MODULE 2

HEAT ILLNESSES:
What Are They & How Do You Treat Them?

SESSION DURATION:
15–20 MINUTES

MODULE OVERVIEW:
This module introduces audiences to the three types of heat illnesses (heat cramps, heat exhaustion, and heat stroke), why they occur, who is most at risk, how to recognize symptoms, and how to treat each illness.

SLIDE 1: Heat Illnesses: What Are They & How Do You Treat Them?

PURPOSE: **To introduce Module 2 and establish early on why it is important to be able to recognize heat illnesses and to know how to treat them. Successfully conveying the importance of these topics to audience members will increase the likelihood that they are motivated to take steps toward protecting themselves, their families, and their communities. Presenters are therefore invited to use the below talking points but are also encouraged to frame the importance of these topics in terms they know will resonate strongly with their audiences.**

KEY TALKING POINTS:

1. This module is designed to help you be able to recognize the three main heat illnesses and to know how to treat them.
2. As we'll talk about later on, heat illnesses range from mild to severe, and severe heat illness can be fatal.
3. So being able to recognize heat illnesses is a critical first step toward being able to protect yourself, your family, and your community.

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SLIDE 2: Objectives

PURPOSE: To introduce the objectives for Module 2 and to provide audience members with an overview of what they will learn. Also, to emphasize that this module focuses primarily on teaching audience members how to identify and treat heat illnesses, and that the topic of heat illness prevention will be addressed in a subsequent module.

KEY TALKING POINTS:

1. This module has four objectives designed to help you be able to recognize the three main heat illnesses and to know how to treat them.
2. The four objectives are:
   a. To define the three main heat illnesses and their symptoms
   b. To identify who is most at risk
   c. To learn how to treat each type of heat illness
   d. To understand that heat illnesses happen in San Diego County
3. During this module, we will talk about each of these topics in detail. We'll then talk about how to prevent heat illnesses later on.

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SLIDE 3: What Are Heat Illnesses?

PURPOSE: To provide audiences with a basic understanding of different ways the body cools itself naturally, and to set the stage for understanding what heat illnesses are and why they happen. Here we have included key talking points as well as additional information. The additional information provided is optional. It can be included in presentations to audiences if the presenter thinks it is appropriate to do so. It can also serve to enhance the background knowledge of the presenter in the event that audience members ask for more information or detail about the topics presented.

KEY TALKING POINTS:

1. Heat illnesses are serious medical conditions that can occur when our bodies can't cool down naturally, or when we don't (or aren't able to) help them stay cool in high temperatures.
2. Our bodies try to stay at a safe, constant internal temperature (97.7-99.5°F) to survive.
3. When our bodies exceed that temperature, they try to cool down naturally in three ways:
   a. Faster and deeper breathing
   b. Sweating
   c. Sending blood to the skin

ADDITIONAL (OPTIONAL) INFORMATION:

How does breathing cool the body? Breathing cools the body by releasing water vapor through the breath. When breathing rate and depth increase, for example during exercise, it enhances cooling of the body.

How does sweating cool the body? Sweat is mostly water but also contains some salts. As sweat is released through our pores onto our skin, it evaporates. This process of evaporation releases heat and cools the skin.

How does sending blood to the skin cool the body? When body temperature increases, the blood vessels under the skin expand (this is called vasodilation). Vasodilation makes it easier for blood to flow to the skin where it loses heat. As the cooled blood continues to travel through the body it helps to lower the temperature inside the body.

How does humidity affect the ability of the body to cool itself? In general, there are two kinds of heat: "dry heat" (where the relative humidity level is below 40%) and "humid heat" (where the relative humidity level is above 40%). Relative humidity is a measure of how much water vapor is in the air. The ability of the body to cool itself naturally decreases in humid heat because the more water vapor there is in the air the more slowly sweat is able to evaporate from the skin.

How do nighttime temperatures affect the ability of the body to cool itself? If temperatures cool at night after a hot day, this can help the body cool down. If temperatures do not cool at night after a hot day, this can make it harder for the body to cool down. Higher nighttime temperatures can also interrupt sleep. Less sleep can lead to immune system damage and a higher risk of cardiovascular disease, chronic illnesses, inflammation, and mental health conditions.

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SLIDE 4: Heat Illnesses in San Diego County

PURPOSE: To further set the stage by reminding audiences that heat illnesses happen in San Diego County. Note that use of this particular news article as an example is optional. Presenters are encouraged to include news articles or other fact-based local- or county-level information about recent heat waves and/or the frequency of heat illnesses in San Diego County that they know will resonate strongly with their audiences.

KEY TALKING POINTS:

1. In this recent example from a September 2022 heat wave in California, newspapers reported that some San Diego County hospitals had an influx of patients with heat illnesses.
2. The heat wave lasted for two weeks and was one of the hottest of this duration on record.
3. One hospital emergency room that rarely receives patients with heat illnesses in September reported that it received six in one weekend alone.

NOTES:

SLIDE 5: Conversation Starter

PURPOSE: **This Conversation Starter is designed to create a break in the presentation and to help audiences start thinking critically about the potential for heat illnesses to affect themselves, their families, and their communities. Presenters may choose to ask audiences only to reflect on the questions or to discuss them with the people around them and/or with the broader audience. Note that this Conversation Starter is optional. Presenters are also encouraged to create their own questions (or their own Conversation Starters at other points in the presentation) that they know will resonate strongly with their audiences. Again, the more importance audiences give to being able to recognize and treat heat illnesses, the more likely they will be to take steps toward protecting themselves, their families, and their communities.**

KEY TALKING POINTS:

1. Let's pause for a moment to think about these questions, and feel free to discuss them with the people around you.
   a. Are there people in your community who you think might be at risk for heat illnesses?
   b. If so, what do you think are the biggest at-risk groups and why?
2. Is anyone willing to share their ideas with the group?

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SLIDE 6: Who Is at Risk?

PURPOSE: To provide audiences with a basic overview of what groups are more at risk for heat illnesses before discussing the illnesses in more detail. The intention is for this overview to be brief given that presenters will have the option to discuss at-risk groups more in-depth in Module 3 (HEAT ILLNESSES: Who Is at Risk and Why?).

KEY TALKING POINTS:

1. Heat illnesses can affect anyone, including people who consider themselves to be acclimatized! However, these people are more at risk:
   a. People who are unsheltered or unhoused
   b. People with limited resources
   c. People who are socially, culturally, and/or linguistically isolated
   d. People with certain medical conditions
   e. People taking certain medicines/medications
   f. People with certain physical disabilities
   g. Infants and children (<4)
   h. People who are pregnant and/or nursing
   i. Older adults (60+)
   j. Outdoor workers
   k. People who do outdoor activities/play outdoor sports
2. This list is intended to give just a snapshot of who is more at risk. We'll talk more about each of these groups and why they're at risk later on.

ADDITIONAL (OPTIONAL) INFORMATION:

What does it mean to be acclimatized to heat? When a person is acclimatized to heat, it means that they have increased tolerance to heat due to repeated exposure to a hot environment. The increased tolerance results from changes in the physiology of the person, including greater sweating efficiency, stabilization of circulation, ability to perform work with lower core temperature and heart rate, and sending more blood to the skin at a given core temperature.

Why can even acclimatized people experience heat illnesses? Every human body is different, but every human body also has limitations.

I don't know how to answer that question. What do I do?
Someone asked if they, specifically, are at risk for heat illnesses.
Tell them: If you fall into one of the categories listed here (i.e., on the slide), you may be at risk. However, the best way to know for certain is to ask your doctor or healthcare provider.

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SLIDE 7: Three Types of Heat Illnesses

PURPOSE: **To provide audiences with a brief introduction to the three types of heat illnesses and to make them aware that each one increases in severity. Also, to make audiences aware that all heat illnesses are preventable and so should always be treated early (when possible). These points are critical because if heat cramps are not treated early, they can turn into heat exhaustion. If heat exhaustion is not treated early, it can turn into heat stroke. And if heat stroke is not treated early, it can be fatal. This is why it is so important for audiences to be able to recognize heat illnesses and to know how to treat them – because they can escalate and result in death.**

KEY TALKING POINTS:

1. There are three main types of heat illnesses, and each one increases in severity. The first is "heat cramps," which is mild. The second is "heat exhaustion," which is moderate. The third is "heat stroke," which is severe.
2. Any heat illness is preventable.
3. However, if not treated, heat cramps can turn into heat exhaustion, heat exhaustion can turn into heat stroke, and heat stroke can be fatal.
4. This is why it's important to treat the signs of heat illness early.

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SLIDE 8: Heat Cramps

PURPOSE: To reiterate that heat cramps are the mildest of the three heat illnesses. Also, to help audiences understand why heat cramps occur and how to recognize the symptoms so that they know when heat cramps are happening.

KEY TALKING POINTS:

1. As we talked about before, the three main types of heat illnesses are increasingly severe, and heat cramps is the mildest.
2. Heat cramps can happen when a person sweats a lot while working or exercising in high heat. Sweating causes the body to lose salt and water. Low levels of salt in the muscles can cause painful cramps.
3. There are two main symptoms of heat cramps:
   a. Heavy sweating
   b. Painful muscle cramps or spasms

NOTES:

SLIDE 9: Heat Cramps: Treatment

PURPOSE: To provide audiences with the appropriate steps for treating heat cramps when they happen. It is important to note that these are general, accepted recommendations for treating heat cramps as provided by the Centers for Disease Control and Prevention (sometimes referred to as the CDC). The CDC is the national public health agency of the United States. It is therefore possible that these recommendations may differ from how heat cramps are treated in other cultures. For more information on these recommendations from the CDC, visit https://www.cdc.gov/disasters/extremeheat/warning.html.

KEY TALKING POINTS:

1. Heat cramps are not a medical emergency. Heat cramps can be treated by the person experiencing them.
2. If someone is having heat cramps, here's what they should do:
   a. Stop activity for a few hours
   b. Move to a cooler location (for example, move inside if there is air conditioning or move into the shade)
   c. Drink water, clear juice ("clear" means no pulp), or a sports drink (like Gatorade)
   d. Call the doctor if cramps don't go away within one hour

ADDITIONAL (OPTIONAL) INFORMATION:

Why drink only water, clear juice (i.e., no pulp), or a sports drink? These beverages are all hydrating and easy to get down. Beverages like coffee, caffeinated tea, soda, and alcohol can all lead to dehydration.

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SLIDE 10: Heat Exhaustion

PURPOSE: **To reiterate that heat exhaustion is the moderate of the three heat illnesses. Also, to help audiences understand why heat exhaustion occurs and how to recognize the symptoms so that they know when it is happening. It is important to note that these are general, accepted recommendations for treating heat exhaustion as provided by the Centers for Disease Control and Prevention (sometimes referred to as the CDC). The CDC is the national public health agency of the United States. It is therefore possible that these recommendations may differ from how heat exhaustion is treated in other cultures. For more information on these recommendations from the CDC, visit https://www.cdc.gov/disasters/extremeheat/warning.html.**

KEY TALKING POINTS:

1. As we talked about before, heat exhaustion is a moderate heat illness.
2. Heat exhaustion happens when the body overheats and starts to have a hard time cooling down. Heat exhaustion often happens when a person is dehydrated, meaning that they were sweating a lot in high heat without drinking enough fluids to replace the loss of salt and water from the body.
3. The symptoms of heat exhaustion are varied, and they may not happen all at one time (or appear the same in every person). In fact, some may not happen at all. This is why it can be difficult to identify heat exhaustion when it is happening. The symptoms are:
   a. Tiredness or weakness
   b. Dizziness or headache
   c. Fainting or passing out
   d. Heavy sweating
   e. Fast, weak pulse
   f. Nausea or vomiting
   g. Cold, pale, and clammy skin
   h. Muscle cramps, tingling, or numbness

NOTES:

SLIDE 11: Heat Exhaustion: Treatment

PURPOSE: To provide audiences with the appropriate steps for treating heat exhaustion when it happens.

KEY TALKING POINTS:

1. Heat exhaustion does not usually require emergency medical help if the person can cool down within 30 minutes. A person having exhaustion can usually treat their own symptoms. However, if the heat exhaustion is severe, a person having heat exhaustion will need help (for example, if they are fainting).
2. If someone is having heat exhaustion, here's what they should do:
   a. Go someplace cooler (e.g., air-conditioning or shade)
   b. Sip cool water, clear juice ("clear" means no pulp), or a sports drink (like Gatorade)
   c. Take a cool shower or bath, or apply a cool wet cloth to the body
   d. Change into loose, light-weight clothes
   e. Lay down
   f. Call the doctor if:
      i. Symptoms get worse or last more than one hour
      ii. They have heart problems or high blood pressure

KEY TALKING POINTS

I don't know how to answer that question. What do I do? Someone asked if eating food (or sugar) is a way to treat heat exhaustion. Tell them: No. Food and sugar consumption increases body heat, reduces body water content, and can exacerbate symptoms of dizziness and nausea.

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SLIDE 12: Heat Stroke

PURPOSE: **To reiterate that heat stroke is the most severe of the three heat illnesses. Also, to help audiences understand why heat stroke occurs and how to recognize the symptoms so that they know when it is happening. It is important to note that these are general, accepted recommendations for treating heat stroke as provided by the Centers for Disease Control and Prevention (sometimes referred to as the CDC). The CDC is the national public health agency of the United States. It is therefore possible that these recommendations may differ from how heat stroke is treated in other cultures. For more information on these recommendations from the CDC, visit https://www.cdc.gov/disasters/extremeheat/warning.html.**

KEY TALKING POINTS:

1. As we talked about before, heat stroke is the most severe heat illness.
2. Heat stroke happens when the temperature inside the body becomes too high and the body can't cool down. Heat stroke can cause permanent disability or death.
3. There are a few reasons that heat stroke can be difficult to identify when happening:
   a. Like with heat exhaustion, the symptoms of heat stroke are varied, and they may not happen all at one time. In fact, some may not happen at all.
   b. Some of the symptoms of heat stroke are the same as some of the symptoms of heat exhaustion. The symptoms that pertain only to heat stroke are highlighted here (i.e., in the slide) in bright red. Those symptoms include:
      i. Confusion
      ii. Fast, strong pulse
      iii. Hot, red, dry, or damp skin
      iv. Very high body temperature (103°F or higher)
   c. Other symptoms of heat stroke (that can be the same as symptoms of heat exhaustion) include:
      i. Dizziness or headache
      ii. Fainting or passing out
      iii. Nausea or vomiting
4. If you are unsure if someone is having heat exhaustion or heat stroke, call urgent care for advice on what to do.

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SLIDE 13: Heat Stroke: Treatment

PURPOSE: **To provide audiences with the appropriate steps for treating heat stroke when it happens.**

KEY TALKING POINTS:

1. Heat stroke is a medical emergency. If someone is having heat stroke, they will need help. Here's what you should do:
   a. First, call 911 right away. Then take these steps in order:
      i. Reduce body temperature, for example:
         - Wrap the person in a cool towel
         - Put the person in a cool bath
         - Spray the person lightly with cool hose water
      ii. Move the person to a cooler place
      iii. Do not give the person anything to eat or drink
      iv. If the person is vomiting, turn them on their side to keep their airway open

ADDITIONAL (OPTIONAL) INFORMATION:

Why is it important to not give the person anything to eat or drink? Eating or drinking could be dangerous because a person experiencing heat stroke may be confused, have nausea or vomiting, rapid breathing, and an accelerated heartbeat. Eating or drinking could worsen these symptoms in addition to causing airway obstruction.

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SLIDE 14: Conversation Starter

PURPOSE: This Conversation Starter is designed to create a break in the presentation, to help audiences reflect on what they have learned in this module, and to provide them an opportunity to ask questions. Presenters may choose to ask audiences only to reflect on the question or to discuss it with the people around them and/or with the broader audience. Note that this Conversation Starter is optional. Presenters are also encouraged to create their own questions (or their own Conversation Starters at other points in the presentation) that they know will resonate strongly with their audiences.

KEY TALKING POINTS:

1. Let's pause for a moment to think about this question, and feel free to discuss it with the people around you.
   a. Have you or someone you know experienced heat illness? Talk about that experience.
2. Is anyone willing to share their experiences with the group?

NOTES:

SLIDE 15: What about Pets?

PURPOSE: To help audiences understand that pets can also suffer from heat exhaustion and heat stroke, and to help audiences be able to recognize the symptoms.

KEY TALKING POINTS:

1. Pets can also suffer from heat exhaustion and heat stroke, for example:
   a. Symptoms of heat exhaustion in dogs can include:
      i. Heavy panting
      ii. Restlessness
      iii. Seeking shade and/or water
      iv. Stopping and laying down repeatedly on walks or during a run
      v. Weakness and moments of collapsing
   b. Symptoms of heat stroke in dogs can include:
      i. Change in gum color (bright red or pale)
      ii. Drooling
      iii. Dizziness or disorientation
      iv. Increased heart rate and respiratory rate
      v. Vomiting and/or diarrhea
      vi. Muscle tremors
      vii. Seizures

I don't know the answer to that question. What do I do? Someone asked if other pets can also suffer from heat exhaustion and heat stroke. Tell them: Yes, other pets can also suffer from heat exhaustion and heat stroke. However, the symptoms may be different (e.g., whereas a dog pants, a horse sweats). So, it is important to check with your veterinarian to know what the symptoms are for your particular type of pet.

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SLIDE 16: Heat Exhaustion & Heat Stroke in Pets: Treatment

PURPOSE: To provide audiences with basic steps for treating heat exhaustion and heat stroke in dogs when it happens.

KEY TALKING POINTS:

If your dog is experiencing symptoms of heat exhaustion or heat stroke, act fast!

1. Call your veterinarian right away.
2. If home treatment is recommended, be sure to follow the steps provided by your veterinarian. These may include:
   a. Making sure your dog is in a shaded area or room with air-conditioning
   b. Pouring cool water (not cold water to avoid shock) over the dog
   c. Offering the dog small amounts of cool water
3. Do not place wet towels over your dog as this will trap heat (remember: unlike humans, they have a layer of fur on their skin),

I don't know the answer to that question. What do I do? Someone asked if treatment of heat exhaustion and heat stroke is the same for all types of pets. Tell them: Some of these treatment steps may be similar but others not. So, it is important to check with your veterinarian to know specifically what steps to take to treat heat exhaustion and heat stroke in your particular type of pet.

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SLIDE 17: Summary

PURPOSE: **To reinforce the objectives of this module by highlighting key takeaways.**

KEY TALKING POINTS:

As we conclude this module, please remember these four key takeaways:

1. There are three main types of heat illnesses: heat cramps (mild), heat exhaustion (moderate), and heat stroke (severe).
2. Heat illnesses can happen to anyone, but some groups are more at risk.
3. Heat illnesses can also happen in pets.
4. Any heat illness is preventable, so it is important to treat the signs (or symptoms) early.

NOTES:

SLIDES 18–20: Module 2 Templates

PURPOSE: **These Module 2 slide templates are included so that presenters can add additional information into the presentation that they consider important for audiences to know. If a presenter needs more templates, they can simply copy those provided here.**

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