Supplemental Guide: Pulmonary Critical Care

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Pulmonary Critical Care 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.

Milestone Levels:

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

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

Supervision requirements:

Direct Supervision: the supervising physician is physically present with the fellow and patient.

Indirect Supervision with Direct Supervision Immediately Available: the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide Direct Supervision.

Indirect Supervision with Direct Supervision Available: the supervising physician is not physically present within the hospital or other site of patient care but is immediately available to provide Direct Supervision by means of telephonic and/or electronic modalities.

Glossary of Terms

Oversight: the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered.

Substantial Guidance: the supervising physician must provide extensive corrective suggestions, elaboration, or, for procedures, step in to assist or demonstrates some or all of the steps.

Independently: the supervising physician may have a few additional suggestions, but the interaction is more like a peer-to-peer discussion about a patient.

Levels between “substantial guidance” and “independently” assume graduated levels of independence and sophistication of the learner, with guidance and supervision appropriate to the skill of the learner.

Patient Care 1: History and Physical Examination **Overall Intent:** To perform a comprehensive, specialty-specific history and physical exam	
Milestones	**Examples**
Level 1 *Obtains specialty-specific, detailed, and accurate history from patients with common disorders, with substantial guidance* *Performs a specialty-specific, detailed, and accurate physical exam on patients with common disorders, with substantial guidance*	● Requires attending-level advice for obtaining relevant occupational history ● Requires attending-level advice for obtaining relevant history from other sources when patient's history is incomplete ● Needs reminders when performing pulmonary exam to assess for finger clubbing, supraclavicular node exam, or thoracic abnormalities ● Needs reminder to assess for paradoxical breathing in a patient with respiratory compromise
Level 2 *Obtains specialty-specific, detailed, and accurate history from patients with common disorders* *Performs a specialty-specific, detailed, and accurate physical exam on patients with common disorders*	● Asks about workplace environment for patient with asthma symptoms ● Obtains history of prior heparin usage in a patient with thrombocytopenia ● Assesses for finger clubbing in a patient with history of a lung mass ● Recognizes paradoxical breathing in a patient with respiratory compromise
Level 3 *Obtains specialty-specific, detailed, and accurate history from multiple sources for patients with complex disorders* *Elicits specialty-specific signs while performing a detailed and accurate physical exam on patients with complex disorders*	● Obtains a detailed occupational history and prior imaging in a patient with interstitial lung disease ● Gets a detailed history from multiple family members regarding illicit substance use in a comatose intubated patient ● Assesses for diaphragmatic excursion using ultrasound or percussion in a patient with a lung mass and hoarseness ● Recognizes splinter hemorrhages in a patient with sepsis and heart murmur
Level 4 *Independently and efficiently obtains a specialty-specific, detailed, and accurate history from multiple sources for patients with complex disorders* *Independently and efficiently elicits specialty-specific signs while performing a detailed and accurate physical exam on patients with complex disorders*	● Gets a detailed and multisource history for multiple new complex pulmonary patients in their outpatient clinic setting and finish clinic on time ● Gets a detailed and multisource history for multiple new complex intensive care unit (ICU) admissions during their assigned shift ● Performs a detailed and accurate physical exam for multiple new complex pulmonary inpatients and finish their shift on time ● Gets a detailed and accurate physical exam for multiple new complex ICU admissions during their assigned shift

Level 5 *Independently obtains a specialty-specific, detailed, and accurate history from multiple sources for patients with rare disorders* *Independently elicits specialty-specific signs while performing a detailed and accurate physical exam on patients with complex or rare disorders in clinically difficult circumstances*	● Asks for a detailed family history of pneumothorax and renal cell carcinoma in a patient with Birt-Hogg-Dubé syndrome ● Gets a history of a prior tick bite in a patient with septic shock and severe anemia and makes a diagnosis of babesioisis ● Recognizes fibrofollicular skin adenomas in a patient with a spontaneous pneumothorax and makes a diagnosis of Birt-Hogg-Dubé syndrome ● Diagnoses Wilson's disease after identifying Kayser-Fleischer rings in a comatose patient
Assessment Models or Tools	● Direct observation ● Medical record (chart) review ● Multisource feedback ● Observable structured clinical examination (OSCE) ● Simulation ● Standardized patients
Curriculum Mapping	●
Notes or Resources	● Fink MP, Vincent JL, Moore FA. *Textbook of Critical Care*. 7th ed. Philadelphia, PA: Elsevier; 2017. ● Grippi M, Elias J, Fishman J, Pack A, Senior R, Kotloff R. *Fishman's Pulmonary Diseases and Disorders*. 5th ed. New York, NY: McGraw-Hill Education; 2015. ● Layon AJ, Gabrielli A, Yu Mihae, Wood KE. *Civetta, Taylor, & Kirby's Critical Care Medicine*. 5th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2018. ● Mason RJ, Slutsky A, Murray JF, et al. *Murray & Nadel's Textbook of Respiratory Medicine*. 6th ed. Philadelphia, PA: Elsevier; 2015. ● Parrillo JE, Dellinger RP. *Critical Care Medicine: Principles of Diagnosis and Management in the Adult*. 5th ed. Philadelphia, PA: Elsevier; 2019. ● Substantial guidance implies direct observation and/or real-time oversight/supervision ● Weinberger SE, Cockrill BA, Mandel J. *Principles of Pulmonary Medicine*. 7th ed. Philadelphia, PA: Elsevier; 2018.

Patient Care 2: Disease Management in Critical Care **Overall Intent:** To independently assess and manage critically ill patients	
Milestones	**Examples**
Level 1 *Manages unstable patients requiring a higher intensity of care, with substantial guidance*	● Requires attending assistance in recognizing hypotension in a septic patient who needs a higher level of care
Identifies the long-term consequences of critical illness, with substantial guidance	● Requires attending physician prompting to identify myopathy as a consequence of sepsis
Provides critical care consultation, with substantial guidance	● Requires attending physician guidance in the consultation of a patient with impending respiratory failure
Level 2 *Manages unstable patients with single system disease*	● Recognizes hypotension and begins fluid resuscitation in a septic patient who needs a higher level of care
Anticipates the long-term consequences of critical illness	● Identifies myopathy as a consequence of sepsis
Provides critical care consultation for patients with single system disease	● Initiates consultation of a patient with impending respiratory failure and recommends initial therapeutics and management
Level 3 *Manages unstable patients with multisystem disease*	● Manages hypotension and respiratory distress in a septic patient
Anticipates and acts to minimize the long-term consequences of critical illness	● Identifies myopathy as a consequence of sepsis, and promotes early mobility in ICU patients
Provides critical care consultation for patients with multisystem disease	● Initiates consultation of a patient with impending respiratory failure and liver failure, and recommends initial therapeutics and management
Level 4 *Independently manages unstable patients with multisystem disease and coordinates interdisciplinary care plans*	● Manages sepsis, acute respiratory distress syndrome (ARDS), and renal failure in a patient, and coordinates respiratory care, hemodynamic management, and dialysis across multiple disciplines
Anticipates and acts independently to minimize the long-term consequences of critical illness	● Identifies myopathy as a consequence of sepsis, and promotes early mobility in ICU patients without attending prompting

Independently triages and prioritizes comprehensive critical care consultation for multiple patients	● Appropriately assigns priority order for admission to ICU for multiple triaged patients
Level 5 *Independently facilitates post-intensive care unit care* *Independently reconciles conflicting consultative recommendations to optimize patient care*	● Enrolls patient in ICU survivorship clinic ● Arranges meeting between multiple subspecialty disciplines to coordinate care for a patient with acute liver failure
Assessment Models or Tools	● Direct observation ● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation ● Standardized patients
Curriculum Mapping	●
Notes or Resources	● Substantial guidance implies direct observation and/or real-time oversight/supervision

Patient Care 3: Disease Management in Pulmonary Medicine **Overall Intent:** To provide comprehensive care for ambulatory and hospitalized patients with pulmonary disorders as either primary provider or consultant	
Milestones	**Examples**
Level 1 *Manages common pulmonary disorders in hospitalized patients, with substantial guidance*	● Needs attending staff advice to undertake management of a cystic fibrosis patient during an exacerbation
Manages common pulmonary disorders in ambulatory patients	● Requires attending staff advice to distinguish asthma from chronic obstructive pulmonary disease (COPD) and recommend appropriate therapy
Provides pulmonary consultation for patients with common pulmonary disorders, with substantial guidance	● Requires attending staff assistance to provide differential diagnosis and recommendations for a consult regarding a patient with hospital acquired pneumonia
Level 2 *Manages common pulmonary disorders in hospitalized patients*	● Manages an uncomplicated cystic fibrosis patient during an exacerbation
Manages common pulmonary disorders in ambulatory patients and mitigates their disease risk factors	● Distinguishes asthma from COPD and recommend appropriate therapy including counseling on smoking cessation, necessary vaccinations, and avoidance of environmental exposures
Provides pulmonary consultation for patients with common pulmonary disorders	● Provides differential diagnosis and recommendations for a consult regarding a patient with hospital acquired pneumonia
Level 3 *Manages complex pulmonary disorders in hospitalized patients*	● Provides appropriate recommended therapy for a hospitalized patient with pulmonary hypertension with minimal input from attending
Manages pulmonary disorders in ambulatory patients with complex comorbidities and mitigates their disease risk factors	● Provides appropriate recommended therapy and counseling for an obese patient with hypersensitivity pneumonitis with minimal input from attending
Provides pulmonary consultation for patients with complex pulmonary disorders	● Provides appropriate recommendations for the patient with interstitial lung disease awaiting surgery on the general surgery service
Level 4 *Independently manages complex pulmonary disorders in hospitalized patients*	● Provides appropriate recommended therapy for a hospitalized patient with pulmonary hypertension rarely requiring modification to initial plan

Independently manages complex ambulatory patients with pulmonary disorders and mitigates their disease risk factors *Independently triages and prioritizes pulmonary consultation for multiple patients*	● Provides appropriate recommended therapy and counseling for an obese patient with hypersensitivity pneumonitis rarely requiring modification to initial plan ● Provides consultative advice on a hypoxic emergency room patient prior to consulting on a stable patient with an asthma exacerbation on the floor
Level 5 *Independently manages complex pulmonary disorders in hospitalized patients and coordinates interdisciplinary care plans* *Independently manages complex ambulatory patients with pulmonary disorders, mitigates their disease risk factors, and coordinates interdisciplinary care plans* *Independently triages and prioritizes pulmonary consultation including reconciling conflicting consultative recommendations to optimize patient care*	● Coordinates and provides appropriate care for a hospitalized patient with advanced lung disease awaiting lung transplant ● Coordinates and provides appropriate care for a patient with history of pulmonary hypertension who is now pregnant including balancing the risks of medication management to the risks of the fetus ● Facilitates consensus on the appropriate treatment of a patient who may require pulse dose steroids in the face of possible infection while managing other active consults
Assessment Models or Tools	● Direct observation ● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation
Curriculum Mapping	●
Notes or Resources	● Buckley JD, Addrizzo-Harris DJ, Clay AS, et al. Multisociety task force recommendations of competencies in Pulmonary and Critical Care Medicine. *Am J Respir Crit Care Med*. 2009;180(4):290-295. https://www.atsjournals.org/doi/full/10.1164/rccm.200904-0521ST?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dpubmed. 2020. ● Kritek PA, Richards JB. *Medical Education in Pulmonary, Critical Care, and Sleep Medicine: Advanced Concepts and Strategies (Respiratory Medicine).* 1st ed. Switzerland; 2019. ● Substantial guidance implies direct observation and/or real-time oversight/supervision

Patient Care 4: Pre-Procedure Assessment **Overall Intent:** To counsel patients regarding indications, risks, benefits, and alternatives of common procedures	
Milestones	**Examples**
Level 1 *Identifies indications for procedures and their risks, benefits, and alternatives*	● Identifies that a patient has a new pleural effusion that may benefit from thoracentesis
Level 2 *Assesses indications, risks, benefits and weighs alternatives in low- to moderate-risk situations*	● Weighs the risks and benefits of a thoracentesis for a new pleural effusion in a patient without comorbidities
Level 3 *Assesses indications, risks, benefits and weighs alternatives in high-risk situations*	● Weighs the risks and benefits of a thoracentesis for a new pleural effusion in a patient with severe bullous emphysema
Level 4 *Independently assesses indications, risks, benefits and weighs alternatives in high-risk situations and acts to mitigate modifiable risk factors*	● Weighs the risks and benefits of a thoracentesis for a new pleural effusion in a patient with coagulopathy and proactively decides when to hold the anticoagulation and use real-time ultrasound
Level 5 *Recognized by peers as an expert in procedural assessment*	● Is considered an expert when other fellows encounter a loculated pleural effusion
Assessment Models or Tools	● Direct observation (with checklist) ● OSCE ● Simulation with task trainers
Curriculum Mapping	●
Notes or Resources	● American Society of Anesthesiologists Task Force on Central Venous Access, Rupp SM, Apfelbaum JL, et al. Practice guidelines for central venous access: a report by the American Society of Anesthesiologists Task Force on Central Venous Access. *Anesthesiology*. 2012;116(3):539-573. https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2443415&_ga=2.100960201.918126446.1568824887-761947262.1568824887. 2020. ● British Thoracic Society. Flexible Bronchoscopy. https://www.brit-thoracic.org.uk/quality-improvement/quality-standards/flexible-bronchoscopy/. 2020. ● BTS. National Safety Standards for Invasive Procedures - Bronchoscopy and Pleural Procedures. https://www.brit-thoracic.org.uk/quality-improvement/clinical-resources/interventional-procedures/national-safety-standards-for-invasive-procedures-bronchoscopy-and-pleural-procedures/. 2020. ● Davies C, Gleeson F, Davies R. BTS guidelines for the management of pleural infection. *Thorax*. 2003;58(Suppl 2):ii18-ii28. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1766018/. 2020.

	● Doyle DJ, Garmon Eh. *American Society of Anesthesiologists Classification (ASA Class)*. Treasure Island, FL; 2019. https://www.ncbi.nlm.nih.gov/books/NBK441940/. 2020. ● Ernst A, Wahidi MM, Read CA, et al. Adult bronchoscopy training. *Chest Journal*. 2015;148(2):321-332. https://journal.chestnet.org/article/S0012-3692(15)50328-0/fulltext. 2020. ● Feller-Kopman DJ, Reddy CB, DeCamp MM, et al. Management of malignant pleural effusions. An official ATS/STS/STR clinical practice guide. *Am J Respir Crit Care Med*. 2018;198(7):839-849. https://www.thoracic.org/statements/resources/lcod/mgmt-of-mpe-guideline.pdf. 2020.

Patient Care 5: Procedures (Invasive and Non-Invasive) **Overall Intent:** To safely and competently perform procedures and manage complications	
Milestones	**Examples**
Level 1 *Performs simple procedures, with assistance*	● Places central venous catheter under direct supervision
Interprets limited procedural results, with assistance	● Requires faculty member assistance to identify lung sliding on thoracic ultrasound ● Requires faculty assistance to interpret spirometry
Recognizes common complications	● Recognizes hypoxemia following flexible bronchoscopy
Level 2 *Performs complex procedures, with assistance*	● Places a pulmonary artery catheter with direct assistance from supervisor
Interprets comprehensive procedural results, with assistance	● Requires faculty member assistance to perform comprehensive thoracic ultrasound exam ● Requires faculty member assistance to interpret full pulmonary function testing
Recognizes uncommon complications	● Recognizes pneumothorax following subclavian central venous catheter placement
Level 3 *Performs complex procedures, with minimal assistance*	● Placement of a pulmonary artery catheter with supervisor oversight
Independently interprets comprehensive procedural results	● Interprets lung sliding, A lines, and B lines independently on thoracic ultrasound ● Independently interprets full pulmonary function testing
Recognizes and manages complications, with oversight	● Recognizes pneumothorax following subclavian central venous catheter placement and places chest tube with direct assistance from supervisor
Level 4 *Independently performs all procedures in the current practice environment*	● Places pulmonary artery catheter independently
Independently interprets comprehensive procedural results and applies them to the patient's clinical context	● Independently identifies a complex pleural effusion on thoracic ultrasound ● Independently interprets methacholine challenge testing in a patient with suspected asthma
Independently recognizes and manages complications	● Recognizes pneumothorax following subclavian central venous catheter placement and places chest tube
Level 5 *Recognized by peers as a procedural expert*	● Is asked to place central venous catheter by peers after multiple failed attempts

Assessment Models or Tools	● Direct observation ● OSCE ● Simulation
Curriculum Mapping	●
Notes or Resources	● British Thoracic Society. Flexible Bronchoscopy. https://www.brit-thoracic.org.uk/quality-improvement/quality-standards/flexible-bronchoscopy/. 2020. ● BTS. National Safety Standards for Invasive Procedures - Bronchoscopy and Pleural Procedures. https://www.brit-thoracic.org.uk/quality-improvement/clinical-resources/interventional-procedures/national-safety-standards-for-invasive-procedures-bronchoscopy-and-pleural-procedures/. 2020. ● Davies C, Gleeson F, Davies R. BTS guidelines for the management of pleural infection. *Thorax*. 2003;58(Suppl 2):ii18-ii28. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1766018/. 2020. ● Ernst A, Wahidi MM, Read CA, et al. Adult bronchoscopy training. *Chest Journal*. 2015;148(2):321-332. https://journal.chestnet.org/article/S0012-3692(15)50328-0/fulltext. 2020. ● Feller-Kopman DJ, Reddy CB, DeCamp MM, et al. Management of malignant pleural effusions. An official ATS/STS/STR clinical practice guide. *Am J Respir Crit Care Med*. 2018;198(7):839-849. https://www.thoracic.org/statements/resources/lcod/mgmt-of-mpe-guideline.pdf. 2020. ● Individuals may achieve competency in different procedures at different rates, and this milestone is intended to capture the overall skills

Medical Knowledge 1: Clinical Reasoning **Overall Intent:** To generate a focused and prioritized differential diagnosis while consciously avoiding errors due to cognitive bias	
Milestones	**Examples**
Level 1 *Synthesizes a specialty-specific, analytic, and prioritized differential diagnosis for common presentations, with substantial guidance*	● Needs prompting to develop a complete differential diagnosis of wheezing
Identifies types of clinical reasoning errors within patient care, with substantial guidance	● When pointed out by an attending, recognizes that a finding was overlooked because fellow accepted a radiology report without reviewing the film
Level 2 *Synthesizes a specialty-specific, analytic, and prioritized differential diagnosis for common presentations*	● Develops a complete differential diagnosis of wheezing
Identifies types of clinical reasoning errors within patient care	● Recognizes that a finding was overlooked because a radiology report was accepted without reviewing the film
Level 3 *Synthesizes a specialty-specific, analytic, and prioritized differential diagnosis for complex presentations*	● Develops a comprehensive differential diagnosis of post-operative pleural effusion
Applies clinical reasoning principles to retrospectively identify cognitive errors	● Recognizes that anchoring bias led them to a misdiagnosis of left heart failure in a patient who actually had chronic thromboembolic pulmonary hypertension
Level 4 *Synthesizes information to reach high-probability and/or high-risk diagnoses and anticipates potential complications in patient care*	● Gathers and evaluates all data and applies clinical practice guidelines and patient preferences to determine course of action for an indeterminate pleural effusion
Continually re-appraises one's clinical reasoning to prospectively minimize cognitive errors and manage uncertainty	● Adjusts original differential diagnosis for indeterminate pleural effusion based on new information from subsequent follow up computed tomography (CT) scan
Level 5 *Recognized by peers as an expert diagnostician*	● Is often consulted by colleagues on difficult cases
Coaches others to recognize and avoid cognitive errors	● Tactfully redirects a resident who is confident in their diagnosis of heart failure in a patient who actually has diaphragmatic paralysis
Assessment Models or Tools	● Direct observation

	● In-service examination ● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation ● Standardized patients
Curriculum Mapping	●
Notes or Resources	● The Society to Improve Diagnosis in Medicine (SIDM). Assessment of Reasoning Tool. https://www.improvediagnosis.org/art/. 2020. ● SIDM. Driver Diagram. https://www.improvediagnosis.org/wp-content/uploads/2018/10/Driver_Diagram_-_July_31_-_M.pdf. 2020. ● SIDM. Inter-Professional Consensus Curriculum on Diagnosis and Diagnostic Error.: https://www.improvediagnosis.org/consensuscurriculum/ 2020.

Medical Knowledge 2: Scientific Knowledge of Disease and Therapeutics **Overall Intent:** To recognize, apply, and teach scientific knowledge, pharmacology, and therapeutics of pulmonary and/or critical care medicine	
Milestones	**Examples**
Level 1 *Demonstrates scientific knowledge of common diseases* *Demonstrates knowledge of pharmacology and therapeutics for common diseases*	● Lists common infectious agents for hospital-acquired pneumonia ● Demonstrates knowledge of appropriate pharmacologic agents in the treatment of patients with COPD exacerbations
Level 2 *Applies scientific knowledge of common diseases* *Applies knowledge of pharmacology and therapeutics for common diseases*	● Applies the hospital specific antibiogram in selecting the empiric antibiotics in patients with hospital acquired pneumonia ● Selects appropriate steroid regimen in patients hospitalized with an acute exacerbation of COPD
Level 3 *Applies scientific knowledge of complex diseases* *Applies knowledge of pharmacology and therapeutics for complex diseases*	● Recognizes appropriate risk stratification for patients presenting with acute pulmonary emboli ● Discusses various treatment options with patients who have submassive pulmonary emboli
Level 4 *Independently applies scientific knowledge of complex diseases* *Independently applies knowledge of pharmacology and therapeutics for complex diseases*	● Independently recognizes submassive acute pulmonary emboli using established criteria ● Independently selects best treatment option for patients with submassive pulmonary emboli
Level 5 *Expertly teaches scientific knowledge of complex diseases* *Applies cutting-edge knowledge of pharmacology and therapeutics*	● Provides instruction to other health professionals in diagnosis of submassive pulmonary emboli ● Coordinates mechanical thrombolysis with interventional radiology colleagues in select patients with submassive pulmonary emboli and recent neurological surgery
Assessment Models or Tools	● Direct observation ● In-service examination ● Medical record (chart) review ● Multisource feedback ● OSCE ● Simulation ● Standardized patients

Curriculum Mapping	●
Notes or Resources	● Buckley JD, Addrizzo-Harris DJ, Clay AS, et al. Multisociety task force recommendations of competencies in Pulmonary and Critical Care Medicine. *Am J Respir Crit Care Med*. 2009;180(4):290-295. https://www.atsjournals.org/doi/full/10.1164/rccm.200904-0521ST?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dpubmed. 2020. ● Kritek PA, Richards JB. *Medical Education in Pulmonary, Critical Care, and Sleep Medicine: Advanced Concepts and Strategies (Respiratory Medicine).* 1st ed. Switzerland; 2019.

Systems-Based Practice 1: Patient Safety and Quality Improvement (QI) **Overall Intent:** To analyze patient safety events, including relevant communication with patients, families, and health care professionals; to participate in a QI project	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of common patient safety events*	● Lists patient misidentification or medication errors as common patient safety events
Demonstrates knowledge of how to report patient safety events	● Describes how to report errors in the environment
Demonstrates knowledge of basic quality improvement methodologies and metrics	● Describes fishbone tool
Level 2 *Identifies system factors that lead to patient safety events*	● Identifies that lack of hand sanitizer dispensers in exam rooms may lead to increased infection rates
Reports patient safety events through institutional reporting systems (simulated or actual)	● Reports lack of hand sanitizer dispenser in an exam room to the clinic director
Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)	● Summarizes protocols resulting in decreased spread of hospital acquired *C. diff*
Level 3 *Participates in analysis of patient safety events (simulated or actual)*	● Prepares and presents a morbidity and mortality presentation
Participates in disclosure of patient safety events to patients and families (simulated or actual)	● Through simulation, communicates with patients/families about an anticoagulation dose administration error
Participates in local quality improvement initiatives	● Participates in QI project identifying root causes of COPD readmissions ● Participates in QI project identifying root causes of unplanned extubations
Level 4 *Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)*	● Collaborates with a team to conduct the analysis of an anticoagulation dose administration error and can effectively communicate with patients/families about those events
Discloses patient safety events to patients and families (simulated or actual)	● Participates in the completion of a QI project to reduce COPD readmission rates within the practice, including assessing the problem, articulating broad goals, developing a

Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	SMART (Specific, Measurable, Attainable, Relevant, and Time-bound) objective plan, and monitoring progress and challenges ● Participates in the completion of a QI project to reduce unplanned extubations rates within the practice, including assessing the problem, articulating a broad goal, developing a SMART objective plan, and monitoring progress and challenges
Level 5 *Actively engages teams and processes to modify systems to prevent patient safety events* *Role models or mentors others in the disclosure of patient safety events* *Creates, implements, and assesses quality improvement initiatives at the institutional or community level*	● Assumes a leadership role at the departmental or institutional level for patient safety ● Conducts a simulation for disclosing patient safety events ● Initiates and completes a QI project to reduce county COPD readmission rates in collaboration with the county health department and shares results with stakeholders ● Initiates a multi-center consortium QI project to reduce the number of unplanned extubations and shares results with stakeholders
Assessment Models or Tools	● Direct observation ● E-module multiple choice tests ● Medical record (chart) audit ● Multisource feedback ● Portfolio ● QI project ● Reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● Institute of Healthcare Improvement. http://www.ihi.org/Pages/default.aspx. 2020. ● IHI. IHI Open School Online Courses. http://app.ihi.org/lmsspa/#/6cb1c614-884b-43ef-9abd-d90849f183d4. 2020. ● IHI. QI 102: How to Improve with the Model for Improvement. http://app.ihi.org/lmsspa/#/1431fa43-38e4-4e40-ab3b-7887d3254f72/41b3d74d-f418-4193-86a4-ac29c9565ff1. 2020. ● Agency for Healthcare Research and Quality. Detection of Safety Hazards Prime. https://psnet.ahrq.gov/primer/detection-safety-hazards. 2020. ● AHRQ. Measurement of Patient Safety. https://psnet.ahrq.gov/primer/measurement-patient-safety. 2020.

Systems-Based Practice 2: Coordination and Transitions of Care **Overall Intent:** To effectively navigate the health care system, including the interdisciplinary team and other care providers to ensure high-quality patient outcomes	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of care coordination*	● For a patient with end-stage COPD in the ICU, identifies the outpatient pulmonologist, palliative care team, home health nurse, respiratory care practitioners, and social workers as members of the team
Identifies key elements for safe and effective transitions of care and hand-offs	● Lists the essential components of a structured sign-out tool and care transition and hand-offs
Level 2 *Coordinates care of patients in routine clinical situations effectively using the members of the interprofessional teams*	● Coordinates care with the outpatient pulmonary clinic at the time of discharge from the hospital
Performs safe and effective transitions of care/hand-offs in routine clinical situations	● Routinely uses a structured sign-out tool for a stable patient during night float sign-out
Level 3 *Coordinates care of patients in complex clinical situations effectively using the members of the interprofessional teams*	● Works with the social worker to coordinate care for a complex chronically ventilated patient that will ensure transfer to a long-term acute care facility safely after discharge from the hospital
Performs safe and effective transitions of care/hand-offs in complex clinical situations	● Routinely uses a structured sign-out tool when transferring a patient to the ICU
Level 4 *Coordinates care of patients in complex clinical situations among different disciplines and specialties*	● During inpatient rotations, leads team members in approaching consultants to review cases/recommendations and arranges radiology rounds for the team
Advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems	● Prior to going on vacation, proactively informs the incoming fellow about a plan of care for a complex lung cancer patient with numerous prior intubations who will likely require airway stenting and ICU care afterwards
Level 5 *Analyzes the process of care coordination and leads in the design and implementation of improvements*	● Leads a program to arrange for team home visits to end-stage COPD at high risk for ICU admissions ● Leads a program evaluating local implementation of the ABCDEF bundle
Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes	● Develops a protocol to improve transitions to long-term care facilities
Assessment Models or Tools	● Direct observation

	● Medical record (chart) audit ● Multisource feedback ● OSCE ● QI project ● Quality metrics and goals mined from electronic health records (EHR) ● Review of sign-out tools, use and review of checklists
Curriculum Mapping	●
Notes or Resources	● Center for Disease Control. Population Health Training in Place Program (PH-TIPP). https://www.cdc.gov/pophealthtraining/whatis.html. 2020. ● Kaplan KJ. In pursuit of patient-centered care. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns. 2020. ● Skochelak SE, Hawkins RE, Lawson LE, Starr SR, Borkan JM, Gonzalo JD. *AMA Education Consortium: Health Systems Science.* 1st ed. Philadelphia, PA: Elsevier; 2016. https://commerce.ama-assn.org/store/ui/catalog/productDetail?product_id=prod2780003. 2020. ● O'Toole JK, Starmer AJ, Calaman S, Campos ML, Goldstein J. I-PASS mentored implementation handoff curriculum: implementation guide and resources. *MedEd PORTAL*. 2018;14:10736. https://www.mededportal.org/publication/10736/. 2020.

Systems-Based Practice 3: Population Health **Overall Intent:** To adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of population and community health needs*	● Identifies that patients in different socioeconomic circumstances may have different abilities to access medications as an outpatient
Level 2 *Identifies specific population and community health needs for the local population*	● Identifies that limited transportation options may be a factor in patients getting to multiple pre-lung transplant appointments
Level 3 *Uses local resources effectively to meet the needs of a patient population in the community*	● Refers patients to a local pharmacy which provides a sliding fee scale option and prints pharmacy coupons for patients in need
Level 4 *Advocates for changing and adapting practice to provide for the needs of specific populations*	● Assists to design protocols for procedural sedation in patients with opioid use disorders
Level 5 *Leads innovations and advocates for populations and communities with specific health care needs*	● Leads development of a project to enable greater access to in-person interpreters in the hospital
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback ● OSCE ● QI project ● Quality metrics and goals mined from EHR ● Reflection
Curriculum Mapping	●
Notes or Resources	● CDC. Population Health Training in Place Program (PH-TIPP). https://www.cdc.gov/pophealthtraining/whatis.html. 2020. ● Kaplan KJ. In pursuit of patient-centered care. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns. 2020.

Systems-Based Practice 4: Physician Role in Health Care Systems **Overall Intent:** To understand the physician's role in impacting health care system to improve patient care	
Milestones	**Examples**
Level 1 *Describes basic health care delivery systems (e.g., practice and payment models, accountable care organizations)*	● Describes the impact of health plan coverage on prescription drugs for individual patients ● Identifies that notes must meet coding requirements
Level 2 *Describes how components of a complex health care delivery system are interrelated, and how this impacts patient care (e.g., out-of-network hospitalizations)*	● Takes into consideration patient's prescription drug coverage when choosing an inhaler for treatment of COPD ● Recognizes that appropriate documentation can influence the severity of illness determination upon discharge
Level 3 *Discusses how individual practice affects the broader system (e.g., length of stay, cost of care, readmission rates, clinical efficiency)*	● Ensures that patient with severe asthma admitted to the ICU has a scheduled follow-up pulmonary appointment at discharge within seven days to reduce risk of readmission ● Discusses the impact of daily chest x-rays of intubated patients with pneumonia on the broader health care system
Level 4 *Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model*	● Uses hospital resources to get access to a taxi voucher for a recently hospitalized patient who needs to come in for multiple follow-up appointments ● Works collaboratively to improve patient assistance resources for a patient with a recent ICU admission and limited resources
Level 5 *Advocates for or leads systems change that enhances high-value, efficient, and effective patient care*	● Works with community or professional organizations to advocate for no smoking ordinances ● Improves informed consent process for non-English-speaking patients requiring interpreter services
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Portfolio ● QI project ● Reflection
Curriculum Mapping	●
Notes or Resources	● AHRQ. Measuring the Quality of Physician Care. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. 2020. ● AHRQ. Major Physician Measurement Sets. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementsets.html. 2020. ● American Board of Internal Medicine. QI/PI Activities. http://www.abim.org/maintenance-of-certification/earning-points/practice-assessment.aspx. 2020.

	● Commonwealth Fund. Health System Data Center. https://datacenter.commonwealthfund.org/#ind=1/sc=1. 2020. ● Commonwealth Fund. Health Reform Resource Center. http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#/f:@facasubcategoriesfacet63677=[Individual%20and%20Employer%20Responsibility. 2020. ● Dzau VJ, McClellan MB, McGinnis JM, et al. Vital directions for health and health care: priorities from 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/. 2020. ● Kaiser Family Foundation. Health Reform. https://www.kff.org/topic/health-reform/. 2020.

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 and apply available evidence to care for patients* *Demonstrates knowledge of basic trial design and statistical concepts and communicates details of published scientific work*	● Identifies evidence-based guidelines for septic shock, considering the patient's goals of care ● Performs a PubMed search on septic shock practice guidelines
Level 2 *Elicits patient preferences and values to guide evidence-based care for patients* *Reads scientific literature, identifies gaps, and generates hypotheses for planned scholarly activity*	● In a patient with advanced COPD, identifies and discusses potential evidence-based treatment options, and solicits patient perspective ● Performs a literature search and generates a hypothesis on the topic of planned scholarly activity
Level 3 *Locates and applies the best available evidence, integrated with patient preference to care for patients* *Participates in a scholarly project*	● Obtains, discusses, and applies evidence for the treatment of a patient with advanced COPD and co-existing coronary artery disease and diabetes mellitus ● Participates in a quality improvement or medical research project
Level 4 *Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient* *Presents scholarly activity at local or regional meetings, and/or submits an abstract of their scholarly work to a regional meeting*	● Accesses the primary literature to identify alternative treatments for refractory septic shock ● Presents scholarly activity at local or regional conference
Level 5 *Coaches others to critically appraise and apply evidence; and/or participates in the development of guidelines* *Effectively presents scholarly work at national and international meetings or has a peer reviewed publication accepted or grant funded*	● Leads clinical teaching on application of best practices in critical appraisal of sepsis criteria ● Presents scholarly work at national conference
Assessment Models or Tools	● Direct observation

	● Oral or written examinations ● Presentation evaluation ● Research portfolio
Curriculum Mapping	●
Notes or Resources	● Glasser SP, Howard G. Clinical trail design issues: at least 10 things you should look for in clinical trials. *J Clin Pharmacol*. 2006;46(10):1106-1115. https://accp1.onlinelibrary.wiley.com/doi/abs/10.1177/0091270006290336. 2020. ● Institutional IRB guidelines ● Krogh CL. A checklist system for critical review of medical literature. *Med Educ*. 1985;19(5):392-395. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2923.1985.tb01343.x?sid=nlm%3Apubmed. 2020. ● National Institutes of Health. Write Your Application. https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm. 2020. ● Neely JG, Karni RJ, Wang EW, et al. Practical guide to efficient analysis and diagramming articles. *Otolaryngol Head Neck Surg.* 2009;140(1):4-8. https://journals.sagepub.com/doi/abs/10.1016/j.otohns.2008.10.013?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=otoj. 2020. ● U.S. National Library of Medicine. PubMed Tutorial. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html. 2020. ● Various journal submission guidelines

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth **Overall Intent:** To seek clinical performance information with the intent to improve care; reflects on all domains of practice, personal interactions, and behaviors, and their impact on colleagues and patients (reflective mindfulness); develop clear objectives and goals for improvement in some form of a learning plan	
Milestones	**Examples**
Level 1 *Accepts responsibility for personal and professional development by establishing goals* *Identifies the factors which contribute to gap(s) between expectations and actual performance* *Actively seeks opportunities to improve knowledge and abilities*	● Sets a personal practice goal of documenting use of established guideline criteria for COPD for evaluation of patients with emphysema ● Recognizes that limited prior experience contributed to gaps in knowledge of ventilator management ● Asks for feedback from patients, families, and patient care team members
Level 2 *Demonstrates openness to performance feedback in order to inform goals* *Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance* *Designs and implements a learning plan, with prompting*	● Integrates feedback to adjust the documentation of the established guideline criteria for evaluation of patients with possible COPD ● Assesses time management skills and how it impacts timely completion of clinic notes and literature reviews ● When prompted, develops individual education plan to improve their management of advanced respiratory failure
Level 3 *Seeks performance feedback episodically, with adaptability, and humility* *Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance* *Independently creates and implements a learning plan*	● Does a chart audit to determine the percent of patients evaluated for smoking cessation ● Completes a comprehensive literature review prior to patient encounters ● Using web-based resources, creates a personal curriculum to improve the ability to evaluate of acute respiratory failure
Level 4 *Intentionally seeks performance feedback consistently with adaptability, and humility*	● Completes a quarterly chart audit to ensure documentation of the ICU checklist for the ventilator bundle and reviews results with mentor

Identifies and uses alternative methods to narrow the gap(s) between expectations and actual performance *Uses performance feedback to measure the effectiveness of the learning plan and when necessary, improves it*	● Identifies that patient communication skills improve when a debrief is completed after difficult encounters and uses simulation to improve skills ● Performs a chart audit on personal adherence to ARDSNet ventilation protocol; reviews with mentor and creates a plan to improve documentation
Level 5 *Consistently role models the seeking of performance data with adaptability and humility* *Coaches others on reflective practice* *Facilitates the design and implementation of learning plans for others*	● Uses Central Line-Associated Bloodstream Infection (CLABSI) data to discuss improving infection rates without creating second victims ● Develops educational module for collaboration with other patient care team members ● Assists first-year residents in developing their individualized learning plans
Assessment Models or Tools	● Direct observation ● Review of learning plan ● 360-degree evaluations
Curriculum Mapping	●
Notes or Resources	● Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. *Academic Pediatrics.* 2014;14(2):S38-S54. https://www.acgme.org/Portals/0/PDFs/Milestones/Practice-basedLearningandImprovementPediatrics.pdf. 2020. ● 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. 2020. ● 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. 2020.

Professionalism 1: Professional Behavior and Ethical Principles **Overall Intent:** To demonstrate ethical and professional behaviors and recognize and address lapses using appropriate resources	
Milestones	**Examples**
Level 1 *Identifies and describes potential triggers for professionalism lapses in self*	● Understands that being tired can cause a lapse in professionalism
Recognizes professionalism lapses in others	● Understands being late to sign out has adverse effect on patient care and on professional relationships
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	● Articulates how the principle of "do no harm" applies to a patient who may not need a central line even though the training opportunity exists
Level 2 *Demonstrates insight into professional behavior in routine situations and takes responsibility for own professionalism lapses*	● Apologizes to the team for being late to sign-out and works to correct behavior
Knows institutional processes for reporting professionalism lapses, including strategies for addressing common barriers	● Describes lines of reporting for a peer who is using stimulants to stay awake while on a scheduled shift
Analyzes straightforward situations using ethical principles and applies them to practice	● Explains how the principle of autonomy applies to surrogate decision making and demonstrate it during an end-of-life discussion
Level 3 *Demonstrates professional behavior in complex or stressful situations*	● Appropriately responds to a distraught family member, following an unsuccessful resuscitation attempt of a relative
Follows institutional processes for reporting professionalism lapses, including strategies for addressing common barriers	● After noticing a colleague's inappropriate social media post, reviews policies related to posting of content and seeks guidance
Analyzes complex situations using ethical principles, and applies them to practice, while recognizing the need to seek help in managing these situations	● Offers treatment options for a terminally ill patient, free of bias, while recognizing own limitations and consistently honoring the patient's choice

Level 4 *Recognizes situations that may trigger professionalism lapses and acts to prevent them* *Intervenes to prevent and address professionalism lapses in peers* *Recognizes and utilizes appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)*	● Practices restraint when replying to an emotionally provocative email from patient or colleague ● Arranges coverage and sends a resident home early when the resident appears too tired to carry out clinical duties ● Uses ethics consults, literature, risk-management/legal counsel in order to resolve ethical dilemmas regarding continued aggressive care of dying patient
Level 5 *Recognized by peers as a resource for professionalism concerns* *Coaches peers when their behavior fails to meet professional expectations* *Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution*	● Receives institutional recognition for exemplary professionalism ● Coaches others when their behavior fails to meet professional expectations, and creates a performance improvement plan to prevent recurrence ● Engages stakeholders to address excessive wait times in the clinic to decrease patient and provider frustrations that lead to unprofessional behavior
Assessment Models or Tools	● Direct observation ● Global evaluation ● Multisource feedback ● Oral or written self-reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2020. ● ABIM, American College of Physicians-American Society of Internal Medicine, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. *Ann Intern Med*. 2002;136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millenium-A-Physician-Charter.pdf. 2020. ● Bynny RL, Paauw DS, Papadakis MA, Pfeil S. *Medical Professionalism Best Practices: Professionalism in the Modern Era*. Aurora, CO: Alpha Omega Alpha Medical Society; 2017. *Medical Professionalism Best Practices: Professionalism in the Modern Era*. Aurora, CO: Alpha Omega Alpha Medical Society; 2017. http://alphaomegaalpha.org/pdfs/Monograph2018.pdf. 2020.

	● Byyny RL, Papadakis MA, Paauw DS. *Medical Professionalism Best Practices*. Menlo Park, CA: Alpha Omega Alpha Medical Society; 2015. https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf. 2020. ● Domen RE, Johnson K, Conran RM, et al. Professionalism in pathology: a case-based approach as a potential education tool. *Arch Pathol Lab Med.* 2017;141(2):215-219. https://www.archivesofpathology.org/doi/pdf/10.5858/arpa.2016-0217-CP. 2020. ● Levinson W, Ginsburg S, Hafferty FW, Lucey CR. *Understanding Medical Professionalism*. 1st ed. New York, NY: McGraw-Hill Education; 2014.

Professionalism 2: Accountability **Overall Intent:** To take responsibility for one's own actions and the impact on patients and other members of the health care team	
Milestones	**Examples**
Level 1 *Completes tasks and responsibilities in response to requests or reminders*	● Responds to reminders from program administrator to complete work hour logs ● With reminders, attends conferences regularly ● Completes end-of-rotation evaluations with more than routine reminders
Level 2 *Completes tasks and responsibilities in a timely manner, without reminders*	● Completes administrative task required training modules, procedure review, and licensing requirements by specified due date ● Before going out of town, completes tasks in anticipation of lack of computer access while traveling
Level 3 *Completes tasks and responsibilities without reminders, identifies potential barriers to completion, and acts to mitigate those barriers in routine situations*	● Notifies attending of multiple competing demands on-call, appropriately triages tasks, and asks for assistance from other residents or faculty members as needed ● In preparation for being out of the office, arranges coverage for assigned clinical tasks on clinic patients and ensures appropriate continuity of care
Level 4 *Completes tasks and responsibilities without reminders, identifies potential barriers to completion, and acts to mitigates those barriers in complex or stressful situations*	● Takes responsibility for inadvertently omitting key patient information during sign-out, professionally discusses with the patient, family members, and interprofessional team, and has a plan to prevent this in the future
Level 5 *Assists others in developing strategies for completing tasks and responsibilities*	● Sets up a meeting with the nurse manager to streamline patient discharges and leads team to find solutions to the problem
Assessment Models or Tools	● Compliance with deadlines and timelines ● Direct observation ● Global evaluations ● Multisource feedback ● Self-evaluations and reflective tools ● Simulation
Curriculum Mapping	●
Notes or Resources	● American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2020. ● Code of conduct from fellow/resident institutional manual ● Expectations of residency program regarding accountability and professionalism ● Thompson DR. *Critical Care Ethics: A Practice Guide*. 3rd ed. Mount Prospect, IL: Society of Critical Care Medicine; 2014.

Professionalism 3: Well-Being and Resiliency **Overall Intent:** To identify, use, manage, improve, and seek help for personal and professional well-being for self and others	
Milestones	**Examples**
Level 1 *Identifies elements of well-being and describes risk factors for burnout and signs and symptoms of burnout and depression in self or peers*	● Completes a wellness module
Level 2 *With assistance, recognizes status of well-being and risk factors for maladaptation in self or peers*	● Acknowledges own response to death of a patient
Level 3 *Independently recognizes status of well-being in self or peers and reports concerns to appropriate personnel*	● Confidentially shares concerns about a possibly depressed peer to the attention of program leadership
Level 4 *Develops and implements a plan to improve well-being of self or peers, including utilization of institutional or external resources*	● Takes up a new hobby or resumes an abandoned non-medical interest to balance life and relieve stress
Level 5 *Recommends and facilitates system changes to promote well-being in a practice or institution*	● Establishes a book club and discussion group for peers in response to a needs assessment
Assessment Models or Tools	● Direct observation ● Group interview or discussions for team activities ● Individual interview ● Self-assessment and personal learning plan
Curriculum Mapping	●
Notes or Resources	● This subcompetency is not intended to evaluate a fellow's well-being, but to ensure each fellow has the fundamental knowledge of factors that impact well-being, the mechanisms by which those factors impact well-being, and available resources and tools to improve well-being. ● ACGME. "Well-Being Tools and Resources." https://dl.acgme.org/pages/well-being-tools-resources. Accessed 2022 ● Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. *Acad Pediatr*. 2014;14(2 Suppl):S80-97. https://www.sciencedirect.com/science/article/abs/pii/S187628591300332X. 2020. ● 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 patients and families	
Milestones	**Examples**
Level 1 *Uses language and nonverbal behavior to demonstrate respect and establish rapport* *Identifies common barriers to effective communication (e.g., language, disability, bias)*	● Establishes eye contact with the patient when introducing team and calls patients by Mr./Mrs./Ms. and their last name ● Identifies need for trained interpreter with non-English-speaking patients
Level 2 *Establishes a therapeutic relationship using effective communication behaviors in straightforward encounters* *Identifies complex barriers to effective communication (e.g. health literacy, cultural), including bias*	● Avoids medical jargon and restates patient perspective when discussing tobacco cessation ● Recognizes the need for handouts with diagrams and pictures to communicate information to a patient who is unable to read or speak
Level 3 *Establishes a therapeutic relationship using effective communication behaviors in challenging patient encounters* *Mitigates communication barriers, including bias*	● Goes to the level of the patient in bed, maintains eye contact, and holds hand to convey empathy when discussing palliative care approach and do not resuscitate/do not intubate (DNR/DNI) in a patient with end-stage disease who is a full code ● Conducts a family meeting to identify personal/family/cultural beliefs and concerns
Level 4 *Establishes therapeutic relationships using shared decision making (e.g., attention to patient/family concerns and context), regardless of complexity* *Role models the mitigation of communication barriers*	● Continues to engage representative family members with disparate goals in the care of a patient with end-stage disease ● Reflects on bias related to lung cancer death of resident's father and solicits input from faculty members about mitigation of communication barriers when counseling patients around smoking cessation
Level 5 *Coaches others in developing therapeutic relationships and mitigating communication barriers*	● Leads a discussion group on personal experience of moral distress ● Develops a resident/fellowship curriculum on social justice which addresses bias ● Serves on a hospital bioethics committee
Assessment Models or Tools	● Direct observation ● Global evaluations ● Kalamazoo Essential Elements Communication Checklist (Adapted) ● Multisource feedback ● OSCE

	● 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
Curriculum Mapping	●
Notes or Resources	● Braddock III CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. Informed decision making in outpatient practice: time to get back to basics. *JAMA.* 1999;282(24):2313-2320. https://jamanetwork.com/journals/jama/fullarticle/192233. 2020. ● 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.tandfonline.com/doi/full/10.3109/0142159X.2011.531170. 2020. ● Lane JL, Gottlieb RP. Structured clinical observations: a method to teach clinical skills with limited time and financial resources. *Pediatrics*. 2000;105(4 Pt 2):973-977. https://pediatrics.aappublications.org/content/105/Supplement_3/973. 2020. ● Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med*. 2001;76(4):390-393. https://journals.lww.com/academicmedicine/Fulltext/2001/04000/Essential_Elements_of_Communication_in_Medical.21.aspx. 2020. ● Makoul G. The SEGUE Framework for teaching and assessing communication skills. *Patient Educ Couns*. 2001;45(1):23-34. https://www.sciencedirect.com/science/article/abs/pii/S0738399101001367?via%3Dihub. 2020. ● 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. 2020.

Interpersonal and Communication Skills 2: Interprofessional and Team Communication **Overall Intent:** To effectively communicate with the health care team, including consultants, in both straightforward and complex situations	
Milestones	**Examples**
Level 1 *Uses language that values all members of the team*	● Receives consult request for a patient with respiratory failure, asks clarifying questions politely, and expresses gratitude for the consult
Level 2 *Communicates information, including basic feedback with all team members*	● Communicates diagnostic evaluation recommendations clearly and concisely in an organized and timely manner
Level 3 *Facilitates team communication to reconcile conflict and provides difficult feedback*	● Adjusts schedule to join rounds of consulting teams to ensure communications are complete and understood
Level 4 *Adapts communication style to fit team needs and maximizes impact of feedback to the team*	● Sets up a meeting with multiple consulting teams to achieve consensus for recommendations
Level 5 *Role models flexible communication strategies that facilitate excellence in teamwork*	● Recognized as a preferred consultant among the consulting teams due to their communication skills
Assessment Models or Tools	● Direct observation ● Global assessment ● Medical record (chart) audit ● Multi-source feedback ● Simulation
Curriculum Mapping	●
Notes or Resources	● Braddock III CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. Informed decision making in outpatient practice: time to get back to basics. *JAMA.* 1999;282(24):2313-2320. https://jamanetwork.com/journals/jama/fullarticle/192233. 2020. ● Dehon E, Simpson K, Fowler D, Jones A. Development of the faculty 360. *MedEdPORTAL*. 2015;11:10174. https://www.mededportal.org/publication/10174/. 2020. ● Fay D, Mazzone M, Douglas L, Ambuel B. A validated, behavior-based evaluation instrument for family medicine residents. *MedEdPORTAL*. 2007. https://www.mededportal.org/publication/622/. 2020. ● François J. Tool to assess the quality of consultation and referral request letters in family medicine. *Can Fam Physician*. 2011;57(5):574–575. https://www.cfp.ca/content/57/5/574. 2020. ● Green M, Parrott T, Crook G. Improving your communication skills. *BMJ.* 2012;344:e357. https://www.bmj.com/content/344/bmj.e357. 2020. ● 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. 2020. ● Lane JL, Gottlieb RP. Structured clinical observations: a method to teach clinical skills with limited time and financial resources. *Pediatrics*. 2000;105(4 Pt 2):973-977. https://pediatrics.aappublications.org/content/105/Supplement_3/973. 2020. ● 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. 2020.

Interpersonal and Communication Skills 3: Communication within Health Care Systems **Overall Intent:** To effectively document and communicate clinical data and reasoning within the health care system	
Milestones	**Examples**
Level 1 *Accurately records comprehensive information* *Communicates using formats specified by institutional policy to safeguard patient personal health information*	● Documentation is accurate but may include extraneous information ● Shreds patient list after rounds; avoids talking about patients in the elevator, and identifies institutional and departmental communication hierarchy for concerns and safety issues
Level 2 *Documents clinical reasoning through organized notes* *Selects direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context, with assistance*	● Documentation is organized and accurate, but does not include clinical reasoning that supports the treatment plan ● Based on attending recommendation, calls a consulting service to clarify the consulting question
Level 3 *Documents clinical reasoning and is concise most of the time* *Appropriately selects direct and indirect forms of communication based on context*	● Notes include rationale for a diagnosis and therapeutic trial of steroids ● Informs patient immediately about potentially critical test result
Level 4 *Documents clinical reasoning concisely in an organized form, including next steps in care* *Role models effective written and verbal communication*	● Notes include rationale for a diagnosis and therapeutic trial of steroids as well as possible next steps based on outcome ● Helps others to develop documentation templates for their personal use
Level 5 *Guides departmental or institutional communication policies and procedures*	● Participates on an EHR committee to develop more effective outpatient templates
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback
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. 2020. ● 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.jointcommissionjournal.com/article/S1553-7250(06)32022-3/fulltext. 2020. ● Starmer AJ, Spector ND, Srivastava R, et al. I-pass, a mnemonic to standardize verbal handoffs. *Pediatrics*. 2012;129.2:201-204. https://pediatrics.aappublications.org/content/129/2/201.long?sso=1&sso_redirect_count=1&nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token. 2020.

Interpersonal and Communication Skills 4: Complex Communication Around Serious Illness **Overall Intent:** To sensitively and effectively communicate about serious illness with patients and their families/caregivers, promoting shared decision making and assessing the evolving impact on all involved	
Milestones	**Examples**
Level 1 *Identifies prognostic communication as a key element for shared decision making* *Identifies the need to assess patient/family expectations and understanding of their health status and treatment options*	● Recognizes importance of communicating prognosis to permit shared decision making but unable to do so independently ● Values assessing patient/family understanding of health status and expectations but unable to consistently do so independently
Level 2 *Assesses the patient's families/caregivers' prognostic awareness and identifies preferences for receiving prognostic information* *Facilitates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying an understanding of the clinical situation*	● Using open ended questions, can determine a patient's/family's prognostic awareness and discuss patient/family preferences for how communication about prognosis should occur ● Begins a family meeting for a patient with acute respiratory distress syndrome by asking the patient/family what they understand about their clinical condition
Level 3 *Delivers basic prognostic information and attends to emotional responses of patient and families/caregivers* *Sensitively and compassionately delivers medical information; elicits patient/family values, goals and preferences; and acknowledges uncertainty and conflict, with guidance*	● Consistently responds to emotion in conversations by using evidence-based communication strategies ● With a shared understanding of their medical condition, asks patients and families what is most important to them
Level 4 *Tailors communication of prognosis according to disease characteristics and trajectory, patient consent, family needs, and medical uncertainty, and manages intense emotional response* *Independently uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a*	● Adjusts communication with family/caregivers to address uncertainty and conflicting prognostic estimates after an acute brain injury ● Runs a family meeting with complex emotions, family dynamics ● Independently develops and provides a recommendation for a time-limited trial of ventilator support for a patient with acute respiratory distress syndrome, in the context of conflicting patient and family goals

personalized care plan in situations with a high degree of uncertainty and conflict	
Level 5 *Coaches others in the communication of prognostic information* *Coaches shared decision making in patient/family communication*	● Develops a simulation module to teach communication of prognosis ● Develops a role play to teach shared decision making
Assessment Models or Tools	● Direct observation ● OSCE ● Standardized patient communication testing scenarios in simulation
Curriculum Mapping	●
Notes or Resources	● Back AL, Arnold RM, Tulsky JA. *Mastering Communication with Seriously Ill Patients: Balancing Honesty with Empathy and Hope*. 1st ed. New York, NY: Cambridge University Press; 2009. ● Back AL, Arnold RM, Baile WF, Tulsky JA, Fryer-Edwards K. Approaching difficult communication tasks in oncology. *CA Cancer J Clin*. 2005;55(3):164-77. https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/canjclin.55.3.164?sid=nlm%3Apubmed. 2020. ● Center to Advance Palliative Care. https://www.capc.org/. 2020. ● Childers JW, Back AL, Tulsky JA, Arnold RM. REMAP: a framework for goals of care conversations. *J Oncol Pract*. 2017;13(10):e844-e850. https://ascopubs.org/doi/10.1200/JOP.2016.018796. 2020. ● Levetown M, American Academy of Pediatrics Committee on Bioethics. Communicating with children and families: from everyday interactions to skill in conveying distressing information. *Pediatrics*. 2008;121(5):e1441-1460. https://pediatrics.aappublications.org/content/121/5/e1441.long. 2020. ● Shaw DJ, Davidson JE, Smilde RI, Sondoozi T, Agan D. Multidisciplinary team training to enhance family communication in the ICU. *Crit Care Med*. 2014;42(2):265-271. https://journals.lww.com/ccmjournal/Abstract/2014/02000/Multidisciplinary_Team_Training_to_Enhance_Family.4.aspx. 2020. ● VITALtalk. https://www.vitaltalk.org/. 2020.

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

Remediation Toolkit - https://dl.acgme.org/courses/acgme-remediation-toolkit

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