

Hypothermia Assignment

Hint: open the word processing program on this computer and cut and paste the questions and answer on to that document, then print

1. How does hypothermia happen?
2. What ways can you prevent hypothermia from occurring:
3. What conditions lead to hypothermia?
4. Simply stated what are the "umbles" and how do they indicate someone has hypothermia.
5. Complete the following chart regarding signs and symptoms of hypothermia

Level of Hypothermia	Body Temperature	Signs and Symptoms
Mild		
Moderate		
Severe		

Hypothermia Assignment Continued

6. What is the significance of the term "metabolic icebox"
7. What are the three major things must you do in all severities to treat hypothermia?
8. What is a hypothermic wrap and where on the body do you place the hot pads if available?
9. Why should you try and have the hypothermic victim urinate?
10. What is afterdrop and how can it be avoided?
11. Comment on the following statement:
"But they still may be alive in a "metabolic icebox" and can be revived. Your job as a rescuer is to rewarm the person and do CPR if indicated. A hypothermia victim is never cold and dead only warm and dead." (use the back of this page to comment on)

How to avoid, recognize, and treat hypothermia

Hypothermia happens when your core body temperature falls below normal, which can easily happen when you are exposed to cold winds or wetness. Your body automatically begins to shiver to rewarm itself. As your energy is used up to keep warm, you may reach a point where your body will be unable to rewarm itself. If left untreated, your body will gradually shut down and you can die.



Wear clothing that protects you from the elements.
Photo: Dorothy Dantico

The prevention of hypothermia includes things like:

- dress appropriately for weather and other conditions -- windproof and waterproof layers of clothing.
- making sure that you are prepared for changes in weather conditions (e.g. carry a warm woolen sweater and a waterproof covering in your backpack when hiking in the mountains -- even in the summertime).
- bring a change of clothing if it is possible that you might get wet.
- limit the amount of time spent in cold temperatures without a break to warm up.
- do what you have to stay warm in unusual situations (build a make-shift shelter or build a fire if you have no other options).
- carry 'emergency clothing', candles and matches in the car in case of an accident or breakdown.
- don't drink alcohol or take drugs when spending time outdoors.
- monitor children, the elderly or those who may not recognize signs of hypothermia.

Be aware that hypothermia may masquerade as a variety of conditions, including death, in a variety of situations and seasons.

Always act on the premise that "no one is dead until warm and dead".

Patients cold, stiff and cyanotic, with fixed pupils and no audible heart tones or visible thoracic excursions have been successfully resuscitated. One patient recovered completely in the morgue.

Hypothermia

1. Hypothermia - "a decrease in the core body temperature to a level at which normal muscular and cerebral functions are impaired." - Medicine for Mountaineering

2. Conditions Leading to Hypothermia

- Cold temperatures
- Improper clothing and equipment
- Wetness
- Fatigue, exhaustion
- Dehydration
- Poor food intake
- No knowledge of hypothermia
- Alcohol intake - causes vasodilation leading to increased heat loss

Signs and Symptoms of Hypothermia

Watch for the "-Umbles" - stumbles, mumbles, fumbles, and grumbles which show changes in motor coordination and levels of consciousness

Mild Hypothermia - core temperature 36-34 degrees C

- Shivering - not under voluntary control
- Can't do complex motor functions (ice climbing or skiing) can still walk & talk
- Vasoconstriction to periphery

Moderate Hypothermia - core temperature 34-32 degrees C

- Dazed consciousness
- Loss of fine motor coordination - particularly in hands - can't zip up parka, due to restricted peripheral blood flow
- Slurred speech
- Violent shivering
- Irrational behavior - Paradoxical Undressing - person starts to take off clothing, unaware s/he is cold
- "I don't care attitude" - flattened affect

Severe Hypothermia - core temperature 32-25 degrees C and below (*immediately life threatening*)

- Shivering occurs in waves, violent then pause, pauses get longer until shivering finally ceases - because the heat output from burning glycogen in the muscles is not sufficient to counteract the continually dropping core temperature, the body shuts down on shivering to conserve glucose
- Person falls to the ground, can't walk, curls up into a fetal position to conserve heat
- Muscle rigidity develops - because peripheral blood flow is reduced and due to lactic acid and CO₂ buildup in the muscles
- Skin is pale
- Pupils dilate
- Pulse rate decreases
- at 32 degrees the body tries to move into hibernation, shutting down all peripheral blood flow and reducing breathing rate and heart rate.
- at 25 degrees the body is in a state of "metabolic icebox." The person looks dead but is still alive.

Death from Hypothermia

- Breathing becomes erratic and very shallow
- Semi-conscious
- Cardiac arrhythmias develop, any sudden shock may set off Ventricular Fibrillation
- Heart stops, death

How to Assess if someone is Hypothermic

- If shivering can be stopped voluntarily = mild hypothermia
- Ask the person a question that requires higher reasoning in the brain (count backwards from 100 by 9's). If the person is hypothermic, they won't be able to do it. [Note: there are also other conditions such as altitude sickness that can also cause the same condition.]
- If shivering cannot be stopped voluntarily = moderate - severe hypothermia
- If you can't get a radial pulse at the wrist it indicates a core temp below 32-25 degrees C

- The person may be curled up in a fetal position. Try to open their arm up from the fetal position, if it curls back up, the person is alive. Dead muscles won't contract only live muscles.

TREATING HYPOTHERMIA

The basic principles of rewarming a hypothermic victim are to conserve the heat they have and replace the body fuel they are burning up to generate that heat. If a person is shivering, they have the ability to rewarm themselves at a rate of 2 degrees C per hour.

Mild - Moderate Hypothermia

1. Reduce Heat Loss

- Additional layers of clothing
- Dry clothing
- Increased physical activity
- Shelter

2. Add Fuel & Fluids

It is essential to keep a hypothermic person adequately hydrated and fueled.

Food intake

- Hot liquids - calories plus heat source
- Sugars (kindling)
- GORP - has both carbohydrates (sticks) and proteins/fats (logs)

Things to avoid

- Alcohol - a vasodilator - increases peripheral heat loss
- Caffeine - a diuretic - causes water loss increasing dehydration
- Tobacco/nicotine - a vasoconstrictor, increases risk of frostbite

3. Add Heat

- Fire or other external heat source
- Body to body contact. Get into a sleeping bag, in dry clothing with a normothermic person in lightweight dry clothing

Severe Hypothermia

1. Reduce Heat Loss

- **Hypothermia Wrap:** The idea is to provide a shell of total insulation for the patient. No matter how cold, patients can still internally rewarm themselves much more efficiently than any external rewarming. Make sure the patient is **dry**, and has a polypropylene layer to minimize sweating on the skin. The person must be protected from any moisture in the environment. Use multiple sleeping bags, wool blankets, wool clothing, Ensolite pads to create a minimum of 4" of insulation all the way around the patient, especially between the

patient and the ground. Include an aluminum "space" blanket to help prevent radiant heat loss, and wrap the entire ensemble in plastic to protect from wind and water. If someone is truly hypothermic, don't put him/her naked in a sleeping bag with another person.

2. Add Fuel & Fluids

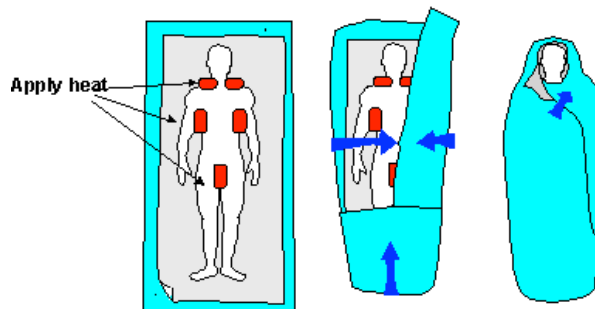
- **Warm Sugar Water** - for people in severe hypothermia, the stomach has shut down and will not digest solid food but can absorb water and sugars. Give a dilute mixture of warm water with sugar every 15 minutes. Dilute Jello™ works best since it is part sugar and part protein. This will be absorbed directly into the blood stream providing the necessary calories to allow the person to rewarm themselves. One box of Jello = 500 Kilocalories of heat energy. **Do not** give full strength Jello even in liquid form, it is too concentrated and will not be absorbed.
- **Urination** - people will have to urinate from cold diuresis. Vasoconstriction creates greater volume pressure in the blood stream. The kidneys pull off excess fluid to reduce the pressure. A full bladder results in body heat being used to keep urine warm rather than vital organs. Once the person has urinated, it precious body heat will be used to maintain the temperature of vital organs. So in the end urinating will help conserve heat. You will need to help the person urinate. Open up the Hypothermia Wrap enough to do this and then cover them back up. You will need to keep them hydrated with the dilute Jello solution described above.

3. Add Heat

Heat can be applied to transfer heat to major arteries - at the neck for the carotid, at the armpits for the brachial, at the groin for the femoral, at the palms of the hands for the arterial arch.

- Chemical heat packs such as the Heat Wave™ provides 110 degrees F for 6-10 hours.
- Hot water bottles, warm rocks, towels, compresses
- For a severely hypothermic person, rescue breathing can increase oxygen and provide internal heat.

Hypothermia Wrap



Afterdrop

Is a situation in which the core temperature actually decreases during rewarming. This is caused by peripheral vessels in the arms and legs dilating if they are rewarmed. This dilation sends this very cold, stagnate blood from the periphery to the core further decreasing core temperature which can lead to death. In addition, this blood also is very acetic which may lead to cardiac arrhythmias and death. **Afterdrop can best be avoided by not rewarming the periphery. Rewarm the core only! Do not expose a severely hypothermic victim to extremes of heat.**

CPR & Hypothermia

When a person is in severe hypothermia they may demonstrate all the accepted clinical signs of death:

- Cold
- Blue skin
- Fixed and dilated pupils
- No discernable pulse
- No discernable breathing
- Comatose & unresponsive to any stimuli
- Rigid muscles

But they still may be alive in a "metabolic icebox" and can be revived. Your job as a rescuer is to rewarm the person and do CPR if indicated. **A hypothermia victim is never cold and dead only warm and dead.** During severe hypothermia the heart is hyperexcitable and mechanical stimulation (such as CPR, moving them or Afterdrop) may result in fibrillation leading to death. As a result CPR may be contraindicated for some hypothermia situations:

1. ***Make sure you do a complete assessment of heart rate before beginning CPR.*** Remember, the heart rate may be 2-3/minute and the breathing rate 1/30 seconds. Instituting cardiac compressions at this point may lead to life-threatening arrhythmias. Check the carotid pulse for a longer time period (up to a minute) to ascertain if there is some slow heartbeat. Also, even though the heart is beating very slowly, it is filling completely and distributing blood fairly effectively. External cardiac compressions only are 20-30% effective. Thus, with its severely decreased demands, the body may be able to satisfy its circulatory needs with only 2-3 beats per minute. ***Be sure the pulse is absent before beginning CPR. You will need to continue to do CPR as you rewarm the person.***

2. Ventilation may have stopped but respiration may continue - the oxygen demands for the body have been so diminished with hypothermia that the body may be able to survive for some time using only the oxygen that is already in the body. If ventilation has stopped, artificial ventilation may be started to increase available oxygen. In addition, blowing warm air into the person's lungs may assist in internal rewarming.

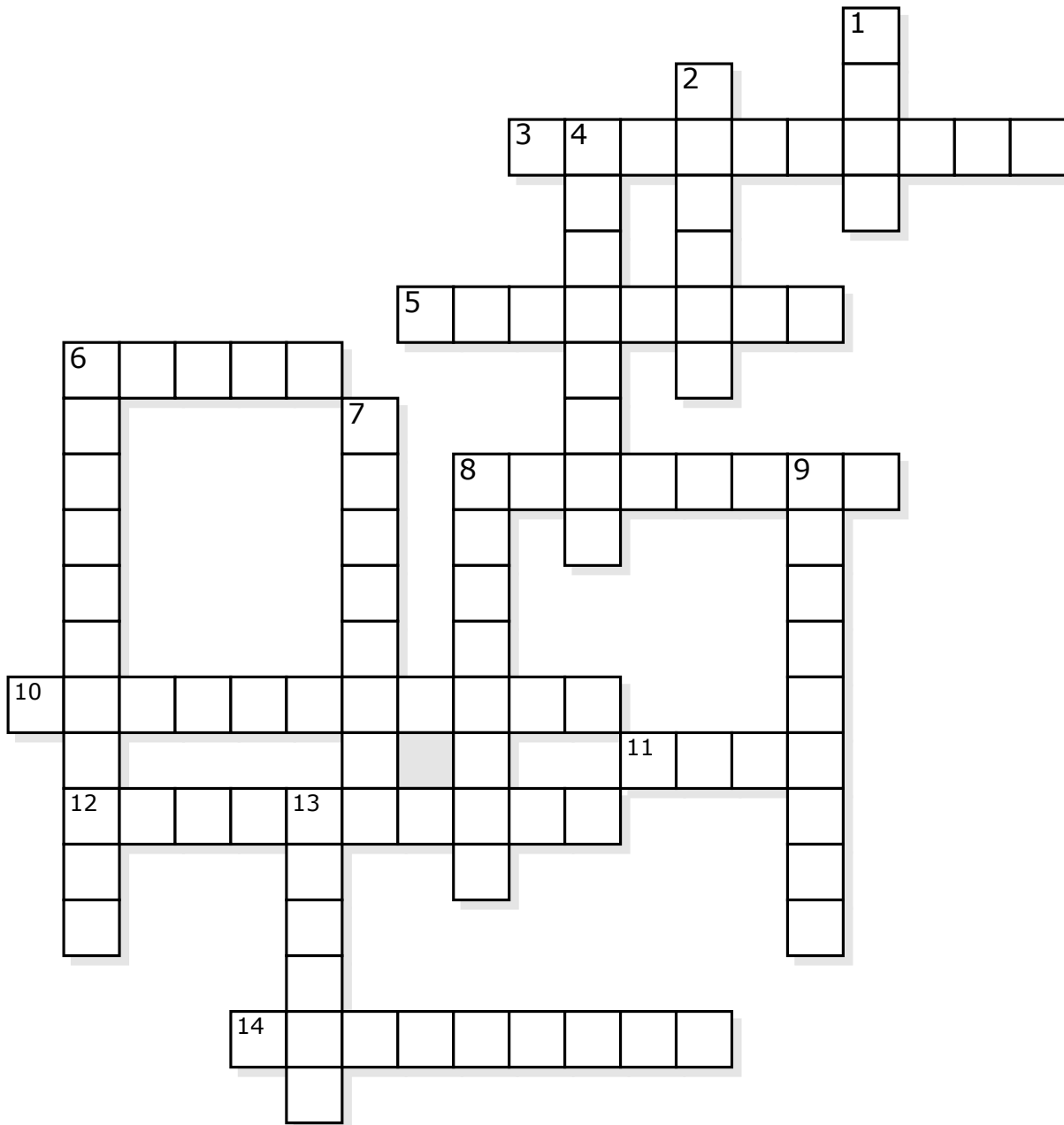
3. CPR Procedures

- Check radial pulse, between 91.4 and 86 degrees F this pulse disappears
- Check for carotid pulse - wait at least a full minute to check for very slow heartbeat
- If pulse but not breathing or slow breathing, give rescue breathing (also adds heat).
- If no discernible heartbeat begin CPR and be prepared to continue - persons with hypothermia have been given CPR for up to 3.5 hours and have recovered with *no* neurological damage
- Begin active rewarming

Y Y N Y A V L Y O Z D S C B P F Y J J P
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 W G D V M Z C P V M O D E R A T E W E G
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Word Bank

Afterdrop, Arteries, Cerebral, Chemical, Clinical, Dehydration, Hypothermia, Masquerade,
 Metabolic, Mild, Moderate, Severe, Warm, Waterproof, heart, umbles



Across

3) Prevention of hypothermia requires dress that is windproof and _____?

5) Hypothermia - "a decrease in the core body temperature to a level at which normal muscular and what type of functions are impaired

Down

1) Always act on the premise that "no one is dead until _____?"

2) Immediately life threatening level of hypothermia where the person doesn't shiver at times

Across

- 6) Cardiac arrhythmia's develop, any sudden shock may set off Ventricular Fibrillation which causes death because what stops
- 8) Hot water bottles, warm rocks, towels, compresses and what type of packs can be used to warm the body in a hypothermic wrap
- 10) A condition leading to hypothermia
- 11) Shivering, not under voluntary control is a symptom of what type of hypothermia
- 12) What does hypothermia do to a variety of conditions like death
- 14) A hypothermic victim may still may be alive in what type of icebox which they can be revived from

Down

- 4) Where should heat packs be applied to transfer heat ? Examples are - at the neck for the carotid, at the armpits for the brachial, at the groin for the femoral, at the palms of the hands for the arterial arch.
- 6) happens when your core body temperature falls below normal, which can easily happen when you are exposed to cold winds or wetness
- 7) Irrational behavior and "I don't care attitude" are symptoms of what level of hypothermia
- 8) When a person is in severe hypothermia they may demonstrate all the accepted what signs of death
- 9) Is a situation in which the core temperature actually decreases during rewarming. This is caused by peripheral vessels in the arms and legs dilating if they are rewarmed. This dilation sends this very cold, stagnate blood from the periphery to the core further decreasing core temperature which can lead to death.
- 13) stumbles, mumbles, fumbles, and grumbles which show changes in motor coordination and levels of consciousness are called what ?