

# The Child Neurology 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 Child Neurology Milestone Project

The Milestones are designed only for use in evaluation of resident 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 resident physician 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.

## Child Neurology Milestones

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*\*Acknowledgement: Special thanks to Steven Lewis, MD, who was an active member of both the Working and Advisory Groups.*

## Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of resident 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 resident performance as a resident moves from entry into residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe a resident'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 resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

**Level 1:** The resident demonstrates milestones expected of an incoming resident.

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

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

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

**Level 5:** The resident has advanced beyond performance targets set for residency 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 residents 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 residency 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 resident 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/acgmeweb/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 resident's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that resident's performance in relation to the milestones.

Formulation — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Summarizes history and exam findings</li> </ul>	<ul style="list-style-type: none"> <li>Summarizes key elements of history and exam findings</li> <li>Identifies relevant pathophysiologic categories to generate a broad differential diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>Synthesizes information to focus and prioritize diagnostic possibilities</li> <li>Correlates the clinical presentation with basic anatomy of the disorder</li> </ul>	<ul style="list-style-type: none"> <li>Efficiently synthesizes information to focus and prioritize diagnostic possibilities</li> <li>Accurately correlates the clinical presentation with detailed anatomy of the disorder</li> <li>Continuously reconsiders diagnostic differential in response to changes in clinical circumstances</li> <li>Diagnoses brain death</li> </ul>	<ul style="list-style-type: none"> <li>Consistently demonstrates sophisticated and detailed knowledge of pathophysiology in diagnosis</li> <li>Effectively educates others about diagnostic reasoning</li> </ul>
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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
<ul style="list-style-type: none"> <li>Obtains a perinatal and developmentally appropriate neurologic and behavioral history</li> </ul>	<ul style="list-style-type: none"> <li>Obtains a complete and relevant perinatal and developmentally appropriate neurologic and behavioral history</li> <li>Elicits patient and family contribution, as appropriate, based on cognitive level and cultural norms</li> </ul>	<ul style="list-style-type: none"> <li>Obtains a complete, relevant, and organized perinatal and developmentally appropriate neurologic and behavioral history</li> <li>Integrates patient and parent/care giver contribution into history</li> <li>Incorporates information from readily available sources external to the encounter (e.g., medical records)</li> </ul>	<ul style="list-style-type: none"> <li>Efficiently obtains a complete, relevant, and organized perinatal and developmentally appropriate neurologic and behavioral history</li> <li>Synthesizes patient, parent/care giver, and external source contribution into history</li> </ul>	<ul style="list-style-type: none"> <li>Incorporates information from sources difficult to access external to the encounter (e.g., teachers, social workers)</li> </ul>
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Neurological Exam — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Performs a complete, developmentally appropriate neurological exam on patients ranging across the lifespan</li> <li>• Demonstrates a high level of respect and compassion in performing an exam across gender and cultural differences</li> </ul>	<ul style="list-style-type: none"> <li>• Performs a complete, developmentally appropriate, and accurate neurological exam on patients ranging across the lifespan</li> <li>• Examines for common signs and patterns of dysmorphology and dermatologic findings</li> </ul>	<ul style="list-style-type: none"> <li>• Performs a relevant, developmentally appropriate neurological exam, incorporating some additional appropriate maneuvers</li> <li>• Visualizes important findings on the fundoscopic exam, including papilledema, chorioretinitis, and cherry red spots</li> <li>• Accurately performs a neurological exam on the patient with depressed levels of consciousness (e.g., comatose, vegetative states, minimally conscious)</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiently performs a relevant, developmentally appropriate neurological exam accurately, incorporating all additional appropriate maneuvers</li> <li>• Accurately performs an age-appropriate brain death examination</li> </ul>	<ul style="list-style-type: none"> <li>• Consistently demonstrates mastery in performing a complete, relevant, organized, and developmentally appropriate neurological exam across all age groups</li> </ul>
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Management/Treatment — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Demonstrates basic knowledge of management of patients with neurologic disease ranging across the lifespan</li> </ul>	<ul style="list-style-type: none"> <li>• Discusses the general approach to initial treatment of common neurologic disorders, including risks and benefits of treatment</li> <li>• Identifies neurologic emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Individualizes treatment for specific patients</li> <li>• Initiates management for neurologic emergencies, and triages patients to the appropriate level of care</li> <li>• Appropriately requests consultations from non-neurologic care providers for additional evaluation and management</li> </ul>	<ul style="list-style-type: none"> <li>• Adapts treatment based on patient response</li> <li>• Identifies and manages complications of therapy</li> <li>• Independently directs management of patients with neurologic emergencies</li> <li>• Appropriately requests consultations from a neurologic subspecialist for additional evaluation or management</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates sophisticated knowledge of treatment subtleties and controversies in the care of patients of all ages</li> </ul>
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Neurometabolic and Neurogenetic Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have a neurometabolic or neurogenetic disorder</li> </ul>	<ul style="list-style-type: none"> <li>Identifies neurometabolic or neurogenetic disorder patterns and categories</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages common neurometabolic or neurogenetic disorders</li> <li>Identifies neurometabolic or neurogenetic disorder emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses uncommon neurometabolic or neurogenetic disorders</li> <li>Appropriately refers a neurometabolic or neurogenetic disorder patient for more advanced diagnosis and treatment</li> <li>Manages neurometabolic or neurogenetic disorder emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Manages uncommon neurometabolic or neurogenetic disorders</li> <li>Engages in scholarly activity (e.g., teaching, research) in neurometabolic or neurogenetic disorders</li> </ul>
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Movement Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have a movement disorder</li> </ul>	<ul style="list-style-type: none"> <li>Identifies movement disorder phenomenology and categories (hypokinetic and hyperkinetic)</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages patients with common movement disorders</li> <li>Identifies movement disorder emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses patients with uncommon movement disorders</li> <li>Appropriately refers a movement disorder patient for more advanced treatment</li> <li>Manages movement disorder emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Manages patients with uncommon movement disorders</li> <li>Utilizes advanced treatment modalities (e.g., <i>Botulinum</i> toxin, intrathecal baclofen)</li> <li>Engages in scholarly activity (e.g., teaching, research) in movement disorders</li> </ul>
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Neuromuscular Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have a neuromuscular disorder</li> </ul>	<ul style="list-style-type: none"> <li>Identifies patterns of neuromuscular disease (e.g., anterior horn cell disease, nerve root, plexus, peripheral nerve, neuromuscular junction, muscle)</li> <li>Identifies neuromuscular disorder emergencies</li> <li>Orders nerve conduction study [NCS]/ electromyography [EMG], and genetic testing appropriately</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages patients with common neuromuscular disorders</li> <li>Manages neuromuscular disorder emergencies</li> <li>Interprets results of genetic testing in the context of the clinical presentation</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses patients with uncommon neuromuscular disorders</li> <li>Recognizes when tissue biopsy is warranted</li> <li>Describes pitfalls in NCS/EMG testing</li> <li>Interprets results of NCS/EMG testing in the context of the clinical presentation</li> </ul>	<ul style="list-style-type: none"> <li>Manages patients with uncommon neuromuscular disorders</li> <li>Performs, interprets, and creates a report for NCS/EMG</li> <li>Engages in scholarly activity (e.g., teaching, research) in neuromuscular disorders</li> </ul>
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Cerebrovascular Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have a cerebrovascular disorder</li> </ul>	<ul style="list-style-type: none"> <li>Describes stroke syndromes and etiologic subtypes</li> <li>Identifies cerebrovascular emergencies</li> <li>Lists indications and contraindications for intravenous thrombolytic therapy</li> </ul>	<ul style="list-style-type: none"> <li>Identifies specific mechanism of a patient’s cerebrovascular disorder</li> <li>Appropriately refers for interventional or surgical evaluation</li> <li>Diagnoses and manages patients with common cerebrovascular disorders, including appropriate use of thrombolytics</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses patients with uncommon cerebrovascular disorders</li> </ul>	<ul style="list-style-type: none"> <li>Manages patients with uncommon cerebrovascular disorders</li> <li>Engages in scholarly activity (e.g., teaching, research) in cerebrovascular disorders</li> </ul>
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Cognitive, Behavioral, and Psychiatric Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Recognizes when a patient may have a cognitive, behavioral, or psychiatric disorder</li> <li>• Obtains an appropriate cognitive, behavioral, and psychiatric history</li> </ul>	<ul style="list-style-type: none"> <li>• Identifies common cognitive, behavioral, or psychiatric disorders</li> <li>• Identifies cognitive, behavioral, or psychiatric co-morbidities in patients with neurologic disease</li> <li>• Identifies major side effects of psychiatric and neurotropic medications</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnoses and manages patients with common cognitive and behavioral disorders, including cognitive effects of traumatic brain injury, including concussion</li> <li>• Appropriately refers for neuropsychological testing in evaluating patients with cognitive, behavioral, and psychiatric disorders</li> <li>• Recognizes when a patient’s neurological symptoms are of psychiatric origin</li> <li>• Recognizes when a patient’s psychiatric symptoms are of neurologic origin</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnoses and manages patients with uncommon cognitive and behavioral disorders</li> <li>• Diagnoses patients with common psychiatric disorders</li> <li>• Manages complex combinations of medications with central nervous system effects</li> </ul>	<ul style="list-style-type: none"> <li>• Manages patients with common psychiatric disorders</li> <li>• Engages in scholarly activity (e.g., teaching, research) in cognitive, behavioral, or psychiatric disorders</li> <li>• Demonstrates sophisticated knowledge of advanced diagnostic testing and controversies</li> </ul>
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Neuroimmunologic and White Matter Disorders — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have a neuroimmunologic or white matter disorder</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages patients with common neuroimmunologic and white matter disorders</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes patients with uncommon neuroimmunologic and white matter disorders</li> <li>Manages acute presentations of neuroimmunologic and white matter disorders</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses patients with uncommon neuroimmunologic and white matter disorders</li> </ul>	<ul style="list-style-type: none"> <li>Manages patients with uncommon neuroimmunologic and white matter disorders</li> <li>Engages in scholarly activity (e.g., teaching, research) in neuroimmunologic or white matter disorders</li> </ul>
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Epilepsy — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes when a patient may have had a seizure</li> </ul>	<ul style="list-style-type: none"> <li>Identifies epilepsy phenomenology, and classification of seizures and epilepsies</li> <li>Diagnoses convulsive status epilepticus</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages patients with common seizure disorders and provides antiepileptic drug treatment</li> <li>Diagnoses patients with non-convulsive status epilepticus</li> <li>Manages patients with convulsive and non-convulsive status epilepticus</li> <li>Discusses short- and long-term effects of anticonvulsant therapies</li> <li>Counsels patient and caregivers on seizure management and safety issues</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses patients with uncommon seizure disorders</li> <li>Appropriately refers an epilepsy patient for more advanced therapies and interventions</li> <li>Manages short- and long-term effects of anticonvulsant therapies</li> </ul>	<ul style="list-style-type: none"> <li>Manages patients with uncommon seizure disorders</li> <li>Engages in scholarly activity (e.g., teaching, research) in epilepsy</li> </ul>
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Headache Syndromes — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes common headache syndromes</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages common headache syndromes</li> <li>Demonstrates the ability to distinguish primary from secondary headache disorders</li> <li>Identifies headache emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes uncommon headache syndromes</li> <li>Diagnoses and manages headache emergencies</li> <li>Counsels patients and caregivers on headache management and safety issues</li> <li>Discusses side effects of headache therapies</li> </ul>	<ul style="list-style-type: none"> <li>Diagnoses and manages uncommon headache syndromes</li> <li>Manages side effects of headache therapies</li> <li>Appropriately refers a headache patient for more advanced therapies</li> </ul>	<ul style="list-style-type: none"> <li>Engages in scholarly activity (e.g., teaching, research) in headache syndromes</li> </ul>
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Neuro-Oncology – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes common clinical presentations of the brain, spine, or peripheral nerves</li> </ul>	<ul style="list-style-type: none"> <li>Identifies neuro-oncological emergencies and initiates management</li> </ul>	<ul style="list-style-type: none"> <li>Provides differential diagnosis of the brain, spine, or peripheral nerves</li> <li>Identifies neurologic complications due to cancer or the treatment of cancer</li> </ul>	<ul style="list-style-type: none"> <li>Appropriately refers for advanced testing, including biopsy</li> <li>Manages neurologic complications due to cancer or the treatment of cancer</li> </ul>	<ul style="list-style-type: none"> <li>Engages in scholarly activity (e.g., teaching, research) in neuro-oncology</li> </ul>
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Neuroimaging — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Identifies basic neuroanatomy on brain and spine magnetic resonance [MR] and computerized tomography [CT]</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes emergent imaging findings on brain and spine MR and CT</li> <li>Identifies major vascular anatomy on angiography</li> </ul>	<ul style="list-style-type: none"> <li>Describes abnormalities of the brain and spine on MR and CT</li> <li>Recognizes maturation patterns of the brain and spine on MR and CT</li> <li>Identifies major abnormalities on angiography and ultrasound</li> </ul>	<ul style="list-style-type: none"> <li>Interprets MR and CT neuroimaging of brain and spine</li> <li>Recognizes need for specialized neuroradiologic procedures (e.g., magnetic resonance spectroscopy [MRS], positron emission tomography [PET], single-photon emission computed tomography [SPECT], diffusion tensor imaging [DTI])</li> </ul>	<ul style="list-style-type: none"> <li>Identifies subtle abnormalities on angiography</li> <li>Interprets carotid and transcranial ultrasound</li> <li>Recognizes normal patterns on specialized neuroradiologic procedures</li> <li>Engages in scholarly activity (e.g., teaching, research) using neuroimaging techniques to study neurologic disorders</li> </ul>
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Electroencephalogram [EEG] — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Explains an EEG procedure in non-technical terms</li> </ul>	<ul style="list-style-type: none"> <li>Uses appropriate terminology related to EEG (e.g., montage, amplitude, frequency)</li> <li>Describes indications, limitations and clinical utility of amplitude integrated EEG (aEEG)</li> </ul>	<ul style="list-style-type: none"> <li>Describes normal EEG features of wake and sleep states</li> <li>Recognizes maturational changes in EEG</li> <li>Recognizes EEG patterns of status epilepticus</li> <li>Recognizes common EEG artifacts</li> </ul>	<ul style="list-style-type: none"> <li>Interprets common EEG abnormalities and creates a report</li> <li>Recognizes normal EEG variants</li> <li>Identifies EEG patterns in continuous bedside monitoring</li> <li>Correlates EEG patterns seen on concomitant video</li> <li>Interprets and manages patients based on aEEG results</li> </ul>	<ul style="list-style-type: none"> <li>Interprets uncommon EEG abnormalities</li> <li>Engages in scholarly activity (e.g., teaching, research) in EEG</li> </ul>
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<b>Comments:</b>				<b>Not yet rotated</b> <input type="checkbox"/>

Lumbar Puncture — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Lists the indications and contraindications for lumbar puncture</li> <li>• Lists the complications of lumbar puncture</li> </ul>	<ul style="list-style-type: none"> <li>• Manages complications from lumbar puncture</li> </ul>	<ul style="list-style-type: none"> <li>• Performs lumbar puncture under direct supervision</li> </ul>	<ul style="list-style-type: none"> <li>• Performs lumbar puncture on patients across the lifespan without direct supervision</li> </ul>	<ul style="list-style-type: none"> <li>• Performs lumbar puncture on patients with challenging anatomy</li> </ul>
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Development — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Recognizes that metabolism, biochemistry, and pharmacology evolve across the lifespan</li> <li>Lists growth and developmental norms</li> <li>Recognizes that emotional, cognitive, and behavioral developments evolve across the lifespan</li> </ul>	<ul style="list-style-type: none"> <li>Discusses normal embryology of the nervous system</li> <li>Discusses the changes of metabolism, biochemistry, and pharmacology across the lifespan</li> <li>Recognizes individuals who are outliers in normal growth and development</li> <li>Discusses normal emotional, cognitive, and behavioral development across the lifespan</li> </ul>	<ul style="list-style-type: none"> <li>Discusses the manifestations of variant embryology of the nervous system</li> <li>Discusses the changes of metabolism, biochemistry, and pharmacology across the lifespan in common pathologic disorders</li> <li>Has sufficient knowledge to counsel families regarding outliers in normal growth and development</li> <li>Discusses abnormal emotional, cognitive, and behavioral development across the lifespan</li> </ul>	<ul style="list-style-type: none"> <li>Has sufficient knowledge to counsel families regarding the manifestations and implications of common disorders of embryology of the nervous system</li> <li>Discusses the changes of metabolism, biochemistry, and pharmacology in uncommon disorders across the lifespan</li> <li>Has sufficient knowledge to counsel families regarding common disorders of emotional, cognitive, and behavioral development across the lifespan</li> </ul>	<ul style="list-style-type: none"> <li>Has sufficient knowledge to counsel families regarding the manifestations and implications of uncommon disorders of embryology of the nervous system</li> <li>Has sufficient knowledge to counsel families regarding uncommon disorders of emotional, cognitive, and behavioral development across the lifespan</li> <li>Engages in scholarly activity (e.g., teaching, research) related to metabolism, biochemistry, and pharmacology in the developing nervous system</li> </ul>
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Localization — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Attempts to localize lesions within the nervous system</li> <li>• Describes basic neuroanatomy</li> </ul>	<ul style="list-style-type: none"> <li>• Localizes lesions to general regions of the nervous system</li> </ul>	<ul style="list-style-type: none"> <li>• Accurately localizes lesions to specific regions of the nervous system</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiently and accurately localizes lesions to specific regions of the nervous system and incorporates into ongoing patient management</li> <li>• Describes advanced neuroanatomy</li> </ul>	<ul style="list-style-type: none"> <li>• Consistently demonstrates sophisticated and detailed knowledge of neuroanatomy in localizing lesions</li> </ul>
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<b>Comments:</b>				<b>Not yet rotated</b> <input type="checkbox"/>

Formulation — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Summarizes history and exam findings</li> <li>Demonstrates knowledge that neurologic diseases have age-specific presentations</li> </ul>	<ul style="list-style-type: none"> <li>Summarizes key elements of history and exam findings</li> <li>Identifies relevant pathophysiologic categories to generate a broad differential diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>Synthesizes information to focus and prioritize diagnostic possibilities</li> <li>Correlates the clinical presentation with basic anatomy and physiology of the disorder</li> </ul>	<ul style="list-style-type: none"> <li>Efficiently synthesizes information to focus and prioritize diagnostic possibilities</li> <li>Accurately correlates the clinical presentation with detailed anatomy of the disorder</li> <li>Continuously reconsiders diagnostic differential in response to changes in clinical circumstances</li> <li>Utilizes age-appropriate guidelines to diagnose brain death</li> </ul>	<ul style="list-style-type: none"> <li>Consistently demonstrates sophisticated and detailed knowledge of pathophysiology in diagnosis</li> <li>Effectively educates others about diagnostic reasoning and pathophysiology</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet rotated <input type="checkbox"/>



Diagnostic Investigation — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Demonstrates general knowledge of diagnostic tests in neurology</li> </ul>	<ul style="list-style-type: none"> <li>• Discusses the general diagnostic approach appropriate to the clinical presentation</li> <li>• Lists risks and benefits of tests</li> </ul>	<ul style="list-style-type: none"> <li>• Individualizes the diagnostic approach to the specific patient</li> <li>• Accurately interprets results of common diagnostic tests and assessment instruments</li> </ul>	<ul style="list-style-type: none"> <li>• Explains diagnostic yield and cost-effectiveness of testing</li> <li>• Accurately interprets results of less common diagnostic testing</li> <li>• Recognizes indications and implications of genetic testing</li> <li>• Recognizes indications for advanced imaging and other diagnostic studies</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates sophisticated knowledge of diagnostic testing and controversies</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				<b>Not yet rotated</b> <input type="checkbox"/>

Systems thinking, including cost- and risk-effective practice — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Describes basic cost and risk implications of care</li> </ul>	<ul style="list-style-type: none"> <li>• Describes cost- and risk-benefit ratios in patient care</li> </ul>	<ul style="list-style-type: none"> <li>• Makes clinical decisions that balance cost- and risk-benefit ratios</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporates available quality measures in patient care</li> <li>• Completes and presents a quality improvement project</li> </ul>	<ul style="list-style-type: none"> <li>• Engages in scholarly activity (e.g., teaching, research) regarding cost- and risk-effective practice</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Work in inter-professional teams to enhance patient safety — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Describes team members' roles in maintaining patient safety</li> </ul>	<ul style="list-style-type: none"> <li>• Identifies and reports errors and near-misses</li> </ul>	<ul style="list-style-type: none"> <li>• Describes potential sources of system failure in clinical care, such as minor, major, and sentinel events</li> </ul>	<ul style="list-style-type: none"> <li>• Participates in a team-based approach to medical error analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes in a peer-reviewed journal on multidisciplinary error analysis and patient safety</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Self-directed learning — Practice-based Learning and Improvement				
<ul style="list-style-type: none"> <li>• Identify strengths, deficiencies, and limits in one’s knowledge and expertise</li> <li>• Set learning and improvement goals</li> <li>• Identify and perform appropriate learning activities</li> <li>• Use information technology to optimize learning</li> </ul>				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Acknowledges gaps in knowledge and expertise</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporates feedback</li> </ul>	<ul style="list-style-type: none"> <li>• Develops an appropriate learning plan based upon clinical experience</li> </ul>	<ul style="list-style-type: none"> <li>• Completes an appropriate learning plan based upon clinical experience</li> </ul>	<ul style="list-style-type: none"> <li>• Engages in scholarly activity regarding practice-based learning and improvement</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				<b>Not yet achieved Level 1</b> <input type="checkbox"/>

Locate, appraise, and assimilate evidence from scientific studies related to the patient’s health problems — Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Uses information technology to search and access relevant medical information</li> </ul>	<ul style="list-style-type: none"> <li>• Uses scholarly articles and guidelines to answer patient care issues</li> </ul>	<ul style="list-style-type: none"> <li>• Critically evaluates scientific literature</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporates appropriate evidence-based information into patient care</li> <li>• Understands the limits of evidence-based medicine in patient care</li> <li>• Identifies clinical controversies, analyzes the scientific literature, and develops reasoned conclusions for patient care based on the evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Engages in scholarly activity (e.g., teaching, research) regarding evidence-based medicine</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Compassion, integrity, accountability, and respect for self and others — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Demonstrates compassion, sensitivity, and responsiveness to patients, families, and caregivers</li> <li>• Demonstrates non-discriminatory behavior in all interactions, including with diverse and vulnerable populations</li> <li>• Describes effects of sleep deprivation and substance abuse on performance</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates appropriate steps to address impairment in self</li> <li>• Consistently demonstrates professional behavior, including dress and timeliness</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates compassionate practice of medicine, even in the context of disagreement with patient and family beliefs</li> <li>• Incorporates patient and family socio-cultural needs and beliefs into patient care</li> <li>• Demonstrates appropriate steps to address impairment in colleagues</li> </ul>	<ul style="list-style-type: none"> <li>• Mentors others in the compassionate practice of medicine, even in the context of disagreement with patient and family beliefs</li> <li>• Mentors others in sensitivity and responsiveness to diverse and vulnerable populations</li> <li>• Advocates for quality patient care</li> </ul>	<ul style="list-style-type: none"> <li>• Engages in scholarly activity (e.g., teaching, research) regarding professionalism</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Knowledge about, respect for, and adherence to the ethical principles relevant to the practice of medicine — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Describes basic ethical principles</li> <li>• Demonstrates responsiveness to patients, recognizing that patient needs supersede self interest</li> </ul>	<ul style="list-style-type: none"> <li>• Recognizes ethical issues in practice</li> </ul>	<ul style="list-style-type: none"> <li>• Analyzes and manages ethical issues in straightforward clinical situations</li> </ul>	<ul style="list-style-type: none"> <li>• Analyzes and manages ethical issues in complex clinical situations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates leadership and mentorship in applying ethical principles</li> <li>• Engages in scholarly activity (e.g., teaching, research) regarding ethics</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Relationship development, teamwork, and managing conflict — Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Develops a positive relationship with patients, families, and caregivers in uncomplicated situations</li> <li>• Is aware of cultural diversities</li> <li>• Actively participates in team-based care</li> </ul>	<ul style="list-style-type: none"> <li>• Engages patients, families, and caregivers in shared decision-making</li> <li>• Manages simple patient/family-related conflicts</li> <li>• Is respectful of cultural diversities in discussions and management suggestions</li> </ul>	<ul style="list-style-type: none"> <li>• Manages conflict in complex situations</li> <li>• Uses easy-to-understand language in all phases of communication</li> <li>• Recognizes differing philosophies within and between different disciplines in care provision</li> </ul>	<ul style="list-style-type: none"> <li>• Manages conflict across specialties and systems of care</li> <li>• Leads team-based patient care activities</li> <li>• Recruits appropriate assistance from external sources when cultural differences create barriers to patient care</li> </ul>	<ul style="list-style-type: none"> <li>• Engages in scholarly activity (e.g., teaching, research) regarding teamwork and conflict management</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

Information sharing, gathering, and technology — Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Effectively communicates during patient care transitions using a structured communication tool</li> <li>Completes all documentation in a timely and accurate fashion, including use of electronic health record (EHR)</li> <li>Accurately documents transitions of care</li> </ul>	<ul style="list-style-type: none"> <li>Effectively communicates during team meetings, discharge planning, and other transitions of care</li> <li>Educates patients, families, and caregivers about the disease and management, including risks and benefits of treatment options</li> </ul>	<ul style="list-style-type: none"> <li>Effectively communicates the results of a neurologic consultation in a timely manner</li> <li>Effectively gathers information from collateral sources when necessary</li> <li>Demonstrates synthesis, formulation, and thought process in documentation</li> <li>Educates junior residents and medical students regarding disease identification and management</li> </ul>	<ul style="list-style-type: none"> <li>Effectively leads multidisciplinary patient care and family meetings</li> <li>Effectively and appropriately uses all forms of communication, including appropriate use of medical interpreters that respect patient privacy</li> <li>Mentors colleagues in timely, accurate, and efficient documentation</li> </ul>	<ul style="list-style-type: none"> <li>Develops patient education materials</li> <li>Engages in scholarly activity (e.g., teaching, research) regarding interpersonal communication</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>