



A Burning Issue: Handling Household Burns

Accidental burns can happen just about anywhere in your home, and they're not always caused by fire. You might get burned by spilling coffee in your lap, touching a hot iron, or misusing certain cleaning products.

Burns are skin or tissue damage, usually caused by heat. Burns can be caused by hot objects or liquid, fire, friction, the sun, electricity, or certain chemicals.

Each year, about a half-million people nationwide seek medical attention for burns. Household burns lead to nearly seven of 10 admissions to burn centers. The good news is that the number of deaths from severe burns has dropped by more than half over the past four decades.

The severity of a burn depends on the area it covers and how deep the damage goes. First-degree burns affect only the thin top layer of skin. Second-degree burns include the thick lower layer of skin. A third-degree burn is the most serious; it penetrates the entire thickness of the skin, permanently destroying it and the tissue that's underneath.

Treating Burns

You can care for most minor burns at home. If the burn is red and painful with mild swelling or little blistering, then it's a first-degree or minor second-degree burn.

See a doctor if the burn is dark red and looks glossy with a lot of blistering. These are signs of a deep second-degree burn. Get immediate treatment if the burned skin is dry and leathery, perhaps with white, brown, or black patches. These are signs of third-degree burn.

Burns can become infected with bacteria or other germs if protective layers of skin are lost. Burns can also lead to painful inflammation, as your immune system shifts into gear.



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Better Safe!



WELCOA'S ONLINE BULLETIN FOR YOUR FAMILY'S SAFETY

“The immune system response is intended to limit the area of injury and to remove any bacteria,” says Dr. Ronald G. Tompkins, chief of the burn unit at Massachusetts General Hospital. “But sometimes this immune reaction can lead to further harm to the area damaged by the heat.” Proper burn care can help avoid additional damage.

Emergency treatment for third-degree and some second-degree burns may include a blood transfusion and/or extra fluids to help maintain blood pressure. Grafting—placing healthy skin on top of the burn wound—might help promote new skin growth.

Severe burns can lead to widespread inflammation, organ failure, and shock. This sometimes-deadly response can arise a week or two after the initial burn. But doctors can't tell beforehand which patients might develop this extreme reaction. Tompkins and other scientists are looking for ways to predict and prevent shock and organ failure after burns or trauma.

Take Proper Precautions

You can take steps to avoid household burns. Never leave cooking food unattended on the stove. Set your water heater's thermostat to 120 °F or lower to prevent scalding burns. And install smoke alarms on every floor of your home. Keep yourself and your family safe from unexpected burn injuries.

First Aid For Burns

For minor burns:

- **Immerse in fresh, cool water, or apply cool compresses for 10-15 minutes.**
- **Dry the area with a clean cloth. Cover with sterile gauze or a non-adhesive bandage.**
- **Don't apply ointments or butter; these may cause infection.**
- **Don't break blisters.**
- **Over-the-counter pain medications may help reduce inflammation and pain.**
- **Call emergency services (911) if:**
 - **burns cover a large area of the body.**
 - **burns affect the entire thickness of skin.**



Naps Can Aid Learning In Preschoolers

Afternoon naps can enhance memory and support learning in preschoolers, a new study reports. The finding hints that making time for naps in the classroom might be helpful during early childhood.

Although plenty of studies have shown that overnight sleep and brief naps can boost learning and memory in adults, the effects of napping on toddlers hadn't been closely examined. To learn more, National Institutes of Health (NIH)-funded scientists played a memory game with 40 preschoolers. In the morning, the children learned where nine or 12 cartoon images were located on a grid. Then the children either took an afternoon nap (about one hour and 15 minutes) or were gently kept awake.

After nap time, the children were tested to see how well they could remember the locations of the cartoon images. The scientists found that children could recall 10% more of the items' locations when they napped than when they'd been kept awake. Children who napped had similar success in remembering items' locations even the next morning. The researchers also found that the benefits of napping were greatest for the children who regularly took naps.

To explore how memories might be stored in the brain, the team measured the brain waves of 14 additional children during naps. The researchers noticed a link between distinct bursts of brain activity during napping and a child's performance on memory tests. These bursts of activity might represent the strengthening of memories, the scientists suggest.

"We hope these results will be used by policy makers and center directors to make educated decisions regarding nap opportunities in the classrooms," says the study's lead researcher, Dr. Rebecca Spencer at the University of Massachusetts Amherst.



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What Does Sleep Do For Us?

Although scientists are still trying to learn exactly why people need sleep, animal studies show that sleep is necessary for survival. For example, while rats normally live for two to three years, those deprived of rapid eye movement (REM) sleep survive only about five weeks on average, and rats deprived of all sleep stages live only about three weeks. Sleep-deprived rats also develop abnormally low body temperatures and sores on their tail and paws. The sores may develop because the rats' immune systems become impaired. Some studies suggest that sleep deprivation affects the immune system in detrimental ways.

Sleep appears necessary for our nervous systems to work properly. Too little sleep leaves us drowsy and unable to concentrate the next day. It also leads to impaired memory and physical performance and reduced ability to carry out math calculations. If sleep deprivation continues, hallucinations and mood swings may develop. Some experts believe sleep gives neurons used while we are awake a chance to shut down and repair themselves. Without sleep, neurons may become so depleted in energy or so polluted with byproducts of normal cellular activities that they begin to malfunction. Sleep also may give the brain a chance to exercise important neuronal connections that might otherwise deteriorate from lack of activity.

Deep sleep coincides with the release of growth hormone in children and young adults. Many of the body's cells also show increased production and reduced breakdown of proteins during deep sleep. Since proteins are the building blocks needed for cell growth and for repair of damage from factors like stress and ultraviolet rays, deep sleep may truly be "beauty sleep." Activity in parts of the brain that control emotions, decision-making processes, and social interactions is drastically reduced during deep sleep, suggesting that this type of sleep may help people maintain optimal emotional and social functioning while they are awake. A study in rats also showed that certain nerve-signaling patterns which the rats generated during the day were repeated during deep sleep. This pattern repetition may help encode memories and improve learning.

Getting Quality Sleep

- Go to bed the same time each night and get up the same time each morning.
- Sleep in a dark, quiet, comfortable environment.
- Exercise daily (but not right before bedtime).
- Limit the use of electronics before bed.
- Relax before bedtime. A warm bath or reading might help.
- Avoid alcohol and stimulants such as caffeine late in the day.
- Avoid nicotine.
- Consult a health care professional if you have ongoing sleep problems.



Personalized Medicine: MATCHING TREATMENTS TO YOUR GENES

You're one of a kind. It's not just your eyes, smile, and personality. Your health, risk for disease, and the ways you respond to medicines are also unique. Medicines that work well for some people may not help you at all. They might even cause problems. Wouldn't it be nice if treatments and preventive care could be designed just for you?

The careful matching of your biology to your medical care is known as personalized medicine. It's already being used by health care providers nationwide.

The story of personalized medicine begins with the unique set of genes you inherited from your parents. Genes are stretches of DNA that serve as a sort of instruction manual telling your body how to make the proteins and perform the other tasks that your body needs. These genetic instructions are written in varying patterns of only four different chemical "letters," or bases.

The same genes often differ slightly between people. Bases may be switched, missing, or added here and there. Most of these variations have no effect on your health. But some can create unusual proteins that might boost your risk for certain diseases. Some variants can affect how well a medicine works in your body. Or they might cause a medicine to have different side effects in you than in someone else.

The study of how genes affect the way medicines work in your body is called pharmacogenomics.

Pharmacogenomics At Work

It's becoming more common for doctors to test for gene variants before prescribing certain drugs. For example, children with leukemia might get the TPMT gene test to help doctors choose the right dosage of medicine to prevent toxic side effects. Some HIV-infected patients are severely allergic to treatment drugs, and genetic tests can help identify who can safely take the medicines.

Pharmacogenomics is also being used for cancer treatment. Some breast

cancer drugs only work in women with particular genetic variations. If testing shows patients with advanced melanoma (skin cancer) have certain variants, two new approved drugs can treat them.

Even one of the oldest and most common drugs, aspirin, can have varying effects based on your genes. Millions of people take a daily aspirin to lower their risk for heart attack and stroke. Aspirin helps by preventing blood clots that could clog arteries. But aspirin doesn't reduce heart disease risk in everyone.



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Genetic Testing... Is It For You?

Getting a genetic test usually isn't difficult. Doctors generally take a sample of body fluid or tissue, such as blood, saliva or skin, and send it to a lab. Most genetic tests used today analyze just one or a few genes, often to help diagnose disease. Newborns, for example, are routinely screened for several genetic disorders by taking a few drops of blood from their heels. When life-threatening conditions are caught early, infants can be treated right away to prevent problems.

The decision about whether to get a particular genetic test can be complicated. Genetic tests are now available for about 2,500 diseases, and that number keeps growing. Your doctor might advise you to get tested for specific genetic diseases if they tend to run in your family or if you have certain symptoms.

For some diseases, such as sickle cell anemia or cystic fibrosis, inheriting 2 copies of abnormal genes means a person will get that disease. But for other diseases and conditions, the picture is more complex. For type 2 diabetes, testing positive for some specific gene variants may help predict risk, but no better than other factors—such as obesity, high blood pressure and having a close relative with the disease.

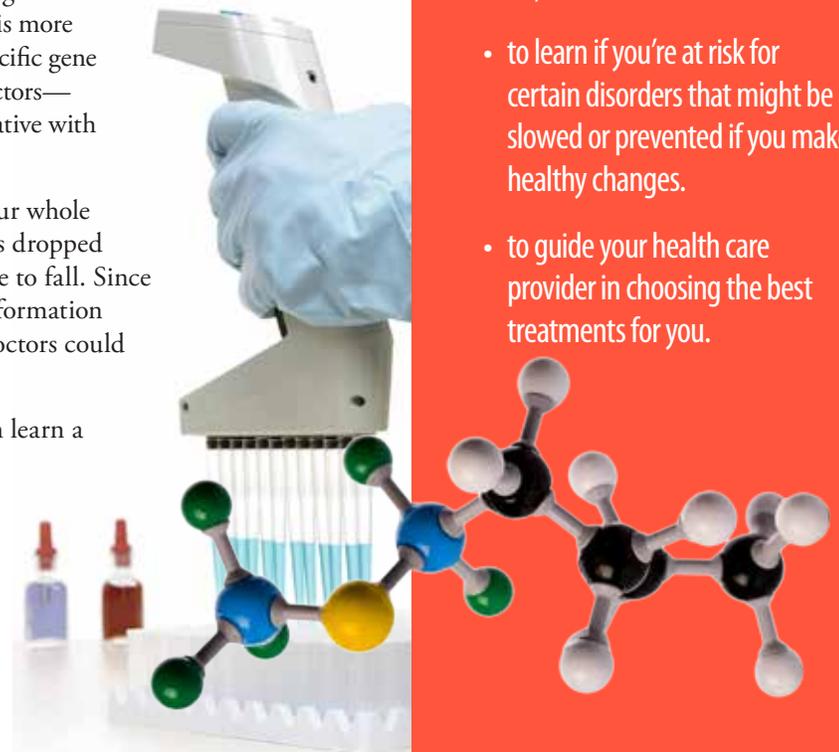
The latest approach to personalized medicine is to get your whole genome sequenced. That's still expensive, but the cost has dropped dramatically over the past decade and will likely continue to fall. Since your genome essentially stays the same over time, this information might one day become part of your medical record, so doctors could consult it as needed.

But personalized medicine isn't just about genes. You can learn a lot about your health risks by taking a close look at your current health and habits. Smoking, a poor diet, and lack of exercise can raise your risks for life-threatening health problems, such as heart disease and cancer. Talk to your health care provider about the steps you can take to understand and reduce your unique health risks.

TEST YOUR GENES?

Genetic tests aren't necessarily for everyone. You and your doctor might consider analyzing your genes or genome:

- to diagnose a disease.
- if there's a strong family history of a certain disease.
- if you're pregnant or plan to have a child.
- to learn if you have, or are at risk for, an inherited disorder.
- to learn if you're at risk for certain disorders that might be slowed or prevented if you make healthy changes.
- to guide your health care provider in choosing the best treatments for you.



Avoiding Anemia

BOOST YOUR RED BLOOD CELLS

If you're feeling constantly exhausted and sluggish, you might have a condition called anemia. Anemia is a common blood disorder that many people develop at some point in their lives.

Many types of anemia are mild and short term. But the condition can become serious if left untreated for a long time. The good news is that anemia often can be prevented and easily corrected by getting enough iron.

Anemia arises when your body doesn't have enough healthy red blood cells. You may either have too few red blood cells, or they may be lacking in an iron-rich protein called hemoglobin. Red blood cells are responsible for delivering oxygen throughout your body, and hemoglobin is the protein that carries the oxygen.

When the number of red blood cells or your hemoglobin level is too low, your body doesn't get all of the oxygen it needs, and that can make you feel very tired. You may also have other symptoms, such as shortness of breath, dizziness, headaches, pale skin, or cold hands and feet.

The most common type of anemia occurs when your body lacks iron. This condition is called iron-deficiency anemia, and it often arises if you don't have enough iron in your diet. Your body needs iron and other nutrients to make hemoglobin and healthy red blood cells. So it's important to get a regular supply of iron as well as vitamin B12, folate, and protein. You can get these nutrients by eating taking dietary supplements.

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Another common cause of iron-deficiency anemia is blood loss, which might arise from injury, childbirth, or surgery. Women of child-bearing age are at risk for iron-deficiency anemia due to blood loss from menstrual periods.

Women also need extra iron during pregnancy. Dr. Harvey Luksenburg, a specialist in blood diseases at the National Institutes of Health (NIH), says that if anemia isn't treated during pregnancy, women can give birth to iron-deficient children. This lack of iron can affect a child's growth rate and brain development.

"Women who feel symptoms of sluggishness and fatigue may be iron deficient," Luksenburg says. "Even if you've lived with

it a long time, get it checked. I've seen startling changes when women were put on iron supplements. Some say they've never felt better."

Detecting & Diagnosing Anemia

Many people living with anemia may not realize they have it. They might have mild symptoms or none at all. A doctor can determine whether you have anemia by a simple blood test.

Common types of anemia can be prevented and treated by eating iron-rich foods. The best sources are red meat (especially beef and liver), poultry, fish, and shellfish. Other foods high in iron include peas, lentils, beans, tofu, dark green leafy vegetables such as spinach, dried fruits such as prunes and raisins, and iron-fortified cereals and breads. Some rarer, more severe types of anemia can be treated with medicines. Severe cases may require blood transfusions or surgery.

If you don't get enough iron from your food, ask your doctor about taking iron dietary supplements. The body absorbs iron from meat and fish better than that from vegetables.

If you're a vegetarian, consult a health care provider to make sure you're getting enough iron.

Making healthy lifestyle choices, including a nutritious, iron-rich diet, can help prevent common types of anemia so you can have more energy and feel your best.

Preventing Anemia

To prevent or treat iron-deficiency anemia:

- Eat foods rich in iron and B vitamins.
- Eat fruits and vegetables high in vitamin C, which helps your body absorb iron.
- Ask your doctor about iron supplements if you don't get enough iron in your diet.
- Get checked every year or two if you're a woman of child-bearing age who has heavy menstrual periods or a previous diagnosis of anemia.