

Vagus Nerve Stimulation (VNS Therapy®)

What is VNS Therapy?

Vagus nerve stimulation (VNS Therapy by Liva Nova) is a device used to prevent or reduce seizures. It can send regular, small pulses of electrical energy to the brain via the vagus nerve in the neck. The VNS device can be programmed to send stimulation at regular intervals and when periods of increased heart rate are seen. Since a person's heart rate may increase during a seizure, giving stimulation at this time may help stop seizures too.

VNS has two parts that are placed during a surgical procedure.

- A stimulator (also called generator) is implanted under the skin in the left chest area.
- A thin wire or lead is wrapped around the left vagus nerve in the neck. The lead goes under the skin and connects to the stimulator.

There are different models of stimulators. The most recent one has ways to make programming easier. It can deliver stimulation in response to heart rate changes and time of day. Your epilepsy team will explain which VNS model will work best for you.

What is the VNS magnet?

When you have a VNS placed, you'll get a magnet kit. The magnet can be worn on the wrist or on your belt. If you feel a seizure coming or someone sees a seizure, the magnet can be swiped over the generator in the left chest area. For some people, this may stop a seizure or make it less severe or shorter.

- The VNS magnet should be part of typical seizure first aid for anyone with a VNS.
- Make sure to include how to use the magnet in your seizure response plan.

Who can use VNS?

VNS is used to help control seizures in people who:

- Are adults or children 4 years and older.
- Have focal (partial) seizures that are not controlled after trying at least 2 seizure medicines. This is called drug-resistant or refractory epilepsy.
- Are not able to have epilepsy surgery or surgery has not worked.
- Have had testing at a comprehensive epilepsy center.

How does VNS work?

The vagus nerve sends information from the brain to other areas of the body and also carries information from the body to the brain. It's not clear exactly how VNS works in the brain. It is designed to change how brain cells work by sending electrical impulses to certain areas involved in seizures.

More about VNS

- VNS therapy is used together with seizure medications.
- The VNS device is programmed in the outpatient clinic a few weeks after it is placed. You will need to come back to the clinic to have this adjusted over time.
- It may take several weeks or months to find the best amount of stimulation. It also may take 1 to 2 years to know how well VNS works for you.
- Usually, you can't feel the stimulation. Sometimes people may have a funny feeling in their throat or neck, their voice may be hoarse, or they may have a mild cough when stimulation happens.
- If stimulation bothers you, tell your epilepsy team so the amount of stimulation can be changed.
- If VNS helps control your seizures, your medicine doses may be lowered by your epilepsy team.
- If VNS does not work well enough, the stimulation can be turned off. The generator can be removed, but sometimes the leads may need to be left in.

How well does VNS therapy work?

- In the first 3 months of using VNS, about 1 out of 3 people find their seizures decrease by 50%.
- Seizure control typically improves over time. About 45% of people have seizures decrease by 50% after 1 to 2 years of therapy. People who have had VNS for up to 10 years may see seizures decrease by 75%.
- The majority of people report better quality of life when using VNS.
- This device is not a cure for epilepsy and doesn't work in everyone. Small numbers of people may become seizure free.

Where can I learn more about VNS?

- To learn more, talk to your epilepsy doctor or nurse. Many comprehensive epilepsy centers that offer surgery will offer VNS.
- Learn more about treatments for epilepsy and seizures at [epilepsy.com/treatment](https://www.epilepsy.com/treatment).

About the Epilepsy Foundation: The Epilepsy Foundation, and its network of 50 organizations throughout the United States, improve the lives of people affected by epilepsy through education, advocacy, research, and connection. To learn more, please visit [epilepsy.com](https://www.epilepsy.com).

Disclaimer: This publication is designed to provide general information about epilepsy and seizures to the public. It is not intended as medical advice. People with epilepsy should not make changes to treatment or activities based on this information without first consulting with their health care provider.

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