University of Central Florida
College of Medicine

Neurology Clerkship Handbook
for Students & Attending Physicians
2012-2013
(Block 4, Updated 9/11/12)

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IMPORTANT NOTICE

The clerkship director reserves the right to modify, amend, delete, replace, or revise all policies, procedures, and scholarly content if needed to maintain or improve the academic integrity of the clerkship. When possible, such changes will be planned to minimize disruption to current students and preceptors, however, fairness and the academic soundness of the clerkship must take precedence. Any such changes will be communicated promptly to neurology clerkship students as well as attending preceptors.
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<td>PM: Longitudinal Session</td>
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</table>
Contents
1. Introduction

2. Sites, Personnel, Contact Information

3. Goals & Objectives
   3.1. Knowledge
      3.1.1. Learning objectives
      3.1.2. Required reading
      3.1.3. Reading schedule
   3.2. Skills, Attitudes, & Behaviors
   3.3. Professionalism
      3.3.1. Interpersonal skills
      3.3.2. Professional behavior
      3.3.3. Information management
   3.4. Commendation Cards & Early Warning Cards

4. Attendance Policies
   4.1. College policies
   4.2. Unexpected absences
   4.3. Expected absences

5. Grading Policies
   5.1. Evaluation
   5.2. Formative feedback
   5.3. Summative evaluation
   5.4. Grading overview
   5.5. Details of grading components
      5.5.1. Preceptor evaluations
      5.5.2. NBME subject examination in neurology
      5.5.3. Preceptor-observed exam requirements
      5.5.4. Neurological H&P requirements
      5.5.5. Weekly Quiz and Peer Evaluation
   5.6. Determination of final grade
      5.6.1. Grading rubric
      5.6.2. Minimum criteria for passing
      5.6.3. Minimum criteria for failing
      5.6.4. Lapses of professionalism, low preceptor ratings
      5.6.5. Borderline performance and T grades

6. Clinical Contact Experience & Documentation Requirements
   6.1. Required Patient Types
   6.2. OASIS

7. Rotation Schedule
   7.1. Rotation sites
   7.2. Daily and weekly schedules
7.3. Duty hours restrictions

8. Learning Sessions & Didactics
   8.1. Schedule
      8.1.1. Orientation day
      8.1.2. Weekly sessions
      8.1.3.

9. Information for Attending Physicians & Residents
   9.1. Overview
      9.1.1. Rotation schedule
      9.1.2. Grading
      9.1.3. Clerkship goals
   9.2. Preceptor responsibilities
      9.2.1. General
      9.2.2. Specific responsibilities
      9.2.3. Giving feedback
      9.2.4. Documentation of student performance
         9.2.4.1. Commendation & early warning cards
   9.3. College of Medicine policy on student abuse
   9.4. FERPA

10. Learning Resources
    10.1. Textbooks
    10.2. On-line resources

11. Appeals Process

Appendix 1: Variations of the Neurologic Examination
    Complete Neurologic Examination
    Screening Neurologic Examination
    Examination of the Comatose Patient

Appendix 2: Curriculum Outline

Appendix 3: Sample Forms
1. Introduction

Welcome to the third-year neurology clerkship. Neurology is a fast-evolving field that incorporates cutting-edge, high-tech interventions with proven, hands-on examination techniques that have been handed down for centuries. Patient care in neurology requires both high-tech and traditional methods to make diagnoses, choose rational treatment strategies, and optimize patient care.

Neurology has historically been regarded as a specialty in which diagnosis could be exquisitely precise but treatment was minimal or non-existent. This is no longer the case. While a good neurologic examination can still localize a lesion more accurately than any MRI scan, many treatments are now available for patients with diverse diagnoses. Treatment options are expected to increase dramatically during your career.

The purpose of the neurology clerkship is not to train neurologists (that is the goal of residency training). The goal of the neurology clerkship is to provide students with the fundamental skills required by all physicians to recognize, diagnose, and formulate an initial treatment plan for patients with common neurologic disorders. As such, a principal goal of the clerkship is to help you refine your skills in taking a neurologic history and performing a thorough neurologic examination. Most of you will eventually practice in settings where acute neurologic consultation is initially available only by phone. The better historical and examination information you provide, the better your neurologic consultant will be able to advise you regarding immediate interventions for your patients.
1.1 Mandate & Rationale

Why neurological disease is important

- Over 45 million patients visit a physician every year. Up to 10% present with potential neurologic symptoms.
- Up to 20% of all hospital admissions are due to neurologic disease.
- The incidence and prevalence of neurologic disease are increasing.
- Annual deaths from epilepsy rival those from breast cancer.
- Stroke is the #1 cause of disability in the US and is the third leading cause of death.
- Alzheimer’s disease was the fifth most common cause of death in 2004, an increase of 33% over 2000, and rates of Alzheimer’s disease are expected to at least quadruple by 2050.

Why neurology education is important

- While a neurology clerkship technically is not required by the LCME, over 80% of medical schools offer one.
- A consensus opinion by professional organizations has addressed the content of the neurology-neuroscience curriculum.
- The standard curriculum was extensively peer-reviewed at the national level prior to publication.
- Neurology is widely viewed by practicing generalist physicians as the "hardest" specialty.
- Neurology is the clinical area in which many practicing generalists feel least confident to diagnose and manage patients.
- Most practicing generalists feel their undergraduate education in clinical neuroscience was weak.

How to improve neurology education

- In one survey, most practicing generalists attributed their weakness in neurology & neuroscience education to three main factors: (1) over-emphasis of basic neuroscience, (2) lack of time spent on clinical neuroanatomy, and (3) poor teaching.
- Most generalists agreed that a firm foundation in basic clinical neuroanatomy would have benefitted their future practice.
- Most urged instructors to "stress the most basic and simple concepts" relevant to general practice.
- Addressing these issues appears to improve knowledge and confidence in senior medical students.
- A broad generalist view of clinical neuroscience (rather than highly specialized knowledge) appears to be most appropriate level of education.

For these reasons, a broad understanding of neuroanatomy, neurophysiology, and clinical neurology is important for all graduating medical students.
## 2. Sites, Personnel, & Contact Information

<table>
<thead>
<tr>
<th>Location</th>
<th>Contact Information</th>
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<tbody>
<tr>
<td><strong>UCF College of Medicine</strong></td>
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<tr>
<td>6850 Lake Nona Boulevard Orlando, FL 32827</td>
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<td>407-266-1000</td>
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<td>Richard O’Neal, MS</td>
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<tr>
<td><strong>Florida Hospital Neuroscience and ICU</strong></td>
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<td>Site Contact and Coordinator: Vanessa Thrasher</td>
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<td>407-303-7449</td>
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<td>Winter Park, FL 3278</td>
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<tr>
<td>407-975-0200, main line</td>
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<tr>
<td><strong>M. D. Anderson Cancer Center Orlando</strong></td>
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<tr>
<td>1400 South Orange Avenue Orlando, FL 32806</td>
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<tr>
<td>407-648-3800</td>
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<tr>
<td>Nicholas Avgeropoulos, MD</td>
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<tr>
<td>OH Site Director</td>
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<td><a href="mailto:Nicholas.Avgeropoulos@OrlandoHealth.com">Nicholas.Avgeropoulos@OrlandoHealth.com</a> or</td>
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<td>Garrett Riggs, PhD, MD</td>
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<td><strong>Arnold Palmer Hospital for Children</strong></td>
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<td>92 West Miller Street Orlando, FL 32806</td>
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<td>Ashraf El-Bohy, MD</td>
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<td>Catherine Matarese, MD</td>
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<td>Sampathkumar Shanmugham, MD</td>
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<td>Private Practice</td>
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<td>Sachin Shenoy, MD</td>
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<tr>
<td>Titusville, FL 32796</td>
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<tr>
<td>Office: 321-264-2011</td>
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<tr>
<td>Ira Goodman, MD</td>
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<tr>
<td>Compass Research</td>
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<tr>
<td>100 W Gore Street Orlando, FL</td>
<td>Cell: 321-262-1311 (text is fine)</td>
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<td>Dina Dahan, MD &amp; Refaat El-Said, MD</td>
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<tr>
<td>Orlando, FL 32825</td>
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<tr>
<td>Office: 407-208-0708</td>
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<tr>
<td>Sampathkumar Shanmugham, MD</td>
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<tr>
<td>755 Stirling Center Place</td>
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<tr>
<td>Lake Mary, FL 32746</td>
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<td>Office: 407-333-1718</td>
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Neurology Clerkship Handbook, Block 2(2012-2013)
3. Goals and Objectives

The overarching educational goal of the neurology clerkship is for students to learn how to take a complete neurologic history and perform a comprehensive neurologic examination. It is also desirable to develop additional skills in lesion localization, neurologic differential diagnosis, and development of initial diagnostic and treatment plans for common neurological conditions. These are basic skills shared by competent physicians regardless of specialty.

3.1 Knowledge

3.1.1 Neurology Clerkship Learning Objectives

1. Review basic sciences (anatomy, physiology, pathology) relevant to the diagnosis and management of common neurological conditions.
2. Develop and demonstrate the ability to acquire, record, and interpret clinical information about patients who present with common neurologic symptoms.
3. Develop and demonstrate the ability to synthesize clinical data into a differential diagnosis and initial treatment plan for patients with common neurological problems.
4. For patients with common neurological conditions, apply evidence based principles to compare and contrast available treatment options with regard to efficacy, risk, benefit, and cost-effectiveness.
5. Develop and refine history-taking and examination skills pertinent for all patients, with a special emphasis on techniques for evaluating neurologic problems.
6. Develop and demonstrate professional comportment during interactions with patients, families, and other health professionals.
7. Develop and demonstrate basic competencies in dealing with neurological emergencies, including:
   - Acute ischemic stroke
   - Intracranial hemorrhage
   - Delirium
   - Status epilepticus
   - Myasthenic crisis
   - Neuromuscular respiratory failure
   - Acute central nervous system infections
   - Spinal cord compression
   - Increased intracranial pressure
   - Acute worst headache
8. Develop and demonstrate proficiency in eliciting historical elements of and performing examination techniques in evaluation of the following complaints:
   - Dizziness, vertigo, and syncope
   - Weakness
   - Headache
   - Sensory loss
   - Memory loss
   - Altered mental status, loss of consciousness, cognitive impairment
   - Back pain
   - Hyperkinesia
   - Hypokinesia
   - Acute muscle weakness

9. Develop and demonstrate proficiency in evaluation the following common conditions:
   - Stroke/TIA
   - Seizure
   - Migraine
   - Dementia
   - Neuropathy
   - Myopathy
   - Motor neuron disease
   - Neuromuscular disease
   - Dementia
   - Delirium
   - Demyelinating disease
   - Movement disorders

3.1.2 Required Reading
The required text for this rotation is *Concise Neurology* by Jose Biller and Alberto Espay (2011). This is a practical text keyed to common neurological problems. It will be distributed from your clerkship coordinator at the start of your rotation and must be returned in good condition on NBME Day.

Recommended texts are *Case Files Neurology* and *Pre-test Neurology*. These books are available for borrowing from the neurology clerkship coordinator but must be returned at the conclusion of the clerkship rotation. If you would like to write in them, you may purchase your own. A more recent version may be available through the College of Medicine library.

3.1.3 Reading Schedule
Students are expected to read the entire Biller text by the end of the clerkship and demonstrate substantive mastery of the information contained therein. Mastery will be assessed by your clinical performance in the clerkship, weekly quizzes, and on the NBME subject examination in neurology.

Where to Start. For each individual didactic session, assigned readings can be found on MEDS (Blackboard). You are responsible for completing these readings before the didactic session and material for the quizzes will come predominately from these readings.
You should read in the textbook in advance on the topics for scheduled didactic sessions and quizzes. Didactic sessions will assume you have done the reading and will focus on applications, questions, and cases. (See section 8, “Didactic Sessions.”)

**The importance of additional reading beyond the required reading cannot be overemphasized.** This is a habit you must develop to be an effective physician. **READ SOMETHING – ANYTHING – ABOUT YOUR PATIENTS EVERY DAY!** Reading about your patients will improve your knowledge, impress your attendings, and establish the basis for good patient care throughout your career. The following resources are helpful but this list is not exhaustive:

**ADDITIONAL RESOURCES**

**Comprehensive Textbooks**
Many of the following texts are available electronically via the College of Medicine library.

- *Harrison’s Principles of Internal Medicine*. Many of the leading neurologists in the country provide excellent concise reviews in the chapters of Harrison’s.
- *Neurology in Clinical Practice*. This is a favorite neurology textbook because it is so clearly written. Do not be intimidated by its expansive breadth.
- *Merritt’s Neurology*. Especially concise to read about a patient whose diagnosis is known.
- *Adams and Victor’s Principles of Neurology*. A standard in the field, and especially helpful when approaching a patient whose diagnosis is unknown.
- *Localization in Clinical Neurology*. This book is extremely helpful when learning to localize lesions. It is exhaustive, so do not try and memorize it but do use it as needed to improve your localization skills.
- *Practical Neurology*, by Jose Biller. The name says it all. Has both symptom-based and diagnosis-based sections.

**On-Line Resources**

- *The New England Journal of Medicine* ([www.nejm.org](http://www.nejm.org)). You can search by content collection (Neurology/Neurosurgery) and also by topic. Limiting your search to “Review Articles” or “Case Records” may yield especially valuable articles for learning.
- *Neurology* ([www.neurology.org](http://www.neurology.org)). This is the official journal of the American Academy of Neurology and contains many seminal articles and reviews on pertinent topics.
- The American Academy of Neurology ([www.aan.org](http://www.aan.org)) is the largest professional organization of neurologists in North America. The website has many resources. In addition, expert panels often review important clinical topics that are summarized in practice recommendations. Check them out at [http://www.aan.com/go/practice/guidelines](http://www.aan.com/go/practice/guidelines).
- Dr. Alan Pestronk’s neuromuscular disease web page is an excellent resource to learn more about disorders affecting the peripheral nervous system ([http://neuromuscular.wustl.edu/](http://neuromuscular.wustl.edu/)).

If you have trouble finding information, talk to the faculty or see one of the librarians. Scholarly articles that are not available through the UCF libraries’ web sites can be obtained free of charge to you by asking in the library or by sending an email to medlibrary@mail.ucf.edu.

**What to Avoid**

Search engines like Google, Yahoo!, Bing, and others can help you discover helpful internet resources. They can also lead you to misinformation. Be wary. You are now becoming a professional, and as such,
you bear substantial responsibility to make sure the information you bring to patient care and to your colleagues is scholarly, accurate, and complete. Do not embarrass yourself on rounds by citing Wikipedia as a source. If you aren’t sure how to find something in the medical literature, ask. Talk to one of the COM faculty or ask a librarian for assistance.

3.2 Skills, Attitudes and Behaviors
Students are expected to meet and exceed the following minimum standards:

- Be present and participate fully in all clerkship activities, including orientation, group meetings, and examinations.
- Make decisions, defend them, and understand the consequences of a poor decision; such self-reflection is how you improve your own understanding and practice.
- Give 100% effort while on the clerkship and expect the same from your classmates.
- Be current with all your patients and be prepared in advance with relevant reading. Search peer-reviewed literature and bring articles with you! Your team will appreciate it.
- Be present and on time every day unless you are ill or have a family emergency.
- You are expected to be respectful of your classmates, residents, faculty, and other staff at all times.
- You should expect residents and attendings to provide constructive criticism, so that you can improve throughout the clerkship. Formal mid-rotation and end-of-rotation feedback sessions will also be held with the clerkship director.
- You will be assigned to specific sites and teams by the clerkship director.
- Remember that the patient is the focus of clinical care, not you.

3.3 Professionalism
The clerkship experience is not only about knowledge; it is also about inculcating the behaviors and attitudes that comprise the professional demeanor of the physician. Toward this end, neurology preceptors will be asked to comment on the following professional attributes for each student.

3.3.1 Interpersonal skills
**Definition:** Includes demonstration of inquiry about family and support systems; understanding of cultural diversity in health care delivery; understanding social, psychological, and economic factors in health care delivery; accurately assessing patients’ expectations and assumptions; and effectively engaging patients and families in verbal communication.

**Assessment:** The ability to develop rapport with patients, patient families, and other medical professionals.

3.3.2 Professional behavior
**Definition:** Includes demonstration of respect, truthfulness and honesty; appropriate self-assessment; understanding patients’ rights; recognizing and responding appropriately to conflicts between personal convictions and patients’ choices of medical treatments; and sensitivity to cultural and ethnic diversity.

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15 For in-depth discussion, see Riggs G et al. Assessment of professionalism task force: final report to the UCF College of Medicine Curriculum Committee. Unpublished manuscript. 19 June 2009.

16 Adapted, with permission, from a syllabus for the Senior Neurosurgery Clerkship Elective by Stephen Lewis, MD, FRCS, University of Florida (pers comm. 10 September 2008).
3.3.3 Information management

**Definition:** Includes demonstration of oral case presentation skills, mastery of traditional organization of medical data, adequate medical record keeping, and accessing data and information systems.

**Assessment:** Ongoing throughout the rotation. Oral case presentation skills will be assessed during rounds and in clinic. Medical record assessment will focus on case notes recorded by the student on assigned patients and will take into consideration organization, accuracy, and legibility.

3.4 Commendation and Early Warning Cards

It is important to maintain documentation about student performance. For performance outside the norm, supervising attendings will have access to documents that allow them to call special attention to individual students when necessary. This may be in the form of a **Commendation Card** (to commend exceptional performance above usual expectations), or in the form of an **Early Warning Card** (to document concerns about student performance below usual expectations). Commendations and concerns may be regarding any area of performance, including but not limited to patient care, interactions with other health care professionals, knowledge or skills performance, professionalism, dress, demeanor, etc. Commendations and concerns will go directly to the clerkship director who will determine what, if any, immediate action is required.

3.5 Dress Code

Professional attire is expected at all times during the neurology clerkship rotation. Professional business attire is the standard. Scrubs are not acceptable for outpatient rotations; scrubs are acceptable (and often required) for the inpatient service. All students should wear white coats that are clean and free of excessive wrinkles. Men should wear ties. Women should wear slacks or dresses of appropriate length. Closed toed shoes are essential for both men and women for safety reasons and men should wear socks; athletic shoes are not acceptable unless required by a medical condition. Students should not wear jeans while participating in patient care. Fingernails must be clean and trimmed to an appropriate length to avoid injury to patients and minimize transmission of pathogens. Tasteful jewelry is permissible but should not be excessive. Facial piercings other than earrings are prohibited, including tongue piercings. Hair (including facial hair for men) should be clean, neatly groomed, and of appropriate length. Hair coloring is acceptable as long as it is tasteful and does not detract from professional appearance. Lapel pins and other clothing adornments should be tasteful, non-inflammatory, and apolitical. Acceptable examples include pins promoting breast cancer or HIV/AIDS awareness; unacceptable examples include political slogans or support for non-medical social issues. Please direct questions regarding dress code issues to the clerkship director. Violation of these professional standards may be referred to Student Affairs for further assessment, remediation, or other necessary action.
4. Attendance Policies

4.1 Overview: College Policies
College of Medicine policies on attendance are outlined in the Student Handbook and on the College of Medicine web site. It is your responsibility to review and adhere to these policies, and ignorance of the policies is not an excuse for absence. Failure to comply may result in academic or disciplinary penalties. The handbook is available on-line at http://www.med.ucf.edu/academics/student_affairs/resources.asp.

4.2 Unexpected Absences
In brief, you should regard your duties on the neurology clerkship as you would your duties as a full-time, employed physician. Patients and other members of the health care team rely on your timely execution of patient care responsibilities. Only illness or extenuating personal emergencies should be viewed as legitimate grounds for absence or tardiness.

The key to handling unforeseen absences professionally is communication. If it is unavoidable that you be absent from or late for clerkship duties, you must inform all relevant parties as soon as possible. This should include a phone call to

1. your attending physician;
2. your attending physician’s clinical or office manager (if applicable);
3. your supervising resident or intern (if applicable);
4. the College of Medicine’s Neurology Clerkship Coordinator;
5. any others as specified in the College of Medicine Student Handbook.

How Unexpected Absences Should Be Reported

As soon as student knows he/she will be absent from their scheduled clerkship, he/she should make at least TWO notifications.

Supervising preceptor
- Send BOTH email and call/text

Clerkship Coordinator
Richard O’Neal
Email: Roneal@ucf.edu
Office: 407-266-1129
Cell: 407-619-7543
*Send BOTH email and call/text

*As soon as possible after an unexpected absence has occurred, students should follow through with proper paperwork/documentation.
4.3 Expected Absences
Pre-approved absences may be considered by the Clerkship Director with sufficient advance notice. In general these will be limited to unique scholarly or educational opportunities (e.g., presenting original research at an academic conference). Any expected absence must be approved by the Office of Student affairs and the Clerkship Director in order to count as an excused absence.

The following policy is reproduced from the Clerkship Student Handbook:

1. On a 6-week clerkship, students will be allowed to miss 3 full days of responsibilities as excused absences for the following:
   - Illness
   - Family emergencies
   - Presentation at professional meetings

2. Absences due to illness or family emergencies should be reported to the appropriate Clerkship or Site Director and supervising physician/chief resident on service. Approval for student presentations at professional meetings must be requested in advance (refer to UCF COM Student Handbook). Such absences must also be reported in writing to the Clerkship coordinator for documentation purposes. Once approved, you must inform your supervising physician/chief resident of your absence. The student absence form will be completed and forwarded to the Office of Student Affairs by the Clerkship Directors.

3. Absences exceeding three days will require make-up, the nature of which will be determined by the Clerkship Director. Examples including the taking of additional call or weekend shifts.

4. The three days of excused absences do not include, for example, vacation or social events.

In the event of an absence from the clerkship without permission from the clerkship director, the student will lose 5 points per absence from their final clerkship grade. In addition, it will be at the clerkship director’s discretion to require additional remediation (e.g., the taking of extra call).
5. Grading Policies

5.1 Evaluation
Evaluation procedures are consonant with standards set by the College of Medicine, in particular the Curriculum Committee, the Clerkship Directors’ Subcommittee, the Program Evaluation Subcommittee, and the Student Evaluation and Promotion Committee. In the neurology clerkship, the following general plan will apply.

5.2 Formative Feedback
Ongoing formative evaluation during the clerkship is essential to allow students to improve skills during the rotation. At minimum, students may expect daily feedback from preceptors in the following areas:

- Cognitive skills
  - History taking
  - Neurologic examination
  - Understanding of ancillary testing & data
  - Formulation, differential diagnosis, and treatment plan

- Personal skills
  - Professionalism
  - Dress
  - Demeanor
  - Any other concerns

Preceptors should communicate any concerns to the clerkship director immediately for monitoring or remediation as appropriate.

The frequency and mechanisms of formative feedback delivery are shown in the table.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Verbal feedback from attending physician preceptor</td>
</tr>
<tr>
<td></td>
<td>One-on-one interaction with preceptors &amp; residents</td>
</tr>
<tr>
<td></td>
<td>Aimed at “teachable moments” at the bedside and during clinical care</td>
</tr>
<tr>
<td>Weekly</td>
<td>Formative quizzing in didactic sessions</td>
</tr>
<tr>
<td></td>
<td>Case discussions in didactic setting</td>
</tr>
<tr>
<td></td>
<td>Checklist submitted by preceptor (if students rotate weekly)</td>
</tr>
<tr>
<td>Mid-clerkship</td>
<td>Formative feedback summarized &amp; discussed in meeting with clerkship director</td>
</tr>
<tr>
<td></td>
<td>Formal review of patient log, adjustment of assignments as needed</td>
</tr>
<tr>
<td>End of Clerkship</td>
<td>Exit meeting with clerkship director</td>
</tr>
<tr>
<td></td>
<td>Final examination</td>
</tr>
<tr>
<td></td>
<td>Formal evaluation report</td>
</tr>
<tr>
<td>Ongoing</td>
<td>Monitoring patient log</td>
</tr>
</tbody>
</table>
5.3 Summative Evaluation
Current standards suggest summative assessment be based on a minimum of one comprehensive written examination, narrative observations by primary teaching faculty, and other observable performance-based measures.

Small- and large-group discussions will be administered throughout the third year in the Longitudinal Clerkship Curriculum (detailed in other documents). The clerkship curriculum will include clinical skills and case sessions during protected didactic days to refine neurological examination skills.

A formative OSCE will be performed in October with a summative OSCE in April. These are scheduled in coordination with other clerkships and will integrate knowledge and examination techniques across clerkships.

5.4 Grading Overview
The final neurology clerkship grade will be based on the following components:

- Preceptor evaluations (this grade will include professionalism), contributing approximately 55% of the final clerkship grade;
- NBME subject exam, passing set at 5th national percentile contributing approximately 20% of the final clerkship grade; 80th national percentile or above is required to be eligible for an “A” in the clerkship.
- Two clinician-observed history and physicals – form to be turned in to the clerkship director; the aggregate contributing approximately 5% of the final clerkship grade. (First one will equal 2% of final grade; second one will equal 3%.)
- Write-ups of the above H&Ps to be turned in to the clerkship director; the aggregate contributing approximately 5% of the final clerkship grade. (First one will equal 2% of final grade; second one will equal 3%.)
- Five weekly individual quizzes (weeks 2 thru 6) will account for 1% each (an aggregate of 5% of the final grade)
- Five weekly group-based quizzes (weeks 2 thru 6) will account for 1% each (an aggregate of 5% of the final grade)
- Peer assessments will comprise 5% of the final grade

Attendance at all didactic sessions is expected. Unexcused absences may result in penalty or assignment of remedial work at the discretion of the Clerkship Director.

5.5 Details of Grading Components

5.5.1. Preceptor evaluations will be completed after a one- or two-week period with the preceptor (as indicated in the section on rotation schedules). Substantial weight is placed on the aggregate evaluation of students by preceptors since it is the day-to-day performance in practice that is the standard to which the student should aspire.

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Preceptors will evaluate students on various dimensions of medical knowledge (including examination skills, ability to localize pathological processes, ability to generate a differential diagnosis, and ability to develop an initial plan for evaluation and treatment); humanism (including ability to establish rapport with patients, maintaining focus on patient comfort and dignity, integration of family into assessment and treatment plans); and professionalism (including communication skills, interactions with patients, families and medical staff, dress, timeliness in execution of duties, and record keeping). Rankings for these attributes will be assigned based on an eight-point Likert scale. A higher number and a lower number are found in some categories. A borderline final grade may be boosted by a higher ranking in a category, or by favorable narrative comments from precepting physicians.

- **7, 8: exceeds expectations** (the highest rank representing outstanding or exceptional performance at a level higher than expected for level of training; should be reserved for truly unusual students whose knowledge, actions, compassion, or professionalism are uncommonly refined and consistently executed in an exceptional way);
- **5, 6: above expectations** (representing substantially high-quality performance beyond that normally expected of students at this level of training; knowledge, skills, attitudes, or behaviors especially meriting commendation or comment);
- **3, 4: meets expectations** (appropriate for level of training; no concerns or deficits that will not be rectified with further education or experience in the course of normal educational processes; the “average” performance for a student at this level);
- **1, 2: below expectations** (consistently insufficient performance in a given domain that requires further evaluation and remediation; deficiencies in knowledge, skills, attitudes, or behaviors that should be addressed before promotion beyond current level; will trigger investigation by Clerkship Director and other academic or administrative staff at the college level; may result in failing grade and development of a remediation plan);
- **0: Not observed** (will not influence grading evaluation; a simple statement that a given domain or behavior was not sufficiently observed by the preceptor to allow meaningful assessment).

Attending preceptors please note: while completion of the checklists is necessary for assigning student grades, narrative comments are critical to thorough student evaluation. Please provide narrative comments on each student, commenting on both strengths and weaknesses. Supportive narrative comments may be used to increase the final clerkship grade for students with a borderline final score.

Use of narrative comments. All narrative comments by preceptors will be reviewed by the Clerkship Director and the Neurology Clerkship Working Group when determining final grades for the clerkship rotation.

A student’s grade for the clerkship rotation may be raised based on exceptionally persuasive narrative comments from an attending preceptor, or if Likert scale rankings are consistently in the higher range of several categories. Such action will depend on simple majority vote of the Neurology Clerkship Working Group.

A student’s grade may not be revised downward based on narrative comments from an attending preceptor unless such comments raise grave concerns about a student’s professional integrity or
medical knowledge. If such concerns are raised, the Clerkship Director shall investigate further and report to the Neurology Clerkship Working Group within one week of the end of the rotation. If the group feels there is sufficient cause to warrant further investigation, the Office of Student Affairs and the Chair of the Student Evaluation and Promotions Committee will be notified. A temporary (T) grade may be assigned during investigations.

5.5.2. The NBME Subject Examination in Neurology will be used as an assessment of fundamental medical knowledge. This examination has excellent psychometric properties and statistical validity to assess student knowledge over a wide range of neurologic data (mean 72, standard deviation 8). The examination has been reviewed by members of the Neurology Clerkship Working Group at the UCF COM and is felt to be reliable and valid, though admittedly a demanding examination instrument. The trend nationally is to set the passing grade for the third-year neurology clerkship at about the 5th percentile (standard [z] score = -1.96, scaled score 56). Performance at or above this level is thought to represent a knowledge base sufficient for the non-specialist, third-year clinical clerk to proceed with training in other clinical disciplines. A score of 80th national percentile or above is required to be eligible for an A in the clerkship.

The NBME exam will be administered beginning at 8:00 AM on the last Friday of the clerkship at the College of Medicine. Standard NBME timing will apply (i.e., 1.5 minutes per question). Students arriving late for the examination will not be given extra time for completion.

5.5.3. Preceptor-observed exam requirements

The form will be available on MEDS (Blackboard) and it will be the student’s responsibility to ask two of their preceptors to observe them taking an H&P and provide written feedback on the form (found on MEDS). These forms must be submitted to the clerkship coordinator at the conclusion of weeks 3 and 5. This requirement is worth 5 points toward your final grade (2 points for the first form and 3 points for the second).

5.5.4. Neurologic history and physicals are stock in trade for students on the neurology clerkship. You are expected to create, on average, one of these daily or every other day during all 6 weeks of the clerkship. The format of these write-ups is detailed in the appendix. Your attending preceptors may have additional requirements and these should take precedence for clinical care.

During weeks 3 and 5 (as applicable) of the rotation, each student must submit their H&P write-up from the above preceptor-observed exam to be submitted via email to the Clerkship Director for review by Friday at 5 PM of each week. The first assignment is worth 2 point toward your final grade and the second assignment is worth 3 points (total of 5 points over the clerkship). A reasonable attempt, given level of training at that point in the academic year, will result in full credit. A write up that is judged sub-standard by the clerkship director may be returned to the student for revision and re-evaluation. Failure to meet these requirements may result in assignment of remedial work before receiving a final grade in the clerkship rotation (including, but not limited to, additional written or clinical assignments, oral examination, or written essay examination).
5.5.5. Weekly Quizzes and Peer Evaluation

The quizzes will be given, administered on MEDS, at the start of didactics every Tuesday, weeks 2 through 6. Each individual quiz will count 1% of your grade for a total of 5% of your final grade at the end of the clerkship. After each individual quiz, you will take a small group quiz and these quizzes will also count as 1% each, or 5% aggregate of your final grade.

Quizzes start at 13:00 SHARP. Students with an excused absence may make up an individual quiz; however, due to the nature of the group quiz, they cannot be administered after their scheduled time slot. Therefore, the individual quiz would count as 2 points on that respective week. Unexcused absences from a quiz may not be made up.

Each student will be required to submit a peer evaluation (submitted on OASIS) on each of their fellow clerkship students by the final day of the clerkship. The average score of your peers’ evaluation of you will count as 5% of your final grade.

5.6 Determination of Final Grade

A grading committee will review all data on student performance at the end of each six-week rotation. The committee will be chaired by the clerkship director, and will initially consist of members from the Neurology Clerkship Working Group (see end of document). Final responsibility for assignment of the clerkship grade rests with the clerkship director.

5.6.1 Grading rubric

Special circumstances

- Students with median preceptor evaluations “below expectations” (≤ 2) will be dealt with separately as described in detail elsewhere in this document.
- Students who score less than the 5th percentile on the NBME subject exam in neurology, but who receive median preceptor evaluations greater than or equal to “meets expectations,” will receive a T grade until the exam is retaken; details of these procedures are described elsewhere in this document.

The final clerkship grade is calculated as follows (refer to the table below while reading this section).

5.6.2 Minimum criteria for passing. A student will receive a minimal passing grade (C) in the neurology clerkship provided all of the following criteria are met:

1. A score on the NBME Subject Examination in Neurology of ≥ 56 (5th percentile) and
2. A median combined score from preceptor evaluations of “meets expectations” and
3. Satisfactory completion of required write ups (5 H&Ps and 1 case report).

5.6.3 Minimum criteria for failure. A student may receive a failing grade in the neurology clerkship if any of the following criteria are met:

1. Substantiated lapse of professionalism (explained below) or
2. Substantiated ratings of less than “meets expectations” from a preceptor or
3. Failure to complete (or unsatisfactory completion of) required components of the clerkship (including but not limited to required H&Ps, case report, or documenting patient types evaluated).
5.6.4 Lapses of professionalism or low preceptor ratings. Professional behavior (discussed elsewhere) is the \textit{sine qua non} of being a physician. Any allegation of a lapse in professionalism in the neurology clerkship will be investigated by the clerkship director and members of the Neurology Clerkship Working Group. Such lapses may include, but are not limited to, cheating; plagiarism; or failure to fulfill patient care responsibilities. Likewise, any score of “below expectations” or less by any preceptor will be investigated by the clerkship director and the Neurology Clerkship Working Group. If the allegation of a lapse in professionalism is substantiated, or if the rating of “below expectations” or less is found to be accurate, either of these criteria alone (regardless of exam scores and other preceptor evaluations) may be grounds to receive a failing grade in the clerkship. The student will also be referred to the Student Evaluation and Promotions Committee for further consideration. An “incomplete” grade may be assigned, and remediation may be required. Further details are discussed in the next section.

5.6.5 Details of remediation of borderline performance; T grade options.

**Low NBME score, acceptable preceptor evaluations.** A student who receives ratings from preceptors at or above the “meets expectations” level, but who scores less than 56 on the NBME Subject Examination in Neurology, may, at the discretion of the clerkship director, be assigned a T grade. The student may remediate the T grade by taking the examination a second time, the time frame to be determined in consultation with the clerkship director.

Since student preceptor ratings are assumed to be at least “meets expectations,” the remediated grade will be assigned based on repeat NBME performance alone. Inasmuch as the student must take a second administration of the NBME exam in order to meet minimum passing criteria, the maximum grade achievable upon remediation shall be that of “B.”

Performance on repeat administration of the NBME at or above the mean (≥ 72) will result in assignment of a grade of “B.” NBME performance less than the mean but greater than minimum passing score (72 > student score ≥ 56) will result in assignment of a grade of “C.” Repeat performance less than 56 will be referred to the Student Evaluation and Performance Committee for further consideration.

**Acceptable NBME score, low preceptor evaluations.** Remediation of the student who achieves an acceptable passing score on the NBME, but who has preceptor evaluations at or below the “below expectations” level, will depend on the particulars of why low preceptor evaluations were assigned. Such particulars will be defined by investigation by the clerkship director. A serious breach of professional behavior – such as one that endangers patient safety or confidentiality, seriously disrupts the healthcare team, or results from frank dishonesty – may be determined to be unremediable and may result in assignment of a failing (“F”) grade. In cases where lapses are less serious – such as inability to take a complete medical history, inadequate neurologic examination, or insufficient knowledge base – the clerkship director, in consultation with appropriate COM faculty, will work to develop a plan for remediation. Part of that remediation plan will include an assessment method appropriate to the domain in which further training is required. If remediation is successfully executed, the maximum final grade assigned shall be that of “C.”
6. Clinical Contact Experience & Documentation Requirements

6.1 Required Patient Types
According to national data, on average, about 80% of neurology students work up 1 outpatient in detail every day or every other day, and approximately 2/3 of students keep a case log.\(^{18}\)

A minimum number of contact experiences for specific types of patients has been determined based on published data, consensus of the UCF COM Neurology Clerkship Working Group, and local practice patterns. Over the course of the **six-week rotation** students should see and examine a **minimum** of:

- 3 patients with stroke/TIA;
- 3 patients with an episodic disorder (e.g., headache, seizure);
- 1 patient with coma;
- 3 patients with neurodegenerative disease (e.g., dementia, movement disorder); and
- 3 patients with peripheral neurologic disease (e.g., neuropathy, neuromuscular disease).

In addition, students should see and/or assist in performance and interpretation of neurologic procedures, including a **minimum** of:

- 1 lumbar puncture;
- 2 EMG/NCS studies;
- 1 EEG;
- 1 CT; and
- 1 Cerebral Angiogram
- 1 MRI.

These are goals for the overall clerkship; not every type of patient or every procedure must be seen in each setting.

**Students** are responsible for using Oasis to track the types of patients and procedures they see during their rotation. Failure to complete this documentation may result in review by the Student Evaluation and Promotions Committee.

The need for this stringency is that the College of Medicine is required by the LCME and best educational practices to demonstrate adequate diversity of exposure to various patient populations, especially in the early years of curriculum implementation. Students must take this mission seriously not only for their own education, but also for quality control in the college.

The clerkship director and coordinator will monitor patient logs in real time. **Students should also be attentive to their patient experiences and should contact the clerkship director if they need additional exposure to a given type of patient.** Logs will be formally reviewed with the student during meetings with the clerkship director for formative feedback at the mid-point of the rotation and in summative fashion at the end of the rotation. If a live patient experience is not possible for some given condition,

students will, at the discretion of the clerkship director, use some combination of the following resources to round out their clinical knowledge:

- Continuum/Quintessentials, both high-quality, peer reviewed, clinical CME publications of the American Academy of Neurology;
- Literature review with directed readings and discussion with the clerkship director or other neurology faculty;
- Preparation and presentation to neurology faculty of a short oral or written summary on a given topic;
- Use of the resources in the COM Clinical Skills and Simulation Center which may include an encounter with a standardized patient; use of computer-based or mannequin simulation; or use of part-task trainers (e.g., lumbar puncture simulation model).

6.2 OASIS

OASIS is the online mechanism for completing evaluations both by students and preceptors. It will facilitate completion of students’ clinical logs and submission of duty hours tracking for clerkship students. Preceptors will be given their user names prior to the start of the clerkship and the first time they log in, they will be given a new password. For any questions regarding OASIS, contact the Neurology Clerkship coordinator, Richard O’Nea, at 407-266-1129.
UCF users log-in looks like this: (For clerkship directors)

**LOGIN**

Username: 
Password:  
Your username and password are **case sensitive**.

Forgot Your Password?

Non-UCF users log-in looks like this: (for site directors & preceptors)

**LOGIN**

Username: 
Password:  
Your username and password are **case sensitive**.

Forgot your password or need to get your account information? Enter your username or email address:  
Submit

Main screen looks like this:

**UCFMEDS Clinical Curriculum Support**

Course  Configure and manage a course.
Calendar  View calendar information.
Students  Manage and access student information and accounts.
Users  Add and manage user accounts.
Manage  Manage important OASIS tools and access reports and information.
Log out  Log out of OASIS.

If you have problems accessing OASIS, contact Ed Tech at comedtech@mail.ucf.edu or (407) 266-1459
7. Rotation Schedule

7.1 Rotation Sites
In the 2012-2013 academic year there will typically be eight students per neurology clerkship rotation. Students will rotate among several sites. The overarching goals of each experience are to enhance the student’s ability to perform, document, and interpret a neurological examination; generate a differential diagnosis; and formulate initial evaluation and treatment plans for patients with common neurological complaints. Each student’s neurology experience will include the following components (not necessarily in this same order):

Subspecialty Experience
M. D. Anderson Cancer Center Neuro-Oncology Group (1 week). Students at this site will see the full range of patients with neurologic disease due to neoplasia. Most patients have definite abnormalities on neurologic exam. The goal of this experience is to enhance the student’s skills in neurologic examination, and allow students to assess focal neurologic abnormalities.

Pediatric Neurology (1 week). Students will spend most of their time in the offices of the Child Neurology Center of Orlando. At the discretion of the attending physicians, students may be asked to see patients at the Arnold Palmer Hospital for Children depending on the inpatient census. The goal of this experience is to provide students a brief introduction to childhood neurologic disorders, and to enhance students’ observation skills, which are the foundation of the pediatric neurologic examination.

General Neurology Experience
Inpatient Experience: Florida Hospital Neuro-ICU/Neurosurgery (2 weeks). The focus at this site is care of the neurologic patient in the acute setting. Patients will typically include those with both primary neurological problems as well as neurological complications of systemic diseases. Florida Hospital has a very active, Neuro-ICU and Neurosurgery program in which students are expected to participate.

Outpatient Experience: Neurologic Private Practice (2 weeks). Several central Florida neurologists from the UCF COM Volunteer & Affiliate Faculty allow students to rotate through their offices. The focus of these experiences is for students to gain experience in the evaluation of common neurological problems, and to participate in the ongoing care of patients with chronic neurological disease. Individual physicians have various areas of subspecialty interest and expertise that they will share with students during the rotation. Students will follow the office schedule for individual practitioners during their outpatient experience.

7.2 Daily & Weekly Schedule
Operational details of the daily and weekly schedule will be at the discretion of the attending physician. In general, students will work Monday through Friday. Students on inpatient services may be required to come in one weekend day at the discretion of the attending. Students will be required to take overnight at-home call for a five-day block of their choosing, during their two weeks at Florida Hospital. Important variations in the schedule are:

The first Monday morning of the rotation will be spent at Florida Hospital for Scrub and Gown training, orientation and assignment of clinical sites.
Tuesday afternoons are reserved for didactics at the College of Medicine. All students will return to the College of Medicine every week for didactics and case conferences.

The last Friday of the rotation is reserved for the NBME Subject Exam in Neurology in the morning and integration conference in the afternoon. Both will take place at the College of Medicine.

Students rotating through private offices will follow the schedule set by those physicians. In addition, those students rotating through remote clinical sites such as Titusville will not be required to attend clinic on Tuesday mornings.

7.3 Duty Hours Restrictions

The University of Central Florida College of Medicine will follow the duty hour guidelines set by the Accreditation Council for Graduate Medical Education (ACGME), ACGME 2011.

“Duty hours” are defined as all clinical and academic activities related to the education of the medical student, i.e., patient care (both inpatient and outpatient), administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled activities, such as didactic sessions, grand rounds and conferences. Duty hours do not include reading and preparation time spent away from the duty site. Important points of this policy are:

a. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.

b. Adequate time for rest and personal activities will be provided and will consist of a 10-hour time period between all daily duty periods and after in-house call.

c. In-house call must occur no more frequently than every third night.

d. Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Students may be on site for up to 6 additional hours in order to participate in didactic activities.

e. Students must be provided with one day (24 consecutive hours) in seven, free from all educational and clinical responsibilities, averaged over a four-week period.

This policy will be published on the College of Medicine website, in the clerkship handbooks, and in the faculty and preceptor handbooks. This information will also be covered in the COM Clerkship Orientation.

Oversight of this policy will be the responsibility of the Clerkship Director and the relevant Clerkship Site Director/s. Students are responsible for tracking and logging their duty hours in OASIS. Faculty and students with concerns regarding possible duty hour violations should report those concerns directly to the Clerkship Director in a timely fashion. Failure to keep duty hour log up to date in OASIS may result in participation point penalization from final grade.

Students and Clerkship Directors will be given a Clerkship Duty Hours Agreement to co-sign acknowledging the policy.
8. Learning Sessions (Including Didactics)

8.1 Schedule
All students will return to the College of Medicine (Room 216) every Tuesday afternoon for structured learning sessions. Students are expected to read in advance in preparation for each week’s sessions. A limited amount of lecture may be delivered, but as a rule, sessions will focus on cases, answering student questions, and applying knowledge from the text. Summative quizzes will be given, weeks two through six.

The reading schedule, by topic, as is as follows:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Required</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>Goldberg 1-87</td>
<td>Tinter pp. 3-13</td>
</tr>
<tr>
<td>*Myopathy</td>
<td>291-330 (40)</td>
<td></td>
</tr>
<tr>
<td>*Neuropathy</td>
<td></td>
<td>34, 35, 38, 39, 41</td>
</tr>
<tr>
<td>*NMJ</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Intracranial Hemorrhage</td>
<td>48-75 (28)</td>
<td>12</td>
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<tr>
<td>Stroke</td>
<td></td>
<td>11, 13</td>
</tr>
<tr>
<td>Coma, Brain Death</td>
<td>98-100 (3)</td>
<td></td>
</tr>
<tr>
<td>CSF / ICP / CPP</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Delirium</td>
<td>To Be Determined</td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td>210-230 (21)</td>
<td>20, 21, 28, 29, 30</td>
</tr>
<tr>
<td>Demyelinating Disease</td>
<td>252-264 (13)</td>
<td>23, 24, 25</td>
</tr>
<tr>
<td>Dizziness, Syncope</td>
<td>To Be Determined</td>
<td>16</td>
</tr>
<tr>
<td>Ear, Olfaction, Taste</td>
<td>247-251 (5)</td>
<td></td>
</tr>
<tr>
<td>EEG, Seizures</td>
<td>76-93 (18)</td>
<td>14, 15, 17, 44, 45, 49</td>
</tr>
<tr>
<td>EMG / NCV</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Eye Disorders</td>
<td>231-246 (16)</td>
<td></td>
</tr>
<tr>
<td>Headache, Facial Pain</td>
<td>101-107 (7)</td>
<td>18, 19</td>
</tr>
<tr>
<td>LP Simulation</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>LP Simulation Cases</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Mental Disorders</td>
<td>331-347 (17)</td>
<td></td>
</tr>
<tr>
<td>Movement Disorders</td>
<td>155-209 (55)</td>
<td>1, 2, 3, 4, 5, 6</td>
</tr>
<tr>
<td>Myelopathy, Radiculopathy</td>
<td>To Be Determined</td>
<td></td>
</tr>
</tbody>
</table>

Neurology Clerkship Handbook, Block 2(2012-2013)
Neurology Clerkship Handbook, Block 2(2012-2013)  Page 28

Neuro Emergencies  To Be Determined
Neuro ID  108-133 (26)  26
Neuro Imaging  NA
Neuro Oncology  265-279 (15)  52, 53
Neuro Trauma  To Be Determined  7, 8, 9, 10 32
Nutrition / Metabolic dz  1-23 (23)  22
Pediatric Neuro  24-47 (24)  50, 51
280-282 (3)
Peripheral Nerve Lesions  283-290 (8)  42, 43
Sleep Disorders  94-97 (4)
Toxic Injuries  134-154 (21)  27 31

8.1.1 Orientation Day
The first Monday morning of the clerkship will begin at 7:20 AM with Scrub and gown training and then general clerkship orientation at Florida Hospital. Salient points of this syllabus and clerkship requirements will be reviewed, copies of this handbook will be distributed, and students will receive their specific site assignments.

Following there will be an interactive review of the neurologic examination, and an interactive review of basics of neuro-CT and neuro-MRI. Students will be released no later than 12:00 PM with the expectation that they will arrive at their assigned sites by 1:00 PM.

Students should come prepared to provide a case history to the faculty and other students in the manner in which the case unfolded in the student’s experience. Students should bring copies of relevant imaging studies if possible. Cases do not need to be related to the topic(s) under discussion that week.

8.1.2 Weekly Sessions

<table>
<thead>
<tr>
<th>1:00-1:45</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuro Imaging</td>
<td>Quiz 1</td>
<td>Quiz 2</td>
<td>Quiz 3</td>
<td>Quiz 4</td>
<td>Quiz 5</td>
<td></td>
</tr>
<tr>
<td>1:45-2:30</td>
<td>CSF/ICP</td>
<td>EMG/NCV</td>
<td>Myopathy</td>
<td>Eye Disorders</td>
<td>Neuro ID</td>
<td>Mental Disorders</td>
</tr>
<tr>
<td>2:30-2:45</td>
<td>Break</td>
<td></td>
<td></td>
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<tr>
<td>Time</td>
<td>Activity</td>
<td>Topics</td>
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<tr>
<td>2:45-3:30</td>
<td>LP Simulation</td>
<td>EEG, Seizures, Neuropathy, Movement Disorders, Headache, Facial Pain</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:30-4:15</td>
<td>Simulation / Cases</td>
<td>Sleep Disorders, NMJ, Dementia, Demyelinating Disease, Toxic Injuries</td>
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<tr>
<td>4:15-4:30</td>
<td>Break</td>
<td></td>
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</tr>
<tr>
<td>4:30-5:15</td>
<td>Stroke</td>
<td>Dizziness, Syncope, Peripheral Nerve Lesions, Delirium, Pediatric Neuro</td>
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</tr>
<tr>
<td>5:15-6:00</td>
<td>ICH</td>
<td>Ear, Olfaction, Taste dz, Myelopathy, Radiculopathy, Coma, Brain Death</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**PLEASE NOTE:** Weekly didactic schedule subject to change due to faculty availability.

### 8.1.3 MEDS

Much of the content for the clerkship course, including the syllabus, didactic information, grading scale, handbook and sample evaluations will be available on the online learning system known as Blackboard or “MEDS.” It can be accessed and any preceptors who would like access, please contact Richard O’Neal at Roneal@ucf.edu for a log-in and password. Students should access MEDS frequently for any clerkship announcements or class discussions.
9. Information for Attending Physicians & Supervising Residents

9.1 Overview

9.1.1 Rotation schedule
Days: Monday through Friday.

Exceptions:
- Tuesday afternoons are reserved for didactic sessions at College of Medicine.
- The last Friday of the rotation is reserved for NBME Subject Exam and Integrated Case Conference.

Attendance: mandatory except for personal emergencies or as arranged with the clerkship director and preceptor.

Hours: At discretion of attending.

Night call? Yes, at-home call for a five-day block during your two weeks spent at Florida Hospital.

Maximum work hours per week: per ACGME duty hours policy (summarized in section 7.3).

9.1.2 Grading

Preceptor evaluations: 55%
NBME subject exam: 20%
Peer evaluation: 5%
Two H&Ps turned in to clerkship director: 5% (2% for the first and 3% for the second)
Five individual quizzes: 1% each
Five group-based quizzes: 1% each
Two preceptor-observed exams: 5% (2% for the first and 3% for the second)

9.1.3 Clerkship goals
The overarching goals of the clerkship are to
- (a) refine the neurologic examination;
- (b) localize lesions;
- (c) develop a reasonable differential diagnosis; and
- (d) outline an initial diagnostic and treatment plan.

We want students to meet these goals by examining patients with both acute and chronic neurologic problems in both the inpatient and outpatient settings.

9.2 Preceptor responsibilities

9.2.1 General. All attending physicians and residents are expected to provide:

- Daily supervision.
- Direct observation of basic skills.
- Teaching and guidance.
- Constructive feedback.
• Written assessment of student performance upon completion of the rotation.

9.2.2 Specific responsibilities. These goals can be met in different ways in different venues. At minimum, we request the following of attending preceptors:

• Allow each student to perform one complete neurologic history and examination and present that patient to the preceptor, on average once per day. Students should write up each evaluation overnight and submit it to the preceptor for comments.
• Observe and complete two “Preceptor-Observed exam forms” which the student will turn in to the clerkship director for 5% of their final grade.
• Students must also submit two write-ups per clerkship to the clerkship director.
• Assign additional patient experiences that may include focused exams on follow-up patients.
• On inpatient services, allow students to follow 5-6 patients (depending on complexity). Exposure to neurologic critical care is highly desirable.
• Ensure student experiences are hands-on, with oral patient presentations to preceptors.
• Provide constructive feedback on physical exam, differential diagnosis, and treatment.
• Fill out a final evaluation forms per student: upon completion of the rotation. (These will be available electronically or on paper as you prefer.)
• Attend one half-day workshop annually at College of Medicine to provide feedback on clerkship rotation and organization.
• Assign brief readings (preferably from recent primary literature) on interesting patient topics as you see fit.

9.2.3 Giving feedback. Ongoing formative feedback during the clerkship is essential to allow students to improve skills during the rotation. At minimum, the following categories should be evaluated:

• Cognitive skills
  o History taking
  o Neurologic examination
  o Understanding of ancillary testing & data
  o Formulation, differential diagnosis, and treatment plan
• Personal skills
  o Professionalism
  o Dress
  o Demeanor
  o Any other concerns

Preceptors should communicate any concerns to the clerkship director immediately for monitoring or remediation as appropriate.
9.2.4 Documenting student performance. Attending preceptors please note: while completion of the checklists is necessary for assigning student grades, narrative comments are critical to thorough student evaluation. PLEASE provide narrative comments on each student, commenting on both strengths and weaknesses. Your narrative comments may boost a student’s clerkship score if their final clerkship grade is on the borderline between two letter grades. Likewise, choosing the higher rankings in a category on rating scales may provide evidence of superior performance in borderline cases.

9.2.4.1 Commendation and Early Warning Cards. It is important to maintain documentation about student performance. For performance outside the norm, supervising attendings will have access to documents that allow them to call special attention to individual students when necessary. This may be in the form of a Commendation Card (to commend exceptional performance above usual expectations), or in the form of an Early Warning Card (to document concerns about student performance). Commendations and concerns may be regarding any area of performance, including but not limited to patient care, interactions with other health care professionals, knowledge or skills performance, professionalism, dress, demeanor, etc. Commendations and concerns will go directly to the clerkship director who will determine what, if any, immediate action is required.

9.2.5 Examples of Outpatient Preceptor Routine

Note: These are basic examples. Development of bedside and in-office teaching techniques will be the focus of future faculty development workshops.

- Preparatory issues:
  - Meet with student each morning to review the schedule of patients;
  - Identify patients whom the student will evaluate independently (including the specific educational focus of the encounter);
  - Identify patients for whom the student will shadow the preceptor;
  - Discuss any questions from reading assignments or self-directed learning that student performed overnight.

- Patient encounter (several possible variations, preceptors are encouraged to use each of these techniques over the course of the rotation depending on the educational objective of the encounter):
  - Preceptor sees the patient and the student observes;
  - Student interviews and/or examines patient independently, presents patient to preceptor, student and preceptor then interview/examine patient together;
  - Student interviews and/or examines patient with preceptor observing.

- Preceptors are encouraged to fill out brief student evaluation forms during or immediately after the patient encounter.

- Short debriefing (immediately following encounter): student and preceptor reflect on patient encounter; follow up on questions and teaching points; identify plan for further self-directed learning.

- Daily debriefing (at end of day): more leisurely discussion of any remaining questions; review plans for self-directed learning; review next day’s patient schedule, assign any pertinent preparatory reading based on anticipated patient encounters.
9.3 College of Medicine Policy on Student Mistreatment & Abuse

Medical students should report any incidents of mistreatment or abuse to the UCF College of Medicine Associate Dean for Students immediately. It is the policy of the UCF College of Medicine that mistreatment or abuse will not be tolerated. Anyone made aware of any such mistreatment or abuse should notify the COM Associate Dean for Students at 407-266-1353.

9.4 FERPA

FERPA, the Family Educational Rights and Privacy Act of 1974, as Amended, protects the privacy of student educational records. It gives students the right to review their educational records, the right to request amendment to records they believe to be inaccurate, and the right to limit disclosure from those records. An institution’s failure to comply with FERPA could result in the withdrawal of federal funds by the Department of Education.

As a Faculty Member, you need to know the difference between Directory Information and Personally Identifiable Information or Educational Records:

Personally Identifiable Information or Educational Records may not be released to anyone but the student and only then with the proper identification.

Parents and spouses must present the student’s written and signed consent before the University may release Personally Identifiable Information or Educational Records to them.

(Please refer callers to the COM Registrar’s Office 407-266-1397, UCF COM, Room 115F)

General Practices to Keep in Mind:

- Please do not leave exams, papers, or any documents containing any portion of a student’s Social Security Number, Personal Identification Number (PID), grade or grade point average outside your office door or in any area that is open-access.
- Please do not record attendance by passing around the UCF Class Roster, which may contain the student’s PID.
- Please do not provide grades or other Personally Identifiable Information/Education Records to your students via telephone or email.
FOR MORE FERPA INFORMATION:

Or contact: Teresa Lyons-Oten,
UCF COM Registrar
407-266-1371
tloten@mail.ucf.edu.
10. Learning Resources

10.1 Textbooks
Many of the following texts are available electronically via the College of Medicine library.

- *Harrison’s Principles of Internal Medicine*. Many of the leading neurologists in the country provide excellent concise reviews in the chapters of Harrison’s.
- *Neurology in Clinical Practice*. This is a favorite neurology textbook because it is so clearly written. Do not be intimidated by its expansive breadth.
- *Merritt’s Neurology*. Especially concise to read about a patient whose diagnosis is known.
- *Adams and Victor’s Principles of Neurology*. A standard in the field, and especially helpful when approaching a patient whose diagnosis is unknown.
- *Localization in Clinical Neurology*. This book is extremely helpful when learning to localize lesions. It is exhaustive, so do not try and memorize it but do use it as needed to improve your localization skills.
- *Practical Neurology*, by Jose Biller. The name says it all. Has both symptom-based and diagnosis-based sections.

10.2 On-Line Resources

- *The New England Journal of Medicine* ([www.nejm.org](http://www.nejm.org)). You can search by content collection (Neurology/Neurosurgery) and also by topic. Limiting your search to “Review Articles” or “Case Records” may yield especially valuable articles for learning.
- *Neurology* ([www.neurology.org](http://www.neurology.org)). This is the official journal of the American Academy of Neurology and contains many seminal articles and reviews on pertinent topics.
- The American Academy of Neurology ([www.aan.org](http://www.aan.org)) is the largest professional organization of neurologists in North America. The website has many resources. In addition, expert panels often review important clinical topics that are summarized in practice recommendations. Check them out at [http://www.aan.com/go/practice/guidelines](http://www.aan.com/go/practice/guidelines).
- Dr. Alan Pestronk’s neuromuscular disease web page is an excellent resource to learn more about disorders affecting the peripheral nervous system ([http://neuromuscular.wustl.edu/](http://neuromuscular.wustl.edu/)).

11. Appeals Process
The process for appealing a grade in the clerkship is outlined in the College of Medicine Student Handbook at [http://www.med.ucf.edu/academics/student_affairs/resources.asp](http://www.med.ucf.edu/academics/student_affairs/resources.asp).
Appendix 1: Variations of the Neurologic Examination

Screening Neurologic Examination
Abnormalities found on screening examination must prompt further detailed evaluation with some or all of the comprehensive examination.

A. Mental status
   1. Level of consciousness
   2. Appropriateness of responses
   3. Orientation to time, date and place
B. Cranial nerves
   1. Visual acuity
   2. Pupillary light reflex
   3. Eye movements
   4. Facial strength.
C. Motor function
   1. Gait (casual & tandem)
   2. Coordination
   3. Strength
      a) shoulder abduction
      b) elbow flexion/extension
      c) wrist flexion/extension
      d) finger abduction
      e) hip flexion
      f) knee flexion
      g) ankle dorsiflexion
D. Deep tendon reflexes
   1. Biceps
   2. Patellar
   3. Achilles
   4. Plantar responses
E. Sensation
   1. Light touch
   2. Joint position at toes

Comprehensive Neurologic Examination

A. Mental status exam
   1. Level of consciousness
   2. Language (expression, comprehension, repetition)
   3. Neglect
   4. Gnosis
   5. Memory
   6. Calculation
   7. Visuo-spatial processing
B. Cranial nerve examination
   1. Cranial nerve I: describe how to test olfaction
   2. Cranial nerve II: visual acuity, visual fields
   3. Cranial nerves II – III: pupillary light reflex
   4. Cranial nerves III, IV, & VI: extraocular movements
   5. Cranial nerve V: facial sensation and jaw movement; understand trigeminal-supplied areas of intra-oral sensation

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20 For more detailed information, consult Campbell WW DeJong’s The Neurologic Examination, 6th ed (2005). Available at UCF COM library website.
6. Cranial nerve VII: facial expression; describe taste testing
7. Cranial nerve VIII: screen hearing
8. Cranial nerves IX, X, & XI: screen palatal, laryngeal, and shoulder movement; phonation; describe afferent & efferent limbs of gag reflex
9. Cranial nerve XII: tongue movement

C. Motor examination, assessing tone, strength, bulk, and abnormal movements. Comprehensive motor testing should include:
   1. Finger abduction/adduction
   2. Wrist flexion/extension
   3. Elbow flexion/extension
   4. Forearm rotation external/internal
   5. Shoulder abduction
   6. Hip flexion/extension
   7. Hip abduction/adduction
   8. Knee flexion/extension
   9. Ankle flexion/extension
  10. Ankle inversion/eversion

D. Sensory examination: light touch, pin prick, vibration, joint position sense, Romberg’s test.
E. Coordination: rapid alternating movements, finger-to-nose, heel-to-shin.
F. Deep tendon reflexes: brachioradialis, biceps, triceps, patellar, Achilles.
G. Gait: casual, tandem.

Examination of the Comatose Patient

A. Mental status
   1. Level of arousal
   2. Response to auditory stimuli (including voice)
   3. Response to visual stimuli
   4. Response to noxious stimuli (applied centrally and to each limb individually)
B. Cranial nerves
   1. Response to visual threat
   2. Pupillary light reflex
   3. Oculocephalic (“doll’s eyes”) reflex
   4. Vestibulo-ocular (cold caloric) reflex
   5. Corneal reflex
   6. Gag reflex
C. Motor function
   1. Voluntary movements
   2. Reflex withdrawal
   3. Spontaneous involuntary movements
   4. Tone
D. Reflexes: deep tendon reflexes (as above), plantar responses
E. Sensation: response to noxious stimuli

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Appendix 2: Curriculum Outline

Approaches to Curricular Content
There are three major areas of content for a clinical neurology curriculum:

- **Content Area 1**: Review of clinical neuroanatomy;
- **Content Area 2**: Performing a neurologic history and examination;
- **Content Area 3**: Understanding major categories of neurological symptoms and diseases.

There are at least 4 ways to approach organization of such curricular content:

1. By the format of the standard neurological examination and dysfunction;
2. Based on common symptom complexes;
3. By major diagnostic categories of neurologic dysfunction;
4. By principles of anatomical and physiologic organization of neural systems.

Each of these approaches has advantages & disadvantages. For the most part, didactic sessions will focus on common neurological symptoms and diagnoses. However, students will be instructed on the advantages of being able to organize information in these various ways, and will be encouraged to develop proficiency in each approach.
Curricular Content Required to Meet Clerkship Learning Objectives

Note: the following database constitutes the minimum knowledge expected for graduating medical students. Some of this knowledge will be obtained during the pre-clinical portion of the curriculum, but should be reviewed during the clerkship (formally or by the student independently) to reinforce key concepts and to underscore clinical application of basic principles of neuroscience.

CONTENT AREA I: REVIEW OF CLINICAL NEUROANATOMY

A. Understand basic anatomical and physiological principles of the components of the neuraxis (cerebral hemispheres, basal ganglia, cerebellum, brainstem, spinal cord, spinal nerve roots, plexi, peripheral nerves, neuromuscular junction, and muscle).

B. Describe the major functions of the following structures of the central nervous system (CNS):
   1. Frontal lobe
   2. Parietal lobe
   3. Occipital lobe
   4. Temporal lobe
   5. Basal ganglia
   6. Thalamus
   7. Cerebellum
   8. Reticular activating system
   9. Brainstem function (as it relates to autonomic, motoric, and reflex functions present in the persistent vegetative state (PVS) and minimally conscious state (MCS))
   10. Spinal cord

C. Describe the visual pathway (retina, optic disc, optic nerve, optic chiasm, optic tract, lateral geniculate bodies, optic radiations, and occipital cortex).

D. Describe the relationship of the midbrain, pons and medulla to each other and:
   1. Localize each cranial nerve nucleus to one of these major brainstem regions, and
   2. Describe the location of the corticospinal tract in each of these major brainstem regions.

E. Describe the vascular supply of the CNS.
   1. Anterior vs posterior circulation territories
   2. Typical distribution of anterior, middle, and posterior cerebral arteries
   3. Draw the circle of Willis.
   4. Note the origin of lenticulostriate arteries.

F. Describe the ventricular system (including foramina) and its relationship to the subarachnoid space.

G. Trace the origin, flow, and absorption of cerebrospinal fluid (CSF).

H. Describe the anatomy of the spinal cord, with special emphasis on the following:
   1. Relationship of the spinal cord to the vertebral column, and locate the level at which the conus medullaris typically ends.
   2. Identify the following tracts, their functions, the cross sectional location of each, the longitudinal path of each, and levels of synapses and decussations:
      a) Anterior spino-thalamic tract
      b) Dorsal columns
      c) Corticospinal tract

I. Identify the following components of the peripheral nervous system (PNS):
   1. Afferent (sensory) root
   2. Efferent (motor) root
   3. Dorsal root ganglion
   4. Relationship of nerve roots to intervertebral foramen

J. Review the brachial and lumbosacral plexi and discuss the major clinical functions of each of the following nerves:
   1. Radial nerve
   2. Median nerve
   3. Ulnar nerve
   4. Femoral nerve
   5. Sciatic nerve
      a) Tibial nerve
b) Fibular nerve

K. Describe the physiological basis of major reflexes, including:
   1. Biceps reflex
   2. Triceps reflex
   3. Brachioradialis reflex
   4. Patellar reflex
   5. Achilles reflex

L. Describe the neuromuscular junction (NMJ) with special attention to:
   1. Physiology of pre-synaptic vesicle function and neurotransmitter release
   2. Physiology of post-synaptic neurotransmitter binding

M. Review the autonomic nervous system (ANS)
   1. Describe the sympathetic nervous system including hypothalamus, intermediolateral cell columns, and sympathetic chain.
   2. Identify the parasympathetic (cranio-sacral outflow) distribution.
   3. Describe the effect of ANS dysfunction on bladder & bowel function, sexual function, and pupillary action.
CONTENT AREA II: NEUROLOGIC HISTORY AND EXAMINATION

A. Understand that the patient history is paramount in performing a good neurological examination.
B. Establish the onset of the symptoms, noting progression, symptom character, and exacerbating or alleviating factors.
C. Perform a standard neurologic review of symptoms with regard to personality, memory, headaches, pain, seizures, impairments of consciousness, vision, hearing, language, swallowing, coordination, gait, weakness, sensory disturbances, sphincter disturbance, and involuntary movements.
D. Perform a neurologic examination, and understand when and how to apply a “screening examination” versus a “comprehensive examination.”

a. Screening examination
   i. Mental status
      1. Level of consciousness
      2. Appropriateness of responses
      3. Orientation to time, date and place
   ii. Cranial nerves
      1. Visual acuity
      2. Pupillary light reflex
      3. Eye movements, facial strength.
   iii. Motor function
      1. Gait (casual & tandem)
      2. Coordination
      3. Strength
         a. shoulder abduction
         b. elbow flexion/extension
         c. wrist flexion/extension
         d. finger abduction
         e. hip flexion
         f. knee flexion
         g. ankle dorsiflexion
   iv. Deep tendon reflexes
      1. Biceps
      2. Patellar
      3. Achilles
      4. Plantar responses
   v. Sensation
      1. Light touch
      2. Joint position at toes

b. Comprehensive examination (abnormalities found on screening examination may prompt further detailed evaluation with some or all of the comprehensive examination)
   i. Mental status exam
      1. Level of consciousness
      2. Language (expression, comprehension, repetition)
      3. Neglect
      4. Gnosis
      5. Memory
      6. Calculation
      7. Visuo-spatial processing
   ii. Cranial nerve examination
      1. Cranial nerve I: describe how to test olfaction
      2. Cranial nerve II: visual acuity, visual fields
      3. Cranial nerves II – III: pupillary light reflex
      4. Cranial nerves III, IV, & VI: extraocular movements
      5. Cranial nerve V: facial sensation and jaw movement; understand trigeminal-supplied areas of intra-oral sensation
      6. Cranial nerve VII: facial expression; describe taste testing
      7. Cranial nerve VIII: screen hearing
      8. Cranial nerves IX, X, & XI: screen palatal, laryngeal, and shoulder movement; phonation; describe afferent & efferent limbs of gag reflex
9. Cranial nerve XII: tongue movement

iii. Motor examination, assessing tone, strength, bulk, and abnormal movements. Comprehensive motor testing should include:
   1. Finger abduction/adduction
   2. Wrist flexion/extension
   3. Elbow flexion/extension
   4. Forearm rotation external/internal
   5. Shoulder abduction
   6. Hip flexion/extension
   7. Hip abduction/adduction
   8. Knee flexion/extension
   9. Ankle flexion/extension
  10. Ankle inversion/eversion

iv. Sensory examination: light touch, pin prick, vibration, joint position sense, Romberg’s test.

v. Coordination: rapid alternating movements, finger-to-nose, heel-to-shin.


Part A: Content Organized by Common Neurological Symptoms

The student should demonstrate a systematic approach to the evaluation and differential diagnosis of patients with the following complaints:

A. Focal weakness
B. Diffuse weakness
C. Clumsiness
D. Involuntary movements
E. Gait disturbances
F. Urinary or fecal incontinence
G. Dizziness
H. Vision loss
I. Diplopia
J. Dysarthria
K. Dysphagia
L. Acute mental status change
M. Dementia
N. Aphasia
O. Headache
P. Focal pain
    1. Facial pain
    2. Neck pain
    3. Low back pain
    4. Neuropathic pain
Q. Numbness/paresthesias
R. Transient or episodic focal symptoms
S. Transient or episodic alteration of consciousness or awareness
T. Sleep disorders
U. Developmental disorders

Part B: Content Organized by Major Categories of Neurological Disease

The student should demonstrate a knowledge of the following major diagnoses, being able to discuss salient diagnostic criteria (to ensure the diagnosis is correct), pathophysiology, symptoms, initial steps in management, and prognosis.

A. Potential emergencies
    1. Increased intracranial pressure
    2. Acutely altered mental status (including toxic-metabolic encephalopathy, post-ictal states, and stroke syndromes presenting as “confusion”)
    3. Intracranial hemorrhage (subarachnoid & parenchymal)
    4. CNS infection (meningitis & encephalitis)
    5. Status epilepticus
    6. Acute ischemic stroke
    7. Spinal cord or cauda equina compression
    8. Head trauma/concussion
    9. Acute respiratory distress of neurologic origin (including myasthenic crisis and acute inflammatory demyelinating polyradiculoneuropathy)
    10. Temporal arteritis
B. Stroke
C. Seizure
D. Dementia (especially Alzheimer’s disease)
E. Parkinson’s disease  
F. Essential tremor  
G. Multiple sclerosis  
H. Migraine  
I. Bell’s palsy  
J. Carpal tunnel syndrome  
K. Diabetic polyneuropathy  
L. Brain death
Part C: Content Organized by Neurological Organ Systems

The student should demonstrate knowledge of the major diagnoses by the following neurologic systems, including presentation of disorders, pathophysiology, formulation of appropriate differential diagnoses, a rational approach to initial evaluation, first steps in treatment, and prognosis.

A. Disorders of motor function: differentiate between disorders causing weakness, incoordination, and involuntary movements based on history and examination.
   1. For disorders of weakness, differentiate between upper motor neuron (UMN) and lower motor neuron (LMN) dysfunction.
      a) Discuss pathophysiology of and examination findings of UMN syndromes of hemiparesis, paraparesis, and quadriparesis.
      b) Differentiate between paresis & plegia.
      c) Define spasticity & rigidity.
      d) Differentiate between UMN and LMN facial weakness.
   2. For disorders of incoordination, discuss the clinical findings and pathophysiology of midline versus hemispheric cerebellar disorders. The student should be able to define “ataxia.”
   3. For involuntary movement disorders, differentiate among the following:
      a) Resting vs action tremor
      b) Rigidity vs spasticity
      c) Asterixis
      d) Dystonia
      e) Myoclonus
      f) Tics
   4. Discuss the clinical findings, ancillary studies, and treatment of the following:
      a) Parkinson’s disease
      b) Essential tremor
      c) Tardive dyskinesia

B. Disorders of sensation: differentiate between central and peripheral sensory disorders based on distribution of sensory abnormality, modalities affected, associated findings, and presence or absence of pain.
   1. For central sensory disorders, discuss and localize each of the following:
      a) Hemisensory loss
      b) Sensory level
      c) Brown-Séquard syndrome
      d) Dissociated sensory loss
   2. For peripheral sensory disorders, see below.

C. Disorders of vision
   1. Assess visual loss, localizing the following:
      a) Monocular visual loss
      b) Bitemporal visual field defect
      c) Homonymous hemianopsia
   2. Assess diplopia
      a) Describe the innervation an action of each of the extraocular muscles.
      b) Describe the oculocephalic response in health and disease and its role in evaluation of the comatose patient.
      c) Localize and name the most common cause of the following syndromes:
         i. Internuclear ophthalmoplegia
         ii. Third cranial nerve palsy (pupil-sparing vs non-pupil sparing)
         iii. Fourth cranial nerve palsy
         iv. Fluctuating or fatigueable ocular weakness sparing the pupil
   3. Recognize nystagmus and list common causes
   4. Assess pupillary abnormalities
      a) Trace the sympathetic and parasympathetic pathways that supply the pupil.
      b) Describe the components of Horner’s syndrome.
      c) Describe the pathophysiology & significance of an afferent pupillary defect.

D. Episodic disorders
1. Discuss common historical and clinical features that help differentiate syncope and seizure; identify common causes of syncope.

2. Seizure disorders
   a) Outline the International Classification System for common types of seizures, differentiating among the following:
      i. Generalized tonic-clonic seizure
      ii. Absence seizure
      iii. Complex partial seizure
      iv. Simple partial seizure
      v. Partial seizure with secondary generalization
   b) Distinguish between seizure and epilepsy
   c) List the common causes of seizures by age group
   d) Describe post-ictal paralysis (Todd’s phenomenon).
   e) Discuss the routine evaluation of patients with new-onset seizures, risks and benefits of early anticonvulsant treatment, and appropriate lifestyle modifications during initial evaluation.
   f) Discuss commonly used anticonvulsants and their major side effects.
   g) Define status epilepticus and outline its emergent management.

E. Cerebrovascular disease
   1. List major risk factors for cerebrovascular disease and their attenuation by lifestyle modification and pharmacologic treatment.
   2. Define and discuss initial evaluation and management of the following:
      a) Asymptomatic carotid bruit
      b) Transient ischemic attack (TIA)
      c) Ischemic infarction (artery-to-artery embolization, cardiac embolization, large-vessel thrombus)
      d) Lacunar infarction
      e) Hemorrhagic infarction
      f) Parenchymal intracranial hemorrhage
      g) Subarachnoid hemorrhage
      h) Transient monocular visual loss (amaurosis fugax)
   3. Describe the major clinical features of ischemic infarction in the following cerebral arterial territories:
      a) Anterior cerebral artery
      b) Middle cerebral artery
      c) Posterior cerebral artery
      d) Basilar artery
      e) Vertebral artery
      f) Lenticulostriate arteries
   4. Describe the emergent management of acute ischemic stroke, with special attention to:
      a) Intravenous thrombolysis
      b) Intra-arterial thrombolysis
      c) Mechanical clot disruption
      d) Anticoagulation
      e) Other supportive measures in the acute peri-stroke period.
   5. Describe the emergent management of acute intracranial hemorrhage, with special attention to:
      a) Most common sites and presentations for hypertensive intracranial hemorrhage
      b) Indications for emergent surgical intervention
      c) Clinical presentation of increased intracranial pressure
      d) Typical presentation of subarachnoid hemorrhage
         i. Initial diagnostic evaluation
         ii. Immediate/emergent management

F. Demyelinating disease
   1. Describe common clinical findings in multiple sclerosis, including MRI and CSF examinations.
   2. Describe onset, diagnosis, and emergent management of acute inflammatory demyelinating polyradiculoneuropathy (Guillain-Barre disease).

G. Head trauma
   1. Define each of the following in terms of temporal profile and initial management:
      a) Concussion
      b) Diffuse axonal injury
2. Understand and apply the Glasgow Coma Scale

H. Dizziness and disorder of hearing

1. Evaluation of dizziness
   a) Distinguish the various meanings of “dizziness,” define vertigo, and differentiate these from disequilibrium.
   b) List common causes of these symptoms.
   c) Describe the following components of a vestibular examination:
      i. Nystagmus
      ii. Dix-Hallpike maneuver
      iii. Caloric stimulation
   d) Identify salient features distinguishing among the following:
      i. Benign paroxysmal positional vertigo
      ii. Vestibular neuronitis
      iii. Meniere’s disease
      iv. Brainstem ischemia with vertigo
      v. Acoustic neuroma

2. Auditory symptoms
   a) Define tinnitus, conductive hearing loss, and sensorineural hearing loss.
   b) Give common causes for these symptoms.
   c) Describe Weber & Rinne testing for conductive versus sensorineural hearing loss. (Not sure whether to include in final draft.)

I. Disorders of higher cognitive function

1. Define and distinguish among the following, giving common causes for each condition:
   a) Dementia
   b) Delirium
   c) Amnesia
   d) Confabulation
   e) Hallucination

2. Differentiate an acute confusional state (delirium) and dementia

3. Dementia
   a) Give diagnostic criteria for dementia and describe at least one means of assessing each criterion.
   b) List common causes of dementia.
   c) Describe the initial evaluation of dementia.

4. Define and distinguish aphasia and dysarthria.

5. Differentiate Broca’s aphasia from Wernicke’s aphasia

6. Alterations in consciousness: define and distinguish among the following:
   a) Consciousness
   b) Coma
   c) Brain death
   d) Persistent vegetative state
   e) Locked-in syndrome

7. Discuss the minimal neurologic substrate for alertness & consciousness

J. Assessment of the comatose patient

1. List the first three things one must do when confronted with a comatose patient (ABCs).

2. Discuss eliciting, localizing, and interpreting the following findings during neurologic examination of the comatose patient:
   a) Motor
      i. Decorticate vs decerebrate rigidity
      ii. Conjugate deviation of eyes toward or away from hemiparesis
   b) Respiratory abnormalities, including Cheyne-Stokes respiration
   c) Pupillary abnormalities
      i. Mid-position fixed
      ii. Pinpoint
      iii. Unilaterally fixed & dilated
   d) Eye movements
      i. Conjugate roving eye movements
ii. Intact vs absent oculocephalic responses

3. Interpret the above exam findings with regard to hemispheric vs brainstem localization of causes of coma.

K. Describe the diagnosis and management of increased intracranial pressure (ICP)
1. List symptoms and signs of increased ICP
2. List the effects of uncal herniation on level of consciousness, motor activity, and pupillary reactivity
3. List some methods used to treat increased ICP.
4. Distinguish between communicating and non-communicating hydrocephalus.

L. Headaches and facial pain
1. Compare and contrast clinical features of benign vs potentially serious causes of headache.
2. Describe the clinical feature of the following recurrent headache disorders in terms of onset, evolution, location, character, duration, precipitants, and associated symptoms:
   a) Migraine with and without aura
   b) Tension type headache
   c) Trigeminal neuralgia
3. Describe the clinical features of the following causes of headache:
   a) SAH
   b) Meningitis
   c) Increased ICP/mass
   d) Temporal arteritis
   e) ICH
4. Discuss emergent and non-emergent indications as well as contraindications, risks, and benefits of the following diagnostic tests in patients with headache:
   a) MRI or CT
   b) LP
   c) Erythrocyte sedimentation rate
   d) Temporal artery biopsy
5. Discuss typical CSF profiles of meningitis vs SAH.
6. Discuss treatment for common headache disorders including symptomatic and prophylactic therapy.

M. Neck and back pain
1. Differentiate between musculoskeletal pain, radiculopathy, and spinal cord compression. List common causes of each.
2. Discuss the significance of back pain in cancer patients.

N. Brain tumors
1. Discuss the common clinical presentation of primary brain tumors in the following locations:
   a) Cerebellopontine angle
   b) Pituitary
   c) Cerebral hemisphere
2. Discuss metastatic tumors to the brain
   a) List common sources of metastases
   b) Differentiate from primary brain tumor by clinical features and neuroimaging.
3. Discuss common primary brain tumors

O. Neurologic infectious disease
1. Discuss common clinical presentation, CSF findings, and initial treatment for the following:
   a) Acute bacterial meningitis (most common organisms in infants, children, & adults)
   b) Acute viral meningitis
   c) Encephalitis (including herpes simplex)
   d) Brain abscess
2. HIV and the nervous system
   a) Discuss manifestations of HIV including:
      i. Encephalopathy
      ii. Myelopathy
      iii. Neuropathy
   b) Discuss opportunistic CNS infections associated with HIV infection

P. Spinal cord disorders
1. Localize the lesions yielding the following findings on examination:
   a) Unilateral UMN findings with ipsilateral decreased joint position sense and contralateral loss of pain and temperature sensation.
   b) Dissociated sensory loss with weakness and areflexia in the arms.
c) Sensory level with paraparesis and bladder incontinence.

2. Describe the usual clinical presentation of vitamin B12 deficiency.
3. Understand the emergent management of acute spine trauma.

Q. Peripheral nervous system (PNS) disorders
1. Contrast and compare the common LMN clinical syndromes of neuropathy, neuromuscular junction disorders, and myopathy in terms of symptoms such as sensory changes, reflex changes, muscle bulk, and muscle tone.
2. Discuss symptoms, common examination findings, ancillary studies, and localization of each of the following:
   a) Radiculopathy
   b) Polyneuropathy
   c) Carpal tunnel syndrome
3. Discuss the time course, symptoms, laboratory findings, and treatment of acute inflammatory demyelinating polyneuropathy (AIDP; Guillain-Barre syndrome).
4. Describe the pathogenesis, usual clinical presentation, evaluation, and therapy of myasthenia gravis.

R. Alcohol related disorders
1. Define and discuss the following with regard to clinical symptoms, examination findings, differential diagnosis, and management:
   a) Wernicke-Korsakoff syndrome (especially initial treatment with thiamine & glucose)
   b) Alcohol withdrawal seizure (especially regarding anticonvulsant treatment)
   c) Delirium tremens
   d) Cerebellar degeneration
   e) Peripheral neuropathy
APPENDIX 3: SAMPLE FORMS

CLERKSHIP COMMENDATION FORM

University of Central Florida
College of Medicine

CLERKSHIP COMMENDATION CARD

Please complete and submit this card to the clerkship director when you wish to compliment a student for her/his performance. This information will be conveyed to the student and noted in the student’s file.

Name of Student: ___________________________ Date: ___________________________

Clerkship:

<table>
<thead>
<tr>
<th>Internal Medicine/Family Medicine</th>
<th>Psychiatry</th>
</tr>
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<tbody>
<tr>
<td>Neurology</td>
<td>Surgery</td>
</tr>
<tr>
<td>Obstetrics &amp; Gynecology</td>
<td>Selective</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>Elective</td>
</tr>
</tbody>
</table>

My praise about the performance of this student is based upon her/his demonstration of exceptional ability in the following (please check all that apply):

<table>
<thead>
<tr>
<th>clinical skills</th>
<th>teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>communication skills</td>
<td>professional attitude and behavior</td>
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<tr>
<td>medical knowledge</td>
<td>humanistic qualities</td>
</tr>
<tr>
<td>clinical judgment</td>
<td>the management &amp; leadership of the team</td>
</tr>
</tbody>
</table>

Please include any additional comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Faculty Name: ___________________________ Faculty Signature: ___________________________
Title: ___________________________ Location: ___________________________
CLERKSHIP EARLY WARNING CARD

University of Central Florida
College of Medicine

CLERKSHIP EARLY WARNING CARD

Please complete and submit this card to the clerkship director or coordinator when you have any concerns about a student’s performance. This information will be used constructively to help the student.

Name of Student: ___________________________ Date: ___________________________

Clerkship:

<table>
<thead>
<tr>
<th>Internal Medicine/Family Medicine</th>
<th>Psychiatry</th>
</tr>
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<tbody>
<tr>
<td>Neurology</td>
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<td>Selective :</td>
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<tr>
<td>Pediatrics</td>
<td>Elective :</td>
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</tbody>
</table>

My concerns about the performance of this student are (please check all that apply):

- [ ] professionalism
- [ ] clinical practice
- [ ] medical knowledge
- [ ] medical knowledge
- [ ] interpersonal relations and/or communication skills
- [ ] other: ___________________________

Please include any additional comments:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Faculty Name: ___________________________ Faculty Signature: ___________________________

Title: ___________________________ Location: ___________________________
# FINAL STUDENT PERFORMANCE EVALUATION

**University of Central Florida**  
College of Medicine  
Clerkship Student Performance Evaluation - NEUROLOGY

<table>
<thead>
<tr>
<th>Student Name: ________________</th>
<th>Student Number: ________________</th>
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<tbody>
<tr>
<td>Clerkship Name: ________________</td>
<td>Clerkship Date: ________________</td>
</tr>
<tr>
<td>Evaluator: ________________</td>
<td>Site: ________________</td>
</tr>
</tbody>
</table>

1. I have reviewed and provided feedback on ________ (number) history and physical documents provided by the student.

2. Please choose the item that best characterizes your knowledge of the student's demonstrated competence:
   - □ Not intense/superficial  
   - □ Solid but not in-depth  
   - □ Very good/in-depth

3. This evaluation is based primarily upon (check as many as apply):
   - □ Review of student's medical documentation  
   - □ Observation of student presentations  
   - □ Observation during attending rounds  
   - □ Input gained from others about student performance

<table>
<thead>
<tr>
<th>Patient Care</th>
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<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
<th>Outstanding</th>
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<tr>
<td>Perform a comprehensive physical examination</td>
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<td>Organize patient care and function in a clinical setting</td>
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<td>Fund of Knowledge</td>
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(revised 04/18/2011)
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<th>Clinical Reasoning</th>
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<tbody>
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<td>Application of knowledge</td>
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<td>Below Expectations</td>
<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Apply clinical information to patient care</td>
<td>&quot;Reporter&quot; - reports data but makes no attempt to interpret or apply information.</td>
<td>&quot;Interpreter&quot; - attempts to interpret or apply information appropriate to level of training.</td>
<td>&quot;Manager&quot; - uses information to develop insightful plans for patient management.</td>
<td>&quot;Educator&quot; - understands and applies knowledge to educate patients and colleagues regarding disease processes.</td>
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</tr>
<tr>
<td>Team Relationships</td>
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<td>Exceeds Expectations</td>
<td>Outstanding</td>
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<tr>
<td>Attitude and Professionalism</td>
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<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
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<tr>
<td>Feedback and Responsibility</td>
<td>Not Observed</td>
<td>Below Expectations</td>
<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Humanism and Ethics</td>
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<td>Below Expectations</td>
<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Interaction with patients and families</td>
<td>Lack of respect, compassion, integrity, or honesty.</td>
<td>Demonstrates respect, compassion, integrity, and honesty.</td>
<td>Genuine display of empathetic and humanistic care: clear respect, integrity, compassion, and honesty.</td>
<td>Superior or remarkable empathetic and humanistic care: utmost respect, integrity, compassion, and honesty.</td>
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</tr>
<tr>
<td>Oral Case Presentations</td>
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<td>Below Expectations</td>
<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Verbally report information to colleagues/peers</td>
<td>Often unclear, incomplete, disorganized, or inaccurate. Lacks synthesis and rationale. Consistent attention to details. Unable to express thoughts clearly.</td>
<td>Presentations mostly clear, complete, organized with adequate synthesis and rationale. Usually able to present pertinent details.</td>
<td>Usually clear, accurate, well organized and concise. Thoughtful problem synthesis. Consistent ability to express pertinent details.</td>
<td>Clear, accurate, well organized and concise with thoughtful synthesis and pertinent synthesis. Clear articulation of patient's presentation and details.</td>
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<td>Below Expectations</td>
<td>Meets Expectations</td>
<td>Exceeds Expectations</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Collegial discussion and appropriate behavior</td>
<td>Demonstrates inappropriate attention, listening or nonverbal communication.</td>
<td>Demonstrates adequate attention, listening, appropriate questioning.</td>
<td>Shows engagement with learning process. Expresses thoughts in a clear manner.</td>
<td>Actively engaged with learning process. Attentive, with ability to express thoughts in a respectful, clear manner.</td>
<td></td>
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</tbody>
</table>

**Interpersonal and Communication Skills**

*Revised 04/02/11*
Please include comments on back of this page.

<table>
<thead>
<tr>
<th>Summative Comments [Will be Included In Medical Student Performance Evaluation (MSPE) i.e. &quot;Dean’s Letter&quot;]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(including descriptive comments)</td>
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<table>
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<tr>
<th>Formative Comments [Will be shared with the student and Clerkship Director]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(including descriptive comments)</td>
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</tbody>
</table>

Evaluator Signature: ____________________________________________  Date: ___________________________

revised 04/38/2011
Sample Neurologic H&P

Attending: Seen with Dr. ___________
Date: ______________

HPI: YY has had headaches his entire adult life. For many decades these were migraines which occurred without aura. He would experience severe throbbing holoccephalic head pain accompanied by nausea, occasional vomiting, photophobia, and phonophobia. He would obtain relief only when he lay down in a dark room for several hours. These occurred 2 to 3 times per year. He would commonly experience other low-grade headaches on most days of the year.

Since approximately 1995, YY has been experiencing few or no migraines but now has daily headaches that are reported to be grade 1 or 2/10. These are typically holoccephalic, and consist of a dull ache without radiation. There is no positional component. He cannot identify exacerbating factors or triggers. These are typically alleviated by sleep. He occasionally has exacerbations of headache where the pain escalates to a grade 6 or 7/10. At such times he will take ibuprofen 400 mg, generally with some relief.

Recently he has been awakening at 3:00 or 4:00 AM with headaches. This occurs in a context of work-related stress. He is currently experiencing exacerbations to grade 6 or seven approximately once per week. He largely cut out caffeine in 2008 with no change in his headaches. He also tried cutting out alcohol for several months with no appreciable change.

PRIOR DIAGNOSTIC EVALUATION:
1. Multiple cranial CT and MRI scans performed last in the mid-1990s when he was in Pennsylvania for suspected Ménière's disease. He reports that these were all within normal limits.
2. He sees an ophthalmologist approximately every two years for routine care.

PMH:
1. Tinnitus with suspected Ménière's disease. He has had high-pitched bilateral tinnitus for as long as he can recall. He has had multiple audiograms in addition to the radiologic evaluations reported above. He says that these were all normal.
2. Palpitations in approximately 1990. He tells me that a work up was unrevealing. He was placed on Lopressor which led to orthostatic dizziness. He now rarely has palpitations and is asymptomatic when they occur.
3. He experienced some prostatism when prescribed an unknown medication for orthostatic hypotension on Lopressor.

CURRENT MEDICATIONS:
1. Vitamin D replacement.
2. No other herbal supplements, vitamins, or OTC medications.

ALLERGIES: NKDA

FAMILY HISTORY:
1. Mother is alive at age 76 with heart disease. She experienced migraines often when she was young.
2. Father died at age 65 of multiple myeloma.
3. Siblings: one brother alive in good health at age 56. He did have a cancer of the jaw as a child and received whole head radiation with secondary chronic static neurologic deficits.
5. Extended family: there's a paternal aunt who had cancer and there is a family history of heart disease.

This section is a handy way to summarize data. Others might put this in the PMH, still others in HPI. Remember to include vitamins & supplements & OTC meds. A complete list of current medication is always required.

FH is never “non-contributory.” At minimum, you MUST ask about parents, siblings, and children for every patient.
SOCIAL HISTORY: The patient as a non-smoker. He consumes alcohol socially. He's a few credits shy of a bachelor's degree. He is currently employed by UCF. He is married to his wife of 20 years.

REVIEW OF SYSTEMS: The patient completed a review of systems checklist which appears in Dr. ____’s written chart. There were no other complaints.

PHYSICAL EXAMINATION

Blood pressure 112/70 Heart rate 74 Respiratory rate 16.

GENERAL EXAM: Cranium was normocephalic. Tympanic membranes were clear. Heart was RRR without murmurs, gallops, or rubs. Lungs were clear to auscultation bilaterally. Abdomen soft and non-tender. Extremities normal with good pulses and no cyanosis, clubbing, or edema. Range of spinal motion was full.

NEUROLOGIC EXAMINATION:

Mental status was normal without evidence of aphasia, apraxia, or neglect. Recall 3/3 at 5 minutes. Normal fund of knowledge. Thought processes were cogent and linear. Cranial nerves were symmetric. Pupils were round and reactive to light. Extraocular movements were intact. Fundi were unremarkable on non-dilated examination. The face was symmetric with normal sensation. The tongue and palate were midline. Motor examination showed full strength grade 5/5 throughout with normal muscle bulk and tone. There were no involuntary movements. Sensation was intact to light touch and proprioception. Coordination testing was accurate on finger-nose-finger and heel-knee-shin. Rapid alternating hand movements were normal. Deep tendon reflexes were symmetric and 2+ BR, 2+B, 2-T, 2+ KJ, 2 AJ, toes down bilaterally. Station and casual & tandem gait were normal. Romberg’s test was negative.

IMPRESSION

1. Chronic daily headache.
   a. Diagnosis. YY’s history is fairly typical of a patient experiencing mild to moderate headaches early in life and resolving to chronic daily headache in midlife.
   b. Diagnostic evaluation. Given the very long history and absolute stereotypical nature of these headaches, I do not feel additional diagnostic evaluation is necessary at this time. Multiple cranial MRIs in the not-too-distant past is reassuring. Additional diagnostic investigations would be indicated if he ever experiences changes in the frequency, quality, severity, or location of his headaches.
   c. Treatment. We discussed prophylactic as well as acute treatments.
      i. Prophylaxis. In this case, prophylactic treatment will be selected. The SSRI medications, while less efficacious, are well tolerated, and when they work, they tend to work as chemotherapeutic agents. We decided to try an SSRI medication from this class. If this medication fails, our third line plan will probably be to avoid antihypertensives given his history of orthostatic dizziness.
      ii. Acute. Ibuprofen is often overlooked as an effective treatment for acute headache. He does experience some relief from low-dose ibuprofen. I would recommend increasing the dose as needed for the acute flares.
2. History of palpitations, asymptomatic.
3. History of tinnitus, multiple evaluations unrevealing. This is therefore idiopathic. It is not bothersome at present.

RECOMMENDATIONS & PLAN

1. To break the cycle of chronic headaches, we will try a Midrin taper as follows: one tablet TID for seven days, then one tablet BID for seven days, then one tablet QD for seven days, then stop.
2. For headache prophylaxis, we will try Celexa 20 mg per day. We did discuss potential side effects.
3. YY will let me know right away if he experiences problems, otherwise we will check in six weeks on his progress. We would like to get to 40 mg per day of the Celexa before judging efficacy.
4. For acute headaches, he will take ibuprofen 800 mg every eight hours with food as needed, not more than 2 to 3 days per week.
5. I provided a list of food triggers for his review. I doubt a food trigger will be obvious, but it is worthwhile looking.
6. We will touch base on medications in six weeks at the latest, and I will see him back for routine follow-up in six months or sooner if necessary.

The REC/PLAN section should be **concise** and **to the point**. It is helpful to think of it as a **checklist** of what you will do, or what you recommend the primary physician do, and in what order. **Be specific!**

- Include doses, route, frequency, and duration of therapies.
- For imaging include (modality) (body part) (special instructions) (reason) (time) (place).
  - “MRI of the brain without contrast to evaluate for stroke scheduled tomorrow with inpatient radiology.”
  - “MRI of the brain with and without contrast and sagittal FLAIR to evaluate for MS scheduled on September 1, 2011, at 10:30 AM at Florida Hospital East.”
  - “TEE with agitated saline study to evaluate for PFO as cause of stroke tomorrow in cardiology suite.”