

National Hormone and Pituitary Program (NHPP): Information for People Treated with Pituitary Human Growth Hormone (Summary)

National Endocrine and Metabolic Diseases Information Service



National Institute of
Diabetes and Digestive
and Kidney Diseases

How did Creutzfeldt-Jakob disease (CJD) occur in people treated with pituitary human growth hormone (hGH)?

From 1963 to 1985, the National Hormone and Pituitary Program (NHPP), funded by the U.S. Department of Health and Human Services (HHS), sent hGH made from human pituitary glands to hundreds of doctors across the country. As a part of research studies, doctors used the hormone to treat nearly 7,700 children for failure to grow.

In 1985, the HHS learned that three people treated with pituitary hGH died of Creutzfeldt-Jakob disease (CJD), a rare, incurable brain disease. The HHS immediately stopped distributing the hormone and began a national study to learn more about how pituitary hGH treatment may have caused this problem.

How many people treated with NHPP-distributed hGH got CJD in the United States?

The HHS has identified 29 cases of CJD among the nearly 7,700 people in the United States who received NHPP pituitary hGH. All of these people began treatment with pituitary hGH before 1977, which is when the NHPP added a new purification step to the process for extracting pituitary hGH. With the addition of this step, the risk of CJD was

greatly reduced and may have been removed. So far, no patient who started pituitary hGH after 1977 has become ill with CJD. Today, growth hormone used for treatment is made using a different process in a lab. It poses no threat of infection with CJD.

How many people treated with pituitary hGH got CJD in other countries?

People treated with pituitary hGH in other countries also got CJD:

- In France, 119 people got CJD out of 1,700 people treated with pituitary hGH.
- In the United Kingdom, 75 people got CJD out of 1,849 people treated.
- In New Zealand, six people got CJD out of 159 people treated.
- Holland and Brazil have each had two people who got CJD.
- Austria, Qatar, and Ireland have each had one person who got CJD.
- In Australia, one person got “possible” (albeit unlikely) CJD.

The people in New Zealand and Brazil received hormone made in the United States, but it was not identical to hormone distributed by the NHPP. France, Britain, Holland, and Australia produced their own hormone. The person in Qatar received hormone made in France. The person in Austria received hormone made by a pharmaceutical company.

Are people treated with pituitary hGH at risk for other diseases or problems?

Many people were treated with pituitary hGH because their pituitary glands did not make enough growth hormone, and these people also had problems making other pituitary hormones. One of these other hormones tells the adrenal gland to make cortisol, a hormone needed for life. People lacking this hormone are at risk of death from adrenal crisis, but adrenal crisis can be prevented. More pituitary hGH recipients have died from adrenal crisis than from CJD. Please read the health alert at www.endocrine.niddk.nih.gov/pubs/creutz/alert.aspx and discuss this information with your doctor.

Besides CJD, no other serious or fatal health risks from pituitary hGH treatment have been found.

“Mad Cow” Disease

“Mad cow” disease in cattle is the same kind of disease as CJD from pituitary hGH. People who ate beef from animals infected with mad cow disease got a form of CJD called variant CJD (vCJD). Transmission of vCJD from cattle to humans has happened mostly in Britain. In the United States, three cases of vCJD have been found. According to the Centers for Disease Control and Prevention (CDC), two people most likely acquired their infection in the United Kingdom and one person most likely acquired their infection in Saudi Arabia. CJD from hGH and vCJD are separate diseases. People who received pituitary hGH are not at higher risk for vCJD.

AIDS

Pituitary hGH does not cause AIDS. Although destroying the CJD infectious agent is very difficult, the same is not true of destroying HIV, the virus that causes AIDS. Any HIV present in human pituitary glands would be destroyed by the process used to make hGH.

Low Levels of GH in Adults

Some people who needed hGH as children may benefit from biosynthetic growth hormone (bGH) as adults. Biosynthetic growth hormone is made in a laboratory and is not obtained from human pituitary glands. People with low levels of growth hormone as adults may have symptoms or changes such as these:

- more body fat
- less muscle
- less bone mass
- less strength
- less energy

If you lacked growth hormone as a child and have these problems as an adult, ask your doctor whether they might be due to low GH. Because these conditions are common in many people, they may not be due to low GH. Studies have shown that GH administration in adults with low GH reduces fat and increases muscle mass. Effects on strength, energy, and bone fractures in GH-deficient adults receiving GH replacement are not as clear.

Cancer

HHS studies of people treated with pituitary hGH supplied by the NHPP show no increased risk of cancer in those who did not have tumors before pituitary hGH treatment. Many people who received NHPP pituitary hGH had brain tumors that caused their lack of hGH. People who have had one tumor have an increased risk for getting other tumors.

In previous updates to pituitary hGH recipients, the HHS noted that Japanese doctors reported in 1988 that some people who received hGH seemed to have a higher rate of leukemia. Studies of those who got pituitary hGH in the United States found no higher rate of leukemia among those who did not have tumors before getting pituitary hGH. A more recent study by Japanese researchers found no increase in leukemia in people who did not have tumors or radiation before pituitary hGH treatment.

Emotional Problems

No studies have shown that hGH causes changes in personality, emotional problems, or suicide.

What are the symptoms of CJD?

Symptoms of CJD can vary. People who got CJD from pituitary hGH had difficulty with walking and balance, dizziness, and/or clumsiness. Later, some began to slur words and have jerky movements. They also had trouble seeing, remembering, and/or thinking clearly. The disease becomes worse very quickly. When individuals have symptoms like these over a long period of time, such as a year, without getting much worse, they do not have CJD. Occasional forgetfulness, clumsiness, or headaches are normal and do not mean one has CJD.

What is my risk for getting CJD from NHPP pituitary hGH?

No one can say what each person's risk is. Of the approximately 7,700 people in the United States who received pituitary hGH, 29 have gotten CJD. The two things that seem to be connected with getting CJD are

- **how long a person was treated:** The average treatment time with hGH was 3 years. However, people who got CJD typically were treated with hGH for about 8.4 years.
- **when a person was treated:** All of the people who got CJD started hGH treatment before 1977, when the process for making hGH was improved. Recent analysis shows that after 1977, the new purification steps greatly reduced and may have eliminated the risk for CJD infection.

Overall, one in about 265 people treated with NHPP pituitary hGH got CJD. All CJD patients received some hGH before 1977. Of those treated before 1977, about one in 91 got CJD. Because CJD takes so long to develop, no one can say for sure that those who started treatment after 1977 are safe. The longest reported time from the start of pituitary hGH treatment to first signs of CJD is 44 years in U.S. patients. However, the appearance of new cases is decreasing, as there has only been one new case in the past 5 years.

Who can tell me when I was treated and for how long?

The best source for details about your treatment is the doctor or center that gave you pituitary hGH. To protect patient privacy, the HHS did not ask for the names of those being treated until 1985, when the first CJD cases came to light. In 1985, the HHS asked doctors and centers for the names and addresses of recipients to inform them of the risk of CJD. Specific treatment for most recipients was not included. If your doctor is not available, HHS staff can check its records for any information about your treatment. You can call 1-800-472-0424 or email NIDDK.Inquiries@nih.gov with your questions.

Did the hormone I took cause CJD?

To try to find the pituitary hGH that could have caused CJD, HHS researchers did two things:

- **They set up a test in animals**, injecting samples of all available pituitary hGH directly into the brains of monkeys. Doctors gave brain injections to shorten the time needed for illness to develop.
- **They studied people treated with pituitary hGH** to see who got CJD and which hormone preparation they received.

Results: The animal tests did not help find the pituitary hGH that might have caused CJD. After 10 years, only one test animal got sick with CJD. Two other animals received the same hormone and did not get sick. In addition, the pituitary hGH that made the animal sick was different from the pituitary hGH given to the people who had gotten CJD. The animal tests did not prove that any specific hormone preparation caused CJD.

The NHPP kept records of pituitary hGH preparations sent to each doctor. These records helped match which preparation could have been given to people who later got CJD. No specific preparation was found to cause CJD. Scientists concluded that more than one pituitary hGH preparation carried low levels of infection. Most of the people who got CJD received pituitary hGH for long periods of time and received many different preparations. In the United States, only people who started treatment before 1977 developed CJD, but no one can say for sure that those who started treatment after 1977 are safe, as noted above.

If I develop CJD, will my family get it? If I get pregnant, will my baby get it?

Scientists do not believe that CJD is transmitted through day-to-day contact or through sexual contact. Therefore, your spouse and your children are not in danger. Except for rare genetic forms of CJD, a pregnant woman does not pass CJD to her unborn baby. CJD from hGH treatment does not affect the genes.

Can a test tell if I will get CJD?

Today, when a person has symptoms and findings on neurological examination that may be due to CJD, additional testing may be recommended to help in the diagnosis. Two commonly used tests are the electroencephalogram (EEG) and magnetic resonance imaging (MRI). While these brain tests are useful if they show characteristic features of CJD, such features may be absent, particularly early in the course of the disease. A third test that can help doctors diagnose CJD requires a sample of spinal fluid. To obtain the sample for testing, a doctor performs a lumbar puncture, or spinal tap. A lumbar puncture is considered an invasive test, as a needle is inserted into a person's spinal canal in the lower back.

Scientists are working on tests to diagnose CJD that are more accurate, safer, and less invasive than the currently available tests. One such test is an easy-to-use nasal brush test that collects cells along the mucous membranes in a person's nasal cavity for analysis. Although more study is needed before this test can be used on people with neurologic problems, scientists believe the nasal brush test could make it possible to rapidly and accurately diagnose CJD. More information about this new test can be found at www.nih.gov/news/health/aug2014/niaid-06.htm.

Why can't I donate blood or organs?

Five cases have been reported in which the agent that causes vCJD was transmitted through blood. vCJD is the disease that occurs in people who ate tainted beef or were exposed to products from cattle with "mad cow" disease. vCJD is different from the classic type of CJD that occurred in pituitary hGH recipients. Scientists do not believe that the type of CJD that occurs in GH recipients can be transmitted by blood, but more study is needed. Because no test can rule out the presence of CJD in blood or organs, pituitary hGH recipients are not allowed to donate blood or organs.

Until more is known, the following people should not donate blood or organs:

- anyone who received pituitary hGH
- family members who have a relative with a genetic form of CJD
- anyone who lived in the United Kingdom for 3 months between 1980 and 1996 or in France for 5 years between 1980 and now

Family members of pituitary hGH recipients can donate blood. People who only received bGH after 1985 can also donate blood.

The U.S. Food and Drug Administration has set these guidelines on blood donation: www.fda.gov/downloads/BiologicsBloodVaccines/BloodBloodProducts/ApprovedProducts/LicensedProductsBLAs/BloodDonorScreening/UCM164191.pdf.

Why should people treated with pituitary hGH know about CJD?

Some parents did not tell their children about receiving treatment with pituitary hGH and the possible risk of CJD. These children are now adults. Although the HHS no longer sends annual information about the problem of CJD in pituitary hGH recipients, the HHS does maintain a mailing list should any important new information become available. If parents are no longer available to receive HHS mailings, their adult children may not have access to important new information. Some pituitary hGH recipients have learned about the risk of CJD from newspaper stories. Others heard about it when they tried to give blood. Those who were not told by their parents are often angry when they hear of it outside the family. Any parent of someone who received pituitary hGH who has not received any mailings from the HHS—the last correspondence was sent in June 1999—should contact the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) with the adult child's current address. Knowledgeable staff members are glad to answer any questions that parents or recipients may have.

How can the U.S. Department of Health and Human Services (HHS) help me?

If you have questions, please call the phone numbers listed below. If you call the toll-free number, a recording will ask you to leave your name, phone number, and a good time to reach you. A staff member will call you back. You can call, write, or have your doctor contact the National Institutes of Health (NIH) at

National Institutes of Health
NIDDK Office of Communications and
Public Liaison
Building 31 Room 9A06
31 Center Drive, MSC 2560
Bethesda, MD 20892-2560
Phone: 301-496-3583
Toll-free: 1-800-472-0424
Email: NIDDK.Inquiries@nih.gov

The website www.endocrine.niddk.nih.gov provides additional information about hGH and CJD.

How can I get support and information?

More information and medical journal articles about CJD and growth hormone therapy can be found on the National Endocrine and Metabolic Diseases Information Service web page Human Growth Hormone and Creutzfeldt-Jakob Disease Resource List at www.endocrine.niddk.nih.gov/pubs/creutz/creutz.aspx.

The Creutzfeldt-Jakob Disease Foundation, Inc. (www.cjdfoundation.org) was created in 1993 by two families who lost loved ones to CJD and the neurologist who treated their family members. This nonprofit corporation promotes awareness of CJD through research and education and reaches out to those who have lost relatives to this illness. The NIH has CJD information at www.ninds.nih.gov.

The Human Growth Foundation (HGF) (www.hgfound.org) is a nonprofit organization concerned with children's growth disorders and adult GH deficiency. The HGF has information available online and through its toll-free number, 1-800-451-6434. The HGF also supports an Internet mailing list to help the exchange of information about adult GH deficiency and adult GH replacement therapy.

How can I help with the follow-up study?

Patients, their families, and their doctors can help by telling the HHS of any deaths, especially if anyone suspects CJD. The following information is also important:

- Report to the HHS any deaths from any cause in someone who received hGH.
- Give HHS doctors permission to review medical records if an hGH recipient dies.
- Send address changes for hGH recipients to the NIDDK Office of Communications and Public Liaison at the NIH.

Acknowledgments

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You may also find additional information about this topic by visiting MedlinePlus at www.medlineplus.gov.

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit www.fda.gov. Consult your health care provider for more information.

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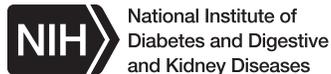
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