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WELCOA'S ONLINE BULLETIN FOR YOUR FAMILY'S SAFETY

MAPPING LANGUAGE PROBLEMS IN THE BRAIN

We often use language to communicate our knowledge and beliefs. But such communication can be challenging for up to 8 million people nationwide who have some form of language impairment.

To learn more about how language is organized in the brain, an NIH-funded research team studied people with a type of language impairment known as aphasia. Aphasia can arise after injury to the brain regions that help people express and understand language. The condition can occur suddenly—for example, from stroke or head injury. It can also develop slowly, from a brain tumor, an infection, or dementia.

Anyone can acquire aphasia, including children, but most people who have aphasia are middle-aged or older. Men and women are equally affected. According to the National Aphasia Association, approximately 80,000 individuals acquire aphasia each year from strokes. About one million people in the United States currently have aphasia.

WHAT TYPES OF APHASIA ARE THERE?

There are two broad categories of aphasia: fluent and non-fluent.

Damage to the temporal lobe (the side portion) of the brain may result in a fluent aphasia called Wernicke's aphasia (see figure). In most people, the damage occurs in the left temporal lobe, although it can result from damage to the right lobe as well. People with Wernicke's aphasia may speak in long sentences that have no meaning, add unnecessary words, and even create made-up words. For example, someone with Wernicke's aphasia may say, "You know that smoodle pinkered and that I want to get him round and take care of him like you want before." As a result, it is often difficult to follow what the person is trying to say. People with Wernicke's aphasia usually have great difficulty understanding speech, and they are often unaware of their mistakes. These

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individuals usually have no body weakness because their brain injury is not near the parts of the brain that control movement.

A type of non-fluent aphasia is Broca's aphasia. People with Broca's aphasia have damage to the frontal lobe of the brain. They frequently speak in short phrases that make sense but are produced with great effort. They often omit small words such as "is," "and," and "the." For example, a person with Broca's aphasia may say, "Walk dog," meaning, "I will take the dog for a walk," or "book book two table," for "There are two books on the table." People with Broca's aphasia typically understand the speech of others fairly well. Because of this, they are often aware of their difficulties and can become easily frustrated. People with Broca's aphasia often have right-sided weakness or paralysis of the arm and leg because the frontal lobe is also important for motor movements.

HOW IS APHASIA DIAGNOSED?

Aphasia is usually first recognized by the physician who treats the person for his or her brain injury. The physician typically performs tests that require the person to follow commands, answer questions, name objects, and carry on a conversation.

If the physician suspects aphasia, the patient is often referred to a speech-language pathologist, who performs a comprehensive examination of the person's communication abilities. The examination includes the person's ability to speak, express ideas, converse socially, understand language, read, and write, as well as the ability to swallow and to use alternative and augmentative communication.

HOW IS APHASIA TREATED?

In some cases, a person will completely recover from aphasia without treatment. This type of spontaneous recovery usually occurs following a type of stroke in which blood flow to the brain is temporarily interrupted but quickly restored, called a transient ischemic attack. In these circumstances, language abilities may return in a few hours or a few days.

For most cases, however, language recovery is not as quick or as complete. While many people with aphasia experience partial spontaneous recovery, in which some language abilities return a few days to a month after the brain injury, some amount of aphasia typically remains. In these instances, speech-language therapy is often helpful. Recovery usually continues over a two-year period. Many health professionals believe that the most effective treatment begins early in the recovery process.

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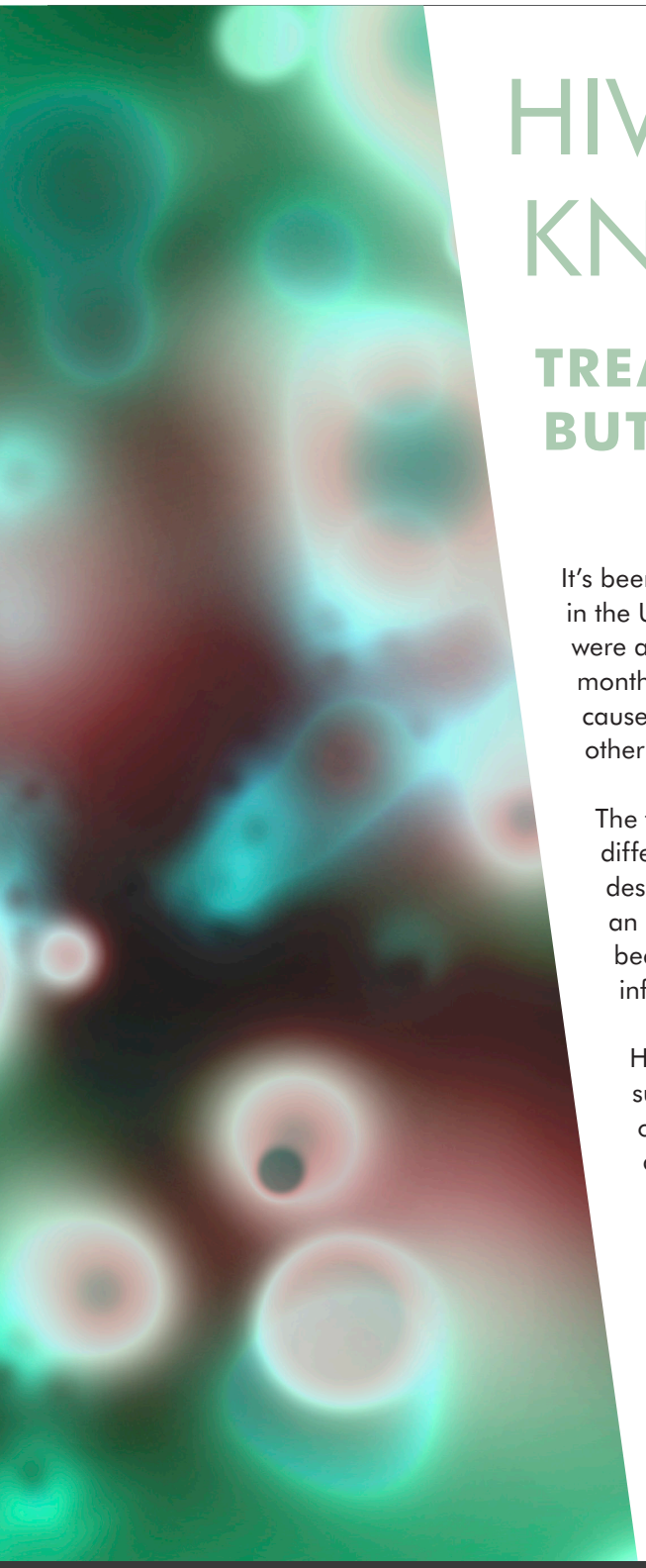

HIV AND AIDS: KNOW THE FACTS

TREATMENTS WORK, BUT PREVENTION IS KEY

It's been more than 30 years since a disease now called AIDS was first recognized in the United States. Back then, it was considered a death sentence. No treatments were available, its cause was unknown, and people often died within a few months after being diagnosed. Today, people infected with HIV—the virus that causes AIDS—can live full, healthy lives, in large part because of medicines and other discoveries made with NIH support.

The terms HIV and AIDS can be confusing, because they're related but different. HIV is a virus that harms your immune system by invading and then destroying your infection-fighting white blood cells. AIDS is the final stage of an untreated HIV infection. People with AIDS can have a range of symptoms, because their weakened immune systems put them at risk for life-threatening infections and cancers.

HIV virus passes from one person to another through certain body fluids, such as blood and semen. About 90% of new HIV infections in the U.S. occur during sex. Shared needles and injection drug use is the second most common route of infection. HIV can also spread from an infected mother to her newborn. HIV isn't spread through casual contact, such as shaking hands, hugging, sneezing, sharing utensils, or using bathrooms.

Today, by taking a combination of HIV-fighting medicines (called antiretroviral therapy), fewer Americans with HIV are developing AIDS. And some HIV infections can now be prevented by taking daily medications (called PrEP).

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STILL AN EPIDEMIC...

Because of these advances, some people may think that there's little need to be concerned about HIV and AIDS. But nothing could be further from the truth. Nationwide, more than 1 million people are infected with HIV, and each year over 50,000 more become newly infected. About 1 in 7 Americans who have HIV don't even realize they're infected, so they may be unknowingly spreading the virus to others. The problem is even more severe in developing nations, especially in parts of Africa.

"If you get a diagnosis of HIV infection, and you begin antiretroviral therapy in a timely fashion, before your immune system becomes substantially compromised, your prognosis is excellent," says Dr. Anthony S. Fauci, NIH's infectious disease chief, who first began treating AIDS patients in the early 1980s. Studies show that with early treatment, HIV levels may become so low that the virus becomes undetectable in the blood. That lengthens life and reduces the risk of spreading HIV to others. "If those who are infected stay on therapy, they can save their own lives and also help keep HIV from infecting their sexual partners," Fauci says.

Keeping HIV infections in check requires early diagnosis and taking daily HIV medications for life. Even if it's undetectable in the blood, once a person's been infected with HIV, it remains forever hidden in the body. "HIV has the ability to integrate itself into your cells and hide in an inactive form, called a reservoir," says Fauci. Although medicines can keep virus levels low, they don't clear out the viral reservoir. So if treatment lapses, HIV comes out of hiding and rushes back into the bloodstream.

SHOULD YOU GET AN HIV TEST?

HIV tests involve a simple cheek swab, finger prick, or urine sample. Experts recommend that you get tested for HIV if you answer yes to any of these questions:

- Have you had sex with someone who is HIV-positive or whose HIV status you didn't know since your last HIV test?
- Have you injected drugs and shared equipment (such as needles or syringes) with others?
- Have you exchanged sex for food, shelter, drugs, or money?
- Have you been diagnosed with, or sought treatment for a sexually transmitted disease, like syphilis?
- Have you been diagnosed with hepatitis or tuberculosis (TB)?
- Have you had sex with anyone who has any of the risk factors listed above or whose history you don't know?

TakeCharge
WELCOA'S ONLINE SELF-CARE BULLETIN

Talking with Your Doctor

MAKE THE MOST OF YOUR APPOINTMENT

Patients and health care providers share a very personal relationship. Doctors need to know a lot about you, your family, and your lifestyle to give you the best medical care. And you need to speak up and share your concerns and questions. Clear and honest communication between you and your physician can help you both make smart choices about your health.

Begin with some preparation. Before your health exam, make a list of any concerns and questions you have. Bring this list to your appointment, so you won't forget anything.

Do you have a new symptom? Have you noticed side effects from your medicines? Do you want to know the meaning of a certain word? Don't wait for the doctor to bring up a certain topic, because he or she may not know what's important to you. Speak up with your concerns.

"There's no such thing as a dumb question in the doctor's office," says Dr. Matthew Memoli, an infectious disease doctor at NIH. "I try very hard to make my patients feel comfortable so that they feel comfortable asking questions, no matter how dumb they think the question is."

Even if the topic seems sensitive or embarrassing, it's best to be honest and upfront with your health care provider. You may feel uncomfortable talking about sexual problems, memory loss, or bowel issues, but these are all important to your health. It's better to be thorough and share a lot of information than to be quiet or shy about what you're thinking or feeling. Remember, your doctor is used to talking about all kinds of personal matters.

HELPFUL HINTS

Consider taking along a family member or friend when you visit the doctor. Your companion can help if there are language or cultural differences between you and your doctor. If you feel unsure about a

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topic, the other person can help you describe your feelings or ask questions on your behalf. It also helps to have someone else's perspective. Your friend may think of questions or raise concerns that you hadn't considered.

Many people search online for health information. They use Web-based tools to research symptoms and learn about different illnesses. But you can't diagnose your own condition or someone else's based on a Web search.

"As a physician, I personally have no problem with people looking on the Web for information, but they should use that information not as a way to self-diagnose or make decisions, but as a way to plan their visit with the doctor," says Memoli. Ask your doctor to recommend specific websites or resources, so you know you're getting your facts from a trusted source. Federal agencies are among the most reliable sources of online health information.

Many health care providers now use electronic health records. Ask your doctor how to access your records, so you can keep track of test results, diagnoses, treatment plans, and medicines. These records can also help you prepare for your next appointment.

After your appointment, if you're uncertain about any instructions or have other questions, call or email your health care provider. Don't wait until your next visit to make sure you understand your diagnosis, treatment plan, or anything else that might affect your health.

Your body is complicated and there's a lot to consider, so make sure you do everything you can to get the most out of your medical visits.

TIPS FOR YOUR DOCTOR VISIT

- ✓ Write down a list of questions and concerns before your exam.
- ✓ Consider bringing a close friend or family member with you.
- ✓ Speak your mind. Tell your doctor how you feel, including things that may seem unimportant or embarrassing.
- ✓ If you don't understand something, ask questions until you do.
- ✓ Take notes about what the doctor says, or ask a friend or family member to take notes for you.
- ✓ Ask about the best way to contact the doctor (by phone, email, etc.).
- ✓ Remember that other members of your health care team, such as nurses and pharmacists, can be good sources of information.

ToYourHealth
WELCOA'S ONLINE GENERAL WELLNESS BULLETIN

Drivers of Cancer

The genetic changes that contribute to cancer tend to affect three main types of genes—proto-oncogenes, tumor suppressor genes, and DNA repair genes. These changes are sometimes called "drivers" of cancer.

A CLOSER LOOK AT THE "DRIVERS"

Proto-oncogenes are involved in normal cell growth and division. However, when these genes are altered in certain ways or are more active than normal, they may become cancer-causing genes (or oncogenes), allowing cells to grow and survive when they should not.

Tumor suppressor genes are also involved in controlling cell growth and division. Cells with certain alterations in tumor suppressor genes may divide in an uncontrolled manner.

DNA repair genes are involved in fixing damaged DNA. Cells with mutations in these genes tend to develop additional mutations in other genes. Together, these mutations may cause the cells to become cancerous.

As scientists have learned more about the molecular changes that lead to cancer, they have found that certain mutations commonly occur in many types of cancer. Because of this, cancers are sometimes characterized by the types of genetic alterations that are believed to be driving them, not just by where they develop in the body and how the cancer cells look under the microscope.

In metastasis, cancer cells break away from where they first formed (primary cancer), travel through the blood or lymph system, and form new tumors (metastatic tumors) in other parts of the body. The metastatic tumor is the same type of cancer as the primary tumor.

A cancer that has spread from the place where it first started to another place in the body is called metastatic cancer. The process by which cancer cells spread to other parts of the body is called metastasis.

Metastatic cancer has the same name and the same type of cancer cells as the original, or primary, cancer. For example, breast cancer that spreads to and forms a metastatic tumor in the lung is metastatic breast cancer, not lung cancer.

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Treatment may help prolong the lives of some people with metastatic cancer. In general, though, the primary goal of treatments for metastatic cancer is to control the growth of the cancer or to relieve symptoms caused by it. Metastatic tumors can cause severe damage to how the body functions, and most people who die of cancer die of metastatic disease.

TISSUE CHANGES THAT ARE NOT CANCER

Not every change in the body's tissues is cancer. Some tissue changes may develop into cancer if they are not treated, however. Here are some examples of tissue changes that are not cancer but, in some cases, are monitored:

Hyperplasia occurs when cells within a tissue divide faster than normal and extra cells build up, or proliferate. However, the cells and the way the tissue is organized look normal under a microscope. Hyperplasia can be caused by several factors or conditions, including chronic irritation.

Dysplasia is a more serious condition than hyperplasia. In dysplasia, there is also a buildup of extra cells. But the cells look abnormal and there are changes in how the tissue is organized. In general, the more abnormal the cells and tissue look, the greater the chance that cancer will form.

Some types of dysplasia may need to be monitored or treated. An example of dysplasia is an abnormal mole (called a dysplastic nevus) that forms on the skin. A dysplastic nevus can turn into melanoma, although most do not.

An even more serious condition is **carcinoma in situ**. Although it is sometimes called cancer, carcinoma in situ is not cancer because the abnormal cells do not spread beyond the original tissue. That is, they do not invade nearby tissue the way that cancer cells do. But, because some carcinomas in situ may become cancer, they are usually treated.

Normal cells may become cancer cells. Before cancer cells form in tissues of the body, the cells go through abnormal changes called hyperplasia and dysplasia. In hyperplasia, there is an increase in the number of cells in an organ or tissue that appear normal under a microscope. In dysplasia, the cells look abnormal under a microscope but are not cancer. Hyperplasia and dysplasia may or may not become cancer.