

# **Epilepsy Milestones**

The Accreditation Council for Graduate Medical Education



Second Revision: February 2021 First Revision: June 2014

## **Epilepsy Milestones**

The Milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the fellow in key dimensions of the elements of physician competence 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.

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The ACGME would like to thank the following organizations for their continued support in the development of the Milestones:

American Board of Psychiatry and Neurology

**Review Committee for Neurology** 

### **Understanding Milestone Levels and Reporting**

This document presents the Milestones, which programs use in a semi-annual review of fellow performance, and then report to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME Competencies organized in a developmental framework. The narrative descriptions are targets for resident/fellow performance throughout their educational program.

Milestones are arranged into levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert fellow in the specialty or subspecialty. For each reporting period, the Clinical Competency Committee will review the completed evaluations to select the milestone levels that best describe each learner's current performance, abilities, and attributes for each subcompetency.

These levels *do not* correspond with post-graduate year of education. Depending on previous experience, a junior fellow may achieve higher levels early in his/her educational program just as a senior fellow may be at a lower level later in his/her educational program. There is no predetermined timing for a resident to attain any particular level. Fellows may also regress in achievement of their milestones. This may happen for many reasons, such as over scoring in a previous review, a disjointed experience in a particular procedure, or a significant act by the fellow.

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

#### **Additional Notes**

Level 4 is designed as a graduation *goal* but *does not* represent a graduation *requirement*. Making decisions about readiness for graduation and unsupervised practice is the purview of the program director. Furthermore, Milestones 2.0 include revisions and changes that preclude using Milestones as a sole assessment in high-stakes decisions (i.e., determination of eligibility for certification or credentialing). Level 5 is designed to represent an expert fellow whose achievements in a subcompetency are greater than the expectation. Milestones are primarily designed for formative, developmental purposes to support continuous quality improvement for individual learners, education programs, and the specialty. The ACGME and its partners will continue to evaluate and perform research on the Milestones to assess their impact and value.

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

A Supplemental Guide is also available to provide the intent of each subcompetency, examples for each level, assessment methods or tools, and other available resources. The Supplemental Guide, like examples contained within the Milestones, is designed only to assist the program director and Clinical Competency Committee and is not meant to demonstrate any required element or outcome.

Supplemental Guides and other resources are available on the Milestones page of each specialty section of the ACGME website. On <a href="https://www.acgme.org">www.acgme.org</a>, choose the applicable specialty under the "Specialties" menu, then select the "Milestones" link in the lower navigation bar.

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

Systems-Based Practice	1: Patient Safety			
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of commonly reported patient safety events	Identifies system factors that lead to patient safety events	Participates in analysis of patient safety events	Conducts analysis of patient safety events and offers error prevention strategies	Actively engages teams and processes to modify systems to prevent patient safety events
Demonstrates knowledge of how to report patient safety events	Reports patient safety events through institutional reporting systems	Participates in disclosure of patient safety events to patients and families	Discloses patient safety events to patients and families	Role models or mentors others in the disclosure of patient safety events
Comments:  Not Yet Completed Level 1				
			Not reto	ompleted Level 1
middle of a leve	at level and in lower	between in lower le demonstr	a response box on the levels indicates that mi evels have been substrated as well as <b>some</b> as in the higher level(s)	lestones antially

Patient Care 1: History					
Level 1	Level 2	Level 3	Level 4	Level 5	
Obtains a relevant and organized seizure history and interval history, including from external sources	Obtains a relevant and organized history, recognizing seizure risk factors, seizure mimics, and adverse treatment effects	Efficiently obtains a relevant and organized history, including neuropsychiatric symptoms, relevant to patient's acuity and clinical setting (e.g., clinic, emergency room)	Consistently obtains a history sufficient to guide subsequent examination, investigation, and treatment in complex cases, including unusual causes of seizures and epilepsy	Serves as a role model for obtaining a neurological history related to seizures and epilepsy	
Comments:	Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Patient Care 2: Neurologic Examination					
Level 1	Level 2	Level 3	Level 4	Level 5	
Performs a complete neurologic examination, including a relevant systemic and treatment side-effect examination	Performs a complete neurologic examination accurately, incorporating all maneuvers (e.g., hyperventilation) appropriate to the patient, and relevant screening for psychiatric comorbidities	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	
Comments:	Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Patient Care 3: Medical Management				
Level 1	Level 2	Level 3	Level 4	Level 5
Provides anti-seizure medication treatment for patients with common seizure disorders	Provides anti-seizure medication treatment for patients with uncommon seizure disorders, incorporating genetic background, age, gender, and relevant demographic variables	Provides anti-seizure medications for special circumstances such as pregnancy and underlying medical complications	Provides medical management, including nonpharmacologic treatments, of patients with seizure disorders	Engages in scholarly activity (e.g., teaching, participating in clinical trials, authorship) related to medical management of patients with seizure disorders
Manages common side- effects of pharmacologic therapy	Manages pharmacokinetics and drug interactions of anti- seizure medications	Identifies uncommon and rare side-effects of pharmacologic therapy	Manages uncommon anti-seizure medications, rare side- effects of pharmacologic therapy and complex drug interactions	
Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Level 1	Level 2	Level 3	Level 4	Level 5
Discusses the indications for and different types of surgical intervention and identifies appropriate epilepsy surgery candidates	Identifies and interprets diagnostic modalities for epilepsy surgery evaluation (Phase I)	Plans all aspects of the Phase I surgical evaluation and recognizes and interprets common findings of diagnostic modalities (intracranial electroencephalogram (EEG), functional mapping with cortical stimulation, imaging merge and fusion)	Plans all aspects of the Phase II surgical evaluation including less common findings	Independently plans and manages Phase II surgical evaluation and engages in scholarly activity (e.g., conducts research, publishes in peer-reviewed journal) related to surgical management of patients with refractory seizure disorder
Identifies all approved medical device therapies	Discusses age-dependent indications for and limitations of all approved device therapies	Interrogates medical device therapies with simple programming	Interprets data and programs approved medical devices as well as troubleshoots technical issues	Independently manages and programs all approved medical devices including complex programming
Educates patients and caregivers regarding epilepsy surgery indication and understands the role of the epilepsy surgery conference	Educates patients and caregivers regarding overall epilepsy surgery risks and benefits and participates in epilepsy surgery conference	Collaborates with the interdisciplinary team, including patient and family, in acute post-operative management and presents Phase I data as part of the epilepsy surgery conference	Collaborates with the interdisciplinary team in long-term surgical management and presents Phase II data	Leads multidisciplinary epilepsy surgery team and epilepsy surgery conference

Patient Care 5: Emergen	t and Critical Care			
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the indications for continuous EEG monitoring in critically ill patients and identifies primary and secondary causes of status epilepticus	Recognizes and interprets continuous EEG monitoring data in patients with convulsive and non-convulsive status epilepticus and identifies common artifacts in intensive care unit (ICU) EEGs	Recognizes and interprets continuous EEG monitoring data in patients with acute neurologic problems and identifies uncommon artifacts in ICU EEGs	Interprets and manages critically ill patients with continuous EEG monitoring, including quantitative EEG	Engages in scholarly activity (e.g., publishes in peer-reviewed journal) related to emergent management of patients with cluster of seizures or status epilepticus
Performs and interprets a diagnostic evaluation for a patient with status epilepticus	Recognizes common drug interactions and life-threatening complications of anti-seizure medications	Identifies and manages critically ill patients with refractory and super refractory status epilepticus	Collaborates with the interdisciplinary team and manages neurological complications in critically ill patients including refractory and super refractory status epilepticus	
Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies cognitive, behavioral, and psychiatric disorders in patients with epilepsy or psychogenic non- epileptic seizures	Discusses the contribution of seizures, epilepsy etiology, treatment (e.g., antiseizure medications, surgery), and other factors (e.g., sleep disorder) to cognitive, behavioral, and psychiatric disorders in patients with epilepsy or psychogenic non-epileptic seizures	Diagnoses and manages common cognitive, behavioral, and psychiatric disorders medically and refers for neuropsychological testing and psychological or psychiatric treatment, as appropriate	Uses community resources and collaborates with other mental health providers and families to manage cognitive, behavioral, and psychiatric disorders in patients with epilepsy or psychogenic nonepileptic seizures	Engages in scholarly activity (e.g., teaching, research, authorship) in cognitive, behavioral, or psychiatric disorders

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies normal EEG as a function of age	Identifies features of the normal EEG at all developmental stages, as well as artifacts	Recognizes interictal epileptiform abnormalities, benign non-epileptiform transients, and ictal patterns, and correlates these patterns with observed semiology on video	Teaches others to identify normal and abnormal features of an EEG	Engages in scholarly activity focusing on the interpretation of EEG
Verbally describes the findings of an EEG study	Writes a complete report of a routine EEG study	Writes a complete daily report for a continuous video-EEG study including (when applicable) a detailed semiologic description	Teaches others to report EEG findings in verbal and written formats	

Medical Knowledge 1: E	pilepsy Localization				
Level 1	Level 2	Level 3	Level 4	Level 5	
Describes typical semiology of seizures originating in each lobe and the potential neurological deficits based on lobe of origin	Predicts lobar location of the seizure focus based on history (e.g., seizure semiology), exam findings, interictal EEG, and anatomical magnetic resonance imaging (MRI)	Uses detailed knowledge of neuroanatomy and neurophysiology along with clinical data (e.g., seizure semiology, neuropsychological testing, positron emission tomography (PET) scans) to determine the location of the seizure focus within a lobe	Uses detailed knowledge of neuroanatomy, neural networks, and neurophysiology along with incongruent clinical data (e.g., seizure semiology, neuropsychological testing, PET scans) to develop a plan for intracranial recording and potential surgical options	Participates in scholarly activity (e.g., teaching, research, authorship) related to localization of epileptic focus	
Comments:	Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Medical Knowledge 2: Diagnostic Evaluation					
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates knowledge of and indications for ordering routine tests and their costs	Demonstrates knowledge of, risks, and benefits, and indications for ordering advanced diagnostic tests	Recognizes indications, implications, and limitations of less common testing (e.g., magnetoencephalography (MEG), ictal single photon emission computed tomography (SPECT), Wada)	Demonstrates knowledge of, risks and benefits, and indications for ordering invasive diagnostic tests	Participates in scholarly activity (e.g., publication in peer-reviewed literature) related to diagnostic investigation	
Comments:	Comments:  Not Yet Completed Level 1  Not Yet Assessable				

Medical Knowledge 3: Seizure and Epilepsy Classification				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates basic knowledge of common types of seizures and epilepsy, including epilepsy syndromes and epilepsy classification	Demonstrates detailed knowledge of clinical and diagnostic findings in common epilepsy syndromes in children and adults	Demonstrates detailed knowledge of clinical and diagnostic findings in uncommon or rare epilepsy syndromes and epilepsies	Demonstrates advanced knowledge of epilepsies based on age, genetics, and other variables, and their potential impact on management	Engages in scholarly activity related to clinical and diagnostic findings in seizures and epilepsy
Comments:			Not Yet C Not Yet A	ompleted Level 1

Systems-Based Practice 1: Patient Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of commonly reported patient safety events	Identifies system factors that lead to patient safety events	Participates in analysis of patient safety events	Leads analysis of patient safety events and offers error prevention strategies	Actively engages teams and processes to modify systems to prevent patient safety events
Demonstrates knowledge of how to report patient safety events	Reports patient safety events through institutional reporting systems	Participates in disclosure of patient safety events to patients and families	Leads team disclosing patient safety events to patients and families	Role models or mentors others in the disclosure of patient safety events
Comments:  Not Yet Completed Level 1				

Systems-Based Practice 2: Quality Improvement					
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level	
Comments:	Comments:  Not Yet Completed Level 1				

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of care coordination	Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams	Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams	Role models effective coordination of patient- centered care among different disciplines and specialties	Improves quality of transitions of care within and across health care
Performs safe and effective transitions of care/hand-offs in routine clinical situations	Performs safe and effective transitions of care/hand-offs in complex clinical situations	Supervises transitions of care by other team members	Role models safe and effective transitions of care/hand-offs within and across health care delivery systems including outpatient settings	delivery systems to optimize patient outcomes
Demonstrates knowledge of population and community health needs and disparities	Identifies specific population and community health needs and inequities for their local population and community	Effectively uses local resources to meet the needs of a patient population and community	Adapts practice to provide for the needs of specific populations	Leads innovations in adapting practice and systems for populations and communities with health care disparities

Systems-Based Practice 4: Physician Role in Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic health care payment systems (e.g., government, private, public, uninsured care) and practice models	Delivers patient-centered care, considering patient's payment model	Engages with patients in shared decision making, informed by each patient's payment models	Uses available resources to promote optimal patient care (e.g., community resources, patient assistance resources) considering each patient's payment model	Advocates for systems change that enhances high-value, efficient, and effective patient care
Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	Consistently demonstrates timely and accurate documentation, including coding and billing requirements	Implements changes in individual practice patterns in response to professional requirements and in preparation for practice	Educates others to prepare them for transition to practice
Comments:  Not Yet Completed Level 1				

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access and use available evidence, and to incorporate patient preferences and values in order to take care of a routine patient	Articulates clinical questions and elicits patient preferences and values in order to guide evidence-based care	Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients	Critically appraises and applies evidence, even in the face of uncertainty, and interprets conflicting evidence to guide care, tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of guidelines
Comments:			Not Yet C	ompleted Level 1

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to performance data (feedback and other input)	Seeks performance data episodically, with adaptability and humility	Intentionally seeks performance data consistently with adaptability and humility	Role models consistently seeking performance data with adaptability and humility
Identifies the factors that contribute to gap(s) between expectations and actual performance	Analyzes and reflects on the factors that contribute to gap(s) between expectations and actual performance	Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Addresses assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance	Coaches others on reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Analyze and edit/modify learning plans regularly	Role models creation, implementation, analysis, and modification of learning plans
Comments:				
			Not Yet C	ompleted Level 1

Professionalism 1: Professional Behavior and Ethical Principles					
Level 1	Level 2	Level 3	Level 4	Level 5	
Identifies and describes potential triggers for professionalism lapses and how to report  Demonstrates knowledge of ethical principles related to patient care	Demonstrates insight into professional behavior in routine situations and takes responsibility  Analyzes straightforward situations using ethical principles	Demonstrates professional behavior in complex or stressful situations  Analyzes complex situations using ethical principles	Intervenes to prevent professionalism lapses in self and others  Recognizes and uses appropriate resources for managing and resolving ethical dilemmas as needed	Coaches others when their behavior fails to meet professional expectations  Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution	
Comments:  Not Yet Completed Level 1					

Level 1	Level 2	Level 3	Level 4	Level 5
Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations	Recognizes situations in which own behavior may impact others' ability to complete tasks and responsibilities in a timely manner	Develops or implements strategies to improve system-wide problems to improve ability for self and others to complete tasks and responsibilities in a timely fashion
Responds promptly to requests or reminders to complete tasks and responsibilities	Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner	Proactively implements strategies to ensure that the needs of patients, teams, and systems are met		

Professionalism 3: Self-Awareness and Well-Being					
Level 1	Level 2	Level 3	Level 4	Level 5	
Recognizes status of personal and professional well-being, with assistance	Independently recognizes status of personal and professional well-being	With assistance, proposes a plan to promote personal and professional well-being	Independently develops a plan to promote personal and professional well-being	Coaches others when emotional responses or limitations in knowledge/ skills do not meet professional expectations	
Recognizes limits in knowledge/skills, with assistance	Independently recognizes limits in knowledge/skills	With assistance, proposes a plan to remediate or improve limits in knowledge/skills	Independently develops a plan to remediate or improve limits in knowledge/skills		
Comments:  Not Yet Completed Level 1					

This subcompetency is not intended to evaluate a fellow's well-being, but to ensure each fellow has the fundamental knowledge of factors that impact well-being, the mechanisms by which those factors impact well-being, and available resources and tools to improve well-being.

Level 1	Level 2	Level 3	Level 4	Level 5
Uses language and nonverbal behavior to demonstrate respect and establish rapport	Establishes a therapeutic relationship in straightforward encounters using active listening and clear language	Establishes a therapeutic relationship in challenging patient encounters	Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity	Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships
Identifies the need to individualize communication strategies based on patient/family expectations and understanding	Communicates compassionately with patient/family to clarify expectations and verify understanding of the clinical situation	Communicates medical information in the context of patient/family values, uncertainty and conflict	Uses shared decision making to align patient/family values, goals, and preferences with treatment options	Role models shared decision making in the context of patient/family values, uncertainty and conflict

Interpersonal and Communication Skills 2: Barrier and Bias Mitigation				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies common barriers to effective patient care (e.g., language, disability)	Identifies complex barriers to effective patient care (e.g., health literacy, cultural)	Recognizes personal biases and mitigates barriers to optimize patient care, when prompted	Recognizes personal biases and proactively mitigates barriers to optimize patient care	

Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes link between patient outcomes and education	Describes methods for effective patient education	Educates patients effectively in straightforward situations, including eliciting understanding of information provided	Educates patients effectively in complex situations	Educates patients in self- advocacy, community outreach, and activism
Identifies the need to adjust communication strategies based on patient/family expectations and understanding of their health status and treatment options	Organizes and initiates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying understanding of the clinical situation	Compassionately delivers medical information, elicits patient/family values, goals and preferences, and acknowledges uncertainty and conflict	Independently uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a personalized care plan	Role models shared decision making in patient/family communication, including those with a high degree of uncertainty/conflict

Interpersonal and Communication Skills 4: Interprofessional and Team Communication					
Level 1	Level 2	Level 3	Level 4	Level 5	
Respectfully requests and/or receives a consultation	Clearly and concisely requests or responds to a consultation	Checks own or others understanding of consultation	Coordinates recommendations from different members of the health care team to	Role models flexible communication strategies that value input from all health care team	
Uses language that values all members of the health care team	Communicates information effectively with all members of the health care team	Uses active listening to adapt communication style to fit team needs	optimize patient care	members, resolving conflict when needed	
Understands the importance of feedback	Solicits feedback on performance as a member of the health care team	Communicates concerns and provides feedback to peers and learners	Communicates feedback and constructive criticism to superiors	Facilitates regular health care team-based feedback in complex situations	
Comments:	Comments:  Not Yet Completed Level 1				

Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record as required by institutional policy	Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record	Concisely reports diagnostic and therapeutic reasoning in the patient record	Communicates clearly, concisely, timely, and in an organized written form, including anticipatory guidance	Models feedback to improve others' written communication
Describes appropriate use of documentation shortcuts as required by institutional policy	Accurate, timely, and appropriate use of documentation shortcuts in formats specified by institutional policy	Appropriately selects direct (e.g., telephone, inperson) and indirect (e.g., progress notes, text messages) forms of communication based on context	Achieves written or verbal communication (patient notes, email, etc.) that serves as an example for others to follow	Guides departmental or institutional communication around policies and procedures