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The Deadly Intersection of Heat and Overdose: Understanding the Impact of Extreme Heat, Substance Use, and Overdose Risk

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Learning objectives

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1. Describe how extreme heat physiologically interacts with opioids and stimulants to increase the risk of overdose, overamping, and mortality.
2. Identify temporal, seasonal, and geographic patterns associated with overdose mortality during periods of extreme heat in Clark County, Nevada.
3. Identify strategies that individuals and organizations can use to recognize warning signs and reduce risk during extreme heat events.

Extreme Heat and Overdose Basics

Heat stress basics: What happens in the body?

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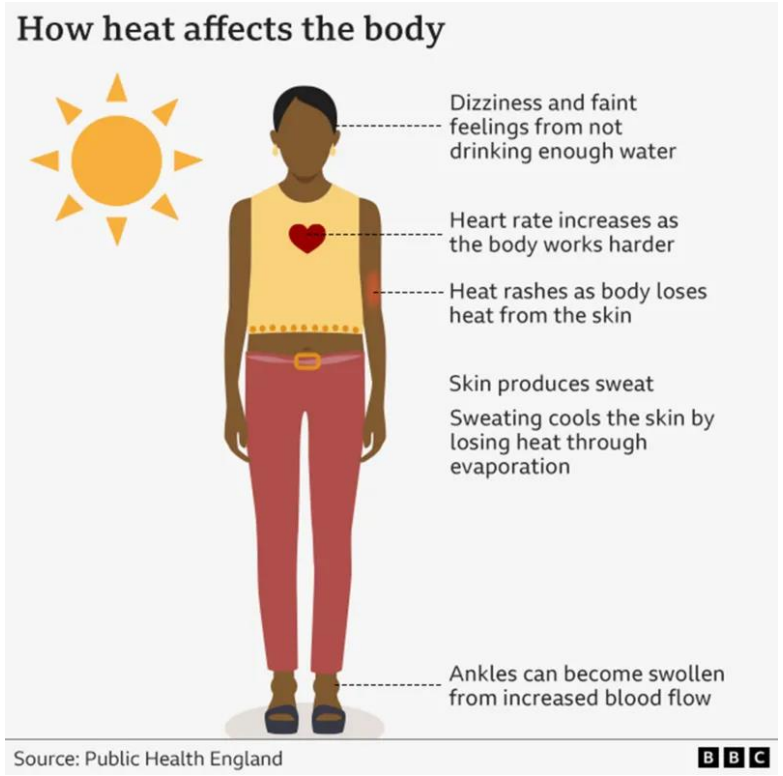
- The body cools itself mainly through sweating and increased blood flow to the skin.
- During extreme heat, the body works harder to maintain a safe core temperature.
- Risk increases when heat exposure is combined with dehydration, physical exertion, lack of shade, lack of air conditioning, chronic illness, certain medications, or substance use.
- Heat illness exists on a spectrum: heat cramps, heat exhaustion, heat injury, and heat stroke.



How do drugs, such as opioids and stimulants, play a role in this process?

Substance use can increase risk during extreme heat through several pathways

Dehydration

Reduced fluid intake, sweating, vomiting, diarrhea, or prolonged time outside.

Impaired judgment

Reduced ability to recognize danger, seek shade, drink water, or call for help.

Changes in thermoregulation

Some substances affect how the body produces, retains, or releases heat.

Cardiovascular strain

Heat and substances can both increase stress on the heart and circulation.

Delayed response

Symptoms of heat illness may be mistaken for intoxication, withdrawal, overdose, or behavioral health symptoms.

Opioids

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- Opioids are a class of drugs that affect the brain and body by attaching to opioid receptors.
- They are commonly used medically to treat pain, but they can also produce sedation, euphoria, slowed breathing, and physical dependence.
- Examples include:
  - Prescription pain medications such as oxycodone, hydrocodone, morphine, and fentanyl.
  - Illicit opioids such as heroin and illegally made fentanyl.
- In an overdose, opioids can slow or stop breathing, which is why naloxone and quick emergency response are critical.

Opioids Can Increase Heat-Related Risk

Slowed breathing

Primary danger in opioid overdose.

Sedation

May reduce ability to move to shade, drink water, or respond to warning signs.

Higher environmental risk

Risk increases when someone is alone, unsheltered, or in a hot indoor space without cooling.

Harder to recognize

Can be difficult to distinguish between overdose, heat illness, or both.

Polysubstance use

Risk increases when combined with alcohol, benzodiazepines, stimulants, or other sedating substances.

Stimulants

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- Stimulants are a class of drugs that speed up activity in the brain and body.
  - They can increase energy, alertness, heart rate, blood pressure, body temperature, and agitation.

- Examples include methamphetamine, cocaine, prescription amphetamines, and some medications used to treat ADHD.

- Unlike opioid overdose, which primarily involves slowed breathing, stimulant overdose or “overamping” often involves overheating, chest pain, severe anxiety, agitation, seizures, stroke, or other cardiovascular complications.

Stimulants Can Increase Heat-Related Risk

Higher heart rate and blood pressure

Stimulants can raise heart rate, blood pressure, agitation, and physical activity.

Reduced sleep / more time outside

Stimulants can reduce sleep and increase time spent outside or moving around.

More body heat

Increased muscle activity generates more body heat.

Dehydration

Stimulants can contribute to dehydration.

Severe complications

Heat risk may include hyperthermia, seizures, rhabdomyolysis, organ injury, and death.

Methamphetamine toxicity

Methamphetamine toxicity is strongly linked with elevated body temperature, and lethal cases are often associated with extreme hyperthermia.

Why extreme heat events create higher-risk settings

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- Risk is not only biological. It is also shaped by the environment.

- Higher-risk situations include:
  - Living unsheltered or spending long periods outdoors.
  - Not have a peer group.
  - Staying in vehicles, tents, encampments, or buildings without cooling.
  - Limited access to water, bathrooms, showers, or cooling centers.
  - Disrupted routines, including medication access, treatment appointments, outreach, or transportation.
  - Hot nights, which reduce the body's ability to recover.

Responding to a Suspected Overdose during Extreme Heat

Overdose vs. overamping vs. heat illness

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Condition	What you may see	Immediate response
Opioid overdose	Slow or no breathing, blue or gray lips, unresponsive, gurgling/snoring sounds, pinpoint pupils	Naloxone, call 911, rescue breathing, recovery position, stay with person
Stimulant overamping	Panic, agitation, chest pain, overheating, paranoia, severe headache, seizure, confusion	Move to calm/cool setting, reduce stimulation, hydrate if conscious, call 911 for severe symptoms
Heat exhaustion	Heavy sweating, weakness, headache, nausea, dizziness, thirst, elevated body temperature	Move to cooler place, loosen clothing, cool skin, drink fluids if alert
Heat stroke	Confusion, slurred speech, loss of consciousness, seizure, very high body temperature, hot/dry skin or heavy sweating	Call 911 immediately, rapid cooling, do not leave person alone

General overdose response in extreme heat

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- During extreme heat, overdose response should include:
  - Call 911.
  - Administer naloxone.
  - Monitor breathing and provide rescue breathing as needed, if trained and able.
  - Move the person to a cooler place, if safe.
  - Begin active cooling while waiting for help.

Prevention and Intervention Strategies

Warning signs to emphasize in outreach

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- For opioid overdose
  - Unresponsive or cannot wake up.
  - Slow, irregular, or stopped breathing.
  - Blue, gray, or pale lips or fingernails.
  - Gurgling, choking, or snoring sounds.
  - Limp body.

Warning signs to emphasize in outreach

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- For stimulant overamping
  - Chest pain or pressure.
  - Severe headache.
  - Extreme anxiety, panic, paranoia, or agitation. Confusion or disorientation.
  - Seizure.
  - Very hot body, heavy sweating, or inability to cool down.

Warning signs to emphasize in outreach

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- For heat stroke
  - Confusion, slurred speech, altered mental status.
  - Loss of consciousness.
  - Seizures.
  - Very high body temperature.
  - Hot, dry skin or heavy sweating.
  - Symptoms that worsen or do not improve quickly with cooling.

Individual overdose prevention strategies during extreme heat

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- Connect with support network, especially during extreme heat.
  - Stay in touch with people who can respond or provide support, if needed.
- Carry naloxone and make sure others nearby know where it is.
- Start low and go slow.
- Hydrate before, during, and after heat exposure.
  - Include electrolytes when possible.

Individual overdose prevention strategies during extreme heat (cont.)

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- Take cooling breaks in shade, air conditioning, cooling centers, libraries, shelters, or public buildings.
- Avoid prolonged time in direct sun, vehicles, tents, or enclosed spaces without airflow.
- Reduce physical exertion during the hottest part of the day.
- Use fentanyl test strips or other drug checking options when available.
- Seek help early for chest pain, confusion, fainting, seizure, trouble breathing, or overheating.

Organization-level strategies

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- **Before heat events**
  - Identify high-risk populations and locations.
  - Stock naloxone, water, electrolyte packets, instant cold packs, sunscreen, hats, and cooling towels.
  - Train staff to recognize overdose, overamping, and heat illness.
  - Map cooling centers, shaded areas, mobile outreach routes, and transportation options.
  - Create simple heat safety scripts for outreach teams.

Organization-level strategies

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- During heat events
  - Increase outreach to encampments, high-overdose areas, and places where people gather outdoors.
  - Pair naloxone distribution with heat safety supplies.
  - Offer wellness checks, cooling transportation, and low-barrier referrals.
  - Extend hours where possible.
  - Communicate alerts and plain-language safety messages.
  - Coordinate with EMS, shelters, libraries, overdose prevention programs, and treatment providers.

- After heat events
  - Review EMS, ED, overdose, outreach, and mortality data.
  - Identify missed opportunities.
  - Update protocols before the next heat wave.

Communication messages that may work well

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- **Plain-language messages**
  - “Heat can make overdose and overamping more dangerous.”
  - “If someone is confused, unconscious, seizing, having chest pain, or not breathing normally, call 911.”
  - “Naloxone first for suspected opioid overdose, but also cool the person down.”
  - “During extreme heat, check in on your peers.”
  - “Drink water, take cooling breaks, and check on people who are outside.”
  - “Stimulants like meth can make it harder for your body to cool down.”
  - “A person can be overdosing, overheated, or both.”

Case Scenario

Case scenario

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- **Scenario:** It is 111°F in Las Vegas. Outreach staff find a man sitting near an encampment. He is sweating heavily, confused, and breathing slowly. A peer reports that he used meth and possibly fentanyl earlier in the day. He is difficult to wake up.

- What would you do first?

Case scenario

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- Call 911 and administer naloxone for possible opioid overdose and call 911.
- Monitor breathing and provide rescue breathing as needed, if trained and able.
- Move him to shade or a cooler location if safe.
- Begin cooling: remove excess clothing, use cool wet cloths, fan air, apply cold packs if available.
- Stay with him until EMS arrives.

Summary

Closing takeaways

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1. Extreme heat can intensify the risks associated with opioids and stimulants.
2. Opioids increase risk through sedation, respiratory depression, impaired judgment, and delayed response.
3. Stimulants, especially methamphetamine, increase risk through hyperthermia, agitation, dehydration, and cardiovascular strain.
4. Heat illness, overdose, and overamping can look similar and can occur at the same time.
5. Overdose prevention during extreme heat should combine naloxone, cooling, hydration, wellness checks, drug checking, safer-use planning, and low-barrier access to cool spaces.
6. Organizations can save lives by integrating heat safety into overdose prevention and outreach before extreme heat events occur.