How Medications Affect Your Body's Response to the Summer Heat

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Summer is in full swing in the United States. We are working, socializing, and exercising outside, enjoying the sunshine and warmer temperatures. Many of us fail to think about how prescription medications and over-the-counter drugs (OTCs) or skin applications affect our body's response to the sun or summer heat.

Key takeaways:

- Our medications can alter our body's ability to adjust to being in the sun or heat.
- Certain medications, even our expensive anti-aging face creams, can lead to severe sunburn. Other medications can lead to heat stroke, organ damage, and death.
- Taking beta-blockers while being exposed to very hot conditions increases the risk of heart attack.
- Minimizing exposure to the sun and heat during peak hours reduces the risk of developing medication-related photosensitivity and heat sensitivity.

→ Heat stroke is a medical emergency that can result when our medication causes extreme sensitivity to summer heat.

The southwest United States has been under a dangerous heat wave, with daytime temperatures often over 100°F (37.8°C). We need to be concerned about how the medications we take affect our body's ability to respond to the sun and heat. With global warming, this issue becomes dangerous with certain medications.

Medications and the sun

Although the sun improves our mood and helps us produce vitamin D, there is no "fun in the sun" when it comes to medications. With the sun's strong UV rays and rising temperatures, many prescription drugs and over-the-counter (OTC) medications cause photosensitivity or heat sensitivity. As a result, the U.S. Food and Drug Administration (FDA) requires medications causing sensitivity to the sun or heat stroke to have warning labels.

Photosensitivity and toxicity

Some medications cause photosensitivity, which ranges from skin irritation, rash, or hyperpigmentation to a blistering burn after sun exposure. Warm weather and sunny skies lure us outside with the promise of enjoyment and

social connection. However, we are often unaware that many medications we ingest or use topically make our skin more susceptible to the sun's UV rays.

Over-the-counter medications such as antihistamines used to treat allergies, common cold symptoms, or insect bites can result in photosensitivity. The nonsteroidal anti-inflammatory medications (NSAIDs) we use to treat pain and inflammation after we exercise too hard can also make our skin more susceptible to the sun's UV rays. Medications like antibiotics or antifungals used to fight infections also make us more susceptible to sunlight.

Many expensive face creams containing retinoids used to fight acne or aging remove the skin's top protective layer, increasing our susceptibility to sunburn. Medications for birth control and to treat menopausal estrogen loss also increase the risk of sunburn.

Perhaps more surprising is that cholesterol-lowering medications and diuretics or "water pills," which decrease the workload on the heart and body fluid, as well as medications used to reduce blood sugar in type 2 diabetes, also make our skin more sensitive to sunlight.

One of the best ways to combat sun sensitivity while on any of these medications is to use and frequently reapply sunscreen to exposed areas, especially the face, ears, forearms, and neck.

Heat sensitivity: heat stroke

With heat stroke, the body cannot control its temperature. Our temperature can rise to 106°F (41.1°C) or higher within as little as 10 to 15 minutes. As body temperature rises, we become unable to sweat or cool ourselves. Heat stroke becomes a medical emergency, which, if untreated, can result in organ failure and death.

Raising body temperature

Medications can increase our sensitivity to heat by raising our body temperature. Stimulants used to treat attention deficit hyperactivity disorder (ADHD) and antipsychotics used for schizophrenia and bipolar disorder also increase body temperature by acting on the hypothalamus area of the brain. Thyroid medications increase our metabolism, which raises body temperature.

Blood flow to the skin

There are other ways that medications can cause heat sensitivity. By decreasing blood flow to the skin, beta-blockers, which treat high blood pressure, angina, and heart failure and decongestants, medications for migraines, and ADHD medications constrict blood vessels and decrease blood flow to the skin. The body's risk of overheating increases if it cannot release heat through the skin.

Sweating

Sweating is another way the body cools itself. After a good workout, it is amazing how fast our

internal body temperature cools as sweat evaporates off the skin. Medications that decrease the ability to sweat increase the risk of heat sensitivity and heat stroke.

Dehydration

Fluid balance is also a key factor in maintaining our body's homeostasis. Medications that pull fluid out of the body, such as diuretics or certain laxatives, can result in dehydration. Medications that decrease our ability to sweat include antihistamines, medications for urinary incontinence, antidepressants, anti-nausea medications, medications for stomach cramps, and antipsychotics. In addition, some antipsychotics reduce thirst, which increases the risk of dehydration.

Dopamine levels

Dopamine affects the hypothalamus, which resides in the brain and is the body's thermostat. Dopamine stimulates warm-sensitive nerve cells (neurons) and decreases the response of cold-sensitive neurons. Medications for Parkinson's disease, and antipsychotics, which affect the body's dopamine levels, make it difficult for the body to regulate its internal temperature, increasing the risk of heat sensitivity.

Symptoms and warning signs

Even if you are taking medications without any adverse reactions, it's best to continue to watch for symptoms and take precautions with the extreme heat during the summer or warm weather. Warning signs of heat insensitivity to watch for include:

- **Flushing or skin rash.** Skin that is pink/red and warm to the touch.
- **Sunburns.** Hot red or blistered skin.
- **Dehydration.** Signs include cramps, headache, thirst, dizziness, fainting, or weakness.
- **Nausea.** A common symptom of heat stroke.
- **Dizziness or Fainting.** Blood pressure drops cause decreased blood flow to organs, creating a life-threatening emergency.
- **Excessive sweating.** Leads to dehydration.
- **Inability to sweat.** Prevents the body from cooling itself.

A cautionary tale with beta-blockers

Beta-blockers regulate heart rhythm, reduce blood pressure, and treat angina. These medications also reduce blood flow to the skin, potentially interfering with the body's ability to cool itself. A 2022 study revealed a 65% higher risk for heart attacks with beta-blocker use in hot weather. Furthermore, taking anti-platelet medications like aspirin with beta-blockers to thin the blood increases the risk of heart attack.

Check out the following table to see the most common medications associated with the risk of photosensitivity and heat sensitivity.

Class of medications
Antibiotics
Antifungals
Beta-blockers
Cholesterol-lowering
Diuretics
Antipsychotics, antidepressants, ADHD medicati
NSAIDs
Oral contraceptives & estrogen
OTC cold medications & antihistamines
Overactive bladder
Psoralens
Thyroid
Type 2 diabetes

Decreasing medication reactions

The medications we take can significantly increase sensitivity to sun and heat. If ignored, these sensitivities can cause long-lasting health problems, including organ failure and death. However, this does not mean that we must stay

indoors all summer. We can do many things to have fun in the sun safely.

For example, wearing light-colored, loose, breathable clothing or a brimmed hat that shades the head, face, back of the neck, and ears, reduces UV exposure and keeps us cooler. Additionally, sunscreen with a sun protection factor (SPF) of 30 or higher and protection against UV rays should be applied 15 minutes before going outside and reapplied every two hours or after swimming.

Drinking water and fluids to restore electrolytes, except for people who have congestive heart failure that requires fluid restriction, helps keep us hydrated and better regulate body temperature. Balancing our time outdoors with cooling breaks indoors in the air conditioning helps our bodies recover from heat exposure. Timing our activities when the sun is weaker — early morning or evening — is also a good way to enjoy the sun safely.

Speaking with a physician or pharmacist about side effects and medication warning labels helps to keep us safer. For those working outside or spending time outdoors, ask a physician if there is a substitute medication available without potential photosensitivity or heat sensitivity issues.

Resources:

1. Heatwaves, medications, and heat-related hospitalization in older Medicare beneficiaries with chronic conditions.

2. Triggering of myocardial infarction by heat exposure is modified by medication intake.

3. Some medications may increase sensitivity to heat, sun.

4. The Sun and Your Medication.