Key: Evidence-based Practice Recommendations
R =Research-based
N = National Practice Guideline/Protocol
L = Literature
E = Expert Opinion/Consensus

Epilepsy Monitoring in Adults – Phase I and Phase II

SCOPE

This policy applies to the nursing care of adult patients at Ronald Reagan UCLA Medical Center with medically refractory seizures who are undergoing long term, continuous video EEG monitoring for the purposes of seizure classification and localization. Phase 1 includes those patients undergoing evaluation with non-invasive scalp EEG recordings. Phase 2 includes those patients with surgically placed intracranial electrodes, either depth or subdural grid. Duration of monitoring is dictated by the goals of admission

PATIENT GOALS/OUTCOMES

I. The patient will:
   - A. Report discomfort associated with scalp itching.
   - B. Maintain activities of daily living (ADLs) during hospitalization within the confines of the mobility protocol.
   - C. Verbalize emotional responses to coping with telemetry protocol throughout hospitalization.
   - D. Have a sufficient number of seizures recorded and tested in order to complete the evaluation safely and efficiently
   - E. Understand that anti- seizure drugs will be tapered in order to provoke seizures.
   - F. Be encouraged to participate in monitoring by simulating usual seizure triggers if possible and alerting nursing staff to the onset of seizures when possible.
   - G. Request a family member to be present for monitoring
   - H. Return to pre-hospital level of function or better.

ASSESSMENT

I. Admission assessment will include:
   - A. Seizure History
     1. Onset and duration of seizures
     2. Seizure related falls and injuries
     3. Description of ictal and post ictal behavior
     4. Seizure frequency

5. Factors which precipitate seizures (menses, illness, alcohol, stress, sleep deprivation)
6. Anti -seizure drugs:
    1. List of medicines (dose, schedule/route, action, side/toxic effects, blood levels
    2. Drug related side effects
7. Co-morbidities
    1. Including psychiatric complaints such as depression and anxiety; and coexisting medical diagnoses.
    2. Change of shift assessment will include:
        a. Number and type of seizures recorded and observed during past 12 hours and any treatment given.

B. Pain or discomfort:
1. Headache (severe, unrelieved)
2. Scalp itching or scratching head
3. Pain or tenderness at site of electrode placement, or other electrode placement related pain eg jaw pain, neck/ shoulder pain

C. Activity level:
1. Ability to cope with activity restrictions and ability to perform self-care.
2. Response to supervised mobility related to phase protocols for mobility
3. Frustration from limitations of freedom and lack of privacy

D. Coping with hospitalization:
1. Compliance with protocols
2. Inappropriate/exaggerated behaviors (anxious, hostile, apathetic, impulsive, irritable) or behavioral change (impulsive, irritable)
3. Ability/Inability to ask for help
4. Verbalization of inability to cope/solve problems

E. Changes in neurological examination/physical assessment:
1. Observation and recording of all seizure activity will include changes in level of awareness, physiological measures during and after seizures and assessing return to baseline level of responsiveness after every seizure.)
2. Measure autonomic measures such as heart rate and rhythm, altered respiratory patterns and O2 sats
3. Testing during seizures will include memory for the event, verbal response during and after seizures, ability to follow commands during and after seizures.
4. Post ictal weakness (new onset, transient, progression), and changes in memory, concentration and judgment.

INTERVENTIONS

I. General Care:
- A. Neurological examination Q shift and after each seizure (Phase I) and Q4hrs and after each seizure for Phase II patients. Frequency of vital signs monitoring may be liberalized to Q6 after the first week of monitoring if the patient is stable.
- B. Take precautions to limit potential complications related to reduced mobility. This includes encouraging active and passive exercise. Maintaining alternating leg pressure (ALP) device while patient in bed (Phase II patients). Implementing/maintaining DVT precautions.
- C. Monitoring antiepileptic drug levels/taper to assess likelihood of seizure activity
  1. If antiepileptic medications are tapered, monitor for potential side effects, as patient may not have experienced them prior to this admission
- D. Instructing patient to press seizure button for auras and/or seizures when possible. Patient is instructed to call in immediately after a suspected seizure if there was no warning prior to the seizure.
- E. Observe seizures and document in Daily Seizure Record Q shift.
- F. Check head that the head dressing is correctly positioned and is dry and intact - Remind patient NOT to scratch under sterile dressing or push on dressing to decrease itching.
- G. Check that Electroencephalogram (EEG) telemetry cables are connected ASAP after walks in hall, bathing, dressing changes, or testing off unit. Ensure careful lead care.
- H. Maintain Head of Bed (HOB) at 30 degrees (Phase 2)
- I. Enforce sleep deprivation per daily orders.
  1. Sleep deprivation may increase the frequency of seizures in some patients and is frequently used in combination with AED taper in order to provoke seizures in a timely way.
- J. Maintain a patent IV access
  1. Flush with Normal Saline (NS) per protocol

II. Set up Seizure Precautions:
- A. Padded side rails up at all times
- B. Bed maintained in lowest position
- C. Suction set-up with Yankauer ready for use
- D. Oxygen set-up and mask at HOB
- E. O2 Saturation measures in place
- F. Call-light within reach
- G. Seizure button within reach
- H. Posey vest as appropriate (Refer to Restraint Guidelines Nur-G1008 regarding the safe use of restraints). All phase 2 patients will wear posey vest restraint for the duration of the monitoring

III. Perform Seizure Testing (when appropriate):
   A. At the onset of the seizure patients will be given a word to remember, and asked a series of questions in order to assess level of responsiveness, ability to comprehend and follow simple commands, and memory for event
   B. 1V. Mobility protocol offer regular opportunities to get Out of Bed (OOB), to brush teeth, bathe, and etc.
   C. Ambulate patient in hall, TID, within boundaries of the monitoring unit only.
   D. Encourage time for patient diversions (games, videos, etc.)

Phase I activity supervision requirements:
• One person, a RN, LVN, or CP, when out of bed to use the bathroom or to sit up in a chair, must assist patient.
• One staff must provide standby assistance when patient is using shower or tub facilities.
Patient can only ambulate within the floor boundaries accompanied by staff. Please stay close to the monitored rooms, so that should a patient have a seizure they can be safely returned to the room quickly, and the EEG re-connected .
• While ambulating, staff member must hold onto the arm of the patient for safety in case of seizure during the walk.
Patient may sit in chair in the room without the presence of a person
Patient will require two staff (one licensed) if seizures are known to be dangerous to safety or if patient has a history of atonic "drop attack" seizures. Patients with GTC sz should wear a posey vest when out of bed and sitting in a chair during monitoring

Phase II activity supervision requirements:
• Posey vest at all times when in bed or chair/commode
• MUST be in view of staff at all times, either via monitor or direct observation
• Must be accompanied by two staff members (one licensed) when toileting, ambulating, or using shower/tub facilities.
One staff member present when patient is in chair/commode

**Removal of restraints will occur when the patient no longer meets the above criteria

IV. Specific aspects of care for the Depth/Grid Electrode Placement Patient:
   A. Monitor for any signs and symptoms of increased intracranial pressure (ICP) Please immediately report to Neurosurgery team:
      1. New onset severe headache, change in mental status not related to seizures, decreased consciousness, confusion, alteration in vital signs, pupil changes, , nausea/vomiting
   B. Maintain HOB at 30 degrees
   C. DO NOT allow patient to lie on site of grid.
   D. Patient may lie on site of depth electrodes.

E. Monitor intake and output for first 7 days of study.
F. Avoid activities which increase ICP: severe neck flexion, Valsalva maneuver (no straining with bowel movements, no resistive exercises)
G. Monitor condition of head dressing Q shift and as needed (PRN) (Phase II)
H. Reinforce damp head dressing and notify Epilepsy CNS or neurosurgery resident if head dressing is wet or has bloody drainage (Phase II)
I. Monitor antiepileptic drug taper to assess increased likelihood of seizure activity.

V. Care of patient during a seizures
A. Ease patient to floor if standing during seizure, protect patient from injury, and turn patient on his/her left side.
B. Do not forcibly restrain
C. Loosen tight clothing and remain with patient until fully oriented or seizure activity has been halted with medication.
D. Perform seizure testing described above. Note the onset, duration of seizure and observe what the patient is doing (example: blank stares, chewing, fidgeting).
E. Maintain airway, suction PRN
F. Turn on side
G. Remove dangerous objects from immediate environment
H. DO NOT attempt to force any object into patient's mouth, including suction catheter.

IV. When and who to notify :
A. Notify neurosurgery team immediately if patient strikes depth electrodes or pulls grid electrode cable, or there is any surgically related concern including suspected infection, fever, pain and headache
B. Call epilepsy team for seizure related questions and after 3 complex partial seizures in a 24-hour period.
C. Call epilepsy team for every generalized tonic-clonic (GTC) seizure.

PATIENT/FAMILY EDUCATION INTERVENTIONS

J. The patient/family will demonstrate understanding of:
A. Phase I and Phase II EEG telemetry monitoring
1. Activity Restrictions
2. Safety Precautions
3. Seizure reporting
B. Safety precautions and testing cognition during a seizure
C. Restarting medical therapy and preparing for safe discharge home.
D. Provide post-operative instructions for Phase II patients including:
1. Scalp and wound care

2. Instruct patient to check temperature and inspect scalp daily for any signs of infection and if present, to contact MD/designee
3. Medications

E. When to return for suture removalNutrition, activity, sleep and safety in the home needs:
1. Instruct patient on continued need for good nutritional habits, adequate sleep and rest, and awareness of risks to safety at home.
2. Instruct patient to resume activities gradually.
3. Encourage adherence to anti-seizure medicine regime.
4. Follow-up with neurologist and neurosurgeon as instructed

F. Community resources:
1. Brochures
2. On line websites e.g. Epilepsy.com
3. Organizations

EPILEPSY FOUNDATION OF AMERICA
National office:
4351 Garden City Drive
Landover, MD 20785
Telephone #: 800/332-1000

REFERENCES

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R[1] Moseley B D., Dewar R., Haneef Z., Stern J (2015) How long is long enough? The utility of prolonged inpatient video EEG monitoring *Epilepsy Research*, *109 (9-12.*

N[1]. Shafer, P.O., Buelow, J.M., Noe, K., Shinnar, R., Dewar, S**.,** Levisohn, P.M., Dean, P., Ficker, D., Pugh, M.J., Barkley, G.L. (2012). A consensus based approach to patient safety in epilepsy monitoring units: Recommendations for preferred practice. *Epilepsy and Behavior, 3*, 449-56.

L[1] Dewar, S., Passaro, E., Fried, I., Engle, J. (1996). Intracranial electrode monitoring for seizure localization: Indications, methods and the prevention of complications. *Journal of Neuroscience Nursing 28 (*5): 280-284; 289-292.

L[2] Engel, J. (1996). Surgery for seizures. *The New England Journal of Medicine 334 (*March 7): 647-652.

L[3] Sanders, P. T., Cysyk, B. J., Bare, M. A. (1996). Safety in long-term EEG/video monitoring. *Journal of Neuroscience Nursing 28* (5): 305-313.

E[1] Epilepsy Caring. Web-based training guidelines for safety in the epilepsy monitoring unit www.EMUcaring.org

REVISION HISTORY

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APPROVAL

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