Pre-Surgical Evaluation
What to Know - for Patients and Family Members
Quick Overview

If you or your loved one has been deemed a possible surgical candidate, you may have several questions and concerns. The goal of this booklet is to address the process one may go through in order to achieve their end goal.

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Dear Patient/Guardian,

Your epileptologist has concluded that you or your loved one may be a candidate for epilepsy surgery. As you may already know, surgery to remove the seizure focus of the brain is the only cure for epilepsy. Surgery is considered for those whose epilepsy is resistant to medication and whose epilepsy meets certain criteria determined by their care team. The process of the pre-surgical evaluation can seem long and time consuming to many, but it is our mission to help you through this process. Every patient’s seizure focus is different and no one brain is the same. Behind the scenes your Minnesota Epilepsy Group care team will be working to get you the best outcome possible. We aim to only provide benefits through epilepsy surgery and that means identifying if there would be any risks posed to important brain functions. For this reason, there are many different tests and procedures that you may have prior to the epilepsy surgery. We hope this guide as well as the other educational materials provided helps you through this process. As always don’t hesitate to call our office with any questions or concerns.

Sincerely,
Minnesota Epilepsy Group
The following tests and procedures are some of the ones you may have throughout your pre-surgical workup. **Not every patient will need to have every procedure. You and your provider will discuss the following tests and come up with a pre-surgical plan.**

◊ **History and Physical**

A history and physical will be completed for any new patient referred to us for surgical evaluation. During this time we will discuss past medical records and your history as well as perform a physical/neurological exam. We will discuss the next steps in the process at this appointment. Some established patients might have already done this and will discuss their next steps during a follow-up appointment.

◊ **Pre-Surgical EEG Evaluation**

The first part of the pre-surgical evaluation is often an extended EEG with video done in a epilepsy monitoring unit (EMU). This will be done in attempt to capture several of your seizures in order to localize their origin. This process may involve the weaning of medications and certain tests in order to provide the providers with important data. The length of your stay will depend on the quality and quantity of data recorded. This process may be different for everyone. You will be updated daily throughout this process.

◊ **Magnetic Resonance Imaging (MRI)**

An MRI scan looks at the structure of the brain and may help find the cause of your epilepsy. MRI is a standard part of the pre-surgical process and is often completed while you are in the EMU for your EEG evaluation but it may be scheduled outside of that setting. You will receive more information regarding your MRI prior to the day of your test.
◊ Neuropsychological Evaluation

Evaluation of a person's cognitive functioning can provide information to help the epilepsy treatment team determine where the seizures may be coming from. The neuropsychological evaluation is also used to help determine whether there is any risk for cognitive changes following epilepsy surgery. The neuropsychological evaluation may be done during your inpatient EEG evaluation or may be scheduled as an outpatient. You will be administered a test that covers your concentration, memory as well as verbal abilities. In addition, you will also meet with a neuropsychologist to discuss the impact epilepsy has had on your life.

◊ PET/SPECT

A positron emission tomography (PET) scan may be used to locate the part of the brain that is causing seizures. A PET scan is used to give doctors and their patients more information about how the organs and tissues in the body are functioning by observing the metabolic activity. Single-photon emission computed tomography (SPECT) is a nuclear radiology study that measures the blood flow in the brain. During a seizure, there is more blood flow to the area of the brain where the seizure is coming from. Information regarding these scans will be sent out prior to the appointment.

◊ Magnetic Source Imaging (MSI)

MSI combines MEG (magnetoencephalography) and MRI results to create maps of brain activity specific to each individual. These maps can show where areas of abnormal activity are located. Clinically, MSI can provide better identification than scalp EEG of areas of seizure activity in the brain. MSI can also help map areas of function (language, hearing, movement, etc.) in pre-surgical patients. Specific information regarding MSI will be provided prior to the day of your test.
◊ **Wada Test/ISAT**

The Wada (ISAT) establishes language and memory areas of the brain. A physician will temporarily put one side of the brain to sleep (anesthetize) at a time while a specialized team of providers assess for speech, language as well as memory. EEG will also be used during this procedure. WADA can be important to pre-surgical evaluation as it maps the functions you use in your daily life. Like a snowflake, every brain is different but imaging and evaluation assist in making surgery safe. You will be provided more detailed instructions prior to the procedure.

◊ **Surgery Conference**

Behind the scenes your provider will present your case to a large team of their colleagues from various departments such as neuropsychology, EEG, radiology, neurosurgery and the epileptologists that work for our clinic. Your provider and the team at Minnesota Epilepsy Group will make a recommendation regarding whether you are a surgical candidate or not. As a group, they will decide on if there is any further testing you would need such as SEEG. This process is not taken lightly as surgery is only done if we can be assured that it will likely be beneficial to you as a patient.

◊ **Consult with Neurosurgeon**

At this point you and your provider will have discussed whether or not you will pursue epilepsy surgery. You may have also discussed an admission for SEEG. You will meet with the designated neurosurgeon that works with your provider to discuss the SEEG (if needed) or the epilepsy surgery depending on the route you and your provider decide.
Stereoelectroencephalography (SEEG)

SEEG is a surgical procedure that is used to identify areas of the brain where epileptic seizures originate. During SEEG, a surgeon will place electrodes deep into targeted brain areas, which allows us to see activity more precisely than we are able to with scalp EEG. You may stay one day in the intensive care unit so that we can ensure your safety. You will then transition to our epilepsy monitoring unit where you will be monitored by technologists 24 hours a day and will have nursing staff with you the entire duration of the test. Your hospital stay will last until you and the physician team are content that the data recorded meets your goals. You will be updated in person daily by one of our group’s physicians during your admission. Not every patient will need this procedure.

Follow-Up Regarding Results

Your physician or their nurse will review the results of each test and discuss them as they are completed. At the end of the entire process and after your provider meets with their colleagues to review your case once more, you will then sit down with your doctor and discuss the plan that they have come up with. You will have the opportunity to meet with the provider as well as other teams members such as social work and psychology during this time.

End Goal

The end goal of the pre-surgical evaluation is that the surgery needed to remove the seizure focus is performed. Our hope is to provide seizure freedom or reduction for every patient that goes through this process. We hope that they can regain their independence and a better quality of life.
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