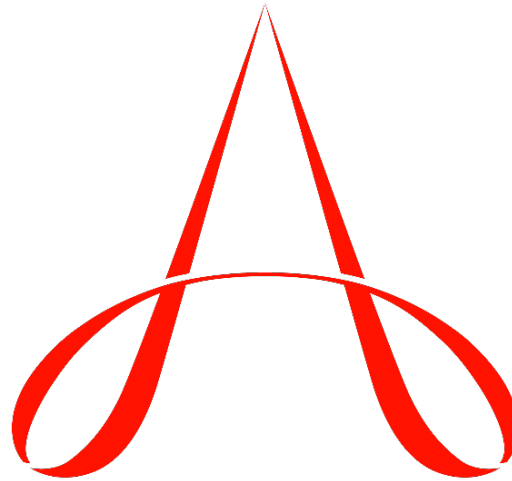




Supplemental Guide: Interventional Pulmonology



ACGME

March 2024

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Interventional 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 on the [Resources](#) page of the Milestones section of the ACGME website.

Milestone Levels:

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

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

Glossary of Terms

With assistance: The fellow requires hands-on participation from the supervising physician. The supervising physician may also provide verbal input, recommendations, suggestions, or feedback based on observations and communication with the fellow.

With coaching: The supervising physician provides verbal input, recommendations, suggestions, or feedback based on observations and communication with the fellow, but the fellow is otherwise able to carry out the procedure without hands-on participation from the supervising physician.

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

Patient Care 1: Advanced Diagnostic Bronchoscopy	
Overall Intent: To independently perform advanced diagnostic bronchoscopic techniques	
Milestones	Examples
Level 1 <i>Performs uncomplicated diagnostic flexible bronchoscopy with minimal coaching and recognizes common peri-procedural complications</i>	<ul style="list-style-type: none"> • Performs basic manipulation of the bronchoscope and reaches all targets • Performs airway inspection without trauma • Demonstrates basic knowledge of bronchial anatomy to the segmental level
Level 2 <i>With assistance, executes advanced diagnostic interventional flexible bronchoscopy procedures and manages common peri-procedural complications</i>	<ul style="list-style-type: none"> • Maneuvers the endobronchial ultrasound (EBUS) bronchoscope through the airways, identifies all relevant lymph node stations and associated anatomic landmarks, and safely completes all steps of diagnostic transbronchial needle aspiration • Demonstrates basic understanding of navigational platforms and procedural planning for reaching peripheral nodules • Plans and navigates to within a reasonable distance of a peripheral lesion using adjunctive diagnostic and imaging techniques with hands-on assistance
Level 3 <i>With coaching, executes advanced diagnostic interventional flexible and rigid bronchoscopy procedures and manages complex peri-procedural complications</i>	<ul style="list-style-type: none"> • Carries out complete hilar/mediastinal lymph node staging • Plans and navigates to within a reasonable distance of a peripheral lesion using adjunctive diagnostic and imaging techniques with occasional coaching for ideal positioning and completes the procedure • Recognizes a peri-procedural pneumothorax and places a chest tube with minimal coaching • Recognizes and manages bleeding caused by transbronchial biopsy or other sampling technique with minimal coaching
Level 4 <i>Independently executes advanced diagnostic flexible and rigid bronchoscopy procedures, including anticipating and managing all peri-procedural complications.</i>	<ul style="list-style-type: none"> • Independently plans and navigates to a peripheral lesion using guidance adjuncts, makes appropriate adjustments, and obtains a biopsy specimen • Independently recognizes a periprocedural pneumothorax and places a chest tube • Independently recognizes and manages bleeding caused by transbronchial biopsy or other sampling technique
Level 5 <i>Implements new techniques in the program and/or coaches others to manage all levels of peri-procedural complications</i>	<ul style="list-style-type: none"> • Studies and applies emerging advanced diagnostic bronchoscopy technologies • Confidently biopsies difficult anatomic locations like abutting the pericardium or biopsies multiple lung nodules • Serves as an instructor at a regional bronchoscopy course • Independently educates the core pulmonary fellows in advanced diagnostic techniques
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Simulation
Curriculum Mapping	<ul style="list-style-type: none"> •

Notes or Resources

- Individuals may achieve competence in different procedures at different rates, and this milestone is intended to capture the overall skills.
- The American Board of Pediatrics. Entrustable Professional Activities for Subspecialties: Pulmonology. <https://www.abp.org/content/entrustable-professional-activities-subspecialties>. British Thoracic Society. Flexible Bronchoscopy. <https://www.brit-thoracic.org.uk/quality-improvement/quality-standards/flexible-bronchoscopy/>.
- British Thoracic Society. National Safety Standards for Invasive Procedures - Bronchoscopy and Pleural Procedures. <https://www.brit-thoracic.org.uk/quality-improvement/clinical-resources/interventional-procedures/national-safety-standards-for-invasive-procedures-bronchoscopy-and-pleural-procedures/>.
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Patient Care 2: Therapeutic Bronchoscopy	
Overall Intent: To independently perform therapeutic bronchoscopy and airway management	
Milestones	Examples
Level 1 <i>Performs uncomplicated therapeutic flexible bronchoscopy with minimal coaching and recognizes common peri-procedural complications</i>	<ul style="list-style-type: none"> • Performs an atraumatic airway exam and identifies all target segments • Identifies a pneumothorax following endobronchial valve placement
Level 2 <i>With assistance, executes routine therapeutic interventional flexible bronchoscopy procedures and manages common peri-procedural complications</i>	<ul style="list-style-type: none"> • With assistance, performs balloon dilation of a stenotic bronchus • With assistance, places a chest tube to manage peri-procedural pneumothorax
Level 3 <i>With coaching, executes therapeutic interventional flexible and rigid bronchoscopy procedures on patients with complex or high-risk airway disease and manages complex peri-procedural complications</i>	<ul style="list-style-type: none"> • With coaching, safely intubates with a rigid bronchoscope • With coaching, uses a snare to debulk an endobronchial tumor • With coaching, places a balloon blocker for peri-procedural hemoptysis
Level 4 <i>Independently executes therapeutic flexible and rigid bronchoscopy procedures on patients with complex or high-risk airway disease, and anticipates and manages all peri-procedural complications</i>	<ul style="list-style-type: none"> • Independently performs rigid bronchoscopy with tumor debulking and stent placement • Independently places a balloon blocker for peri-procedural hemoptysis
Level 5 <i>Implements new techniques for therapeutic bronchoscopy and/or coaches others to manage all levels of peri-procedural complications</i>	<ul style="list-style-type: none"> • Serves as an instructor at a regional therapeutic bronchoscopy course • Serves as a resource to colleagues for challenging or high-risk bronchoscopies
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Simulation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Individuals may achieve competence in different procedures at different rates, and this milestone is intended to capture the overall skills. • The American Board of Pediatrics. Entrustable Professional Activities for Subspecialties: Pulmonology. https://www.abp.org/content/entrustable-professional-activities-subspecialties. • British Thoracic Society. Flexible Bronchoscopy. https://www.brit-thoracic.org.uk/quality-improvement/quality-standards/flexible-bronchoscopy.

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Patient Care 3: Percutaneous Procedures	
Overall Intent: Independently perform percutaneous procedures	
Milestones	Examples
Level 1 <i>With assistance, performs straightforward percutaneous procedures</i>	<ul style="list-style-type: none"> • Performs thoracentesis with hands-on assistance • Performs chest-tube for pneumothorax with hands-on assistance
Level 2 <i>With coaching, performs straightforward procedures and with assistance, performs complex procedures</i>	<ul style="list-style-type: none"> • Performs thoracentesis with coaching • Performs image-guided chest tube placement with coaching • Performs medical thoracoscopy with assistance
Level 3 <i>Independently performs straightforward procedures and with coaching, performs complex procedures, including management of complex peri-procedural complications</i>	<ul style="list-style-type: none"> • Independently performs thoracentesis • Independently performs image-guided chest tube placement • Performs medical thoracoscopy with coaching • Independently identifies and treats patient procedure-related discomfort
Level 4 <i>Independently performs all procedures and manages all peri-procedural complications</i>	<ul style="list-style-type: none"> • Independently manages persistent air leak • Independently performs a medical thoracoscopy and manages post-biopsy bleeding • Independently identifies and manages tunneled pleural catheter infection
Level 5 <i>Demonstrates superior technical skill in the most complex, high-risk procedures and manages complex peri-procedural complications</i>	<ul style="list-style-type: none"> • Studies and applies emerging percutaneous procedures • Serves as an instructor at a regional percutaneous procedure course
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Multisource feedback • Simulation • Validated checklist assessment tools (i.e. iCOMPT)
Curriculum Mapping	<ul style="list-style-type: none"> •

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Patient Care 4: Pre-Procedural Care Planning and Risk Assessment	
Overall Intent: To optimize pre-procedural evaluation, decision making, and care	
Milestones	Examples
<p>Level 1 <i>Discusses indications, risks, and benefits for straightforward procedures</i></p> <p><i>Discusses prerequisite diagnostic testing, imaging, and optimal medical management strategies</i></p>	<ul style="list-style-type: none"> • Discusses pneumothorax as a potential complication for thoracentesis • Demonstrates a review of patient’s medication, medical history, and consultation with other specialties • Understands the appropriate withholding time of anticoagulant prior to a basic procedure
<p>Level 2 <i>With assistance, identifies the indications, risks, and benefits to individualized patient care</i></p> <p><i>With assistance, evaluates diagnostic testing, imaging, and optimizes medical management</i></p>	<ul style="list-style-type: none"> • With assistance, obtains informed consent for thoracentesis • With assistance, anticipates complex complications in a patient with poorly controlled diabetes undergoing a tunneled pleural catheter • Orders diagnostic testing including, but not limited to, computed tomography (CT) scan images, laboratory results, and physical examination • With assistance, performs a neck examination in anticipation of a rigid bronchoscopy procedure
<p>Level 3 <i>With coaching, selects and plans complex, high-risk procedures based on indications, risks, selection of alternatives, and benefits to individualized patient care</i></p> <p><i>With coaching, evaluates diagnostic testing and imaging, and optimizes medical management</i></p>	<ul style="list-style-type: none"> • With coaching, identifies appropriate patient for medical thoracoscopy and pleurodesis • With coaching, ensures necessary equipment and personnel are available in the procedural space for rigid bronchoscopy • With coaching, selects appropriate airway stent for central airway obstruction
<p>Level 4 <i>Independently selects and plans complex, high-risk procedures based on indications, risks, selection of alternatives, and benefits to individualized patient care</i></p> <p><i>Independently evaluates diagnostic testing and imaging, and optimizes medical management</i></p>	<ul style="list-style-type: none"> • Independently anticipates complex and high-risk procedures in the pregnant patient • Anticipates need for extracorporeal membrane oxygenation (ECMO) in a patient with high-risk central airway obstruction • Independently integrates CT scan findings for the choice and size range of an airway stent
<p>Level 5 <i>Demonstrates advanced decision making in complex clinical scenarios and procedural selection, and coaches others</i></p>	<ul style="list-style-type: none"> • Develops and leads a team in following a procedural plan for a critically ill patient with stridor from an anterior tracheal mass • Develops an algorithm for management of pre-procedural hypoxemia

<i>Demonstrates advanced decision making in managing complex clinical scenarios</i>	<ul style="list-style-type: none"> • Develops a multidisciplinary algorithm for managing subglottic stenosis
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) review • Multisource feedback
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Abuzaydas, S, Raju S, Bartholomew JR, Abu Hweij R, Mehta AC. Management of antithrombotic agents in patients undergoing flexible bronchoscopy. <i>European Respiratory Journal</i> 2017; 26:170001. https://err.ersjournals.com/content/26/145/170001. • Avasarala SK, Lentz RJ, Maldonado F. Medical thoracoscopy. <i>Clinics in Chest Medicine</i> 2021;42(4):751-66. https://doi.org/10.1016/j.ccm.2021.08.010. • Ayub A, Al-Ayoubi AM, Bhora FY. Stents for airway strictures: selection and results. <i>Journal of Thoracic Disease</i> 2017;9(Suppl 2):S116-121. https://doi.org/10.21037/jtd.2017.01.56. • Chaddha U, Murgu S. Complications of rigid bronchoscopy. <i>Respirology</i> 2020. https://onlinelibrary.wiley.com/doi/10.1111/resp.13917. • Goudra BG, Singh PM, Borle A, Farid N, Harris K. Anesthesia for advanced bronchoscopic procedures: state-of-the-art review. <i>Lung</i>. 2015;193(4):453-65. https://doi.org/10.1007/s00408-015-9733-7. • Martin MJ, Dulohery Scrodin MM, Edell ES, Rajagopalan S, Bartholmai BJ, Peikert T. Bronchoscopic lung volume reduction: highlighting the patient selection process. <i>Mayo Clinic Proceedings</i> 2023;98(9):1347-1352. https://doi.org/10.1016/j.mayocp.2023.05.001. • Sabath BF, Casal R. Airway Stenting for Central Airway Obstruction: A Review. <i>Mediastinum</i> 2023;7:18 PMID 37261090. https://doi.org/10.21037/med-22-65. • Salahuddin M, Salamo O, Karanth S, Faiz SA, Estrada-Y-Martin RM, Cherian SV. Safety and incidence of complications associated with bronchoscopy in an obese population. <i>The Clinical Respiratory Journal</i>. 2021;15(6):670-75. https://pubmed.ncbi.nlm.nih.gov/33608994/. • Williams JG, Lerner AD. Managing complications of pleural procedures. <i>Journal of Thoracic Disease</i>. 2021. 13(8):5242-5250. https://jtd.amegroups.org/article/view/39432/html.

Patient Care 5: Post-Procedural Management	
Overall Intent: To optimize post-procedural care for immediate and long-term outcomes	
Milestones	Examples
<p>Level 1 <i>Identifies longitudinal patient care needs</i></p> <p><i>Identifies types of complications</i></p>	<ul style="list-style-type: none"> • Knows that follow-up imaging and standardized follow-up is needed after endobronchial valve placement • Knows that a patient is at risk for a pneumothorax after peripheral nodule biopsy • Identifies role of airway clearance need in patients following airway stent placement
<p>Level 2 <i>Manages routine longitudinal patient care</i></p> <p><i>Manages common complications</i></p>	<ul style="list-style-type: none"> • Evaluates a patient in outpatient setting following endobronchial valve placement with CT imaging and pulmonary function testing • Institutes a comprehensive patient-specific airway clearance plan • Manages an infected pleural space following placement of a tunneled pleural catheter placement
<p>Level 3 <i>Manages complex longitudinal patient care with coaching</i></p> <p><i>Manages complex complications with coaching</i></p>	<ul style="list-style-type: none"> • Evaluates and provides a differential diagnosis for a patient with a lack of atelectasis who underwent endobronchial valve placement in discussion with a supervising physician • Identifies and addresses, with guidance, loss of airway patency due to stent occlusion • Recognizes and intervenes on delayed post-value placement pneumothorax
<p>Level 4 <i>Independently manages complex longitudinal patient care</i></p> <p><i>Independently anticipates, mitigates, and manages complications</i></p>	<ul style="list-style-type: none"> • Troubleshoots lack of atelectasis in a patient who underwent endobronchial valve placement • Identifies and independently addresses loss of airway patency due to stent occlusion • Creates a customized follow-up plan based on patient risk factors and findings during the procedure
<p>Level 5 <i>Mentors others in longitudinal care</i></p> <p><i>Develops a clinical pathway for management of complex longitudinal patient care through multidisciplinary teams</i></p>	<ul style="list-style-type: none"> • Institutes a protocol management tree for indwelling pleural catheters that facilitates effective triaging • Teaches junior fellows the role of endobronchial valves for persistent air leak
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit

	<ul style="list-style-type: none"> • Multisource feedback
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Criner GJ, Sue R, Wright S, Dransfield M, Rivas-Perez H, Wiese T, Scirba FC, et al. A multicenter randomized controlled trial of zephyr endobronchial valve treatment in heterogenous emphysema (LIBERATE). <i>American Journal of Respiratory and Critical Care Medicine</i>. 2018;198(9):1151-1164. https://doi.org/10.1164/rccm.201803-0590oc. • Dransfield MT, Garner JL, Bhatt SP, Slebos D-J, Klooster K, Scirba FC, Shah PL, et al. Effect of zephyr endobronchial valves on dyspnea, activity levels, and quality of life at one year. results from a randomized clinical trial. <i>Annals of the American Thoracic Society</i>. 2020;17(7):829-838. https://doi.org/10.1513/annalsats.201909-666oc. • Gilbert CR, Wahidi MM, Light RW, Rahman NM, Yarmus LB. Management of indwelling tunneled pleural catheters: a modified delphi consensus statement. <i>Chest</i>. 2020;158(5):P2221-2228. https://doi.org/10.1016/j.chest.2020.05.594.

Medical Knowledge 1: Anatomy and Physiology	
Overall Intent: To understand the implications of anatomy and physiology including through imaging modalities in the practice of interventional pulmonology	
Milestones	Examples
<p>Level 1 <i>Identifies normal anatomy of airway, lung, mediastinum, and pleura during procedures and through imaging</i></p> <p><i>Demonstrates knowledge of pathophysiology of straightforward pulmonary conditions</i></p>	<ul style="list-style-type: none"> • Identifies all airway segments on imaging and correlates on bronchoscopy • Identifies mediastinal structures including large vessels and lymph nodes on CT chest imaging • Identifies pleural space fluid and adjacent structures including diaphragm, liver, and spleen • Identifies normal flow-volume loops on pulmonary function testing and impairment in patients with airway stenosis
<p>Level 2 <i>Identifies location and implications of the anatomic abnormalities for procedure planning</i></p> <p><i>Demonstrates knowledge of pathophysiology and treatment of patients with straightforward pulmonary conditions</i></p>	<ul style="list-style-type: none"> • Identifies the segmental location of peripheral pulmonary lesion and maps a path based on imaging • Identifies mediastinal structures including large vessels and lymph nodes on EBUS • Identifies diagnostic options based on imaging findings • Identifies and differentiates ultrasound findings on pleural ultrasound and risk stratify for appropriate procedure selection • Identifies when a patient presenting with stridor likely has an airway diameter less than or equal to 5mm (approximately)
<p>Level 3 <i>Identifies the appropriate diagnostic procedural approach based on anatomic location of chest abnormalities</i></p> <p><i>Demonstrates knowledge of pathophysiology and treatment of complex pulmonary conditions</i></p>	<ul style="list-style-type: none"> • Identifies an end-on path to a peri-fissural nodule and makes appropriate adjustments to procedure plan to avoid complications • Systematically identifies and samples the hilum and mediastinum in a lung cancer patient • Recognizes the relationship with pleural elastance and nonexpandable lung
<p>Level 4 <i>Identifies appropriate diagnostic and therapeutic approach based on anatomic location of chest abnormalities</i></p>	<ul style="list-style-type: none"> • Identifies on imaging the level and extent of airway stenosis in clinical scenarios of stridor and develops a procedure plan including selecting appropriate tools • Identifies use of laryngeal mask airway as an option for patients with high-airway or subglottic stenosis as an intermediary step to perform bronchoscopy dilation • Identifies and adjusts sampling tools during the procedure based on intra-procedure image acquisition for optimal sampling

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<p><i>Applies knowledge of pathophysiology and treatment of patients with complex conditions</i></p>	<ul style="list-style-type: none"> • Stratifies risk of complications and success of bronchoscopic lung volume reduction in a patient with severe emphysema based on evaluation of pulmonary function tests, imaging, and ventilation/perfusion scanning
<p>Level 5 <i>Mentors others in obtaining medical knowledge regarding implications of complexity of anatomic variations during procedures</i></p> <p><i>Contributes to peer-reviewed literature on pathophysiology and/or treatment</i></p>	<ul style="list-style-type: none"> • Reviews the procedural implications of common pulmonary lobar and vascular anomalies with learners/peers • Instructs others in differentiating thrombus from lymph node on chest CT imaging and endobronchial ultrasound imaging • Publishes on novel technique or uses existing imaging technology in a novel way to solve a complex problem of persistent air-leak or trachea-esophageal fistula
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit • Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Green DB, Groner LK, Lee JJ, Shin J, Broncano J, Vargas D, Castro M, Shostak. Overview of interventional pulmonology for radiologists. <i>RadioGraphics</i>. 2021. 41(7):1916-1935. doi: 10.1148/rg.2021210046. https://doi.org/10.1148/rg.2021210046.

Medical Knowledge 2: Benign and Malignant Diseases	
Overall Intent: To recognize, apply, and teach scientific knowledge on benign and malignant diseases of the chest	
Milestones	Examples
<p>Level 1 <i>Demonstrates scientific knowledge of common benign and malignant diseases of the chest</i></p> <p><i>Demonstrates knowledge of pharmacology and therapeutics for common diseases of the chest</i></p>	<ul style="list-style-type: none"> • Lists the differential diagnosis of an anterior mediastinal mass • Reviews typical behavior of small cell and non-small cell lung cancer • Demonstrates knowledge of thrombolytic therapy in patients with an infected pleural space
<p>Level 2 <i>Applies scientific knowledge of common benign and malignant diseases of the chest</i></p> <p><i>Applies knowledge of pharmacology and therapeutics for common diseases of the chest</i></p>	<ul style="list-style-type: none"> • Obtains testing necessary to diagnose a malignant or benign thymoma • Identifies the lung cancer subtype more commonly seen in non-smokers • Lists indications/contraindications and selects appropriate medications for patients with an infected pleural space • Demonstrates knowledge of impact on chronic obstructive pulmonary disease (COPD) exacerbation for bronchoscopic lung volume reduction candidates
<p>Level 3 <i>Applies scientific knowledge of complex benign and malignant diseases of the chest</i></p> <p><i>Applies knowledge of pharmacology and therapeutics for complex diseases of the chest</i></p>	<ul style="list-style-type: none"> • Obtains appropriate testing and lists treatment options for patients with relapsing polychondritis • Describe guideline management of a potential lung cancer patient with a 4cm mass with ipsilateral hilar and mediastinal lymph node enlargement • Describes the role of the interventionalist in biomarker collection for patients with lung cancer • Diagnoses and develops a treatment plan for tracheal papillomatosis
<p>Level 4 <i>Independently applies scientific knowledge of benign and malignant diseases of the chest</i></p> <p><i>Independently applies knowledge of pharmacology and therapeutics for complex diseases of the chest</i></p>	<ul style="list-style-type: none"> • Independently recognizes and stages a malignancy presenting as endobronchial tumor • Independently provides evidence-based input in the setting of a multidisciplinary tumor board • Independently develops a treatment plan for placement of endoluminal stent
<p>Level 5 <i>Expertly teaches scientific knowledge of complex benign and malignant diseases of the chest</i></p>	<ul style="list-style-type: none"> • Provides instruction to other health professionals in the decision making for management of central airway obstruction.

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<p><i>Applies cutting-edge knowledge of pharmacology and therapeutics for complex diseases of the chest</i></p>	<ul style="list-style-type: none"> • Teaches and publishes on novel therapeutics
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • In-service examination • Medical record (chart) review • Multisource feedback • Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Buckley JD, Addrizzo-Harris DJ, Clay AS, Curtis JR, Kotloff RM, Lorin SM, Murin S, et al. Multisociety task force recommendations of competencies in pulmonary and critical care medicine. <i>American Journal of Respiratory and Critical Care Medicine</i>. 2009;180(4):288-380. https://www.atsjournals.org/doi/epdf/10.1164/rccm.200904-0521ST?role=tab. • Girvin F, Phan A, Steinberger S, Shostak E, Bessich E, Zhou F, Borczuk A, et al. Malignant and benign tracheobronchial neoplasms: comprehensive review with radiologic, bronchoscopic, and pathologic correlation. <i>RadioGraphics</i>. 2023;43(9). https://pubs.rsna.org/doi/10.1148/rg.230045. • Kritek PA, Richards JB. <i>Medical Education in Pulmonary, Critical Care, and Sleep Medicine: Advanced Concepts and Strategies</i>. Switzerland AG; Springer Nature. 2019.

Medical Knowledge 3: Devices, Techniques, and Outcomes	
Overall Intent: To understand the implications of the choice of technique and devices in terms of procedural and long-term outcomes	
Milestones	Examples
Level 1 <i>Identifies commonly used devices</i>	<ul style="list-style-type: none"> • Identifies various thermal ablative devices • Ensures adequate radiation protection for those in the room prior to using fluoroscopy • Identifies the appropriate direction for a Heimlich valve when managing a persistent air leak
Level 2 <i>Demonstrates knowledge of commonly used devices, techniques, and outcomes</i>	<ul style="list-style-type: none"> • Identifies fundamental properties of argon plasma coagulation • Identifies components of, and assembles, a rigid bronchoscope
Level 3 <i>Integrates knowledge of the indications, contraindications, side effects, and complications of commonly used devices, techniques, and outcomes</i>	<ul style="list-style-type: none"> • Understands the risk of pneumothorax when using cryospray and the need for off-gassing/egress • Demonstrates an understanding of various laser frequencies and their applications • Identifies contraindications for electrocautery • Describes the expected changes in lung function following placement of endobronchial valves for COPD • Discusses the likelihood of spontaneous pleurodesis after placement of a tunneled pleural catheter
Level 4 <i>Independently applies knowledge of devices, techniques, and outcomes into procedures and peri-procedural care</i>	<ul style="list-style-type: none"> • Appropriately selects a stent based on the patient's anatomy and disease state • Takes steps to decrease the dose of radiation delivered during a procedure • Suggests safe alternatives to thermal ablation for patients requiring 100% FiO₂
Level 5 <i>Achieves a superior level of knowledge to effectively teach others about devices, techniques, and outcomes</i>	<ul style="list-style-type: none"> • Teaches the technique of pigtail catheter placement at a national or international conference • Publishes on outcomes of lobar stenting in patients with airway complications in lung transplant recipients
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit • Multisource feedback
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Chaddha, U, Hogarth DK, Murgu S. Bronchoscopic ablative therapies for malignant central airway obstruction and peripheral lung tumors. <i>Annals of the American Thoracic Society</i>. 2019. 16(10): 1220-1229. https://www.atsjournals.org/doi/10.1513/AnnalsATS.201812-892CME.

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Systems-Based Practice 1: Patient Safety and Quality Improvement (QI) Overall Intent: To analyze patient safety events, including relevant communication with patients, families, and health care professionals; to participate in a QI project	
Milestones	Examples
<p>Level 1 <i>Demonstrates knowledge of common patient safety events</i></p> <p><i>Demonstrates knowledge of how to report patient safety events</i></p> <p><i>Demonstrates knowledge of basic quality improvement methodologies and metrics</i></p>	<ul style="list-style-type: none"> • Lists patient misidentification or medication errors as common patient safety events • Describes how to report errors in the practice environment • Describes fishbone tool
<p>Level 2 <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> <p><i>Describes local quality improvement initiatives (e.g., community lung cancer screening rates, smoking cessation)</i></p>	<ul style="list-style-type: none"> • Performs a procedural time out • Uses the institutional safety reporting system to report a post-procedural safety concern • Summarizes institutional initiatives resulting in improved identification of complicated pleural infections for hospitalized patients
<p>Level 3 <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> <p><i>Participates in local quality improvement initiatives</i></p>	<ul style="list-style-type: none"> • Prepares and delivers a morbidity and mortality presentation • Through simulation, communicates with patients/families about a procedural complication • Participates in QI project identifying root causes of hemorrhagic pleural effusions following lytic administration for empyemas
<p>Level 4 <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"> • Collaborates with a team to conduct the analysis of a procedural complication and can effectively communicate with patients/families about those events

<p><i>Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project</i></p>	<ul style="list-style-type: none"> • Initiates a QI project to improve implementation of massive transfusion protocol in the OR suite following massive hemoptysis, including assessing the problem, articulating broad goals, developing a SMART (Specific, Measurable, Attainable, Relevant, and Time-bound) objective plan, and monitoring progress and challenges
<p>Level 5 <i>Actively engages teams and processes to modify systems to prevent patient safety events</i></p> <p><i>Models or mentors others in the disclosure of patient safety events</i></p> <p><i>Creates, implements, and assesses quality improvement initiatives at the institutional or community level</i></p>	<ul style="list-style-type: none"> • Assumes a leadership role at the institutional or national level for patient safety • Develops a simulation curriculum for disclosing patient safety events • Initiates a multi-center consortium QI project to reduce the incidence of tunneled pleural catheter related infections and shares results with stakeholders
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • QI project • Reflection • Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Agency for Healthcare Research and Quality (AHRQ). Measurement of Patient Safety. Patient Safety 101: Primer. 2019. https://psnet.ahrq.gov/primer/measurement-patient-safety. • Agency for Healthcare Research and Quality (AHRQ). Detection of Safety Hazards. Patient Safety 101: Primer. 2019. https://psnet.ahrq.gov/primer/detection-safety-hazards. • Institute for Healthcare Improvement (IHI). IHI Open School Online Courses: IHI Education Platform. http://app.ih.org/lmsspa/#/6cb1c614-884b-43ef-9abd-d90849f183d4. • Sanchez BDV, Vicente CD, Largo SJ, Blanco MB, Estaba MJC, Martinez J, Figueroa, VR. Safety of therapeutic bronchoscopy in interventional pulmonology suit. <i>European Respiratory Journal</i>. 2020. 56:1198. https://erj.ersjournals.com/content/56/suppl_64/1198.

Systems-Based Practice 2: Coordination and Transitions of Care	
Overall Intent: To effectively navigate the health care system, including the interdisciplinary team and other care providers to ensure high-quality patient outcomes	
Milestones	Examples
<p>Level 1 <i>Demonstrates knowledge of care coordination</i></p> <p><i>Identifies key elements for safe and effective transitions of care and hand-offs</i></p>	<ul style="list-style-type: none"> • For a patient with a malignant effusion consistent with stage IV adenocarcinoma, identifies oncologist, radiation oncologist, and palliative care physician as members of the team • Lists the essential components of a structured sign-out tool
<p>Level 2 <i>Coordinates care of patients in routine clinical situations effectively collaborating with members of the interprofessional team</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in routine clinical situations</i></p>	<ul style="list-style-type: none"> • Coordinates care with the outpatient multidisciplinary clinics at the time of discharge from the hospital for a patient with lung cancer • Routinely uses a structured sign-out tool for a stable patient during sign-out
<p>Level 3 <i>Coordinates care of patients in complex clinical situations effectively collaborating with members of the interprofessional team</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in complex clinical situations</i></p>	<ul style="list-style-type: none"> • Coordinates care with in-patient case manager for supplies and follow-up for a complex patient who received an indwelling pleural catheter • Consistently uses a structured sign-out tool when transferring a patient to the post-operative recovery area
<p>Level 4 <i>Coordinates care of patients in complex clinical situations among different disciplines and specialties</i></p> <p><i>Advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems</i></p>	<ul style="list-style-type: none"> • Coordinates the involvement of thoracic surgery and gastroenterology specialties for a patient with a tracheoesophageal fistula • Facilitates expedited workup for patients presented during tumor board • Prior to going on vacation, proactively transfers the electronic health record inbox to a team member and provides handoff on active cases
<p>Level 5 <i>Analyzes the process of care coordination and leads in the design and implementation of improvements</i></p> <p><i>Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes</i></p>	<ul style="list-style-type: none"> • Leads a program to provide patients a consistent airway regimen after stent placement • Develops a protocol to improve transitions for patients undergoing bronchoscopic lung volume reduction (BLVR) to return to their home pulmonologist after appropriate follow up

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<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit • Multisource feedback • OSCE • QI project • Quality metrics and goals mined from electronic health records (EHR) • Review of sign-out tools, use and review of checklists
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Kaplan KJ. In Pursuit of Patient-Centered Care. 2016 http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns. • O'Toole JK, Starmer AJ, Calaman S, Campos ML, Goldstein J, Hepps J, Maynard GA, Owolabi MO, et al. I-pass mentored implementation handoff curriculum: implementation guide and resources. <i>MedEd PORTAL</i>. 2018;14:10736. Accessed 2020. https://www.mededportal.org/doi/epdf/10.15766/mep_2374-8265.10736.

Systems-Based Practice 3: Population Health	
Overall Intent: To adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	Examples
Level 1 <i>Demonstrates knowledge of population and community health needs</i>	<ul style="list-style-type: none"> Identifies that patients in different socioeconomic circumstances may have different abilities to access medications as an outpatient
Level 2 <i>Identifies specific population and community health needs for the local population</i>	<ul style="list-style-type: none"> Identifies that limited transportation options may be a factor in patients getting to cancer screening appointments
Level 3 <i>Uses local resources effectively to meet the needs of a patient population in the community</i>	<ul style="list-style-type: none"> Refers patients to a local pharmacy which provides a sliding fee scale option and prints pharmacy coupons for patients in need Utilizes technology for language interpretation in the care of patients Participates in lung cancer screening outreach program
Level 4 <i>Advocates for changing and adapting practice to provide for the needs of specific populations</i>	<ul style="list-style-type: none"> Assists in the design of protocols for procedural sedation in patients with opioid use disorders Teaches at community events on the importance of lung cancer screening
Level 5 <i>Leads innovations and advocates for populations and communities with specific health care needs</i>	<ul style="list-style-type: none"> Leads development of a project to enable greater access to in-person interpreters in the pre-procedure suite Participates at a national society committee that furthers smoking cessation or develops lung cancer screening guidelines
Assessment Models or Tools	<ul style="list-style-type: none"> Direct observation Medical record (chart) audit Multisource feedback OSCE QI project Quality metrics and goals mined from EHR Reflection
Curriculum Mapping	<ul style="list-style-type: none">
Notes or Resources	<ul style="list-style-type: none"> Kaplan KJ. In Pursuit of Patient-Centered Care. 2016. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns.

Systems-Based Practice 4: Physician Role in Health Care Systems Overall Intent: To understand the physician’s role in impacting health care system to improve patient care	
Milestones	Examples
Level 1 <i>Describes basic health care delivery systems (e.g., practice and payment models, accountable care organizations)</i>	<ul style="list-style-type: none"> • Describes the impact of health plan coverage on procedural planning for individual patients • Identifies that notes must meet coding requirements
Level 2 <i>Describes how components of a complex health care delivery system are interrelated and how this impacts patient care (e.g., out-of-network hospitalizations)</i>	<ul style="list-style-type: none"> • Takes patient’s procedural coverage into consideration when planning care • Describes steps to access medical records from outside institutions to minimize redundancies in care
Level 3 <i>Discusses how individual practice affects the broader system (e.g., length of stay, cost of care, readmission rates, clinical efficiency)</i>	<ul style="list-style-type: none"> • Ensures that a patient who underwent airway stent placement has a scheduled short-term follow-up appointment at discharge
Level 4 <i>Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient’s payment model</i>	<ul style="list-style-type: none"> • Consolidates hospital appointments to reduce the number of visits for a patient
Level 5 <i>Advocates for or leads systems change that enhances high-value, efficient, and effective patient care</i>	<ul style="list-style-type: none"> • Works with community or professional organizations to advocate for no smoking ordinances
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit • Portfolio • QI project • Reflection
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Agency for Healthcare Research and Quality (AHRQ). Measuring the Quality of Physician Care. Accessed 2020. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. • Agency for Healthcare Research and Quality (AHRQ). Major Physician Measurement Sets. Accessed 2020. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementsets.html.

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- Kaiser Family Foundation. Health Reform. <https://www.kff.org/topic/health-reform/>.

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice	
Overall Intent: To incorporate evidence and patient values into clinical practice	
Milestones	Examples
<p>Level 1 <i>Demonstrates how to access and apply available evidence to care for patients</i></p> <p><i>Demonstrates knowledge of basic trial design and statistical concepts, and communicates details of published scientific work</i></p>	<ul style="list-style-type: none"> • Identifies evidence-based guidelines for management of malignant pleural effusion when considering the patient’s goals for care • Performs a PubMed search and appraises results on malignant pleural effusion management practice guidelines
<p>Level 2 <i>Elicits patient preferences and values to guide evidence-based care for patients</i></p> <p><i>Reads scientific literature, identifies gaps, and generates hypotheses for planned scholarly activity</i></p>	<ul style="list-style-type: none"> • In a patient with advanced COPD, solicits patient perspective when discussing potential evidence-based treatment options, including bronchoscopic and surgical lung volume reduction • Performs a literature search and generates a hypothesis on the topic of a planned scholarly activity
<p>Level 3 <i>Locates and applies the best available evidence, integrated with patient preference to care for patients</i></p> <p><i>Participates in a scholarly project</i></p>	<ul style="list-style-type: none"> • Obtains, discusses, and applies evidence for the management of suspicious lung nodules in a patient with advanced COPD and coronary artery disease • Participates in a quality improvement or medical research project
<p>Level 4 <i>Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient</i></p> <p><i>Presents scholarly activity at local or regional meetings, and/or submits an abstract of their scholarly work to a regional meeting</i></p>	<ul style="list-style-type: none"> • Accesses the primary literature to identify alternative treatments for persistent air leak due to bronchopleural fistula • Presents scholarly activity at local or regional conference
<p>Level 5 <i>Coaches others to critically appraise and apply evidence; and/or participates in the development of guidelines</i></p> <p><i>Effectively presents scholarly work at national and international meetings or has a peer reviewed publication accepted or grant funded</i></p>	<ul style="list-style-type: none"> • Leads clinical teaching on application of best practices in lung cancer diagnosis and staging • Presents scholarly work at national conference

Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Written examinations • Presentation evaluation • Research portfolio
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Various journal submission guidelines • Institutional IRB guidelines • Al-Jundi A, Sakka S. Critical appraisal of clinical research. <i>Journal of Clinical and Diagnostic Research</i>. 2017;11(5):JE01-JE05. https://doi.org/10.7860%2FJCDR%2F2017%2F26047.9942 • Glasser SP, Howard G. Clinical trial design issues: at least 10 things you should look for in clinical trials. <i>The Journal of Clinical Pharmacology</i> 2006;46(10):1106-1115 https://accp1.onlinelibrary.wiley.com/doi/abs/10.1177/0091270006290336. • Journal of the American Medical Association. Users' Guide to the Medical Literature. https://jamanetwork.com/collections/44069/users-guide-to-the-medical-literature. • Krogh CL. A checklist system for critical review of medical literature. <i>Medical Education</i>. 1985;19(5):392-395. Accessed 2020. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2923.1985.tb01343.x?sid=nlm%3Apubmed. • National Institutes of Health (NIH). Grants and Funding: Write Your Application. Accessed 2020. https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm. • National Library of Medicine (NIH). PubMed® Online Training. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html. • Neely JG, Karni RJ, Wang EW, Rich JT, Paniello RC, Voelker CJ, Nussenbaum B. Practical guide to efficient analysis and diagramming articles. <i>Otolaryngology–Head and Neck Surgery</i>. 2009;140(1):4-8. https://journals.sagepub.com/doi/abs/10.1016/j.otohns.2008.10.013?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=otoj.

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth	
Overall Intent: To seek clinical performance information with the intent to improve care; reflects on all domains of practice, personal interactions, and behaviors, and their impact on colleagues and patients (reflective mindfulness); develops clear objectives and goals for improvement in a learning plan of some form	
Milestones	Examples
<p>Level 1 <i>Accepts responsibility for personal and professional development by establishing goals</i></p> <p><i>Identifies the factors which contribute to gap(s) between expectations and actual performance</i></p> <p><i>Actively seeks opportunities to improve knowledge and abilities</i></p>	<ul style="list-style-type: none"> • Sets a personal practice goal of documenting use of established guideline criteria for evaluation of patients with tracheal stenosis • Recognizes that limited prior experience contributed to gaps in knowledge of stent selection • Asks for feedback from patients, families, and patient care team members
<p>Level 2 <i>Demonstrates openness to performance feedback in order to inform goals</i></p> <p><i>Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance</i></p> <p><i>Designs and implements a learning plan, with prompting</i></p>	<ul style="list-style-type: none"> • Integrates feedback to adjust the documentation of the established guideline criteria for evaluation of patients with malignant pleural effusion • Assesses time management skills and how it impacts timely completion of clinic notes and literature reviews • When prompted, develops individual education plan to improve their management of pneumothorax
<p>Level 3 <i>Seeks performance feedback episodically, with adaptability, and humility</i></p> <p><i>Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance</i></p> <p><i>Independently creates and implements a learning plan</i></p>	<ul style="list-style-type: none"> • Does a chart audit to determine the percent of patients evaluated for lung cancer screening • Completes a comprehensive literature review prior to patient encounters • Using web-based resources, creates a personal curriculum to improve the ability to evaluate tracheal bronchial malacia
<p>Level 4 <i>Intentionally seeks performance feedback consistently with adaptability, and humility</i></p>	<ul style="list-style-type: none"> • Completes a quarterly procedural log audit to determine diagnostic adequacy and complications of navigational bronchoscopy

<p><i>Identifies and uses alternative methods to narrow the gap(s) between expectations and actual performance</i></p> <p><i>Uses performance feedback to measure the effectiveness of the learning plan, and when necessary, improves it</i></p>	<ul style="list-style-type: none"> • Identifies that patient communication skills improve when a debrief is completed after difficult procedures and uses simulation to improve skills • Performs a chart audit on personal adherence to lung nodule surveillance guidelines; reviews with mentor and creates a plan to improve adherence
<p>Level 5 <i>Consistently role models the seeking of performance data with adaptability and humility</i></p> <p><i>Coaches others on reflective practice</i></p> <p><i>Facilitates the design and implementation of learning plans for others</i></p>	<ul style="list-style-type: none"> • Models practice improvement and adaptability • Develops educational module for collaboration with other patient care team members • Assists first-year residents in developing their individualized learning plans
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Review of learning plan • 360-degree evaluations
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. <i>Academic Pediatrics</i>. 2014;14(2):S38-S54. https://www.academicpedsjnl.net/article/S1876-2859(13)00333-1/abstract. • Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. <i>Academic Medicine</i>. 2009;84(8):1066-1074. https://journals.lww.com/academicmedicine/fulltext/2009/08000/Measurement_and_Correlates_of_Physicians_Lifelong.21.aspx. • Lockspeiser TM, Schmitter PA, Lane JL, Hanson JL, Rosenberg AA, Park YS, Soo Y. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. <i>Academic Medicine</i>. 2013;88(10):1558-1563. https://journals.lww.com/academicmedicine/fulltext/2013/10000/Assessing_Residents_Written_Learning_Goals_and.39.aspx.

Professionalism 1: Professional Behavior and Ethical Principles	
Overall Intent: To demonstrate ethical and professional behaviors and recognize and address lapses using appropriate resources	
Milestones	Examples
<p>Level 1 <i>Identifies and describes potential triggers for professionalism lapses in self</i></p> <p><i>Recognizes professionalism lapses in others</i></p> <p><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></p>	<ul style="list-style-type: none"> • Identifies that being fatigued can cause a lapse in professionalism • Describes how being late to the bronchoscopy suite has adverse effect on patient care and on professional relationships • Articulates how the principle of “do no harm” applies to a patient who may not need a bronchoscopy even though the training opportunity exists • Recognizes the unique effects of age, sex, culture, religion, and disability on a patient’s health and well-being to provide care that is cognizant of these ramifications
<p>Level 2 <i>Demonstrates insight into professional behavior in routine situations and takes responsibility for one’s own professionalism lapses</i></p> <p><i>Knows institutional processes for reporting professionalism lapses, including strategies for addressing common barriers</i></p> <p><i>Analyzes straightforward situations using ethical principles and applies them to practice</i></p>	<ul style="list-style-type: none"> • Apologizes to the team for being late and works to correct behavior • Describes lines of reporting for a peer who is using stimulants to stay awake while on a scheduled shift • Explains how the principle of autonomy applies to surrogate decision making when considering tracheostomy in a patient with chronic respiratory failure
<p>Level 3 <i>Demonstrates professional behavior in complex or stressful situations</i></p> <p><i>Follows institutional processes for reporting professionalism lapses, including strategies for addressing common barriers</i></p> <p><i>Analyzes complex situations using ethical principles, and applies them to practice, while recognizing the need to seek help in managing these situations</i></p>	<ul style="list-style-type: none"> • Appropriately responds to a distraught family member, following an intraprocedural cardiac arrest • After noticing a colleague’s inappropriate social media post, reviews policies related to posting of content and seeks guidance • Offers treatment options for a terminally ill patient, free of bias, while recognizing own limitations and consistently honoring the patient’s choice

<p>Level 4 <i>Recognizes situations that may trigger professionalism lapses and acts to prevent them</i></p> <p><i>Intervenes to prevent and address professionalism lapses in peers</i></p> <p><i>Recognizes and utilizes appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)</i></p>	<ul style="list-style-type: none"> • Practices restraint when replying to an emotionally provocative email from patient or colleague • Arranges coverage and sends a resident home early when the resident appears too tired to carry out clinical duties • Uses ethics consults, literature, risk-management/legal counsel to resolve ethical dilemmas regarding continued aggressive care of dying patient
<p>Level 5 <i>Recognized by peers as a resource for professionalism concerns</i></p> <p><i>Coaches peers when their behavior fails to meet professional expectations</i></p> <p><i>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</i></p>	<ul style="list-style-type: none"> • Receives institutional recognition for exemplary professionalism • Coaches others when their behavior fails to meet professional expectations, and creates a performance improvement plan to prevent recurrence • Engages stakeholders to address excessive wait times in the clinic to decrease patient and provider frustrations that lead to unprofessional behavior
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Global evaluation • Multisource feedback • Oral or written self-reflection • Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • American Medical Association (AMA). Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. • American Board of Internal Medicine, American College of Physicians-American Society of Internal Medicine, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. <i>Annals of Internal Medicine</i>. 2002;136:243-246. https://www.acpjournals.org/doi/10.7326/0003-4819-136-3-200202050-00012. • Byyny RL, Paauw DS, Papadakis M, Pfeil S. eds. <i>Medical Professionalism Best Practices: Professionalism in the Modern Era</i>. Aurora, CO: Alpha Omega Alpha Medical Society. 2017. https://www.alphaomegalpha.org/3d-flip-book/2017-monograph/.

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Professionalism 2: Accountability	
Overall Intent: To take responsibility for one’s own actions and the impact on patients and other members of the health care team	
Milestones	Examples
<p>Level 1 <i>Completes tasks and responsibilities in response to requests or reminders</i></p> <p><i>Recognizes the principles of conflict of interest in relationships with industry and other entities</i></p>	<ul style="list-style-type: none"> • Responds to reminders from program administrator to complete work hour logs • With reminders, attends conferences regularly • Completes end-of-rotation evaluations with additional reminders beyond those that are routine • Recognizes the potential conflicts of interest in relationships with medical device companies
<p>Level 2 <i>Completes tasks and responsibilities in a timely manner, without reminders</i></p> <p><i>Recognizes personal potential conflicts with industry</i></p>	<ul style="list-style-type: none"> • Completes administrative task required training modules, procedure review, and licensing requirements by specified due date • Enters data into procedural log books without prompting • Follows institutional policies regarding relationships with industry representatives
<p>Level 3 <i>Completes tasks and responsibilities without reminders, identifies potential barriers to completion, and acts to mitigate those barriers in routine situations</i></p> <p><i>Seeks assistance in managing personal relationships with industry and other entities to minimize bias and undue influence in practice</i></p>	<ul style="list-style-type: none"> • Notifies attending of multiple competing demands on-call, appropriately triages tasks, and asks for assistance from other fellows or faculty members as needed • In preparation for being out of the office, arranges coverage for assigned clinical tasks on clinic patients and ensures appropriate continuity of care • In collaboration with peers and supervisors, reviews and critiques promotional materials provided by medical device representatives • Follows institutional policies regarding relationships with industry
<p>Level 4 <i>Completes tasks and responsibilities without reminders, identifies potential barriers to completion, and acts to mitigate those barriers in complex or stressful situations</i></p> <p><i>Identifies, discloses, and manages relationships with industry and other entities to minimize bias and undue influence in practice</i></p>	<ul style="list-style-type: none"> • Takes responsibility for inadvertently omitting key patient information during sign-out, professionally discusses with the patient, family members, and interprofessional team, and has a plan to prevent this in the future • Independently reviews and critiques promotional materials provided by medical device representatives • Provides accurate conflict of interest statement when presenting at a national conference
<p>Level 5 <i>Assists others in developing strategies for completing tasks and responsibilities</i></p>	<ul style="list-style-type: none"> • Sets up a meeting with the nurse manager to streamline patient discharges and leads team to find solutions to prevent delays in discharge

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	<ul style="list-style-type: none"> • Serves as interventional pulmonology representative on divisional conflict of interest/industry relations committee
Assessment Models or Tools	<ul style="list-style-type: none"> • Compliance with deadlines and timelines • Direct observation • Global evaluations • Multisource feedback • Self-evaluations and reflective tools • Simulation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Code of conduct from fellow/resident institutional manual • Expectations of residency program regarding accountability and professionalism • American Medical Association (AMA). Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. • Thompson DR. <i>Critical Care Ethics: A Practice Guide</i>. 3rd ed. Mount Prospect, IL: Society of Critical Care Medicine; 2014.

Professionalism 3: Well-Being and Resiliency Overall Intent: To identify, use, manage, improve, and seek help for personal and professional well-being for self and others	
Milestones	Examples
Level 1 <i>Identifies elements of well-being and describes risk factors for burnout and signs and symptoms of burnout and depression in self or peers</i>	<ul style="list-style-type: none"> • Completes a wellness module
Level 2 <i>With assistance, recognizes status of well-being and risk factors for maladaptation in self or peers</i>	<ul style="list-style-type: none"> • Acknowledges own response to death of a patient or clinical burnout • Identifies possible sources of personal stress and independently seeks help
Level 3 <i>Independently recognizes status of well-being in self or peers and reports concerns to appropriate personnel</i>	<ul style="list-style-type: none"> • Confidentially shares concerns about a possibly depressed peer to the attention of program leadership or recommends suggestion of EAP (Employee Assistance Program)
Level 4 <i>Develops and implements a plan to improve well-being of self or peers, including utilization of institutional or external resources</i>	<ul style="list-style-type: none"> • Takes up a new hobby or resumes an abandoned non-medical interest to balance life and relieve stress
Level 5 <i>Recommends and facilitates system changes to promote well-being in a practice or institution</i>	<ul style="list-style-type: none"> • Establishes a book club and discussion group for peers in response to a needs assessment
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Group interview or discussions for team activities • Individual interview • Self-assessment and personal learning plan
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • 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. • Local resources, including Employee Assistance Programs • Accreditation Council for Graduate Medical Education (ACGME). Tools and Resources. https://dl.acgme.org/pages/well-being-tools-resources. • Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. <i>Academic Pediatrics</i>. 2014;14(2 Suppl):S80-97. https://www.academicpediatricsjournal.net/article/S1876-2859(13)00332-X/abstract#articleInformation.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication Overall Intent: To deliberately use language and behaviors to form constructive relationships with patients and families	
Milestones	Examples
<p>Level 1 <i>Uses language and nonverbal behavior to demonstrate respect and establish rapport</i></p> <p><i>Identifies common barriers to effective communication (e.g., language, disability, bias)</i></p>	<ul style="list-style-type: none"> • Establishes eye contact with the patient when introducing team and calls patients by Mr./Mrs./Ms. and their last name • Identifies need for trained interpreter with non-English-speaking patients
<p>Level 2 <i>Establishes a therapeutic relationship using effective communication behaviors in straightforward encounters</i></p> <p><i>Identifies complex barriers to effective communication (e.g. health literacy, cultural), including bias</i></p>	<ul style="list-style-type: none"> • Avoids medical jargon and restates patient perspective when discussing tobacco cessation • Recognizes the need for handouts with diagrams and pictures to communicate information to a patient who is unable to read or speak
<p>Level 3 <i>Establishes a therapeutic relationship using effective communication behaviors in challenging patient encounters</i></p> <p><i>Mitigates communication barriers, including bias</i></p>	<ul style="list-style-type: none"> • Effectively and empathetically explains the interventional pulmonology procedure of choice, including risks, benefits, and alternatives; interactively listens and responds to the patient and family members during the patient encounter • Conducts a family meeting to identify personal/family/cultural beliefs and concerns; documents discussion and preference of the patient and family
<p>Level 4 <i>Establishes therapeutic relationships using shared decision making (e.g., attention to patient/family concerns and context), regardless of complexity</i></p> <p><i>Role models the mitigation of communication barriers</i></p>	<ul style="list-style-type: none"> • Continues to engage representative family members with disparate goals in the care of a patient with end-stage lung disease • Reflects on bias related to lung cancer death of resident’s father and solicits input from faculty members about mitigation of communication barriers when counseling patients around smoking cessation
<p>Level 5 <i>Coaches others in developing therapeutic relationships and mitigating communication barriers</i></p>	<ul style="list-style-type: none"> • Leads a discussion group on personal experience of moral distress • Develops a resident/fellowship curriculum on social justice which addresses bias • Serves on a hospital bioethics committee

<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Global evaluations • Kalamazoo Essential Elements Communication Checklist (Adapted) • Multisource feedback • OSCE • Self-assessment including self-reflection exercises • Skills needed to Set the state, Elicit information, Give information, Understand the patient, and End the encounter (SEGUE) • Standardized patients
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Braddock III CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. Informed decision making in outpatient practice: time to get back to basics. <i>JAMA</i>. 1999;282(24):2313-2320. https://jamanetwork.com/journals/jama/fullarticle/192233. • Laidlaw A, Hart J. Communication skills: an essential component of medical curricula. Part i: assessment of clinical communication: AMEE Guide No. 51. <i>Medical Teacher</i>. 2011;33(1):6-8. https://www.tandfonline.com/doi/full/10.3109/0142159X.2011.531170. • Lane JL, Gottlieb RP. Structured clinical observations: a method to teach clinical skills with limited time and financial resources. <i>Pediatrics</i>. 2000;105(4 Pt 2):973-977. https://pediatrics.aappublications.org/content/105/Supplement_3/973. • Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. <i>Academic Medicine</i>. 2001;76(4):390-393. https://journals.lww.com/academicmedicine/Fulltext/2001/04000/Essential_Elements_of_Communication_in_Medical.21.aspx. • Makoul G. The SEGUE framework for teaching and assessing communication skills. <i>Patient Education and Counseling</i>. 2001;45(1):23-34. https://www.sciencedirect.com/science/article/abs/pii/S0738399101001367?via%3Dihub. • Symons AB, Swanson A, McGuigan D, Orrange S, Akl EA. A tool for self-assessment of communication skills and professionalism in residents. <i>BMC Medical Education</i>. 2009;9:1. https://bmcmmededuc.biomedcentral.com/articles/10.1186/1472-6920-9-1.

Interpersonal and Communication Skills 2: Patient Counseling and Shared Decision Making Overall Intent: To counsel patients about indications, risks, benefits, and alternatives during informed consent	
Milestones	Examples
Level 1 <i>Demonstrates basic understanding of informed consent process</i>	<ul style="list-style-type: none"> • Confirms consent and patient counseling has been completed for a procedure
Level 2 <i>Answers questions about treatment plan and seeks guidance when appropriate</i>	<ul style="list-style-type: none"> • Uses patient-centered communication when answering questions during the informed consent process • Ensures use of receptive body language, eye contact, and posture
Level 3 <i>Counsels patient through the decision-making process in understandable terms, including a description of all alternative treatment options for simple clinical problems</i>	<ul style="list-style-type: none"> • Fully discusses indications, risks, benefits, and alternatives during informed consent for navigational bronchoscopic biopsy
Level 4 <i>Counsels patient through the decision-making process in understandable terms, including a description of all alternative treatment options for complex clinical problems</i>	<ul style="list-style-type: none"> • Fully discusses indications, risks, benefits, and alternatives during informed consent for interventional bronchoscopy with airway stent placement • Obtains a consent in emergent situations and documents appropriately
Level 5 <i>Coaches others in counseling a patient through the decision-making process in understandable terms, including a description of all alternative treatment options for complex and uncommon clinical problems</i>	<ul style="list-style-type: none"> • Develops supplemental materials to better inform patients prior to procedure • Obtains consent for use of a vascular occlusion device for closure of a tracheal esophageal fistula
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Multisource feedback • Patient evaluation of residents • Rotation evaluation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes/Resources	<ul style="list-style-type: none"> • Laidlaw A, Hart J. Communication Skills: An Essential Component of Medical Curricula. Part I: Assessment of Clinical Communication: AMEE Guide No. 51. <i>Medical Teacher</i> 2011;33(1):6-8. https://www.tandfonline.com/doi/full/10.3109/0142159X.2011.531170. 2019. • Makoul G. Essential elements of communication in medical encounters: the kalamazoo consensus statement. <i>Academic Medicine</i>. 2001;76(4):390-393. https://journals.lww.com/academicmedicine/Fulltext/2001/04000/Essential Elements of Communication in Medical.21.aspx#pdf-link.

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Interpersonal and Communication Skills 3: Interprofessional and Team Communication	
Overall Intent: To effectively communicate with the health care team, including consultants, in both straightforward and complex situations	
Milestones	Examples
Level 1 <i>Uses language that values all members of the team</i>	<ul style="list-style-type: none"> Addresses procedural team politely, with respect, and listens to team member concerns at all times
Level 2 <i>Communicates information, including basic feedback with all team members</i>	<ul style="list-style-type: none"> Communicates procedural plan clearly and concisely in an organized and efficient manner
Level 3 <i>Facilitates team communication to reconcile conflict and provides difficult feedback</i>	<ul style="list-style-type: none"> Completes a debrief at the end of the day with the procedure team, discussing/reviewing any conflicts while privately speaking with individuals when required
Level 4 <i>Adapts communication style to fit team needs and maximizes impact of feedback to the team</i>	<ul style="list-style-type: none"> Sets up a meeting with all care team members to achieve consensus for recommendations with regards to a patient with complex medical issues
Level 5 <i>Role models flexible communication strategies that facilitate excellence in teamwork</i>	<ul style="list-style-type: none"> Is recognized as a preferred consultant and proceduralist among consulting teams due to their communication skills
Assessment Models or Tools	<ul style="list-style-type: none"> Direct observation Global assessment Medical record (chart) audit Multi-source feedback Simulation
Curriculum Mapping	<ul style="list-style-type: none">
Notes or Resources	<ul style="list-style-type: none"> Braddock III CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. Informed decision making in outpatient practice: time to get back to basics. <i>JAMA</i>. 1999;282(24):2313-2320. https://pubmed.ncbi.nlm.nih.gov/10612318/. Dehon E, Simpson K, Fowler D, Jones A. Development of the faculty 360. <i>MedEdPORTAL</i>. 2015;11:10174. https://www.mededportal.org/publication/10174/. Fay D, Mazzone M, Douglas L, Ambuel B. A validated, behavior-based evaluation instrument for family medicine residents. <i>MedEdPORTAL</i>. 2007. https://www.mededportal.org/publication/622/. François J. Tool to Assess the quality of consultation and referral request letters in family medicine. <i>Canadian Family Physician</i>. 2011;57(5):574–575. https://www.cfp.ca/content/57/5/574. Green M, Parrott T, Crook G. Improving Your Communication Skills. <i>British Medical Journal</i>. 2012;344:e357. https://www.bmj.com/content/344/bmj.e357.

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https://pediatrics.aappublications.org/content/105/Supplement_3/973.
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<https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499>.

Interpersonal and Communication Skills 4: Communication within Health Care Systems Overall Intent: To effectively document and communicate clinical data and reasoning within the health care system	
Milestones	Examples
<p>Level 1 <i>Accurately records comprehensive information</i></p> <p><i>Communicates using formats specified by institutional policy to safeguard patient personal health information</i></p>	<ul style="list-style-type: none"> • Documentation is accurate but may include extraneous information or lack key elements of clinical reasoning • Shreds patient list after rounds; avoids talking about patients in the elevator, and identifies institutional and departmental communication hierarchy for concerns and safety issues
<p>Level 2 <i>Records necessary information and concisely documents clinical reasoning most of the time</i></p> <p><i>Selects direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context, with assistance</i></p>	<ul style="list-style-type: none"> • Documentation is organized and accurate, however explanation of clinical reasoning is at times unclear or overly wordy • Based on attending recommendation, calls a consulting service to clarify the consulting question
<p>Level 3 <i>Records necessary information and concisely documents clinical reasoning</i></p> <p><i>Appropriately selects direct and indirect forms of communication based on context</i></p>	<ul style="list-style-type: none"> • Notes include concise and understandable rationale for a procedural approach to obtain a diagnosis • Informs patient about potentially critical histopathologic test result in a timely manner
<p>Level 4 <i>Documents clinical reasoning concisely in an organized form, including next steps in care</i></p> <p><i>Role models effective written and verbal communication</i></p>	<ul style="list-style-type: none"> • Notes consistently include a concise and understandable rationale for a procedural approach to obtain a diagnosis, and next steps depending on histopathologic findings • Helps others to develop documentation templates for their personal use
<p>Level 5 <i>Guides departmental or institutional communication policies and procedures</i></p>	<ul style="list-style-type: none"> • Participates on an EHR committee to develop more effective procedural templates
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Medical record (chart) audit • Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •

Notes or Resources

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Interpersonal and Communication Skills 5: Complex Communication Around Serious Illness	
Overall Intent: To sensitively and effectively communicate about serious illness with patients and their families/caregivers, promoting shared decision making and assessing the evolving impact on all involved	
Milestones	Examples
<p>Level 1 <i>Identifies prognostic communication as a key element for shared decision making</i></p> <p><i>Identifies the need to assess patient/family expectations and understanding of their health status and treatment options</i></p>	<ul style="list-style-type: none"> • Recognizes importance of communicating prognosis and the effects of an interventional palliative procedure to permit shared decision making, but unable to do so independently • Values assessing patient/family understanding of health status and expectations but unable to consistently do so independently
<p>Level 2 <i>Assesses the patient's families'/caregivers' prognostic awareness and identifies preferences for receiving prognostic information</i></p> <p><i>Facilitates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying an understanding of the clinical situation</i></p>	<ul style="list-style-type: none"> • Using open ended questions, can determine a patient's/family's prognostic awareness when discussing the effects of an interventional palliative procedure • Begins a family meeting for a patient to discuss interventional palliative procedural options by asking the patient/family what they understand about the patient's clinical condition
<p>Level 3 <i>Delivers basic prognostic information and attends to emotional responses of patient and families/caregivers</i></p> <p><i>Sensitively and compassionately delivers medical information; elicits patient/family values, goals and preferences; and, acknowledges uncertainty and conflict, with guidance</i></p>	<ul style="list-style-type: none"> • Consistently responds to emotion in conversations by using empathetic listening and understanding • With a shared understanding of their medical condition, asks patients and families what is most important to them
<p>Level 4 <i>Tailors communication of prognosis according to disease characteristics and trajectory, patient consent, family needs, and medical uncertainty, and manages intense emotional response</i></p> <p><i>Independently uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a</i></p>	<ul style="list-style-type: none"> • Adjusts communication with family/caregivers to address uncertainty and conflicting prognostic estimates after a procedural complication • Independently develops and provides a recommendation for potential interventional procedure options that may or may not provide symptom relief in a patient with malignant airway lesions in the context of conflicting patient and family goals

<p><i>personalized care plan in situations with a high degree of uncertainty and conflict</i></p>	
<p>Level 5 <i>Coaches others in the communication of prognostic information</i></p> <p><i>Coaches shared decision making in patient/family communication</i></p>	<ul style="list-style-type: none"> • Develops a simulation module to teach communication of prognosis • Develops a role play to teach shared decision making
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • OSCE • Standardized patient communication testing scenarios in simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Back AL, Arnold RM, Baile WF, Tulsky JA, Fryer-Edwards K. Approaching difficult communication tasks in oncology. <i>CA: A Cancer Journal for Clinicians</i>. 2005;55(3):164-77. https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/canjclin.55.3.164?sid=nlm%3Apubmed. • Back AL, Arnold RM, Tulsky JA. <i>Mastering Communication with Seriously Ill Patients: Balancing Honesty with Empathy and Hope</i>. 1st ed. New York, NY: Cambridge University Press; 2009. • Center to Advance Palliative Care. https://www.capc.org/. • Childers JW, Back AL, Tulsky JA, Arnold RM. REMAP: a framework for goals of care conversations. <i>Journal of Oncology Practice</i>. 2017;13(10):e844-e850. https://ascopubs.org/doi/10.1200/JOP.2016.018796. • Levetown M, American Academy of Pediatrics Committee on Bioethics. Communicating with children and families: from everyday interactions to skill in conveying distressing information. <i>Pediatrics</i>. 2008;121(5):e1441-1460. https://pediatrics.aappublications.org/content/121/5/e1441.long. • Shaw DJ, Davidson JE, Smilde RI, Sondoozi T, Agan D. Multidisciplinary team training to enhance family communication in the ICU. <i>Critical Care Medicine</i>. 2014;42(2):265-271. https://journals.lww.com/ccmjournal/Abstract/2014/02000/Multidisciplinary_Team_Training_to_Enhance_Family.4.aspx. • VITALtalk. https://www.vitaltalk.org/.

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/>