

## Supplemental tables

### Supplemental Table e-1:

#### Listing of the ACGME Adult Neurology Sub-Competencies assessed as part of the Milestone Project<sup>10</sup>

• History – patient care
• Neurological exam – patient care
• Management/treatment – patient care
• Movement disorders – patient care
• Neuromuscular disorders – patient care
• Cerebrovascular disorders – patient care
• Cognitive/behavioral disorders – patient care
• Demyelinating disorders – patient care
• Epilepsy – patient care
• Headache symptoms – patient care
• Neurologic manifestations of systemic disease – patient care
• Child neurology for the adult neurologist – patient care
• Neuro-oncology – patient care
• Psychiatry for the adult neurologist – patient care
• Neuro-imaging – patient care
• Electroencephalogram/EEG – patient care
• Nerve conduction studies/EMG – patient care
• Lumbar puncture – patient care
• Localization – medical knowledge
• Formulation – medical knowledge
• Diagnostic investigation – medical knowledge
• Systems thinking, including cost and risk effective practice – systems-based practice
• Work in interprofessional teams to enhance patient safety – systems-based practice
• Self-directed learning – practice-based learning and improvement
• Locate, appraise, and assimilate evidence from scientific studies related to the patient's health problems – practice-based learning and improvement
• Compassion, integrity, accountability, and respect for self and others – professionalism
• Knowledge about, respect for, and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – professionalism
• Relationship development, teamwork, and managing conflict – interpersonal and communication skills
• Information sharing, gathering, and technology – interpersonal and communication skills

Source: *The Neurology Milestone Project. A Joint Initiative of The Accreditation Council for Graduate Medical Education and The American Board of Psychiatry and Neurology July 2015*

<http://www.acgme.org/portals/0/pdfs/milestones/neurologymilestones.pdf>, Accessed January 2018

**Supplemental Table e-2:****Sample EPA with linkage to core competencies and neurology milestones**

*This is an example of how an EPA may be mapped to ACGME core clinical competencies and neurology milestones. The example provided here relates to the management of an acute ischemic stroke. The behaviors described in milestone format signify “entrustable” levels of performance for a resident and would not be expected from a medical student. It is evident that patient care, medical knowledge and interpersonal communication skills are key competency domains that are needed for this EPA. Please note that this example is created by the authors to demonstrate linkage to competencies and milestones for a proficient learner and is not endorsed or introduced as an assessment tool by UES.*

<b>EPA: Recognize a patient requiring emergent care and initiate evaluation and management for acute ischemic stroke</b>					
<b>Patient care</b>	<b>Medical knowledge</b>	<b>Professionalism</b>	<b>System-based practice</b>	<b>Practice-based learning</b>	<b>Interpersonal and communication skills</b>
Efficiently obtains a complete, relevant and organized neurologic history ( <i>History-Level 4</i> )	Efficiently and accurately localizes lesions to specific regions of the nervous system ( <i>Localization-Level 4</i> )	Demonstrates compassionate practice of medicine ( <i>Compassion, integrity, accountability and respect-Level 3</i> )	Incorporates available quality measures in patient care ( <i>System Thinking-Level 4</i> )	Incorporates appropriate evidence-based information into patient care ( <i>Locate, appraise and assimilate EBM-Level 4</i> )	Leads team-based patient care activities ( <i>Teamwork-Level 4</i> )
Efficiently performs a relevant neurological exam accurately incorporating all additional appropriate maneuvers ( <i>Neurological Exam-Level 4</i> )	Efficiently synthesizes information to focus and prioritize diagnostic possibilities ( <i>Formulation-Level 4</i> )				<ul style="list-style-type: none"><li>- Effectively communicates the results of neurologic consultation in a timely manner</li><li>- Effectively gathers information from collateral sources when necessary (<i>Information sharing-Level 4</i>)</li></ul>

Independently directs management of patients with neurologic emergencies ( <i>Management/Treatment-Level 4</i> )	Individualizes diagnostic approach to the specific patient ( <i>Diagnostic Investigation-Level 3</i> )				
Manages common cerebrovascular disorders including appropriate use of thrombolytics ( <i>Cerebrovascular Disorders-Level 3</i> )					
Interprets MR and CT neuroimaging of brain and spine ( <i>Neuroimaging-Level 4</i> )					

**Supplemental Table e-3:**

**Potential Advantages of Framing Medical Student Activities as EPAs (Adapted from Chen et al.<sup>16</sup>)**

<ul style="list-style-type: none"><li>• Assessment and documentation of entrustment decisions by clinical supervisors about individual students</li></ul>
<ul style="list-style-type: none"><li>• Increased student motivation due to defined responsibility and participation expectations</li></ul>
<ul style="list-style-type: none"><li>• Clarification of medical student role and increasing responsibilities in patient care over time</li></ul>
<ul style="list-style-type: none"><li>• Accounting of student contribution and UME value to patient care</li></ul>
<ul style="list-style-type: none"><li>• Alignment of student engagement with individual student learning goals, institutional expectations and societal needs</li></ul>
<ul style="list-style-type: none"><li>• Promotion of safety and quality at the clinical workplace with greater accountability to public and regulatory bodies</li></ul>

**Supplemental Table e-4:**  
**Core Entrustable Professional Activities for Entering Residency<sup>2</sup>**

<b>EPA 1</b>	Gather a history and perform a physical examination
<b>EPA 2</b>	Prioritize a differential diagnosis following a clinical encounter
<b>EPA 3</b>	Recommend and interpret common diagnostic and screening tests
<b>EPA 4</b>	Enter and discuss orders and prescriptions
<b>EPA 5</b>	Document a clinical encounter in the patient record
<b>EPA 6</b>	Provide an oral presentation of a clinical encounter
<b>EPA 7</b>	Form clinical questions and retrieve evidence to advance patient care
<b>EPA 8</b>	Give or receive a patient handover to transition care responsibility
<b>EPA 9</b>	Collaborate as a member of an interprofessional team
<b>EPA 10</b>	Recognize a patient requiring urgent or emergent care and initiate evaluation and management
<b>EPA 11</b>	Obtain informed consent for tests and/or procedures
<b>EPA 12</b>	Perform general procedures of a physician
<b>EPA 13</b>	Identify system failures and contribute to a culture of safety and improvement

**Supplemental Table e-5:****Sample EPA for the Neurology Clerkship: Gather a Neurologic History and Perform a Neurologic Exam**

*This example uses the expanded entrustment scale to make meaningful entrustment determination for medical students who never provide patient care unsupervised. Please note that this is meant to demonstrate the concept of EPA in the clerkship setting and is not a validated or UES-endorsed assessment tool.*

	<b>Pre-Entrustable UME Learner</b>				<b>Entrustable UME Learner</b>	
Expected stage in	Level 1 (Requires remediation)	Level 2a	Level 2b	Level 3a	Level 3b Expected of all medical students at the end of the core neurology clerkship	Level 3c Expected of medical students entering neurology at the end of neurology sub-internship
Supervision	Not allowed to practice EPA	Allowed to practice EPA only with direct supervision	Allowed to practice EPA only with direct supervision	Allowed to practice EPA only with indirect, immediately available supervision	Allowed to practice EPA only with indirect, immediately available supervision	Allowed to practice EPA only with indirect, distantly available supervision
Behavioral anchor	Unable to solicit history or conduct exam	Takes inaccurate, history and uses incorrect neurologic exam technique	Frequently misses pertinent information, needs assistance with neurologic exam technique	Occasionally misses pertinent information or needs assistance with neurologic exam technique	Rarely misses pertinent information or abnormal neurologic findings, solicits accurate information and findings	Very reliably performs accurate neurologic history and exam pertinent to the setting and focus of the patient visit

Narrative Comments:

Clinical Site and Date of Observation:

Name of Student:

Name and Signature of Preceptor: