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EPILEPSY MONITORING UNIT FACTS AND EXPECTATIONS:

Epilepsy centers are groups of health care professionals, usually led by a neurologist specializing in epilepsy, that focus on the care of people with seizures and/or epilepsy. Depending on resources, some centers focus on diagnostic and medical approaches to care of epilepsy. Comprehensive centers should be capable of offering the full range of diagnostic and treatment services, including surgical approaches and often research treatment options.

The multidisciplinary team generally includes neurologists, psychiatrist, neurosurgeon, neuroradiologist, neuropsychologist, nurses, social worker, EEG technologists, and access to other specialists such as pharmacology, and pathology. The team is skilled in the assessment and management of patients with epilepsy, including: medical, surgical, dietary therapies; clinical research; and educational, self-management and psychosocial supports for patients and families.

The inpatient unit of an Epilepsy Center, called an Epilepsy Monitoring Unit (EMU), should have the capability of providing long-term video EEG telemetry to assist in the diagnosis and management of seizures that are difficult to diagnose or control. It is not a forum to diagnose or treat other medical problems or symptoms that are chronic or can be managed as an outpatient. The patient is usually confined to the bedroom during the monitoring, which again makes ancillary testing more difficult.

1. When should people with seizures be referred to a specialized epilepsy center?

- When seizures are difficult to diagnose, and there is a need to confirm if a person has epilepsy or non-epileptic events (physiologic or psychogenic)
- When seizure type or epilepsy syndrome is uncertain and/or seizures are not responding to treatment
- When etiology of seizures is unknown/unclear
- When seizures persist after trials with two appropriate AEDs titrated to correct doses or the person has unacceptable medication side effects



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- When comorbidities are difficult to diagnose or manage, for example behavioral difficulties, mood disorders, and/or cognitive disorders
- When surgery, stimulation devices (i.e., vagus nerve stimulation), or dietary therapy is being considered
- Children or adults with neurocutaneous disorders and epileptic encephalopathies
- Women with epilepsy who are pregnant or planning pregnancy
- Women with hormonal considerations affecting management of seizures, for example catamenial epilepsy, reproductive endocrine disorders, interactions with contraceptive treatment, menopause
- Older adults with new onset events that are not of certain etiology and may be new-onset seizures or chronic epilepsy
- People with epilepsy and their families who desire education and support for self-management or psychosocial concerns

2. Is there anything I should do before referral for pre-surgical evaluation?

It is important that the patient and/or family fully understand the reason for referral. Epilepsy surgery is considered when seizures do not fully respond to medications and when seizures start in one part of the brain that can be safely removed. In general, children and adults with epilepsy who have not responded well to 2 or 3 trials of medication should at least be considered for epilepsy surgery. Available treatment options, including surgery, may be discussed during the initial evaluation to the epilepsy center; often this is done in the outpatient setting.

- Referral does not mean that the patient will definitely be a good candidate to have surgery. These expectations for the referral are important to address early.
- Initial evaluation includes a detailed history, prior medical, surgical and medication history, neurological exam, and reviewing any imaging (MRI brain) or prior EEGs (including ambulatory).
- If indicated, the specialist will try to capture several seizures on EEG in their EMU so that medications may be withdrawn or changed. In addition, the epilepsy team evaluation, a significant component necessary for surgery, occurs in the EMU.



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- Patients are requested to bring their current medications, copies of their prior medical records and CDs or DVDs of prior neuroimaging (i.e., CT, MRI, PET, SPECT) and EEG recordings for primary review at the epilepsy clinic beforehand if possible. If not seen by one of our neurologists, and are being referred by an outside provider, then having results or CDs/DVDs would be helpful.

3. Why must this video EEG monitoring be accomplished in the hospital?

There are many situations in which children and adults with epilepsy (or suspected to have epilepsy) can be adequately treated with seizure medications using history and a routine EEG to guide the physician. Additionally, outpatient EEG telemetry may be indicated to capture events that occur frequently enough to be recorded without changes to the patient's seizure medication. However, patients who may have non-epileptic events, poorly characterized or localized seizures will require provocation of seizures, usually accomplished by lowering or withdrawing anti-epileptic drugs (AEDs). In these situations, patients must be hospitalized to maintain safety.

- A continuous video EEG with video and audio recording enables review of the events from start to finish both clinically and electrographically. This can be helpful when the patient lives alone or is unaware of the semiology.
- Correlation of the observed behavioral/clinical change with the EEG clarifies if event are of central nervous system (CNS) physiological origin or may be non-epileptic..
- Having video and synchronized EEG often allows localization of the seizure.
- Nurses or technologists can interact with the patient to determine level of consciousness and maximize patient safety.
- Inpatient video EEG allows for rapid AED adjustment that would not be possible or safe otherwise.
- Video recordings can be used to help educate patients, family members, or other caregivers what the seizures look like, how to respond, and how they can use this information to help others respond appropriately to the seizures. If events are nonepileptic, recommendations for treatment may be started in the EMU and transitioned to the outpatient setting.



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- Inpatient monitoring insures a more rapid solution for the common technical issues that arise from loose electrodes.
- Inpatient monitoring allows rapid assessment of overall seizure burden, including subclinical seizures, help with appropriate seizure classification/ epilepsy syndrome and management. Sleep disruption, a major provocation for seizures, can also be assessed.
- The patient is usually given a push button for which he or she can push and capture any symptoms or events that they are concerned may be epileptic.

4. Should medications be tapered prior to admission to the EMU in order to expedite the monitoring results?

Medications are generally not tapered prior to admission to the EMU except under certain circumstances where there has been communication beforehand with the epilepsy specialist. Seizures resulting from AED withdrawal may be more frequent and more severe than anticipated; patients who have had complex partial seizures or absences may experience generalized tonic clonic seizures or even status epilepticus as a result of a precipitous taper prior to admission.

5. What happens to my patient after the epilepsy monitoring is complete?

The patient is usually loaded with IV anti-epileptic medications if there has been medication withdrawal with seizure activity noted. If there have been only non-epileptic (psychogenic) events captured, then a discussion with the epilepsy specialist will ensue about medication adjustment and setting up with an appropriate psychotherapist or psychiatrist. Follow up with the primary neurologist or epilepsy specialist is also done. If there is a need for further monitoring for surgical work up, then that will be discussed along with the utility of further non EEG testing which may be required in order to determine if the patient is a good surgical candidate.