

Normal pressure hydrocephalus (NPH) is a rare neurological condition that is caused by an accumulation of an excess amount of cerebrospinal fluid in the ventricles (cavities) of the brain. As a result of the cerebrospinal build-up, the ventricles become enlarged and can cause brain tissue to become damaged or destroyed. This brain damage may cause people with NPH to experience decline in their physical and cognitive functioning.

### About normal pressure hydrocephalus

NPH is a rare condition that occurs when there is a blockage in the brain that limits the normal flow of cerebrospinal fluid throughout the brain and spinal cord. The normal function of cerebrospinal fluid is to act as a cushion to protect the brain and spinal cord tissue from injury and to distribute nutrients to the brain.

A blockage may result in an abnormal accumulation of cerebrospinal fluid in the ventricles. This blockage may then cause swelling in the ventricles in order to accommodate the build-up of fluid, causing the nerve tissue of the brain to stretch and become damaged. If this fluid build-up is left untreated, NPH may cause physical and cognitive changes affecting a person's movement, thinking and bodily functions.

### What are the symptoms?

Symptoms of NPH appear mainly in people over the age of 60, but may occur at any age. There are three main symptoms that are common in people with NPH which are: problems with gait (walking difficulties), dementia and loss of bladder control.

People with NPH may have difficulty picking up their feet when they are walking and tend to walk with their legs wide apart and their body bent forward. They do not pick up their feet as if their feet are stuck to the ground. Difficulties with gait in people with NPH can range from mild balance concerns to the inability to walk at all.

As the condition progresses, a person may begin to experience symptoms of dementia such as forgetfulness, short-term memory loss, impaired decision-making abilities, lack of concentration and changes in mood and behaviour. In addition to dementia, people may experience problems controlling their bladder. If NPH goes untreated, a person may also begin to have seizures that can become progressively worse with time.

### How is normal pressure hydrocephalus diagnosed?

There is no single test to diagnose NPH and making a diagnosis can be challenging as there are a number of symptoms that NPH shares with other dementias. Physicians assess patterns and types of symptoms as well as review the person's complete medical history to rule out other conditions, such as Alzheimer's disease or Parkinson's disease. There is no single diagnostic test for NPH.

Brain imaging (MRI) is often used to detect any abnormal growth in the brain's ventricles. A spinal tap may be completed to measure not only the pressure of the cerebrospinal fluid but also see if the walking improves. A thorough assessment may also include neuropsychological testing to evaluate the impact of symptoms on the person's mental abilities.

## What are the causes or the risk factors?

In most cases of NPH, the reasons for the build-up of cerebrospinal fluid in the brain's ventricles are unknown.

## Is there treatment?

The most common treatment to reduce symptoms associated with NPH is to insert a tube, called a ventriculoperitoneal shunt, to drain the excess cerebrospinal fluid from the brain (ventriculo) to the abdomen (peritoneal). This surgical procedure is most likely to help improve the walking abilities of a person with NPH. Symptoms related to a person's cognitive function and bladder control can improve from the shunt being inserted in the brain.

Currently, there is no known nonsurgical cure for NPH. Medications that are often used to reduce excess fluid in the body have not been found to be effective in treating NPH.

## Support is available:

Visit the Alzheimer Society's website at [www.alzheimer.ca](http://www.alzheimer.ca) or contact your local Alzheimer Society.

## Additional resources:

- Alzheimer's Association:  
<http://www.alz.org/dementia/normal-pressure-hydrocephalus-nph.asp#symptoms>
- National Institute of Neurological Disorders and Stroke:  
[http://www.ninds.nih.gov/disorders/normal\\_pressure\\_hydrocephalus/normal\\_pressure\\_hydrocephalus.htm](http://www.ninds.nih.gov/disorders/normal_pressure_hydrocephalus/normal_pressure_hydrocephalus.htm)

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## Sources:

Alzheimer's Association, *Normal Pressure Hydrocephalus*

<http://www.alz.org/dementia/normal-pressure-hydrocephalus-nph.asp#symptoms>

John Hopkins Medicine, *Normal Pressure Hydrocephalus*

[http://www.hopkinsmedicine.org/healthlibrary/conditions/adult/nervous\\_system\\_disorders/normal\\_pressure\\_hydrocephalus\\_134,49/](http://www.hopkinsmedicine.org/healthlibrary/conditions/adult/nervous_system_disorders/normal_pressure_hydrocephalus_134,49/)

Life NPH, *About NPH*

<http://www.lifenph.com/about.asp>

MedlinePlus, *Normal Pressure Hydrocephalus (NPH)*

<http://www.nlm.nih.gov/medlineplus/ency/article/000752.htm>

National Institute of Neurological Disorders and Stroke, *NINDS Normal Pressure Hydrocephalus Information Page*

[http://www.ninds.nih.gov/disorders/normal\\_pressure\\_hydrocephalus/normal\\_pressure\\_hydrocephalus.htm](http://www.ninds.nih.gov/disorders/normal_pressure_hydrocephalus/normal_pressure_hydrocephalus.htm)

# Alzheimer Society

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