

# Scientists think they know how stress causes gray hair

**S**orry Mom and Dad: It turns out you might not have been exaggerating when you told us your children made your hair turn gray.

Stress may play a key role in just how quickly hair goes from colored to ashen, a study Trusted Source published this past week in the journal *Nature* suggests.

Scientists have long understood some link is possible between stress and gray hair, but this new research from Harvard University in Massachusetts more deeply probes the exact mechanisms at play. The researchers' initial tests looked closely at cortisol, the "stress hormone" that surges in the body when a person experiences a "fight or flight" response.

It's an important bodily function, but the long-term presence of heightened cortisol is linked to a host of negative health outcomes.

But the culprit ended up being a different part of the body's fight or flight response — the sympathetic nervous system. These

nerves are all over the body, including making inroads to each hair follicle, the researchers reported. Chemicals released during the stress response — specifically norepinephrine — causes pigment-producing stem cells to activate prematurely, depleting the hair's "reserves" of color. "The detrimental impact of stress that we discovered was beyond what I imagined," Ya-Chieh Hsu, PhD, a lead study author and an associate professor of stem cell and regenerative biology at Harvard, said in a press release. "After just a few days, all of the pigment-regenerating stem cells were lost. Once they're gone, you can't regenerate pigments anymore. The damage is permanent."

Have medical questions? Connect with a board-certified, experienced doctor online or by phone. Pediatricians and other specialists available 24/7.

**Why we go gray:** But stress isn't the only — or even the primary — reason that most people get gray hair. In most cases, it's



simple genetics. "Gray hair is caused by loss of melanocytes (pigment cells) in the hair follicle. This happens as we age and, unfortunately, there is no treatment that can restore these cells and the pigment they produce, melanin," Dr. Lindsey A. Bordone, a der-

matologist at ColumbiaDoctors and an assistant professor of dermatology at Columbia University Medical Center in New York, told Healthline.

"Genetic factors determine when you go gray. There is nothing that can be done medically to

prevent this from happening when it is genetically predetermined to happen."

That doesn't mean environmental factors — such as stress — don't play a role. Smoking, for instance, is a known risk factor for premature graying, according to a

2013 study Trusted Source. So kick the habit if you want to keep that color a little longer. Other contributing factors to premature graying include deficiencies in protein, vitamin B-12, copper, and iron as well as aging due in part to an accumulation of oxidative stress. That stress is prompted by an imbalance between free radicals and antioxidants in your body that can damage tissue, proteins, and DNA, Kasey Nichols, NMD, an Arizona physician and a health expert at Rave Reviews, told Healthline.

And some degree of oxidative stress is a natural part of life. "We would expect increasing gray hair as we advance in age, and we see about a 10 percent increase in the chance of developing gray hair for every decade after age 30," Nichols said. Changes you can pursue to delay premature grays include eating a diet high in omega-3 fatty acids such as walnuts and fatty fish, not spending too much time in the skin-damaging and hair-damaging ultraviolet light of the sun,

and taking vitamin B-12 and vitamin B-6 supplements. That said, if you are going gray prematurely, it wouldn't hurt to go have a checkup just in case natural genetic factors aren't the sole culprit.

**FUTURE RESEARCH:** The new Harvard research is only a mouse study, so replicating the same results in a human study would be necessary to strengthen the findings. But the Harvard research has implications far beyond graying hair, with the hair color change merely one obvious sign of other internal changes as a result of prolonged stress. "By understanding precisely how stress affects stem cells that regenerate pigment, we've laid the groundwork for understanding how stress affects other tissues and organs in the body," said Hsu. "Understanding how our tissues change under stress is the first critical step towards eventual treatment that can halt or reverse the detrimental impact of stress." —Health Line

## Is eating an egg a day ok for heart health?



**A** Funny or Die sketch set in 1979 begins with a man sitting down for breakfast of steak, eggs, and toast. Suddenly, a bright light flashes in the next room and a stranger walks into the kitchen, startling the man and his wife.

"Wait! Stop! Don't eat that food," the stranger says. "Confused, the man asks, 'Why?' 'The eggs,' the stranger says. 'They're full of cholesterol.' The couple seems confused because few people in the late 1970s were worried about the goopy substance that can clog your arteries."

The stranger warns the couple that eating one egg a day drastically increases the chance of a heart attack. The time traveling dietician leaves, only to return again from the future, declaring there's two types of cholesterol and eggs have both the good and bad kind. This goes on for some time, as the man comes back again and again, updating the couple on what scientists in the future will learn about the other foods on the man's plate. While a comical rendition of evolving food science, the skit is still relatively accurate in terms of what studies have shown in terms of eggs, what's in them, and whether they're part of a healthy diet. That debate remains important as people in the United States continue to consume eggs more than they have in nearly half a century. On average, we eat 289 eggs per year, or more than five per week. That comes as new dietary guidelines drop restrictions on cholesterol, reflecting the views of many nutritionists that an egg's cheaply provided nutrient content outweighs other concerns. Much like the time traveling dietician points out, nutritionists now say dietary cholesterol isn't as lethal as we thought some 40 years ago.

**THE LATEST RESEARCH:** The latest in the long saga of the egg's long pile of scientific research comes out of the Population Health Research Institute (PHRI) of McMaster University and Hamilton Health Sciences in Ontario, Canada. There, researchers Trusted Source used data from about 177,000 people involved in one of three long-term studies conducted in 50 countries.

The researchers had a simple premise: Since they find eggs to be "a rich source of essential nutrients," they wanted to check what the available facts have to say on their impact on preventable diseases, as there's contradictory evidence as to what their cholesterol content means to human health. Using data from PHRI studies named PURE, ONTARGET, and TRANSCEND, the researchers counted 12,701 deaths and 13,658 cardiovascular disease "events," such as a heart attack. With that data, researchers reported they didn't find any "significant" connections between eating eggs, the collection of cholesterol in the blood, premature deaths, or major cardiovascular disease events. That led researchers to conclude that, for most people, eating one egg per day doesn't increase their risk of cardiovascular disease or death, even if their risk factors would suggest otherwise. —Health Line

## Why you don't need to panic about the new coronavirus

**T**he new coronavirus continues to spread Trusted Source with more than 24,000 cases in China and nearly 200 cases reported in other countries.

The outbreak is serious, but if you're living in the United States, the odds are that the everyday flu is a much more serious risk to your health. At this point, the seasonal flu carries much greater odds of killing you while in the United States than the novel coronavirus recently identified in Wuhan, China.

"So far this season in the U.S. [there's been] a mortality rate from flu-like illnesses and pneumonia of around 7 percent," Charles C. Bailey, MD, infectious disease specialist with St. Joseph Hospital, told Healthline. "This should be compared to the 11 cases so far documented for 2019-coronavirus with no deaths," he said. "Clearly if there's no panic concerning the current flu season which is a fairly normal one, panic over domestic 2019-coronavirus situation doesn't seem justified at present."

According to the Centers for Disease Control and Prevention (CDC) Trusted Source, flu caused about 60,000 American fatalities between 2017 and 2018.

To date, the number of deaths due to the new coronavirus in China are 564, according to the latest report from the New York Times. Additionally, 2 people outside of China have died from the disease, one in Hong Kong and one in the Philippines.

"This is not the first respiratory virus epidemic or pandemic we'll see, nor will it be the last," said infectious disease specialist Anita Sircar, MD, Providence Little Company of Mary Medical Center in California.

"It's too easy to believe everything that's posted on Facebook or Twitter and get swayed into hysteria. Educating yourself on what's happening is the strongest weapon against panic," she added.

A new viral outbreak is scary, but it's important to remember that the United States has been preparing to combat such an outbreak. While reports find China mishandled Trusted Source the 2002 SARS epidemic, and may have been delayed in recognizing the seriousness of this new outbreak, the United States is unlikely to have the same issues.

"If we take strong measures now, we may be able to blunt the impact of the

virus on the United States," said Nancy Messonnier Trusted Source, MD, director of the National Center for Immunization and Respiratory Diseases (NCIRD) in a statement Trusted Source. Experts emphasize that this coronavirus is at this point less dangerous than the SARS epidemic, which also originated in China.

"SARS was not especially transmissible, but more deadly, and was eventually controlled by public health measures. nCoV seems to be quite a bit more transmissible, but less deadly," said Gary Whittaker, PhD, professor of virology at Cornell University College of Veterinary Medicine.



On Jan. 31, President Donald Trump issued a proclamation that, during the 14-day period before entering into the United States, "it is in the interests of the United States to take action to restrict and suspend the entry into the United States, as immigrants or nonimmigrants, of all aliens who were physically present within the People's Republic of China." While this is unlikely to stop the virus, it "may slow the virus down enough that U.S. cases can be handled better," Dr. Whittaker explained.

President Trump also determined that the United States should take all "necessary and appropriate measures to facilitate orderly medical screening," and to quarantine those allowed to enter the United States, who may have been exposed to the

new virus, when appropriate. "Current measures are quite appropriate in my opinion. Quarantining symptomatic returning travelers who don't require hospitalization and isolating asymptomatic travelers for the 14-day incubation period will prevent any significant domestic transmission," Dr. Bailey confirmed.

Quarantine effectively restricts spread of disease Isolation and quarantine are two public health strategies that can help prevent the spread of a highly contagious illness. These strategies help keep those who are sick or may have been exposed to a contagious illness away from people who haven't been exposed.

Isolation is a public health tool that's used when we restrict the movement of someone who's already sick with a specific illness. Quarantine is basically when we have a recommended movement, restriction, or some kind of conditions on that movement for people who are exposed and not yet sick," said Martin Cetron Trusted Source, MD, director for the Division of Global Migration and Quarantine (DGMQ) at the CDC in a statement Trusted Source.

Dr. Sircar said it's important to think in terms of person-to-person transmission, and consider that there are just 11 confirmed cases in the United States right now. "The risk of infection is dependent on exposure," Sircar said. "For the general American public, the immediate health

risk from 2019-nCoV is considered low at this time." The viral outbreak is still in the early stages and there's potential for it to mutate or for deaths to be undercounted at this early stage. But at this point the death rate for the new coronavirus appears to be around 2 percent, far less than SARS at about 10 percent.

In confirmed cases of infection, reported symptoms Trusted Source range from people with little or no signs to those with:

**FEVER  
COUGH**

**SHORTNESS OF BREATH:** Although the new virus can infect people of any age, older people and those with asthma, diabetes, or heart disease appear to be most vulnerable to potentially life-threatening illness with this virus, according to the World Health Organization (WHO) Trusted Source. The CDC Trusted Source reports that the immediate risk of this virus to the American public is considered low at this time. But they also emphasize that everyone can do their part to help them respond to this health threat. This includes being vaccinated for the flu, and taking normal preventive Trusted Source actions to stop the spread of germs, like frequent hand washing, avoiding close contact with sick people, and staying home when you're sick.

Dr. Sircar explained it's important to consider how much less deadly this virus is, compared to previous coronavirus outbreaks. "What is more indicative of severity is the case fatality rate of the viruses," she said. "SARS killed 10 percent of infected people, for every 50 people infected, 5 died. MERS killed 35 percent of those infected, so for every 50 people infected 17 died. [The] 2019 n-CoV has so far killed about 2.2 percent, for every 50 people infected, only 1 has died." Extensive news coverage of the new coronavirus outbreak can make the situation seem much worse than it actually is.

While the infection is serious, the influenza virus still causes far more illness and death worldwide. Experts also emphasize that this outbreak is significantly less dangerous than previous coronavirus epidemics like SARS and MERS.

Our public health infrastructure is more than capable of dealing with the crisis, and U.S. government agencies are allocating all possible resources to contain the virus and prevent widespread

## How diet, exercise and weight management can add a decade to your life



**N**ow a recently published study has concluded there are lifestyle factors that can increase your odds of reaching an older age without chronic health issues.

There's been plenty of research on lifestyle choices, such as smoking, physical activity, drinking habits, weight management, and diet, that affect our overall life span and likelihood of experiencing chronic diseases.

However, few studies have looked at how a combination of these factors relate to a long life free of disease.

"We wanted to see whether following a healthy diet and exercise can prolong life, not just life expectancy but life expectancy free of chronic diseases, such as cancer, cardiovascular disease, and diabetes," Dr. Frank Hu, MPH, a professor at the Harvard T.H. Chan School of Public Health in Massachusetts and lead study author, told Healthline.

"Because we're not just looking at life span but also health span, meaning that there are increased years of life free of chronic disease," he said.

**5 crucial health factors:** Researchers examined data from roughly 73,000 registered female nurses in the United States from the Nurses' Health Study and from almost 40,000 male health professionals in the United States from the Health Professionals Follow-Up Study. The study participants didn't have cancer, cardiovascular disease, or diabetes when they were enrolled.

Study participants were routinely assessed for new diagnoses and deaths from cancer, cardiovascular disease, and type 2 diabetes for more than 20 years.

Researchers adjusted for age, ethnic background, family medical history, and other considerations.

The low-risk lifestyle factors used to calculate a healthy lifestyle score included:

**NEVER SMOKING:** At least 30 minutes of daily physical activity moderate alcohol intake maintaining a moderate weight (defined as a BMI less than 25) a good quality diet

Adding these five factors together gave a final low-risk lifestyle score ranging from 0 to 5. A higher score indicated a healthier lifestyle. "Your healthcare provider can help with risk scores that can estimate your risk for death for certain conditions, and evidence-based lifestyle modifications and treatments that can improve conditions," said Dr. Katrina Miller Parrish, the chief quality and information executive at L.A. Care Health Plan.

"Keep in mind that a healthy lifestyle with low impact, tolerable physical exercise; a good, well-balanced, colorful diet; hydration; and an appropriate amount of sleep can do wonders to help maintain a positive mental outlook and physical state," Parrish told Healthline.

**Increasing your healthy life span:** Years of life free from cancer, heart disease, and diabetes at age 50 was 24 years for women who followed none of the low-risk lifestyle factors.

It was 34 years for women who adopted four or five of the factors. The life expectancy free of these chronic diseases was 24 years among 50-year-old men who followed no low-risk lifestyle factors. It was 31 years for men who

practiced four or five of these healthy habits.

"While hypertension is the number one cause for death throughout the world, many lifestyle changes, such as better diet and exercise, can affect this diagnosis to varying degrees, especially based on regimen and adherence," Parrish said.

**Diet is key:** Being selective in what you eat is one of the most important lifestyle factors. "Foods that are high in fiber have been studied extensively for the benefits that they provide when it comes to cardiovascular health, including blood pressure regulation," Shelley Wood, MPH, RDN, a clinician at Santa Clara Valley Medical Center in California, told Healthline. Wood explains these foods are plant-based and include whole grains, fruits, and vegetables. Additionally, legumes, such as beans, lentils, and peas, have been shown to lower the risk of heart disease, high cholesterol level, and high blood pressure. For those wishing to preserve heart function and health, Wood says they'd benefit from avoiding foods high in sugar, sodium, saturated fat, and refined carbohydrates. "It's especially important to avoid these foods if you have high cholesterol. If you're contemplating eating a food that is high in sugar, salt, or fat, your best bet is to choose something else," she said.

Wood adds that optimizing caloric intake and reaching or maintaining a moderate weight and waist measurement into middle age are "the single most important ways to reduce risk for diabetes as well as participating in regular physical

activity and avoiding smoking."

**Smoking, obesity effects:** According to the study, men who smoked heavily — defined as 15 or more cigarettes per day — and men and women with obesity (defined as BMI 30 or higher) had the lowest chance of disease-free life expectancy at age 50. "We looked at five lifestyle factors: eating a healthy diet, maintaining a healthy body weight, not drinking in excess, not smoking, and being physically active. They're all important. But for smokers, the most important thing for them to do, of course, is to stop smoking. For people who are obese, it's important to lose weight and maintain a healthy body weight," Hu said.

Parrish agrees that not smoking is critically important. "The one single thing anyone who smokes can do is simply quit and reduce risk of disease and death by double digits, which is seen through this study. The effect appears to be greater the longer an 'ever-smoker' remains no longer smoking," Parrish said. "In the first 1 to 10 years after quitting, the risk of heart disease and lung cancer drops, and by 15 years, the risk of each is near that of a nonsmoker," she added.

**The bottom line:** New research finds there are five lifestyle factors that significantly increase the years you live without experiencing chronic health issues. Study participants were followed for more than 20 years. Those who followed four or five of the healthy lifestyle choices significantly increased their healthy life span after age 50. Experts emphasize that the most influential of these are not smoking and maintaining a