



HARVARD T.H. CHAN
SCHOOL OF PUBLIC HEALTH

C-CHANGE

CENTER FOR CLIMATE, HEALTH,
AND THE GLOBAL ENVIRONMENT



Climate Resilience for Frontline Clinics Toolkit

Module for

Extreme Heat

in collaboration with





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How To Use This Toolkit

The Climate Resilience for Frontline Clinics Toolkit includes a wide variety of resources for several different hazards. There is more material here than anyone has time to read in one sitting. The following suggestions may help you make the best use of these resources. These suggestions are based on feedback, focus groups, and interviews with frontline clinic staff that implemented earlier versions of these toolkit materials.

Designate a weather resilience lead

Designate one person at your facility as a weather resilience lead. This person can:

- Take the time to review these documents in detail.
- Identify which materials will be most useful to colleagues in different parts of the organization.
- Track imminent weather threats.
- Sign up for and receive alerts from various systems, if desired.

See the [Critical Roles and Responsibilities](#) for more details.

Identify your clinical engagement strategy

Set up a meeting with members of your healthcare team to determine how you would like to use the clinical and patient facing resources at your facility. Frontline clinics that participated in the development of these resources use them in several different ways, including the following:

- Educating clinicians on the impacts of climate hazards and approaches they can use when counseling patients.
- Making sure printouts of patient facing materials are easily accessible alongside other counseling materials that are used in the clinic.
- Adding patient facing materials to electronic after-visit summary documents so that it is easy to distribute these materials along with other parts of the after-visit summary.
- Printing out patient-facing materials and leaving them in a prominent location in the waiting room.
- Conducting education sessions on the contents of this toolkit for staff, administrators, or patients.
- Assign a specific member of the healthcare team to ask patients about relevant hazards and provide educational materials. This could include roles such as nurses, doctors, social workers, pharmacists, community health workers, and others.

Tailor these resources to the needs of your institution

In some cases, it may be desirable to modify details in these toolkit resources to meet specific needs at your organization or to reflect your local situation. Examples of this could include:

- Adding more detailed information about how to reach local authorities.
- Providing information about specific city, county, or state level resources.
- Providing information about specific policies and practices at your institution.
- Providing information about resources in your community, such as how to find cooling centers available in your city or town.

The easiest way to do this is to modify the provided **Documentation Templates**, which you can import into after-visit summaries for your patients.

Alternatively, you may find it helpful to make a separate flyer with a list of local resources and phone numbers to accompany the materials from this toolkit.

Integrate resources into your electronic health record system

You may find it helpful to integrate resources into your electronic health record system.

- You are welcome to include the attached PDFs and content in after-visit summaries, or to link to them from internal institutional reference documents or databases.
- We have provided a set of documentation templates that you can easily import into your electronic health record system.
- If you need more advanced integration support, such as creating templates of these materials within your electronic health record system, we may be able to help provide the content in a compatible format. Please contact our team for more information.

Share your experience and ideas

Many of the clinics that helped develop these materials found it helpful to share ideas and learn from each other about how they used the toolkit resources. If you have insights or experiences to share, please contact our team. In some cases, your contributions may be shared with other clinics or healthcare workers, with credit to you and your institution if desired. Examples of what you might share include:

- A description of how you have been using a specific resource in the toolkit.
- An anecdote about a climate hazard that you have dealt with successfully.

Conduct periodic reassessments

It may be beneficial to periodically reassess your climate resilience activities. Consider doing this:

- Annually in late fall, after the risk of climate hazards has decreased.
- After specific climate-related events, such as a hurricane or heatwaves, to review and learn from the experience.



Heat Action Plan and Tip Sheet

For Patients

This sheet provides tips and helps make a plan for patients and caregivers on how to stay safe in the heat.

Heat is dangerous for your health. It can be dangerous even when the temperature is not extremely high

Hot weather increases the risk of heat stroke, heat exhaustion, heart attacks, strokes, dehydration, mental health crises, and many other health problems.

Things like humidity can make it feel hotter even when the temperature is not as high, and the intensity of the sun can make heat more dangerous. **High temperatures at night** or unusual temperatures for where you live may be especially risky.

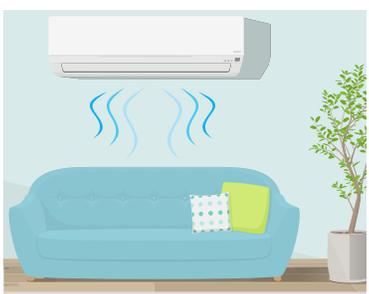
Local heat risk can be checked here: <https://ephtracking.cdc.gov/Applications/HeatRisk/>

I will check my local weather forecast here: _____

I may be at risk when the temperature is over: _____

If you feel hot, even if there is not a heat advisory or heat warning, use the following tips to stay safe.

Go somewhere cooler if it feels too hot for you where you are



Family or friend's house with air conditioning



Place of worship



Local businesses, community centers and shopping centers



Shaded area

To cool off, I will: _____

If needed, I can go to: _____

I will get there by: _____

Know what to do if you or someone around you is suffering from a heat-related illness

Heat exhaustion vs. heat stroke

Heat Exhaustion

Heat Exhaustion symptoms that need emergency medical attention include

- feeling weak or extremely tired
- nausea
- heavy sweating
- feeling light-headed or as if you might pass out

Treatment:

- Seek care in a hospital emergency room
- Drink cold water and electrolytes
- Get to a cooler location or wet skin and sit in front of a fan



Heat Stroke

Heat stroke symptoms that need emergency medical attention include

- unconsciousness
- convulsions or seizures
- difficulty breathing
- confusion or slurred speech

Heat stroke victims may look drunk. They need to be aggressively cooled immediately.

Treatment:

- Immediately call 9-1-1
- Remove clothing and pour cold water on them
- If you have a fan, pour water on them and aim it at them
- If you can put them in ice water while protecting their ability to breathe, do that while working on getting them to hospital

Without treatment, symptoms can get worse. Heat stroke patients can die if they don't get immediate treatment.



Other heat-related symptoms include cramps, heat rash, thirst, and mild fatigue.

Treatment: • Drink cold water and electrolytes • Get to a cooler location or wet skin and sit in front of a fan

Adapted from the National Weather Service and U.S. CDC

I will watch for signs of heat illness including: _____

If someone is showing signs of heat related illness, it is very important to **cool first while waiting for transport** if needed. You can mist with cool air and a fan, use ice packs over the body and move to a cooler place close by (shade or air-conditioned room).

Drink plenty of water

- Do not wait until you feel thirsty—drink water throughout the day.
- Weight is your best indicator for dehydration: check your weight daily when it is hot.
- If your urine is dark, you probably need to drink more water.
- If you have heart or kidney problems, ask your doctor how much you should drink.

Here is a way to look at your urine or pee color to see how hydrated you are.

Urine color chart to assess hydration

Well hydrated Keep drinking the same amount			Mildly dehydrated Drink a glass of water	Dehydrated Drink 2-3 glasses of water
				Kidney injury Immediately go to the ER

The colors on this chart should only be used as a guide and not replace advice from a health professional. Chart adapted from <http://healthdirect.gov.au>

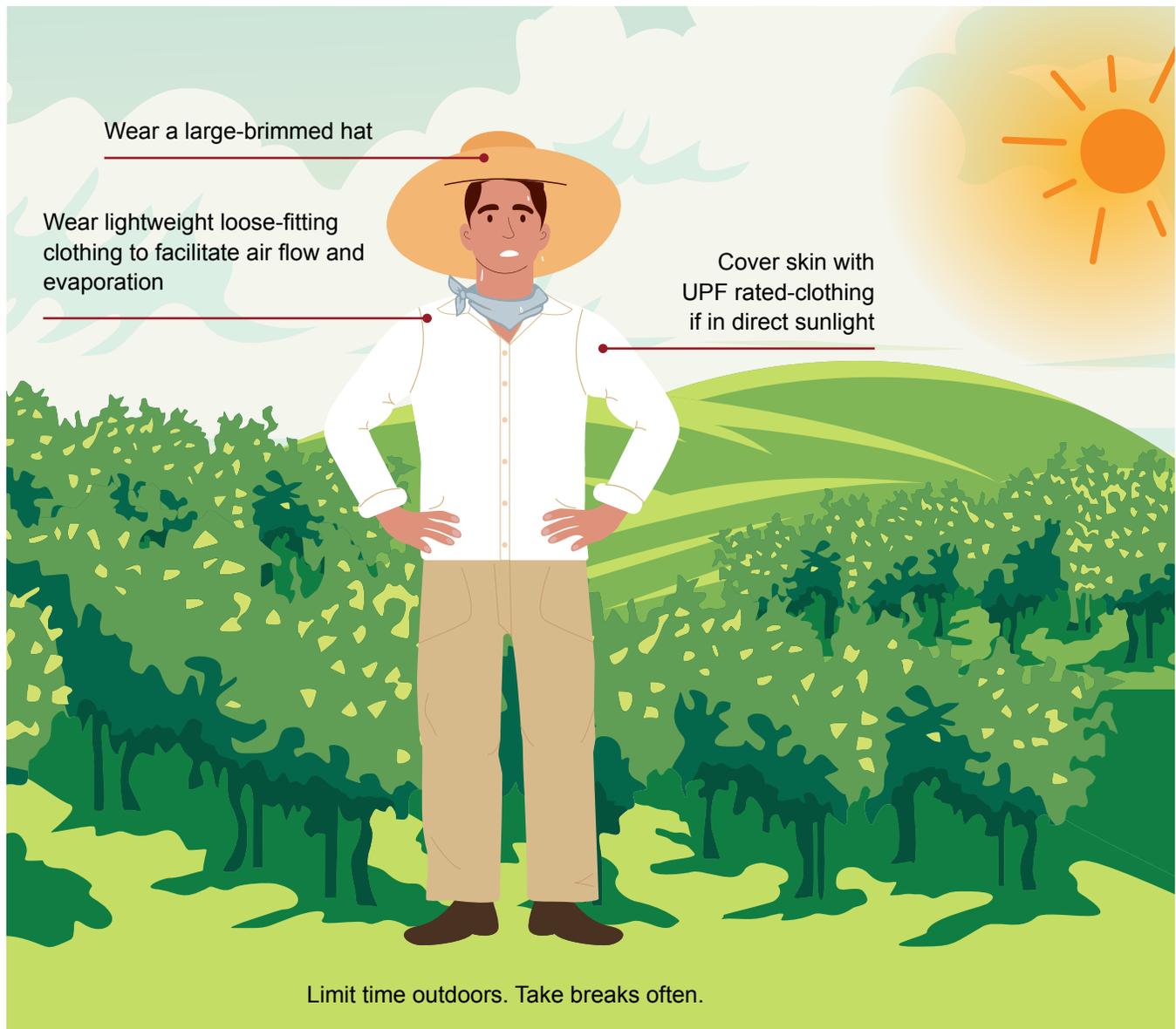
Drink	Reduce	Avoid
<p>Drink water and electrolytes.</p>	<p>Reduce consumption of sugary drinks or highly caffeinated drinks.</p>	<p>Avoid alcohol as it can impair decision-making and increase dehydration.</p>

If you are drinking a lot of water to stay hydrated, make sure to add a little extra salt to your food or add some oral rehydration salts or electrolytes to your water. If you drink nothing but water and do not eat or take in electrolytes, you can experience health problems caused by abnormally low electrolyte levels.

Signs of dehydration or electrolyte problems include feeling nausea, dizziness, headaches, muscle cramps and weakness.

To stay hydrated, I will drink: _____

Wear loose-fitting, lightweight clothing in light colors as well as a hat or head covering



To stay cool, I will wear: _____

Do outdoor work when it is cool in the morning or evening when you can

Heat is most dangerous in the middle of the day. If you must work, travel, or exercise outside, early morning and evening are safer options.

If you must work in the heat:

- Know the signs of heat related illness including nausea, headache, muscle cramps, extra sweating, weakness, or dizziness.
- Take frequent breaks in the shade or in a cool space.
- Be aware risks of injury when working in the heat is higher so be extra careful when working in the heat.
- Drink plenty of water- ideally at least one cup (8 oz) every 20 minutes while working outdoors.
- Talk about a heat safety plan with others.

To stay safe at work, I will: _____

Take steps to cool down

- Wet your body with cool water such as with a spray bottle, shower, or bath.
- Running a fan can help, but if the temperature is above 35°C or 95°F, also wet your skin with water, and try to move to a space with air conditioning.
- If you can, open the windows in your home when it is cooler outside, in the early mornings or late evenings, to cool down inside.
- If possible, move to a space with air conditioning in your home or neighborhood.

Take your medicines as prescribed unless your provider says otherwise

If you have heart problems, kidney problems, a mental health condition, or other health conditions, talk to your healthcare provider. See **Medications and Heat (For Patients)** for more information.

My healthcare provider told me to do the following when it is hot out:

Consider your risk factors

If you, or a loved one, are in any of the following groups, also review the **Tips for People with Specific Health Conditions or Risk Factors**.

- Babies or small children
- Chronic medications
- Dementia
- Diabetes
- Heart disease
- Kidney disease
- Limited mobility
- Lung diseases (like asthma or COPD)
- Mental health conditions
- Multiple sclerosis
- Older adults
- Outdoor workers
- Pregnancy and breastfeeding
- Substance use



Tips for People With Specific Health Conditions or Risk Factors

For Patients

This sheet gives overall tips and specific recommendations to people at-risk from the heat.

Tips for all people

- Avoid activities during the hottest part of the day when possible.
- Stay hydrated by drinking plenty of fluids such as water and electrolyte drinks.
- Avoid beverages with sugar, corn syrup, caffeine, and alcohol.
- Wear light colored, lightweight, loose-fitting clothing if you must go outside.
- Try to seek cooler environments and shade.
- Know where you can go to stay cool. This might be a neighbor or friend's home, a local business, or a cooling center near you. Sleep in a cool area if you can.
- Check-in on friends, family, and neighbors that may need help in the heat.
- Know who to ask for help if you are feeling too hot.
- Make a heat action plan with your healthcare provider today.

Tips for different health conditions or risks factors for heat illness

Babies or small children

- Babies and small children are at risk from heat due to their small bodies and difficulty controlling temperature.
- Keep babies and children in a **cool and shaded area** during hot weather, but do not reduce skin-to-skin contact even if it is hot.
- **Covering strollers with a moist muslin cloth and a clip-on fan** helps keep the stroller cool. Do not cover with a dry cloth as that can increase stroller temperatures.
- Ensure babies are **well-hydrated** with breastmilk or formula and that breast-feeding mothers are well hydrated as well.
- Make sure children stay **well-hydrated** by providing them with lots of fluids.
- Make sure they are urinating regularly.
- **If a baby or child appears pale, floppy, or exhibits unusual behavior, seek immediate medical attention.**

Chronic medications

- Certain medications can make it **harder for your body to cool down** or make you more likely to become dehydrated.

- **Go over your medication list** with your pharmacist or healthcare provider to know if you are on any medications that put you at higher risk.
- Unless your healthcare provider or pharmacist tells you to do something differently, keep taking your medications as prescribed.

Dementia

- Dementia patients including those with Alzheimer's or Parkinson's disease have a **higher risk of heat stroke, hospitalization, and death** in hot weather.
- Dementia can **impair temperature regulation and memory**, making people forget to stay hydrated or take actions to stay cool such as taking off hot clothes or going somewhere cool.
- Regularly check in on individuals with dementia for their well-being.
- Offer those with dementia more fluids to drink and move them to a cooler place if they are in a hot environment.
- If you have dementia, make a plan to stay cool, drink water, and have someone check on you.

Diabetes

- High temperatures can lead to dehydration and cause problems with blood sugar control for people with diabetes. Losing weight, dark urine, and a fast heart rate can be signs of dehydration.
- Keep your **glucometer and insulin cool**, but do not put insulin directly on ice. Insulin should be kept in a refrigerator at 36 to 46 degrees Fahrenheit. Please see **Medications and Heat (For Patients)** for more information.
- **Monitor blood sugar** before, during, and after activity in hot weather; adjust insulin if needed.

Heart disease

- Hot weather can put **stress on the heart and lungs** and cause problems for those with cardiovascular diseases, such as heart failure or history of heart attack.
- Watch out for both **dehydration** and **overheating**. Nausea, headaches, and dizziness are symptoms you should watch out for.
- **Weigh yourself daily** when it is hot out and know your target weight; when it is hot you could be dehydrated if you lose too much weight.
- Some **medications**, for example diuretics (water pills), can make you dehydrated; talk to your doctor about how to manage your heart medicines and fluid intake.

Kidney disease

- Kidneys work extra hard in hot conditions and can be damaged if you do not drink enough water. Ensure proper hydration, indicated by light-colored urine.
- Individuals with chronic kidney disease or on dialysis face elevated risks in hot weather.
- **Medications** for kidney disease can make it harder to handle heat; talk to your doctor for guidance.
- Discuss your ideal fluid intake with a healthcare professional and monitor your weight; if you are losing too much weight you may be dehydrated.

Limited mobility

- People with limited mobility are also at risk of heat illness and not being able to get to cool spaces.
- If you feel too hot, **ask for help** from others if needed, like neighbors, friends, or family.
- If your neighbor, friend, or family member has limited mobility, **check on them** during hot weather, and, if possible, find them a safe place to stay until the weather cools down.
- Getting to cooling centers can be challenging if you are living with limited mobility; see if your local transportation authority or local charities offer rides for qualified individuals who need to get somewhere cool during a heat wave.

Lung diseases (such as asthma or COPD)

- Hot weather can be dangerous for people with lung conditions like Chronic Obstructive Pulmonary Disease (COPD) and asthma. Worsening air quality can trigger exacerbations of your lung disease.
- **Monitor air quality** using the Air Quality Index (AQI) to decide whether it is safe to be outdoors.
- If the AQI is below 50, outdoor activities are generally safe. Consult your medical provider if it is above 50.
- **Seek cool environments and stay indoors if you can when air quality is poor** due to smoke or pollution, particularly on hot days when smog is visible.
- Search for **cooling centers** to go to if it is too hot to stay safe inside your home.

Mental health conditions

- Hot weather can **exacerbate symptoms** of mental health conditions and disrupt sleep, leading to worsened symptoms.
- Certain mental health conditions and medications (e.g., antidepressants, antipsychotics) can impair the body's ability to cool down in heat. Take extra care in the heat if you take these.
- Avoid extremely hot places or workspaces, take breaks, and drink plenty of fluids.
- If you or someone around you appears lightheaded, confused, or behaves unusually, **move to a cooler environment**, notify those around you and seek medical attention.

Multiple sclerosis (MS)

- Hot weather and dehydration can **increase symptoms of MS such as fatigue and weakness**.
- **Stay hydrated**, even if you have bladder control difficulties.
- If you are already feeling hot, **avoid strenuous activities**, as they can elevate body temperature and worsen MS symptoms.

Older adults

- Older adults can have difficulty staying cool during hot weather. Many of those who are injured or die because of heat are over the age of 65 years.
- If you are over age 65, be extra careful to **stay in a cool environment** and **avoid strenuous outdoor activities** during hot conditions.
- If you feel too hot, **ask for help** from others if needed, like neighbors, friends, or family.

- If your house is too hot, try to **get to a safe, cool location**.
- If your neighbor, friend, or family member is an older adult, **check on them** during hot weather, and, if possible, find them a safe place to stay until the weather cools down.
- **If you - or an older adult around you - start behaving unusually during hot weather, appear pale or weak, or have difficulty walking, seek medical attention right away.**

Outdoor workers

- Heat can be hard to avoid if you work outdoors and can result in heat illness, kidney disease, and increases in injury.
- Avoid extremely hot places or workspaces and **reduce work effort**, if possible, when it is too hot.
- Pay extra attention as you are more **at risk of injury** in hot weather.
- Stay hydrated by **drinking plenty of fluids** and avoiding alcohol.
- If you can, try to **stay in the shade** or find cool spaces.
- When possible, **work during cooler times of the day**.
- Try to **limit your heat exposure** before and after work, including where you sleep at night, so your body can recover.
- Know the **early signs of heat illness** including nausea, muscle cramps, hot or extra sweaty skin, or dizziness, and notify your supervisor or ask for help.
- **Use a buddy system** to stay aware of the heat and check on one another. If you notice you or someone you work with is dizzy, confused, or behaves unusually, move to a cooler environment, let someone know, and seek medical attention.

Pregnancy and breastfeeding

- Pregnancy can make it **more difficult** to cope with hot weather as the body is already working hard for you and the baby.
- Heat is associated with **risk of birth defects** especially when it is hot earlier in pregnancy, as well as higher chances of **pregnancy loss** or **premature birth**. Heat can also be associated with braxton-hicks or “practice” contractions.
- If you are pregnant, take precautions to **stay cool and avoid excessive heat** and make sure to stay hydrated by drinking lots of water and taking breaks. **If you are breastfeeding**, make sure to drink lots of fluids and stay hydrated as you are at increased risk of dehydration.

Substance use

- People who use drugs or alcohol may be at higher risk of heat illness and less able to get to cool spaces.
- In particular, **alcohol and alcohol hangovers can make you more at risk of dehydration and stimulants such as methamphetamine can increase your risk of dangerous overheating.**
- If you feel too hot, **ask for help** from neighbors, friends, or family,
- **Use a buddy system** to look out for others who may be using drugs or alcohol in hot temperatures.
- Try to find a safe place to cool down, especially if you or those around you may not be as aware of heat when using drugs or alcohol.



Medications and Heat

For Patients

It is important to know which medications can increase your risk of health problems during hot weather. Your provider or pharmacist can help you review your medication list and provide instructions to help you protect your health.

Medications that affect how your body cools down

Some medications can make it harder for your body to cool down in hot weather. They can change how hot you feel, block natural cooling responses, or affect your ability to think clearly. Some can also change your blood pressure or cause problems if you get dehydrated. It is important to follow your heat action plan to stay safe. Your healthcare provider might also give you special instructions related to use of these medications when it is hot outside.

You are taking the following medications that can increase your risk of overheating:

Medication name(s): _____

Special instructions: _____

Medications that increase dehydration risk

Some medications can make you lose more water when you urinate, sweat more, or make you less thirsty. Hot weather can increase your risk of dehydration. This can harm your kidneys and/or cause low blood pressure, making you faint or fall and putting you at risk of injury.

You are taking the following medications that can increase your risk of dehydration:

Medication Name(s): _____

Special Instructions: _____

How to stay safe

- Pay close attention to how much water you drink throughout the day. You might need to drink more water than usual, even if you are not feeling thirsty.
- **If you have heart or kidney problems or if you usually restrict how much fluid you drink**, plan with your doctor to stay hydrated but not drink too much.

- Check your weight every day. If you are losing weight, drink more water and electrolytes. If you are gaining weight, you may be drinking too much water and/or salt or electrolytes.
- Use a urine color chart to check for dehydration.
- Pay attention to your body. If you feel dizzy or faint, or if you have a rapid heartbeat, you might be dehydrated.

Medication storage

Heat can damage medications and medical devices, making them less effective. Most should be stored at room temperature (59-86°F). Some medications, like insulin, biologic medications, or liquid antibiotics for children, need to be refrigerated. However, during an emergency, insulin can be left unrefrigerated at a temperature of 59-86°F for up to 28 days and continue to work. Do not use insulin if it has become frozen. Check with your pharmacist or read the medication instructions to learn how your medications need to be stored.

Tips to protect medications from heat

- Store in a cool, dry, dark place.
- Keep out of direct sunlight.
- Do not leave in a hot car.
- Protect from heat when traveling.
- Bring mail-order medications inside quickly.
 - Be extra careful with life-saving medications like EpiPens, nitroglycerin, glucagon, or naloxone. If these become damaged by heat, they may not be effective in an emergency.
- If you need to transport medications that are usually stored in the refrigerator:
 - Keep them as cool as possible, ideally in an insulated cooler or pouch.
 - If you use a cooler, **do not store your medications directly on ice**. Medications may be damaged if they freeze.

Prepare for a power outage

If you have medications that need to be stored in a refrigerator, be prepared with a backup plan in case the power goes out for a long time. If your refrigerator loses power, you might need to find other ways to keep your medications as cool as possible.

- **Keep a backup cooler:** Keep an insulated cooler at home or take it with you if you need to leave. This backup can help protect medications even if they cannot be stored at the recommended temperatures.
- **Monitor temperatures:** Consider getting an inexpensive thermometer (\$10 or less) for the inside of the refrigerator to check if it is still keeping medications cool during a power outage.

If your medications get hot or if you think they might have been damaged by heat or improper storage: Talk to your pharmacist. They can tell you if they need to be replaced and help you get them replaced if needed.

Based on materials developed by Hayley Blackburn, PharmD, Associate Professor, University of Montana Skaggs School of Pharmacy.



Helping Patients Establish a Heat Action Plan

For Providers

Exposure to heat is increasing across the United States, threatening the health of outdoor workers, or people who are particularly vulnerable, such as those who are elderly or pregnant. Heat can cause a range of illnesses, from cardiovascular problems like heart attacks to heat exhaustion and heat stroke.

*Below is guidance to help you prepare for completion of the **Heat Action Plan and Tip Sheet** included in this toolkit with your patients. Consider sharing **Tips for People With Specific Health Conditions or Risk Factors**.*

Assess if (and how) they access weather information, if they have a means to know the temperature inside their home, and what temperatures are dangerous for them

Ask: If you wanted to know how hot it would be outside, what would you do? How often do you look up the weather forecast?

If the patient does not know where to look, you can suggest their phone weather app, a local AM radio station with frequent weather reports, the National Weather Service website (weather.gov), or weather.com

Ask: If you wanted to know the temperature inside your home, what would you do? Do you have a thermostat or thermometer that can measure it?

If the patient does not have a thermometer/thermostat, consider providing one or suggest that they can be purchased for a few dollars at hardware stores or online.

Ask: Do you know when a temperature becomes too hot for you?

Talk about different thresholds for risk at different temperatures - inside v. nighttime v. unseasonal. You can find more information about these different temperatures here: <https://ephtracking.cdc.gov/Applications/HeatRisk/>

Assess risks for excess heat exposure above forecast temperatures

Ask: How hot do you feel your home gets in the summer?

Ask: Do you live in a building with many floors? If so, what floor do you live on?

Ask: Do the windows in your home open?

Ask: Are there greenspaces or trees around or near your home?

Ask: Do you ever feel hot at work?

Ask: Do you have a job in which you work outdoors or work inside when it is hot, near hot machinery such as ovens, grills, or boilers? What type of work do you do, and is it strenuous?

Ask: How do you get to work? Do you feel hot on your way to work?

If a patient lives on an upper floor, has a unit without functional windows, or has occupational risks or risks in transport, these all increase the risk of heat exposure and should be considered when developing a heat action plan.

Assess home cooling strategies, access to air conditioning and cool indoor spaces

Ask: Are you able to cool down your home (or rooms) when it gets hot out?

Ask: Do you have functioning air conditioning at home? If so, is it a window unit(s)? Do you use the air conditioning when it is hot?

Ask: Are there air conditioners in rooms where you sleep?

Ask: Are you concerned about how much air conditioning will cost if you use it? Does this affect your use?

Ask: Do you have other ways to cool your home such as fans or opening windows?

If a patient states that they have no access to air conditioning in their home, or if their air conditioning does not adequately cool the home (e.g. they have a single window unit that cools only a child's bedroom but not theirs), or they are worried about air conditioning costs, sometimes there are options to help with the costs of air conditioning such as the federal program LIHEAP (Low Income Home Energy Assistance Program). Local subsidies or agencies can also help in some cases.

You can also discuss cooling by opening windows, avoiding heating the house from inside (for example avoiding oven use), using fans, or dousing the skin with water. If opening windows, discuss monitoring and protecting from poor air quality, but remember that heat can kill people faster than poor air quality, so opening windows may be a reasonable action in some situations even when air quality is poor. If they cannot stay cool at home, then:

Ask: Is there somewhere that you can go when it gets hot outside that has air conditioning? For instance, a place of worship, a neighbor's home, a library, a community center, a local business, or mall, or elsewhere?

Ask: If you are going somewhere else, how far is it and how will you get there?

If they do not have any place, they can go that has air conditioning, consider providing them with a list of air-conditioned locations they may be able to access in your community. Many cities have cooling center maps available to identify the closest sites to a patient's home. Make a plan with them for how to get there that is safe and does not expose them to too much heat.

Assess connectedness

Ask: Do you live alone? Do you frequently interact with friends, family, or neighbors?

Ask: Do you have a plan to check in with anyone when the weather gets hot?

If they do not have a plan, work with them to identify WHO they will stay connected with if a heat warning is issued. If they do not have any connections, discuss when they should contact 911 (such as having the initial symptoms of dehydration and illness- like nausea, headache, dizziness - see [Heat Action Plan and Tip Sheet](#)). Some municipalities or nonprofits may also offer telephone check in services for interested at-risk individuals; if this is an option in your community, consider referring these patients to this service.

Consider increased risks from medications and how to monitor hydration

Many patients take medications that affect sweating, urination, and thermoregulation, which may accentuate their risk of harm during heat events. They should be advised to seek cooler environments, whether indoors or outdoors (e.g., in the shade). Go over the medication list with patients using **Medications and Heat (For Patients)**. Additional information on medications related to heat is available from the CDC here: <https://www.cdc.gov/heat-health/hcp/clinical-guidance/heat-and-medications-guidance-for-clinicians.html>

Ask: How do you know you are staying hydrated and healthy in the heat?

Go over symptoms of heat related illness and chronic medical conditions. Discuss checking urine color, monitoring weight for hydration status as well and go over ways to stay safe on the **Heat Action Plan and Tip Sheet**.

For patients with chronic lung diseases, assess air quality risks, especially if they may travel to a cooling center

In guidance about whether to access a cooling center, consider whether a patient may be exposed to high levels of outdoor or indoor air pollution.

Begin by assessing the AQI. If the AQI is over 50, closing windows may help prevent outdoor air pollution from getting inside, but this may also increase heat exposure, especially if no air conditioning is available.

Ask: Do you use an air filter in your home? If so, what kind is it and where does it sit?

Ask: How often do you change the air cleaner/filter? Are there any barriers to cleaning it?

If a patient's home has a forced air system (i.e., air gets blown into rooms through vents, for example an HVAC), this may increase the delivery of air pollution indoors, even with windows closed; however, many of these systems have air filters. See if they have changed the filter recently and make sure it is MERV 13 or higher. HVAC systems only filter when they are on.

Some patients may have indoor air cleaners, also known as air purifiers or sanitizers. Portable indoor air cleaners have a wide range of capabilities in filtering out air pollutants. The filter should be the right size for the square feet of the room it operates in.

Air cleaners typically come with either a MERV (minimum efficiency reporting value) rating or are HEPA certified. Ideally, patients will have an air cleaner with a MERV rating of at least 13, which should remove at least 60% of particulate matter 2.5 microns in diameter or smaller. HEPA filters should remove even more. If patients are unable to afford commercial portable air cleaners, they may be able to assemble box fan units or Corsi-Rosenthal boxes, both of which use a fan and air filters to produce a short-term home-made air filter. While not as good as commercial systems, these can be an effective way to improve short-term air quality in small indoor spaces. See **All About Air Purifiers** for more information.

If outdoor air quality is poor, traveling to a cooling center may worsen health, depending on how people travel and the level of exposure. However, remaining in a hot indoor space can be deadly, and in some cases exposure to air pollution may be necessary to reach safety or achieve cooler temperatures.



Medications and Heat

For Providers

This tool is designed to help prescribers and pharmacists with the identification of medications that may increase the risk of patient harm during extreme heat. This document includes some commonly used medications which are associated with increased risk for patients who use them during hotter weather.

This list of medications is based on a combination of known pharmacological effects and mechanisms of heat sensitization across several classes of medication and larger epidemiologic studies showing increased risks of morbidity for those who take certain medications during extreme heat. In general, medications and hot weather interact in several ways which can increase the risk of patient harm during summer months. Some medications disrupt thermoregulatory response mechanisms and/or alter fluid and electrolyte status, increasing the risk of overheating, dehydration, or other harm in hot weather.¹⁻³ Heat exposure and dehydration can alter the pharmacokinetics of medications (i.e., absorption, distribution, or elimination), which can increase the risk of adverse effects.⁴ Examples include insulin (increased absorption with heat exposure resulting in increased risk of hypoglycemia) and lithium (increased serum concentrations and acute toxicity with dehydration).^{1,4,5}

Evidence to guide specific dosing or medication changes specifically to reduce risks during extreme heat is limited, but some suggestions for patient management have been included at the end of this document. Regular comprehensive medication reviews, including evaluation of OTCs and supplements, can help identify these medications, assess patient risk, and proactively address potential medication-related issues.

It should also be noted that hot temperatures can degrade or damage medications and medical devices, which may lead to loss of medication efficacy or device malfunction. Patients should be advised on proper storage methods to protect their medications and medical devices during high temperatures. This applies to medications like inhalers, EpiPens, and insulin and equipment like blood glucose meters and test strips.⁶⁻⁸

Although many products are labeled for storage under refrigeration only, some temperature excursions may be allowable based on the individual drug product.⁹ For instance, while manufacturer recommend that unopened insulin vials and pens are maintained between 36-46°F, several recent studies have suggested that when refrigeration is not possible, insulin will maintain its stability for longer periods of time outside of this range when stored in environments that prevent it from becoming very hot (e.g., insulated container maintaining temperatures between 77-80°F).¹⁰ Patients should be educated on appropriate medication storage and should have a backup plan for keeping refrigerated medications as cool as possible if transporting them during hot weather or in the case of a power outage which impacts refrigerator functioning.

Heat-sensitizing medications

The following broad medication categories and medication classes are associated with alterations in thermoregulatory response, increased risk of dehydration, and/or increased risk of electrolyte abnormalities during hot weather.

Psychotropic medications

Psychotropic medications can increase heat sensitivity and pose risks during hot weather. Additionally, individuals with substance use disorder or recreational drug use are at higher risk during heat waves¹¹⁻¹⁵. Not all medications carry the same risk, and some evidence suggests that anticholinergic effects, [anticholinergic burden](#), and overall number of psychotropic medications may have additive risk¹⁶⁻¹⁹.

Medication class	Effect on thermoregulation and heat sensitivity ¹⁻³
SSRIs & SNRIs	Impaired central thermoregulation, increased sweating and increased risk of dehydration and electrolyte abnormalities ¹
Tricyclic antidepressants	Impaired central thermoregulation, decreased sweating; Sedation or altered cognition impacting behavioral response to heat ^{1,16}
Antipsychotics	Impaired central thermoregulation and impaired sweating; increased sedation, cognitive effects may lead to reduced alertness, judgement, and perception of hot weather which impact behavioral responses to heat. Antipsychotics with increased anticholinergic effects (e.g., clozapine, olanzapine, quetiapine) may have additive blunting of thermoregulation and increased risk ^{16,18}
Stimulants	Impaired central thermoregulation, increased metabolic rates leading to excess heat production and hyperthermia, and altered heat perception ^{20,21}
Benzodiazepines	Sedation, altered cognition impacting behavioral response to heat ¹
Mood stabilizers	Electrolyte imbalances; risk of toxicity in the setting of dehydration ¹
Opioids	Sedation, altered cognition impacting behavioral response to heat; potential for misdiagnosis of opioid overdose vs heat stroke delaying appropriate treatment ¹²
Alcohol	Increased sweating combined diuretic effects leading to dehydration; Sedation, altered cognition, altered heat perception impacting behavioral response to heat ^{11,13,22}
Cocaine	Impaired central thermoregulation, delayed and reduced sweating, increased thermogenesis, impaired cutaneous vasodilation, and impaired heat perception ²³
MDMA	Increased core temperature and elevated metabolic rate, delayed sweating ^{24,25}

Cardiovascular medications

Commonly used cardiovascular medications can alter thermoregulation, fluid status, electrolyte balance, and/or blood pressure, increasing risks during heat exposure through multiple mechanisms. The combination of ACEi and diuretic therapy has been associated with particularly elevated risk in several studies, pointing to the need for careful assessment and monitoring of these patients during hot weather.^{26,27} Prescribers should use caution and provide patient-specific recommendations for management of hydration and medication dosing for those with conditions requiring careful management of fluid balance (e.g., heart failure, renal disease). Diuretics may also cause electrolyte imbalances (e.g., hyponatremia, hypokalemia) which may be exacerbated by over-hydration with water alone.^{28,29}

Limited studies have demonstrated reduced risks with the use of some medications during extreme heat. In one study, statin use was associated with lower all-cause mortality during extreme heat events, and a similar study demonstrated a reduction in risk during extreme heat for patients prescribed empiric potassium supplementation when using furosemide ≥ 40 mg per day.^{30,31}

Medication class	Effect on thermoregulation and heat sensitivity ^{1–3,26}
Diuretics	Increased risk of dehydration and hypovolemia; risk of electrolyte abnormalities; risk of hypotension and fainting/falls ^{1,3,5}
ACEi & ARB	Suppressed thirst sensation impacting fluid intake behaviors and increasing risk of dehydration; increased risk of renal injury with dehydration; increased risk of hyperkalemia and other electrolyte abnormalities; risk of hypotension and fainting/falls ³²
Beta-blockers	Disrupted thermoregulatory response through inhibition of cutaneous vasodilation and decreased sweat response; risk of hypotension and fainting/falls ³
Calcium channel blockers	Increased risk of hypotension and fainting/falls; risk of electrolyte abnormalities ²
Antiplatelets	Both aspirin and clopidogrel have been shown to impair thermoregulatory responses during passive and exertional heat stress by reducing skin blood flow and possibly suppressing sweat responses. ³

Antidiabetic medications

Patients with diabetes often use multiple medications which increase the risk of heat-related harms. Patients taking insulin may be at an increased risk of hypoglycemia due to increased absorption of insulin with heat exposure and cutaneous vasodilation. One epidemiologic study found insulin users' risk of serious hypoglycemic events was approximately 40% higher on days with a heat index ≥ 99 th percentile vs days with heat index in 25–74th percentile.⁵ Patients who use insulin should be instructed to carefully monitor their blood glucose during extreme heat and should have a plan for management of hypoglycemia.

Medication class	Effect on thermoregulation and heat sensitivity ^{1–3}
Insulin	Altered thermoregulatory response; increased subcutaneous absorption of insulin leading to hypoglycemic emergencies ^{4,5}
SGLT2i	Increased osmotic diuresis and increases the risk of dehydration; dehydration may increase the risk of euglycemic DKA with SGLT2i use ^{3,33,34}
Metformin and GLP-1 RA medications	Increased GI disturbances and diarrhea upon drug initiation or dose increase, leading to increased risk of dehydration ³

Anticholinergic medications

Anticholinergic medications influence thermoregulation and response to heat through several mechanisms, including alterations in central thermoregulation, decreased sweating, decreased peripheral vasodilation, and sedation or cognitive effects which may reduce heat awareness and inhibit behavioral responses to promote cooling.⁴ Some evidence suggests that the increased relative anticholinergic effects of individual medications and increasing anticholinergic burden may be associated with greater risk of heat-related harm.^{16,35} Anticholinergic medications should be evaluated, particularly in older adults, and deprescribing or [other steps to reduce anticholinergic burden](#) should be used wherever risk outweighs benefit. Anticholinergic medications that may be

associated with increased heat-related risks include:^{1,3,36,37}

- Anti-histamines (e.g., diphenhydramine, chlorpheniramine)
- Drugs for urinary incontinence (e.g., oxybutynin, solifenacin)
- Antiemetics (e.g., meclizine, promethazine, scopolamine)
- Tricyclic antidepressants (e.g., amitriptyline, nortriptyline)
- Antipsychotics (e.g., clozapine, olanzapine, quetiapine)
- Muscle relaxants (e.g., carisoprodol, methocarbamol, tizanidine)
- Medications for insomnia (e.g., doxylamine, hydroxyzine, doxepin)
- Antispasmodics (e.g., hyoscyamine, dicyclomine)

Ambient temperature, altered fluid status and pharmacokinetics

The pharmacokinetics of some medications may be altered during periods of elevated ambient temperatures. The absorption and/or distribution of medications may be altered by thermoregulatory changes in vasodilation and circulation. Heat exposure, dehydration and hypovolemia can decrease visceral blood flow to the liver and kidneys, resulting in an increased risk of organ damage and decreased clearance of medications.³⁸ The resulting elevations in serum concentrations, particularly for drugs with a narrow therapeutic index, can lead to acute toxicity. Examples of some drugs which may have altered pharmacokinetics during periods of extreme heat include:

- Drugs with narrow therapeutic index: Lithium, digoxin^{39,40}
- Direct-oral anticoagulants (apixaban, rivaroxaban, dabigatran)¹
- Transdermal medications (e.g., fentanyl patches)⁴
- Subcutaneous medications (e.g., insulin)^{4,5}

What you can do

Prescribers and pharmacists should review patient medication lists to assess heat-related medication risks and make patient-specific plans to manage medications during hot days. The list of medications above is not intended to be all-inclusive. Both prescription and over-the-counter medications, supplements, and herbals can affect fluid and electrolyte balance, hemodynamics, thermoregulatory set-point, and/or cognition and alertness. It is important to obtain a complete and accurate list of patient medications, including non-prescription medications, at every visit to fully assess medication-associated risks. Efforts to reduce drug burden and discontinue high-risk medications should be considered as a part of usual care, particularly in older adults where polypharmacy is a common concern. Evidence to provide broad guidance on medication management during heat is limited, but individualized patient plans may include:

- Educating patients on their medication-related risks and self-monitoring strategies, know the signs and symptoms that might indicate drug-related problems during hot weather, and have a plan in place outlining appropriate actions to take if patients experience these symptoms (i.e., self-management versus seeking care).
- Avoiding or delaying initiation or dose increases of heat-sensitizing medications if heat is forecasted in the near future.
- Considering adjustments to fluid restrictions and/or dose reductions for diuretics during hot weather, along with home monitoring of weight to assess fluid status.

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Heat and Health

For Providers

This sheet is an overview on heat, providing background of how heat impacts health and how providers can help patients prepare.

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Temperatures of concern

Hot conditions can be dangerous. The temperatures that increase the risk of harm for individuals with certain conditions or who are regularly exposed to heat may be lower than those considered dangerous by many people. For most cities in the United States, the minimum mortality temperature (the temperature above which mortality rates increase) is often just below that city's 80th percentile of the annual temperature range.¹

The National Weather Service (NWS) issues heat advisories, excessive heat watches and excessive heat warnings. To see if a heat alert has been issued for your location, check the weather app on your smartphone, or go to [weather.gov](https://www.weather.gov) and click on your county or type in your zip code. For more details on how to access NWS alerts for heat (and other weather extremes), as well as the differences between heat watches and warnings, see the accompanying toolkit document titled **Weather Hazard Monitoring**.

Additionally, the CDC, in partnership with NOAA, EPA and NWS have released a HeatRisk map you can use to identify your risks from heat by zip code which is available at: <https://ephtracking.cdc.gov/Applications/HeatRisk/>. If you would like to receive email alerts when HeatRisk predicts dangerous heat in your location, you can sign up to receive alerts from the Climate Central / Harvard C-CHANGE system [here](#).

Temperatures tend to peak in the mid-to-late afternoon. The time of day with the highest temperatures for your location can be found at weatherspark.com. It is not only the hottest time of the day that is dangerous, however; high nighttime temperatures affect sleep and do not allow people respite from a long hot day and are also dangerous to people's health.²

Patient case

A 46-year-old male construction worker presents to your clinic complaining of fatigue and headaches. These have been occurring for the past couple of weeks since the onset of hot weather and are worse in the afternoon and evening hours. The patient reports that he mostly drinks soda at work, and usually works through lunch trying to make overtime. He also takes a diuretic (hydrochlorothiazide) for hypertension.

What are some actions you could suggest to this patient to help reduce his risk of dehydration, electrolyte abnormalities, and heat exhaustion?

Populations at high risk

Certain people are at particularly **high risk from heat exposure**, for example people who are older, pregnant, or have chronic medical conditions including heart disease, diabetes, hypertension, mental health conditions, and neurological diseases.^{3,4,5} People who are **unable to limit their heat exposure** are also at increased risk for heat related illness, including outdoor workers, military personnel, people who use drugs, and persons experiencing homelessness. A wide variety of conditions can be exacerbated by hot weather. For example, exposure to high ambient temperatures can increase morbidity and mortality from cardiovascular-related events, including myocardial infarction, heart failure, and arrhythmias^{6,7}, as well as lead to increases in violence and traumatic injury.⁸ Heat exposure during the first trimester can predispose to birth defects^{9,10} and higher ambient temperatures throughout pregnancy are associated with greater risk of low birthweight, stillbirths, and preterm birth.^{11,12} Additionally, medications such as antipsychotics, antidepressants, antihypertensives and anticholinergics have been shown to be associated with increased risk of heat-related harm.^{13, 14, 15}

Markers of dehydration and treatment

During exposure to heat, people should watch for signs of dehydration, including physical symptoms and markers such as weight loss and urine color. Symptoms include nausea, headaches, dizziness, or excessive sweating or hot dry skin. One of the best ways to assess hydration status is by changes in weight, with weight loss indicating dehydration. Although most studies focus on weight as a marker of hydration status in athletes, weight loss is also a marker of dehydration during heat waves or excessive heat in non-athletes, resulting from sweat induced fluid losses.^{16, 17} Laboratory studies show urine color is a sensitive marker of dehydration; there is limited published evidence of the accuracy of this method in real-world and clinical settings, but it currently serves as a practical method of assessing hydration.¹⁸ It is important to note that urine color may correlate less well with other markers of hydration (such as urine osmolality and specific gravity) in adults over 60 years old.¹⁸

Time to cooling is also incredibly important to reduce morbidity and mortality in heat related illness. Counsel patients that if someone is hot and showing signs of heat related illness such as heat stroke, it is very important to start cooling while calling 911 and waiting for transport. Patients can be cooled with fans and spraying cool water, moving to a nearby cool space (shade or air-conditioned room), and placing ice packs on groin, axilla, and neck; putting the patient in ice water is also highly effective if they are awake and able to breathe safely.¹⁹

Built environment

The forecast temperature available to patients may not accurately represent the temperature they are exposed to in their home, workplace, schools, or community. The upper floors of multi-story buildings, especially those without air conditioning, may be much hotter than lower levels.²⁰

Urban heat island effects means that cities can be hotter than nearby areas, due to factors such as fewer trees and greenspaces, more concrete, and more traffic. Populations of color, Hispanic communities, and lower-wealth communities often live in neighborhoods with greater heat island effects.⁷ Unhoused individuals are at particularly high risk of heat exposure.²¹ Additionally, workers who are regularly exposed to heat at work without protections often suffer detrimental health effects.²²

Anticipatory guidance for providers to give patients

Anticipatory guidance for hot days may help patients take steps to protect their health. The strategies and resources below may be helpful for you to provide to patients who are at risk from heat. We also encourage you to share the **Heat Action Plan and Tip Sheet** and **Medications and Heat (For Patients)** included in this toolkit; some patients may find it helpful for you to fill these out with them.

Guidance for patients may include:

- Before going outside, check the weather forecast on your phone, television, radio, or online and consider signing up for local heat alert messaging.
- If a patient does not have a thermostat or thermometer that measures room temperature in their home, they can buy one for a small amount at local stores or online. Consider distributing inexpensive thermometers at your clinic.
 - Indoor temperatures in the patient's home should ideally remain <80°F. If they cannot keep the temperature below 80°F, they should use a fan, up to about 95°F when fans do not significantly help cooling²³ and may actually become harmful.

- The most effective means for cooling is moving to an air-conditioned space until the temperature cools, such as a family, friend, or neighbor’s house, as well as cool spaces such as cooling centers, movie theaters, libraries, or places of worship.
- If air conditioning is not available, the basement of a building may be cooler than its upper floors.

Advise patients to watch for signs of dehydration and monitor weight loss and urine color.

- When a heat advisory or heat alert has been announced (see **Weather Hazard Monitoring** for more information), advise patients to:
 - Follow their heat action plan (see **Heat Action Plan and Tip Sheet** for guidance).
 - If a heat advisory is issued, at-risk patients should stay indoors in an air-conditioned space when possible. If going outside is necessary, limit outdoor activities, especially during the hottest part of the day (typically 11AM to 3 PM).
 - During extreme heat, patients should remain in air-conditioned spaces until the warning expires.
 - Be as safe at work as possible. Workers also have right to a safe workplace and should try to avoid heat related illness. Information is available from Occupational Safety and Health Administration here: <https://www.osha.gov/heat/worker-information>.

Heat health action plans

For many patients, it may be worth discussing a heat action plan. Guidance for patients should be based upon an assessment of the severity of their disease, comorbidities, medications, occupation (especially if outdoors), access to air conditioning at home, and dangerous heat exposure from an urban heat island, workplace, or the home environment, as well as their previous experience with heat.

Prior to a heat event, you can work with an individual’s healthcare team to develop a plan. We recommend that you familiarize yourself with the **Heat Action Plan and Tip Sheet** provided in the toolkit and make sure patients review it. Different members of the healthcare team can learn to review the plan and tip sheet with patients, including community health workers, social workers, patient navigators or other trained members of the team. The action plan can be provided during care visits and can be the basis for a discussion around safety planning and care management in the event of extreme heat. Action plans should be completed before the heat season in your location.

In addition to sharing how to create a heat action plan with your patients, consider also sharing the heat tip sheet and action plan materials included in this toolkit.

Notes:

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Extreme Heat Preparedness Guidance

For Administrators

This document provides guidance to assist health centers in developing policies, procedures, and protocols to ensure their facilities are prepared for extreme heat events. It outlines recommended actions across three main periods: long-term facility resilience, year-round actions, and start of the heat season actions.

The guidance covers key areas such as assigning heat preparedness roles, enhancing facility infrastructure, establishing maintenance schedules, preparing high-risk patients, developing communications plans, ensuring staff safety, and coordinating with community partners. While not all steps may be feasible for every clinic, they should be prioritized based on the health center’s specific needs, capacity, and resources. For recommended actions to take when extreme heat is in the forecast or occurring, please refer to the **Extreme Heat Response Guidance and Checklist** document.

The facility Weather Resilience Lead should lead these activities with support from clinic leadership.

Thorough preparedness enables clinics to reduce risks and optimize their ability to keep staff and patients safe during extreme heat events.

Long-term infrastructure resilience

- **With support from clinic leadership, establish a committee** to oversee the development and implementation of policies for facility improvements and cost planning for extreme weather-related emergencies.
- **Identify maintenance schedules** and assign staff roles that will inspect critical equipment and cooling technology as part of their position description.
- **Plant trees** on property to provide shade and evaporative cooling. Consider any wildfire risks and follow FireWise guidance.
- **Install shade structures** for high traffic walkways and prevent direct sunlight in south-facing windows.
- **Evaporative cooling** - consider adding misting systems in high traffic areas that can be turned on during extreme heat.
- **Reduce use or replace non-essential heat generating equipment.**
- See **Health Center Power Outage Preparedness and Response**.
- Replace degraded concrete/pavement and dark surfaces with “**cool pavement**” or “**cool paints**” which can reduce the amount of heat absorption.
- Install fans in attic or upper-floors to vent hot air outside.

Year-round preparedness

Extreme weather resilience lead activities:



Done	Task	Assigned to
✓	Sign up for local wireless emergency alerts via local government notification system (e.g., emergency management or local public health), local power utility companies), and monitor HeatRisk. Additionally, OSHA/NIOSH Heat Safety tool can provide valuable information for staff safety during hot temperatures.	Weather Resilience Lead
✓	Open vents early in the morning and early evening (when temperatures are generally cooler) for greatest ventilation at places with high foot traffic. Open windows and blinds if the temperature outside is cooler than the temperature inside the building.	Weather Resilience Lead
✓	Ensure thermostats are working properly and accurately measuring temperature inside the clinic. If no thermostats in the clinic measure air temperature, have at least one mobile thermometer to assess air temperature.	Weather Resilience Lead
✓	Ensure weather strips on doors and windowsills are in good condition.	Weather Resilience Lead
✓	Check ventilation ducts for proper insulation. If absent, consider installing insulation to increase cooling efficiency.	Weather Resilience Lead
✓	If the clinic uses window AC units, ensure they are properly sealed so that cool air stays in and heat stays outside. (Do not rely on fans as your primary cooling device- they create air flow and a false sense of comfort but do not actually reduce body temperature, and therefore, do not prevent heat-related illnesses).	Weather Resilience Lead
✓	Cover windows with drapes or shades. If possible, use window reflective film specifically designed to reflect heat back outside.	Weather Resilience Lead
✓	Refer to the Extreme Heat Preparedness Guidance resource for other steps to prepare the facility for and mitigate impacts of an extreme heat event.	Weather Resilience Lead
✓	Heat planning activities include assessing the facility.	Weather Resilience Lead
✓	Consult with the Health Center Power Outage Preparedness and Response to ensure uninterrupted power supply during extreme heat events.	
✓	Identify high-risk patients and flag their charts. If you do not have a charting system, establish a list of patients and relevant information. Get contact information for family or caregivers to check on the patient during extreme heat.	

Some important factors make patients more susceptible to the negative health effects of heat, these include:

- Age - particularly children under 5 and people over 65
- Pregnancy
- Chronic medical problems (e.g.: diabetes, heart disease, chronic kidney disease, chronic obstructive pulmonary disease (COPD))
- Working outdoors and / or in manual labor jobs
- Socioeconomic status - low-income status, living in informal settlements, low-income neighborhood, or being unhoused
- Social isolation (e.g., elders living alone)
- Transportation barriers
- Lack of cooling technology: fans, air conditioning, heat pumps, etc.

Check with your local health department or city sustainability office to see if there are heat vulnerability maps available. These can help you understand your patients' level of vulnerability based on where they live.

Develop a heat communication plan for at-risk patients.

- Either through the health center or a family member, high-risk patients should be assessed daily for:
 - Use of cooling technology (remind patient that 76°F is adequate)
 - Signs of heat-related illness
 - Dizziness, confusion, nausea, or vomiting – seek help if exhibiting these signs
 - Adequate water intake
 - Appropriate clothing: light colored and loose
- See the **Heat Action Plan and Tip Sheet** resource in this toolkit for additional heat-illness prevention measures to be communicated and encouraged.
- See **Extreme Heat Communications Templates** document for draft language to use.
- All patients and staff should be linked to official government messaging about the heatwave.
- Integrate heat emergencies into your existing emergency patient communications plan. If you do not have an existing emergency communications plan, see **Extreme Heat Communications Templates**.

Collaborations and preparations

- Discuss heat wave preparedness with staff in late winter / early spring.
 - Consider scenario-based discussions or tabletop exercises involving staff at all levels.
 - Ensure staff know how to protect themselves and their families from heat-related illness and conduct training as appropriate.
 - Communicate any possible changes in roles and responsibilities that might occur as a result of extreme heat. These may already be outlined in the clinic's existing emergency plan.
- Prepare for power outages: See this toolkit's **Health Center Power Outage Preparedness and Response** for additional information about power outages at your facility.

- Connect with existing community organizations, government, or local service providers that would be able to support the clinic or the patients during extreme heat.
- Connect with the local health department to make sure the clinic is on all important messaging lists for heat-related communications.
- Work with nearby health centers to identify where staff can be relocated in case of a facility closure or evacuation during an extreme heat event. These relationships can be utilized beyond extreme heat events.
- Consider occupational safety protocols and procedures. Ensure staff will have adequate breaks and access to water. Installing ambient air thermometers will help staff monitor work conditions.

Start of heat season

- Check, clean, maintain, and/or repair relevant equipment:
 - Air conditioners or heat pump systems
 - Fans
 - Window blinds
 - Dehumidifiers
 - Refrigerators, freezers, and other cold storage equipment
 - Structure insulation
 - Generators or other backup power systems
- Identify non-essential equipment that can be turned off during extreme heat to conserve electricity and reduce heat generation.
- Ensure contact information for partners is up to date. This should include local service providers, community organizations, utility providers, local emergency management, and others.
- Ensure emergency generators or battery storage are connected to refrigeration units to keep them running during power outages.
- Review plans for equipment failure and identify thresholds for specific actions.
 - Example: If air conditioning fails and indoor temperatures exceed 80°F, you may shut down the facility to protect staff and patient health.
 - This should include backup storage for temperature sensitive equipment, pharmaceuticals, vaccines, etc.
- Consider installing the following to reduce indoor temperatures:
 - Window blinds, louvered shutters, window UV film, reflectors, or shades to reduce direct sunlight into the facility
 - Double paneled windows to promote insulation
 - “Cool roofs” by painting the roof with white paint or reflective materials
 - Painting or shading concrete surfaces that receive direct sunlight can reduce nighttime temperatures
- Consider acquiring body bags to support rapid cooling of patients experiencing acute heat stroke. Body bags can be filled with ice, contain liquids, and be reused, as necessary.
- Review toolkit materials with providers and staff, ensure providers are prepared to use and distribute materials.



Extreme Heat Response Guidance and Checklist

For Administrators

This heat response guidance and checklist is designed to help clinics and health centers maintain situational awareness and clinic operations during extreme heat events. It outlines actions to take when extreme heat is in the forecast and during an ongoing extreme heat event.

This guidance and checklist should be utilized proactively, ideally before an extreme heat event occurs, to ensure that the health center is well-prepared to handle the challenges associated with such an event. The checklist is designed for quick and easy use, allowing the weather resilience lead or other staff to efficiently confirm that all necessary precautions and actions have been taken.

When extreme heat is in the forecast and during an extreme heat event

- If you have not done so already, work with medical staff and resources in this toolkit to identify patients served in your clinic who are most vulnerable to heat risk.
- Develop a heat communication plan and activate it for at risk patients in the days before an extreme heat event occurs.
 - Either through the health center or a family member, high-risk patients should be assessed daily for:
 - Access and use of air conditioning (remind patient that 76° F is adequate, **over 80° F becomes dangerous**)
 - Signs of heat-related illness
 - Hydration (Are they drinking enough water?)
 - Appropriate clothing (Are they overdressed or wearing light / loose clothing?)
- See the **Heat Action Plan and Tip Sheet** in this toolkit for additional heat-illness prevention measures to be communicated and encouraged.
- Ensure protocols if a patient or staff experiences heat stroke. This should include calling 9-1-1 and aggressive cooling until EMS arrives. See the **Heat Action Plan and Tip Sheet**.
- All patients and staff should be receiving response agency messaging. This may be an opt-in system. The Weather Resilience Lead should identify how to register and share this information with staff. Staff may need to walk patients through signing up for these alerts.
- Identify patients requiring routine, time sensitive treatments and / or lab tests (such as dialysis or INR levels). Work to get these patients scheduled ahead of an anticipated extreme heat event, or if they must come during times of extreme heat, try to have them travel early in the morning or into the evening when temperatures are lower.
- Identify scheduling opportunities.
 - Keep any open appointment times available for potential heat-related non-emergency visits.
 - Where possible, reschedule non-acute appointments to prevent patients from traveling in the heat. Patients at high-risk from heat should be prioritized for rescheduling if their appointment is not time sensitive. Consider telehealth where available.
- Address necessary changes in staff roles and responsibilities in line with the clinic's emergency plan.
 - If not a standard part of operations, institute morning huddles to discuss staff and patient needs and challenges and address any updates or changes.

- Monitor changes in public transit.
 - Heat can cause public transit to slow down or stop functioning entirely. Even where transit continues to function normally; ridership may decrease due to access issues (ex: unshaded bus stops). This affects both staff getting to work and patients getting to appointments.
- Reach out to local partners to confirm cooling center sites. Share this information with patients as needed, taking into consideration COVID and other infection prevention measures.
- **Check and test critical systems:**
 - Backup generator(s) or energy systems
 - Conduct test run
 - Check fuel
 - Confirm full battery storage
 - Test solar panel output
 - Air conditioners or heat pump systems
 - Fans
 - Water systems and water fountains
- **Supplies**
 - Check with vendors to ensure your facility is on their priority list for:
 - Refueling
 - Equipment repairs
 - Consider acquiring supplies to help patients and staff remain cool:
 - Purchase or rent freezers to store ice
 - IV fluids
 - Water and electrolyte powders/drinks
 - Ice packs
 - Popsicles or other cool refreshments
 - Spray bottles (to accompany fan use)
 - Foot submersion buckets
 - Hydration stations

Communications alert plan

When extreme heat is in the forecast, it is crucial to activate the communications alert plan to ensure that all staff, patients, and relevant stakeholders are informed and prepared. The Weather Resilience Lead should initiate the plan by notifying the site manager and using the established communication procedures outlined below:

Done	Task	Assigned to
✓	Inform the site manager of the extreme heat forecast (HeatRisk).	Weather Resilience Lead
✓	Use established communications procedures to notify staff that extreme heat is in the forecast and clinic operations will be adjusted. That could include text messages to staff mobile phones or emails.	Weather Resilience Lead
✓	Check local government sites (department of health or emergency management) for information on activated cooling centers in the area, to know where to direct patients. If no centers are established, identify community spaces with A/C such as libraries, malls, or community centers.	Weather Resilience Lead

Communications alert plan (continued)



Done	Task	Assigned to
✓	Postpone non-essential tasks that involve intense activity or heat exposure. If activity must be performed in high temperatures, consider additional breaks for staff in shade or A/C and ample access to cool water.	Clinic Supervisor
✓	Notify patients if appointments need to be rescheduled. Work with clinicians to decide who may be too high risk to travel to the clinic.	Front Desk Staff
✓	Consider telehealth for high-risk patients.	Clinicians
✓	Consider working with local transport service providers to bring in high-risk patients who lack transportation. Weather Resilience Lead	Weather Resilience Lead
✓	Check the condition of any medication or equipment that may be affected by extreme heat and relocate them away from windows, doors, or upper floors.	Weather Resilience Lead
✓	Provide information on heat informational resources to patients, see Extreme Heat Communications Template .	Weather Resilience Lead

Facility infrastructure checklist



Done	Task	Assigned to
✓	Check all blinds are operable and closed.	
✓	Inspect all windows to verify that all windows seal appropriately to prevent heat from getting in or air conditioning from getting out.	
✓	Place electric fans in exam rooms and lobbies as needed to circulate cool air. Consider the spread of airborne infectious diseases when placing fans.	
✓	Indoor humidity should be kept between 30-50%. Consider utilizing a humidifier or dehumidifier based on indoor conditions.	
✓	Check that all water fountains are working properly.	
✓	Preposition cooling supplies and heat safety information for patients near entrance.	
✓	Shut off lights and additional heat generating equipment where possible.	

Refrigeration



Done	Task	Assigned to
✓	Check the temperature of refrigerators in the morning and in the afternoon to ensure medications and vaccines are being kept at appropriate temperatures during extreme heat events.	
✓	Identify staff responsible for monitoring temperature and steps to take if medicine and vaccines need to be relocated.	
✓	Check that emergency generators or battery packs are connected to refrigerator to keep them running during a power outage.	

Emergency power

The facility should be able to maintain enough power to continue operating with essential services and therefore, should have an emergency generator, solar panels, or other source of power. Whether a generator is preinstalled, portable, or rented, the facility should be ready to utilize back up power sources at any moment during an extreme heat event.



Done	Task	Assigned to
✓	Run the emergency generator(s) and check fuel/energy levels prior to a heat wave.	
✓	Communicate what will be powered on back-up generators (e.g., which outlets, lighting, etc.) and an expectation of how long back up power can be expected to last. [this requires having an inventory]	
✓	Identify staff in charge of overseeing generator fuel/energy levels and refueling as needed.	
✓	Identify a safe and cool place to store an emergency supply of fuel for generators.	
✓	Check the air temperature in the clinic every 1-2 hours. Temperature should not exceed 80°F.	
✓	Contact vendors with fuel supplies (to ensure they will follow through on any agreements) prior to the heat wave beginning.	
✓	Contact utility companies about Critical Infrastructure and Key Resources (CIKR) information.	



Extreme Heat Recovery Checklist

For Administrators

In the aftermath of an extreme heat event, it is essential for clinics and health centers to focus on recovery efforts to ensure the well-being of their patients, staff, and the community. This extreme heat recovery checklist provides guidance on the critical steps health centers should take to assess the impact of the event, address any issues that arose, and improve their preparedness for future extreme heat events.

By following this checklist, clinics and health centers can support patients and staff, and systematically evaluate their response to the extreme heat event, identify areas for improvement, and take necessary actions to enhance their resilience.

Recovery actions:

- Check in with patients known to have had a heat-related illness and schedule follow-up appointments as needed.
- Reschedule all patients who missed appointments or whose appointments were moved due to extreme heat.
- Conduct a debriefing session with staff to discuss the effectiveness of the response, identify challenges, and gather feedback for improvement.
- Assess the facility for any damage caused by extreme heat and schedule necessary repairs or maintenance.
- Check on medications and equipment that may have been affected by heat exposure and plan for disposal, restocking, or repairs, as necessary.
- Evaluate the effectiveness of communication with staff, patients, and local partners during the event and identify areas for improvement.
- Assess the performance of critical systems, such as air conditioning, generators, and refrigeration units, and schedule any necessary maintenance or upgrades.
- Document any heat-related illnesses or injuries among staff and patients and review protocols for prevention and treatment.
- Update the clinics or health center's emergency preparedness plan based on the lessons learned during the extreme heat event.
- Review and update staff training materials based on the experience gained during the event.
- Share success stories, challenges, and lessons learned with other clinics and health centers and local partners to improve community-wide response to future extreme heat events.
- Collaborate with local partners and authorities to identify areas for improvement in the community's overall response to extreme heat.
- Assess the financial impact of the extreme heat event on the health center, including any additional expenses incurred or revenue lost due to rescheduled appointments.
- Recognize and appreciate staff members who went above and beyond during the event.

This guidance has been adapted from the NYC Health "Heatwave Guidance for Service Providers."



Extreme Heat Communications Templates

For Administrators

Effective communication is crucial for health centers and clinics to ensure the safety and well-being of their patients and staff during extreme heat events. This heat communications templates document provides guidance and sample messages that can be used to disseminate important information and alerts before and during periods of extreme heat.

Dissemination methods:

Health centers and clinics can use various methods to disseminate extreme heat alerts and information to their target audiences. Dissemination modalities should be carefully selected to reach those most vulnerable to heat impacts. Potential options include:

- Text messages
- Personal phone calls
- Automated phone calls
- Clinic facilitated chat groups (e.g., WhatsApp)
- Clinic website
- Signs in waiting rooms
- Disseminated via community service providers (e.g., food pantries, harm reduction organizations, senior support organizations, etc.)
- Health educators, patient navigators, community health workers, or other non-clinical patient-facing staff.

Recorded phone message or email

Health impacts from extreme heat are expected in [impacted region]. Extreme heat exposure increases the risk of heat-associated illnesses. Heat illnesses include heat stroke, heat exhaustion, heat cramping or rashes, and the potential to worsen pre-existing heart, breathing, or kidney-related health conditions.

Learn about the signs of heat stroke and heat exhaustion to understand when you or loved need emergency support. If someone is hot and experiencing confusion, loss of consciousness, or seizure, call 9-1-1

If you are unsure about heat-associated symptoms, please contact us at _____

[Clinic name] will remain [open / closed]. *If open, specify hours and services provided*

Social media post or text message

While extreme heat can put everyone at risk from heat illnesses, health risks are greatest for:

Older adults (65+ years old)

Infants and children

Pregnant people

People with chronic medical conditions (respiratory, cardiovascular, and renal diseases)

People living in low-income neighborhoods

Athletes

Outdoor workers

If you or anyone you know falls under one of these categories, take extra care during extremely high temperatures. Stay in a cool area, take extra breaks, and drink plenty of fluids.

If you are taking certain medications or have health conditions that put you at greater risk, contact your provider for more information on how to stay safe. Contact us at [phone number].

Heat stroke is a medical emergency! Call 911 immediately if someone has a high body temperature, is unconscious, confused, delirious, or experiences seizures.

- While waiting for help, rapid cooling will increase the likelihood of a full recovery.
- Moving them to a cool place, pour cold water over their body (while protecting their airway), and fan them.

It is going to be hot in the coming days. Prevent heat illness by staying in a cool place. There are public spaces available that have air-conditioning. To find the nearest cooling center, visit [insert website].

