

From VOA Learning English, this is Science in the News. I'm Faith Lapidus.

And I'm Steve Ember. Today on the program, we tell about international efforts to fight a health threat in the West African nation of Guinea. Then, we report on a finding that cold air might be good for your health. But first, we report on a medical discovery. American researchers say a drug used to treat breast cancer may help people who have AIDS or HIV, the virus that causes the disease.

## **Breast Cancer Drug May Help HIV/AIDS Patients**

A drug used to treat breast cancer may soon have another use. Researchers say the drug could be helpful as a weapon against a fungal infection that kills more HIV/AIDS patients than the disease tuberculosis. The possible new use for tamoxifen was discovered as part of an investigation of older, already approved drugs. The makers of these drugs have sought and received approval from United States government agencies to sell their products to the public.

Health experts estimate that a fungus called Cryptococcus infects about one million people worldwide every year. The fungal infection is called Cryptococcosis. It is especially deadly for people living with AIDS, Acquired Immune Deficiency Syndrome. Most of the infections take place in African countries south of the Sahara Desert. Ninety percent of the people who have AIDS live in those countries.

Damian Krysan is an infectious diseases specialist at the University of Rochester in New York State. He says Cryptococcosis can lead to meningitis, a life-threatening infection of the covering of the brain and spinal cord.

“It currently kills on the order of three-quarters of a million people a year, primarily again in resource-limited regions with high rates of HIV/AIDS.”

Two costly drugs are commonly used to treat the fungal infection. But they are not commonly available in developing countries. And they are difficult to give to patients, because they must be injected into a person’s blood.

Experts say that even under the best conditions, 10 to 20 percent of those who receive this treatment will die. Another drug is often used in poor countries to fight Cryptococcosis. But the drug only slows the growth of the infection.

Some researchers are investigating whether drugs already approved for one condition might be useful against another. Dr. Krysan and other researchers examined about 2,000 drugs and combinations of drugs for ones that could kill Cryptococcus.

They found one – tamoxifen, a drug that has been used for years to treat women with breast cancer. Dr. Krysan says tamoxifen is not pricey and seems to help patients in a number of ways.

“Can be given orally to patients, which is what we needed. And Cryptococcus causes a brain infection essentially. And so we needed that drug to get to the brain. And tamoxifen actually crosses into the central nervous system very effectively and even accumulates to levels above what we see in the blood.”

Dr. Krysan published a report on his findings in the journal mBio. He says tamoxifen is most effective against the fungal infection when it is combined with the drug that is already used to treat Cryptococcosis in poor countries.

More tests are still needed. But because both drugs are already approved, human testing will follow soon.

## **Aid Groups in Guinea Fighting Measles Outbreak**

Mass emergency vaccination programs were launched in Guinea recently to control a growing health threat -- measles. Doctors Without Borders and the United Nations Children's Fund announced the vaccination campaigns last month. The two groups planned to work with Guinea's Ministry of Health to vaccinate more than two million children against measles. All the boys and girls are between the ages of six months and 10 years.

The World Health Organization warns that measles is one of the mostly highly-infectious diseases. WHO experts say measles is a leading cause of death among children. The cause is a fast-spreading virus.

The measles outbreak in Guinea began in December. A short time later, the government declared measles an epidemic. This means it has infected many people over a short period. The last measles outbreak in Guinea was in 2009. At that time, the disease infected more than 4,000 children and caused 10 deaths.

Most cases of measles are curable. But health experts say vaccination is the best way to keep the number of deaths low.

In February, Doctors Without Borders reported that not enough children had received vaccinations that include protection against measles. It said fewer than 80 percent of children living in the capital Conakry had received such vaccines. Only 37 percent of all children in Guinea were vaccinated.

Dr. Renaldo Ortunio works for Doctors Without Borders. He says even a single case of measles is one too many.

“Measles is a preventable disease by vaccine, so you shouldn’t have an epidemic, an outbreak in this country. But unfortunately, there are some weaknesses at the Ministry of Health, in the regular vaccinations and of course, with this lack of vaccination among children, we see an outbreak every three to four years, which is the case currently in Conakry.”

Health officials have been urging parents to watch their children for signs of measles: high body temperature, redness in the eyes, white areas on the mouth, and skin discoloration on the face and neck.

## **Shivering Could Help Burn Body Fat**

North America was in a deep freeze this winter. Cold air from the Arctic led to record low temperatures in some areas. But now, a new study has found that all that cold air may actually be good for your health.

It was so cold in Chicago, Illinois last month that people were being warned to stay inside. Paige Worthy was born and lives in the place that Americans call The Windy City. She says this was the worst winter she can remember.

“It actually hurt to breathe in because the air is so cold that I actually have to cover my mouth with a scarf to keep my lungs from actually hurting.”

Shivering is an involuntary response to cold. It is the subject of a new study published in the journal Cell Metabolism. Researchers say they found that shivering or shaking causes the body to release a natural hormone called irisin. The hormone activates brown fat -- the good fat in your body that burns calories and helps to support weight loss.

Francesco Celi of Virginia Commonwealth University was the lead writer of a report about the study. He says irisin has another important role.

“Indeed the purpose of brown fat is maintaining the core temperature, so the temperature of the body whereby all the vital functions can be active and normal.”

Dr. Celi worked with researchers at the US National Institutes of Health, in Bethesda, Maryland. They already knew the body produces irisin when we do physical exercise. When we exercise, our muscles contract, or change in size, like they do when we shiver. The NIH researchers believe human ancestors developed the ability to shiver as a way to survive cold weather.

“This is the last ditch before going into hypothermia and having severe metabolic and life-threatening consequences.”

The researchers studied hormonal changes and how the body uses energy in a group of volunteers who exercised. The volunteers were then asked to lie under cooling blankets -- where temperatures were slowly reduced to 12 degrees Celsius.



“Most of our volunteers shivered at that time and the shivering was anywhere between five and 10 minutes, not more. And, again we drew the blood before and after the study.”

The volunteers’ bodies produced irisin, but with some surprises.

“The amount of increase in irisin was almost identical to what we observed after one hour of exercise. This first set of experiments validated our initial hypothesis, whereby the maximum stimulation of irisin is probably shivering.”

Dr. Celi says understanding how irisin activates brown fat could lead to new drugs to fight diabetes or help overweight individuals.

“It is a short-term effect. We do not know yet the long term consequences of these interventions. So, studies need to be performed to address this very question. We do not know if this is advantageous, which individuals would be more able to gain from intervention.”

Back in Chicago, Paige Worthy is pleased to know that shivering may have a physical benefit. Ms. Worthy works as a fitness trainer. She helps people improve their physical condition. She is not sure she will urge her fitness students to be cold and shiver.

“As a newly-minted spinning instructor, I guess I would say that there are risks that go along with every exercise and every weight loss regimen, but this seems like kind of a perilous way to approach your weight loss, if it is going to be this cold.”

Dr. Celi agrees. Just because shivering and exercise have similar effects on the body, he says, that does not mean standing in the cold should replace physical activity.

This Science in the News was based on reports from VOA reporters Jessica Berman, Jennifer Lazuta and Rosanne Skirble. The program was written by Christopher Cruise, and produced by June Simms. I'm Faith Lapidus.

And I'm Steve Ember. Join us again next week for more news about science on the Voice of America.



