IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS

This fact sheet is provided to help you understand the current evidence regarding shunting for treatment of idiopathic normal pressure hydrocephalus (iNPH).

The American Academy of Neurology (AAN) is the world’s largest association of neurologists and neuroscience professionals. Neurologists are doctors who identify and treat diseases of the brain and nervous system. The AAN is dedicated to promoting the highest quality patient-centered neurologic care.

Experts from the AAN carefully reviewed the available scientific studies on shunting for iNPH. The following information is based on evidence from those studies. The information summarizes the main findings of the 2015 AAN evidence-based guideline.

To read the complete evidence-based guideline, visit AAN.com/guidelines.

What is iNPH?

People with NPH or iNPH may have all or some of these three symptoms:

- Trouble walking
- Loss of bladder control
- Dementia (problems with thinking or memory)

In normal pressure hydrocephalus (NPH), brain imaging shows disproportionate enlargement of the ventricles—the fluid-filled spaces within the brain. NPH develops gradually, unlike other types of hydrocephalus, and the fluid pressure is not elevated. Unlike NPH, which typically arises from underlying conditions, the cause of iNPH is unknown.

How can iNPH be treated? What are the risks?

iNPH can be treated with a surgery called ventricular shunting. A shunt is a tube that is placed into the fluid-filled areas in the brain, usually to relieve pressure in the head. Shunting may lead to improvement in at least some of the associated difficulties.

Experts from the AAN reviewed available studies of people who had the surgery. While there was not much strong evidence,* the studies suggest that people with iNPH might report that they feel better after shunting, and may see improvements in walking. Age does not seem to have an effect on the success of shunting.

There are significant potential risks to shunting, including:

- Infection
- Shunt failure
- Bleeding into or over the surface of the brain
- Permanent brain damage
- Death

Stronger evidence is still needed to understand if shunting helps over longer periods of time. Some studies have reported that benefits gained from shunting decline over time.

How do I know if shunting could help me or my family member?

To decide if shunting might help, your doctor could consider:

- If you have:
  - Trouble walking
  - Loss of bladder control
  - Memory/thinking difficulties
- Brain imaging—to see if the ventricles in the brain are enlarged
- History of Alzheimer disease
- Brain and spinal fluid infusion test—a procedure that measures changes in the pressure of fluid in the brain and spine
  - Positive responses to this test may mean you are more likely to respond to shunting. A negative response does not mean shunting would not help. This test is not commonly performed in many places, including the United States and Canada.
- Response to external lumbar drainage—a tube is placed in the spine to drain fluid—or lumbar punctures removing a significant amount of fluid
  - Positive response to these tests may mean you are more likely to respond to shunting though a negative response does not necessarily mean shunting would not help.

It is important to consider that these tests also have risks. They also may not be covered by your medical insurance or be available where you live.
The educational content of this guideline was affirmed by the American Association of Neurological Surgeons and the Congress of Neurological Surgeons.

This statement is provided as an educational service of the American Academy of Neurology. It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.

*After the experts review all of the published research studies, they describe the strength of the evidence supporting each recommendation:

- **Strong evidence** = Future studies very unlikely to change the conclusion
- **Moderate evidence** = Future studies unlikely to change the conclusion
- **Low evidence** = Future studies likely to change the conclusion
- **Very low evidence** = Future studies very likely to change the conclusion

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