

The Epilepsy Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Psychiatry and Neurology



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The Milestones are designed only for use in evaluation of the fellow in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for assessment of the development of the fellow in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Epilepsy Milestones

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Milestone Reporting

This document presents Milestones designed for programs to use in semi-annual review of fellow performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine Milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe a fellow's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert in the subspecialty.

Selection of a level implies that the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The fellow demonstrates milestones expected of an incoming fellow.

Level 2: The fellow is advancing and demonstrates additional milestones, but is not yet performing at a mid-fellowship level.

Level 3: The fellow continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for fellowship.

Level 4: The fellow has advanced so that he or she now substantially demonstrates the milestones targeted for fellowship. This level is designed as the graduation target.

Level 5: The fellow has advanced beyond performance targets set for fellowship and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional fellows will reach this level.

Additional Notes

Level 4 is designed as the graduation *target* and *does not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to the ACGME supervision guidelines, as well as institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

Answers to Frequently Asked Questions about Milestones are available on the Milestones web page:
<http://www.acgme.org/acmeweb/Portals/0/MilestonesFAQ.pdf>.

The diagram below presents an example set of milestones for one sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

History — Patient Care				
Level1	Level2	Level3	Level4	Level5
<ul style="list-style-type: none"> Obtains a relevant and organized neurologic history 	<ul style="list-style-type: none"> Obtains a relevant and organized history, recognizing significant risk factors for seizures, epilepsy, and seizure mimics Incorporates historical information from external sources (e.g., parents, care givers, school personnel) 	<ul style="list-style-type: none"> Efficiently obtains a relevant and organized history relevant to patient's acuity and clinical setting (e.g., clinic, emergency room) Efficiently obtains an interval history during follow-up visits Identifies potential neuropsychiatric symptoms (e.g., memory loss, depression, psychosis) 	<ul style="list-style-type: none"> Consistently obtains a history sufficient to guide subsequent examination, investigation, and treatment Obtains history that identifies unusual causes of seizures and epilepsy 	<ul style="list-style-type: none"> Serves as a role model for obtaining a neurological history related to seizures and epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: Not yet achieved Level 1 <input type="checkbox"/>				

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

History — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Obtains a relevant and organized neurologic history	Obtains a relevant and organized history, recognizing significant risk factors for seizures, epilepsy, and seizure mimics Incorporates historical information from external sources (e.g., parents, care givers, school personnel)	Efficiently obtains a relevant and organized history relevant to patient’s acuity and clinical setting (e.g., clinic, emergency room) Efficiently obtains an interval history during follow-up visits Identifies potential neuropsychiatric symptoms (e.g., memory loss, depression, psychosis)	Consistently obtains a history sufficient to guide subsequent examination, investigation, and treatment Obtains history that identifies unusual causes of seizures and epilepsy	Serves as a role model for obtaining a neurological history related to seizures and epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Neurological Examination — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a complete neurologic examination	Performs a complete neurologic examination, including a relevant systemic examination Examines patients for common side-effects of antiepileptic treatment	Performs a complete neurologic examination accurately incorporating all maneuvers (e.g., hyperventilation) appropriate to the patient Performs a mental status examination relevant to potential neuropsychiatric comorbidities Examines patients for uncommon side-effects of antiepileptic treatment	Consistently performs a complete neurologic examination to efficiently guide and prioritize subsequent investigation and treatment Performs a neurologic and systemic examination to identify unusual and rare causes of seizures or epilepsy	Serves as a role model for performing a complete and relevant neurologic and systemic examination of patients with seizures and epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Medical Management — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Provides antiepileptic drug treatment for patients with common seizure disorders</p> <p>Selects appropriate antiepileptic drug relative to patient’s genetic background and comorbidities</p> <p>Manages common side-effects of pharmacologic therapy</p>	<p>Provides antiepileptic drug treatment for patients with uncommon seizure disorders</p> <p>Manages uncommon and rare side-effects of pharmacologic therapy</p> <p>Identifies patients who are appropriate candidates for antiepileptic drug titration, change, weaning, and withdrawal</p>	<p>Identifies patients who are pharmacoresistant</p> <p>Identifies patients who are candidates for nonpharmacologic therapy (e.g., ketogenic diet, hormonal therapy, surgery)</p> <p>Appropriately utilizes laboratory and other diagnostic modalities to monitor therapy</p> <p>Appropriately titrates, changes, weans, and withdraws antiepileptic treatment</p>	<p>Provides medical management of patients with seizure disorders and other complex medical issues (e.g., dialysis, transplant, diabetes)</p> <p>Provides specific medical management based on age, gender, and other relevant demographic variables</p> <p>Manages patients using nonpharmacologic therapy, including surgical evaluation</p>	<p>Engages in scholarly activity (e.g., teaching, participating in clinical trials) related to medical management of patients with seizure disorders</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Surgical Management — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Lists indications for surgical intervention</p> <p>Identifies patients who are appropriate candidates for surgical evaluation</p>	<p>Applies knowledge of various types of surgical interventions</p> <p>Actively participates in epilepsy surgery conference</p> <p>Identifies diagnostic modalities essential for surgical planning</p>	<p>Plans and manages Phase 1 surgical evaluation</p> <p>Leads epilepsy surgery case discussion regarding routine surgical evaluation (e.g., Phase 1)</p> <p>Synthesizes pre-surgical planning process and data to establish surgical management plan</p> <p>Manages neurologic issues in the post-operative patient</p> <p>Identifies candidates for use of medical devices approved for treatment of epilepsy</p>	<p>Plans and manages Phase 2 surgical evaluation (e.g., cortical stimulation, placement of invasive electroencephalography [EEG] electrodes)</p> <p>Collaborates with the interdisciplinary epilepsy surgery team in refining the management plan</p> <p>Leads epilepsy surgery conference for all cases, including for complicated surgical evaluations (e.g., non-lesional epilepsy)</p> <p>Collaborates with the interdisciplinary team in the immediate and long-term post-operative management</p> <p>Manages and programs medical devices approved for treatment of epilepsy</p>	<p>Engages in scholarly activity (e.g., publishes in peer-reviewed journal) related to surgical management of patients with seizure disorders</p> <p>Participates in research related to novel surgical approaches</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Emergent and Critical Care Management — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Diagnoses and manages convulsive and non-convulsive status epilepticus	Recognizes and manages uncommon types of non-convulsive status epilepticus	Recognizes the role of continuous EEG monitoring in critically-ill patients	Utilizes and interprets continuous EEG monitoring data in critically-ill patients	Engages in scholarly activity (e.g., publishes in peer-reviewed journal) related to emergent management of patients with seizure disorders
Recognizes the role of continuous EEG monitoring in patients with non-convulsive status epilepticus	Interprets continuous EEG monitoring data in patients with non-convulsive status epilepticus	Manages patients with refractory status epilepticus	Manages neurologic complications associated with convulsive and non-convulsive status epilepticus	Establishes novel protocols for emergent management of patients with seizure disorders
Recognizes primary and secondary causes of status epilepticus	Recognizes patients with refractory status epilepticus	Prescribes and educates patients and care givers on the use of rescue medications	Collaborates with the interdisciplinary team in the management of critically-ill patients with seizures and status epilepticus	
Educates patients and care givers regarding seizure first aid	Recognizes life threatening complications of antiepileptic therapy		Discusses prognosis of patients with status epilepticus with care givers	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Cognitive, Behavioral, and Psychiatric Disorders Associated with Seizure Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Recognizes when a patient may have a cognitive, behavioral, or psychiatric disorder associated with epilepsy</p> <p>Obtains an appropriate cognitive, behavioral, and psychiatric history in patients being evaluated for seizures</p> <p>Recognizes when a patient’s neurological symptoms are of psychiatric origin</p>	<p>Identifies cognitive, behavioral, or psychiatric disorder in patients with epilepsy</p> <p>Identifies major cognitive, behavioral, or psychiatric side effects of antiepileptic medications</p> <p>Identifies psychiatric co-morbidities in patients with non-epileptic seizures</p>	<p>Manages complex combinations of medications with central nervous system effects</p> <p>Appropriately refers for neuropsychological testing in evaluating patients with cognitive, behavioral, and psychiatric disorders</p> <p>Recognizes when a patient’s psychiatric symptoms are of neurologic origin (e.g., post-ictal psychosis)</p>	<p>Collaborates with psychiatrist and psychologist to manage cognitive, behavioral, or psychiatric comorbidities in patients with epilepsy</p> <p>Manages cognitive, behavioral, or psychiatric side effects of medical and surgical therapy</p>	<p>Engages in scholarly activity (e.g., teaching, research) in cognitive, behavioral, or psychiatric disorders</p> <p>Selects and utilizes advanced neuropsychological testing related to cognitive, behavioral, or psychiatric disorders in patients with epilepsy</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Epilepsy Localization — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates basic knowledge of neuroanatomy and neurophysiology relevant to localization of the epileptic focus</p> <p>Formulates a reasonable localization based on the history and examination</p>	<p>Localizes epileptic lesions to specific regions of the brain based on history and examination</p> <p>Selects appropriate diagnostic modalities to further localize the epileptic focus</p>	<p>Demonstrates detailed knowledge of neuroanatomy and neurophysiology relevant to localization of the epileptic focus</p> <p>Interprets results of routine diagnostic studies (e.g., EEG, video EEG, magnetic resonance imaging [MRI]) to further localize the epileptic focus</p>	<p>Consistently demonstrates sophisticated and detailed knowledge of neuroanatomy and neurophysiology relevant to localization of the epileptic focus</p> <p>Appropriately utilizes results from more sophisticated diagnostic modalities (e.g., intracranial electrodes, positron emission tomography [PET], single-photon emission computerized tomography [SPECT]) to further localize the epileptic focus</p>	<p>Participates in scholarly activity (e.g., publication in peer-reviewed literature) related to localization of epileptic focus</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Diagnostic Investigation — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of and indications for ordering routine diagnostic tests	Demonstrates knowledge of and indications for ordering advanced diagnostic tests (e.g., PET, SPECT, MR-Spectroscopy) Lists risks and benefits of diagnostic tests	Demonstrates knowledge of and indications for ordering invasive diagnostic tests (e.g., intracranial electrodes, Wada, cortical stimulation) Individualizes diagnostic approach to the specific patient Accurately interprets results of routine diagnostic tests	Recognizes indications and implications of less common testing (e.g., genetic, immunologic) Accurately interprets results of advanced and invasive diagnostic testing Explains limitations, diagnostic yield, and cost-effectiveness of various tests	Participates in scholarly activity (e.g., publication in peer-reviewed literature) related to diagnostic investigation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Seizure and Epilepsy Classification — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common types of seizures and epilepsy, including epilepsy syndromes	Demonstrates knowledge of uncommon types of seizures and epilepsy, including epilepsy syndromes	Demonstrates basic knowledge of clinical and diagnostic findings in common and uncommon seizures and epilepsy	Demonstrates detailed knowledge of clinical and diagnostic findings in common and uncommon seizures and epilepsy	Engages in scholarly activity related to clinical and diagnostic findings in seizures and epilepsy
Demonstrates basic knowledge of seizure and epilepsy classification	Demonstrates knowledge of common electroclinical syndromes Demonstrates advanced knowledge of seizure and epilepsy classification	Demonstrates knowledge of uncommon or rare electroclinical syndromes	Demonstrates advanced knowledge of seizure and epilepsy classification based on age and other demographic variables Demonstrates advanced knowledge of natural history of epilepsy syndromes	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Work in Interprofessional Teams to Enhance Patient Safety — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes team members' roles in maintaining patient safety	Identifies and reports errors and near-misses	Describes potential sources of system failure in clinical care such as minor, major, and sentinel events	Participates in a team-based approach to medical error analysis	Engages in scholarly activity regarding error analysis and patient safety in epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Systems Thinking, Including Cost- and Risk-Effective Practice — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic cost and risk implications of care	Describes cost- and risk-benefit ratios in patient care	Makes clinical decisions that balance cost- and risk-benefit ratios	Incorporates available quality measures in patient care	Engages in scholarly activity (e.g., teaching, research) regarding cost- and risk-effective practice in epilepsy Completes and presents a quality improvement project
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Advocacy, Continuum of Care, and Community Resources — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Identifies responsibilities and duties of allied health professionals involved in the care of patients with seizure disorders</p> <p>Aware of state driving laws as they relate to patients with seizures</p>	<p>Appropriately utilizes and consults with allied health professionals and community resources involved in the care of patients with seizure disorders</p> <p>Identifies community resources for care givers</p>	<p>Understands the differences in expectations of care in comprehensive epilepsy centers vs. other health care centers</p> <p>Advocates for patient care in all aspects (e.g., work, school)</p>	<p>Consistently demonstrates competency in referring and coordinating services</p> <p>Provides anticipatory guidance regarding further services across the lifespan</p> <p>Participates in education of other health professionals (e.g., EEG technician)</p> <p>Understands the practice and responsibilities of allied health professionals in the continuum of care</p>	<p>Engages in scholarly activity regarding continuum of care of patients with epilepsy</p> <p>Participates in leadership role in education of patients and care givers</p> <p>Develops resources for community support services</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Self-directed learning — Practice-based Learning and Improvement				
<ul style="list-style-type: none"> Identify strengths, deficiencies, and limits in one’s knowledge and expertise Set learning and improvement goals Identify and perform appropriate learning activities Use information technology to optimize learning 				
Level 1	Level 2	Level 3	Level 4	Level 5
Acknowledges gaps in knowledge and expertise in epilepsy	Incorporates feedback	Develops an appropriate learning plan based upon clinical experience	Completes an appropriate learning plan based upon clinical experience	Engages in scholarly activity regarding practice-based learning and improvement in epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: 				

Locate, Appraise, and Assimilate Evidence from Scientific Studies Related to Patient’s Health Problems – Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
Uses information technology to search and access relevant medical information	Uses scholarly articles and guidelines to answer patient care issues	Critically evaluates scientific literature	Incorporates appropriate evidence-based information into patient care Understands the limits of evidence-based medicine in patient care	Engages in scholarly activity regarding evidence-based medicine in epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: 				

Compassion, Integrity, Accountability, and Respect for Self and Others — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates compassion, sensitivity, and responsiveness to patients and families</p> <p>Demonstrates non-discriminatory behavior in all interactions, including with diverse and vulnerable populations</p> <p>Consistently demonstrates professional behavior, including dress and timeliness</p>	<p>Describes effects of sleep deprivation and substance abuse on performance</p> <p>Demonstrates appropriate steps to address impairment in self</p>	<p>Demonstrates compassionate practice of medicine, even in context of disagreement with patient beliefs</p> <p>Incorporates patients' socio-cultural needs and beliefs into patient care</p> <p>Demonstrates appropriate steps to address impairment in colleagues</p>	<p>Mentors others in the compassionate practice of medicine, even in context of disagreement with patient beliefs</p> <p>Mentors others in sensitivity and responsiveness to diverse and vulnerable populations</p> <p>Advocates for quality patient care</p>	<p>Engages in scholarly activity regarding professionalism in epilepsy</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

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				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic ethical principles	Determines presence of ethical issues in practice	Analyzes and manages ethical issues in straightforward clinical situations	Analyzes and manages ethical issues in complex clinical situations	Demonstrates leadership and mentorship in applying ethical principles in settings related to epilepsy
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: 				

Relationship Development, Teamwork, and Managing Conflict — Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
Develops a positive relationship with patients in uncomplicated situations Actively participates in team-based care	Manages simple patient/family-related conflicts Engages patients in shared decision-making	Manages conflict in complex situations Uses easy-to-understand language in all phases of communication	Manages conflict across specialties and systems of care Leads epilepsy team-based patient care activities	Engages in scholarly activity regarding teamwork and conflict management
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: 				

Information Sharing, Gathering, and Technology — Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
Effectively communicates during patient hand-overs using a structured communication tool	Effectively communicates during team meetings, discharge planning, and other transitions of care	Effectively communicates the results of a neurologic consultation in a timely manner	Effectively leads family meetings	Develops patient education materials regarding epilepsy
Accurately documents transitions of care	Educates patients about their disease and management, including risks and benefits of treatment options	Effectively gathers information from collateral sources when necessary	Effectively and ethically uses all forms of communication	Engages in scholarly activity regarding interpersonal communication in epilepsy
Completes documentation in a timely fashion	Completes all documentation accurately, including use of electronic health records (EHR), to promote patient safety	Demonstrates synthesis, formulation, and thought process in documentation	Mentors colleagues in timely, accurate, and efficient documentation	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				