Le—Developing an Outpatient Neurology Resident Curriculum and Entrusted Professional Activities (EPAs)

PI: Scheherazade Le, MD; Clinical Assistant Professor in CE Line; General Neurology & Clinical Neurophysiology; Education Director for Epilepsy for Stanford Neurology Residents; Resident Continuity Clinic Preceptor

Co-PI: Rebecca Miller-Kuhlmann, MD; Clinical Instructor in CE Line; General Neurology; Resident Continuity Clinic Preceptor

Co-PI: Sarada Sakamuri, MD; Clinical Assistant Professor in CE Line; General Neurology, Neuromuscular Medicine, and Neurophysiology; Resident Continuity Clinic Preceptor

I. Specific educational aims:
(1) Develop an outpatient neurology resident curriculum
        a. Develop flipped classroom, learner focused, interactive, high-yield, case-based modules to cover core outpatient concepts
        b. Incorporate diversity curriculum within the cases
(2) Assess neurology residents through entrustable professional activities (EPAs) in the outpatient clinic

II. Project rationale:
        Although the majority of the clinical practice of Neurology is outpatient-based, the Stanford Neurology Residency formal educational curriculum is predominantly inpatient-based. Bedside teaching occurs often, but direct observation with constructive feedback of resident history-taking, neurologic exam skills, and patient counseling skills is limited. In addition, Stanford Neurology Residents attend formal, weekly 3-hour didactic sessions that are lecture-based, but research suggests that knowledge retention after the traditional pedagogical approach is limited [Bonnes]. Those lectures are planned months in advance and lack the flexibility to be tailored to and thus reinforced by immediate resident clinic experiences and cases—a powerful educational opportunity currently untapped. An integrated diversity curriculum is also lacking and not taught in the educational series, despite that when surveyed, most neurology program directors believe training in culturally-responsive care is important [Rosendale].

        All Stanford Neurology Residents have a weekly continuity clinic, with longitudinal supervision and mentorship by a core group of faculty members. Building a routine outpatient curriculum is an opportunity to address two gaps in the current training curriculum: (1) The tools and methods to diagnose and manage outpatient neurological cases and (2) Strategies for providing culturally-responsive care. The limited teaching time available during the residents' busy continuity clinic can be optimized by creating a formalized, flipped-classroom curriculum.

        Our primary aim is to create outpatient, case-based, learner focused, flipped classroom teaching modules that Neurology Residents will discuss as a group with their peers and continuity clinic preceptors on a regular basis.

        Our secondary aim is to develop and assess neurology residents in the outpatient setting through entrustable professional activities (EPAs) defined by the American Academy of Neurology (AAN) and ACGME [Horak; Supplemental Table e-1 through e-5]

III. Approach:
        For the modules, we will create the new framework necessary for residents and preceptors to engage in learner-centered flipped classroom sessions [Alimoglu]. Our current goal is to develop ten high-yield teaching cases. The cases will be available online to be previewed before the group discussion. The online cases can be developed through web-based interactive learning platforms such

as SmartSparrow or NearPod. Aside from traditional teaching on neuroanatomical localization and differential diagnosis, the modules will also incorporate diversity topics such as language, religion, sexual orientation, gender and socioeconomic status. We will consider best-practices in teaching diversity as published by Dogra et al. Neurology Residents will discuss as a group with their peers and outpatient continuity clinic attendings on a regular basis, before or after the scheduled Resident Continuity Clinic. Cases can be chosen for discussion in any order, which allows flexibility to tailor the cases and discussions to tie into patients being currently cared for by the residents.

To meet our second aim, we will develop EPAs for neurology residents in the outpatient setting. To date, no neurology-specific EPAs have been published for use in neurology residencies [Horak]. The EPAs are professional activities that can be entrusted to the physician in a clinical context for independent practice and is based on direct-observation for formative feedback rather than proxy (i.e., multiple choice questions) assessments. The EPAs will be assessed through discussion of the novel case modules and direct observation of clinical encounters with real patients. A possible list of core EPAs for Neurology Residents in an Outpatient Setting is attached in the Appendix (Table 1) modeled after AAN and ACGME recommendations.

This project addresses education gaps in the Neurology Resident outpatient training. Development of these innovative educational tools would be easily generalizable and adaptable to Neurology Training Programs across the nation. The project would easily impact many generations of Neurology Resident trainees.

IV. Timeline and plan for implementation:
- Fall 2018:
  - Develop online modules using real cases seen at Stanford Outpatient Neurology Clinics that are particularly high yield and expose learners to the diversity of cases.
- Spring 2019:
  - Implement flipped classroom discussion regularly into Resident Continuity Clinic, one session per month
  - Implement assessment of EPAs during modules and clinical encounters

V. Anticipated work product
(1) Ten new cases of flipped classroom online modules
(2) EPAs for outpatient continuity clinic

VI. Evaluation plan
- Pre- and post-tests for the online modules
- Learner evaluations of the modules and EPAs
- Faculty feedback of EPAs versus current ACGME Clinical Core Competencies

VII. Dissemination of results
- Neurology Education Committee and Faculty Meeting
- Abstracts for American Academy of Neurology (AAN) and Stanford Innovations in Medical Education Conference

Appendix

Table 1

EPA 1	Gather a neurologic history
EPA 2	Perform a neurologic exam
EPA 3	Generate a neuroanatomical localization
EPA 4	Generate and prioritize a differential diagnosis
EPA 5	Document in the electronic medical record
EPA 6	Provide an oral presentation of the clinical encounter
EPA 7	Form clinical questions and retrieve evidence from the literature to inform patient care
EPA 8	Recommend and interpret common tests
EPA 9	Collaborate as a member of an interprofessional team
EPA 10	Recognize a patient requiring urgent/emergent care and initiate evaluation and management
EPA 11	Obtain informed consent for tests +/- procedures
EPA 12	Perform a lumbar puncture
EPA 13	Discuss the risks and benefits of treatment options
EPA 14	Identify system failures and contribute to a culture of safety and quality improvement
EPA 15	Identify an address an ethical dilemma, family conflict
EPA 16	Communicate with sensitivity to diversity issues: language, culture, gender, socioeconomic status
EPA 17	Deal with language barrier - interpreter, American sign language, dementia, aphasia
EPA 18	Lead a challenging discussion regarding neurologic diagnosis, end of life/palliative care

References

Rosendale N, Josephson SA. Residency Training: The need for an integrated diversity curriculum for neurology residency. Neurology. 2017 Dec 12;89(24):e284-e287. doi: 10.1212/WNL.0000000000004751.

Horak H et al, Entrustable professional activities: A useful concept for neurology education. Neurology. 2018 Feb 13;90(7):326-332. doi: 10.1212/WNL.0000000000004947

Supplemental Tables. https://download.lww.com/wolterskluwer_vitalstream_com/PermaLink/WNL/A/WNL_90_7_2018_01_08_TIRYAKI_2016790063_SDC1.pdf.

Bonnes, SL et al, Flipping the Quality Improvement Classroom in Residency Education, Academic Medicine [1040-2446] yr:2017 vol:92 iss:1 pg:101 -107.

Alimoglu ,Mustafa, Selda Yardım, and Hilmi Uysal. The effectiveness of TBL with real patients in neurology education in terms of knowledge retention, in-class engagement, and learner reactions. Adv Physiol Educ 2017; 41: 38–43.

Freeman WD, Vatz KA. The Future of Neurology. Neurologic Clinic 2010;28:537-561.

Bradley WG. Neurology in the next two decades: report of the workforce task force of the American Academy of Neurology. Neurology 2000;54:787-789.

Nisha Dogra, Farah Bhatti, Candan Ertubey, Moira Kelly, Angela Rowlands, Davinder Singh & Margot Turner (2016) Teaching diversity to medical undergraduates: Curriculum development, delivery and assessment. AMEE GUIDE No. 103, Medical Teacher, 38:4, 323-337, DOI: 10.3109/0142159X.2015.1105944