Supplemental Guide: Brain Injury Medicine

ACGME

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Brain Injury Medicine Milestones. This is not designed to indicate any specific requirements for each level, but to provide insight into the thinking of the Milestone Work Group.

Included in this document is the intent of each Milestone and examples of what a Clinical Competency Committee (CCC) might expect to be observed/assessed at each level. Also included are suggested assessment models and tools for each subcompetency, references, and other useful information.

Review this guide with the CCC and faculty members. As the program develops a shared mental model of the Milestones, consider creating an individualized guide (Supplemental Guide Template available) with institution/program-specific examples, assessment tools used by the program, and curricular components.

Additional tools and references, including the Milestones Guidebook, Clinical Competency Committee Guidebook, and Milestones Guidebook for Residents and Fellows, are available on the Resources page of the Milestones section of the ACGME website.

Patient Care 1: History **Overall Intent:** To obtain a thorough and highly relevant medical history with focus on function and other rehabilitation elements	
Milestones	**Examples**
Level 1 *Acquires a basic history, including medical, functional, and psychosocial elements*	● While admitting a patient, elicits a history that includes a recent subdural hemorrhage with hemiparesis, depression, and an inability to walk independently in relation to preinjury level of function
Level 2 *Uses knowledge of brain injury medicine to acquire a history to guide the performance of the physical examination*	● When admitting a patient with brain injury, identifies difficulty in walking that limits the ability to visit children who live in a second-floor walk-up apartment ● When examining a patient with a history of traumatic brain injury, assesses for hemineglect
Level 3 *Acquires a history, in patients with complex conditions and comorbidities, including psychiatric*	● When admitting a patient with brain injury to acute rehabilitation, identifies multiple comorbidities, including cardiomyopathy concurrent fractures, which may interfere with rehabilitation for hemiparesis ● For a patient with a history of substance or alcohol abuse, takes a history that elicits anxiety and fatigue as the most functionally relevant symptoms impacting activity tolerance and quality of life
Level 4 *Efficiently acquires a relevant history, gathering subtle, sensitive, and/or not readily volunteered information, across a spectrum of ages, impairments, and clinical settings*	● Elicits the sexual history of a 68-year-old patient who developed an ataxic gait to avoid missing a potential diagnosis of neurosyphilis ● Elicits a history of a high school wrestling athlete with a new concussion that includes the return to train regimen
Level 5 *Mentors others in gathering subtle, sensitive, and/or not readily volunteered information*	● Is asked to present to the medical student class on how to take a functional history ● Helps a more junior resident to prioritize the elements of taking a patient history ● Teaches a more junior resident how to use the framework of the International Classification of Functioning in eliciting a functional history
Assessment Models or Tools	● Direct observation ● Medical record (chart) review ● Objective structured clinical examination (OSCE)
Curriculum Mapping	●
Notes or Resources	● Journals ● Textbooks

Patient Care 2: Physical Examination **Overall Intent:** To efficiently perform a hypothesis-driven physical and neurologic examination that identifies subtle or atypical findings over a spectrum of ages and impairments	
Milestones	**Examples**
Level 1 *Performs a basic physical and neurologic exam that identifies impairments and functional abilities*	● Performs an accurate heart and lung exam in a stroke survivor with new cough ● Performs cranial nerve examination in patient with complaint of double vision ● Performs gait assessment in patient who report balance difficulty after traumatic brain injury
Level 2 *Interprets the neurologic exam to accurately assess brain injury and its sequelae, and other non-neurologic comorbidities*	● Assesses a patient after a stroke, including neurologic, cognitive, and musculoskeletal systems; assesses a patient's ability to communicate basic wants and needs ● Includes a comprehensive evaluation of the shoulder and its impact on the patient's daily activities during an outpatient evaluation for shoulder pain on hemiparetic side
Level 3 *Modifies exam to accommodate the patient's impairments, optimize assessment, minimize discomfort, and preserve patient dignity*	● Changes visual exam to focus on tracking and saccadic eye movement in patient who report difficulty with vision after traumatic brain injury ● Changes trail making test to alternating numeric and alphabetic sequence orally when assessing executive dysfunction in a patient with dominant hemiparesis ● Performs a cognitive examination on the right side for a patient with left-side neglect
Level 4 *Identifies and correctly interprets subtle or atypical physical and neurologic findings from the brain injury*	● Performs an examination for apraxia of speech in a patient who has communication deficit after a stroke ● Performs a comprehensive examination for a 70-year-old patient who sustained moderate traumatic brain injury that includes functional gait evaluation and mental status that is completed efficiently
Level 5 *Mentors others in physical and neurologic exam skills in complex brain injury patients*	● Is selected to lead a workshop on neuromusculoskeletal examination of adults with spasticity ● Models how to examine a patient with disorder of consciousness to other trainees
Assessment Models or Tools	● Direct observation ● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation
Curriculum Mapping	●
Notes or Resources	● Neuroexam. Bumenfeld Physical Exam. http://neuroexam.com/neuroexam/content2.html. 2021.

Patient Care 3: Spasticity Management **Overall Intent:** To develop and implement a comprehensive treatment plan that addresses spasticity management needs	
Milestones	**Examples**
Level 1 *Demonstrates basic understanding of spasticity management options*	● While discussing spasticity management in a patient with modified Ashworth level 2 tone, lists the medications, injections, positioning, and splinting/casting interventions that could be done
Identifies indications and contraindications for the procedure	● Determines that low severity spasticity may not significantly affect function and therefore may not warrant intervention ● Determines contractures are not an indication for chemodenervation ● Holds procedural intervention with an elevated international normalized ratio, increased swelling, or cellulitis ● Recognizes that tone may assist with ambulation and grasp
Diagnoses patients with upper motor neuron hyperactivity syndromes by history and physical examination	● Identifies muscles with increased tone through a musculoskeletal and neurological exam
Level 2 *Provides rationale for treatment options including oral and injectable medications, and non-pharmacologic treatments (e.g., physical or occupational therapy, casting, dynamic splinting, surgery)*	● Elicits information about fatigue, cognitive function, driving, and/or working environment to determine if oral medications are appropriate
Performs some components of the procedure, with supervision	● Obtains consent, prepares chemodenervation with appropriate dilution, and sets up electromyogram machine with leads ● While participating in a botulinum toxin injection of the gastrocnemius/soleus complex, prepares the medication and correctly identifies and prepares the injection site ● Confirms placement of needle utilizing maneuvers and electromyogram guidance
Assesses the severity of spasticity (physically and functionally) and documents the assessment accurately before and after interventions	● Accurately and consistently uses a spasticity scale to measure the severity of spasticity ● Performs active and passive range of motion in different positions and notes evidence of sustained clonus ● Performs functional assessment such as walking with and without braces in patients with spasticity
Level 3 *Individualizes treatment choices regarding medication options (e.g., baclofen*	● Modifies medication doses based on extent of spasticity across one or multiple limbs

pump, botulinum toxin injection, phenol), dosing, and injection guidance methods *Performs all components of the procedure, including obtaining informed consent, with supervision* *Assesses outcomes of spasticity interventions, patient's tolerability, and side effects*	● Localizes and appropriately places needle in key muscles of a patient with a plantar flexion contracture ● Correctly identifies a comprehensive progressive intervention strategy that is based on changes in function in a patient with severe function limiting spasticity, ● Uses a risk/benefit analysis of a procedure for a patient with spastic hemiplegia and poor pain tolerance
Level 4 *Adapts a treatment program for continued spasticity management which modifies for better neuromuscular control or corrects possible side effects* *Performs all components of the procedure, including obtaining informed consent across a spectrum of presentations* *Assesses outcomes of spasticity interventions and manages complications*	● In a team meeting, facilitates a discussion with the therapists on the functional outcomes of medical spasticity management and alters medical intervention accordingly ● Resumes occupational therapy and physical therapy for noted increase in tone after a patient has become too depressed to continue a home exercise program ● Identifies muscles responsible for circumduction and hip hiking in a patient with spastic hemiparesis ● Performs all aspects of a technically challenging procedure on muscles responsible for a clenched fist ● At a six-week follow-up, decreases the dose of botulinum toxin to the bicep/brachioradialis at follow up after noting decreased functional use of elbow flexion
Level 5 *Educates others on spasticity management (procedural and non-procedural interventions)* *Instructs others on the performance of the procedure a across a spectrum of presentations* *Educates others on the assessment of outcomes across a spectrum of treatment choices*	● Provides lectures to residents and medical students on spasticity management ● Develops and implements an education session on the procedural management of spasticity for the medical students and residents ● Is noted for proficiency with chemodenervation procedures and is asked to demonstrate injections for a more junior resident on the service ● Leads a resident injection workshop
Assessment Models or Tools	● Direct observation ● OSCE ● Simulation
Curriculum Mapping	●

Notes or Resources	● Components include all pre-procedural, procedural, and post-procedural aspects, including anticipation, prevention, and management of complications ● E-modules ● Escaldi SV, Cuccurullo SJ, Terzella M, Petagna AM, Strax TE. Assessing competency in spasticity management: a method of development and assessment. *Am J Phys Med Rehabil*. 2012;91(3):243-253. https://pubmed.ncbi.nlm.nih.gov/22173081/. 2021. ● Textbooks ● Workshops

Patient Care 4: Evaluation and Diagnosis of Individuals with Brain Injury across the Spectrum of Severity **Overall Intent:** To thoroughly assess individuals across the spectrum of brain injury (mild, moderate, and severe injury as well as concussion and disorders of consciousness)	
Milestones	**Examples**
Level 1 *Generates a differential diagnosis for common presentations from concussion through disorders of consciousness*	● Elicits history from patients/family/caregiver regarding the event of the injury ● While discussing an emergency department consult on a patient with a Glasgow Coma Scale of 4, provides a prioritized differential diagnosis for the disorder of consciousness ● Discusses and differentiates stages of disorders of consciousness
Orders diagnostic studies for common presentations	● Orders a head computerized tomography (CT) as the initial radiological test with altered mental status changes ● Discusses risks and benefits of neuroradiology after concussion
Interprets basic diagnostic study results	● Differentiates gross anatomical structures of the brain on imaging
Level 2 *Generates a differential diagnosis that considers atypical presentations across levels of severity and conditions commonly seen in brain injury*	● Determines presence of psychiatric history in the patient as a contributing factor in the behavior of a severe brain injury ● Determines chronic headaches in a patient with a concussion are related to cervicalgia from a herniated disc in a car accident ● Discusses neurologic versus musculoskeletal causes of headaches after concussion
Orders diagnostic studies for conditions commonly seen in brain injury	● Orders a lower extremity Doppler in setting of new onset swelling to rule out a deep vein thrombosis ● Orders a urinalysis/urine culture in the setting of new, altered mental status ● Requests neuropsychological evaluation for emotionally or cognitively impaired patients
Interprets more complex diagnostic study results	● Identifies the various bleeds in the brain, including subdural, subarachnoid, and epidural ● Identifies and measures midline shifts ● Reviews and has a general understanding of neuropsychological testing
Level 3 *Generates a comprehensive differential diagnosis, including less common conditions*	● Identifies how the source of a fever can be related to pain, a deep vein thrombosis, heterotopic ossification, spasticity, urinary infection, aspiration pneumonia, and/or pulmonary embolus
Prioritizes the sequence and urgency of diagnostic testing	● Correctly identifies the sequence and priority of imaging studies after a brain injury survivor has a fall ● Orders a CT scan to identify emergent clinical status changes ● Orders electroencephalogram (EEG) when imaging is unchanged and a patient continues to have an altered mental status

	● Requests vestibular therapy evaluation of dizziness after assessment reveals impaired balance and deficits in oculomotor testing such as saccades or nystagmus
Interprets diagnostic study results and pursues further testing or specialist input	● After independently reviewing neuroradiological image and noting a change, requests neurological or neurosurgical consultation
Level 4 *Synthesizes clinical information and results of diagnostic studies in the development of a comprehensive differential diagnosis*	● Determines psychiatric illness as a cause of prolonged symptoms related to a head injury ● Requests speech therapy to evaluate swallowing deficits in setting of increased dysarthria and cough ● Correctly correlates clinical findings with the results found on the brain imaging studies of a 22-year-old Rancho Los Amigos Scale Level IV brain injury survivor that is being admitted to the rehabilitation unit ● Identifies brain injury related impairments and implements preventative measures to minimize secondary complications, such as a chair alarm to prevent a fall related to impulsivity
Orders diagnostic testing based on cost-effectiveness and likelihood that results will influence clinical management	● Defers use of magnetic resonance imaging (MRI) in setting of an uncomplicated concussion ● Requests neuropsychological consultation to assess possible influence of pain or mood disorders on cognitive function
Incorporates diagnostic study results and specialist input into a care plan	● Seeks collaboration with other subspecialty clinicians to optimize medical care such as pain management or neurology for chronic post-traumatic headaches ● Modifies discharge plans with patient who needs long-term intravenous antibiotics
Level 5 *From a comprehensive differential diagnosis produces a focused and prioritized differential diagnosis accounting for rare conditions*	● Educates residents on history and physical exam presentations
Streamlines diagnostic evaluation for maximal cost-effectiveness and minimal patient burden	● Facilitates the resident formulating a prioritized differential diagnosis from a comprehensive one while presenting a patient admission ● Defers imaging on uncomplicated concussion and able to discuss with patient and attending on the evidence available
Distinguishes key components of diagnostic study results and specialists input into a care plan	● After independently reviewing results of neuropsychological testing, determines that mood is a contributing factor to cognitive impairment and prescribes an appropriate anti-depressant and recommends psychotherapy
Assessment Models or Tools	● Direct observation

	● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation
Curriculum Mapping	●
Notes or Resources	● Clinical guidelines ● Giacino JT, Katz DI, Schiff ND, et al. Practice guideline update recommendations summary: Disorders of consciousness: Report of the guidelines development, dissemination, and Implementation Subcommittee of the American Academy of Neurology; the American Congress of Rehabilitation Medicine; and the National Institute on Disability, Independent Living, and Rehabilitation Research. *Neurology*. 2018;91(10):450-460. https://n.neurology.org/content/91/10/450.long. 2021. ● McCrory P, Meeuwisse W, Dvořák J, et al. Consensus statement on concussion in sport – the 5th international conference on concussion in sport held in Berlin, October 2016. *Br J Sports Med*. 2017;51(11):838-847. https://bjsm.bmj.com/content/51/11/838.long. 2021. ● Textbooks

Patient Care 5: Medical/Neuropsychiatric Management of Individuals with Brain Injury across the Spectrum of Severity **Overall Intent:** To develop and implement a comprehensive treatment plan that anticipates, identifies, and addresses potential complications related to neurological and musculoskeletal disorders over a spectrum of ages, conditions, and settings	
Milestones	**Examples**
Level 1 *Identifies presence of medical comorbidities directly and indirectly related to brain injury*	● Identifies poorly controlled diabetes as a significant medical issue for a patient on the inpatient rehabilitation service
Identifies common neuropsychiatric consequences of brain injury	● Recognizes depression impacting patient rehabilitation engagement
Level 2 *Identifies level of medical acuity and initiates appropriate treatment*	● Identifies an evolving wrist flexion contracture in an individual who comes to the outpatient clinic for a follow-up four months after a middle cerebral artery stroke, and institutes a treatment program to restore range of motion
Performs initial diagnostic evaluation of neuropsychiatric symptoms	● Completes Patient Health Questionnaire-9 (PHQ-9) in patient verbalizing hopelessness
Level 3 *Identifies individual risk factors for secondary conditions and potential complications and institutes preventive care*	● Enters a complete order set that includes preventative measures for pneumonia, joint contracture, skin breakdown, and deep vein thrombosis after evaluating a patient who is being admitted to the acute rehabilitation unit for comprehensive treatment after a subarachnoid hemorrhage
Initiates appropriate pharmacologic and non-pharmacologic treatment of neuropsychiatric symptoms	● Refers patient with depression to psychologist for cognitive behavior therapy and initiates therapy with a SSRI
Level 4 *Develops and implements a comprehensive treatment plan that identifies and addresses all pertinent comorbidities, secondary conditions, and potential complications*	● Identifies and manages HTN, Type II diabetes, obesity, and spasticity in patient with stroke to prevent recurrent stroke and joint contractures
Develops and implements a comprehensive individualized treatment plan that addresses neuropsychiatric symptoms	● Partners with patient and family members to create a treatment plan to address insomnia after concussion including exercise, sleep hygiene education, alcohol cessation, and sleep study referral
Level 5 *Educates others on development and implementation of comprehensive plans that address comorbidities, secondary conditions and complications, and critically evaluates*	● Is observed by a resident educating a patient in well-established and emerging options for management of the motor and non-motor symptoms related to Parkinson's disease, including evidence-based exercise recommendations

emerging treatments for efficacy and scientific validity *Educates others on development and implementation of a comprehensive individualized plans that address neuropsychiatric symptoms*	● Leads a workshop on the evaluation and management of hydrocephalus, including the evidence basis for emerging surgical interventions ● Engages a patient and family members in discussing symptoms of anxiety and brainstorming environmental strategies, readiness for cognitive behavioral therapy and barriers to medication adherence
Assessment Models or Tools	● Chart stimulated recall ● Direct observation ● Medical record (chart) review ● OSCE ● Simulation ● Written or oral examinations
Curriculum Mapping	●
Notes or Resources	● American Academy of Neurology (AAN). Practice Guideline Update Recommendations Summary: Disorders of Consciousness. https://www.aan.com/Guidelines/home/GuidelineDetail/926. 2021. ● AAN. Practice Guideline: Reducing Brain Injury following Cardiopulmonary Resuscitation. https://www.aan.com/Guidelines/home/GuidelineDetail/857. 2021. ● AAN. Summary of Evidence-based Guideline Update: Evaluation and Management of Concussion in Sports. https://www.aan.com/Guidelines/home/GuidelineDetail/582. 2021. ● Bayley M, Swaine B, Lamontagne ME, et al. *INESSS-ONF Clinical Practice Guideline for the Rehabilitation of Adults with Moderate to Severe Traumatic Brain Injury*. Toronto, ON: Ontario Neurotrauma Foundation; 2016. https://braininjuryguidelines.org/modtosevere/. 2021. ● Brain Trauma Foundation. Guidelines for the Management of Severe TBI, 4th Edition. https://braintrauma.org/guidelines/guidelines-for-the-management-of-severe-tbi-4th-ed#/. 2021. ● Clinical Guidelines ● Harvey RL, Stein J, Winstein CJ, Wittenberg G, Zorowitz R. *Stroke Recovery and Rehabilitation*. 2nd ed. New York, NY: Demos Medical Publishing; 2014. ISBN:978-1620700068. ● Kochanek PM, Carney N, Adelson PD, et al. Guidelines for the acute medical management of severe traumatic brain injury in infants, children, and adolescents – second edition. *Pediatr Crit Care Med*. 2012;13(Suppl 1):S1-82. https://journals.lww.com/pccmjournal/Fulltext/2012/01001/Guidelines_for_the_Acute_Medical_Management_of.1.aspx. 2021.

	● Marshall S, Bayley M, McCullagh S, et al. *Guideline for Concussion/Mild Traumatic Brain Injury and Persistent Symptoms: 3rd Edition (for Adults 18+ years of age)*. Toronto, ON: Ontario Neurotrauma Foundation; 2018. https://braininjuryguidelines.org/concussion. 2021. ● Textbooks ● Zasler ND, Katz DI, Zafonte RD, Arciniegas DB, Bullock MR, Kreutzer JS. *Brain Injury Medicine: Principles and Practice*. 2nd ed. New York, NY: Demos Medical; 2012. ISBN:978-1936287277.

Patient Care 6: Therapy and Durable Medical Equipment Management of Individuals with Brain Injury **Overall Intent:** To develop and implement a comprehensive treatment plan that addresses therapy and durable medical equipment needs	
Milestones	**Examples**
Level 1 *Identifies rehabilitation therapies by discipline, based on functional need*	● Knows roles of the brain injury therapy team members including, physical therapist, occupational therapist, speech therapist, rehab psychologists, vocational counselor, and recreational therapist
Identifies basic orthoses, mobility aids, and assistive technology	● Identifies different types of ankle-foot orthosis
Level 2 *Prescribes rehabilitation therapies by discipline, based on functional need in accordance with short-term goals*	● Prescribes vestibular therapy to physical therapy to treat benign paroxysmal positional vertigo after a traumatic brain injury
Recognizes the indications for basic orthoses, mobility aids, and assistive technology	● Identifies when to prescribe a power wheelchair
Level 3 *Provides therapy prescriptions with appropriate precautions in accordance with short- and long-term goals*	● Prescribes physical therapy for a patient with a severe traumatic brain injury with coordination deficit and post-traumatic epilepsy including fall and seizure precaution, and discusses with patient to establish short- and long-term goals
Prescribes commonly used orthoses, mobility aids, and assisted technology with understanding of outcomes	● Prescribes assistive technology referral to consider voice recognition technology to help a patient return to work after a stroke and resultant hemiparesis
Level 4 *Provides detailed therapy prescription for specific conditions while adjusting for short- and long-term goals*	● Prescribes speech therapy to focus on cognitive deficit after severe traumatic brain injury, identifying attention at the main deficit; short term goal to attend task in low stimulating environment and adjust for long term goal to use memory aid with minimal cues
Prescribes assistive technologies and mobility devices in partnership with the interprofessional team	● Discusses with physical therapist and orthotist to adjust the angle of the ankle-foot orthosis to minimize knee hyperextension and optimize gait for a patient with hemiparesis
Level 5 *Collaborates with orthotists, therapists, and other health care professionals for problem solving unusual clinical and functional challenges with therapies*	● Plans a serial casting program for contractures with a physical or occupational therapist
Serves as an expert resource to other stakeholders (e.g., insurance companies) for the	● Participates in a peer-to-peer review to justify the recommendations behind an ultralight wheelchair

appropriateness of durable medical equipment and assistive technologies	
Assessment Models or Tools	● Chart stimulated recall ● Direct observation ● Medical record (chart) review ● OSCE ● Simulation ● Written or oral examinations
Curriculum Mapping	●
Notes or Resources	● Chen SC, Bodine C, Lew HL. Assistive technology and environmental control devices. In: Cifu DX. *Braddom's Physical Medicine and Rehabilitation*. Philadelphia, PA: Elsevier; 2020;374-388. ISBN:978-0323625395. ● Esquenazi A, Talaty M. Assessment and orthotic management of gait dysfunction in individuals with traumatic brain injury. In: Webster J, Murphy D. *Atlas of Orthoses and Assistive Devices*. Philadelphia, PA: Elsevier; 296. ISBN: 978-0323483230. ● Hryvniak D, Wilder RP, Jenkins J, Statuta SM. Therapeutic exercise. In: Cifu DX. *Braddom's Physical Medicine and Rehabilitation.* Philadelphia, PA*:* Elsevier; 2020:291-315. ISBN:978-0323625395. ● Kelly BM, Patel AT, Dodge C. Upper limb orthotic devices. In: Cifu DX. *Braddom's Physical Medicine and Rehabilitation*. Philadelphia, PA: Elsevier; 2020:209-228. ISBN:978-0323625395. ● Murphy DP, Webster JB, Lovegreen W, Simoncini A. Lower limb orthoses. In: Cifu DX. *Braddom's Physical Medicine and Rehabilitation*. Philadelphia, PA: Elsevier; 2020:229-247. IBSN:978-0323625395.

Medical Knowledge 1: Traumatic and Non-Traumatic Brain Injury **Overall Intent:** To acquire comprehensive scientific knowledge base in traumatic and non-traumatic brain injuries to allow for expert communication to patients, families, and colleagues.	
Milestones	**Examples**
Level 1 *Describes common etiologies of brain injuries and risk factors*	● Distinguishes between primary and secondary brain injury pathophysiology, and common anatomic sites involved ● Describes the epidemiology of brain injury in terms of causation and risk factors
Describes basic brain anatomy, pathophysiology of brain injuries, and neurorecovery mechanisms	● Understands cellular and biochemical pathophysiologic processes in traumatic brain injuries
Describes common complications of brain injuries	● Recognizes seizure as a common complication of severe traumatic brain injury
Level 2 *Demonstrates knowledge of the spectrum of severity and prognosis of brain injury*	● Identifies methods to grade the severity of brain injury
Demonstrates the knowledge of effects of insult to specific brain regions and makes clinical correlations	● Reviews CT or MRI brain imaging with residents and/or medical students and describes potential clinical correlations for a patient with traumatic brain injury
Demonstrates knowledge of risk factors for specific secondary complications and appropriate preventative measures	● Explains appropriate activity restrictions for a patient recent concussion in the context of preventing secondary complication or reducing reinjury risk
Level 3 *Demonstrates knowledge of unique clinical features in special brain injury populations (e.g., geriatric, military, penetrating)*	● Recognizes comorbidities in the elderly traumatic brain injury population which may hinder traumatic brain injury recovery
Demonstrates the knowledge required to diagnose and treat neurological disorders/impairments after brain injuries	● Recommends treatments for patients at risk for post-traumatic stress disorder (PTSD)
Describes diagnostic and therapeutic measures for secondary complications	● Explains the need for EEG for subclinical seizure in a patient with disorders of consciousness

Level 4 *Role models in providing education to patients, families/caregivers, and local community about brain injury*	● Presents about concussions in a community setting
Demonstrates the knowledge required to diagnose and treat neurological disorders/impairments in medically complex cases	● Prescribes appropriate medication for headache management in a patient with traumatic brain injury on hemodialysis
Demonstrates the knowledge required to select appropriate treatment options based on potential side effects and contraindications	● Selects the appropriate selective serotonin reuptake inhibitor (SSRI) to treat depression for a patient who suffered a stroke and currently taking clopidogrel ● Appropriately doses amantadine in the setting of renal impairments
Level 5 *Serves as an expert resource to health care professionals regarding brain injury*	● Presents the results of a research project at a scientific or professional meeting
Delineates a brain injury-specific health maintenance and management program across the lifespan	● Presents a lecture to family medicine physicians on the management of behavioral disorders after traumatic brain injury
Describes interdisciplinary approach to treat the conditions and demonstrates knowledge of complementary and alternative therapies	● Explains how hyperbaric oxygen may or may not be useful for a patient with disorders of consciousness
Assessment Models or Tools	● Case based discussion ● Direct observation ● Medical record (chart) review ● Scholarly Activity ● Written assessment
Curriculum Mapping	●
Notes or Resources	● Journals ● Textbooks

Medical Knowledge 2: Functional Outcomes and Assessment across the Spectrum of Brain Injury Severity **Overall Intent:** To determine functional outcomes based on a thorough assessment of patients across the spectrum of brain injury (mild, moderate, and severe as well as concussion and disorders of consciousness)	
Milestones	**Examples**
Level 1 *Demonstrates basic knowledge in the assessment of functional impairments*	● Identifies the level of assistance required during a patient transfer
Determines basic functional impairments related to cognitive and/or physical deficits	● In case conference, discusses assessment tools used in the evaluation of cognitive, physical, and behavioral dysfunction after brain injury ● Determines potential impairments of a patient with hemiparesis versus hemiplegia
Demonstrates knowledge of commonly used assessment tools in brain injury medicine	● Understands and uses the functional ability measurements in brain injury rehabilitation services
Level 2 *Demonstrates advanced knowledge in the assessment of functional impairments*	● Explains gait impairments of a patient with a dropped foot ● Identifies an appropriate measure to use in a patient exhibiting substantial behavioral disruptions.
Determines advanced functional impairments related to cognitive and/or physical	● Identifies how safety is affected by a patient with hemi-neglect and cognitive deficits.
Selects and implements an assessment tool to assist with functional evaluations	● Uses functional ability measurements to understand basic function and the Berg balance scale to quantify balance impairments. ● Uses the Coma Recovery Scale-Revised (CRS-R) in a disorder of consciousness patient
Level 3 *Integrates a generalized assessment based on an individual's injury to determine functional outcomes*	● Observes a brain injury patient who has chronic back pain struggle to stand and discusses possible modifications to the pain regimen to enhance function ● In the brain injury follow-up clinic, describes how to correctly administer the Disability Rating Scale assessment and discusses the results and functional implications
Synthesizes prognosis and recovery based on assessment of functional impairments	● Determines that recovery of a hemiplegic upper extremity will be unlikely after three months of a traumatic brain hemorrhage ● Reviews progress made by a brain injury patient and determines short- and long-term goals for return to work or driving
Interprets assessment tools used to assist in determining functional outcomes	● Uses the Berg balance scale and Dynamic Gait Index and understands the differences in the clinical information they provide ● Utilizes the CRS-R for evaluating where a patient is in the spectrum of disorder of consciousness

Level 4 *Integrates a comprehensive assessment of an individual to include broader aspects of the injury to determine functional outcomes* *Integrates assessment of an individual to determine functional goals and prognosis* *Exhibits differential uses and limitations of assessment tools for determinants of functional outcomes*	● Correctly identifies visual impairments as a cause of below-predicted functional ability given physical and cognitive impairments ● Implements compensatory strategy of a patient with hemiplegia and recommends preventative treatments such as aggressive range of motion to prevent contractures and pain ● Lists limitations of CRS-R in assessing a patient with quadriplegia, aphasia, language barrier, or pain
Level 5 *Provides comprehensive recommendations related to functional outcomes based on ongoing assessments* *Delivers evidence-based recommendations for use of interventions as it relates to improving functional outcomes and discussing prognosis* *Demonstrates knowledge of controversial and emerging evaluations for functional outcome*	● Discusses outcomes with patient and family regarding progress and expected recovery ● Provides a workshop on the use of functional assessment tools in monitoring outcomes of interventions in patients with brain injury ● Uses amantadine for the improvement of a patient with a disorder of consciousness ● Understands the uses of zolpidem as the treatment of a disorder of consciousness
Assessment Models or Tools	● Case based discussion ● Direct observation ● Medical record (chart) review ● Scholarly Activity ● Written assessment
Curriculum Mapping	●
Notes or Resources	● Greenwald BD, Kapoor N, Singh AD. Visual impairments in the first year after traumatic brain injury. *Brain Inj*. 2012;26(11):1338-59. https://www.tandfonline.com/doi/abs/10.3109/02699052.2012.706356?journalCode=ibij20. 2021. ● Guidelines ● Journals ● Textbooks

	● Whyte J, Rajan R, Rosenbaum A, et al. Zolpidem and restoration of consciousness. *Am J Phys Med Rehabil.* 2014;93(2):101-113. https://pubmed.ncbi.nlm.nih.gov/24434886/. 2021.

Medical Knowledge 3: Clinical Reasoning **Overall Intent:** To reach high-probability diagnoses with continuous reappraisal to minimize clinical reasoning errors	
Milestones	**Examples**
Level 1 *Identifies salient elements of a patient presentation to inform clinical reasoning*	● Presents a basic clinical scenario after interviewing a patient with neck pain in the setting of concussion
Identifies diagnostic studies for common medical conditions	● Appropriately orders diagnostic studies for evaluation of suspected deep vein thrombosis
Identifies common causes of clinical reasoning error	● Describes anchor bias i.e., the tendency to be overly influenced by one piece of information
Level 2 *Develops a prioritized differential diagnosis for common presentations*	● Presents a comprehensive and prioritized differential for neck pain in the setting of concussion
Identifies diagnostic studies for conditions commonly seen in brain injury medicine practice	● Appropriately orders a urinalysis for evaluation of increased spasticity after brain injury
Describes types of clinical reasoning errors within patient care	● When asked by an attending, recognizes own anchor bias in a clinical scenario
Level 3 *Develops a prioritized differential diagnosis for complex presentations*	● Presents a comprehensive and prioritized differential for pain that spans multiple body regions
Prioritizes the sequence and urgency of diagnostic testing	● Recognizes that a patient with concomitant spinal cord injury and traumatic brain injury who develops new bowel and bladder incontinence and weakness requires urgent imaging
Demonstrates a structured approach to personally identify clinical reasoning errors	● Describes own cognitive reasoning process and identifies where clinical reasoning bias can have an impact
Level 4 *Synthesizes information to reach high-probability diagnoses with continuous re-appraisal to minimize clinical reasoning errors*	● Understands the pre-test probability of a brain injury survivor having venous thromboembolism in the setting of acute hypoxia, uses all available information to create a prioritized differential for hypoxia, and identifies the potential for anchor bias, recency bias, premature closure
Considers diagnostic testing based on cost effectiveness and likelihood that results will influence clinical management	● Considers the need for a head CT in a patient with concussion including considerations of cost-effectiveness and next step in management

Anticipates and accounts for errors and biases	● Considers potential biases when presenting a broad differential for a patient with history of brain injury and poly-substance use disorder presenting with acute encephalopathy
Level 5 *Uses new and emerging data to critically evaluate complex undiagnosed cases* *Mentors others on the identification of cost-effective, high-yield diagnostic testing* *Mentors others on minimizing clinical reasoning errors*	● Uses recent publications to identify and treat a misdiagnosed case of sensory hearing loss in a longitudinal temporal bone fracture ● Leads a quality improvement (QI) project to improve cost-effective diagnostic testing ● Helps students identify and reduce clinical reasoning errors
Assessment Models or Tools	● Data about practice habits ● Direct observation ● Medical record (chart) review ● OSCE ● Online modules ● QI process ● Self- Assessment Exam for Residents (SAE-R) ● Written/oral examination
Curriculum Mapping	●
Notes or Resources	● Embedded EHR tools ● The Society to Improve Diagnosis in Medicine. Assessment of Reasoning Tool. https://www.improvediagnosis.org/art/. 2021. ● The Society to Improve Diagnosis in Medicine. Driver Diagram. https://www.improvediagnosis.org/wp-content/uploads/2018/10/Driver_Diagram_-_July_31_-_M.pdf. 2021. ● The Society to Improve Diagnosis in Medicine. Inter-Professional Consensus Curriculum on Diagnosis and Diagnostic Error. https://www.improvediagnosis.org/competency-summary-list/. 2021.

Systems-Based Practice 1: Patient Safety **Overall Intent:** To engage in the analysis and management of patient safety events, including relevant communication with patients, families, and health care professionals	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of common patient safety events* *Demonstrates knowledge of how to report patient safety events*	● Has basic knowledge of the potential for a medication error ● Knows how to report a medication error
Level 2 *Identifies system factors that lead to patient safety events* *Reports patient safety events through institutional reporting systems (simulated or actual)*	● Recognizes that a system default administration time for a prescribed medication may not be appropriate for the patient ● Reports a patient fall using the institutional reporting system
Level 3 *Participates in analysis of patient safety events (simulated or actual)* *Participates in disclosure of patient safety events to patients and families/caregivers (simulated or actual)*	● Prepares for morbidity and mortality presentations ● Participates in patient conference where family is notified of the patient fall
Level 4 *Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)* *Discloses patient safety events to patients and families/caregivers (simulated or actual)*	● Collaborates with a team to lead the analysis of a patient safety event and can competently communicate with patients/families/caregivers about those events ● After a patient fall, reports the incident and communicates with patient/family/caregiver
Level 5 *Actively engages teams and processes to modify systems to prevent patient safety events* *Mentors others in the disclosure of patient safety events*	● Competently assumes an active role at the departmental or institutional level for patient safety initiatives, possibly even being the person to initiate action or call attention to the need for action ● Walks resident through process of reporting patient fall and notifying family/caregiver
Assessment Models or Tools	● Chart or other system documentation by fellow ● Direct observation ● Documentation of QI or patient safety project processes or outcomes ● E-module multiple choice tests

	● Multisource feedback ● Portfolio ● Simulation
Curriculum Mapping	●
Notes or Resources	● Institute of Healthcare Improvement. http://www.ihi.org/Pages/default.aspx. 2021.

Systems-Based Practice 2: Quality Improvement (QI) **Overall Intent:** To develop an understanding of QI principles and engage in QI activities	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of basic quality improvement methodologies and metrics*	● Describes the Plan, Do, Study Act (PDSA) cycle ● Defines a QI aim statement and identifies its components
Level 2 *Describes quality improvement initiatives and how to be involved*	● Describes a possible QI project for preventing medication error on rounds
Level 3 *Participates in quality improvement initiatives*	● Participates in a workshop aimed at improving patient hand-off
Level 4 *Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project*	● Initiates the use of a standardized template for improving hand-offs and analyzes the results
Level 5 *Creates, implements, and assesses quality improvement initiatives at the institutional or community level*	● Competently assumes an active role at the departmental or institutional level for hand-off improving initiatives, possibly even being the person to initiate action or call attention to the need for action
Assessment Models or Tools	● Chart or other system documentation by fellow ● Direct observation ● Documentation of QI or patient safety project processes or outcomes ● E-module multiple choice tests ● Multisource feedback ● Portfolio ● Simulation
Curriculum Mapping	●
Notes or Resources	● American Academy of Physical Medicine and Rehabilitation. QI Guidelines Resource. https://www.aapmr.org/quality-practice/evidence-based-medicine/clinical-practice-guidelines/guideline-resources. 2021. ● ABPMR QI Guidelines Resource https://www.abpmr.org/MOC/PartIV/SelfDirected ● Guo M, Fortin C, Mayo AL, Robinson LR, Lo A. Quality improvement in rehabilitation: A primer for physical medicine and rehabilitation specialists. *PM&R*. 2019;11(7):771-778. https://onlinelibrary.wiley.com/doi/abs/10.1002/pmrj.12130. 2021. ● Institute of Healthcare Improvement. http://www.ihi.org/Pages/default.aspx. 2021.

Systems-Based Practice 3: System Navigation for Patient-Centered Care **Overall Intent:** To effectively navigate the health care system, including the interdisciplinary team and other care providers, to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of care coordination*	● Identifies the members of the interprofessional/interdisciplinary team, including other specialty physicians, dieticians, nurses, consultants, social workers, case managers, and therapists, and describes their roles, but is not yet routinely collaborating with team members or accessing all available resources
Identifies key elements for safe and effective transitions of care and hand-offs	● Lists the essential components of an effective sign-out and care transition including sharing information necessary for successful on-call/off-call transitions
Demonstrates knowledge of population and community health needs	● Identifies components of social determinants of health and how they impact the delivery of patient care
Level 2 *Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams*	● Coordinates with interprofessional team members for routine cases, but may require supervision to ensure all necessary referrals and testing are made
Performs safe and effective transitions of care/hand-offs in routine clinical situations	● Performs a routine case sign-out but may require supervision to identify and appropriately triage cases or calls (priority versus non-priority case or call) and anticipatory guidance
Identifies specific population and community health needs for their local population	● Knows which patients are at high risk for specific health outcomes related to health literacy concerns, cost of testing or therapy, socioeconomic status, religion, culture, and family support
Level 3 *Coordinates care of patients in complex clinical situations effectively collaborating with members of the interprofessional teams*	● Develops a comprehensive treatment plan in coordination with consultants from other medical specialties, physical therapists, and speech pathologists
Performs safe and effective transitions of care/hand-offs in complex clinical situations	● Coordinates a complex discharge from an acute inpatient rehabilitation with home health agency, pharmacy, acute care team, and primary care physician
Uses local resources effectively to meet the needs of a patient population and community while minimizing health care barriers	● Identifies a discount pharmacy close to where the patient lives
Level 4 *Role models effective coordination of patient-centered care in collaboration with different professions and specialties*	● Role models behaviors and educates students and more junior team members regarding the engagement of appropriate interprofessional team members, as needed for each patient and/or case, and ensures the necessary resources have been arranged

Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems and settings *Participates in changing and adapting practice to provide for the needs of specific populations*	● Models efficient hand-off to the rehab team, and coordinates and prioritizes consultant input for a specific diagnosis to ensure the patient gets appropriate follow-up ● Identifies patient populations at high risk for poor health care outcomes due to health barriers, and implements strategies to improve care
Level 5 *Analyzes the process of care coordination and leads in the design and implementation of improvements* *Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes* *Leads innovations and advocacy in partnership with populations and communities experiencing health care needs*	● Works with hospital or ambulatory site team members or leadership to analyze care coordination in that setting, and takes a leadership role in designing and implementing changes to improve the care coordination ● Develops a validated tool to improve safe and effective transitions of care ● Designs a social determinants of health curriculum to help others learn to identify local resources and barriers to care
Assessment Models or Tools	● Case management quality metrics and goals mined from electronic health records (EHR) ● Direct observation ● Medical record (chart) review ● Multisource feedback ● OSCE ● Review of sign-out tools, use and review of checklist
Curriculum Mapping	●
Notes or Resources	● Centers for Disease Control (CDC). Population Health Training in Place Program (PH-TIPP). https://www.cdc.gov/pophealthtraining/whatis.html. 2021. ● Skochelak SE, Hawkins RE, Lawson LE, Starr SR, Borkan J, Gonzalo JD. *Health Systems Science*. 1st ed. Philadelphia, PA: Elsevier; 2016. ISBN:9780702070372.

Systems-Based Practice 4: Physician Role in Health Care Systems **Overall Intent:** To understand the physician's role in the complex health care system and how to optimize the system to improve patient care and the health system's performance	
Milestones	**Examples**
Level 1 *Identifies key components of the complex health care system including the various venues for post-acute care*	● Identifies that post-acute care includes acute inpatient rehabilitation facilities, skilled nursing facilities, long-term acute care hospital
Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models	● Names systems and providers involved in test ordering and payment
Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	● Recognizes that Medicare, Medicaid, Veterans Affairs (i.e., the VA), and commercial third-party payors are different payment systems
Level 2 *Describes how components of a complex health care system are interrelated, and how this impacts patient care*	● Understands how improving patient satisfaction improves patient adherence and remuneration to the health system; is not yet able to consistently think through clinical redesign to improve quality; does not yet modify personal practice to enhance outcomes
Delivers care with consideration of each patient's payment model (e.g., insurance type)	● Applies knowledge of health plan features, including formularies and network requirements in patient care situations
Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	● Uses hospital EHR to write note meeting basic requirements for billing
Level 3 *Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)*	● Understands that extended length of stay impacts the ability of other patients to have an inpatient bed and increases costs
Engages with patients in shared decision making, informed by each patient's payment models	● Uses shared decision making and adapts the choice of the most cost-effective imaging studies depending on the relevant clinical needs
Describes core administrative knowledge needed for transition to practice (e.g., contract	● Understands state law concerning requirements for malpractice insurance and consequences for noncompliance

negotiations, malpractice insurance, government regulation, compliance)	
Level 4 *Navigates the various components of the complex health care system to provide efficient and effective patient care and transition of care* *Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model* *Analyzes individual practice patterns and professional requirements in preparation for independent practice*	● Works with social worker to identify transportation resources of a patient without access to a car ● Arranges for in-person interpreter services to gain cultural perspective ● Advocates for a customized wheelchair to prevent downstream costs and complications ● Recognizes the need in practice to set aside time for "New Patient" slots in busy clinical practice setting
Level 5 *Advocates for or leads systems change that enhances high value, efficient and effective patient care, and transition of care* *Participates in health policy advocacy activities*	● Works with community or professional organizations to advocate for accessibility services ● Develops processes to decrease opioid prescribing for one or more clinical services ● Discusses personal experiences in setting up a private practice with other learners
Assessment Models or Tools	● Medical record (chart) review ● Direct observation ● Patient satisfaction data
Curriculum Mapping	●
Notes or Resources	● Agency for Healthcare Research and Quality (AHRQ). Measuring the Quality of Physician Care. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. 2021. ● AHRQ. Major Physician Performance Sets. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementsets.html. 2021. ● Dzau VJ, McClellan M, Burke S, et al. Vital directions for health and health care: priorities form a national academy of medicine initiative. *JAMA*. 2017;317(14):1461-1470. https://nam.edu/vital-directions-for-health-health-care-priorities-from-a-national-academy-of-medicine-initiative/. 2021. ● The Kaiser Family Foundation. Health Reform. https://www.kff.org/topic/health-reform/. 2021.

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice **Overall Intent:** To incorporate evidence and patient values into clinical practice	
Milestones	**Examples**
Level 1 *Demonstrates how to access clinical evidence* *Articulates a summary and use of the available evidence*	● Identifies the clinical problem and obtains appropriate evidence-based guideline
Level 2 *Locates clinical evidence and formulates basic treatment recommendations* *Develops clinical questions and searches the available evidence*	● Searches PubMed for a clinically relevant question on rounds and makes a treatment recommendation ● Asks the appropriate questions of the patient to elicit preferences for disease management/treatment
Level 3 *Integrates clinical evidence with practice of patient care of complex patients* *Locates and applies hierarchal clinical evidence in the care of patients*	● Obtains and applies evidence in the care of complex patients when there is relative agreement in what the evidence suggests
Level 4 *Critically appraises and applies clinical evidence to individual patient care* *Integrates conflicting evidence to tailor recommendations to individual patient care*	● Assesses the peer-reviewed, evidence-based literature to start zolpidem on a patient with disorder of consciousness ● Assesses the peer-reviewed, evidence-based literature to address a patient when the evidence is unclear or emerging ● Is aware of novel therapeutic techniques or new evidence that challenges current guidelines and demonstrates the ability to appropriately apply this information
Level 5 *Educates others on how critically appraise and apply evidence to individual patient care* *Develops evidence-based treatment guidelines*	● Formally teaches others how to find and apply best practice or develops, independently, or as a part of a team, thoughtful clinical guidelines
Assessment Models or Tools	● Case-based assessment ● Direct observation ● Journal Club ● Oral or written examination
Curriculum Mapping	●
Notes or Resources	● Institutional IRB guidelines

	● National Institutes of Health. Write Your Application. https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm. 2021. ● U.S. National Library of Medicine. PubMed Tutorial. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html. 2021. ● Various journal submission guidelines

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Professional Growth **Overall Intent:** To seek clinical performance information with the intent to improve care; reflect on all domains of practice, personal interactions, and behaviors, and their impact on colleagues and patients, families and caregivers (reflective mindfulness); develop clear objectives and goals for improvement in some form of a learning plan	
Milestones	**Examples**
Level 1 *Accepts responsibility for professional development and establishing goals* *Identifies and analyzes performance gaps between one's expected and actual performance* *Seeks opportunities to improve through an assisted learning plan*	● Acknowledges need to improve ● Begins to seek ways to determine where improvements are needed and makes specific goals that are reasonable to execute and achieve
Level 2 *Demonstrates openness to performance feedback to inform goals* *Reflects on the factors which contribute to performance gaps* *Designs and implements a learning plan, with assistance*	● Summarizes feedback ● Is increasingly able to identify performance gaps and uses feedback from others for performance improvement ● Asks faculty members about performance and opportunities for improvement ● Uses feedback with a goal of improving communication skills with peers/colleagues, staff members, and patients while on inpatient service ● Improves performance from prior feedback ● Drafts goals for learning plan using mentor feedback for effective implementation
Level 3 *Seeks and incorporates performance feedback episodically, with openness and humility* *Reflects and institutes behavioral changes to narrow performance gaps* *Independently designs and implements a learning plan*	● Takes input from peers/colleagues and supervisors to gain complex insight into personal strengths and areas to improve ● Acts on input and is appreciative and open ● Documents reasonable and measurable goals ● Uses multiple sources of data to inform goals and plan
Level 4 *Seeks and incorporates performance feedback consistently, with openness and humility*	● Consistently identifies ongoing gaps and chooses areas for further development

Re-evaluates the effectiveness of behavioral changes and modifies when necessary *Uses performance feedback to measure and modify the effectiveness of a learning plan*	● Uses multiple sources of data to evaluate the success of past learning plan and define next steps
Level 5 *Role models consistently seeking and incorporating performance feedback* *Coaches others on reflective practice to improve performance gaps* *Facilitates the design and implementation of learning plans for others*	● Encourages other learners on the team to consider how their behavior affects the rest of the team ● Provides effective feedback for others regarding development of their learning plans
Assessment Models or Tools	● Direct observation ● Multisource feedback ● Peer feedback ● Review of learning plan ● Self-reflection
Curriculum Mapping	●
Notes or Resources	● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. *Academic Medicine*. 2009;84(8):1066-1074. https://journals.lww.com/academicmedicine/fulltext/2009/08000/Measurement_and_Correlates_of_Physicians__Lifelong.21.aspx. 2021. ● Lockspeiser TM, Schmitter PA, Lane JL, Hanson JL, Rosenberg AA, Park YS. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. *Academic Medicine*. 2013;88(10):1558-1563. https://journals.lww.com/academicmedicine/fulltext/2013/10000/Assessing_Residents__Written_Learning_Goals_and.39.aspx. 2021.

Professionalism 1: Ethics **Overall Intent:** To understand ethical principles, apply them in clinical practice, and use appropriate resources for managing ethical dilemmas	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of core ethical principles*	● Discusses the basic principles underlying ethics (beneficence, nonmaleficence, justice, autonomy) and professionalism (professional values and commitments), and how they apply in various situations (informed consent process) ● Obtains informed consent for procedures
Level 2 *Analyzes straightforward situations using ethical principles*	● Uses ethical principles to analyze straightforward situations ● When obtaining informed consent for a procedure, consistently gives patients the information necessary to understand the scope and nature of potential risks and benefits of the procedure to make a decision, and follows the patients' wishes ● Acknowledges a medical error, and provides the patient an explanation of the error and its consequences without deception or non-disclosure
Level 3 *Analyzes complex situations using ethical principles and seeks guidance for resolution*	● Analyzes conflicts (or perceived conflicts) between patients/providers/staff or between professional values ○ Requests an ethics consult for Jehovah's Witness patient with potential transfusion needs ○ Submits an IRB review for a research project ● Analyzes difficult real or hypothetical ethics case scenarios or situations, and recognizes the underlying ethical principles and any potential tensions between them ● Uses shared decision making and educates patients to improve compliance with recommended treatment, but respects the competent patient's right to refuse treatment, even if it is medically indicated
Level 4 *Recognizes conflicting ethical dilemmas and resourcefully manages and resolves them using appropriate resources*	● Participates in creation of a behavioral plan to address a patient's verbal abuse of staff with ethically appropriate enforceable consequences for inappropriate behaviors, in consultation with the ethics team and with engagement of the patient as much as feasible Facilitates communication about the plan to promote consistency of response within the rehabilitation team
Level 5 *Serves as a resource for others to resolve complex ethical challenges*	● Identifies and seeks to address system-wide factors or barriers to promoting a culture of ethical practice through participation in a work group, committee, or task force ● Serves as the resident member of the IRB or Ethics Committee
Assessment Models or Tools	● Direct observation ● Global evaluation ● Multisource feedback ● Oral or written self-reflection (e.g., of a personal or observed lapse, ethical dilemma, or systems-level factors)

	● Simulation
Curriculum Mapping	●
Notes or Resources	● American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2021. ● Kirschner KL. Ethical-legal issues in physiatrics. *PMR*. 2009;1(1):81. https://onlinelibrary.wiley.com/doi/full/10.1016/j.pmrj.2008.12.003. 2021.

Professionalism 2: Professional Behaviors **Overall Intent:** To recognize and address lapses in professional behavior, demonstrate professional behaviors, and use appropriate resources for minimizing potential professionalism lapses	
Milestones	**Examples**
Level 1 *Identifies and describes core professional behavior* *Approaches clinical care with recognition of how professional behavior can affect others*	● Identifies and describes potential triggers for professionalism lapses, describes when and how to appropriately report professionalism lapses, and outlines strategies for addressing common barriers to reporting
Level 2 *Demonstrates professional behavior in routine situations* *Describes situations to appropriately report professionalism lapses in self and others*	● Demonstrates professional behavior in routine situations and can acknowledge a lapse without becoming defensive, making excuses, or blaming others ● Displays respect for patients and expects the same from others ● Apologizes for the lapse when appropriate and taking steps to make amends if needed ● Articulates strategies for preventing similar lapses in the future
Level 3 *Demonstrates professional behavior in complex or stressful situations* *Takes responsibility for own professionalism lapses and responds appropriately*	● Recognizes that when getting calls late at night, it is important to be respectful to the caller ● Apologizes to the nurse after an outburst in response to a call
Level 4 *Recognizes and manages dilemmas that may trigger lapses in professional behavior* *Proactively intervenes to prevent professionalism lapses in self and others*	● Analyzes difficult real or hypothetical professionalism case scenarios or situations, recognizes own limitations, and consistently demonstrates professional behavior ● Actively and consistently seeks to consider the perspectives of others to prevent lapses
Level 5 *Role models professional behavior* *Identifies and addresses system-based factors that affects professionalism*	● Coaches another learner who is frequently late to rounds ● Identifies and seeks to address system-wide factors or barriers to promoting a culture of professional behavior through participation in a work group, committee, or task force
Assessment Models or Tools	● Direct observation ● Multisource feedback ● Oral or written self-reflection (e.g., of a personal or observed lapse, ethical dilemma, or systems-level factors) ● Simulation
Curriculum Mapping	●
Notes or Resources	● ABIM Foundation. American Board of Internal Medicine. Medical professionalism in the new millennium: a physician charter. *Annals of Internal Medicine*. 2002;136(3):243-246.

	https://annals.org/aim/fullarticle/474090/medical-professionalism-new-millennium-physician-charter. 2021. ● ABPMR. Demonstrating Professionalism. https://www.abpmr.org/MOC/PartI/ProfessionalismDefinition. 2021. ● Byyny RL, Papadakis MA, Paauw DS, Pfiel S, Alpha Omega Alpha. *Medical Professionalism Best Practices*. Menlo Park, CA: Alpha Omega Alpha Honor Medical Society; 2015. https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf. 2021. ● Levinson W, Ginsburg S, Hafferty FW, Lucey CR. *Understanding Medical Professionalism*. 1st ed. New York, NY: McGraw-Hill Education; 2014. https://accessmedicine.mhmedical.com/book.aspx?bookID=1058. 2021.

Professionalism 3: Accountability **Overall Intent:** To take responsibility for one's own actions and the impact on patients and other members	
Milestones	**Examples**
Level 1 *Responds promptly to requests or reminders to complete responsibilities*	● Responds quickly to reminders from program administrator to complete case logs ● Completes clinic notes on the day of service after gentle prompting from attending ● Performs patient handoff to the on-call resident after being reminded to do so ● Completes evaluations of peers and attendings when reminded by program administrator
Level 2 *Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations*	● Completes case logs without prompting from program administrator ● Completes appropriately detailed clinic notes on the day of service without prompting from attending ● Completes patient hand-off to the on-call resident at the pre-designated time ● Submits required evaluations on time without requiring reminders
Level 3 *Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations*	● Completes all work on the inpatient rehabilitation service prior to leaving town to give a poster presentation at a conference ● Appropriately notifies resident on day service about overnight call events during transition of care or hand-off to avoid patient safety issues and compromise of patient care ● Notifies attending of multiple competing demands on call, appropriately triages tasks, and asks for assistance from other residents or faculty members, if needed
Level 4 *Proactively implements strategies to ensure that the needs of patients, family members, caregivers, teams, and systems are met in a timely manner*	● Advises residents in how to manage their time in completing patient care tasks and escalates to communicating with program director if problem requires a system-based approach and/or needs addressing at a higher administrative level ● Takes responsibility for potential adverse outcomes and professionally discusses these concerns with the interprofessional team
Level 5 *Mentors others to optimize timely task completion*	● Sets up a meeting with the nurse manager to streamline patient discharges ● Leads team to find solutions to a problem that has been identified
Assessment Models or Tools	● Compliance with deadlines and timelines ● Direct observation ● Multisource feedback ● Self-evaluations and reflective tools ● Simulation
Curriculum Mapping	●
Notes or Resources	● Code of conduct from fellow/resident institutional manual ● Donnon T, Al Ansari A, Al Alawi S, Violato C. The reliability, validity, and feasibility of multisource feedback physician assessment: A systematic review. *Acad Med*. 2014;89(3):511-516.

	https://journals.lww.com/academicmedicine/fulltext/2014/03000/The_Reliability,_Validity,_and_Feasibility_of.34.aspx. 2021. ● Expectations of residency program regarding accountability and professionalism ● Fornari A, Akbar S, Tyler S. Critical synthesis package: assessment of professional behaviors (APB). *MedEdPORTAL. 2014;10:9902. https://www.mededportal.org/publication/9902. 2021.* ● Muueller PS. Teaching and assessing professionalism in medical learners and practicing physicians. *Rambam Maimonides Med J*. 2015;6(2):e0011. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4422450/. 2021. ● Mueller PS. Incorporating professionalism into medical education: The Mayo Clinic experience. *Keio J Med*. 2009;58(3)133-143. https://www.jstage.jst.go.jp/article/kjm/58/3/58_3_133/_article. 2021. ● Wilkinson TJ, Wade WB, Knock LD. A blueprint to assess professionalism: Results of a systematic review. *Acad Med*. 2009;84(5):551-558. https://journals.lww.com/academicmedicine/fulltext/2009/05000/A_Blueprint_to_Assess_Professionalism__Results_of.8.aspx. 2021.

Professionalism 4: Patient Care Etiquette with Patients of All Abilities **Overall Intent:** To attend to the comfort and dignity of all patients regardless of any impairment or disability	
Milestones	**Examples**
Level 1 *Recognizes the need to respect the dignity of all patients and families/caregivers regardless of impairments or disabilities*	● Understands that all patients should be treated with respect, with due attention to their comfort and dignity, regardless of disability
Level 2 *Demonstrates specific elements of verbal and physical communication that reflect respect for people with impairments or disabilities*	● Sits at the level of a wheelchair user for conversation ● Treats the wheelchair as part of the user's personal space ● Talks directly to the person with disability not through their caregiver or companion ● Uses language that emphasizes the individual person and not just the disability when referring to the patient ("a person with paraplegia," not "a paraplegic") ● Adjusts pillows and blanket if needed after examination, and replaces the call button or wheelchair so it is accessible to the patient if moved during patient examination in bed ● Identifies self and makes the patient aware verbally before making physical contact with a patient who is blind
Level 3 *Maintains patient's and family's/caregiver's comfort and dignity during history taking and physical examination for those with mild impairments or disabilities*	● Takes care to avoid causing discomfort to the patient while testing active range of motion of an inflamed knee joint ● Approaches a patient with a right visual field defect from the patient's left (good) side so not startle them
Level 4 *Maintains patient's and family's/caregiver's comfort and dignity during history taking and physical examination for those with severe impairments or disabilities*	● Turns a patient with dense hemiplegia with ease during physical examination without pulling on the weak arm, keeps the weak arm supported at all times during the turn, and appropriately uses techniques such as bending the opposite knee or crossing the patient's ankles in the direction of the turn to facilitate the movement; controls any spasms provoked by the movement by exerting gentle pressure on the spastic limb
Level 5 *Mentors and is a resource for others by coaching them in behaviors and actions that optimize the comfort, dignity, and respect of people with impairments or disabilities*	● Is recognized as a role model for demonstrating disability etiquette in clinical interactions and selected to teach a workshop on optimal techniques to examine patients with different disabling conditions
Assessment Models or Tools	● Direct observation ● Global evaluation ● Multisource feedback ● Oral or written self-reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● Sabharwal S. Assessment of competency in positioning and movement of physically disabled patients. *Acad Med*. 2000;75(5):525.

	https://journals.lww.com/academicmedicine/Fulltext/2000/05000/Assessment_of_Competency_in_Positioning_and.47.aspx. 2021. ● Sabharwal S. Objective assessment and structured teaching of disability etiquette. *Acad Med*. 2001;76(5):509. https://journals.lww.com/academicmedicine/Fulltext/2001/05000/Objective_Assessment_and_Structured_Teaching_of.38.aspx#pdf-link. 2021. ● United Spinal Association. *Disability Etiquette: Tips on Interacting with People with Disabilities.* New York, NY: United Spinal Association. https://www.unitedspinal.org/pdf/DisabilityEtiquette.pdf. 2021.

Professionalism 5: Fellow Well-Being and Help-Seeking **Overall Intent:** To identify, use, manage, improve, and seek help for personal and professional well-being	
Milestones	**Examples**
Level 1 *Recognizes status of personal and professional well-being, with assistance*	● Describes personal well-being during semi-annual evaluation with program director or during mentor meeting with prompting
Level 2 *Independently recognizes status of personal and professional well-being and demonstrates appropriate help-seeking behaviors*	● Describes employee assistance program and resident wellness program
Level 3 *With assistance, proposes, implements, and refines a plan to optimize personal and professional well-being for self and others*	● With supervision, assists in developing a personal action plan to address stress and burnout ● With the help of the program director, creates a plan to optimize work efficiency
Level 4 *Independently develops, implements, and refines a plan to optimize personal and professional well-being for self and others*	● Plans to exercise three times each week to reduce stress
Level 5 *Mentors others and addresses system barriers and facilitators to optimize personal and professional well-being for self and others*	● Assists with the formation of resident wellness programming
Assessment Models or Tools	● Direct observation ● Group interview or discussions for team activities ● Institutional online training modules ● Self-assessment and personal learning plan
Curriculum Mapping	●
Notes or Resources	● This subcompetency is not intended to evaluate a fellow's well-being. Rather, the intent is to ensure that each fellow has the fundamental knowledge of factors that impact well-being, the mechanism by which those factors impact well-being, and available resources and tools to improve well-being. ● ACGME. "Well-Being Tools and Resources." https://dl.acgme.org/pages/well-being-tools-resources. Accessed 2022. ● American Board of Pediatrics. "Entrustable Professional Activities for Subspecialties." https://www.abp.org/content/entrustable-professional-activities-subspecialties. Accessed 2022. ● American Board of Pediatrics. "Medical Professionalism." https://www.abp.org/content/medical-professionalism. Accessed 2020. ● Hicks, Patricia J., Daniel Schumacher, Susan Guralnick, Carol Carraccio, and Ann E. Burke. 2014. "Domain of Competence: Personal and Professional Development."

	Academic Pediatrics 14(2 Suppl): S80-97. https://www.sciencedirect.com/science/article/abs/pii/S187628591300332X. ● Local resources, including Employee Assistance

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication **Overall Intent:** To deliberately use language and behaviors to form constructive relationships with the patient and others (e.g., family and caregivers), identify communication barriers including self-reflection on biases, and minimize them in the doctor-patient relationships; to organize and lead communication around shared decision making	
Milestones	**Examples**
Level 1 *Uses language and nonverbal behavior to demonstrate respect and establish rapport*	● Self-monitors and controls tone, non-verbal responses, and language and asks questions to invite patient/family/caregiver participation
Mitigates common barriers to effective communication (e.g., language, disability)	● Before a family meeting, adjusts the seating in the room and sits down so that all participants can see and hear one another ● Identifies common communication barriers in patient care and uses interpretation services and picture boards ● Avoids medical jargon and can communicate at a level understandable to a lay person ● Ensures communication is at the appropriate reading level to be understood by the patient/family/caregiver
Accurately communicates own role within the health care system	● Accurately communicates their role as a fellow to patients/families/caregivers
Level 2 *Establishes a therapeutic relationship in straightforward encounters using active listening and clear language*	● Establishes a professional relationship with patients/families/caregivers, with attention to affect, and questions that explore the optimal approach to daily tasks
Mitigates complex barriers to effective communication (e.g., health literacy)	● With patient consent, consults pastoral services to facilitate communication between a patient and their family related to differing views of how religion impacts treatment
Organizes and initiates communication with patient/family/caregiver by clarifying expectations and verifying understanding of the clinical situation	● Effectively leads patient/family/caregiver goal meetings in straightforward cases, with attending guidance
Level 3 *Establishes a therapeutic relationship in challenging patient encounters*	● Successfully establishes rapport with challenging patients ● Maintains and repairs a therapeutic relationship through times of conflict
When prompted, reflects on biases while attempting to mitigate communication barriers	● Attempts to mitigate identified communication barriers, including reflection on biases when prompted

With guidance, sensitively and compassionately delivers medical information, elicits patient and family/caregiver values, goals and preferences, and acknowledges uncertainty and conflict	● Provides information in a tailored way to meet the needs of patient/family/caregivers using written versus verbal communication, amount of information, and number of choices desired ● Elicits what is most important to the patient/family/caregivers, and acknowledges uncertainty in medical complexity and prognosis
Level 4 *Easily establishes therapeutic relationships, with attention to patient/family/caregiver concerns and context, regardless of complexity* *Overcomes biases while proactively mitigating communication barriers* *Independently, uses shared decision making to align patient and family/caregiver values, goals, and preferences with treatment options to make a personalized care plan*	● Wins the trust of the patient and family and can explain that what the family wants for the patient may not be what is best for the patient ● Anticipates and proactively addresses communication barriers, including eliciting past experiences and preferences of patients/families/caregivers, and recognition of bias ● Engages in shared decision making with the patient and family, including a recommended plan to align patient's unique goals with treatment options
Level 5 *Mentors others in developing positive therapeutic relationships* *Mentors others in self-awareness practice while teaching a contextual approach to mitigate communication barriers* *Mentors others in shared decision making in patient and family/caregiver communication including those with a high degree of uncertainty/conflict*	● Role models and supports colleagues in self-awareness and reflection to improve therapeutic relationships with patients ● Is an example to others of leading shared decision making with clear recommendations to patients and families even in more complex clinical situations
Assessment Models or Tools	● Direct observation ● Kalamazoo Essential Elements Communication Checklist (Adapted) ● Multisource feedback ● Self-assessment including self-reflection exercises ● Skills needed to Set the state, Elicit information, Give information, Understand the patient, and End the encounter (SEGUE) ● Standardized patients or structured case discussions
Curriculum Mapping	●

Notes or Resources	● Laidlaw A, Hart J. Communication skills: an essential component of medical curricula. Part I: Assessment of clinical communication: AMEE Guide No. 51. *Med Teach*. 2011;33(1):6-8. https://www.researchgate.net/publication/49706184_Communication_skills_An_essential_component_of_medical_curricula_Part_I_Assessment_of_clinical_communication_AMEE_Guide_No_511. 2021. ● Makoul G. Essential elements of communication in medical encounters: The Kalamazoo consensus statement. *Acad Med*. 2001;76(4):390-393. https://www.researchgate.net/publication/264544600_Essential_elements_of_communication_in_medical_encounters_The_Kalamazoo_Consensus_Statement. 2021. ● Makoul G. The SEGUE Framework for teaching and assessing communication skills. *Patient Educ Couns*. 2001;45(1):23-34. https://www.researchgate.net/publication/11748796_The_SEGUE_Framework_for_teaching_and_assessing_communication_skills. 2021. ● Sim MG, Wain T, Khong E. Influencing behaviour change in general practice: Part 1-brief intervention and motivational interviewing. *Australian Family Physician. 2009;38*(11):885. https://pubmed.ncbi.nlm.nih.gov/19893835/. 2021. ● Sim MG, Wain T, Khong E. Influencing behaviour change in general practice: Part 2-motivational interviewing approaches. *Australian Family Physician.* 2009;*38*(12):986. https://pubmed.ncbi.nlm.nih.gov/20369152/. 2021. ● Symons AB, Swanson A, McGuigan D, Orrange S, Akl EA. A tool for self-assessment of communication skills and professionalism in residents. *BMC Med Educ*. 2009;9:1. https://bmcmededuc.biomedcentral.com/articles/10.1186/1472-6920-9-1. 2021.

Interpersonal and Communication Skills 2: Interprofessional and Team Communication **Overall Intent:** To effectively communicate with the health care team, including consultants	
Milestones	**Examples**
Level 1 *Uses respectful language that values all health care team members*	● Shows respect in health care team communications through words and actions ● Uses respectful communication with colleagues in allied health rehabilitation disciplines, clerical staff members, and technical staff members
Understands the need and benefit of receiving feedback on performance from the health care team	● Listens to and considers others' points of view, is nonjudgmental and actively engaged, and demonstrates humility
Level 2 *Communicates information effectively with all health care team members*	● Verifies understanding of own communications within the health care team ● Demonstrates active listening by fully focusing on the speaker, making eye contact, and reflecting on and summarizing the conversation
Solicits feedback on performance as a health care team member	● Communicates clearly and concisely in an organized and timely manner during consultant encounters, as well as with the health care team in general
Level 3 *Checks own understanding while listening to adapt communication style to fit team needs*	● Verifies own understanding of communications from staff member by restating critical values and unexpected diagnoses ● Raises concerns or provides opinions and feedback when needed to others on the team ● Uses teach-back or other strategies to assess understanding during consultations
Communicates concerns and provides feedback to health care team members	● Respectfully provides feedback to members of the medical team for the purposes of improvement ● Identifies and seeks to resolve barriers to communication
Level 4 *Coordinates recommendations and communication from different health care team members to optimize patient care*	● Supportive of group decision making and group responsibility reflective of a collaborative interdisciplinary team model ● Adapts communication strategies in handling complex situations
Communicates feedback and constructive criticism to superiors	● Offers suggestions to negotiate or resolve conflicts with superiors on the team
Level 5 *Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed*	● Communicates with all health care team members, resolves conflicts, and provides feedback appropriate to any situation
Facilitates regular health care team-based feedback in complex situations	● Organizes a team meeting to discuss and resolve potentially conflicting points of view on a plan of care

Assessment Models or Tools	● Direct observation ● Global assessment ● Medical record (chart) review for professionalism and accuracy in written communications ● Multisource feedback ● Simulation encounters
Curriculum Mapping	●
Notes or Resources	● Green M, Parrott T, Cook G. Improving your communication skills. *BMJ*. 2012;344:e357. https://www.bmj.com/content/344/bmj.e357. 2021. ● Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: a review with suggestions for implementation. *Med Teach*. 2013;35(5):395-403. https://www.tandfonline.com/doi/full/10.3109/0142159X.2013.769677. 2021. ● King JC, Blankenship KJ, Schalla W, Mehta A. Rehabilitation team function and prescriptions, referrals, and order writing. In: Frontera WR. *DeLisa's Physical Medicine and Rehabilitation*. 5th Ed. Philadelphia, PA; 2010:362-384. https://musculoskeletalkey.com/rehabilitation-team-function-and-prescriptions-referrals-and-order-writing/. 2021. ● Roth CG, Eldin KW, Padmanabhan V, Freidman EM. Twelve tips for the introduction of emotional intelligence in medical education. *Med Teach.* 2018:1-4. https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499. 2021.

Interpersonal and Communication Skills 3: Communication within Health Care Systems **Overall Intent:** To effectively communicate using a variety of methods	
Milestones	**Examples**
Level 1 *Accurately records information in the patient record while safeguarding patient personal health information* *Demonstrates basic knowledge of appropriate channels of communication within the institution (e.g., pager callback, timely response to emails)*	● Notes are accurate but may include extraneous information and can be disorganized in a patient with a complex brain injury ● Identifies institutional and departmental communication hierarchy for concerns and safety issues ● Understands how to contact members of the interprofessional team
Level 2 *Demonstrates organized and complete diagnostic and therapeutic reasoning through notes in the patient record, including appropriate modifications when using copy-and-paste function* *Communicates through appropriate channels as required by institutional policy (e.g., patient safety reports)*	● Notes are organized and accurate but may still contain some extraneous information ● Assists with documentation of team meeting ● Recognizes that a communication breakdown has happened and respectfully brings the breakdown to the attention of the appropriate individual ● Reports a patient safety event
Level 3 *Communicates clearly, concisely, timely, and in an organized written form, including anticipatory recommendations* *Appropriately selects direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context*	● Documentation is accurate, organized, concise, and includes anticipatory (if/then) guidance ● Uses appropriate communication method when sharing results needing urgent attention
Level 4 *Provides feedback to improve others' written communication* *Achieves written or verbal communication that serves as an example for others to follow*	● Provides feedback to colleagues who have insufficient documentation ● Talks directly to a colleague about breakdowns in communication to prevent recurrence ● Participates in efforts to improve communication within the local environment
Level 5 *Models feedback to improve others' written communication*	● Leads a task force established by the department to develop a plan to improve house staff hand-offs

Guides departmental or institutional communication around policies and procedures	● Teaches colleagues how to improve discharge summaries based on institutional policies ● Teaches colleagues how to improve outpatient notes based on institutional policies
Assessment Models or Tools	● Medical record (chart) review for documented communications ● Multisource feedback ● Observation of sign-outs, observation of requests for consultations
Curriculum Mapping	●
Notes or Resources	● Bierman JA, Hufmeyer KK, Liss DT, Weaver AC, Heiman HL. Promoting responsible electronic documentation: validity evidence for a checklist to assess progress notes in the electronic health record. *Teach Learn Med.* 2017;29(4):420-432. https://www.tandfonline.com/doi/full/10.1080/10401334.2017.1303385. 2021. ● Haig KM, Sutton S, Whittington J. SBAR: a shared mental model for improving communication between clinicians. *Jt Comm J Qual Patient Saf*. 2006;32(3)167-175. https://www.ncbi.nlm.nih.gov/pubmed/16617948. 2021. ● Starmer AJ, Spector ND, Srivastava R, et al. I-PASS, a mnemonic to standardize verbal handoffs. *Pediatrics*. 2012;129(2):201-204. https://ipassinstitute.com/wp-content/uploads/2016/06/I-PASS-mnemonic.pdf. 2021.

In an effort to aid programs in the transition to using the new version of the Milestones, we have mapped the original Milestones 1.0 to the new Milestones 2.0. Below we have indicated where the subcompetencies are similar between versions. These are not necessarily exact matches, but are areas that include some of the same elements. Note that not all subcompetencies map between versions. Inclusion or exclusion of any subcompetency does not change the educational value or impact on curriculum or assessment.

Milestones 1.0	Milestones 2.0
PC1: History and Physical Examination of Individuals with Brain Injury	PC1: History PC2: Physical Examination
PC2: Spasticity Interventions	PC3: Spasticity Interventions
PC3: Evaluation and Diagnosis of Individuals with Brain Injury across the Entire Spectrum of Severity	PC4: Evaluation and Diagnosis of Individuals with Brain Injury across the Entire Spectrum of Severity
PC4: Medical/Neuropsychiatric Management of Individuals with Brain Injury across the Entire Spectrum of Severity	PC5: Medical/Neuropsychiatric Management of Individuals with Brain Injury across the Entire Spectrum of Severity
PC5: Rehabilitation Management of Individuals with Brain Injury	PC6: Therapy and Durable Medical Equipment Management of Individuals with Brain Injury
MK1: Traumatic and Non-Traumatic Brain Injury	MK1: Traumatic and Non-Traumatic Brain Injury
MK2: Functional Outcomes and Assessment across the Entire Spectrum of Brain Injury Severity	MK2: Functional Outcomes and Assessment across the Entire Spectrum of Brain Injury Severity
	MK3: Clinical Reasoning
SBP1: Systems Thinking, including Cost- and Risk-Effective Practice	SBP2: Quality Improvement SBP4: Physician Role in Health Care Systems
SBP2: Works in Interprofessional Teams to Enhance Patient Safety and Patient Care	SBP1: Patient Safety
SBP3: Coordination and Transitions of Care	SBP3: System Navigation for Patient-Centered Care
PBLI1: Self-Directed Learning	PBLI2: Reflective Practice and Commitment to Personal Growth
PBLI2: Location, Appraisal, and Assimilation of Evidence from Scientific Studies related to the Patient's Health Problems	PBLI1: Evidence-Based and Informed Practice
PROF1: Compassion, Integrity, Accountability, and Respect for Self and Others	PROF2: Professional Behaviors PROF3: Accountability
PROF2: Medical Ethics	PROF1: Ethics
	PROF4: Patient Care Etiquette with Patients of All Abilities
	PROF5: Fellow Well-Being and Help-Seeking
ICS1: Relationship Development, Teamwork, and Managing Conflict	ICS1: Patient and Family-Centered Communication ICS2: Interprofessional and Team Communications
ICS2: Information Sharing, Gathering, and Technology	ICS3: Communication within the Health Care Systems

Available Milestones Resources

Milestones 2.0: Assessment, Implementation, and Clinical Competency Committees Supplement, 2021 - *https://meridian.allenpress.com/jgme/issue/13/2s*

Milestones Guidebooks: https://www.acgme.org/milestones/resources/

- *Assessment Guidebook*
- *Clinical Competency Committee Guidebook*
- *Clinical Competency Committee Guidebook Executive Summaries*
- *Implementation Guidebook*
- *Milestones Guidebook*

Milestones Guidebook for Residents and Fellows: https://www.acgme.org/residents-and-fellows/the-acgme-for-residents-and-fellows/

- Milestones Guidebook for Residents and Fellows
- Milestones Guidebook for Residents and Fellows Presentation
- Milestones 2.0 Guide Sheet for Residents and Fellows

Milestones Research and Reports: https://www.acgme.org/milestones/research/

- *Milestones National Report*, updated each fall
- *Milestones Predictive Probability Report,* updated each fall
- *Milestones Bibliography*, updated twice each year

Developing Faculty Competencies in Assessment courses - https://www.acgme.org/meetings-and-educational-activities/courses-and-workshops/developing-faculty-competencies-in-assessment/

Assessment Tool: Direct Observation of Clinical Care (DOCC) - https://dl.acgme.org/pages/assessment

Assessment Tool: Teamwork Effectiveness Assessment Module (TEAM) - https://team.acgme.org/

Improving Assessment Using Direct Observation Toolkit - https://dl.acgme.org/pages/acgme-faculty-development-toolkit-improving-assessment-using-direct-observation

Learn at ACGME has several courses on Assessment and Milestones - https://dl.acgme.org/