



UNC Epilepsy Monitoring Unit (EMU)

Patient Information

**Comprehensive Epilepsy Center
Department of Neurology
University of North Carolina Hospital**

INTRODUCTION

You are scheduled for an evaluation at our Epilepsy Monitoring Unit (EMU). The goal of this testing is to record your typical events for diagnosis and/or to adjust your antiepileptic medication safely. To record your events, we use a video camera, microphones and continuous EEG recording. We do these so your doctor can learn more about your seizures and provide the best possible care for you.

We would like to provide you with information that may make your stay easier for you. Please bring this booklet with you when you come into the hospital.

WHY DO I NEED THIS TYPE OF RECORDING?

A routine EEG lasts about half an hour. It gives us a “Snapshot” of the brain’s activity during that particular recording period. It may not give us enough information to help you with your seizure problem. Our recording has three parts:

1. **VIDEO:** A camera will record all your physical activity while your brain waves are being recorded on the EEG. By videotaping your seizures we can see exactly what happens before, during, and after one of your events. This allows us a more accurate picture of your seizures.
2. **EEG RECORDING:** You will also have a continuous EEG recording. This will allow us to detect any seizure activity that occurs, even if you are not aware it is happening. The EEG helps us decide in what portion of your brain your seizures begin, and gives us information about your brain wave activity between seizures. It also will help us decide if your seizures are due to epilepsy or some other cause. Approximately half of the time, we find that the seizure events are not related to epilepsy.
3. **AUDIO:** Please be aware that there are also microphones in the room to help us fully capture exactly what happens during your seizure.

WHY CAN'T I HAVE THESE TESTS AT MY LOCAL HOSPITAL?

This Epilepsy Monitoring Unit evaluation with state of the art continuous video-EEG monitoring is highly specialized and is available only in hospitals employing epilepsy specialists. Our staff of EEG technologists and nurses is very experienced in caring for people with seizures. Our doctors have advanced training in EEG interpretation and epilepsy treatment. We feel our EMU offers you the best chance for receiving a comprehensive and expert evaluation of your seizure disorder.

WHAT CAN I EXPECT?

On the day of admission, please come to the University of North Carolina Hospitals . We will tell you what time to arrive. You can park in the patient parking deck (Dogwood Deck) on Manning Drive opposite the hospital. You should walk into the front of the hospital and ask the information desk assistants for directions to the Main Admission Office. You should check into the Admission Office. Please be aware you will need to bring your health insurance cards and hospital patient identification card with you.

Next you will go to your assigned room in the Epilepsy Monitoring Unit (EMU), on the 6th floor of Neuroscience hospital. You will have the EEG electrodes placed on your head either in the Clinical Neurophysiology Laboratory (CNP), on the first floor of the Anderson Pavilion, or in your room.

Your length of stay will depend on how long it takes us to record your seizures. We need to see about 3 to 5 of your typical seizures. Plan to spend about a week in the hospital. This may be shorter or longer depending on you and your seizures.

When you have a seizure, be sure you or the person staying with you will press the event push button. This is how the epileptologist reading your EEG knows that you have identified your event. Also, please record on the log sheet whether your seizure was typical or not. If you are not aware of your seizure, your family or significant other who stays with you during the EMU stay can do this for you. If you get a warning or aura, please push the button.

If you are a smoker, please talk to a nurse once you get to your room about the options for nicotine replacement during your stay at the hospital. Smoking is NOT allowed anywhere in the hospital or on the hospital campus.

Your electrodes will be checked daily. We may reattach or add conducting gel to make sure we get a good recording. These electrodes will stay on until you are discharged.

You will not be able to wash or comb your hair during the recording. Please wash your hair with shampoo before you are admitted. Do not use any mousses, gels, oils, creams, hair spray or conditioner in your hair. If you have braids or dreadlocks, please try to have your hair unbraided for the EEG hookup. This will make the hookup more comfortable for you, and will allow the electrodes to work better.

You will have a private room. In each room, you will notice that there is a video camera and microphone on the ceiling and EEG recording device. There should be pads on the side rails of your bed. If you do not see these pads, please notify your nurse. Please keep the side rails up at all times for your safety.

Patients who are admitted are recommended to have a family member, spouse, or friend to stay with them during the admission. This is important for several reasons. Family members, spouses, or friends know you and may know what your seizures look like and can tell us if the seizures you have are typical or not. They will be able to help you if you are in a situation where you could hurt yourself during the seizures. If you cannot find someone to stay with you during the admission, please contact the epilepsy coordinator, at 919-966-6727, or contact a local nursing service to see if you may be able to hire a nurse's aide to stay with you during the admission.

There is cable TV and a phone in your room. Your phone has a number on it which family and friends can use to call you directly. You may make free LOCAL calls by dialing 7 first to get an outside line. Any long distance calls must be made collect or charged to a phone card or credit card. Please check your patient information pamphlet that you receive the day you are admitted for more details.

The cable on your EEG unit is long enough for you to get up and use the bathroom to wash, brush your teeth and use the toilet. However, you must call your nurse for help when you need to get out of bed. While you are using bathroom, you are required to keep the bathroom door open at least for a few inches for your safety. You may get up and sit in a chair with your nurse's assistance. You will not be videotaped while you are in the bathroom, but try to make sure that you are on video any other time that you move around your room.

Your nurse will check on you periodically through the day and night. They will obtain your blood pressure and other vital signs. A capped intravenous line will be placed in one of your veins. This is mandatory and for your safety. If you have a very severe seizure or a lot more seizures than normal we can give you medicine to stop them through this IV line. It will be checked every shift by your nurse to make sure it is working. It is changed every three days.

We will probably decrease or stop your antiepileptic medicine while you are in the hospital to try to trigger your seizures. We might also deprive you of sleep to try to bring

on a seizure. This means you would stay up very late and only get a couple of hours of sleep. The lack of sleep increases the chance of seizures, therefore we do not want you to sleep during the day. We also may make you breath deeply and flash lights to provoke an event. These are similar to the procedures performed when you have a routine EEG and sometimes will bring on seizures. Also, if you are aware of anything that makes you more likely to have a seizure, please let us know.

We will visit you daily and update you on your progress. We will discuss what information we have so far and what you can expect next. This is a good time for you to bring up any questions you or your family may have.

WHAT COULD WE FIND?

This complex testing is to evaluate the cause of the events you are experiencing. Your doctor has asked for this testing to determine what would be the best treatment for you and this testing will provide valuable information to make those decisions. We may find that your events are caused by epileptic seizures and find clues as to where in the brain the seizures are coming from. However, sometimes patients are found to have something different from epileptic seizures. In spite of the vigorous tests, sometimes we cannot tell you definitively about the diagnosis if we were not able to capture the typical seizure or event.

If we do find you have epileptic seizures, the monitoring will most likely show us the type of seizures that you are having. You may have generalized or partial seizures. Generalized seizures are when the electrical impulses of your brain fire all at the same time. Partial seizures are when only part or parts of your brain fire at a time. Your doctor (neurologist) will prescribe antiepileptic medications to help control your seizures. More than half of the time, we cannot find the cause for epilepsy. If the cause of your seizure is known, we will consider corrective treatments to work toward improving your seizure control.

If we find that you do not have epileptic seizures, we will be looking for clues for other types of events. The most common diagnosis other than epileptic seizures include psychogenic nonepileptic events and syncope. Psychogenic Nonepileptic Seizures (PNES) constitute by far the most common (>90%) condition misdiagnosed as epilepsy. This is a very complex condition that has a complex relationship with stress and many times depression and anxiety disorders. We will need the help of a psychiatrist and neuropsychologist to plot a treatment course. During your hospital stay, we may have a

psychiatrist talk to you and review your case to look for potential clues to the best course of treatment.

Syncope is the second most common. You may experience passing-out and some brief jerking movements similar to seizure. The triggers may be pain such as caused by medical procedures, emotions, cough, hunger, hot environment, prolonged standing, or exercise. Treatment for syncope depends on the cause. You may need further work up to find out the cause by your doctor.

Other much less common diagnoses include: Panic attacks, movement disorders, sleep disorders, migraine headaches, etc.

WHAT IS A PHASE I EPILEPSY SURGERY EVALUATION?

Epilepsy can be difficult to live with. Although antiepileptic medications work well most of time, some seizures are not controlled with medications. When more than 2 medications do not control your seizure, epilepsy surgery might be an option. Before we can decide if a brain operation is right for you, we must find out exactly where in your brain your seizures start. If you are a potential candidate for epilepsy surgery, we will collect a variety of tests to help us determine the exact location of the start of your seizures. To do this we may repeat the continuous video-EEG monitoring and obtain other tests at the same time such as a SPECT study to further localize your seizure focus. SPECT (Single Photon Emission Computed Tomography) is a special brain test that gives a clue by labeling blood flow and this helps your doctor to determine where your seizures are coming from in the brain. The type of SPECT that will be done is called an ictal SPECT. This term indicates that this test can only be done during one of your seizures. It is only done during daytime, usually 9am-3pm. The EEG technologist and nurse will monitor you closely in your room during the scheduled time. When a seizure begins, the technologist will alert the nurse so that the nurse will inject a special solution with a small amount of radioactive isotope into your IV line. This isotope labels the blood flow and typically during a seizure more blood flow goes to the part of the brain where the seizure is occurring. You will also have inter-ictal SPECT 24 hours after the ictal SPECT in order to obtain the image that the ictal SPECT can be compared to. Occasionally, the inter-ictal SPECT may be performed before the ictal SPECT study. This is a very safe test. This type of radioactivity only lasts a few hours in the body before it is eliminated. You will not need to take any special precautions after your injection. About an hour or so after the injection you will have the SPECT scan and then return to your room.

WHAT IS PHASE II EPILEPSY SURGERY EVALUATION?

Once you have completed the previous EMU evaluation and Phase I monitoring we will review all of the data and hopefully have a general idea of where in your brain your seizures begin. However, we may need to pinpoint the exact focus of your seizures in a few millimeter radiuses. In order to do this, we need to use electrodes that are placed directly on the brain or in the brain. We call this part of your evaluation Phase II. The skull bone, hair, skin, and muscles can obscure the EEG signal. Putting electrodes directly into or on your brain gives us the closest contact possible to the brain. The intracranial electrodes (grids and depth electrodes) are special EEG electrodes that can be placed onto the surface of brain. There are many different kinds of intracranial electrodes. Your epileptologist and neurosurgeon with special training in epilepsy surgery will decide what kind of intracranial electrodes are needed. If you and your doctor choose to have this evaluation, you will meet with the Neurosurgeon before the admission to discuss the details of surgery, risk and benefit.

WHEN WILL I GET THE RESULTS OF MY TESTS?

We will talk to you about your testing before you go home. In spite of the tests, sometimes we cannot tell definitively about what your spells are if we were not able to capture your typical seizure or event. Also, some epileptic seizures may not be visible on scalp EEG, such as simple partial seizures.

We also will tell you if we think you will need any more tests or need to see any other doctors. Your local doctor will receive a report of our testing shortly after you go home.

WHAT TO BRING FOR YOUR MONITORING ADMISSION:

1. You will be able to wear your own shorts, pants, or sweat suit bottoms. It is important not to disturb the electrodes. You need to wear tops that button or zip down the front or back and can be removed without pulling them over your head.

We can give you “tie in the back” hospital gowns. Please bring your slippers, bath robe, toothbrush, toothpaste, mouthwash, dental floss, shaver, and deodorant with you. You can also bring makeup.

2. Video EEG telemetry can become very boring. Bring along some things that will help you pass the time. Books, magazines, puzzles, games, cards, cassette/CD players or DVD players are types of things you may bring. You may bring a portable laptop computer. However, it may cause some artifact on EEG. It is possible that you may have web access in your room by hospital guest wireless service. Cell phone use is allowed in your room.
3. We will provide the medicines you need during your admission. However, please bring all of your medicine bottles with you (both prescription and over-the-counter) so we can see what you are taking. If you take a special medicine that would be hard to get, please tell us. We will either arrange to get it here or ask you to bring it with you.
4. We will provide meals for the patient, but the family member will need to provide their own food. You can feel free to bring non-perishable food from home (granola bars, crackers, etc). There are also several cafeterias in the hospital.
5. You can bring your own pillow, comforter, stuffed animal or family photos to help you feel more comfortable.

DO NOT BRING:

Do not bring electrical appliances such as hair dryers, electric razors, space heaters or coffee makers. Larger radios with plug in and TVs are also not allowed due to the electrical safety rules of the hospital. Please do not bring frozen food or any food requiring refrigerator or microwaves.

OTHER SERVICES AT UNC HOSPITALS:

Chaplain: Services of the hospital chaplain are available to all patients and their families. Your personal clergy person is also welcome to visit. The All Faiths Chapel on the 1st floor of the hospital is always open. An interfaith service is held on Sunday mornings at 10:30 AM. However, the patients cannot leave the room.

Parking: You can park your car in the visitor’s deck overnight and the usual rate is \$8 per day.

Accommodations: The person you choose to stay with you during your admission can sleep in the hospital room with you. A reclining hospital chair/cot is available for your guest. We can provide you with a list of local motels if other family members or friends want to stay near the hospital while you are here. If your permanent address is at least 50 miles from the hospital, your family members may stay at SECU Family House at a special rate. However, financial assistance is available. If you choose to stay at the SECU Family House, please let us know so a referral on your behalf can be made. SECU Family House is located at 123 Old Mason Farm Road, Chapel Hill, NC 27517. Website: <http://www.SECUFamilyHouse.org>. Phone number is 919-932-8000.

A WORD ABOUT INSURANCE:

We have hospital staff that work on getting a pre-authorization for your admission, and we make every effort prior to your admission to get this completed. However, ultimately it is your responsibility to make sure the authorization is in place before you come into the hospital. We recommend that you contact your insurance company at least one day prior to the admission to check on any problems. That may occur, and to get an idea of what out-of-pocket expenses you may be responsible for. Please note that all of the hospital charges may not be covered by your insurance plan. The hospital has financial advisors to help if you need it. Please contact the hospital's financial advisors ahead of time if you feel it is necessary.

Please feel free to contact the epilepsy coordinator at 919-966-6727 with any questions you have about your admission.