

MR-Guided Focused Ultrasound

A new treatment option for essential tremor and parkinsonian tremor



MR-guided focused ultrasound is a safe, incisionless treatment designed to reduce hand tremor. It targets a specific area of the brain with high-intensity focused ultrasound, guided by magnetic resonance imaging (MRI).

Rush University Medical Center is the only center in Illinois, Wisconsin, Iowa, Michigan and Missouri offering this innovative procedure, which has been FDA approved to provide unilateral (one side of the body) treatment for essential tremor and parkinsonian tremor. Our neurologists and neurosurgeons have the expertise to evaluate each person and determine whether MR-guided focused ultrasound is the best approach.

How does MR-guided focused ultrasound work?

Ultrasound is typically used to diagnose problems, but in this case, it is used as a therapy. During the procedure, sound waves are directed from all different angles towards the target, the ventral intermediate nucleus (VIM) of the thalamus. When these sound waves come together in the target, they generate sufficient heat to make a tiny lesion, resulting in a therapeutic effect.

The procedure is conducted inside an MRI scanner. This enables us to effectively plan the procedure and guide the sound waves to target the treatment area, as well as continuously monitor the patient to ensure that the tissue is treated correctly and thoroughly.

What are the benefits of MR-guided focused ultrasound?

- MR-guided focused ultrasound is the latest treatment option for patients with essential and parkinsonian tremor.
- It is not effective for other symptoms of Parkinson's disease such as slowness or gait abnormalities, so only tremor-dominant PD patients are potential candidates.
- The treatment is intended for patients at least 22 years of age with essential tremor and for patients at least 30 years of age with parkinsonian tremor who have not responded to medication, deep brain stimulation or other prior treatments.
- As part of the process, we will perform a full medical evaluation to assess the patient's overall condition and to determine the severity of the tremor. Patients will also need to have a CT scan to verify that MR-guided focused ultrasound is safe and likely to be effective.

Sustained treatment for up to 2 years

- Tremor suppression after MRgFUS for ET is stably maintained at 2 years.
- Measured scores remained improved from baseline to 36 months (all $p < 0.0001$). Range of improvement from baseline was 38%- 50% in hand tremor, 43%-56% in disability, 50%-75% in postural tremor and 27%-42% in quality of life. When compared to scores at 6 months, median scores increased for hand tremor (95% confidence interval [CI] 0-2, $p = 0.0098$) and disability (95% CI 1-4, $p = 0.0001$). During the third follow-up year, all previously noted adverse events remained mild or moderate, none worsened, 2 resolved and no new adverse events occurred. (See Halpern, Neurology 2019)

Payer information

MR-guided focused ultrasound is a Medicare-covered benefit in the state of Illinois for medication-refractory essential tremor and medication-refractory tremor-dominant Parkinson's disease. Other rules and regulations may apply. Please contact our team at neurofus@rush.edu for more information.

Meet our team

With decades of experience and nationally recognized excellence, our team is dedicated to improving our patients' quality of life.



Neepa Patel, MD
Neurologist



Sepehr Sani, MD
Neurosurgeon



Matthew Wodziak, MD
Neurologist

Contact Us

We are offering MR-guided focused ultrasound at our Rush Oak Brook location. Please call (312) 563-2032 or send an email to neurofus@rush.edu to schedule an evaluation.



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