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| <b>1. Name your educational leadership role(s)</b>   |
| Neurology 110 Clerkship Director (since 2011)  |
| <b>2. Your role(s)</b>   |
| I am responsible for all aspects of running the required third-year clerkship at Parnassus, the San Francisco Veterans Affairs Medical Center, San Francisco General Hospital, Kaiser Oakland, and Fresno. This also includes oversight of the neurology portion of the longitudinally integrated clerkships.  |
| <b>3. Groups served and amount of contact:</b>   |
| <p>--- Approximately 170 students rotate through Neurology 110 annually. I have contact with every student at the neuroanatomy review lecture during week 1 of the rotation and at the final exam; I orient the students rotating at Parnassus on their first day, conduct morning report on a weekly basis, and co-facilitate a monthly joint neurology-psychiatry student report.</p> <p>--- There are 95 teaching faculty, 10 volunteer clinical faculty, 33 adult and pediatric neurology residents, and 28 fellows. There are 5 teaching sites, each with a separate site director (I am the site director for Parnassus). I am actively engaged with clerkship faculty at all levels. I discuss the clerkship with site directors frequently and I provide orientation materials for all teaching faculty. I give verbal feedback to faculty and residents with low teaching evaluations. I frequently discuss student performance with individual faculty to supplement written evaluations.</p>  |
| <b>4. Builds on best practice/evidence</b>   |
| <p>--- Our clerkship's objectives are aligned with those published by the American Academy of Neurology.</p> <p>--- I attend the clerkship director's symposium at the American Academy of Neurology Annual Meeting. This is a forum for national discussion of best practices and curricular innovations. This year we are demonstrating the UCSF NeuroExam Tutor, an iPad application I co-authored (see details below).</p> <p>--- Each year I review the clerkship evaluation data as a whole and broken down by site, and I meet with each site director to review this data and discuss areas for improvement.</p> <p>--- In neurology and psychiatry we have supplemental evaluations that obtain more granular data about specific clerkship sessions at each site. I update these evaluation forms bi-annually.</p>   |
| <b>5. Vision and goals</b>   |
| <p>My vision for Neurology 110 is that the 3rd year clerkship:</p> <ul style="list-style-type: none"> <li>--- Provides a rigorous training experience in clinical neurology that meets the core course objectives;</li> <li>--- Builds upon material taught during Brain, Mind, and Behavior (BMB), the first-year neuroscience course, to steer toward a longitudinally integrated curriculum consistent with the goals of Bridges;</li> <li>--- Maximizes opportunities for interdisciplinary education between neurology and psychiatry as well as clinical and basic neuroscience, to mirror advances in the understanding of functional neuroanatomy as they relate to what have been traditionally considered neurological or psychiatric disorders and teach students how basic neuroscience translates to clinical neurophysiology at the bedside;</li> <li>--- Has a transparent and valid grading and assessment system;</li> <li>--- Provides students with an experience that maximizes their understanding of career options in neurology and connects them with neurology career mentors.</li> </ul> <p>There are many course objectives for Neurology 110. Several representative examples are listed here.</p> <ul style="list-style-type: none"> <li>--- Formulate an approach to the work-up and management of weakness, abnormal movements (e.g., Parkinson Disease, tremor, chorea), headaches, dizziness, back pain, neuropathy, seizure, stroke, and head trauma in adults and children</li> <li>--- Demonstrate anatomic localization of neurologic clinical findings.</li> <li>--- Perform the complete neurologic examination (mental status, cranial nerves, motor system, sensory system, reflexes, coordination, and gait).</li> <li>--- Develop a functional neuroanatomical approach to evaluating not only motor and sensory problems but also cognitive, mood, and behavioral problems.</li> </ul> |

## 6. Methods

I have introduced several initiatives to improve the clerkship in the past 3 years:

--- Ensuring all sites have a first-day orientation with their site directors (previously the orientation at Parnassus was run by the clerkship administrator and the psychiatry site director oriented the neurology students at the VA).

--- 3rd year medical students have traditionally not been invited to participate in morning report with the residents at Parnassus and SFGH. I started a weekly medical student morning report at Parnassus and successfully advocated for students to be included at morning report at SFGH.

--- With Dan Lowenstein, I am the confidential neurology career advisor, which provides students with a career mentor they meet during 1st year (Dr. Lowenstein) and one they meet during 3rd year (me).

--- Based on student feedback and on the practice of other UCSF clerkships I introduced the NBME clinical neurology examination to provide an objective measure of students' medical knowledge for grading and to help students assess their knowledge and prepare for the USMLE Step 2.

--- I redesigned the way grades are assigned using scores weighted by the experience of the evaluator and length of time the evaluator spent with the student, a competency-based grading rubric, and the clerkship examination to increase transparency in the grading process.

--- Based on consistent and disproportionately low resident teaching evaluation scores at SFGH and low scores for this site in general compared with others, in 2013 I introduced a new orientation for residents providing tips for how to teach efficiently in a busy inpatient environment. In addition I led a restructuring of the clerkship at SFGH from multiple 1-week experiences to 2 two-week blocks.

--- I helped design an iPad application (UCSF NeuroExam Tutor) that teaches the neurological examination in a novel way using a hypothesis-driven approach and is used longitudinally in BMB, during Neurology 110, and during the 4th year.

--- I co-authored two case-based teaching sessions with Demian Rose, the psychiatry clerkship director, that emphasize core clerkship objectives and functional neuroanatomy learned during BMB.

## 7. Results and impact

--- During my tenure as clerkship director, clerkship ratings have improved. In 2013-14 to date, the Overall Educational Quality rating was 4.22/5 (N=137) compared with 4.12 (N=148) in 2012-13, 4.07 (N=166) in 2011-12, 3.95 (N=171) in 2010-11, 4.01 (N=164) in 2009-10, and 3.84 (N=119) in 2008-09. This outcome measure for clerkships overall ranged from 4.23 to 4.32 over this time period.

--- Resident teaching evaluation scores at SFGH from 2013-14 to date are 4.39 (N=38), the highest they have been in the last 5 years (3.81 - 3.98), and the clerkship as a whole at SFGH was rated 4.21 (N=38), also the highest scores for this site in the last 5 years (3.51 - 3.91).

--- The response to the NeuroExam Tutor iPad app has been very positive, with preliminary survey data showing 100% of users would recommend the program as a learning tool to rising third year students.

## 8. Dissemination

--- A recently concluded task force on evaluations and grading during third year clerkships used the Neurology 110 grading template as an example for other clerkships.

--- The iPad application (UCSF NeuroExam Tutor) will be presented this month at the national American Academy of Neurology annual meeting and a collaborative evaluation of the program is underway with UC Irvine who purchased the app for all of their students for use during the third year clerkship.

## 9. Reflective critique

The most common theme that emerges from student feedback about Neurology 110 from 2013-14 is for improved medical student specific didactics. In addition, students ask for more direct observation of their neurological exam technique. With several core teaching faculty I will design a new didactic curriculum over the next year using short online lectures about core topics combined with case-based problem-based learning sessions that reinforce the material taught in the online lectures. I will also emphasize techniques to increase direct observation in faculty and resident development in the coming year.