

PRINCIPLES OF ORGANIZING THE NEUROLOGY CLERKSHIP

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The following nine principles should be kept in mind when organizing the Neurology Clerkship:

Active, Hands-on Experience

Students should not be passive learners during the clinical years. Rather, they should learn actively from their patients by being given responsibility for patient care commensurate with their level of training. If at all possible, they should be the first to evaluate the patient, either in the inpatient setting or in the ambulatory clinic.

Teaching conferences should also be an active experience. If patients are discussed, students should be asked to commit themselves as to what they think the diagnosis is. Having students occasionally lead conferences by presenting brief didactic talks on clinical topics is another effective form of "active learning."

Patient-Centered Learning

Learning in the clinical years should be patient-centered. Each student should be responsible for reading in detail about the disease that his/her patient has.

Rounds should also be patient-centered. If at all possible, patient presentations should be at the bedside, and a significant portion of the conference should be conducted around the patient.

There are five advantages for presenting patients at the bedside during rounds:

1. Bedside presentations insure that the patient is the center of the discussion, and not merely an object for an academic exercise.
2. The formality of a bedside presentation insures that the student will do his/her best to present all the details of the history and physical examination.
3. Bedside presentations insure that the material presented is accurate, since the patient is there to correct any errors.
4. During the presentation, the attending physician and all others present have extra time to observe the patient for spontaneous movements, facial asymmetry, respiratory patterns, etc.
5. The patient frequently appreciates the extra attention that is given him/her during the presentation.

Students must be reminded that, at a bedside presentation, the patient is part of the presentation, and not simply the object of the presentation. This should be made

perfectly clear to the patient by acknowledging the patient's presence frequently during the bedside discussion.

Adequate Ambulatory Exposure

Due to the current changes in the way medicine is practiced, fewer and fewer patients are being admitted to hospitals for evaluation and treatment. This is even more true in neurology, where the majority of patients are now seen in the office setting only.

The patient mix in neurology has also changed based on the setting in which patients are seen. Students who are assigned solely to an inpatient neurology ward will rarely have a chance to evaluate patients with common neurological problems, such as dizziness, headache and peripheral nerve disorders. For these reasons, a concerted effort needs to be made to insure that students have adequate ambulatory exposure during their neurology clerkship.

One of the difficulties of having medical students work in a private neurologist's office or in a hospital-based ambulatory clinic is that they may have insufficient knowledge of neurology to function effectively in these settings. Ambulatory medicine in fast paced, imposes significant time constraints on the part of patients and physicians, and provides, in general, less supervision for medical students than an inpatient rotation. Also, mistakes cannot be corrected as easily once the patient has left the office.

One approach to teaching neurology in the ambulatory setting is to have the student spend several half days per week shadowing his/her resident or attending in the outpatient clinic. Some may criticize that by merely "shadowing" the attending or resident physician, students will have primarily a passive learning experience. While this might be true to some extent, the attending or resident physician should be taught to make this form of learning as active as possible. Having the students take part of the history, perform selected aspects of the examination, and commit themselves to a specific diagnosis are ways of insuring active participation.

It is more difficult to have the student evaluate the patient entirely by him/herself in an outpatient setting, and then present the case to the attending. This requires an extra room, and extra time on the part of the patient and attending, particularly if this is the first neurology rotation for the student. Medical students who have already rotated through the inpatient neurology clerkship may be better qualified to function in an ambulatory setting than those who did not.

Core Curriculum

Although the neurology clerkship should have a flexible format to insure that students have adequate time to evaluate patients, a mechanism must be in place to guarantee that a core curriculum of clinical neurology be covered during the rotation. One way to do this is to have a series of didactic clinical lectures that cover core topics in neurology. An alternate way is to prepare a syllabus that the student is expected to read and learn during the rotation. Having neurology chief residents lecture on core topics to the students has the advantage of helping those chief residents improve their lecturing skills.

Return to the Basic Sciences

The integration of the basic neurosciences and clinical neurology occurs not only in the pre-clinical years, but should also occur in the clinical rotations. Basic science faculty should be invited to participate in some clinical conferences to insure that this occurs. By emphasizing "anatomical thinking," these basic scientists can help students localize "clinical" lesions.

Syllabus

A well-written and organized syllabus should accompany the neurology clerkship. The bulk of the syllabus should contain "core material" that all students are required to learn before they complete the rotation. Suggested core topics include: an overview of neuroanatomy; performing and interpreting the neurological examination; indications and proper interpretation of laboratory testing in neurology; common neurological emergencies including seizures, stroke and mental status changes; common outpatient neurological problems including headaches, dizziness, back pain and peripheral nerve disorders; and a brief discussion of other neurological topics including demyelinating diseases, dementing illnesses, movement disorders, neuromuscular diseases, brain trauma, and child neurology.

Performance-Based Evaluations

It is important that evaluation mechanisms for clinical students include performance-based methods. Any evaluation instrument needs to address the three primary educational goals: knowledge, skills, and attitudes. Written examinations, whether essay or multiple choice, are excellent objective methods for assessing knowledge, but poor in assessing the latter two educational goals. On the other hand, direct observation of the student by the attending physician or house officer is an excellent way to evaluate skills and attitudes, but is quite subjective.

Two objective methods for assessing a student's performance include the structured oral examination and the objective structured clinical examination (OSCE). In the structured oral examination, the student is observed obtaining a history and performing an examination on a patient, and is then asked to discuss his or her findings with the evaluators. A checklist of skills to be demonstrated is drawn up in advance, and the student is graded on these technical skills, as well as on his/her ability to formulate a differential diagnosis. Alternatively, several case vignettes are written ahead of time and the student is asked to formulate a differential diagnosis for each of these.

In the OSCE, several stations are set up through which each student rotates. At each station are a standardized patient, or a vignette containing laboratory data (imaging studies, results of EEG or EMG testing, etc.) A checklist of skills is constructed beforehand, and the student is graded on mastering these skills, as well on formulating a differential diagnosis.

The advantages of structured oral examinations and OSCE's are that they are more objective than pure observation, and that behavioral and technical attributes can be evaluated, as well as cognitive attributes.

The quality of any evaluation instrument is proportional to the quality of the evaluators. Faculty, therefore, should receive considerable training in effective evaluation methods, and should also be given sufficient time to evaluate students properly.

Faculty and Student Feedback

Regular feedback concerning a medical student's performance is necessary to identify areas of weakness and suggest ways of improvement. Likewise, the clerkship should receive periodic feedback from the students to correct defects in its organization and structure.

Feedback should be both timely and frequent. Ideally, it is best to meet with each student individually after each presentation and provide feedback. This will allow errors to be caught early and corrected, and will also insure that improvements are sustained by means of positive reinforcement.

Feedback should be both positive and negative. Students often feel insecure in their clerkships, since they are constantly changing rotations and learning new disciplines. Positive feedback helps allay anxieties and maintain enthusiasm.

In addition, faculty should be taught how to give feedback to students, both positive and negative. Students should also be taught how to receive negative feedback, as well as how to effectively evaluate faculty and the clerkship.

Faculty Development

Faculty should be taught how to lecture and teach in small group settings and on rounds. This can be accomplished by mean of master teachers who sit in on these conferences and rounds and then provide constructive feedback afterwards. These master teachers should be identified by the Department chairman and provided with resources (time and salary support) to teach junior faculty and house officers effective lecturing and teaching techniques.

Faculty should also receive formal, written evaluations of their teaching from these master teachers that would then be sent to their chairman for review. Since teaching is an important mission of most medical schools, the amount and quality of a faculty member's teaching efforts should be clearly and carefully documented for use in the promotions process. Hopefully, this will result in a steady improvement in the quality of medical student and resident education.

Faculty and house staff, in particular, should also receive training in how to evaluate students and provide constructive feedback in a timely fashion. This can often be accomplished by means of an evaluation workshop.