Thank you for your interest in performing an externship in neurology at the University of Miami Miller School of Medicine. Extern students may participate in any of four elective rotations in neurology. All electives are for two or four weeks and begin on a Monday (or Tuesday for weeks with a Monday holiday). All inpatient services are at Jackson Memorial Hospital. In addition to the rich clinical experiences offered by the various rotations, externs also participate in certain structured learning opportunities and assessments such as computerized pre- and postcourse testing, instructor-led case-based teaching sessions and computer-based multimedia skills training in the neurologic examination, key clinical findings, and neuroradiology. Four weeks of neurology externship at UM is equivalent to a neurology clerkship at most institutions. This document contains descriptions of the following:

- Elective Rotation Option 1: Inpatient General Neurology and Clinics
- Elective Rotation Option 2: Stroke Service
- Elective Rotation Option 3: Neurology Consultation Service
- Elective Rotation Option 4: Brain Injury Neurorehabilitation Service
- Structured Learning and Assessment
- Learning Objectives

**NEUROLOGY EXTERNSHIP APPLICATION PROCESS**

1. Ensure that we receive the following information via mail or fax:
   a. letter of good standing from your school
   b. proof of immunization
   c. proof of student health insurance
   d. proof of malpractice liability insurance
   e. a brief statement describing your previous experience in neurology and why you wish to perform a neurology externship at the University of Miami.

2. Provide us with the following via return email to the Externship Coordinator (JBaker2@med.miami.edu) as soon as possible:
   a. the name, telephone number, and fax number of a contact person from your medical school to whom we can send your letter of acceptance once we have received all the above paperwork
   b. your complete contact information, including mailing address, telephone number, and email address
   c. the specific elective rotation(s) requested
   d. the specific dates requested in 2-week blocks, beginning on a Monday (or Tuesday for weeks with a Monday holiday).

3. We shall email you a response to your rotation and date requests, either confirming your enrollment or offering alternate dates if the requested slots are already filled.

4. We shall email you again once we have received all your paperwork to provide you with a map, schedule, and more detailed information about the externships and learning opportunities.

You will need to obtain a University of Miami identification card as soon as you arrive on campus. We thank you once again and look forward to your visit to Miami.

Sincerely,

**Juliette Coleman, M.D.**
Instructor of Neurology
Director of Medical Student Education, Department of Neurology
Medical Education Research Fellow, Gordon Center for Research in Medical Education

Department of Neurology c/o Gordon Center for Research in Medical Education
Mailing Address: P.O. Box 016960 (D-41), Miami, Florida 33101
Location: 1120 NW 14th Street, First Floor, Miami, FL 33136

Contact information:
Externship Coordinator
RE: Neurology Externship
University of Miami CRME
P.O. Box 016960 (D-41)
Miami, FL 33101
Fax: 305-243-1823
Third- or fourth-year students may perform a 2- or 4-week elective on the General Neurology service at Jackson Memorial Hospital or the Veterans Administration Medical Center. Students who have already completed a clinical clerkship in neurology may also attend an array of university-run or private physician clinics to compliment this experience. Clinic choices include Epilepsy, Veterans Administration Neurology, Neuro-ophthalmology, Neuromuscular, Stroke, Pediatrics, and Migraine. Experience in EMG and Neuropathology can be arranged based on director approval and availability. During this course students are expected to care for a limited amount of patients on a general Neurology service and be active members on a General Neurology team. Students should attend Neurology Morning Report each morning at 7:15 AM and Neurology Grand Rounds each Friday morning from 10:00 AM - 12:00 PM. The student is expected to take at least one nighttime call per week from 4:00 PM-11:00 PM.

Supervising attending and residents will complete evaluation forms documenting student performance on the elective in the following categories: (1) patient evaluation skills, (2) data gathering and problem solving, (3) fund of knowledge, (4) case presentations, (5) patient write-ups and progress notes, (6) personal qualities, (7) ward activities and responsibilities, and (8) communication and interpersonal relationships.

On the first day of the elective rotation, students should report to the Clerkship and Externship Coordinator at 8:30 AM at the Gordon Center for Research in Medical Education.

On the first day of the clerkship, students will receive instruction on essential neurology skills such as performance of a neurologic exam. There will also be opportunities to participate in a standardized learning experience throughout the rotation, including instructor-led case-based teaching sessions and self-learning computer programs in neuroradiology, key clinical findings, and stroke. On the final day of the clerkship, students will perform a 60-question computer test assessing their knowledge of the standardized component of the curriculum.
STROKE NEUROLOGY

<table>
<thead>
<tr>
<th>COURSE CODE:</th>
<th>MDR 851</th>
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</thead>
<tbody>
<tr>
<td>CLERKSHIP DIRECTOR:</td>
<td>Juliette Coleman, M.D.</td>
</tr>
<tr>
<td>TELEPHONE:</td>
<td>TEL 305-243-6491, FAX 305-243-1823</td>
</tr>
<tr>
<td>CONTACT:</td>
<td>Externship Coordinator (GCRME D-41)</td>
</tr>
<tr>
<td>EMAIL:</td>
<td><a href="mailto:JBaker2@med.miami.edu">JBaker2@med.miami.edu</a></td>
</tr>
<tr>
<td>LENGTH OF ELECTIVE:</td>
<td>2/4 weeks</td>
</tr>
<tr>
<td>PREREQUISITE:</td>
<td>Third- or fourth-year medical student</td>
</tr>
<tr>
<td>NUMBER OF STUDENTS:</td>
<td>2</td>
</tr>
<tr>
<td>AVAILABLE:</td>
<td>All year EXCEPT 6/3/06-7/2/06 and 12/18/06-1/7/07</td>
</tr>
<tr>
<td>INTERVIEWING TIME:</td>
<td>Maximum 2 days—BUT PERMISSION REQUIRED IN ADVANCE</td>
</tr>
<tr>
<td>TYPE:</td>
<td>Clinical</td>
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Third- or fourth-year medical students may perform a 2- or 4-week subinternship on the stroke neurology service at Jackson Memorial Hospital under the supervision of a stroke neurology attending. During the course, the student is expected to care for a limited number of patients on the stroke service and to be an active member of the stroke team. The student should report each morning for stroke inpatient rounds on West Wing 11 at a time designated by the stroke attending. The student is expected to take at least one nighttime call per week from 4:00 PM-11:00 PM.

Supervising attending and residents will complete evaluation forms documenting student performance on the elective in the following categories: (1) patient evaluation skills, (2) data gathering and problem solving, (3) fund of knowledge, (4) case presentations, (5) patient write-ups and progress notes, (6) personal qualities, (7) ward activities and responsibilities, and (8) communication and interpersonal relationships.

On the first day of the elective rotation, students should report to the Clerkship and Externship Coordinator at 8:30 AM at the Gordon Center for Research in Medical Education.

On the first day of the clerkship, students will receive instruction on essential neurology skills such as performance of a neurologic exam. There will also be opportunities to participate in a standardized learning experience throughout the rotation, including instructor-led case-based teaching sessions and self-learning computer programs in neuroradiology, key clinical findings, and stroke. On the final day of the clerkship, students will perform a 60-question computer test assessing their knowledge of the standardized component of the curriculum.
NEUROLOGY CONSULTATION

<table>
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<tr>
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Third- or fourth-year students may perform a 2- or 4-week elective on the Neurology Consult Service at Jackson Memorial Hospital. On this service, students are provided the opportunity to evaluate off-service neurology problems with the neurology consulting resident and attending assigned to that service.

Supervising attending and residents will complete evaluation forms documenting student performance on the elective in the following categories: (1) patient evaluation skills, (2) data gathering and problem solving, (3) fund of knowledge, (4) case presentations, (5) patient write-ups and progress notes, (6) personal qualities, (7) ward activities and responsibilities, and (8) communication and interpersonal relationships.

On the first day of the elective rotation, students should report to the Clerkship and Externship Coordinator at 8:30 AM at the Gordon Center for Research in Medical Education. (During the elective, you will be expected to report to the neurology consult resident each morning at pager 305-585-2255, extension 0689.)

On the first day of the clerkship, students will receive instruction on essential neurology skills such as performance of a neurologic exam. There will also be opportunities to participate in a standardized learning experience throughout the rotation, including instructor-led case-based teaching sessions and self-learning computer programs in neuroradiology, key clinical findings, and stroke. On the final day of the clerkship, students will perform a 60-question computer test assessing their knowledge of the standardized component of the curriculum.
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Third- or fourth-year medical students who have completed a medicine, surgery, or general neurology clerkship rotation may perform a 2- or 4-week elective on the Neurorehab service (located on the 4th floor of the Ryder Trauma Center), shadowing the Rehab attending on daily rounds. There is an opportunity to get involved in clinical research activities that are ongoing in the division. Students will also have the opportunity to become familiar with Botulinum toxin injections and Baclofen pumps. There is no call.

A supervising attending and physician assistant will complete evaluation forms documenting student performance on the elective in the following categories: (1) patient evaluation skills, (2) data gathering and problem solving, (3) fund of knowledge, (4) case presentations, (5) patient write-ups and progress notes, (6) personal qualities, (7) ward activities and responsibilities, and (8) communication and interpersonal relationships.

On the first day of the elective rotation, students should report to the Clerkship and Externship Coordinator at 8:30 AM at the Gordon Center for Research in Medical Education.

On the first day of the clerkship, students will receive instruction on essential neurology skills such as performance of a neurologic exam. There will also be opportunities to participate in a standardized learning experience throughout the rotation, including instructor-led case-based teaching sessions and self-learning computer programs in neuroradiology, key clinical findings, and stroke. On the final day of the clerkship, students will perform a 60-question computer test assessing their knowledge of the standardized component of the curriculum.
In addition to the clinical experiences of the individual externship rotations, each student extern is provided a core curriculum consisting of structured learning and assessment opportunities.

**NOTE:** A 4-week experience satisfies the requirements of most neurology clerkships, though it does not include certain small-group and standardized-patient sessions included in the clerkship for UM students.

**Orientation Day**
- Essential Neurologic Examination
- 30 Key Neurologic Findings
- Lesion Localization
- Communication & Documentation in Neurology

**Case-Based Teaching (CBT) Sessions**
- Comprehensive curriculum of 10 important emergencies, 10 common outpatient conditions
- All cases written by course director with faculty input
- Total of ten sessions in 4-week period
- Three afternoons per week (usually Monday, Wednesday, Friday)
- Each session:
  - Consists of two cases (1 important emergency & 1 common outpatient condition)
  - Led by faculty member or senior resident, or self-learning computer-based
  - Lasts 2 to 3 hours, is followed by 5-question quiz covering both cases

**Neuroradiology**
- Self-study PowerPoint file
- Computerized test emphasizing brain CT scan anatomy

**UMedic Stroke Program**
- Interactive multimedia computer program
- Self-learning, case-based
- Takes 1 to 1 ½ hours to complete

**Neurology Clerkship/Externship Website**
- Case-Based Teaching (CBT) 20 PDF handout versions of the PowerPoint slides
- Neuroradiology PowerPoint presentation
- Neurologic Localization PowerPoint presentation
- Neurologic Communication PowerPoint presentation
- Essential Neurologic Examination Link to files with videos
- Key Clinical Findings Link to files with videos
- Neuroanatomy Review Link to MacroMedia Flash file

**Clinical Conferences**
- Morning Report Monday through Friday 7:15 am to 8:00 am
- Chief’s Rounds Every Thursday 11 am
- Grand Rounds Every Friday 10 am to 12 pm

**Final Day**
- Postcourse Computerized Test 60 questions with text, graphics, videos
LEARNING OBJECTIVES

Global Learning Objectives. By the end of this rotation, student should be able to:

1. Perform an accurate and appropriate neurologic history and examination;
2. Manage patients with common neurologic conditions and key neurologic emergencies;
3. Identify and describe the significance of key neurologic findings on examination;
4. Distinguish normal and abnormal CT and MRI scans of the brain;
5. Order diagnostic tests appropriately for patients with neurologic conditions;
6. Consult a neurologist appropriately.

Specific Skills Learning Objectives. By the end of this rotation, student should be able to:

1. Perform a neurologic history accurately;
2. Perform a reliable “essential” neurologic examination on a patient;
3. Demonstrate a mechanism for learning about medical conditions in a clinical environment that will serve as a life-long strategy;
4. Consult a neurologist appropriately;
5. Order diagnostic tests appropriately for patients with neurologic conditions, including EMG/NCV, EEG, CT scan, and MRI scan;
6. Distinguish normal and abnormal MRI & CT scans; in particular identify mass lesion, ischemia, and hemorrhage;
7. Identify neurologic structures on CT and MRI scans, including:
   1. Brainstem (medulla, pons, and midbrain) and cerebellum
   2. CSF structures: all 4 ventricles, Sylvian aqueduct, quadrigeminal plate cistern, perimesencephalic cistern, suprasellar cistern, Sylvian fissure, interhemispheric fissure
   3. Deep white matter: internal capsule, corona radiata, and centrum semiovale
   4. Subcortical gray matter: thalamus, lentiform nucleus (globus pallidus & putamen), caudate nucleus
   5. Cortex: frontal, parietal, temporal, occipital, insula
15. Identify and describe the neuroanatomy, neuropathology, pathophysiology, diagnostic evaluation, and management associated with these 30 clinical findings:

   1. Normal eye movements
   2. Normal arm coordination
   3. Flexor plantar response
   4. Normal gait
   5. Lateral rectus palsy
   6. Neglect
   7. Expressive aphasia
   8. Receptive aphasia
   9. Dysarthria
   10. Swollen optic disk
   11. Hemianopsia
   12. Cranial nerve 3 palsy
   13. Facial weakness
   14. Atrophy and fasciculations
   15. Pronator drift
   16. Wrist drop
   17. Foot drop
   18. Sensory level to pinprick
   19. Distal pinprick loss
   20. C6 pinprick loss
   21. L5 pinprick loss
   22. Ankle clonus
   23. Extensor plantar response
   24. Intention tremor
   25. Essential tremor
   26. Resting tremor
   27. Choreoathetosis
   28. Ataxic gait
   29. Parkinsonian gait
   30. Rombergian sign
Specific **Cognitive** Learning Objectives.

1. Understand the pathophysiology, clinical course, and management of 10 common outpatient neurologic conditions (also see specific learning objectives for these conditions):
   1. Dizziness, esp. benign positional vertigo
   2. Intermittent headache, esp. migraine
   3. Neck and arm pain, esp. cervical radiculopathy (& carpal tunnel syndrome)
   4. Low-back and leg pain, esp. lumbosacral radiculopathy
   5. Dementia, esp. Alzheimer's disease
   6. Epilepsy, esp. complex-partial seizures
   7. Sleep disorders, esp. sleep apnea
   8. Movement disorders, esp. Parkinson's disease
   9. Demyelinating disease, esp. multiple sclerosis
   10. Neuropathic pain, esp. herpes zoster

2. Understand the pathophysiology, clinical course, and management of 10 neurologic urgencies and emergencies (also see specific learning objectives for these conditions):
   1. Acute ischemic stroke (and TIA)
   2. Subarachnoid hemorrhage
   3. Status epilepticus
   4. Spinal cord compression (and other myelopathies)
   5. Guillain-Barré syndrome
   6. Myasthenic crisis
   7. Bacterial meningitis
   8. Toxic-metabolic encephalopathy (and coma)
   9. Subdural hematoma (and head trauma in general)
   10. Intracranial hypertension and herniation

3. Understand the pathophysiology, clinical course, and management of other neurologic conditions, especially those observed first-hand by the learner.