

Epilepsy Monitoring Unit

University of Virginia

Monitor Tech Orientation Manual

2014

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6. Resources

- a. Primer of Epilepsy Diagnosis and Treatment
- b. Epilepsy Powerpoint
- c. Radiation Safety Training Course
- d. Geiger Mueller Counter training Course

New Monitor Technician Orientation/Education Requirements

- I. Every new Monitor Technician will read the Monitor Technician Orientation Manual, including the following documents:
 - a. “Primer of Epilepsy Diagnosis and Treatment” (Nathan Fountain)
 - b. “Epilepsy Competency 2013” (Chris Hucek)
 - c. “Daily Technologist IM-EG tasks” (Chris Hucek)
 - d. “Epilepsy” (Meghan Cronk)
 - e. “6 Central Epilepsy Unit Radiation Safety Training Course” (Michael Cohen)
 - f. Unit-based policies and procedures including:
 - i. “Policies and Procedures for Ictal/Interictal SPECT
 - ii. “Procedures for Use of Wii System for EMU Patients”

*Every Monitor Technician will sign a form saying that he/she read and understood all the material included in the manual
- II. Hands-on training will consist of working no less than three 8-hour shifts with a competent Monitor Technician. During that time, the new Monitor Technician’s Orientation Competency Assessment and Evaluation (OCAE) form must be completed.

*More time may be granted for orientation as deemed necessary by the Monitor Technician’s preceptor
- III. In order to complete the new Monitor Technician Orientation, the Monitor Technician must be able to do the following:
 - a. Demonstrate the ability to properly admit a new patient
 - b. Demonstrate the ability to properly discharge a patient
 - c. Demonstrate the ability to recognize ictal events and respond appropriately
 - d. Demonstrate the ability to appropriately document seizures on the appropriate Tracking Sheet
 - e. Identify parts of the recording system by name/function
 - f. Demonstrate the ability to trouble shoot the recording system (both at the Monitor Technician station and in the equipment room)
 - g. Demonstrate the ability to switch a patient’s recording at the patch panel
 - h. Demonstrate the ability to maintain the Monitor Technician workstation in a manner to ensure continuity of workflow and patient care

Monitor Technician Continuing Education

- I. Annual competency of the following must be demonstrated to the EMU Nurse Coordinator
 - a. Ensure that the correct patient is recording on the EEG
 - b. Properly identifying EEG monitoring equipment
 - c. The ability to confirm the patient is on camera and focused
 - d. The ability to recognize ictal events and properly test the patient
 - e. Properly identifying push buttons and nurse alarm events
 - f. Properly identifying parts of the recording system by name and describing their functions
 - g. Rebooting a recording system (both at the Monitor Technician station and in the equipment room)
 - h. Switching patients at the patch panel
- II. If a physician identifies an error in identifying an ictal event and/or testing a patient, the EMU Nurse Coordinator will review the event with the Monitor Technician and place documentation of this review in the Monitor Technician's personnel file
- III. Quarterly in-services are offered in the EMU. Monitor Technicians must attend at least 2 out of the 4 annual in-services

Monitor Technician Responsibilities – Admissions

- I. When a patient arrives to the EMU, the Monitor Technician will do the following:
 - a. Ensure that both a camera control and an alarm system in the Nurse Station Alarm have been enabled for the patient (for more information on how to do this, see Chris Hucek’s “Epilepsy Competency 2013” presentation)
 - b. Ensure that the patient’s headbox has been connected to the Aura amplifier by the patient’s RN or PCA/T (for an example of the EEG of a headbox not properly connected to an aura amplifier, see Chris Hucek’s “Epilepsy Competency 2013” presentation)
 - c. Ask the person connecting the headbox to the amplifier, to perform a test push button in the patient’s room and state the patient’s name when doing so (to ensure the correct patient is recording under the correct EEG)
 - d. Perform a test push button at the Monitor Technician station and document appropriately on the correct Tracking Sheet
 - e. Add a column to the appropriate Tracking Sheet for the patient
 - i. For patients being monitored on the 7th floor, add a column to the “Pediatric 7C Tracking Sheet” and for patients being monitored on the 6th floor, add a column to the “EMU Tracking Sheet”
 - f. Complete the following forms, specific to the patient as soon as possible:
 - i. Description Card (information for this card can be collected from the Pre-Admission forms faxed to 6Central from the Admissions Coordinator, the EMU resident or fellow and/or the patient’s RN). The following are the components of the Description Card:
 1. Patient Name Field
 - a. Written last name, coma, first name. If the patient has a nickname or a preferred name, write it in quotations after the first name (i.e. Doe, John “Bubba”)
 2. System Number Field
 - a. Document the system the patient is currently recording under
 3. Room Number Field
 - a. Document the room number for the patient
 4. Description of Events Field
 - a. Write concise and detailed phrases to describe what the patient’s typical events look like (see above for where this information can be obtained)

*The Description Card is placed on a stand under the monitor on which the patient is recording. If any event description information changes during the patient’s stay, replace the old card with a new one that has all of the new information on it

- g. If you notice that a patient's bed does not have green linens and/or blue seizure pads on it, please notify the patient's RN or PCA/T.

Monitor Technician Responsibilities – Discharges

When the Monitor Technician is notified that a patient is being discharged, he/she will do the following:

- I. Document the time the patient was discharged in the Discharge Log Book
- II. Document the following on the EMU Seizure Tracking Form
 - a. The time the patient's EEG electrodes were removed
 - b. The time the patient physically left the Epilepsy Monitoring Unit*
- III. Ensure that both the patient's camera control and alarm system in the Nurse Station Alarm have been disabled (for more information on how to do this, see Chris Hucek's "Epilepsy Competency 2013" presentation). If this step is not done, the other cameras will move slowly because the system will constantly be searching for the camera of the discharged patient.

*Please note that even though the patient's electrodes are removed in preparation for discharge, the patient is still at risk for events and is our full responsibility. The patient must be kept on camera at all times until he/she physically leaves the EMU. If the patient no longer needs to remain on camera, the patient's RN will make you aware.

Monitor Technician Daily Responsibilities – Responding to Push Button Events

When the “Push Button” alarm is activated by the patient or his/her family, please do the following:

- I. Call into the patient’s room and make sure the push button was not accidentally pressed by saying “Is everything okay? The push button was pressed.”
- II. If the patient or his/her family states that it was an accident, document this in the push button column of the appropriate Tracking Sheet. Do not highlight any accidental push button events.
- III. If the patient and/or family states that the button was pressed for a spell or seizure, immediately do the following:
 - a. For 6Central Push Button events, dial 1711 and say “event in room ____” (doing this makes an overhead paging announcement throughout the 6th floor Epilepsy Monitoring Unit)
 - b. For 7Central Push Button events, dial 30114 and say “7 Central event in room ____” (doing this makes an overhead paging announcement throughout 7Central)
 - c. Call back into the patient’s room and begin ictal testing. Ask the patient to do the following:
 - i. “Tell me your name”
 - ii. “Raise your arms”
 - iii. “Remember the color ____”
 - iv. “Why did you push the button?”

*Continue to test the patient until a RN arrives in the room
 - d. As you are testing the patient, adjust the camera so that the patient’s entire body can be viewed onscreen

*If view of the patient is obstructed (either by blankets covering him/her or by someone standing in front of the camera), call into the room and make the RN aware of this fact
 - e. Document in the push button column on the appropriate Tracking Sheet the exact time the push button was pressed (in military time). Highlight all intentional push button events on the appropriate Tracking Sheet to make them easier for the EEG Fellows to find.
 - f. Once the time has been documented on the appropriate Tracking Sheet, reset the push button alarm.
 - g. Document on the appropriate Tracking Sheet everything that happens during the event, including the following:
 - i. Clinical manifestations (i.e. lip smacking, eyes rolling upward, staring, gurgling, jerking of extremities, etc.)
 - ii. Any vital signs announced by staff during the event

- iii. The patient's response to ictal testing (i.e. able to state name, able to follow commands, able to remember a color)
- h. Document on the appropriate Tracking Sheet the exact time (in military time) when the event appears to end (clinical manifestations)

Monitor Technician Daily Responsibilities – Responding to Seizure Event Alarms

The following describes the procedures to be followed when the “Seizure Event” alarm is activated.

- I. If the “Seizure Event” alarm goes off, immediately call into the patient’s room and begin ictal testing. Ask the patient to do the following:
 - i. “Tell me your name”
 - ii. “Raise your arms”
 - iii. “Remember the color ____”
 - iv. “Are you feeling okay?”
- II. If the patient is unresponsive to questioning immediately do the following:
 - a. For 6Central Seizure Event alarms, dial 1711 and say “event in room ____” (doing this makes an overhead paging announcement throughout the Epilepsy Monitoring Unit)
 - b. For 7Central Seizure Event alarms, dial 30114 and say “7 Central event in room ____” (doing this makes an overhead paging announcement throughout 7 Central)
 - c. Document the time the Seizure Event alarm notification went off in the SZAC column on the appropriate Tracking Sheet
 - d. Reset the alarm system
 - e. Document on the appropriate Tracking Sheet anything that is clinically happening with the patient while he/she is unresponsive (i.e. lip smacking, staring, jerking of extremities, etc.)
 - f. Document on the appropriate Tracking Sheet the exact time (in military time) when the clinical manifestations stop
- III. If the patient is responsive to questioning and appears to be okay or the patient’s family says he/she is okay, document the time of the alarm in the SZAC column on the appropriate Tracking Sheet and write “patient okay”.
- IV. The above procedures must be followed each time the Seizure Event alarm is activated. If the alarm is being activated frequently or if you think the alarm activation is the result of artifact (i.e. an electronic device plugged into the wall and touching the patient or dried up electrodes), notify the patient’s nurse who will either fix the issue causing the artifact or contact the EEG Fellow to determine whether the monitor technician needs to continue documenting every Seizure Event alarm or not. Sometimes it is appropriate to document only every third Seizure Event alarm, but this can only be determined by the EEG Fellow.

*Please note, the Seizure Event alarm may activate repeatedly in response to a patient’s baseline abnormal EEG if the alarm’s sensitivity is too high. An EEG technician can lower the alarm’s sensitivity ONLY after he/she has spoken to an EEG fellow.

Monitor Technician Daily Responsibilities – Responding to Clinical Seizures/Events

If the Monitor Technicians observes possible seizure activity by a patient and the Seizure Event alarm does not activate, the following should be done:

- I. Press the “Push Button Event” button on the Nurse Station Alarm system.
- II. Immediately call into the patient’s room and begin ictal testing. Ask the patient to do the following:
 - i. “Tell me your name”
 - ii. “Raise your arms”
 - iii. “Remember the color ____”
 - iv. “Are you feeling okay?”
- III. If the patient is unresponsive to questioning immediately do the following:
 - a. For 6Central Push Button events, dial 1711 and say “event in room ____” (doing this makes an overhead paging announcement throughout the 6th floor Epilepsy Monitoring Unit)
 - b. For 7Central Push Button events, dial 30114 and say “7 Central event in room ____” (doing this makes an overhead paging announcement throughout 7 Central)
 - c. Continue testing the patient until a RN arrives in the room
 - d. Document the time the “Push Button Event” alarm was activated in the push button column on the appropriate Tracking Sheet
 - e. Reset the alarm system
 - f. Document on the appropriate Tracking Sheet anything that is clinically happening with the patient while he/she is unresponsive (i.e. lip smacking, staring, jerking of extremities, etc.)
 - g. Document on the appropriate Tracking Sheet the exact time (in military time) when the clinical manifestations stop
- IV. If the patient is responsive to questioning and appears to be okay or the patient’s family says he/she is okay, document the time of the alarm on the appropriate Tracking Sheet and write “patient okay”.

Monitor Technician Daily Responsibilities – Responding to Patient Disconnects

If the “Patient Disconnect” alarm sounds, reset the disconnect alarm and do the following:

- I. Document the time of the patient disconnect on the Tracking Sheet
 - a. If the RN or PCA/T has notified you why the patient has been disconnected (i.e. changing clothes or leaving the floor for a procedure) document this reason on the sheet as well
 - b. If the RN or PCA/T does not appear to be aware that the patient has become disconnected, please notify either of them right away that the patient has become disconnected. Document on the Tracking Sheet who you spoke to about the patient disconnect.
- II. Once the patient has been reconnected, document this time on the Tracking Sheet

*Please note, the patient is NEVER to disconnect himself/herself from the equipment. If you observe a patient doing this, please overhead page the RN to the patient’s room right away by dialing and 1711 and saying “Nurse needed in room _____”

Monitor Technician Daily Responsibilities – Performing Shift Checks of Equipment/Patients

Every 30 minutes from the beginning of every shift, MTs should check the following and document on “MT Technology Check” sheet:

- I. The patient’s EEG is recording appropriately (for examples of missing electrodes, electrodes that need to be re-glued, or electrical artifact, see Chris Hucek’s “Epilepsy Competency 2013” presentation). Included in this check is checking that the patient’s ECG cable is recording.
*If the patient’s EEG does not appear to be recording appropriately, notify the patient’s RN and document his/her response to your notification on the appropriate Tracking Sheet. Do not highlight this communication.

*If artifact is seen, the following should occur:
 1. Notify nurse. They can check connections, re-start the computers, re-gel electrodes etc. Have patient move and change positions to see if artifact is from a loose wire.
 2. If artifact still there, EEG tech can be called to troubleshoot system.
 - a. At night, EEG fellow can be called. If needed, on-call EEG tech will be notified.
 3. Always be sure to document when artifact started.
- II. The patient is clear and centered on camera with the head on the top of the screen and the legs/feet at the bottom of the screen. For example, if the patient’s face appears to be “washed out” by too much light shining in the room, please ask the assigned RN or PCA/T to close the blinds in the patient’s room. Document his/her response to your notification on the appropriate Tracking Sheet. Do not highlight this communication. At night, this includes making sure the black lights over the patients’ beds are on.
- III. The patient’s EEG pack is connected to him/her. Patients with limited movement are allowed to have the EEG pack beside them in the bed, but all other patients must have their EEG pack attached to their bodies at all times. If you notice that the patient’s EEG pack is not attached to his/her body, notify the assigned RN or PCA/T and document his/her response to your notification on the appropriate Tracking Sheet. Do not highlight this communication.

At the beginning of every shift, MTs should check the following:

- V. The Push Button Event alarm is functioning at the Monitor Technician station. At the start of every shift, the Monitor Technician should press the “Push Button Event” button on the Nurse Station Alarm system. If the Nurse Station Alarm system activates, reset

the alarm and document on the appropriate Tracking Sheet (in the column for appropriate patient), “PB Test by MT” and the time the push button was tested (in military time). If the alarm does not activate, close the Nurse Alarm System, ensure that the system was appropriately enabled and try again (for information on enabling/disabling alarm systems, see Chris Hucek’s “Epilepsy Competency 2013” presentation). If the Push Button Event alarm still does not work and it is during normal business hours, notify the EEG Technician assigned to the EMU. Otherwise, notify the patient’s assigned RN (who should then notify the EEG fellow).

- VI. Every time the patient goes to the bathroom, someone (either a family member or a staff member) is accompanying him/her to the bathroom, standing outside the door until he/she is done, and accompanying him/her back to bed. If you notice that this is not being done, please notify the patient’s assigned RN and document his/her response to your notification on the appropriate Tracking Sheet. Do not highlight this communication
- VII. In any emergency situation (i.e. a patient is about to fall out of bed) immediately overhead page either the PCA/T or the RN to the patient’s room by dialing 1711 and saying either “PCA needed in room ___” or “Nurse needed in room ___”. If an emergency situation exists, make sure the appropriate staff responds immediately by repeatedly overhead paging until he/she responds.

Evening and Night shift:

- VIII. At 2100, MT must communicate with nurse or PCA to ensure that bed alarms are on all EMU patients to help alert staff if patient has seizure in their sleep.
- IX. At 2100, turn on audio for all rooms when patients are asleep. This can help with smaller, more subtle seizures that are difficult to see on the monitors such as lip smacking, gasping, coughing/choking, and other sounds.
- X. Take note of all patients that are being sleep deprived and either call in room or talk to PCA/T or nurse if patient falls asleep.
- XI. Ensure that a five minute break is taken every 2 hours between the hours of 2300 and 0600. This can be done by a PCA/T or charge nurse. Ensure that a 15 minute break and 30 minute lunch break is taken between this time period as well.

MT Technology Check

*Must be completed every 30 minutes starting at beginning of shift

MT name: _____

EEG recording?	Artifact present? List electrodes if Y	Patient face centered top of screen?	EEG pack connected to patient?	Time completed

Other Monitor Technician Guidelines/Expectations

Monitor Technicians are the “eyes and ears” of the epilepsy unit and they play a vital role in assisting the doctors and nurses with the collection of quality information on all of the patients. The goal of the Epilepsy Monitoring Unit is for the physicians to correctly diagnose and treat every patient that is admitted to the unit and for all staff to provide high quality care and to treat each other as well as the patients and their families with respect, while maintaining patient safety at all times. Therefore, Monitor Technicians are encouraged to address issues or situations that threaten to compromise patient safety and/or the quality of information collected.

Monitor Technicians are required to adhere to the following guidelines:

1. Clock in and out on time. Follow hospital policies about clicking in and out, taking breaks, tardiness, and missing a meal. You must have approval from the unit manager to clock in early or late and to clock out with no meal break.
2. You are allotted one thirty-minute meal break per shift. If time and staffing permit, you may take an additional 10-15 minute break.
3. Plan your break according to the availability of the PCA/T or HUC who is relieving you. Talk to the shift manager about your break if no PCA is available to relieve you. Complete the “MT break-relieving” form every time you go on break so that you are not held responsible for a missed event while you are on break.
4. NEVER leave the monitors unattended, except in the case of emergency situations.
5. The computers in the monitoring area are for monitoring purposes only. Never use these computers for personal use.
6. No sleeping at work.
7. No reading (including newspapers and magazines), doing crossword puzzles, homework, texting on the cell phone, etc. while at the monitoring station. You must maintain complete observation of your patients at all times.
8. Outside visitors are not allowed in the monitoring room. You are responsible for maintaining patient confidentiality at all times. It is a violation of HIPPA regulation to have visitors in the monitoring room. Hospital personnel who are not involved in your patients’ care cannot watch the patients who are being monitored.
9. Be very courteous and polite to your patients and their families.
10. Be professional in your dress and language. Rude/foul language has no place in a work environment as it is offensive to patients and coworkers.
11. Keep your voice low when the team is discussing patients. Be respectful, courteous, and professional.
12. No eating, drinking or preparing food around the refrigerator where the radioactive tracer is placed for SPECT. However, you may eat and drink at the desk area.
13. Make sure the monitoring room is kept clean during your shift and discourage anyone from spoiling the cleanliness.

14. Any music that is played in the monitoring room must be free of vulgar language and subject. The volume must remain at a minimum level. If all parties working in the monitoring room cannot reach a mutual decision regarding the type of music played, there will not be any music played.
15. Answer the phone at the monitoring station by stating “Epilepsy Unit” and then your name.

Guidelines for Intracranial Monitoring in the Epilepsy Monitoring Unit

These guidelines are provided to ensure a safe and successful seizure monitoring with intracranial electrodes.

Patients with electrodes in the head (intracranial electrodes) have undergone a major surgical procedure, and the cost of the electrodes range from \$5,000 to \$10,000 depending on the type and number. The success of these recordings depends on these electrodes' working, but they are extremely fragile. The wires are thin and easily cut or broken, and one of the weakest points is where the electrodes are connected to the EEG cables. Any tension at the connection can break the connection and make the electrodes useless. Broken connections have happened. Because we don't know which of the electrodes will point to where the seizures start, we need to be sure that all are working.

The major purpose of these guidelines is to make sure that the electrode wires are protected. In these guidelines one of the main goals is to prevent any tension on the electrode wires and the connections to the EEG cables. The cables to the EEG must be firmly attached to the head bandage so that the connections and electrode wires are under no strain. **AT NO TIME SHOULD THE CONNECTIONS BE ALLOWED TO HANG FREELY AND UNSUPPORTED**

Monitor Technicians

- If the patient is not wearing his/her equipment pack and or is ambulating without someone in the room, notify the nurse immediately and document his/her response on the "EMU tracking sheet"
- If the patient starts picking/pulling at the head dressing or at the EEG leads or if head dressing comes off, **immediately call nurse**. This can lead to many complications or become a medical emergency. Document the response on the sheet.