



The Epilepsy Monitoring Unit

The Epilepsy Monitoring Unit (EMU) at Mecklenburg Neurological Associates is a specialized four bed unit designed to evaluate, diagnose, and treat seizures in patients of all ages.

Computer-based Monitoring for Diagnosis

Staffed with specially trained medical, nursing, and technical personnel monitoring patients 24 hours a day, the EMU is equipped with computer-based monitoring equipment expressly designed for the evaluation of seizure disorders. Based on this evaluation, treatment options can be determined.

Patients who suffer from seizures which are difficult to diagnose and manage are those most likely to be admitted to the EMU. Patients who are being considered for seizure surgery will also be admitted to the EMU for monitoring to identify the location in the brain where the seizures begin.

Epilepsy Experts

Neurologists, neurosurgeons, nurse specialists, EMU technicians, residents, medical students, nursing students, psychologists, counselors, and social workers may all be involved in the care of each EMU patient. Patients are cared for by their own primary nurse who is responsible for the planning and coordination of their nursing care. The EMU team also includes specialists and EMU EEG technologist who supervise the functioning of the monitoring equipment.

EMU Admission

Certain criteria must be met and steps followed before admission to the EMU can take place:

1. Typically, patients have an initial outpatient consultation with a physician. If appropriate, an admission will then be scheduled. Referring physicians will receive a full report from the patient's EMU neurologist after discharge.
2. Once the admission is scheduled, all patients should report to the EMU at 8001 N Tryon St Charlotte, NC at the instructed time on the day of admission. The admission process may take two hours or more.

What to Expect

While you are in the unit you will be under the care of and seen daily by one of our physicians who is an epilepsy specialist. You will be asked questions about your past medical history and your seizures. If you cannot provide this information, please try to bring someone with you, a family member or friend, who can do this. It is especially helpful if the person can provide a description of your typical seizures.

You will have EEG electrodes applied to your scalp and the technologist will first perform a standard EEG test. Then the electrodes will be connected to a video/EEG monitor. The camera will be turned on and your evaluation will begin. The cable that attached the EEG wires to the monitoring machine can be disconnected long enough for you to be able to use the restroom. However, it is very important that you stay on camera at all times. Because electrodes are connected to recording equipment your mobility is restricted and you should expect to spend most of your time in bed or in a nearby chair. Keep in mind the patient cannot leave the EMU at all. Also, due to the electrodes on the patient's head you will not be allowed to shower or wash your hair until you are discharged. Patients may wash in the sink. There are no cameras in the restrooms but an intercom is placed in each restroom for audio monitoring. Although this lack of privacy is bothersome to some patients, continuous monitoring is necessary to help safeguard patients.

At the side of your bed you will find 2 alarm buttons. One is an intercom and the other one is called an event button. If you have any warning about your seizures, **please push the event button**. If a friend or family member is with you, he or she, can also trigger the alarm if a seizure occurs. We also ask you to keep a diary of any unusual feelings of seizures you can remember. Our EEG technologist will explain these to you when you arrive.

When you have a seizure a nurse or EEG technologist will enter the room to closely observe your event and do some testing. Your doctor/neurologist will also be alerted. We do everything possible to prevent injury during seizures.

Special thin wires called sphenoidal electrodes may be inserted. These are placed under the skin just above the jaw with a small needle which is then removed. These electrodes give us more information about seizure activity in the temporal lobes. It is normal for your jaw to feel sore for about a day after they are inserted.

Your antiepileptic medicines may be decreased or stopped while you are in the hospital. We do this to try to bring on seizures. We do not usually reduce medications prior to your admission.

A capped intravenous line will be placed in one of your veins. This is for your safety. If you have a lot of seizures or a very strong one, we can rapidly give you medicine in the intravenous line to stop the seizures. This intravenous line is checked every shift by your nurse to make sure it is working properly. The site where it is placed will be changed every few days. It will also be changed if it stops working.

We might sleep deprive you to try to bring on a seizure. This means you would stay up for 24 hours without sleep or naps. When the brain is very tired, it gets irritable and is more likely to have a seizure.

Every day your doctor will visit and update you on your progress. We will discuss what information we have gathered so far and let you know what to expect next. Please feel free to ask any questions you have at this time. We will also make arrangements to talk with your family during your admission.

What to bring and wear to the EMU

Patients should bring with them **all medicines (in the original bottle labeled by the pharmacy)** they currently take, **including non-seizure medications**. Make sure you bring enough medication for your entire stay. These medicines will be reviewed upon admission. After medication review and quantities confirmed the nurse will administer the medications during your stay, if the doctor permits. The nurse will return any remaining amounts to you upon discharge.

While patients are in the EMU, they are encouraged to wear their own loose fitting street clothes (no pullover tops), unless they have been advised otherwise. Patients should bring personal care items from home as well as games, books, and crafts to help pass the time. There is a television in each room. You may bring your cell phone and a laptop computer. There is free internet service at the unit.

Parents of young patients may find it helpful to bring special toys or a blanket to help their child feel more comfortable.

To prepare for your stay

Please wash your hair prior to arrival and do not use any conditioners or lotions.

Bring **ALL** medications - if you fail to bring medications a family member will need to go pick them up. We can only give you medication that you are currently taking.

MNA is not responsible for lost, stolen or broken items. Please do not bring valuables.

Bring **ALL** personal care items

Bring undergarments

If you smoke you may ask your physician for a nicotine patch that he or she can provide a prescription for prior to your admission. Bring the patches with you for use during your stay. The unit and the premises are completely non smoking.

Visiting Hours

Regular EMU visiting hours are noon until 7:00 p.m. Each patient is limited to two visitors at one time. This is a non-smoking facility. Smoking is not permitted on the grounds either. Family members are encouraged to spend as much time as they wish with the patient, and one family member is permitted for overnight stays. If the patient has special needs or is a very young child, one family member should plan on staying with the patient at all times and remaining in the patient's room overnight every night the patient is cared for in the EMU. A recliner will be provided and guest meal trays can be requested. Patient meals are provided and guest meals are at their expense. (Cash Only)

The EMU Nurse Manager or EMU Staff Assistant can answer questions regarding visiting privileges.

FAQ's

What patients are appropriate for the EMU?

Patients that have new onset seizure disorder can be monitored. This allows classification of the seizure type and will guide further therapy and treatments.

Any patient with unexplained loss of awareness can be monitored. This includes seizures, but also, fainting spells (syncope), severe dizziness, and events of memory loss (amnesia).

Is this a risky test?

There is some risks involved and a procedure consent form is signed by the patient (or guardian). The risks include all of the usual risks associated with having a seizure or severe fainting spell. The risks include injury to muscle, bones, or nerves, head injury etc.. However, the testing is done in a very controlled environment with continuous monitoring by video and with a nurse very close by. The attending neurologist is on call 24 hours per day for the EMU. The EMU monitoring is considered worth the risks listed above because uncontrolled seizures (outside of the hospital) have the same risks and it is imperative to find out about the seizures so to provide better care for the patient.

I am only having one or two seizures per year. Is this really necessary?

The standard of medical care for an epilepsy patient at this time is "No seizures and no side effects" if possible. Therefore, a few seizures per year is considered uncontrolled and every effort is made to improve this seizure frequency (if possible). The EMU is the "gold standard" for diagnosing seizures and epilepsy.

How many seizures will I have while in the EMU?

The convention is to obtain video and EEG data on three-five seizures or typical events. Due to the unpredictable nature of spells and seizures we cannot give exacts.

I had an EEG test as an out-patient in the past. Why can't we just use that information?

This is a very good question and the answer is statistical. A 20 to 40 minute EEG is able to capture the abnormal brain waves about half of the time in a seizure patient. The long term monitoring EMU testing has better sensitivity of 95% or higher. That means that if there is an epilepsy disorder the EMU testing will find this out 95% of cases and miss the correct diagnosis only 5% of cases.

When will I get the results of my tests?

Your doctor will visit daily to review your progress. We will discuss with you a plan of action before you are discharged. You will be given a follow-up appointment in our clinic at the time of your discharge. At that time we will formally review all your test results with you and your family.

If you were referred to us by another doctor, he or she will receive a written report of all your tests shortly after you have been discharged. Sometimes our doctors also call your doctor to discuss our findings at the time of discharge. Our report will include recommendations for care of your seizure disorder. You will need to discuss these results with your doctor.

Am I a candidate for epilepsy surgery?

The initial evaluation for epilepsy surgery begins with admission to the epilepsy monitoring unit to record seizures. You will be monitored around-the-clock by videotape and electroencephalogram. In this way, we are able to locate seizure-triggering areas in the brain. Other testing that is used includes MRI, PET and SPECT scans. We recommend surgery only when we can be certain that the area of seizure activity in your brain can be removed without undue risk to normal brain function. We offer several procedures for surgical treatment of seizures:

- Temporal lobe resection
- Frontal lobe resection
- Corpus callosal section
- Extratemporal resection
- "Lesionectomy"
- Vagal nerve stimulator

The decision to perform surgery is made only after a thorough discussion of a patient's case at the epilepsy surgery conference.

The results from epilepsy surgery are very favorable, however, each individual's chance of improving with surgery differs and your physician will discuss with you what your particular chance of becoming seizure-free is, and what the potential risks for surgery are in your particular case.