towels or a sponge
- 4) Fan the patient aggressively
- 5) Continually monitor the patient

