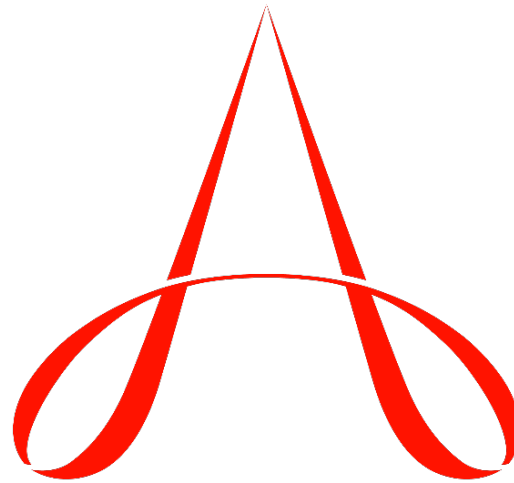




# Supplemental Guide: Pediatric Pulmonology



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## **Milestones Supplemental Guide**

This document provides additional guidance and examples for the Pediatric Pulmonology 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 at the end of this document as well as on the [Resources](#) page of the Milestones section of the ACGME website.

<b>Patient Care 1: Clinical Reasoning</b>	
<b>Overall Intent:</b> To integrate collected data (e.g., history including social determinants of health, physical exam, diagnostic testing if available) to make an informed and appropriate differential diagnosis	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Gathers and reports clinical facts (e.g., history, exam, diagnostics, consultations) with limited pulmonary focus</i>	<ul style="list-style-type: none"> <li>• Reports all spirometric data without identifying pertinent values</li> <li>• Functions as a “reporter”</li> </ul>
<b>Level 2</b> <i>Filters and prioritizes clinical facts to develop a limited pulmonary differential diagnosis</i>	<ul style="list-style-type: none"> <li>• Remembers to report gestational age in a patient presenting with wheezing</li> <li>• Asks for history of vaping in a 12-year-old patient with chronic cough</li> </ul>
<b>Level 3</b> <i>Synthesizes clinical facts into unifying pulmonary diagnosis(es) for uncomplicated or typical presentations</i>	<ul style="list-style-type: none"> <li>• Considers a diagnosis of distal intestinal obstructive syndrome (DIOS) in a seven-year-old child with cystic fibrosis presenting with constipation and vomiting</li> <li>• Considers possible underlying immunodeficiency in a child with recurrent pneumonia and skin abscesses</li> </ul>
<b>Level 4</b> <i>Synthesizes clinical facts into unifying pulmonary diagnosis(es) for complicated or atypical presentations</i>	<ul style="list-style-type: none"> <li>• Considers a diagnosis of SMAD4 gene mutation after intestinal polyps are identified in a patient with hemoptysis</li> <li>• Considers a diagnosis of congenital central hypoventilation syndrome (CCHS) in a patient with post-anesthesia apnea and desaturation</li> </ul>
<b>Level 5</b> <i>Serves as a peer expert to distinguish nuances among pulmonary diagnoses</i>	<ul style="list-style-type: none"> <li>• On rounds, considers the possibility of Birt-Hogg-Dubé syndrome in a patient presenting with recurrent pneumothoraces</li> <li>• Serves as the pulmonary expert consultant during pediatric grand rounds</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>• Chart review</li> <li>• Direct observation</li> <li>• Mini-Clinical Evaluation Exercise (CEX) or structured clinical observation</li> <li>• Multisource feedback</li> </ul>
<b>Curriculum Mapping</b>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Notes or Resources</b>	<ul style="list-style-type: none"> <li>• The American Board of Pediatrics (ABP). “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• Bowen, Judith L. 2006. “Educational Strategies to Promote Clinical Diagnostic Reasoning.” <i>NEJM</i> 355: 2217-2225. <a href="https://www.nejm.org/doi/full/10.1056/NEJMra054782">https://www.nejm.org/doi/full/10.1056/NEJMra054782</a>.</li> <li>• Schumacher, Daniel J., Robert Englander, Patricia J. Hicks, Carol Carraccio, and Susan Guralnick. 2014. “Domain of Competence: Patient Care.” <i>Academic Pediatrics</i> 14(2) Supp: S13-S35. <a href="https://pubmed.ncbi.nlm.nih.gov/24602619/">https://pubmed.ncbi.nlm.nih.gov/24602619/</a>.</li> <li>• Society to Improve Diagnosis in Medicine. “Tools and Toolkits.” <a href="https://www.improvediagnosis.org/toolkits/">https://www.improvediagnosis.org/toolkits/</a>. Accessed 2020.</li> </ul>

<b>Patient Care 2: Organize and Prioritize Patients</b>	
<b>Overall Intent:</b> To efficiently and effectively organize and appropriately prioritize patient care responsibilities both on individual and system levels	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Completes tasks for an individual patient, with substantial guidance</i>	<ul style="list-style-type: none"> <li>● Sees an adolescent with symptoms of cystic fibrosis (CF) pulmonary exacerbation in clinic but does not order pulmonary function testing until prompted by supervising attending</li> <li>● Orders intravenous tobramycin for CF pulmonary exacerbation but does not order tobramycin levels until prompted by the pharmacist</li> </ul>
<b>Level 2</b> <i>Organizes patient care responsibilities by focusing on individual (rather than multiple) patients</i>	<ul style="list-style-type: none"> <li>● Does not transition focus of care to the higher-acuity patient when admitting a CF patient with a pulmonary exacerbation from clinic, an infant who underwent bone marrow transplant (BMT) with respiratory distress and cyanosis arrives</li> <li>● In reviewing tobramycin levels on inpatients with CF, misses critical blood gases on another ill patient</li> </ul>
<b>Level 3</b> <i>Organizes, delegates, and prioritizes the simultaneous care of multiple patients; anticipates and triages urgent and emergent issues</i>	<ul style="list-style-type: none"> <li>● Leaves immediately to evaluate the higher-acuity patient when while admitting a CF patient with a pulmonary exacerbation from clinic, an infant status post BMT with respiratory distress and cyanosis arrives</li> <li>● While managing the inpatient service, responds promptly to critical blood gases on the sickest patient and asks resident to page when tobramycin levels for other patients become available</li> </ul>
<b>Level 4</b> <i>Efficiently organizes and prioritizes patient care responsibilities even when patient volume and acuity are high</i>	<ul style="list-style-type: none"> <li>● On a very busy inpatient service, contacts resident to call gastroenterology for recommendations on an infant with failure to thrive and a swallowing dysfunction who is admitted for nasogastric (NG) tube placement for supplemental feeds, while going to the bedside to evaluate and facilitate transfer to the pediatric intensive care unit (PICU) for an admitted adolescent with tracheostomy and ventilator dependence who demonstrates signs of sepsis.</li> <li>● When two patients arrive at the outpatient clinic simultaneously, asks the rotating resident to see the adolescent who is there for asthma follow up, and sees the toddler who has come in audibly wheezing. Once treatment on the toddler has been initiated, reviews the resident's evaluation and verifies that the adolescent's asthma is well controlled.</li> </ul>
<b>Level 5</b> <i>Serves as an interdisciplinary resource to develop innovative strategies to manage complex patient care environments</i>	<ul style="list-style-type: none"> <li>● Develops a standard checklist for new fellows to help triage multiple patient issues such as admissions and transfers without losing track of key data and to facilitate closing the loop with all health care team members</li> <li>● When a first-year fellow falls behind seeing patients in clinic, assists in clinic and then debriefs afterwards to identify barriers to efficiency and develops strategies with the nurse coordinator to improve clinic flow</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Audit of clinic data to determine the diagnoses, numbers of patients seen per clinic session, and the duration of time spent per patient</li> </ul>

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	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Multisource feedback</li> <li>● Self-assessment</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● Chan, Teresa M., Mathew Mercuri, Kenneth Van Dewark, Jonathan Sherbino, Alan Schwartz, Geoff Norman, and Matthew Lineberry. 2018. “Managing Multiplicity: Conceptualizing Physician Cognition in Multipatient Environments.” <i>Academic Medicine</i> 93(5): 786-793. <a href="https://doi.org/10.1097/ACM.0000000000002081">https://doi.org/10.1097/ACM.0000000000002081</a>.</li> <li>● Covey, Stephen R. 1989. <i>The Seven Habits of Highly Effective People</i>. New York, NY: Simon &amp; Schuster.</li> </ul>

<b>Patient Care 3: Diagnostic and Management Plan</b>	
<b>Overall Intent:</b> To develop and implement an interdisciplinary diagnostic and management plan and modify as needed	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Reports diagnostic and management plans developed by others</i>	<ul style="list-style-type: none"> <li>● Considers antibiotics and chest x-ray based on previous day's comments from attending physician</li> <li>● Repeats cardiology consultant's written recommendations verbatim</li> </ul>
<b>Level 2</b> <i>Participates in the creation of diagnostic and management plans</i>	<ul style="list-style-type: none"> <li>● Develops plan for a patient's chief complaint but neglects other active issues; identifies pneumonia and correct treatment but fails to adjust management plan to address interval development of respiratory failure</li> <li>● Independently creates a plan to discharge patient from an inpatient team but needs assistance with finer details of a complete discharge</li> </ul>
<b>Level 3</b> <i>Develops an interdisciplinary diagnostic and management plan for common and typical diagnoses</i>	<ul style="list-style-type: none"> <li>● In a patient with progressive neuromuscular respiratory failure complicated by pneumonia, develops plans with respiratory therapist for optimal airway clearance</li> <li>● Seeks input from bedside nurse on rounds to modify current plan on a patient with an asthma exacerbation</li> </ul>
<b>Level 4</b> <i>Develops and implements informed diagnostic and management plans for complicated and atypical diagnoses, with the ability to modify plans as necessary</i>	<ul style="list-style-type: none"> <li>● In a patient with progressive neuromuscular respiratory failure who cannot be weaned from positive pressure ventilation, identifies the need for possible long-term invasive respiratory support and initiates appropriate consultations</li> <li>● Realizing a patient's mother is unable to read, labels the patient's asthma action plan in a way the mother understands so she can administer medications correctly, eliciting teach-back to gauge understanding</li> </ul>
<b>Level 5</b> <i>Serves as a peer expert for development of diagnostic and management plans for complicated and atypical diagnoses</i>	<ul style="list-style-type: none"> <li>● In a patient with progressive neuromuscular respiratory failure who cannot be weaned from positive pressure ventilation, leads a multidisciplinary discussion with team members and the patient's family on the need for and implications of long-term invasive respiratory support</li> <li>● Promptly recognizes/identifies junior fellow's misunderstanding and constructively redirects discussion to consider the most important aspects of a case</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Case-based discussion</li> <li>● Chart audit</li> <li>● Direct observation</li> <li>● Multisource feedback</li> </ul>
<b>Curriculum Mapping</b>	<ul style="list-style-type: none"> <li>●</li> </ul>
<b>Notes or Resources</b>	<ul style="list-style-type: none"> <li>● ABP. "Entrustable Professional Activities for Subspecialties: Pulmonology." <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> </ul>

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- Gordon, David, Joseph J. Rencic, Valerie J. Lang, Alik Thomas, Meredith Young, Steven J. Durning. 2022. "Advancing the Assessment of Clinical Reasoning across the Health Professions: Definitional and Methodologic Recommendations." *Perspectives on Medical Education* 11:108-114. <https://doi.org/10.1007/s40037-022-00701-3>.



<b>Patient Care 4: Bronchoscopy</b>	
<b>Overall Intent:</b> To counsel patients regarding indications, risks, benefits, and alternatives of flexible bronchoscopy; to safely and competently perform and interpret bronchoscopies	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Identifies indications for bronchoscopy and their risks, benefits, and alternatives</i></p> <p><i>Performs and interprets simple bronchoscopy, with significant assistance and coaching</i></p>	<ul style="list-style-type: none"> <li>● Understands that flexible bronchoscopy is indicated in an 18-month-old child with persistent, focal, monophonic wheezing</li> <li>● Operates the bronchoscope, but requires attending direction to identify location</li> </ul>
<p><b>Level 2</b> <i>Assesses indications, risks, and benefits, and weighs alternatives in low-risk situations; obtains informed consent</i></p> <p><i>Performs and interprets simple bronchoscopy, with coaching</i></p>	<ul style="list-style-type: none"> <li>● While obtaining informed consent with the family of an 18-month-old with persistent, focal, monophonic wheezing, discusses the options of obtaining a computed tomography angiography (CTA) versus performing flexible bronchoscopy</li> <li>● Identifies anatomy accurately while performing bronchoscopy in an 18-month-old with chronic cough, but requires coaching to visualize the right upper lobe bronchus</li> </ul>
<p><b>Level 3</b> <i>Assesses indications, risks, benefits, and weighs alternatives in high-risk situations</i></p> <p><i>Performs and interprets simple bronchoscopy; performs and interprets complex bronchoscopy, with coaching</i></p>	<ul style="list-style-type: none"> <li>● Identifies the risk of bronchoscopy in a 12-year-old child day +10 status post BMT with a platelet count of <math>5 \times 10^9/L</math></li> <li>● While performing flexible bronchoscopy in a 15-year-old male on extracorporeal membrane oxygenation (ECMO) with pulmonary hemorrhage, requires guidance navigating the airway safely</li> </ul>
<p><b>Level 4</b> <i>Acts to mitigate modifiable risk factors in high-risk or complex situations</i></p> <p><i>Performs and interprets complex bronchoscopy</i></p>	<ul style="list-style-type: none"> <li>● Performs bronchoscopy in a critically ill infant requiring 100% FiO<sub>2</sub> without any guidance from attending</li> <li>● Ensures that a complete cardiac evaluation has been performed in a nine-year-old with severe, primary pulmonary hypertension prior to undergoing anesthesia for flexible bronchoscopy</li> </ul>
<p><b>Level 5</b> <i>Is recognized by peers as a procedural expert and/or implements new techniques in the program</i></p>	<ul style="list-style-type: none"> <li>● Serves as an instructor at a regional pediatric bronchoscopy course</li> <li>● Receives endobronchial ultrasound (EBUS) training and develops program at institution</li> <li>● Serves as a resource to colleagues for challenging or high-risk bronchoscopies</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Simulation</li> </ul>
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> <li>●</li> </ul>
<p>Notes or Resources</p>	<ul style="list-style-type: none"> <li>● Individuals may achieve competence in different procedures at different rates, and this milestone is intended to capture the overall skills</li> </ul>

- ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <https://www.abp.org/content/entrustable-professional-activities-subspecialties>. Accessed 2022.
- American Society of Anesthesiologists (ASA). “Practice Guidelines for Central Venous Access: A Report by the American Society of Anesthesiologists Task Force on Central Venous Access.” 2012. *Anesthesiology* Vol. 116, 539–573. [https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2443415&\\_ga=2.100960201.918126446.1568824887-761947262.1568824887](https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2443415&_ga=2.100960201.918126446.1568824887-761947262.1568824887).
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<b>Medical Knowledge 1: Diagnostic Evaluation (e.g., pulmonary function tests (PFTs), arterial blood gases tests (ABGs), imaging, genetics, interpretation of bronchoalveolar lavage results)</b> <b>Overall Intent:</b> To order diagnostic tests and subspecialty consultations (if appropriate), tailoring the evaluation to patient complexity, severity of illness, and the most likely diagnosis(es); to interpret results accurately within the context of the clinical picture	
Milestones	Examples
<b>Level 1</b> <i>Reports results of diagnostic studies</i>	<ul style="list-style-type: none"> <li>• Reports the results of a blood gas without interpretation</li> </ul>
<b>Level 2</b> <i>Identifies clinically significant diagnostic study results, with guidance</i>	<ul style="list-style-type: none"> <li>• Identifies that a blood gas shows acidemia but does not identify it as secondary to metabolic or respiratory processes, until prompted</li> </ul>
<b>Level 3</b> <i>Independently interprets clinical significance of common diagnostic study results</i>	<ul style="list-style-type: none"> <li>• Recommends an appropriate, but limited workup for a patient demonstrating restrictive defect on body plethysmography</li> <li>• Interprets a blood gas demonstrating either hypoxemic or hypercarbic respiratory failure</li> </ul>
<b>Level 4</b> <i>Independently interprets clinical significance of complex diagnostic study results</i>	<ul style="list-style-type: none"> <li>• Interprets acute on chronic respiratory acidosis on blood gas and adjusts the ventilator appropriately</li> <li>• Unifies collective data results from stool elastase, sweat test and, genetics to confirm cystic fibrosis transmembrane conductance regulator (CFTR)-related disease versus cystic fibrosis</li> </ul>
<b>Level 5</b> <i>Serves as a peer expert for interpreting the clinical significance of complex diagnostic study results</i>	<ul style="list-style-type: none"> <li>• Develops a pulmonary genetics clinic for complex cases referred nationally</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Clinical evaluations</li> <li>• Direct observation</li> <li>• In-training examination</li> <li>• Multisource feedback</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• Davis, Stephanie D., Ernst Eber, Anastassios C. Koumbourlis, eds. <i>Diagnostic Tests in Pediatric Pulmonology: Applications and Interpretation</i>. New York: Humana. <a href="https://doi.org/10.1007/978-1-4939-1801-0">https://doi.org/10.1007/978-1-4939-1801-0</a>.</li> <li>• Englander, Robert, and Carol Carraccio. 2014. “Domain of Competence: Medical Knowledge.” <i>Academic Pediatrics</i> 14(2)Supp: S36-S37. <a href="https://www.sciencedirect.com/science/article/abs/pii/S1876285913003240">https://www.sciencedirect.com/science/article/abs/pii/S1876285913003240</a>.</li> <li>• Epner, Paul L., Janet E. Gans, and Mark L. Graber. 2013. “When Diagnostic Testing Leads to Harm: A New Outcomes-Based Approach for Laboratory Medicine.” <i>BMJ Quality &amp; Safety</i> 22(Supp 2): ii6-ii10. <a href="https://pubmed.ncbi.nlm.nih.gov/23955467/">https://pubmed.ncbi.nlm.nih.gov/23955467/</a>.</li> </ul>

<b>Medical Knowledge 2: Pathology and Pathophysiology</b> <b>Overall Intent:</b> To develop a foundation of scientific knowledge by recognizing, applying, and teaching physiology, pathophysiology, and emerging scientific domains relevant to pulmonary disease	
Milestones	Examples
<b>Level 1</b> <i>Identifies key clinical physiological and pathophysiological concepts</i>	<ul style="list-style-type: none"> <li>● Acknowledges the concept of the oxygen hemoglobin dissociation curve without the ability to apply it to patient care</li> </ul>
<b>Level 2</b> <i>Associates basic knowledge of clinical physiology and pathophysiology with diagnosis</i>	<ul style="list-style-type: none"> <li>● Identifies clinical disease states that shift the oxygen hemoglobin dissociation curve</li> <li>● Identifies the connection between CFTR mutations and sweat test results</li> </ul>
<b>Level 3</b> <i>Applies basic knowledge of clinical pathophysiology to diagnosis and management</i>	<ul style="list-style-type: none"> <li>● Applies the principles of the oxygen hemoglobin dissociation curve to a variety of clinical scenarios such as sickle cell disease with low oxygen saturation or fever</li> <li>● Identifies the implications of various CFTR mutations on CFTR function and the clinical presentation as well as treatment with CFTR modulators</li> </ul>
<b>Level 4</b> <i>Applies advanced knowledge of clinical pathophysiology with diagnosis and management</i>	<ul style="list-style-type: none"> <li>● Integrates knowledge of complex cardiopulmonary interactions in the setting of mechanical ventilation in a patient status post Fontan procedure</li> <li>● Effectively counsels practitioners, patients, and patients' families on various CFTR mutations and expected clinical presentation (e.g., CF, CF screen positive, CS Screen Positive Inconclusive Diagnosis (CFSPID), CFTR-related disease)</li> </ul>
<b>Level 5</b> <i>Serves as a peer expert for applying knowledge of clinical physiology and pathophysiology</i>	<ul style="list-style-type: none"> <li>● Creates a multidisciplinary lecture on the oxygen hemoglobin curve and tailors to level of the audience (e.g., students, fellows, nurses, respiratory therapists)</li> <li>● Develops a tip sheet for nurses that integrates basic concepts on oxygen hemoglobin dissociation curve with common clinical scenarios</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Case-based discussion</li> <li>● Direct observation</li> <li>● In-service examination</li> <li>● Multisource feedback</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● Buckley, John D., Doreen J. Addrizzo-Harris, Alison S. Clay, J. Randall Curtis, Robert M. Kotloff, Scott M. Lorin, Susan Murin, et al. 2009. "Multisociety Task Force Recommendations of Competencies in Pulmonary and Critical Care Medicine." <i>American Journal of Respiratory and Critical Care Medicine</i> 180(4):290-295. <a href="https://doi.org/10.1164/rccm.200904-0521ST">https://doi.org/10.1164/rccm.200904-0521ST</a>.</li> <li>● Kritek, Patricia A., and Jeremy B. Richards, eds. 2019. <i>Medical Education in Pulmonary, Critical Care, and Sleep Medicine: Advanced Concepts and Strategies (Respiratory Medicine)</i>. 1st ed. Switzerland: Humana Cham. <a href="https://doi.org/10.1007/978-3-030-10680-5">https://doi.org/10.1007/978-3-030-10680-5</a>.</li> </ul>

<b>Systems-Based Practice 1: Patient Safety</b>	
<b>Overall Intent:</b> To engage in the analysis and management of patient safety events, including relevant communication with patients, patients’ families, and health care professionals	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Demonstrates knowledge of common patient safety events</i></p> <p><i>Demonstrates knowledge of how to report patient safety events</i></p>	<ul style="list-style-type: none"> <li>● Lists common patient safety events such as patient misidentification or medication errors</li> <li>● Accesses and uses “patient safety reporting system” or “patient safety hotline” as ways to report safety events</li> </ul>
<p><b>Level 2</b> <i>Identifies system factors that lead to patient safety events</i></p> <p><i>Reports patient safety events through institutional reporting systems (simulated or actual)</i></p>	<ul style="list-style-type: none"> <li>● Identifies that electronic health record (EHR) default timing of orders as “routine” (without changing to “stat”) may lead to delays in antibiotic administration for a patient with CF pulmonary exacerbation</li> <li>● Reports delayed antibiotic administration time using the appropriate reporting mechanism</li> </ul>
<p><b>Level 3</b> <i>Participates in analysis of patient safety events (simulated or actual)</i></p> <p><i>Participates in disclosure of patient safety events to patients and families (simulated or actual)</i></p>	<ul style="list-style-type: none"> <li>● Participates in department morbidity and mortality presentations</li> <li>● With the support of an attending or risk management team member, participates in the disclosure of a medication order error to a patient’s family</li> </ul>
<p><b>Level 4</b> <i>Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)</i></p> <p><i>Discloses patient safety events to patients and families (simulated or actual)</i></p>	<ul style="list-style-type: none"> <li>● Leads a simulated or actual root cause analysis related to a patient who became hypoxemic after the tracheostomy tube was dislodged, and develops an action plan</li> <li>● Following consultation with risk management and other team members, independently discloses a medication error to a patient’s family</li> </ul>
<p><b>Level 5</b> <i>Actively engages teams and processes to modify systems to prevent patient safety events</i></p> <p><i>Role models or mentors others in the disclosure of patient safety events</i></p>	<ul style="list-style-type: none"> <li>● Leads a multidisciplinary team to collaboratively work on improved medication reconciliation processes to prevent discharge medication errors</li> <li>● Conducts a simulation demonstrating techniques and approaches for disclosing patient safety events</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Case-based discussion</li> <li>● Direct observation</li> <li>● E-module multiple choice tests (Institute for Healthcare Improvement (IHI), etc.)</li> </ul>

	<ul style="list-style-type: none"> <li>● Guided reflection</li> <li>● Multisource feedback</li> <li>● Portfolio</li> <li>● Simulation</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● Institute for Healthcare Improvement. <a href="http://www.ihl.org/Pages/default.aspx">http://www.ihl.org/Pages/default.aspx</a>. Accessed 2022.</li> <li>● Singh, Ranjit, Bruce Naughton, John S. Taylor, Marlon R. Koenigsberg, Diana R. Anderson, Linda L. McCausland, Robert G. Wahler, Amanda Robinson, and Gurdev Singh. 2005. “A Comprehensive Collaborative Patient Safety Residency Curriculum to Address the ACGME Core Competencies.” <i>Medical Education</i> 39(12): 1195-204. <a href="https://pubmed.ncbi.nlm.nih.gov/16313578/">https://pubmed.ncbi.nlm.nih.gov/16313578/</a>.</li> </ul>

<b>Systems-Based Practice 2: Quality Improvement</b>	
<b>Overall Intent:</b> To understand and implement quality improvement methodologies to improve patient care	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Demonstrates knowledge of basic quality improvement methodologies and metrics</i>	<ul style="list-style-type: none"> <li>• Describes key driver diagram</li> <li>• Describes components of a “Plan-Do-Study-Act” cycle</li> </ul>
<b>Level 2</b> <i>Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)</i>	<ul style="list-style-type: none"> <li>• Describes clinic initiatives to improve adherence to airway clearance for patients with CF</li> <li>• Describes an initiative in the fellow’s clinic to improve pneumococcal vaccination rates in patients with sickle cell disease</li> </ul>
<b>Level 3</b> <i>Participates in local quality improvement initiatives</i>	<ul style="list-style-type: none"> <li>• Participates in an ongoing interdisciplinary project to decrease time from discharge to follow-up appointment for patients hospitalized with asthma exacerbations</li> <li>• Collaborates on a project to improve continuous positive airway pressure (CPAP) adherence in patients with obstructive sleep apnea (OSA)</li> </ul>
<b>Level 4</b> <i>Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project</i>	<ul style="list-style-type: none"> <li>• Develops and implements a quality improvement project to improve vaccination rates within a practice site</li> <li>• In developing a quality improvement project, considers team bias and social determinants of health in patient population</li> </ul>
<b>Level 5</b> <i>Creates, implements, and assesses quality improvement initiatives at the institutional or community level</i>	<ul style="list-style-type: none"> <li>• Initiates and completes a quality improvement project to improve county vaccination rates in collaboration with the county health department and shares results through a formal presentation to the community leaders</li> <li>• Looks for opportunities to improve clinic vaccination rates across a health care system</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• E-module multiple choice test (IHI, etc.)</li> <li>• Multisource evaluations</li> <li>• Poster or other presentation at a local or national meeting</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• Bright Futures. QI Office System Tools. <a href="https://www.aap.org/en/practice-management/bright-futures/bright-futures-quality-improvement/qi-office-system-tools/">https://www.aap.org/en/practice-management/bright-futures/bright-futures-quality-improvement/qi-office-system-tools/</a>. Accessed 2022.</li> <li>• Institute of Healthcare Improvement. “Virtual Training.” <a href="http://www.ihp.org/education/webtraining/Pages/default.aspx?gclid=Cj0KCQjwn4qWBhCvARIsAFNAMii9RzAgwWGKM_gTpOzXCDQWI15J2u-3uxjx-5r9uz4LEwvOGKbF-UaAofbEALw_wcB">http://www.ihp.org/education/webtraining/Pages/default.aspx?gclid=Cj0KCQjwn4qWBhCvARIsAFNAMii9RzAgwWGKM_gTpOzXCDQWI15J2u-3uxjx-5r9uz4LEwvOGKbF-UaAofbEALw_wcB</a>. Accessed 2022.</li> </ul>

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<b>Systems-Based Practice 3: System Navigation for Patient-Centered Care – Coordination of Care</b>	
<b>Overall Intent:</b> To effectively navigate the health care system including the interdisciplinary team and other care practitioners; to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	Examples
<b>Level 1</b> <i>Lists the various interprofessional individuals involved in the patient’s care coordination</i>	<ul style="list-style-type: none"> <li>● For a patient with CF, identifies the team members and their roles, including pediatric pulmonologist, dietician, respiratory therapist, nurses, and social workers</li> <li>● Identifies important members of the medical home for a complex care patient in the fellow’s clinic</li> </ul>
<b>Level 2</b> <i>Coordinates care of patients in routine clinical situations, incorporating interprofessional teams with consideration of patient and family needs</i>	<ul style="list-style-type: none"> <li>● After a positive sweat chloride test, confirms the diagnosis of CF, coordinates care with the patient’s family, pulmonary clinic, CF team, and primary care physician</li> <li>● Works with care coordination team and other subspecialists to care for a patient with bronchopulmonary dysplasia who requires oxygen supplementation being seen in the fellow’s clinic</li> </ul>
<b>Level 3</b> <i>Coordinates care of patients in complex clinical situations, effectively utilizing the roles of interprofessional teams, and incorporating patient and family needs and goals</i>	<ul style="list-style-type: none"> <li>● Works with the care coordination team to ensure appropriate pulmonary clinic follow-up for a ventilator-dependent child who resides in a rural area with limited family transportation options</li> <li>● Partners with local pharmacy that offers a sliding fee scale and provides pharmacy coupons for patients in need</li> <li>● Recognizes situations in which patients from marginalized communities may have additional barriers to access care, and in those cases reaches out to social worker or case manager to find community resources</li> </ul>
<b>Level 4</b> <i>Coordinates interprofessional, patient-centered care among different disciplines and specialties, actively assisting families in navigating the health care system</i>	<ul style="list-style-type: none"> <li>● During inpatient rotations, leads team members in approaching consultants to review cases/recommendations and arranges radiology rounds for the team</li> <li>● Advocates for and coordinates rescheduling a patient who was lost to follow-up from pulmonary clinic due to underlying socioeconomic issues</li> <li>● Recognizes the need for and coordinates a multidisciplinary team/family meeting to include appropriate subspecialists, physical therapist/occupational therapist, nutritionist, child life worker, mental health practitioner, chaplain services, and primary care physician</li> </ul>
<b>Level 5</b> <i>Coaches others in interprofessional, patient-centered care coordination</i>	<ul style="list-style-type: none"> <li>● Leads an initiative to educate residents about home health services or medical home model for medically complex children, ensuring inclusion of discussion on health care disparities</li> <li>● Coaches and mentors colleagues through a multidisciplinary team meeting regarding a child with CCHS and a new tracheostomy and ventilator</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Medical record (chart) audit</li> <li>● Multisource feedback</li> <li>● Review of discharge planning documentation</li> </ul>

Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• American Academy of Pediatrics (AAP). <a href="https://www.aap.org/en-us/Pages/Default.aspx">https://www.aap.org/en-us/Pages/Default.aspx</a>. Accessed 2022.</li> <li>• AAP. Pediatric Care Coordination Resources. <a href="https://www.aap.org/en/practice-management/care-delivery-approaches/care-coordination-resources/">https://www.aap.org/en/practice-management/care-delivery-approaches/care-coordination-resources/</a>. Accessed 2022.</li> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• Starr, Stephanie R., Neera Agrwal, Michael J. Bryan, Yuna Buhrman, Jack Gilbert, Jill M. Huber, Andrea N. Leep Hunderfund, et al. 2017. “Science of Health Care Delivery: An Innovation in Undergraduate Medical Education to Meet Society’s Needs.” <i>Mayo Clinic Proceedings: Innovations, Quality &amp; Outcomes</i>. 1(2): 117-129. <a href="https://www.sciencedirect.com/science/article/pii/S2542454817300395">https://www.sciencedirect.com/science/article/pii/S2542454817300395</a>.</li> </ul>

<b>Systems-Based Practice 4: System Navigation for Patient-Centered Care – Transitions in Care</b> <b>Overall Intent:</b> To effectively navigate the health care delivery system during transitions of care to ensure high-quality patient outcomes	
Milestones	Examples
<b>Level 1</b> <i>Uses a standard template for transitions of care/hand-offs</i>	<ul style="list-style-type: none"> <li>• When handing off to colleagues on a night shift, reads verbatim from a templated hand-off but lacks context, is not appropriately specific in next steps, and does not provide contingency plans</li> </ul>
<b>Level 2</b> <i>Adapts a standard template, recognizing key elements for safe and effective transitions of care/hand-offs in routine clinical situations</i>	<ul style="list-style-type: none"> <li>• Routinely uses a standardized hand-off for a stable patient, verbalizes a basic understanding of active problems, and provides basic contingency plans</li> <li>• Discusses the discharge of a child with complicated pneumonia from the hospital with the primary care physician and provides a problem list, clinical course, and action items to be followed up as an outpatient</li> </ul>
<b>Level 3</b> <i>Performs safe and effective transitions of care/hand-offs in complex clinical situations, and ensures closed-loop communication</i>	<ul style="list-style-type: none"> <li>• Routinely uses a standardized hand-off when transferring a patient to the intensive care unit and solicits read-back and confirms/uses specific resources and timeline for transfer to occur</li> <li>• Performs the hand-off for a patient who is tracheostomy and ventilator dependent to the primary care physician with a succinct summary by problem or system and a timeline for outpatient follow-up and repeat testing, with clearly delineated responsibilities</li> </ul>
<b>Level 4</b> <i>Performs and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems, including transitions to adult care</i>	<ul style="list-style-type: none"> <li>• Prior to going on vacation, proactively seeks out colleagues in fellow clinic to follow up on test results that are still pending and expected back during that week, with specific instructions and contingency plans for the follow-up visit with the patient/family</li> <li>• Seeks out appropriate adult general and subspecialty practitioners to facilitate the transition of a 20-year-old patient with complex health care needs to adult care; ensures a thorough hand-off, including the patient’s cultural preferences and social needs, to the identified new adult practitioners</li> </ul>
<b>Level 5</b> <i>Coaches others in improving transitions of care within and across health care delivery systems to optimize patient outcomes</i>	<ul style="list-style-type: none"> <li>• Designs and implements standardized hand-off workshops and exercises for medical students prior to the start of their clinical rotations</li> <li>• Develops and implements a process for residency continuity clinics to improve the transition of adolescents with asthma from pediatrics to adult medicine</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Multisource feedback</li> <li>• Objective structured clinical examination (OSCE)/Simulation</li> <li>• Review of sign-out tools, use and review of checklists</li> </ul>
<b>Curriculum Mapping</b>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Notes or Resources</b>	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> </ul>

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<b>Systems-Based Practice 5: Population and Community Health</b>	
<b>Overall Intent:</b> To promote and improve health across communities and populations through patient care and advocacy, including public education and elimination of structural racism	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Demonstrates awareness of population and community health needs and disparities</i>	<ul style="list-style-type: none"> <li>• Identifies social determinants of health, such as poverty and structural racism</li> <li>• Identifies lack of health care access and adequate housing as factors contributing to the control of asthma</li> </ul>
<b>Level 2</b> <i>Identifies specific population and community health needs and disparities; identifies local resources</i>	<ul style="list-style-type: none"> <li>• Screens patients with poorly controlled asthma for the adequacy of health care access and housing</li> <li>• Discusses health disparities and identifies local asthma resources for patients with poorly controlled asthma</li> </ul>
<b>Level 3</b> <i>Uses local resources effectively to meet the needs and reduce health disparities of a patient population and community</i>	<ul style="list-style-type: none"> <li>• Refers patients who identify risk factors in the home environment to local asthma resources</li> <li>• Refers patients to programs to address food insecurity</li> <li>• Works with social workers to provide free or discounted transportation to appointments</li> </ul>
<b>Level 4</b> <i>Adapts practice to provide for the needs of and reduce health disparities of a specific population</i>	<ul style="list-style-type: none"> <li>• Participates in an advocacy project to improve health care access and/or decrease practices that support structural racism</li> <li>• Collaborates with social worker in clinic to ensure that all patients are screened for housing and food insecurity, as well as ensuring access to medications</li> <li>• Identifies a local high school with high rates of asthma and partners with school nurse to improve management of asthma exacerbation</li> </ul>
<b>Level 5</b> <i>Advocates at the local, regional, or national level for populations and communities with health care disparities</i>	<ul style="list-style-type: none"> <li>• Partners with a community organization to open a new local community program aimed at addressing community asthma risk</li> <li>• Participates in longitudinal discussions with local, state, or national government policy makers to mitigate impacts of structural racism and reduce health disparities</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Medical record (chart) audit</li> <li>• Multisource feedback</li> <li>• Reflection</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• AAP. "Advocacy." <a href="https://services.aap.org/en/advocacy/">https://services.aap.org/en/advocacy/</a>. Accessed 2020.</li> <li>• AAP. Bright Futures. Promoting Lifelong Health for Families and Communities. <a href="https://downloads.aap.org/AAP/PDF/Bright%20Futures/BF4_LifelongHealth.pdf?_ga=2.268230030.1236819861.1654476607-929400881.1619626826&amp;_gac=1.229642574.1651085941.cj0kcqjw06otbhc_arisaau1yov_dcxkc8cjmzqntqgmfsj0_flej6v7e95sxi3exmdjivnt1vv9rxoaamnzealw_wcb">https://downloads.aap.org/AAP/PDF/Bright%20Futures/BF4_LifelongHealth.pdf?_ga=2.268230030.1236819861.1654476607-929400881.1619626826&amp;_gac=1.229642574.1651085941.cj0kcqjw06otbhc_arisaau1yov_dcxkc8cjmzqntqgmfsj0_flej6v7e95sxi3exmdjivnt1vv9rxoaamnzealw_wcb</a>. Accessed 2022.</li> </ul>

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<b>Systems-Based Practice 6: Physician Role in Health Care Systems</b>	
<b>Overall Intent:</b> To understand the physician’s role in health systems science to optimize patient care delivery, including cost-conscious care	
Milestones	Examples
<b>Level 1</b> <i>Engages with patients and other providers in discussions about cost-conscious care and key components of the health care delivery system</i>	<ul style="list-style-type: none"> <li>● Considers costs of hospital admission versus outpatient therapy in the care of a 16-year-old female with private insurance who presents with a CF pulmonary exacerbation</li> <li>● Asks questions regarding varying costs of inhaled corticosteroids in patients with public insurance and those with private insurance and high-deductible plans</li> </ul>
<b>Level 2</b> <i>Identifies the relationships between the delivery system and cost-conscious care and the impact on the patient care</i>	<ul style="list-style-type: none"> <li>● Considers the patient’s prescription drug coverage and insurance type when choosing an inhaled corticosteroid for the treatment of persistent asthma</li> </ul>
<b>Level 3</b> <i>Discusses the need for changes in clinical approaches based on evidence, outcomes, and cost-effectiveness to improve care for patients and families</i>	<ul style="list-style-type: none"> <li>● Accepts an appropriate level of uncertainty when balancing cost-conscious care (e.g., not ordering a respiratory viral panel when it will not change management)</li> <li>● Discusses costs, risks, and benefits of pursuing a repeat computerized tomography (CT) scan in the follow-up of a two-year-old following treatment for necrotizing pneumonia</li> <li>● Adapts plan to minimize costs and provides appropriate care for an uninsured patient</li> </ul>
<b>Level 4</b> <i>Advocates for the promotion of safe, quality, and high-value care</i>	<ul style="list-style-type: none"> <li>● Works collaboratively to identify additional services in an uninsured patient with CF</li> <li>● Identifies the value of an asthma action plan upon discharge to minimize hospital readmissions, and implements a project to address this issue</li> </ul>
<b>Level 5</b> <i>Coaches others to promote safe, quality, and high-value care across health care systems</i>	<ul style="list-style-type: none"> <li>● Leads a quality improvement project to improve ambulatory follow-up of patients admitted with severe asthma exacerbations</li> <li>● Works with hospital information technology to insert costs of inpatient antibiotics into the EHR</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Medical record (chart) audit</li> <li>● Patient satisfaction data</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes and Resources	<ul style="list-style-type: none"> <li>● Agency for Healthcare Research and Quality (AHRQ). Measuring the Quality of Physician Care. <a href="https://www.ahrq.gov/talkingquality/measures/setting/physician/index.html">https://www.ahrq.gov/talkingquality/measures/setting/physician/index.html</a>. Accessed 2022.</li> <li>● AAP. Practice Management. <a href="https://www.aap.org/en/practice-management/">https://www.aap.org/en/practice-management/</a>. Accessed 2022.</li> <li>● American Board of Internal Medicine. “QI/PI Activities.” <a href="https://www.abim.org/maintenance-of-certification/earning-points/qi-pi-activities.aspx">https://www.abim.org/maintenance-of-certification/earning-points/qi-pi-activities.aspx</a>. Accessed 2020.</li> </ul>

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<b>Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice</b> <b>Overall Intent:</b> To incorporate evidence and apply it to individual patients and patient populations	
Milestones	Examples
<b>Level 1</b> <i>Develops an answerable clinical question and demonstrates how to access available evidence, with guidance</i>	<ul style="list-style-type: none"> <li>● Identifies broad disease questions, but needs guidance to focus question on specific patient presentation</li> <li>● Accesses available evidence using unfiltered resources, retrieving a broad array of related information</li> </ul>
<b>Level 2</b> <i>Independently articulates clinical question and accesses available evidence</i>	<ul style="list-style-type: none"> <li>● Searches the question, “Does albuterol (or bronchodilator) decrease the length of hospitalization in infants with bronchiolitis?”</li> <li>● Uses PubMed to search for the answer to a clinical question and appropriately filters results</li> </ul>
<b>Level 3</b> <i>Locates and applies the evidence, integrated with patient preference, to the care of patients</i>	<ul style="list-style-type: none"> <li>● Obtains, appraises, and applies evidence for Global Initiative for Asthma (GINA)/National Heart, Lung, and Blood Institute (NHLBI) guidelines to a patient with asthma and utilizes shared decision making to incorporate the patient’s family’s preference of nebulizer versus metered-dose inhaler (MDI) inhaled therapy</li> <li>● Incorporates patients’ families’ values/cultural beliefs into developing a nutritional rehabilitation program for a toddler with CF and failure to thrive based on Cystic Fibrosis Foundation (CFF) standard of care nutritional guidelines</li> </ul>
<b>Level 4</b> <i>Critically appraises and applies evidence, even in the face of uncertainty and conflicting evidence to guide care tailored to the individual patient</i>	<ul style="list-style-type: none"> <li>● Elicits patient’s prior experiences regarding diversity, equity, and inclusion in the health care system to incorporate into search strategy</li> <li>● Based on recent guidelines, discusses with parents of children with spinal muscular atrophy alternatives for respiratory support, incorporating family preference</li> <li>● Appraises levels of evidence to weigh treatment options for the care of patients with CF</li> </ul>
<b>Level 5</b> <i>Coaches others to critically appraise and apply evidence for complex patients</i>	<ul style="list-style-type: none"> <li>● Leads the development of clinical guidelines/EHR pathways for patients hospitalized with asthma exacerbation</li> <li>● Coaches a learner to lead a journal club on management of a patient with CF-related diabetes</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Multisource feedback</li> <li>● Presentation evaluation</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● Duke University. “Evidence-Based Practice.” <a href="https://guides.mclibrary.duke.edu/ebm">https://guides.mclibrary.duke.edu/ebm</a>. Accessed 2020.</li> </ul>

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<b>Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth</b> <b>Overall Intent:</b> To continuously improve patient care based on self-evaluation and lifelong learning	
Milestones	Examples
<b>Level 1</b> <i>Participates in feedback sessions</i>  <i>Develops personal and professional goals, with assistance</i>	<ul style="list-style-type: none"> <li>● Listens to feedback respectfully</li> <li>● Acknowledges the existence of implicit/explicit biases</li> <li>● Sets a goal to improve communication skills, with prompting</li> </ul>
<b>Level 2</b> <i>Demonstrates openness to feedback and performance data</i>  <i>Designs a learning plan based on established goals, feedback, and performance data, with assistance</i>	<ul style="list-style-type: none"> <li>● Acknowledges concerns about timely note completion and works with clinic preceptor to develop goals for improvement</li> <li>● Develops an individualized learning plan, with solicitation of program leadership feedback, in response to Subspecialty In-Training Examination (SITE) performance</li> <li>● Devises a plan to explore biases and how they impact care</li> </ul>
<b>Level 3</b> <i>Seeks and incorporates feedback and performance data episodically</i>  <i>Designs and implements a learning plan by analyzing and reflecting on the factors which contribute to gap(s) between performance expectations and actual performance</i>	<ul style="list-style-type: none"> <li>● Often seeks feedback regarding pulmonary function testing interpretation and sometimes incorporates suggestions into future readings</li> <li>● Identifies problems understanding ventilator management and arranges to spend more time with respiratory therapist and attending who staffs ventilator clinic</li> <li>● Recognizes own implicit biases in referral to asthma resources for patients with family members who smoke, and develops a plan for improvement</li> <li>● Identifies the lack of referral of patients in the CF clinic to mental health resources, identifies personal implicit biases, and identifies opportunities for learning and improving</li> </ul>
<b>Level 4</b> <i>Seeks and incorporates feedback and performance data consistently</i>  <i>Adapts a learning plan using long-term professional goals, self-reflection, and performance data to measure its effectiveness</i>	<ul style="list-style-type: none"> <li>● Reviews teaching evaluations completed by residents with residency program director to improve teaching skills in a way that meets the needs of the learners and program</li> <li>● Adapts learning plan to improve knowledge of office-based asthma care based on personal reflection, feedback, and patient data</li> <li>● Actively seeks out opportunities to learn about racism and bystander culture and seeks feedback from patient surveys</li> </ul>
<b>Level 5</b> <i>Role models and coaches others in seeking and incorporating feedback and performance data</i>  <i>Demonstrates continuous self-reflection and coaching of others on reflective practice</i>	<ul style="list-style-type: none"> <li>● Develops a multidisciplinary clinic team to implement change(s) based on patient satisfaction scores</li> <li>● Partner with diversity, equity, and inclusion (DEI) office to develop roles/responsibilities of a DEI champion in the program</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Direct observation</li> </ul>

	<ul style="list-style-type: none"> <li>● Medical record (chart) audit</li> <li>● Multisource feedback</li> <li>● Review of learning plan</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● Burke, Anne E., Bradley Benson, Robert Englander, Carol Carraccio, and Patricia J. Hicks. 2014. “Domain of Competence: Practice-Based Learning and Improvement.” <i>Academic Pediatrics</i>. 14(2): S38-S54. DOI: <a href="https://doi.org/10.1016/j.acap.2013.11.018">https://doi.org/10.1016/j.acap.2013.11.018</a>.</li> <li>● Lockspeiser, Tai M., Su-Ting T. Li, Ann E. Burke, Adam A. Rosenberg, Alston E. Dunbar 3rd, Kimberly A. Gifford, Gregory H. Gorman, et al. 2016. “In Pursuit of Meaningful Use of Learning Goals in Residency: A Qualitative Study of Pediatric Residents.” <i>Academic Medicine</i>. 91(6):839-846. DOI: <a href="https://doi.org/10.1097/ACM.0000000000001015">10.1097/ACM.0000000000001015</a>.</li> <li>● Lockspeiser, Tai M., Patricia A. Schmitter, J. Lindsey Lane, Janice L. Hanson, Adam A. Rosenberg, and Yoon Soo Park. 2013. “Assessing Residents’ Written Learning Goals and Goal Writing Skill: Validity Evidence for the Learning Goal Scoring Rubric.” <i>Academic Medicine</i>. 88(10):1558-1563. DOI: <a href="https://doi.org/10.1097/ACM.0b013e3182a352e6">10.1097/ACM.0b013e3182a352e6</a>.</li> </ul>

<b>Professionalism 1: Professional Behavior</b>	
<b>Overall Intent:</b> To demonstrate ethical and professional behaviors, promote these behaviors in others, and to use appropriate resources to manage professional dilemmas	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Identifies expected professional behaviors and potential triggers for lapses</i></p> <p><i>Identifies the value and role of pediatrics as a vocation/career</i></p>	<ul style="list-style-type: none"> <li>● Asks for feedback on post-call interactions with staff members and colleagues after realizing own tendency to be short when tired</li> <li>● Acknowledges the importance of pediatric pulmonologists in informing the public about vaping</li> </ul>
<p><b>Level 2</b> <i>Demonstrates professional behavior with occasional lapses</i></p> <p><i>Demonstrates accountability for patient care as a pediatrician, with guidance</i></p>	<ul style="list-style-type: none"> <li>● Is late to morning rounds, identifies this lapse, corrects behavior, and immediately apologizes to peers and attendings upon arrival</li> <li>● Reviews patient’s laboratory results with attending physician, but requires prompting to contact the patient’s family and discuss plan</li> </ul>
<p><b>Level 3</b> <i>Maintains professional behavior in increasingly complex or stressful situations</i></p> <p><i>Fully engages in patient care and holds oneself accountable</i></p>	<ul style="list-style-type: none"> <li>● During an overbooked clinic, demonstrates caring and compassionate behaviors with patients, patients’ families, colleagues, and staff members</li> <li>● Advocates for an individual patient’s needs in a humanistic and professional manner regarding home care, medication approval, and need for care by another subspecialist</li> <li>● Despite being off service, follows up on important genetic test results that come back three months later</li> </ul>
<p><b>Level 4</b> <i>Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others</i></p> <p><i>Exhibits a sense of duty to patient care and professional responsibilities</i></p>	<ul style="list-style-type: none"> <li>● Recognizes own inability to provide care due to personal stressors and requests a leave of absence</li> <li>● Recognizes that a co-fellow is struggling with a personal issue and works to bring it to the attention of the program director</li> <li>● Without prompting, assists colleagues with seeing patients when the clinic is busy</li> <li>● Speaks up in the moment when observing racist/sexist behavior within the health care team and uses reporting mechanisms to address it</li> </ul>
<p><b>Level 5</b> <i>Models professional behavior and coaches others when their behavior fails to meet professional expectations</i></p> <p><i>Extends the role of the pediatrician beyond the care of patients by engaging with the community, specialty, and medical profession as a whole</i></p>	<ul style="list-style-type: none"> <li>● Discusses the need to be on time with a PGY-1 who continues to be late, making a plan together to address the underlying issues of why the learner is late</li> <li>● Advocates for process improvement to help a cohort of patients, takes on larger projects to remedy a system issue that is affecting patients, and sees the opportunity to improve care as a responsibility</li> <li>● Develops education and/or modules on microaggressions and bias</li> </ul>

Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Multisource feedback</li> <li>● Oral or written self-reflection</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● It is important to note a historical context in which the informal and formal assessment of “professionalism” has extended beyond these ideals to negatively impact the careers of women, LGBTQIA+ people, and underrepresented minorities in medicine. Explicitly, examples of this have included the way in which women, minoritized learners, and LGBTQIA+ learners have been targeted for certain forms of self-expression of racial, ethnic, or gender identity. The assessment of professionalism should seek to be anti-racist and eliminate all forms of bias. (From the Pediatrics Supplemental Guide)</li> <li>● AbdelHameid, Duaa. 2020. “Professionalism 101 for Black Physicians.” <i>New England Journal of Medicine</i>. 383(5): e34. doi:10.1056/NEJMpv2022773.</li> <li>● AAP. “Resident Curriculum: Mental Health Education Resources.” <a href="https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Mental-Health/Pages/Residency-Curriculum.aspx">https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Mental-Health/Pages/Residency-Curriculum.aspx</a>. Accessed 2020.</li> <li>● American Board of Internal Medicine Foundation, ACP-ASIM Foundation, and European Federation of Internal Medicine. 2002. “Medical Professionalism in the New Millennium: A Physician Charter.” <i>Annals of Internal Medicine</i> 136: 243-246. <a href="https://doi.org/10.7326/0003-4819-136-3-200202050-00012">https://doi.org/10.7326/0003-4819-136-3-200202050-00012</a>.</li> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● ABP. “Teaching, Promoting, and Assessing Professionalism Across the Continuum: A Medical Educator’s Guide.” <a href="https://www.abp.org/professionalism-guide">https://www.abp.org/professionalism-guide</a>. Accessed 2020.</li> <li>● American Medical Association. “Ethics.” <a href="https://www.ama-assn.org/delivering-care/ama-code-medical-ethics">https://www.ama-assn.org/delivering-care/ama-code-medical-ethics</a>. Accessed 2020.</li> <li>● Bynny, Richard L., Douglas S. Paauw, Maxine Papadakis, and Sheryl Pfeil. 2017. <i>Medical Professionalism Best Practices: Professionalism in the Modern Era</i>. Aurora, CO: Alpha Omega Alpha Medical Society. <a href="https://www.alphaomegaalpha.org/wp-content/uploads/2022/01/Monograph2018.pdf">https://www.alphaomegaalpha.org/wp-content/uploads/2022/01/Monograph2018.pdf</a>. ISBN: 978-1-5323-6516-4.</li> <li>● Domen, Ronald E., Kristen Johnson, Richard Michael Conran, Robert D. Hoffman, Miriam D. Post, Jacob J. Steinberg, Mark D. Brissette, et al. 2016. “Professionalism in Pathology: A Case-Based Approach as a Potential Educational Tool.” <i>Archives of Pathology and Laboratory Medicine</i> 141: 215-219. <a href="https://doi.org/10.5858/arpa.2016-0217-CP">https://doi.org/10.5858/arpa.2016-0217-CP</a>.</li> </ul>

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<b>Professionalism 2: Ethical Principles</b>	
<b>Overall Intent:</b> To recognize and address or resolve common and complex ethical dilemmas or situations	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics</i>	<ul style="list-style-type: none"> <li>● Recognizes that knowledge of risks and benefits is required before obtaining informed consent</li> </ul>
<b>Level 2</b> <i>Applies ethical principles in common situations</i>	<ul style="list-style-type: none"> <li>● Understands that one should not accept a trip from a pharmaceutical representative</li> </ul>
<b>Level 3</b> <i>Analyzes complex situations using ethical principles to address conflict/controversy; seeks help when needed to manage and resolve complex ethical situations</i>	<ul style="list-style-type: none"> <li>● While working up a patient’s parents for CFTR mutations and prior to disclosing results, recognizes the need for an ethics consult when paternity is not as expected</li> </ul>
<b>Level 4</b> <i>Manages and seeks to resolve ethical dilemmas using appropriate resources (e.g., ethics consultations, literature review, risk management/legal consultation)</i>	<ul style="list-style-type: none"> <li>● Uses institutional resources, including social work and risk management, when a patient’s parent chooses to leave the hospital against medical advice</li> <li>● Obtains an ethics consult as to continuing insulin prescriptions for patients who do not check their glucose levels</li> </ul>
<b>Level 5</b> <i>Called upon by others to consult in cases of complex ethical dilemmas; identifies and seeks to address system-level factors that induce or exacerbate</i>	<ul style="list-style-type: none"> <li>● Participates in an ethics consult service, providing guidance for complex cases</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Multisource feedback</li> <li>● Oral or written self-reflection</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● American Board of Internal Medicine Foundation, ACP-ASIM Foundation, and European Federation of Internal Medicine. 2002. “Medical Professionalism in the New Millennium: A Physician Charter.” <i>Annals of Internal Medicine</i> 136: 243-246. <a href="https://doi.org/10.7326/0003-4819-136-3-200202050-00012">https://doi.org/10.7326/0003-4819-136-3-200202050-00012</a>.</li> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● American Medical Association. “Ethics.” <a href="https://www.ama-assn.org/delivering-care/ama-code-medical-ethics">https://www.ama-assn.org/delivering-care/ama-code-medical-ethics</a>. Accessed 2020.</li> </ul>



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<b>Professionalism 3: Accountability/Conscientiousness</b>	
<b>Overall Intent:</b> To take responsibility for one’s own actions and the impact on patients and other members of the health care team	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Performs tasks and responsibilities, with prompting</i>	<ul style="list-style-type: none"> <li>• Responds to reminders from program administrator to complete work hour logs</li> <li>• After being informed by the program director that too many conferences have been missed, changes habits to meet the minimum attendance requirement</li> <li>• Completes patient care tasks (callbacks, consultations, orders) after prompting from a supervisor</li> </ul>
<b>Level 2</b> <i>Performs tasks and responsibilities in a timely manner in routine situations</i>	<ul style="list-style-type: none"> <li>• Completes administrative tasks (e.g., licensing requirements) by specified due date</li> <li>• Completes routine patient care tasks as assigned</li> <li>• Answers pages and emails promptly with rare need for reminders</li> </ul>
<b>Level 3</b> <i>Performs tasks and responsibilities in a thorough and timely manner in complex or stressful situations</i>	<ul style="list-style-type: none"> <li>• Identifies multiple competing demands when caring for patients, appropriately triages tasks, and appropriately seeks help from other team members</li> </ul>
<b>Level 4</b> <i>Coaches others to ensure tasks and responsibilities are completed in a thorough and timely manner in complex or stressful situations</i>	<ul style="list-style-type: none"> <li>• Provides tips on task prioritization to residents</li> <li>• Supervises residents to ensure patients are appropriately identified by their illness severity to ensure that proper monitoring/oversight occurs</li> </ul>
<b>Level 5</b> <i>Creates strategies to enhance others’ ability to efficiently complete tasks and responsibilities</i>	<ul style="list-style-type: none"> <li>• Designs and implements a checklist for residents to utilize in the discharge of patients admitted with status asthmaticus to ensure: patients receive asthma education, medications are delivered to hospital room, and follow-up appointment is made for pulmonary clinic prior to discharge</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Compliance with deadlines and timelines</li> <li>• Direct observation</li> <li>• Multisource feedback</li> <li>• Self-evaluations</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• American Medical Association. “Ethics.” <a href="https://www.ama-assn.org/delivering-care/ama-code-medical-ethics">https://www.ama-assn.org/delivering-care/ama-code-medical-ethics</a>. Accessed 2020.</li> <li>• Code of conduct from fellow/resident institutional manual</li> <li>• Expectations of fellowship program regarding accountability and professionalism</li> </ul>

<b>Professionalism 4: Well-Being</b>	
<b>Overall Intent:</b> To identify resources to manage and improve well-being	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Recognizes the importance of addressing personal and professional well-being</i>	<ul style="list-style-type: none"> <li>• Discusses the importance of having a faculty mentor for one’s own professional well-being</li> <li>• Recognizes that personal stress may require a change in schedule</li> </ul>
<b>Level 2</b> <i>Describes institutional resources that are meant to promote well-being</i>	<ul style="list-style-type: none"> <li>• Identifies well-being resources such as meditation apps and mental health resources, available through the program and institution</li> <li>• Describes the employee assistance program as a resource after a challenging night on call</li> </ul>
<b>Level 3</b> <i>Recognizes institutional and personal factors that impact well-being</i>	<ul style="list-style-type: none"> <li>• Identifies that consulting in the PICU may be stressful and impact well-being</li> <li>• Identifies that work-life integration can be personally and professionally stressful</li> </ul>
<b>Level 4</b> <i>Describes interactions between institutional and personal factors that impact well-being</i>	<ul style="list-style-type: none"> <li>• Develops a plan to mitigate the tension between a busy work schedule and time with family</li> <li>• Explains how microaggressions from coworkers and/or faculty members impact performance or engagement in patient care</li> </ul>
<b>Level 5</b> <i>Coaches and supports colleagues to optimize well-being at the team, program, or institutional level</i>	<ul style="list-style-type: none"> <li>• Leads organizational efforts to address clinician well-being</li> <li>• Leads a team debrief after withdrawal of life-sustaining care; shares the personal impact and coaches them on techniques to decompress</li> <li>• Develops formalized support system for self and others to explore impact of microaggressions and biases</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Burn-out scales</li> <li>• Direct observation</li> <li>• Institutional online training modules</li> <li>• Self-assessment and personal learning plan</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Local resources, including employee assistance programs</li> <li>• ACGME. “Well-Being Tools and Resources.” <a href="https://dl.acgme.org/pages/well-being-tools-resources">https://dl.acgme.org/pages/well-being-tools-resources</a>. Accessed 2022.</li> <li>• Hicks, Patricia J., Daniel Schumacher, Susan Guralnick, Carol Carraccio, and Ann E. Burke. 2014. “Domain of Competence: Personal and Professional Development.”</li> </ul>

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<b>Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication</b>	
<b>Overall Intent:</b> To establish a therapeutic relationship with patients and their families, tailor communication to the needs of patients and families, and effectively navigate difficult/sensitive conversations	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Demonstrates respect and attempts to establish rapport</i></p> <p><i>Attempts to adjust communication strategies based upon patient/family expectations</i></p>	<ul style="list-style-type: none"> <li>● Introduces self and faculty member, identifies patient and others in the room, and engages all parties in health care discussion</li> <li>● Attempts to initiate sensitive conversations regarding sexual and reproductive health in an adolescent with CF</li> <li>● Identifies need for trained interpreter with non-English-speaking patients</li> </ul>
<p><b>Level 2</b> <i>Establishes a therapeutic relationship in straightforward encounters</i></p> <p><i>Adjusts communication strategies as needed to mitigate barriers and meet patient/family expectations</i></p>	<ul style="list-style-type: none"> <li>● Prioritizes and sets an agenda based on concerns of a patient’s parents during a clinic visit with an infant newly diagnosed with CF</li> <li>● Uses nonjudgmental language to discuss sensitive topics</li> <li>● Uses patient’s preferred pronouns when addressing patient</li> <li>● In discussion with a 20-year-old transgender woman with CF, appropriately addresses how gender will be considered in predictive equations of spirometry</li> </ul>
<p><b>Level 3</b> <i>Establishes a culturally competent and therapeutic relationship in most encounters</i></p> <p><i>Communicates with sensitivity and compassion, elicits patient/family values, and acknowledges uncertainty and conflict</i></p>	<ul style="list-style-type: none"> <li>● Prioritizes and sets an agenda based on concerns of the patient’s parents at the beginning of a follow-up visit of a 15-year-old recent immigrant with severe persistent asthma, morbid obesity, and obstructive sleep apnea</li> <li>● Discusses pregnancy in a 19-year-old patient with CF while promoting trust, respect, and understanding</li> <li>● Recognizes that mispronouncing a patient’s name, especially one of a different ethnicity, might be experienced as a microaggression; apologizes to the patient and seeks to correct the mistake</li> </ul>
<p><b>Level 4</b> <i>Establishes a therapeutic relationship in straightforward and complex encounters, including those with ambiguity and/or conflict</i></p>	<ul style="list-style-type: none"> <li>● Continues to engage parents who refuse COVID-19 immunizations, addressing misinformation and reviewing risks/benefits to assuage these concerns in a manner that engages rather than alienates the patient’s family</li> <li>● Facilitates sensitive discussions with patient/family and interdisciplinary team in the consideration of tracheostomy placement in a child with spinal muscular atrophy (SMA)</li> <li>● Asks questions in ways that validate patient identities and promote an inclusive environment</li> </ul>

<p><i>Uses shared decision making with patient/family to make a personalized care plan</i></p>	<ul style="list-style-type: none"> <li>• While maintaining trust, engages family of a child with medical complexity along with other members of the multi-specialty care team in determining family wishes and expectations regarding resuscitative efforts in the event of an acute deterioration</li> </ul>
<p><b>Level 5</b> <i>Mentors others to develop positive therapeutic relationships</i></p> <p><i>Models and coaches others in patient- and family-centered communication</i></p>	<ul style="list-style-type: none"> <li>• Acts as a mentor for junior fellows in disclosing a new diagnosis of cystic fibrosis to a family</li> <li>• Models and coaches the spectrum of difficult communication</li> <li>• Develops a curriculum on patient- and family-centered communication, including navigating difficult conversations</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Multisource feedback</li> <li>• Standardized patients</li> <li>• Simulation</li> </ul>
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> <li>•</li> </ul>
<p>Notes or Resources</p>	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• Laidlaw, Anita, and Jo Hart. 2011. “Communication Skills: An Essential Component of Medical Curricula. Part I: Assessment of Clinical Communication: AMEE Guide No. 51.” <i>Medical Teacher</i>. 33(1): 6-8. <a href="https://doi.org/10.3109/0142159X.2011.531170">https://doi.org/10.3109/0142159X.2011.531170</a>.</li> <li>• Makoul, Gregory. 2001. “Essential Elements of Communication in Medical Encounters: the Kalamazoo Consensus Statement.” <i>Academic Medicine</i>. 76(4): 390-393. <a href="https://journals.lww.com/academicmedicine/Fulltext/2001/04000/Essential_Elements_of_Communication_in_Medical.21.aspx#pdf-link">https://journals.lww.com/academicmedicine/Fulltext/2001/04000/Essential_Elements_of_Communication_in_Medical.21.aspx#pdf-link</a>.</li> <li>• Makoul, Gregory. 2001. “The SEGUE Framework for Teaching and Assessing Communication Skills.” <i>Patient Education and Counseling</i>. 45(1): 23-34. <a href="https://doi.org/10.1016/S0738-3991(01)00136-7">https://doi.org/10.1016/S0738-3991(01)00136-7</a>.</li> <li>• MedEdPORTAL. “Anti-Racism in Medicine Collection.” <a href="https://www.mededportal.org/anti-racism">https://www.mededportal.org/anti-racism</a>. Accessed 2020.</li> <li>• National LGBTQIA+ Health and Education Center. <a href="https://www.lgbtqiahealtheducation.org/">https://www.lgbtqiahealtheducation.org/</a>. Accessed 2022.</li> </ul>

<b>Interpersonal and Communication Skills 2: Interprofessional and Team Communication</b> <b>Overall Intent:</b> To communicate effectively with the health care team, including consultants	
Milestones	Examples
<b>Level 1</b> <i>Respectfully requests a consultation, with guidance</i>  <i>Identifies the members of the interprofessional team</i>	<ul style="list-style-type: none"> <li>● Respectfully requests an endocrinology consult for a patient with CF after receiving input from the attending on how to formulate the question</li> <li>● Acknowledges the contribution of each member of the multidisciplinary team to the patient</li> </ul>
<b>Level 2</b> <i>Clearly and concisely requests consultation by communicating patient information</i>  <i>Participates within the interprofessional team</i>	<ul style="list-style-type: none"> <li>● When requesting a consult from the infectious disease team, clearly and concisely describes the recent history of an intensive care unit patient with empyema who has a new fever</li> <li>● Sends a message in the EHR to the dietician of a CF patient to discuss poor weight gain</li> </ul>
<b>Level 3</b> <i>Formulates a specific question for consultation and tailors communication strategy</i>  <i>Uses bi-directional communication within the interprofessional team</i>	<ul style="list-style-type: none"> <li>● Urgently communicates concern to the pediatric surgery team regarding possible bowel obstruction in a CF patient presenting with acute abdominal pain and vomiting</li> <li>● Engages in dialogue with the otolaryngology – head and neck surgery team regarding optimal tracheostomy tube in a patient with a difficult airway</li> </ul>
<b>Level 4</b> <i>Coordinates consultant recommendations to optimize patient care</i>  <i>Facilitates interprofessional team communication</i>	<ul style="list-style-type: none"> <li>● Initiates a multidisciplinary meeting to develop a shared care plan for a patient with rapid-onset obesity with hypothalamic dysregulation, hypoventilation, and autonomic dysregulation (ROHHAD) syndrome</li> <li>● Leads the multidisciplinary CF care team meeting</li> </ul>
<b>Level 5</b> <i>Maintains a collaborative relationship with referring providers that maximizes adherence to practice recommendations</i>  <i>Coaches others in effective communication within the interprofessional team</i>	<ul style="list-style-type: none"> <li>● Maintains regular, professional interactions with the cardiologists providing care for patients with pulmonary hypertension</li> <li>● Discusses strategies to mediate conflicts between different members of the health care team</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Global assessment</li> <li>● Medical record (chart) audit</li> <li>● Multisource feedback</li> <li>● Simulation</li> </ul>

Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>• ACAPT. “NIPEC Assessment Resources and Tools.” <a href="https://acapt.org/about/consortium/national-interprofessional-education-consortium-(nipec)/nipec-assessment-resources-and-tools">https://acapt.org/about/consortium/national-interprofessional-education-consortium-(nipec)/nipec-assessment-resources-and-tools</a>. Accessed 2020.</li> <li>• Brock, Douglas, Erin Abu-Rish, Chia-Ru Chiu, Dana Hammer, Sharon Wilson, Linda Vorvick, Katherine Blondon, Douglas Schaad, Debra Liner, and Brenda Zierler. 2013. “Interprofessional Education in Team Communication: Working Together to Improve Patient Safety.” <i>BMJ Quality and Safety</i> 22:414–423. doi:10.1136/bmjqs-2012-000952.</li> <li>• Dehon, Erin, Kimberly Simpson, David Fowler, and Alan Jones. 2015. “Development of the Faculty 360.” <i>MedEdPORTAL</i>. 11:10174. <a href="http://doi.org/10.15766/mep_2374-8265.10174">http://doi.org/10.15766/mep_2374-8265.10174</a>.</li> <li>• François, José. 2011. “Tool to Assess the Quality of Consultation and Referral Request Letters in Family Medicine.” <i>Canadian Family Physician</i>. 57(5): 574-575. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093595/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093595/</a>.</li> <li>• Green, Matt, Teresa Parrott, and Graham Cook. 2012. “Improving Your Communication Skills.” <i>BMJ</i>. 344:e357. <a href="https://doi.org/10.1136/bmj.e357">https://doi.org/10.1136/bmj.e357</a>.</li> <li>• Henry, Stephen G., Eric S. Holmboe, and Richard M. Frankel. 2013. “Evidence-Based Competencies for Improving Communication Skills in Graduate Medical Education: A Review with Suggestions for Implementation.” <i>Medical Teacher</i>. 35(5):395-403. <a href="https://doi.org/10.3109/0142159X.2013.769677">https://doi.org/10.3109/0142159X.2013.769677</a>.</li> <li>• Interprofessional Education Collaborative Expert Panel. 2011. “Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel.” Washington, D.C.: Interprofessional Education Collaborative. <a href="https://www.aacom.org/docs/default-source/insideome/ccrpt05-10-11.pdf?sfvrsn=77937f97_2">https://www.aacom.org/docs/default-source/insideome/ccrpt05-10-11.pdf?sfvrsn=77937f97_2</a>.</li> <li>• Kessler, Chad S., Teresa Chan, Jennifer M. Loeb, S. Terez Malka. 2013. “I’m Clear, You’re Clear, We’re All Clear: Improving Consultation Communication Skills in Undergraduate Medical Education.” <i>Academic Medicine</i> 288(6):753-758. doi:10.1097/ACM.0b013e31828ff953.</li> <li>• University of Washington. Toolkits available on the Center for Health Sciences Interprofessional Education, Practice and Research website: <a href="https://collaborate.uw.edu/">https://collaborate.uw.edu/</a>. Accessed 2022.</li> <li>• Wolfe, Adam D., Kim B. Hoang, Sarah F. Denniston. 2018. “Teaching Conflict Resolution in Medicine: Lessons from Business, Diplomacy, and Theatre.” <i>MedEdPORTAL</i> 25;14: 10672. <a href="https://doi.org/10.15766/mep_2374-8265.10672">https://doi.org/10.15766/mep_2374-8265.10672</a>.</li> </ul>



<b>Interpersonal and Communication Skills 3: Communication within Health Care Systems</b> <b>Overall Intent:</b> To effectively communicate using a variety of tools and methods	
Milestones	Examples
<p><b>Level 1</b> <i>Records accurate information in the patient record</i></p> <p><i>Identifies the importance of and responds to multiple forms of communication (e.g., in-person, electronic health record (EHR), telephone, email)</i></p>	<ul style="list-style-type: none"> <li>● If using copy/paste/forward in the EHR, edits the note to make changes to ensure all information is up to date</li> <li>● Responds to an EHR message from a nurse regarding a clinic patient</li> </ul>
<p><b>Level 2</b> <i>Records accurate and timely information in the patient record</i></p> <p><i>Selects appropriate method of communication, with prompting</i></p>	<ul style="list-style-type: none"> <li>● Completes inpatient consult notes with accurate assessment and plan by the end of the day</li> <li>● Pages for social work evaluation instead of sending an EHR message for a patient with CF endorsing new depression after prompting by the attending</li> </ul>
<p><b>Level 3</b> <i>Concisely documents updated, prioritized, diagnostic and therapeutic reasoning in the patient record</i></p> <p><i>Aligns type of communication with message to be delivered (e.g., direct and indirect) based on urgency and complexity</i></p>	<ul style="list-style-type: none"> <li>● Produces documentation that addresses the differential diagnosis in a CF patient with suspected intestinal obstruction</li> <li>● Independently pages cardiology team for a patient with pulmonary hypertension admitted to the pulmonary service with pneumonia</li> </ul>
<p><b>Level 4</b> <i>Documents diagnostic and therapeutic reasoning, including anticipatory guidance</i></p> <p><i>Demonstrates exemplary written and verbal communication</i></p>	<ul style="list-style-type: none"> <li>● Documents discussion of health impacts of pregnancy in a 19-year-old woman with CF who is considering starting a family</li> <li>● Upon completing a consultation for empyema, provides verbal recommendations to the care team and lists appropriate, relevant references from the literature in the note</li> </ul>
<p><b>Level 5</b> <i>Models and coaches others in documenting diagnostic and therapeutic reasoning</i></p> <p><i>Coaches others in written and verbal communication</i></p>	<ul style="list-style-type: none"> <li>● At new fellow orientation, provides guidance in effective verbal and written communication as pulmonary consultant</li> <li>● Designs a new EHR sign-out system for the pulmonary division to facilitate transfer of care</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Medical record (chart) audit</li> </ul>

	<ul style="list-style-type: none"> <li>● Multisource feedback</li> <li>● Simulation</li> </ul>
Curriculum Mapping	●
Notes or Resources	<ul style="list-style-type: none"> <li>● ABP. “Entrustable Professional Activities for Subspecialties: Pulmonology.” <a href="https://www.abp.org/content/entrustable-professional-activities-subspecialties">https://www.abp.org/content/entrustable-professional-activities-subspecialties</a>. Accessed 2022.</li> <li>● Bierman, Jennifer A., Kathryn Kinner Hufmeyer, David T. Liss, A. Charlotta Weaver, and Heather L. Heiman. 2017. “Promoting Responsible Electronic Documentation: Validity Evidence for a Checklist to Assess Progress Notes in the Electronic Health Record.” <i>Teaching and Learning in Medicine</i>. 29(4): 420-432. <a href="https://doi.org/10.1080/10401334.2017.1303385">https://doi.org/10.1080/10401334.2017.1303385</a>.</li> <li>● Brock, Douglas, Erin Abu-Rish, Chia-Ru Chiu, Dana Hammer, Sharon Wilson, Linda Vorvick, Katherine Blondon, Douglas Schaad, Debra Liner, and Brenda Zierler. 2013. “Interprofessional Education in Team Communication: Working Together to Improve Patient Safety.” <i>BMJ Quality and Safety</i> 22:414–423. doi:10.1136/bmjqs-2012-000952.</li> <li>● Haig, Kathleen M., Staci Sutton, and John Whittington. 2006. “SBAR: A Shared Mental Model for Improving Communications Between Clinicians.” <i>Joint Commission Journal on Quality and Patient Safety</i>. 32(3):167-75. <a href="https://doi.org/10.1016/s1553-7250(06)32022-3">https://doi.org/10.1016/s1553-7250(06)32022-3</a>.</li> <li>● Starmer, Amy J., Nancy D. Spector, Rajendu Srivastava, April D. Allen, Christopher P. Landrigan, Theodore Sectish, and I-PASS Study Group. 2012. “I-Pass, a Mnemonic to Standardize Verbal Handoffs.” <i>Pediatrics</i> 129.2:201-204. <a href="https://doi.org/10.1542/peds.2011-2966">https://doi.org/10.1542/peds.2011-2966</a>.</li> <li>● University of Washington. Toolkits available on the Center for Health Sciences Interprofessional Education, Practice and Research website: <a href="https://collaborate.uw.edu/">https://collaborate.uw.edu/</a>. Accessed 2022.</li> </ul>

To help programs transition to the new version of the Milestones, the ACGME has mapped the original Milestones 1.0 to the new Milestones 2.0. Indicated below are the subcompetencies that are similar between versions. These are not exact matches, but are areas that include similar elements. 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: Provide transfer of care that ensures seamless transitions	SBP4: System Navigation for Patient-Centered Care – Transitions in Care
PC2: Make informed diagnostic and therapeutic decisions that result in optimal clinical judgement	PC1: Clinical Reasoning MK1: Diagnostic Evaluation
PC3: Develop and carry out management plans	PC3: Diagnostic and Management Plan ICS1: Patient- and Family-Centered Communication
PC4: Provide appropriate role modeling	PBLI2: Reflective Practice and Commitment to Personal Growth PC2: Organize and Prioritize Patient Care PC4: Bronchoscopy
MK1: Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems	MK2: Physiology and Pathophysiology PBLI1: Evidence Based and Informed Practice
SBP1: Work effectively in various health care delivery settings and systems relevant to their clinical specialty	SBP3: System Navigation for Patient Centered Care – Coordination of Care SBP6: Physician Role in Health Care Systems
SBP2: Coordinate patient care within the health care system relevant to their clinical specialty	SBP3: System Navigation for Patient Centered Care – Coordination of Care SBP4: System Navigation for Patient-Centered Care – Transitions in Care SBP5: Population and Community Health ICS1: Patient- and Family-Centered Communications ICS2: Interprofessional and Team Communication
SBP3: Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate	SBP5: Population and Community Health SBP6: Physician Role in Health Care Systems
SBP4: Work in inter-professional teams to enhance patient safety and improve patient care quality	SBP1: Patient Safety ICS2: Interprofessional and Team Communication
SBP5: Participate in identifying system errors and implementing potential systems solutions	SBP1: Patient Safety SBP2: Quality Improvement
PBLI1: Identifying strengths, deficiencies, and limits to one’s knowledge and expertise	PBLI1: Evidence Based and Informed Practice PBLI2: Reflective Practice and Commitment to Personal Growth

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PBLI2: Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement	SBP2: Quality Improvement PBLI2: Reflective Practice and Commitment to Personal Growth
PBLI3: Use information technology to optimize learning and care delivery	PBLI1: Evidence Based and Informed Practice PBLI2: Reflective Practice and Commitment to Personal Growth ICS3: Communication within Health Care Systems
PBLI4: Participate in the education of patients, families, students, residents, fellows, and other health professionals	SBP5: Population and Community Health PBLI1: Evidence Based and Informed Practice ICS1: Patient- and Family-Centered Communications
PROF1: Professional Conduct: High standards of ethical behavior which includes maintaining appropriate professional boundaries	PROF1: Professional Behavior PROF2: Ethical Principles
PROF2: Trustworthiness that makes colleagues feel secure when one is responsible for the care of patients	PBLI1: Evidence Based and Informed Practice PROF1: Professional Behavior PROF3: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communications
PROF3: Provide leadership skills that enhance team functioning, the learning environment, and/or the health care delivery system/environment with the ultimate intent of improving care of patients	ICS2: Interprofessional and Team Communication ICS3: Communication within Health Care Systems PROF2: Ethical Principles PROF3: Accountability/Conscientiousness
PROF4: The capacity to accept that ambiguity is part of clinical medicine and to recognize the need for and to utilize appropriate resources in dealing with uncertainty	PROF2: Ethical Principles ICS1: Patient- and Family-Centered Communication PBLI1: Evidence Based and Informed Practice
	PROF4: Well-Being
ICS1: Communicate effectively with physicians, other health professionals, and health-related agencies	ICS2: Interprofessional and Team Communication ICS3: Communication within Health Care Systems
ICS2: Work effectively as a member or leader of a health care team or other professional group	ICS2: Interprofessional and Team Communication PBLI2: Reflective Practice and Commitment to Personal Growth PROF3: Accountability/Conscientiousness
ICS3: Act in a consultative role to other physicians and health professionals	PC1: Clinical Reasoning ICS2: Interprofessional and Team Communication ICS3: Communication within 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>

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

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