



# Heat Injury

2019 CRITICAL DAYS OF SUMMER NEWSLETTER

WEEK 9: 22 JULY

**170**  
**PEOPLE**  
**DIE EACH**  
**YEAR**  
**FROM**  
**HEAT**  
**STROKE**

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## Types of Heat Illnesses

**Marines should understand that the prevention of heat injuries are vital to sustaining the force. Leaders must continually be aware of the condition of their Marines and be especially alert for signs and symptoms of heat and sun injuries.**

Prevention, early detection, and immediate treatment are the leader initiatives through which heat and sun injuries should be managed. Here is a list of different types of heat illnesses.

**Heat Cramps.** Athletes are familiar with this syndrome caused by salt depletion. It is easily treated with rest and drinking electrolyte-balanced fluids such as sports drinks or plain water and eating salty chips or nuts. Avoid salt tablets due to the risks of overdosing.

**Heat Syncope and Fainting.** Fainting happens when blood pools in the legs, often after standing too long. It is tempo-

rary; being horizontal usually prompts a return to consciousness. To help blood return to the heart, elevate the person's legs, and cool the body with wet compresses and fanning. Turn the unconscious person on his or her side to prevent choking. One exception is if the person has been working hard; then consider the fainting due to heat stroke and call 911. Anyone who faints should be medically evaluated and not return to work.

**Heat Exhaustion.** This condition is serious and is caused by severe dehydration. Symptoms can include fatigue, dizziness, nausea and vomiting, plus early neurological signs such as headache, impaired judgment and anxiety. Exhaustion causes profuse sweating and cool, clammy skin. Move the person out of the heat, provide fluids as tolerated, strip off extra clothing, and cool them by wetting clothing and fanning. Have them medically evaluated.



**Heat Stroke.** This is a medical emergency. It can look like exhaustion except the body temperature is 104 degrees F or higher, and the brain is seriously affected. Neurological effects can include confusion, irrational or aggressive behavior, incoherent speech, collapse, convulsion, and coma. When the body's heat-coping mechanisms have failed, sweating stops and the skin becomes red, dry and hot to the touch. Call 911 and quickly lower the body temperature.

## Flag Conditions

The Wet Bulb, Globe Temperature (WBGT) Index is the most effective means of assessing the effect of heat stress on the human body. The WBGT Index is used to determine **Flag Conditions** as a safety standard. Knowing and understanding these Flag Conditions will help keep you safe. Color coded flags are flown in strategic locations on Marine Corps Installations to communicate hazardous conditions to personnel so that work and outdoor activity can be adjusted accordingly.

Flag Color	WBGT Index (F)	Intensity of Physical Exercise
Green	80-84.9	Unacclimatized personnel must perform heavy exercises with caution and under constant supervision. Organized PT evolutions in boots and utilities are allowed for all personnel.
Yellow	85-87.9	Strenuous exercise and activity (e.g., close order drill) should be curtailed for new and unacclimatized personnel during the first 3 weeks of heat exposure.
Red	88-89.9	Strenuous exercise curtailed for all personnel with less than 12 weeks training in hot weather. Troops who are thoroughly acclimatized may perform limited activity not to exceed 6 hours a day.
Black	90 and above	Physical training and strenuous exercise suspended for all personnel (excludes operational commitment not for training purposes).

**A child  
DIES from  
being left  
in a  
vehicle  
every 9  
days**

# Heat Illness Prevention in 3 Steps

**An ounce of prevention is worth a pound of cure! When it comes to heat injury, that is especially true. Follow these three steps to keep yourself out of the risk zone.**

## 1. HYDRATE

Hydration is the most important step to combating heat stress. In extreme heat and humidity, you can use the half-half rule: drink  $\frac{1}{2}$  liter every  $\frac{1}{2}$  hour. You should not wait until you feel thirsty to drink; if you are thirsty, you may already have lost 2% of your body's water. The onset of heat exhaustion can begin after losing 3% of the body's water and heat stroke occurs once 8% is lost. The bottom line is, if you are not regularly urinating or have dark urine, you are dehydrated and at risk for heat illnesses!

## 2. ASSESS

Assess the relative danger of the CONDITIONS and your PERSONAL risk factors. Conditions: Be aware that high heat, high humidity, low air circulation all



increase risk. When more than one of these variables is present, the danger is compounded. In these conditions, you need to take breaks in the shade and wear light, breathable clothing and hats. Some people wear excess clothing to protect themselves from the sun, but this is a dangerous practice that has resulted in death. Personal risk factors include being out of shape, overweight, old age, drinking sugary

and caffeinated drinks, sleep deprivation, and certain medical conditions and medicines.

## 3. ACCLIMATIZE

If you are new to the area or is returning after time away: ease back into full-time activities over the course of 5 days. Starting strenuous work and exercise at half-time or 50% effort and increasing to a full work load (by 10% each day) can greatly reduce your susceptibility to heat stress.

## Dehydration Warning Signs

**Once dehydration has set in, the body slowly begins to shut down, eventually causing problems such as kidney failure, seizures and brain swelling.**

Fortunately, your body will tell you that you're dehydrated before you get to that stage, by displaying one or more of the following warning signs.

**Dry Mouth** - One of the earliest signs of dehydration.

**Fatigue** - Fatigue is another common sign of dehydration, so if you feel tired after a workout or sluggish while working in the afternoon, it may be because you haven't had enough to drink.

**Headache** - Many headaches are caused by dehydration and this is especially true for children and teens.

**Feeling Hot** - Your body's temperature regulation is dependent on water.

**Dizziness And Difficulty Concentrating** - Severe dehydration can also cause confusion and can make it difficult to concentrate.

**Nausea and vomiting** - Nausea is another symptom of severe dehydration, which may require medical attention.

**Urine Color** - By far, the best indicator of dehydration is the color of your urine. Your urine should actually be clear; if it isn't, that means that you haven't taken in enough fluids. How

much are you lacking? The color will actually tell you. If the urine is a dark color, that's a sign of severe dehydration. But if the urine is a lighter color, that's a sign of mild dehydration. Either way, if your urine isn't clear, it's time to pour yourself a glass of water.

**Check out the Dehydration Urine Color Chart on the last page for more information.**

Although dehydration can easily occur when you're sick or spending time in the sun, it can be just as easy to prevent. All you need to do is just keep drinking!



# Keeping Your Loved Ones Safe

**Children and people aged 65 years and older are more prone to heat-related health problems. Here are some tips to help you keep them safe.**

## CHILDREN

To help protect kids from heat illness:

- Teach kids to always drink plenty of fluids before and during activity in hot, sunny weather — even if they're not thirsty.
- Make sure kids wear light-colored, loose clothing and use sunscreen when outdoors.
- On hot or humid days, make sure your kids only participate in heavy activity outdoors before noon and after 6 p.m.
- Teach kids to come indoors, rest, and hydrate immediately whenever they feel overheated.
- Never leave a child alone in a car. When the outside temperature is 93°F (33.9°C), the temperature inside a car can reach 125°F (51.7°C) in just 20

minutes, quickly raising body temperature to dangerous levels.

Call for emergency medical help if your child has been outside in extreme temperatures or another hot environment and shows one or more of these symptoms of heatstroke: severe headache, weakness, dizziness, confusion, nausea, rapid breathing and heartbeat, loss of consciousness, seizure, no sweating, flushed, hot, dry skin, temperature of 104°F (40°C) or higher

While waiting for help: Get your child indoors or into the shade. Undress your child and sponge or douse him or her with cool water. Do **not** give fluids unless your child is awake, alert, and acting normally.

## OLDER ADULTS

Older adults do not adjust as well as young people to sudden changes in temperature. They are more likely to have a chronic medical condition that changes normal body responses to heat. They are also more likely to take prescription medicines that affect the body's ability to control its temperature or sweat.

- Stay cool, stay hydrated. Drink more water than usual and **don't wait** until you're thirsty to drink. If your doctor limits the amount of fluids you drink or has you on water pills, ask them how much you should drink during hot weather.
- Stay in air-conditioned buildings as much as possible. If your home doesn't have air conditioning, contact your local health department or locate an air-conditioned shelter in your area. Do not rely on a fan as your main cooling source when it's really hot outside.
- Don't use the stove or oven to cook—it will make you and your house hotter.
- Wear loose, lightweight, light-colored clothing.
- Take cool showers or baths to cool down.
- Do not engage in very strenuous activities and get plenty of rest.

If you don't live in the same area as your older relatives, keep in regular contact with them or have someone you trust check on them.

## How Serious is a Heat Stroke?

There are two types of heat stroke. "One is called exertional heat stroke," said Dr. Corey Slovis, a professor and chair of Emergency Medicine at Vanderbilt University Medical Center. This commonly affects athletes, such as football players or road racers, who exercise strenuously and their bodies can't dissipate the heat fast enough. "More commonly, is the classic heat stroke where people become increasingly dehydrated."

Athletes who get heat stroke almost invariably do well, said Slovis. And it is "potentially totally curable" in healthier patients who receive treatment immediately. "Although many patients with heat stroke recover completely, they're at increased risk for heat stroke in the ensuing days, weeks and months," said Dr. Slovis.

Still, no matter who you are, once your temperature rises above 104, profound changes in brain function occur, "you are

**at risk for permanent brain, heart and kidney damage and you are at risk for death since heat stroke is potentially fatal,"** said Dr. Slovis. "The things we fear the most are renal damage, cardiac events, and something called rhabdomyolysis -- or muscle break down that may cause permanent kidney damage. Anything is possible due to heat stroke."

The damage begins immediately, yet the results depend on both time and the individual. Essentially, the longer the body is at high temperatures, the greater the risk to each organ system.

"The sooner you're cooled, the healthier you are, the better you will do in a relatively unpredictable way," said Dr. Slovis. "I want to stress to you it is variable and each individual is different as far as how



he or she is going to do. There's some point in each individual where **the heat, the inflammation, the multi-organ system failure reaches a point where the patient can no longer be saved** and that's different for each individual." Staying out of the sun and heat, and making sure you drink plenty of water can help you from becoming a heat stroke victim.



## Camp Pendleton Base Safety Center

Building 16142 on "A" Street

Commanding General's  
Safety Hotline: 760.763.7233

Base Safety Center:

760.763.2366/5328

Cpen\_safety\_help@usmc.mil

## Our Mission

The Marine Corps Base, Camp Pendleton Safety Center's mission is to promote the combat readiness of operating forces by providing safety support services. Our goals are to train all Marine Corps Base commands and organizations in occupational safety and health; mishap reduction and Federal Employees' Compensation Act costs through an aggressive safety program, and to exceed the reduction goals set by the Secretary of Defense, and Headquarters Marine Corps Safety Division. Our customers are Base personnel, the operating forces, extended Marine Families, tenant commands, and occasional Reserve components.

# SAFETY = FORCE PRESERVATION

## Dehydration Urine Color Chart

*The following Dehydration Urine Color Chart will help you use your urine color as an indicator of your level of dehydration and what actions you should take to help return your body back to a normal level of hydration.*

	Doing ok. You're probably well hydrated. Drink water as normal.
	You're just fine. You could stand to drink a little water now, maybe a small glass of water.
	Drink about 1/2 bottle of water (1/4 liter) within the hour, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.
	Drink about 1/2 bottle of water (1/4 liter) right now, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.
	Drink 2 bottles of water right now (1 liter). If your urine is darker than this and/or red or brown, then dehydration may not be your problem. See a doctor.

### FIND OUT MORE HERE:

⇒ **Camp Pendleton Base Safety Center**

[www.pendleton.marines.mil/Staff-Agencies/Safety-Center/](http://www.pendleton.marines.mil/Staff-Agencies/Safety-Center/)

⇒ **Naval Safety Center**

[www.public.navy.mil/NAVSAFECEN](http://www.public.navy.mil/NAVSAFECEN)

⇒ **CDC**

[www.cdc.gov](http://www.cdc.gov)

⇒ **USC**

[www.ehs.usc.edu](http://www.ehs.usc.edu)