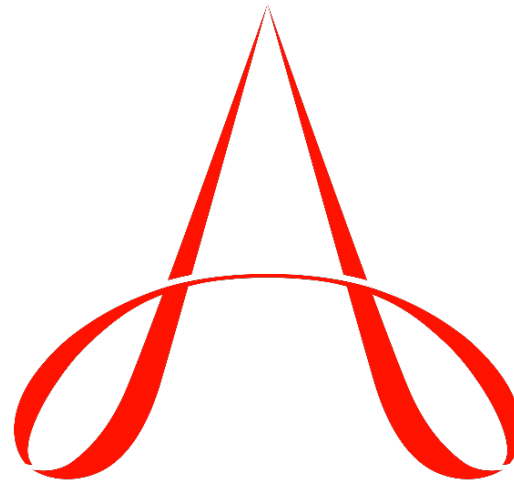




# Supplemental Guide: Selective Pathology



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## **Milestones Supplemental Guide**

This document provides additional guidance and examples for the Selective Pathology 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.

<b>Patient Care 1: Reporting (Track A, B, and C)</b>	
<b>Overall Intent:</b> To generate reports that are helpful to guide patient care; to include nuanced language in comments as appropriate	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Describes the key elements of a report and the need for timely reporting</i></p> <p><i>Describes the role of comments in a pathology report</i></p>	<ul style="list-style-type: none"> <li>● Lists the key elements of a surgical pathology report: clinical history, source of specimen, surgical procedure, gross description, microscopic description, and diagnosis</li> <li>● Engages with pathology attending to promote timely turnaround time</li> <li>● List various types of commonly used comments for pathology reports</li> </ul>
<p><b>Level 2</b> <i>Generates a timely report for a simple case</i></p> <p><i>Generates comments and makes simple recommendations</i></p>	<ul style="list-style-type: none"> <li>● Develops a report for tubular adenoma (A/B)</li> <li>● Develops a report for simple peripheral blood smear showing acute blood loss anemia (C)</li> <li>● Writes report in standard English, using appropriate grammar and syntax</li> <li>● Indicates the need for additional tissue sampling for molecular testing for lung adenocarcinoma when original biopsy is scant (A/B)</li> <li>● Recognizes the need for documentation of intradepartmental consultation</li> </ul>
<p><b>Level 3</b> <i>Generates a timely report that includes synoptic templates and/or ancillary testing for a complex case, with assistance</i></p> <p><i>Generates comments that include the language of uncertainty, as appropriate, with assistance</i></p>	<ul style="list-style-type: none"> <li>● After reviewing the case with an attending, develops a surgical pathology report for a colon resection for cancer, including College of American Pathologists (CAP) synoptic templates and mismatch repair status</li> <li>● Writes a report that interprets pathologic findings in light of discordant imaging, with assistance</li> <li>● After reviewing the case with an attending, explains in a comment the differential diagnosis for carcinoma of unknown primary in light of inconclusive immunohistochemical panel</li> </ul>
<p><b>Level 4</b> <i>Independently generates timely, integrated reports for complex cases</i></p> <p><i>Independently generates a nuanced comment that includes the language of uncertainty and complex recommendations</i></p>	<ul style="list-style-type: none"> <li>● Independently develops a surgical pathology report for complex case of colon cancer in potential Lynch syndrome, including microsatellite instability testing</li> <li>● Consistently generates complex reports incorporating biomarkers with therapeutic implications, such as Her2/Neu testing for breast cancer</li> <li>● Incorporates an outside consultation report in the comment</li> </ul>
<p><b>Level 5</b> <i>Independently generates a report that addresses discordant diagnosis or clinical discrepancy</i></p>	<ul style="list-style-type: none"> <li>● Drafts an amended report to correct an incorrect diagnosis</li> <li>● Reconciles a discordant outside consultation report in the comment</li> </ul>

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Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Direct observation during daily sign-out (with documentation)</li> <li>● Global evaluation form</li> <li>● Review of reports (in real time at sign-out, or by comparing to fellow’s draft)</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● CAP. Cancer Protocol Templates. <a href="http://www.cap.org/cancerprotocols">www.cap.org/cancerprotocols</a>. 2020.</li> <li>● Nakhleh RE, Myers JL, Allen TC, et al. Consensus statement on effective communication of urgent diagnoses and significant, unexpected diagnoses in surgical pathology and cytopathology from the College of American Pathologists and Association of Directors of Anatomic and Surgical Pathology. <i>Arch Pathol Lab Med</i>. 2012;136(2):148-154. <a href="https://www.archivesofpathology.org/doi/10.5858/arpa.2011-0400-SA?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed">https://www.archivesofpathology.org/doi/10.5858/arpa.2011-0400-SA?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed</a>. 2020.</li> <li>● Rosai J, Bonfiglio TA, Carson JM, et. al. Standardization of the surgical pathology report. <i>Mod Pathol</i>. 1992;5(2):197-199. <a href="https://www.nature.com/articles/modpathol201574">https://www.nature.com/articles/modpathol201574</a>. 2020.</li> <li>● Smith SM, Yearsley M. Constructing comments in a pathology report: advice for the pathology resident. <i>Arch Pathol Lab Med</i>. 2016;140(10):1023-1024. <a href="https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0220-ED?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed">https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0220-ED?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed</a>. 2020.</li> </ul>

Patient Care 2: Examination (Track A and B)	
Overall Intent: To examine all specimens likely to be encountered as well as to supervise	
Milestones	Examples
<p><b>Level 1</b> <i>Identifies the importance of dissection and gross tissue sampling with use of appropriate resources</i></p> <p><i>Maintains specimen integrity to avoid sample misidentification</i></p>	<ul style="list-style-type: none"> <li>● Wears appropriate personal protective equipment</li> <li>● Locates and refers to the grossing manual</li>   <li>● Only has one patient container open at a time</li> </ul>
<p><b>Level 2</b> <i>Samples and documents simple cases, with assistance</i></p> <p><i>Identifies specimen integrity issues (e.g., fixation, tissue carryover, orientation)</i></p>	<ul style="list-style-type: none"> <li>● Grosses colon with single tumor, sampling margins tumor and lymph nodes</li>   <li>● Changes scalpel blades between specimens</li> <li>● Stops grossing when impossible orientation is encountered</li> </ul>
<p><b>Level 3</b> <i>Triages, samples, and documents complex cases, with assistance; independently triages, samples, and documents simple cases</i></p> <p><i>Resolves specimen integrity issues, with assistance</i></p>	<ul style="list-style-type: none"> <li>● Grosses Whipple specimen, appropriately inking and sampling after discussing with attending</li>   <li>● Resolves mastectomy orientation problems after discussing with attending</li> <li>● With assistance, procures fresh tissue for cytogenetics, microbiologic cultures, or research</li> </ul>
<p><b>Level 4</b> <i>Independently triages, samples, and documents complex cases</i></p> <p><i>Independently resolves specimen integrity issues</i></p>	<ul style="list-style-type: none"> <li>● Orients, inks, and samples Whipple specimen without direct supervision</li> <li>● Uses imaging or contacts surgeon to resolve mastectomy orientation problems</li>   <li>● Recognizes switched patient specimens and resolves the situation</li> </ul>
<p><b>Level 5</b> <i>Applies innovative grossing techniques and supervises others in gross examination of unusually complex specimens</i></p>	<ul style="list-style-type: none"> <li>● Modifies standard grossing technique to address congenitally or surgically altered anatomy</li> <li>● Is consulted by non-specialist pathologist or pathologist assistant for grossing post-treatment pelvic exenteration specimen</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Assessment from pathology assistants</li> <li>● Competency assessment</li> <li>● Direct observation (e.g., grossing log with documentation of performance on specific specimens)</li> <li>● Portfolio</li> <li>● Review of metrics related to grossing (e.g., reprocessed blocks or delayed cases)</li> </ul>

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	<ul style="list-style-type: none"><li>• Surgical pathology metrics and quality review</li></ul>
Curriculum Mapping	<ul style="list-style-type: none"><li>•</li></ul>
Notes or Resources	<ul style="list-style-type: none"><li>• Lester SC. <i>Manual of Surgical Pathology</i>. 3rd ed. Philadelphia, PA: Elsevier; 2010.</li></ul>

<b>Patient Care 3: Intra-Operative Consultation, including Frozen Section (Track A and B)</b> <b>Overall Intent:</b> To demonstrate competence in providing gross and microscopic intra-operative consultation, including indications, technical performance, interpretation, and reporting	
Milestones	Examples
<p><b>Level 1</b> <i>Recognizes indications for IOC</i></p> <p><i>Discusses specimen-dependent variability in approach to IOC</i></p> <p><i>Identifies broad diagnostic categories (i.e., benign versus malignant, normal versus abnormal) in routine IOC</i></p>	<ul style="list-style-type: none"> <li>● Describes reasoning leading to intraoperative consultation for margins of an esophagectomy specimen (A/B)</li> <li>● Discusses reasoning that might lead to surgeon’s decision to forego frozen section for a colectomy or cystectomy</li> <li>● Locates the tumor in a frozen section slide</li> </ul>
<p><b>Level 2</b> <i>Assesses requests for simple IOC and plans workflow, with assistance</i></p> <p><i>Procures tissue for diagnosis and prepares quality slides for simple specimens, in a timely manner</i></p> <p><i>Interprets and reports routine IOC, with assistance</i></p>	<ul style="list-style-type: none"> <li>● Receives requisition form, notes request for frozen section, and initiates frozen section procedure, with assistance</li> <li>● For specimen to be frozen entirely, prepares frozen block and cuts slides suitable for diagnostic use</li> <li>● Records attending pathologist’s diagnosis for frozen section</li> <li>● Calls back frozen section in accordance with local policy</li> </ul>
<p><b>Level 3</b> <i>Independently assesses and manages requests for simple IOC and plans workflow; for complex cases, addresses requests for IOC, with assistance</i></p> <p><i>Procures tissue for diagnosis and prepares quality slides for complex specimens, in a timely manner</i></p> <p><i>Independently interprets and reports routine IOC</i></p>	<ul style="list-style-type: none"> <li>● Discusses with attending pathologist the sampling of a complex ovarian mass for frozen section</li> <li>● Cuts frozen sections that demonstrate appropriate orientation of inked margins</li> <li>● Cuts interpretable frozen sections from fatty or calcified specimens</li> <li>● For routine cases, reliably formulates an independent frozen section diagnosis suitable for clinical use, within expected turnaround time</li> </ul>
<p><b>Level 4</b> <i>For complex cases, independently manages, prioritizes, and addresses requests for IOC</i></p>	<ul style="list-style-type: none"> <li>● Manages workflow when five or more specimens are submitted for frozen at the same time</li> <li>● Samples areas likely to be diagnostic within a complex ovarian cyst</li> </ul>



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<p><i>Supervises residents and advises technical staff members in the performance of IOC</i></p> <p><i>Independently interprets and reports IOC for complex cases and uses language of uncertainty, as indicated</i></p>	<ul style="list-style-type: none"> <li>● Leads the frozen section team</li> <li>● Teaches more junior learners how to perform frozen sections</li> <li>● Independently formulates a frozen section diagnosis that provides enough information for surgical management, including in complex cases</li> <li>● Recommends deferring final diagnosis to permanent sections in case of small round blue cell tumor</li> </ul>
<p><b>Level 5</b> <i>Develops a plan for process improvement in the performance of IOC</i></p> <p><i>Serves as a consultant for interpreting and reporting IOC</i></p>	<ul style="list-style-type: none"> <li>● Identifies a workflow problem in the frozen section lab and makes a plan to correct it</li> <li>● Sought after by colleagues due to expertise in interpreting frozen section slides</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Correlation of fellow’s impression with attending’s intra-operative consultation diagnosis and final diagnoses</li> <li>● Direct observation in gross room and review of quality of prepared slides for sign-out (real time)</li> <li>● Portfolio review for a range of intra-operative consultation specimens (retrospective)</li> <li>● Process improvement outcomes</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>● Peters SR. <i>A Practical Guide to Frozen Section Technique</i>. New York, NY: Springer, 2010.</li> </ul>

<b>Patient Care 4: Microscopic Examination and Ancillary Testing for Diagnosis (Track A and B)</b> <b>Overall Intent:</b> To use microscopic examination and/or ancillary techniques to render diagnoses	
Milestones	Examples
<b>Level 1</b> <i>Uses microscopic examination to identify normal and abnormal histology</i>  <i>Identifies need for ancillary testing</i>	<ul style="list-style-type: none"> <li>● Localizes neoplastic and non-neoplastic tissue in histologic sections</li> <li>● Identifies schistocytes on a peripheral blood smear</li>   <li>● Recognizes immunostains may be necessary but is not certain which ones to obtain</li> <li>● Orders H. pylori stain based on clinician's request</li> <li>● Orders reflex testing</li> </ul>
<b>Level 2</b> <i>Uses microscopic examination to diagnose simple cases</i>  <i>Selects and interprets ancillary testing</i>	<ul style="list-style-type: none"> <li>● Correctly works up and diagnoses a "bread and butter" case</li>   <li>● Describes how ordered stains would be interpreted, including expected antigen localization and artifacts</li> <li>● Orders prostate cocktail for core biopsy tissue sample</li> </ul>
<b>Level 3</b> <i>Uses microscopic examination to generate and prioritize a differential diagnosis for complex cases</i>  <i>Independently integrates results of ancillary testing into final diagnosis</i>	<ul style="list-style-type: none"> <li>● Correctly works up a tumor of rare type, after considering an appropriate differential diagnosis</li>   <li>● Proposes a reasonable immunohistochemical panel for a poorly differentiated malignancy</li> <li>● Distinguishes between wild-type and aberrant immunoreactivity of p53 stain to support characterization of histotype</li> </ul>
<b>Level 4</b> <i>Uses microscopic examination to make a diagnosis for complex or challenging cases, including when confounding factors are present</i>  <i>Reconciles conflicting ancillary testing results</i>	<ul style="list-style-type: none"> <li>● Correctly diagnoses a tumor of a rare type, distinguishing from mimics</li> <li>● Identifies a tissue floater and handles it in a way acceptable to the attending pathologist, based on local practices</li> <li>● Classifies disease correctly in the presence of treatment effect or secondary alterations</li>   <li>● Resolves contradictory immunostains to reach a plausible final diagnosis</li> </ul>
<b>Level 5</b> <i>Serves as a reference for microscopic examination of complex or challenging cases</i>	<ul style="list-style-type: none"> <li>● Because of perceived expertise, is asked to look over other learners' cases</li> <li>● Publishes a case report in a peer-reviewed journal</li> </ul>
<b>Assessment Models or Tools</b>	<ul style="list-style-type: none"> <li>● Attending assessment of daily work encounters, documented using global form</li> <li>● Direct observation with documentation of performance on specific cases</li> <li>● Documentation of performance during unknown conferences and clinical management conferences</li> <li>● Standardized assessments and practical exams (rotation slide quiz, Resident In-Service Training Exam (RISE))</li> </ul>

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Curriculum Mapping	•
Notes or Resources	<ul style="list-style-type: none"><li>• Reddy VB, Gattuso P, David O, Spitz DJ, Haber MH. <i>Differential Diagnosis in Surgical Pathology</i>. 3rd ed. Philadelphia, PA: Elsevier Saunders; 2011.</li><li>• Rekhman N, Bishop JA. <i>Quick Reference Handbook for Surgical Pathologists</i>. New York, NY: Springer; 2011.</li></ul>

<b>Medical Knowledge 1: Clinical Reasoning (Track A, B, and C)</b>	
<b>Overall Intent:</b> To approach a diagnostic work-up in an informed and logical manner using appropriate resources to guide decisions	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Demonstrates a basic framework for clinical reasoning</i></p> <p><i>Identifies appropriate resources to inform clinical reasoning</i></p>	<ul style="list-style-type: none"> <li>● Articulates a diagnostic algorithm appropriate to a patient’s clinical presentation</li> <li>● Navigates electronic health record (EHR), laboratory information system (LIS), internet, and literature to locate necessary information for a surgical pathology case</li> </ul>
<p><b>Level 2</b> <i>Uses clinical reasoning to determine relevant information</i></p> <p><i>Selects relevant resources based on scenario to inform decisions</i></p>	<ul style="list-style-type: none"> <li>● Extracts pertinent clinical findings from the patient’s medical record and distinguishes between relevant and extraneous data</li> <li>● Understands and can describe scientific basis for current management recommendations for cervical cancer</li> <li>● Identifies current consensus guidelines for tissue management in a biopsy on non-small cell lung cancer</li> </ul>
<p><b>Level 3</b> <i>Synthesizes information to inform clinical reasoning, with assistance</i></p> <p><i>Seeks and integrates evidence to inform diagnostic decision making in complex cases, with assistance</i></p>	<ul style="list-style-type: none"> <li>● Employs consensus guideline data to appropriately order PD-L1 stain by immunohistochemistry for case of lung cancer</li> <li>● Recognizes need for EGFR T790M testing in a patient with recurrent lung adenocarcinoma following treatment</li> <li>● Considers diagnosis of radiation induced angiosarcoma in a patient with a prior history of breast cancer</li> </ul>
<p><b>Level 4</b> <i>Independently synthesizes information to inform clinical reasoning in complex cases</i></p> <p><i>Independently seeks out, analyzes, and applies relevant original research to diagnostic decision making in complex clinical cases</i></p>	<ul style="list-style-type: none"> <li>● Investigates patients record to evaluate possibility of tumor predisposition syndrome in a patient with early-onset ovarian cancer</li> <li>● Uses histopathologic and molecular data to diagnose follicular thyroid neoplasms</li> <li>● Uses literature to evaluate relevance of genomic data to patient’s disease</li> <li>● Assists clinician in interpreting pathologic data in clinical decision making for a rare diagnosis</li> </ul>
<p><b>Level 5</b> <i>Demonstrates intuitive approach to clinical reasoning for complex cases</i></p>	<ul style="list-style-type: none"> <li>● Is sought out by attending faculty members and/or clinicians for the fellow’s expertise</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Case Logs</li> <li>● Clinical management conferences</li> <li>● Presentations</li> <li>● Review of daily case reports</li> </ul>

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	<ul style="list-style-type: none"> <li>● Unknown slide conferences</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● Clinical reasoning relies on appropriate foundational knowledge that requires the trainee to apply that knowledge in a thoughtful, deliberate and logical fashion to clinical cases to inform clinical care</li> <li>● lobst WF, Trowbride R, Philibert I. Teaching and assessing critical reasoning through the use of entrustment. <i>J Grad Med Educ.</i> 2013;5(3):517-518.  <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3771188/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3771188/</a>. 2020.</li> </ul>

<b>Medical Knowledge 2: Knowledge of Established and Evolving Biomedical, Clinical, Epidemiological, and Social-Behavioral Sciences (Track A, B, and C)</b>	
<b>Overall Intent:</b> To demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, and apply it to patient care	
Milestones	Examples
<p><b>Level 1</b> <i>Demonstrates basic medical knowledge acquired in residency</i></p> <p><i>Demonstrates basic knowledge of molecular techniques, immunohistochemistry, and/or histochemistry</i></p>	<ul style="list-style-type: none"> <li>● States clinical relevance of diagnosis of conventional papillary thyroid cancer (A/B)</li> <li>● Knows predisposing factors for human papillomavirus (HPV)-related lesions of oropharynx</li> <li>● Matches patient’s travel history with disease endemic to that area</li> <li>● Describes mechanism of special stains and immunostain techniques</li> <li>● Knows the difference between ancillary testing based on deoxyribonucleic acid (DNA) and ribonucleic acid (RNA)</li> <li>● Identifies common causes of microcytic, hypochromic anemia</li> </ul>
<p><b>Level 2</b> <i>Demonstrates advanced medical knowledge, including common neoplastic and non-neoplastic diseases as applicable</i></p> <p><i>Demonstrates advanced knowledge of molecular techniques, immunohistochemistry, and/or histochemistry</i></p>	<ul style="list-style-type: none"> <li>● States clinical relevance of diagnosis of variants of papillary thyroid cancer</li> <li>● Identifies high-risk HPV serotypes and can begin to explain the cellular biology behind its tumorigenesis</li> <li>● Summarizes rationale for using immunostains in a specific context</li> <li>● Describes pathophysiologic basis of microcytic, hypochromic anemia, and discusses differential diagnosis thereof</li> </ul>
<p><b>Level 3</b> <i>Applies advanced medical knowledge, including uncommon neoplastic and non-neoplastic diseases as applicable</i></p> <p><i>Applies advanced knowledge of molecular techniques, immunohistochemistry, and/or histochemistry</i></p>	<ul style="list-style-type: none"> <li>● States clinical relevance of diagnosis of rare and emerging variants of papillary thyroid cancer</li> <li>● Explains HPV-driven tumorigenesis independently and recognizes that other pathways can lead to carcinoma as well</li> <li>● States sensitivity and specificity of immunostains for a specific disease</li> <li>● Describes common molecular alterations in the diagnosis of soft tissue neoplasms and suggests specific ancillary testing</li> <li>● Compare and contrast different types of anemia (based upon pathophysiology) and apply that knowledge to accurate interpretation of patient results</li> </ul>
<p><b>Level 4</b> <i>Integrates advanced medical knowledge, including uncommon neoplastic and non-neoplastic diseases as applicable, with reference to literature</i></p>	<ul style="list-style-type: none"> <li>● Quotes the literature describing criteria for variants of papillary thyroid cancer</li> <li>● Discusses the rationale for management guidelines of HPV-related lesions based on anatomic site</li> </ul>

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<p><i>Integrates advanced knowledge of molecular techniques, immunohistochemistry, and/or histochemistry with reference to literature</i></p>	<ul style="list-style-type: none"> <li>• Cites literature supporting assertions about immunostains</li> <li>• Is sought out by other learners due to expertise in using ancillary techniques</li> <li>• Recommends and interprets stains that are emerging, uncommonly used, or not performed in-house</li> <li>• Create differential diagnosis for complex complete blood count (CBC) result, propose diagnostic work-up, and accurately diagnose results in case of rare hemoglobinopathy (C)</li> </ul>
<p><b>Level 5</b> <i>Critiques current state of medical knowledge and places it in historical context</i></p>	<ul style="list-style-type: none"> <li>• Describes evidence leading to reclassification of non-invasive follicular thyroid neoplasms with papillary-like nuclear features</li> <li>• Identifies areas where research is needed to fill gaps in medical knowledge</li> <li>• Uses knowledge of molecular pathways to help guide clinicians with secondary testing for therapeutic options</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Presentations</li> <li>• RISE or similar in-service exam</li> <li>• Teaching evaluations</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>• Committee on Diagnostic Error in Health Care, Board on Health Care Services, Institute of Medicine, et al. <i>Improving Diagnosis in Health Care</i>. Washington, D.C.: National Academic Press; 2015. <a href="https://www.ncbi.nlm.nih.gov/books/NBK338596/">https://www.ncbi.nlm.nih.gov/books/NBK338596/</a>. 2020.</li> <li>• Nass SJ, Cohen MB, Nayar R, et al. Improving cancer diagnosis and care: Patient access to high-quality oncologic pathology. <i>Oncologist</i>. 2019;24(10):1287-1290. <a href="https://theoncologist.onlinelibrary.wiley.com/doi/full/10.1634/theoncologist.2019-0261">https://theoncologist.onlinelibrary.wiley.com/doi/full/10.1634/theoncologist.2019-0261</a>. 2020.</li> <li>• Ogino S, Nishihara R, VanderWeele TJ, et al. Review article: The role of molecular pathological epidemiology in the study of neoplastic and non-neoplastic diseases in the era of precision medicine. <i>Epidemiology</i>. 2016;27(4):602–611. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4892980/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4892980/</a>. 2020.</li> </ul>

<b>Systems-Based Practice 1: Patient Safety and Quality Improvement (QI) (Track A, B, and C)</b> <b>Overall Intent:</b> To engage in the analysis and management of patient safety events, including relevant communication with patients, families, and health care professionals; to conduct a QI project	
Milestones	Examples
<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> <p><i>Demonstrates knowledge of basic QI methodologies and metrics</i></p>	<ul style="list-style-type: none"> <li>● Recognizes specimen swap or patient identification error</li> <li>● Recognizes artifacts on slides</li>   <li>● Identifies event reporting system</li>   <li>● Understands basic LEAN principles</li> <li>● Describes fishbone diagram</li> <li>● Describes other methods of evaluating error in a root cause analysis</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> <p><i>Describes departmental and institutional QI initiatives</i></p>	<ul style="list-style-type: none"> <li>● Describes pre-analytical, analytical, and post-analytical sources of patient safety events</li>   <li>● Initiates a reporting process for a patient safety event</li>   <li>● Is aware of improvement initiatives within their scope of practice</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 clinicians and/or patients and families, as appropriate (simulated or actual)</i></p> <p><i>Participates in departmental and institutional QI initiatives</i></p>	<ul style="list-style-type: none"> <li>● Attends a root cause analysis or patient safety debrief</li> <li>● Investigates source of tissue contamination</li>   <li>● Is present when attending discloses a safety event to a surgeon</li> <li>● Assesses clinical impact of frozen section discrepancy</li>   <li>● Participates in QI activities though they may not have yet designed a QI project</li> <li>● Presents at consensus conference</li> </ul>
<p><b>Level 4</b> <i>Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)</i></p>	<ul style="list-style-type: none"> <li>● Serves as a team lead for all or part of a root cause analysis</li> </ul>



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<p><i>Discloses patient safety events to clinicians and/or patients and families, as appropriate (simulated or actual)</i></p> <p><i>Demonstrates the skills required to identify, develop, implement, and analyze a QI project</i></p>	<ul style="list-style-type: none"> <li>● Calls the surgeon to inform them of a lost or delayed specimen or amended report</li> <li>● Initiates and completes a QI project, including communication with stakeholders</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> <p><i>Creates, implements, and assesses QI initiatives at the institutional or community level</i></p>	<ul style="list-style-type: none"> <li>● Competently assumes a leadership role at the departmental or institutional level for patient safety and/or QI initiatives, possibly even being the person to initiate action or call attention to the need for action</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Chart or other system documentation by fellow</li> <li>● Direct observation</li> <li>● Documentation of QI or patient safety project processes or outcomes (e.g., policy, proposal, presentation, report, poster)</li> <li>● E-module multiple choice tests</li> <li>● Narrative or reflective compositions</li> <li>● Participation in quality-related committees or process improvement meetings, with documentation</li> <li>● Portfolio</li> <li>● 360-degree evaluations</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>● Institute of Healthcare Improvement. <a href="http://www.ihl.org/Pages/default.aspx">http://www.ihl.org/Pages/default.aspx</a>. 2020.</li> <li>● Sirota RL. Defining error in atomic pathology. <i>Arch Pathol Lab Med</i>. 2006;130(5):604-606. <a href="https://www.archivesofpathology.org/doi/full/10.1043/1543-2165%282006%29130%5B604%3ADEIAP%5D2.0.CO%3B2">https://www.archivesofpathology.org/doi/full/10.1043/1543-2165%282006%29130%5B604%3ADEIAP%5D2.0.CO%3B2</a>. 2020.</li> <li>● Nakhleh RE. Patient safety and error reduction in surgical pathology. <i>Arch Pathol Lab Med</i>. 2008;132(2):181-185. <a href="https://www.archivesofpathology.org/doi/10.1043/1543-2165(2008)132[181:PSAERI]2.0.CO;2?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed">https://www.archivesofpathology.org/doi/10.1043/1543-2165(2008)132[181:PSAERI]2.0.CO;2?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed</a>. 2020.</li> </ul>

<b>Systems-Based Practice 2: Systems Navigation for Patient-Centered Care (Track A, B, and C)</b> <b>Overall Intent:</b> To effectively navigate the health care system, including the interdisciplinary team and other care providers, to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	Examples
<p><b>Level 1</b> <i>Demonstrates knowledge of case coordination</i></p> <p><i>Identifies key elements for safe and effective transitions of care and hand-offs</i></p> <p><i>Demonstrates knowledge of population and community health needs and disparities</i></p>	<ul style="list-style-type: none"> <li>● Identifies the members of the interprofessional team, including histotechnologists, laboratory technicians, pathologist assistants, consultants, other specialty physicians, nurses, and consultants, and describes their roles but is not yet routinely using team members or accessing all available resources</li> <li>● Lists the essential components of an effective care transition including sharing information necessary for successful on-call/off-call transitions for blood banking apheresis procedure and ongoing surgical case in operating room requiring frozen sections</li> <li>● Identifies components of social determinants of health and how they impact the delivery of patient care</li> </ul>
<p><b>Level 2</b> <i>Coordinates care of patients/specimens in routine cases effectively using interprofessional teams</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in routine situations</i></p> <p><i>Identifies pathology’s role in population and community health needs and inequities for the local population</i></p>	<ul style="list-style-type: none"> <li>● Ensures appropriate turnaround time based on patient appointment or procedure</li> <li>● Follows hand-off policy at the end of call night or rotation</li> <li>● Identifies different populations within own panel of patients, cases, and/or the local community</li> <li>● Knows which patients are at high risk for specific health outcomes related to health literacy concerns, cost of testing or therapy, LGBTQ status, etc.</li> </ul>
<p><b>Level 3</b> <i>Coordinates care of patients/specimens in complex cases effectively using interprofessional teams</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in complex situations</i></p> <p><i>Identifies opportunities for pathology to participate in community and population health</i></p>	<ul style="list-style-type: none"> <li>● At interdisciplinary tumor boards/medical rounds, engages in appropriate discussion of patient care testing options and impact on therapy for complex pathologic cases</li> <li>● When performing hand-offs, prioritizes cases and provides complete information</li> <li>● Reconciles consult pathology by calling referring pathologist on a patient who has been transferred in for continued care, and requests additional outside material (A/B)</li> <li>● Coordinates specimen handling, ordering of needed tests, and courier schedules (C)</li> <li>● Recognizes polymorphism that is more prevalent in local population</li> <li>● Recognizes regional variation in the prevalence of infectious diseases</li> </ul>

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<p><b>Level 4</b> <i>Models effective coordination of patient-centered care among different disciplines and specialties</i></p> <p><i>Models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems</i></p> <p><i>Recommends and/or participates in changing and adapting practice to provide for the needs of communities and populations</i></p>	<ul style="list-style-type: none"> <li>● Coordinates and completes exemplary presentation at tumor board and follows up on additional testing requests (A/B)</li> <li>● Performs quality reviews and correlations between bronchial wash and lung biopsy results to assure appropriate follow-up</li> <li>● Proactively calls the outpatient doctor to ensure a discharged patient will be followed for their international normalized ratio checks</li> <li>● Coordinates and prioritizes consultant input for a new high-risk diagnosis of thrombotic thrombocytopenic purpura</li> <li>● Maintains the integrity of information flow from the intra-operative consultation with the surgeon to the resident grossing bench (A/B)</li> <li>● Supervises residents in following hand-off policy</li> <li>● Recommends adding new tests to menu based upon updates in society guidelines (A/B)</li> <li>● Identifies patient populations at high risk for poor healthcare outcomes related to hemoglobin A1c or lipids due to health disparities and inequities in screening (C)</li> </ul>
<p><b>Level 5</b> <i>Analyses 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> <p><i>Leads innovations and advocates for populations and communities with health care inequities</i></p>	<ul style="list-style-type: none"> <li>● Identifies patterns of lapses in care coordination and implements process improvements</li> <li>● Works with a QI mentor to identify better handoff tools for on-call pathology services or to improve teaching sessions</li> <li>● Designs a social determinants of health curriculum to help others learn to identify local resources and barriers to care and laboratory testing; effectively uses resources, such as telehealth and telepathology for proactive outreach</li> <li>● Models or develops new, specialized service line in order to improve care</li> <li>● Champions a new multidisciplinary conference</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Attendance records at lectures/rounds</li> <li>● Case management quality metrics and goals mined from EHR, anatomic pathology or clinical pathology laboratory informatics systems</li> <li>● Chart review</li> <li>● Direct observation (including discussion during rounds, case work-up and case presentations)</li> <li>● End-of-rotation evaluation</li> <li>● Pathology report review</li> </ul>

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	<ul style="list-style-type: none"> <li>● Review of sign-out tools, use and review of checklists between pathology services</li> <li>● 360-degree feedback from the interprofessional team</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● Aller RD. Pathology's contributions to disease surveillance: sending our data to public health officials and encouraging our clinical colleagues to do so. <i>Archives of Path Lab Med.</i> 2009;133(6):926-932. <a href="https://www.archivesofpathology.org/doi/10.1043/1543-2165-133.6.926?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed">https://www.archivesofpathology.org/doi/10.1043/1543-2165-133.6.926?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed</a>. 2020.</li> <li>● CDC. Population Health Training in Place Program (PH-TIPP). <a href="https://www.cdc.gov/pophealthtraining/whatis.html">https://www.cdc.gov/pophealthtraining/whatis.html</a>. 2020.</li> <li>● CAP. Competency Model for Pathologists. <a href="https://learn.cap.org/content/cap/pdfs/Competency_Model.pdf">https://learn.cap.org/content/cap/pdfs/Competency_Model.pdf</a>. 2020.</li> <li>● Kaplan KJ. In pursuit of patient-centered care. <a href="http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns">http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns</a>. 2020.</li> </ul>

<b>Systems-Based Practice 3: Physician Role in Health Care System (Track A, B, and C)</b>	
<b>Overall Intent:</b> To understand the physician role in the complex health care system and how to optimize the system to improve patient care and the health system's performance	
<b>Milestones</b>	<b>Examples</b>
<p><b>Level 1</b> <i>Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology)</i></p> <p><i>Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models</i></p>	<ul style="list-style-type: none"> <li>● Outlines the organizational chart for the local health system, physician practice plan, and pathology laboratory</li> <li>● Gives basic description of Medicare, Medicaid, the Veterans Affairs (VA), and commercial third-party payers</li> <li>● Describes the rationale for current procedural terminology (CPT) coding</li> </ul>
<p><b>Level 2</b> <i>Describes how components of a complex health care system are interrelated, and how this impacts patient care</i></p> <p><i>Documents testing detail and explains the impact of documentation on billing and reimbursement</i></p>	<ul style="list-style-type: none"> <li>● Understands the impact of health plans on reimbursement for pathology services</li> <li>● With indirect supervision, inputs appropriate coding for a routine patient specimen</li> <li>● Compares and contrasts pay for service and capitated payment models</li> </ul>
<p><b>Level 3</b> <i>Discusses how individual practice affects the broader system (e.g., test use, turnaround time)</i></p> <p><i>Engages with clinicians and/or patients in shared decision making, such as use of preauthorization for complex testing</i></p>	<ul style="list-style-type: none"> <li>● Understands, accesses, and analyzes his/her own individual performance data using a case log, call log, or grossing log</li> <li>● Reflects on how own practices effect turnaround time</li> <li>● Inputs appropriate coding for a complex patient specimen</li> <li>● Uses multidisciplinary tumor board discussion to choose the most cost-effective testing depending on the relevant clinical needs</li> </ul>
<p><b>Level 4</b> <i>Manages various components of the complex health care system to provide efficient and effective patient care and transition of care</i></p> <p><i>Practices and advocates for cost effective patient care with consideration of the limitations of each patient's payment model</i></p>	<ul style="list-style-type: none"> <li>● Works with the institution to improve patient resources or workflows</li> <li>● Adopts testing utilization that integrates cost-effectiveness with best practices</li> </ul>
<p><b>Level 5</b> <i>Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transition of care</i></p>	<ul style="list-style-type: none"> <li>● Performs a LEAN analysis of laboratory practices to make laboratory testing more efficient</li> </ul>

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<i>Participates in health policy advocacy activities</i>	<ul style="list-style-type: none"> <li>• Serves on a CAP committee</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>• Audit of testing usage</li> <li>• Direct observation</li> <li>• QI project (perhaps as part of a portfolio): NOTE: The project may serve as an excellent assessment model/tool to assess this subcompetency. The program can develop criteria to ensure the fellow can access and analyze personal practice data, and work with others to design and implement action plans, and subsequently evaluate the outcome and the impact of the plan(s).</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>•</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>• Agency for Healthcare Research and Quality. 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>. 2020.</li> <li>• AHRQ. Major Physician Measurement Sets. <a href="https://www.ahrq.gov/talkingquality/measures/setting/physician/measurement-sets.html">https://www.ahrq.gov/talkingquality/measures/setting/physician/measurement-sets.html</a>. 2020.</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>. 2020.</li> <li>• Centers for Medicare &amp; Medicaid Services. MACRA. <a href="https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs">https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs</a>. 2020.</li> <li>• The Commonwealth Fund. Health Reform Resource Center. <a href="http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#/f:@facasubcategoriesfacet63677=[Individual%20and%20Employer%20Responsibility">http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#/f:@facasubcategoriesfacet63677=[Individual%20and%20Employer%20Responsibility</a>. 2020.</li> <li>• The Commonwealth Fund. Health System Data Center. <a href="http://datacenter.commonwealthfund.org/?_ga=2.110888517.1505146611.1495417431-1811932185.1495417431#ind=1/sc=1">http://datacenter.commonwealthfund.org/?_ga=2.110888517.1505146611.1495417431-1811932185.1495417431#ind=1/sc=1</a>. 2020.</li> <li>• Dzau VJ, McClellan M, Burke S, et al. Vital directions for health and health care: priorities from a National Academy of Medicine Initiative. <i>NAM Perspectives</i>. Discussion Paper, National Academy of Medicine, Washington, DC. <a href="https://nam.edu/vital-directions-for-health-health-care-priorities-from-a-national-academy-of-medicine-initiative/">https://nam.edu/vital-directions-for-health-health-care-priorities-from-a-national-academy-of-medicine-initiative/</a>. 2020.</li> <li>• The Kaiser Family Foundation. <a href="http://www.kff.org">www.kff.org</a>. 2020.</li> <li>• The Kaiser Family Foundation: Topic: health reform. <a href="https://www.kff.org/topic/health-reform/">https://www.kff.org/topic/health-reform/</a>. 2020.</li> </ul>

<b>Systems-Based Practice 4: Accreditation, Compliance, and Quality (Track A, B, and C)</b> <b>Overall Intent:</b> To gain in-depth knowledge of the components of laboratory accreditation, regulatory compliance, and quality management	
Milestones	Examples
<p><b>Level 1</b> <i>Demonstrates knowledge that laboratories must be accredited</i></p> <p><i>Discusses the need for quality control and proficiency testing</i></p>	<ul style="list-style-type: none"> <li>● Attends departmental quality assurance/quality control meetings, morbidity and mortality (M and M) conferences and accreditation/regulatory summation meetings</li> <li>● Drafts reports using standard comments and other language required for compliance</li>   <li>● Describes the lab's participation in a physical therapy program</li> </ul>
<p><b>Level 2</b> <i>Demonstrates knowledge of the components of laboratory accreditation and regulatory compliance (e.g., Clinical Laboratory Improvement Amendments), either through training or experience</i></p> <p><i>Interprets quality data and charts and trends, including proficiency testing results, with assistance</i></p>	<ul style="list-style-type: none"> <li>● Assesses quality of quality control slides for immunohistochemical stains</li> <li>● Compares frozen section to final diagnosis for own cases</li> <li>● Attends a root cause analysis</li> <li>● Performs CAP cancer protocol audit of in-house malignancies</li>   <li>● Interprets daily instrument quality control and proficiency test reports</li> </ul>
<p><b>Level 3</b> <i>Identifies the differences between accreditation and regulatory compliance; discusses the process for achieving accreditation and maintaining regulatory compliance</i></p> <p><i>Demonstrates knowledge of the components of a laboratory quality management plan</i></p> <p><i>Discusses implications of proficiency testing failures</i></p>	<ul style="list-style-type: none"> <li>● Can describe difference between CLIA and CAP</li> <li>● Actively participates in a root cause analysis</li>   <li>● Completes CAP inspector training to understand process for achieving/maintaining regulatory/accreditation compliance</li>   <li>● Begins to actively participate in regular laboratory quality management duties; compares frozen section to final diagnosis log for department</li> </ul>
<p><b>Level 4</b> <i>Participates in an internal or external laboratory inspection</i></p> <p><i>Reviews the quality management plan to identify areas for improvement</i></p>	<ul style="list-style-type: none"> <li>● Performs mock or self-inspection using a CAP checklist</li>   <li>● Assists in developing a strategy for handling QC or proficiency testing failures</li> </ul>



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<p><i>Performs analysis and review of proficiency testing failures and recommends a course of action, with oversight</i></p>	
<p><b>Level 5</b> <i>Serves as a resource for accreditation at the regional or national level</i></p> <p><i>Creates and follows a comprehensive quality management plan</i></p> <p><i>Independently formulates a response for proficiency testing failures</i></p>	<ul style="list-style-type: none"> <li>● Serves on a regional or national committee relating to accreditation</li> <li>● Assists in developing quality metrics for the laboratory</li> <li>● Serves as an assistant medical director or junior medical director</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Assignment of duties for departmental or hospital quality assurance/quality control committees</li> <li>● Documentation of inspector training and participation in fellow portfolio</li> <li>● Planning and completion of QI projects</li> <li>● Presentation at M and M conferences</li> <li>● Rotation evaluations</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>● CAP. Inspector Training. <a href="https://www.cap.org/laboratory-improvement/accreditation/inspector-training">https://www.cap.org/laboratory-improvement/accreditation/inspector-training</a>. 2020.</li> <li>● Idowu MO, Nakhleh RE. Quality assurance in anatomic pathology. In: Wagar EA, Cohen MB, Karcher DS, Siegal GP. <i>Laboratory Administration for Pathologists</i>. 2nd ed. Northfield, IL: College of American Pathologists; 2019.</li> <li>● Zhai QJ, Siegal GP. <i>Quality Management in Anatomic Pathology</i>. Northfield, IL: College of American Pathologists; 2017.</li> </ul>



<b>Systems-Based Practice 5: Utilization (Track A, B, and C)</b>	
<b>Overall Intent:</b> To develop cost-sensitive and evidence-based laboratory testing practices, including considerations of medical necessity, quality, and resource stewardship	
<b>Milestones</b>	<b>Examples</b>
<b>Level 1</b> <i>Identifies general selective pathology work practices and workflow (e.g., molecular diagnostic, histology, immunohistochemistry stains, chemical tests)</i>	<ul style="list-style-type: none"> <li>Identifies key elements of ordering practices</li> <li>Explains the need for p16 immunohistochemical staining or HPV testing in cases of oropharyngeal squamous cell carcinoma and the impact that has on the diagnosis (A/B)</li> <li>Is aware of ancillary testing resources available in own institution and common send-out tests</li> </ul>
<b>Level 2</b> <i>Explains rationale for utilization patterns in own practice setting</i>	<ul style="list-style-type: none"> <li>Identifies appropriate or inappropriate ordering and overutilization</li> <li>Describes the benefits and drawbacks of having a laboratory protocol for cutting unstained slides upfront on lung biopsy specimens (A/B)</li> </ul>
<b>Level 3</b> <i>Identifies opportunities to optimize utilization of pathology resources</i>	<ul style="list-style-type: none"> <li>Intervenes in inappropriate or overutilization situations</li> <li>Explains the indications for molecular testing in non-small cell lung cancer, recognizes cases for which testing is not indicated (A/B)</li> </ul>
<b>Level 4</b> <i>Initiates efforts to optimize utilization</i>	<ul style="list-style-type: none"> <li>Independently identifies interventions to drive change</li> <li>Identifies a pattern of ordering the incorrect PD-L1 antibody clone for head and neck squamous cell carcinoma and provides educational materials on the topic to help improve ordering practices (A/B)</li> </ul>
<b>Level 5</b> <i>Completes a utilization review and implements change</i>	<ul style="list-style-type: none"> <li>Evaluates the ordering patterns for an immunohistochemical stain being sent out to a reference laboratory, recognizes a cost benefit of bringing the stain in-house, and assists in the validation of the new immunohistochemical stain (A/B)</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>Direct observation</li> <li>Global evaluation</li> <li>Mentor and program director observations</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>Freedman DB. Towards better test utilization - strategies to improve physician ordering and their impact on patient outcomes. <i>EJIFCC</i>. 2015;26(1):15-30. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4975220/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4975220/</a>. 2020.</li> <li>Gross DJ, Kennedy M, Kothari T, et al. The role of the pathologist in population health. <i>Arch Pathol Lab Med</i>. 2019;143(5):610-620. <a href="https://www.archivesofpathology.org/doi/full/10.5858/arpa.2018-0223-CP">https://www.archivesofpathology.org/doi/full/10.5858/arpa.2018-0223-CP</a>. 2020.</li> <li>Laposata M. Putting the patient first - using the expertise of laboratory professionals to produce rapid and accurate diagnoses. <i>Lab Med</i>. 2014;45(1):4-5. <a href="https://academic.oup.com/labmed/article/45/1/4/2657735">https://academic.oup.com/labmed/article/45/1/4/2657735</a>. 2020.</li> </ul>

<b>Practice-Based Learning and Improvement 1: Evidence-Based Practice and Scholarship (Track A, B, and C)</b> <b>Overall Intent:</b> To incorporate evidence into clinical practice and is involved in contributing to the body of knowledge in pathology	
Milestones	Examples
<p><b>Level 1</b> <i>Demonstrates how to access and select applicable evidence</i></p> <p><i>Is aware of the need for patient privacy, autonomy, and consent as applied to clinical research</i></p>	<ul style="list-style-type: none"> <li>● Recognizes that molecular testing is useful in the work-up for select tumors (A/B)</li> <li>● Identifies the need for an Institutional Review Board (IRB) approval when collecting cases for a possible research project</li> </ul>
<p><b>Level 2</b> <i>Identifies and applies the best available evidence to guide diagnostic work-up of simple cases</i></p> <p><i>Develops knowledge of the basic principles of research (demographics, Institutional Review Board, human subjects), including how research is evaluated, explained to patients, and applied to patient care</i></p>	<ul style="list-style-type: none"> <li>● Orders fluorescence in situ hybridization for synovial sarcoma, confirming a single favored diagnosis (A/B)</li> <li>● Drafts an IRB protocol with attending oversight</li> <li>● Submits an abstract for a national meeting</li> </ul>
<p><b>Level 3</b> <i>Identifies and applies the best available evidence to guide diagnostic work-up of complex cases</i></p> <p><i>Applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice, with supervision</i></p>	<ul style="list-style-type: none"> <li>● Uses immunostains to work up carcinoma of unknown primary in a stepwise fashion (A/B)</li> <li>● Drafts an IRB protocol with minimal oversight</li> </ul>
<p><b>Level 4</b> <i>Critically appraises and applies evidence to guide care, even in the face of conflicting data</i></p> <p><i>Proactively and consistently applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice</i></p>	<ul style="list-style-type: none"> <li>● Appropriately researches the primary literature to explain unexpected findings that surface from ancillary testing</li> <li>● Moderates a discussion with clinicians over disparate molecular, morphologic, and/or immunohistochemical findings of a tumor to formulate the best course forward based on the primary literature (A/B)</li> <li>● Submits a paper for publication</li> </ul>

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<p><b>Level 5</b> <i>Teaches others to critically appraise and apply evidence for complex cases; and/or participates in the development of guidelines</i></p> <p><i>Suggests improvements to research regulations and/or substantially contributes to the primary literature through basic, translational, or clinical research</i></p>	<ul style="list-style-type: none"> <li>● Moderates a discussion with clinicians to incorporate evolving clinical practices into pathology workflow based on evidence</li> <li>● Submits a grant proposal</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Presentation</li> <li>● Research portfolio</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>● Institutional IRB guidelines</li> <li>● National Institutes of Health. Write Your Application. <a href="https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm">https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm</a>. 2020.</li> <li>● U.S. National Library of Medicine. PubMed Tutorial. <a href="https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html">https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html</a>. 2020.</li> <li>● Various journal submission guidelines</li> </ul>

<b>Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth (Track A, B, and C)</b> <b>Overall Intent:</b> 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 technologists, colleagues and patients (if applicable) (i.e., reflective mindfulness); develop clear objectives and goals for improvement in some form of a learning plan	
Milestones	Examples
<p><b>Level 1</b> <i>Accepts responsibility for personal and professional development by establishing goals</i></p> <p><i>Identifies the gap(s) between expectations and actual performance</i></p> <p><i>Actively seeks opportunities to improve</i></p>	<ul style="list-style-type: none"> <li>● Is aware of process of using Milestones for self-assessment</li> <li>● States personal learning goals</li>   <li>● Keeps a record of correct and incorrect diagnoses (A/B)</li>   <li>● Is beginning to seek ways to determine where improvements are needed and makes some specific goals that are reasonable to execute and achieve</li> </ul>
<p><b>Level 2</b> <i>Demonstrates openness to receiving performance data and 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 assistance</i></p>	<ul style="list-style-type: none"> <li>● After working with an attending for a week, asks about performance and opportunities for improvement</li>   <li>● Identifies performance gaps in terms of diagnostic skills and daily work; uses feedback from others</li>   <li>● Uses feedback with a goal of improving communication skills with technologists, peers/colleagues, staff members, and patients (if applicable) the following week</li> </ul>
<p><b>Level 3</b> <i>Seeks performance data and feedback with humility</i></p> <p><i>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"> <li>● Takes input from technologists, peers/colleagues, and supervisors to gain nuanced insight into personal strengths and areas to improve</li>   <li>● Humbly acts on input and is appreciative rather than defensive</li>   <li>● Documents goals in a more specific and achievable manner, such that attaining them is reasonable and measurable</li> </ul>
<p><b>Level 4</b> <i>Actively and consistently seeks performance data and feedback with humility</i></p>	<ul style="list-style-type: none"> <li>● Regularly updates learning plan based on performance data and feedback</li> </ul>

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<p><i>Critically evaluates the effectiveness of behavioral changes in narrowing the gap(s) between expectations and actual performance</i></p> <p><i>Uses performance data to measure the effectiveness of the learning plan and improves it when necessary</i></p>	<ul style="list-style-type: none"> <li>● Consistently identifies ongoing gaps and chooses areas for further development</li> <li>● Actively discusses learning goals with supervisors and colleagues</li> </ul>
<p><b>Level 5</b> <i>Models seeking performance data and accepting feedback with humility</i></p> <p><i>Coaches others in reflective practice</i></p> <p><i>Facilitates the design and implementing learning plans for others</i></p>	<ul style="list-style-type: none"> <li>● Presents own errors at quality assurance conference and solicits feedback for improvement</li> <li>● Openly shares learning goals to seek additional experiences</li> <li>● Encourages other learners on the team to consider how their behavior affects the rest of the team</li> <li>● Guides other learners in creating a learning plan</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Review of learning plan</li> <li>● Self-assessment of milestones</li> <li>● Self-reflection</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>● Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. <i>Acad Pediatr.</i> 2014;14: S38-S54. <a href="https://www.academicpedsjnl.net/article/S1876-2859(13)00333-1/fulltext">https://www.academicpedsjnl.net/article/S1876-2859(13)00333-1/fulltext</a>. 2020.</li> <li>● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. <i>Academic Medicine.</i> 2009;84(8):1066-1074. <a href="https://journals.lww.com/academicmedicine/fulltext/2009/08000/Measurement_and_Correlates_of_Physicians_Lifelong.21.aspx">https://journals.lww.com/academicmedicine/fulltext/2009/08000/Measurement_and_Correlates_of_Physicians_Lifelong.21.aspx</a>. 2020.</li> <li>● Lockspeiser TM, Schmitter PA, Lane JL, Hanson JL, Rosenberg AA, Park YS. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. <i>Academic Medicine.</i> 2013;88(10):1558-1563. <a href="https://journals.lww.com/academicmedicine/fulltext/2013/10000/Assessing_Residents_Written_Learning_Goals_and.39.aspx">https://journals.lww.com/academicmedicine/fulltext/2013/10000/Assessing_Residents_Written_Learning_Goals_and.39.aspx</a>. 2020.</li> </ul>

<b>Professionalism 1: Professional Behavior and Ethical Principles (Track A, B, and C)</b> <b>Overall Intent:</b> To recognize and address lapses in ethical and professional behavior, demonstrates ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas	
Milestones	Examples
<p><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></p> <p><i>Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers; identifies and describes potential triggers for professionalism lapses</i></p>	<ul style="list-style-type: none"> <li>● Has completed institutional training course for privacy and information security (HIPAA) compliance</li> <li>● Has completed required institutional IRB training courses before undertaking research project</li> <li>● Knows the procedures for reporting breaches in compliance and ethics to relevant institutional authority</li> <li>● Understands the importance of disclosure of conflicts of interest</li> <li>● Discusses the basic principles underlying ethics (beneficence, nonmaleficence, justice, autonomy) and professionalism (professional values and commitments), and how they apply in various situations (e.g., informed consent process)</li> </ul>
<p><b>Level 2</b> <i>Analyzes straightforward situations using ethical principles</i></p> <p><i>Demonstrates insight into professional behavior in routine situations; takes responsibility for one's own professionalism lapses</i></p>	<ul style="list-style-type: none"> <li>● Obtains informed consent or IRB approval/waiver before using tissue for research</li> <li>● Demonstrates professional behavior in routine situations and uses ethical principles to analyze straightforward situations, and can acknowledge a lapse without becoming defensive, making excuses, or blaming others (e.g., takes responsibility for own tardiness or lack of preparation; honestly reporting mishandling of specimen)</li> <li>● Apologizes for lapses when appropriate and takes steps to make amends if needed; articulates strategies for preventing similar lapses in the future</li> <li>● Does not engage in gossiping or spreading rumors</li> </ul>
<p><b>Level 3</b> <i>Recognizes the need and uses relevant resources to seek help in managing and resolving complex ethical situations</i></p> <p><i>Demonstrates professional behavior in complex or stressful situations</i></p>	<ul style="list-style-type: none"> <li>● Analyzes complex situations that evokes strong emotions</li> <li>● Discusses ethical implications of a case with supervising pathologists</li> <li>● Identifies the signs of and raises concern about impaired/incompetent colleagues to supervisor</li> <li>● Navigates a situation while not at personal best due to fatigue, hunger, or stress</li> <li>● Navigates a situation where systemic barriers like inefficient workflow, inadequate staffing, or conflicting policies threaten professional behavior</li> </ul>
<p><b>Level 4</b> <i>Independently resolves and manages complex ethical situations</i></p>	<ul style="list-style-type: none"> <li>● Uses ethics and risk management consultation for resolving ethical dilemmas</li> </ul>

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<p><i>Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others</i></p>	<ul style="list-style-type: none"> <li>● Actively seeks to consider the perspectives of others</li> <li>● Models respect for patients and expects the same from others</li> <li>● Monitors and responds to fatigue, hunger, stress, etc., in self and team members</li> </ul>
<p><b>Level 5</b> <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"> <li>● Serves as a fellow member on the IRB or ethics committee</li> <li>● Collaborates with other departments to troubleshoot situations that threaten professional relations</li> </ul>
<p><i>Coaches others when their behavior fails to meet professional expectations</i></p>	<ul style="list-style-type: none"> <li>● At an appropriate time as the situation dictates, counsels fellow learner not performing at personal best due to fatigue, hunger, or stress</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Global evaluation</li> <li>● Mentor and program director observations</li> <li>● Multisource feedback</li> <li>● Oral or written self-reflection (e.g., of a personal or observed lapse, ethical dilemma, or systems-level factors)</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>● American Board of Internal Medicine, ACP-ASIM Foundation, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. <i>Ann Intern Med.</i> 2002;136:243-246. <a href="http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf">http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf</a>. 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>. 2020.</li> <li>● Brissette MD, Johnson K, Raciti PM, et al. Perceptions of unprofessional attitudes and behaviors: implications for faculty role modeling and teaching professionalism during pathology residency. <i>Arch Pathol Lab Med.</i> 2017;141:1349-1401. <a href="https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0477-CP">https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0477-CP</a>. 2020.</li> <li>● Byyny RL, Papadakis MA, Paauw DS. <i>Medical Professionalism Best Practices</i>. Menlo Park, CA: Alpha Omega Alpha Medical Society; 2015. <a href="https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf">https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf</a>. 2020.</li> <li>● Conran RM, Powell SZ, Domen RE, et al. Development of professionalism in graduate medical education: a case-based educational approach from the College of American Pathologists' Graduate Medical Education Committee. 2018;5: 2374289518773493. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/</a>. 2020.</li> </ul>



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- Levinson W, Ginsburg S, Hafferty FW, Lucey CR. *Understanding Medical Professionalism.* 1st ed. New York, NY: McGraw-Hill Education; 2014.



<b>Professionalism 2: Accountability and Conscientiousness (Track A, B, and C)</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	
Milestones	Examples
<b>Level 1</b> <i>Responds promptly to instructions, requests, or reminders to complete tasks and responsibilities</i>	<ul style="list-style-type: none"> <li>● Responds promptly to reminders from program administrator to complete clinical and educational work hour logs</li> <li>● Attends conferences punctually and reliably</li> <li>● Follows up on attending instructions for case management</li> <li>● Submits additional tissue sections as explicitly requested by the attending</li> </ul>
<b>Level 2</b> <i>Takes ownership and performs tasks and responsibilities in a timely manner with attention to detail</i>	<ul style="list-style-type: none"> <li>● Completes cases in a timely manner, with attention to detail, including reporting of all immunohistochemical stains and other ancillary studies</li> <li>● Maintains awareness of case list or patient load for the day</li> <li>● Researches patient histories before case sign-out</li> <li>● Proactively identifies missing ancillary tests that should be added to a surgical pathology case</li> <li>● Completes and documents administrative tasks requiring cognitive engagement (safety modules, procedure review, licensing requirements)</li> </ul>
<b>Level 3</b> <i>Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner and describes the impact on team</i>	<ul style="list-style-type: none"> <li>● Notifies team members on day service about overnight call events during hand-off</li> <li>● Notifies attending of multiple competing demands on-call</li> <li>● Appropriately triages competing tasks</li> <li>● Asks for assistance from other residents or faculty members</li> <li>● Reviews Case Logs, evaluations, and portfolio and develops a learning plan to address gaps/weaknesses in knowledge, case exposure, and skills</li> </ul>
<b>Level 4</b> <i>Anticipates and intervenes in situations that may impact others’ ability to complete tasks and responsibilities in a timely manner</i>	<ul style="list-style-type: none"> <li>● Advises residents how to manage their time in completing patient care tasks</li> <li>● Escalates problems to program director in appropriate circumstances</li> </ul>
<b>Level 5</b> <i>Takes ownership of system outcomes, and implements new strategies when necessary</i>	<ul style="list-style-type: none"> <li>● Implements technology to prevent mishandled specimens</li> <li>● Sets up a meeting with the lead technologist to streamline a reflex testing algorithm and follows through with a system-based solution</li> </ul>
Assessment Models or Tools	<ul style="list-style-type: none"> <li>● Compliance with deadlines and timelines</li> <li>● Direct observation</li> <li>● Mentor and program director observations</li> <li>● Multisource global evaluations, including from program administrator</li> <li>● Quality metrics of turnaround time on cases</li> <li>● Self-evaluations and reflective tools</li> <li>● Simulation</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>

Notes or Resources

- Code of conduct from fellow/resident institutional manual
- Expectations of residency program regarding accountability and professionalism

<b>Professionalism 3: Self-Awareness and Help-Seeking (Track A, B, and C)</b> <b>Overall Intent:</b> To identify, use, manage, improve, and seek help for personal and professional well-being for self and others	
Milestones	Examples
<p><b>Level 1</b> <i>Recognizes limitations in the knowledge/skills/ behaviors of self or team, with supervision</i></p> <p><i>Recognizes status of personal and professional well-being, with supervision</i></p>	<ul style="list-style-type: none"> <li>● Accepts feedback and responds to it constructively</li> <li>● Acknowledges signs of burnout in self when counseled by program director or mentor</li> </ul>
<p><b>Level 2</b> <i>Independently recognizes limitations in the knowledge/skills/ behaviors of self or team and seeks help when needed</i></p> <p><i>Independently recognizes status of personal and professional well-being and seeks help when needed</i></p>	<ul style="list-style-type: none"> <li>● Identifies possible sources of personal stress or lack of clinical knowledge and independently seeks help</li> <li>● Develops a list of top five goals and examines how these goals align with current personal and professional activities</li> </ul>
<p><b>Level 3</b> <i>Proposes and implements a plan to remediate or improve the knowledge/skills/behaviors of self or team, with supervision</i></p> <p><i>Proposes and implements a plan to optimize personal and professional well-being, with supervision</i></p>	<ul style="list-style-type: none"> <li>● Initiates or organizes a special slide session</li> <li>● Arranges for a lecture on a pathology management topic</li> <li>● With supervision, develops a personal learning or action plan to address gaps in knowledge or stress and burnout for self or team</li> </ul>
<p><b>Level 4</b> <i>Independently develops and implements a plan to remediate or improve the knowledge/skills/ behaviors of self or team</i></p> <p><i>Independently develops and implements a plan to optimize personal and professional well-being</i></p>	<ul style="list-style-type: none"> <li>● Creates a new lecture series or educational resource in which content is provided by guest speakers</li> <li>● Independently develops personal learning or action plans for continued personal and professional growth, and limits stress and burnout for self or team</li> </ul>
<p><b>Level 5</b> <i>Serves as a resource or consultant for developing a plan to remediate or improve the knowledge/ skills/behaviors</i></p> <p><i>Coaches others when responses or limitations in knowledge/skills do not meet professional expectations</i></p>	<ul style="list-style-type: none"> <li>● Mentors patients and colleagues in self-awareness and establishes plans to limit stress and burnout</li> <li>● Leads a wellness program that benefits multiple members of the department</li> </ul>

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<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Group interview or discussions for team activities</li> <li>● Individual interview</li> <li>● Institutional online training modules</li> <li>● Mentor and program director observations</li> <li>● Participation in institutional well-being programs</li> <li>● Self-assessment and personal learning plan</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>● ACGME. Tools and Resources. <a href="https://www.acgme.org/What-We-Do/Initiatives/Physician-Well-Being/Resources">https://www.acgme.org/What-We-Do/Initiatives/Physician-Well-Being/Resources</a>. 2020.</li> <li>● Conran RM, Powell SZ, Domen RE, et al. Development of professionalism in graduate medical education: a case-based educational approach from the College of American Pathologists' Graduate Medical Education Committee. <i>Acad Pathol</i>. 2018;5:2374289518773493. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/</a>. 2020.</li> <li>● Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. <i>Acad Pediatr</i>. 2014;14(2 Suppl):S80-97. <a href="https://linkinghub.elsevier.com/retrieve/pii/S1876-2859(13)00332-X">https://linkinghub.elsevier.com/retrieve/pii/S1876-2859(13)00332-X</a>. 2020.</li> <li>● Joseph L, Shaw PF, Smoller BR. Perceptions of stress among pathology residents: survey results and some strategies to reduce them. <i>Am J Clin Pathol</i>. 2007;128(6):911-919. <a href="https://academic.oup.com/ajcp/article/128/6/911/1764982">https://academic.oup.com/ajcp/article/128/6/911/1764982</a>. 2020.</li> <li>● Local resources, including Employee Assistance Program</li> </ul>

<b>Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication (Track A, B, and C)</b> <b>Overall Intent:</b> To deliberately use language and behaviors to form constructive relationships with patients, to identify communication barriers including self-reflection on personal biases, and minimize them in the doctor-patient relationships; organize and lead communication around shared decision making	
Milestones	Examples
<p><b>Level 1</b> <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) while accurately communicating own role within the health care system</i></p>	<ul style="list-style-type: none"> <li>● Self-monitors and controls tone, non-verbal responses, and language and asks questions to invite patient/family participation</li> <li>● Avoids medical jargon when talking to patients, makes sure communication is at the appropriate level</li> <li>● Accurately communicates role in the health care system to patients/families</li> <li>● Identifies common communication barriers in patient care</li> </ul>
<p><b>Level 2</b> <i>Establishes a relationship in straightforward encounters using active listening and clear language</i></p> <p><i>Identifies complex barriers to effective communication (e.g., health literacy, cultural)</i></p>	<ul style="list-style-type: none"> <li>● Establishes a professional relationship with patients/families, with active listening</li> <li>● In a real or simulated patient encounter, seeks to understand the patient’s level of understanding of medical language</li> <li>● Meets with blood donors who have been deferred from donation and explains the patient or donor safety issue (C)</li> </ul>
<p><b>Level 3</b> <i>Sensitively and compassionately delivers medical information, with supervision</i></p> <p><i>When prompted, reflects on personal biases while attempting to minimize communication barriers</i></p>	<ul style="list-style-type: none"> <li>● Demonstrates respect for a Jehovah’s Witness who does not want a transfusion with thorough explanation of the risks and alternatives (C)</li> <li>● Acknowledges uncertainty in daily tasks</li> <li>● Recognizes and acknowledges personal bias about a layperson’s medical knowledge when pointed out by attending</li> </ul>
<p><b>Level 4</b> <i>Independently, sensitively, and compassionately delivers medical information and acknowledges uncertainty and conflict</i></p> <p><i>Independently recognizes personal biases while attempting to proactively minimize communication barriers</i></p>	<ul style="list-style-type: none"> <li>● Is an active member of patient care team in discussion with family regarding a difficult transplant match</li> <li>● Develops a plan for communicating biopsy findings in face of patient or family anger (A/B)</li> <li>● Checks personal biases and works to overcome them</li> </ul>

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<p><b>Level 5</b> <i>Mentors others in the sensitive and compassionate delivery of medical information</i></p> <p><i>Models self-awareness while teaching a contextual approach to minimize communication barriers</i></p>	<ul style="list-style-type: none"> <li>● Participates in communication of biopsy findings in face of patient or family anger (A/B)</li> <li>● Gives an active learning session on compassionate communication skills with reference to personal experiences</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>● Direct observation</li> <li>● Kalamazoo Essential Elements Communication Checklist (Adapted)</li> <li>● Self-assessment including self-reflection exercises</li> <li>● Skills needed to Set the state, Elicit information, Give information, Understand the patient, and End the encounter (SEGUE)</li> <li>● Standardized/simulated patients or structured case discussions</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>● Dintzis SM. Improving pathologist's communication skills. <i>AMA J Ethics</i>. 2016;18(8):802-808. <a href="https://journalofethics.ama-assn.org/article/improving-pathologists-communication-skills/2016-08">https://journalofethics.ama-assn.org/article/improving-pathologists-communication-skills/2016-08</a>. 2020.</li> <li>● Dintzis SM, Stetsenko GY, Sitlani CM, et al. Communicating pathology and laboratory errors: anatomic pathologists' and laboratory medical directors' attitudes and experiences. <i>Am J Clin Pathol</i>. 2011;135(5):760-765. <a href="https://academic.oup.com/ajcp/article/135/5/760/1766306">https://academic.oup.com/ajcp/article/135/5/760/1766306</a>. 2020.</li> <li>● Laidlaw A, Hart J. Communication skills: an essential component of medical curricula. Part I: Assessment of clinical communication: AMEE Guide No. 51. <i>Med Teach</i>. 2011;33(1):6-8. <a href="https://www.tandfonline.com/doi/full/10.3109/0142159X.2011.531170">https://www.tandfonline.com/doi/full/10.3109/0142159X.2011.531170</a>. 2020.</li> <li>● Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. <i>Acad Med</i>. 2001;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>. 2020.</li> <li>● Makoul G. The SEGUE Framework for teaching and assessing communication skills. <i>Patient Educ Couns</i>. 2001;45(1):23-34. <a href="https://www.sciencedirect.com/science/article/abs/pii/S0738399101001367?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0738399101001367?via%3Dihub</a>. 2020.</li> <li>● Symons AB, Swanson A, McGuigan D, Orrange S, Akl EA. A tool for self-assessment of communication skills and professionalism in residents. <i>BMC Med Educ</i>. 2009;9:1. <a href="https://bmcmmededuc.biomedcentral.com/articles/10.1186/1472-6920-9-1">https://bmcmmededuc.biomedcentral.com/articles/10.1186/1472-6920-9-1</a>. 2020.</li> </ul>

<b>Interpersonal and Communication Skills 2: Interprofessional and Team Communication (Track A, B, and C)</b> <b>Overall Intent:</b> To effectively communicate with the health care team (laboratory team, resident/fellow team, faculty/resident team, interdisciplinary care team, etc.), including both inter- and intra-departmental and consultants, in both straightforward and complex situations	
Milestones	Examples
<p><b>Level 1</b> <i>Uses language that values all members of the health care team</i></p> <p><i>Describes the utility of constructive feedback</i></p>	<ul style="list-style-type: none"> <li>● Chooses respectful words and actions when communicating with the health care team during routine intraoperative consultation or clinical consultation</li> <li>● Communicates respectfully with clerical and technical staff members</li> <li>● Describes key features of constructive feedback in a theoretical way</li> </ul>
<p><b>Level 2</b> <i>Communicates information effectively with all health care team members</i></p> <p><i>Solicits feedback on performance as a member of the health care team</i></p>	<ul style="list-style-type: none"> <li>● Verifies understanding of communications by obtaining readbacks of frozen section diagnoses, critical values, and/or unexpected diagnoses</li> <li>● Communicates clearly and concisely, in an organized and timely manner, during consultant encounters, as well as with the health care team in general</li> <li>● Seeks feedback from the attending pathologist at sign-out, with specific reference to functioning as part of the team</li> </ul>
<p><b>Level 3</b> <i>Uses active listening to adapt communication style to fit team needs</i></p> <p><i>Integrates feedback from team members to improve communication</i></p>	<ul style="list-style-type: none"> <li>● Actively listens by fully focusing on the speaker and using verbal and non-verbal cues (eye contact, posture, reflection, questioning, summarizing)</li> <li>● Raises concerns or provides opinions and feedback to others on the team</li> <li>● Respectfully provides feedback to more junior members of the medical team to improve or reinforce knowledge, skills, and attitudes, when appropriate</li> </ul>
<p><b>Level 4</b> <i>Coordinates recommendations from different members of the health care team to optimize patient care</i></p> <p><i>Communicates feedback and constructive criticism to superiors</i></p>	<ul style="list-style-type: none"> <li>● Offers suggestions to negotiate or resolve conflicts among health care team members; raises concerns or provides opinions and feedback, when needed, to superiors on the team</li> <li>● Speaks with attending pathologist to pass on a disagreement arising from tumor board</li> <li>● Adapts communication strategies to handle complex situations</li> </ul>
<p><b>Level 5</b> <i>Models flexible communication strategies that value input from all health care team members, resolving conflict when needed</i></p> <p><i>Facilitates regular health care team-based feedback in complex situations</i></p>	<ul style="list-style-type: none"> <li>● Communicates with all health care team members, resolves conflicts, and provides feedback in challenging situations</li> <li>● Remains composed and nonconfrontational during difficult conversations about patient safety incidents</li> <li>● Organizes regular team meetings to discuss and resolve conflicting points of view on case management</li> <li>● Facilitates discussions around use of rare/limited resources</li> </ul>
<p><b>Assessment Models or Tools</b></p>	<ul style="list-style-type: none"> <li>● Direct observation</li> </ul>

	<ul style="list-style-type: none"> <li>● Global assessment</li> <li>● Multi-source assessment</li> <li>● Record or chart review for professionalism and accuracy in written communications</li> <li>● Simulated encounters</li> </ul>
Curriculum Mapping	<ul style="list-style-type: none"> <li>●</li> </ul>
Notes or Resources	<ul style="list-style-type: none"> <li>● Brissette MD, Johnson K, Raciti PM, et al. Perceptions of unprofessional attitudes and behaviors: implications for faculty role modeling and teaching professionalism during pathology residency. <i>Arch Pathol Lab Med.</i> 2017;141:1394-1401. <a href="https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0477-CP">https://www.archivesofpathology.org/doi/10.5858/arpa.2016-0477-CP</a>. 2020.</li> <li>● Conran RM, Powell SZ, Domen RE, et al. Development of professionalism in graduate medical education: a case-based educational approach from the College of American Pathologists' Graduate Medical Education Committee. 2018;5: 2374289518773493. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039899/</a>. 2020.</li> <li>● Green M, Parrott T, Cook G., Improving your communication skills. <i>BMJ.</i> 2012;344:e357. <a href="https://www.bmj.com/content/344/bmj.e357">https://www.bmj.com/content/344/bmj.e357</a>. 2020.</li> <li>● Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: a review with suggestions for implementation. <i>Med Teach.</i> 2013;35(5):395-403. <a href="https://www.tandfonline.com/doi/full/10.3109/0142159X.2013.769677">https://www.tandfonline.com/doi/full/10.3109/0142159X.2013.769677</a>. 2020.</li> <li>● Nakhleh RE, Myers JL, Allen TC, et al. Consensus statement on effective communication of urgent diagnoses and significant, unexpected diagnoses in surgical pathology and cytopathology from the College of American Pathologists and Association of Directors of Anatomic and Surgical Pathology. <i>Arch Pathol Lab Med.</i> 2012;136(2):148-154. <a href="https://www.archivesofpathology.org/doi/10.5858/arpa.2011-0400-SA?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed">https://www.archivesofpathology.org/doi/10.5858/arpa.2011-0400-SA?url_ver=Z39.88-2003&amp;rfr_id=ori:rid:crossref.org&amp;rfr_dat=cr_pub%3dpubmed</a>. 2020.</li> <li>● Roth CG, Eldin KW, Padmanabhan V, Freidman EM. Twelve tips for the introduction of emotional intelligence in medical education. <i>Med Teach.</i> 2019;41(7):1-4. <a href="https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499">https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499</a>. 2020.</li> </ul>



<b>Interpersonal and Communication Skills 3: Communication within Health Care Systems (Track A, B, and C)</b> <b>Overall Intent:</b> To effectively communicate to a variety of audiences using appropriate/approved methods in order to protect patient information	
Milestones	Examples
<p><b>Level 1</b> <i>Safeguards patient personal health information by communicating through appropriate means as required by institutional policy (e.g., patient safety reports, cell phone/pager usage)</i></p> <p><i>Identifies institutional and departmental structure for communication of issues</i></p>	<ul style="list-style-type: none"> <li>● Identifies when it is acceptable to include protected health information (PHI) in various forms of communication</li> <li>● Refrains from using personal email or texting to transmit patient health information</li> <li>● Identifies institutional and departmental hierarchy for reporting concerns about communication of PHI</li> </ul>
<p><b>Level 2</b> <i>Selects forms of communication based on context and urgency of the situation</i></p> <p><i>Respectfully communicates concerns about the system</i></p>	<ul style="list-style-type: none"> <li>● Identifies method for sharing results needing urgent attention and appropriately documents communications</li> <li>● Recognizes when a communication breakdown has happened and respectfully brings the breakdown to the attention of the chief resident/fellow or faculty member</li> <li>● Reports a patient safety event</li> <li>● Identifies barriers to secure communication</li> </ul>
<p><b>Level 3</b> <i>Communicates while ensuring security of personal health information, with supervision</i></p> <p><i>Uses institutional structure to effectively communicate clear and constructive suggestions to improve the system</i></p>	<ul style="list-style-type: none"> <li>● Uses appropriate method when sharing results needing urgent attention</li> <li>● Communicates opportunities for improvement in the LIS/EHR interface</li> <li>● Appropriately escalates concerns or opportunities for improvement in communication</li> </ul>
<p><b>Level 4</b> <i>Independently communicates while ensuring security of personal health information</i></p> <p><i>Initiates conversations on difficult subjects with appropriate stakeholders to improve the system</i></p>	<ul style="list-style-type: none"> <li>● Independently discusses breakdowns in communication with colleague in order to prevent recurrence</li> <li>● Participates in task force to update policy to improve house staff hand-offs</li> <li>● Improves methods for communicating system-wide call schedules, conference scheduling, etc.</li> </ul>
<p><b>Level 5</b> <i>Guides departmental or institutional communication around policies and procedures regarding the security of personal health information</i></p>	<ul style="list-style-type: none"> <li>● Leads a task force to update policy to improve house staff hand-offs</li> </ul>

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<p><i>Facilitates dialogue regarding systems issues among larger community stakeholders (e.g., institution, health care system, field)</i></p>	<ul style="list-style-type: none"> <li>• Works with information systems to implement improvements in the LIS/EHR interface</li> </ul>
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> <li>• Chart review for documented communications</li> <li>• Conferences/presentations of QI project</li> <li>• Direct observation</li> <li>• 360-degree evaluation of verbal communications</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>• Bierman JA, Hufmeyer KK, Liss DT, Weaver AC, Heiman HL. Promoting responsible electronic documentation: validity evidence for a checklist to assess progress notes in the electronic health record. <i>Teach Learn Med.</i> 2017;29(4):420-432. <a href="https://www.tandfonline.com/doi/full/10.1080/10401334.2017.1303385">https://www.tandfonline.com/doi/full/10.1080/10401334.2017.1303385</a>. 2020.</li> <li>• Haig KM, Sutton S, Whittington J. SBAR: a shared mental model for improving communication between clinicians. <i>Jt Comm J Qual Patient Saf.</i> 2006;32(3):167-175. <a href="https://www.jointcommissionjournal.com/article/S1553-7250(06)32022-3/fulltext">https://www.jointcommissionjournal.com/article/S1553-7250(06)32022-3/fulltext</a>. 2020.</li> <li>• Starmer AJ, et al. I-pass, a mnemonic to standardize verbal handoffs. <i>Pediatrics.</i> 2012;129(2):201-204. <a href="https://pediatrics.aappublications.org/content/129/2/201?sso=1&amp;sso_redirect_count=1&amp;nfstatus=401&amp;nftoken=00000000-0000-0000-0000-000000000000&amp;nfstatusdescription=ERROR%3a+No+local+token">https://pediatrics.aappublications.org/content/129/2/201?sso=1&amp;sso_redirect_count=1&amp;nfstatus=401&amp;nftoken=00000000-0000-0000-0000-000000000000&amp;nfstatusdescription=ERROR%3a+No+local+token</a>. 2020.</li> </ul>

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To help programs transition to the new version of the Milestones, the original Milestones 1.0 have been mapped to the new Milestones 2.0. Below it is indicated where the subcompetencies are similar between versions. These are not exact matches but include some of the same 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
PC1A: Patient Care and Procedural Skills	PC1: Reporting PC2: Examination PC4: Microscopic Examination and Ancillary Testing for Diagnosis
PC1B: Patient Care and Procedural Skills	PC1: Reporting PC2: Examination PC4: Microscopic Examination and Ancillary Testing for Diagnosis
PC1C: Patient Care and Procedural Skills	PC1: Reporting PC5: Interpretation
MK1A: Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, and applies it to patient care	MK1: Clinical Reasoning MK2: Knowledge of Established and Evolving Biomedical, Clinical, Epidemiological, and Social-Behavioral Sciences
MK1B: Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, and applies it to patient care	MK1: Clinical Reasoning MK2: Knowledge of Established and Evolving Biomedical, Clinical, Epidemiological, and Social-Behavioral Sciences
MK1C: Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, and applies it to patient care	MK1: Clinical Reasoning MK2: Knowledge of Established and Evolving Biomedical, Clinical, Epidemiological, and Social-Behavioral Sciences
MK2AB: Procedure: Intra-operative consultation/frozen sections	PC3: Intra-Operative Consultation, including Frozen Section
SBP1: Regulatory	SBP4: Accreditation, Compliance, and Quality
SBP2: Health Care Teams	SBP2: Systems Navigation for Patient-Centered Care ICS2: Interprofessional and Team Communication
SBP3: Lab Management: Resource Utilization (personnel and finance)	SBP 3: Physician Role in Health Care System SBP5: Utilization
PBLI1: Evidence-based Utilization	PBLI1: Evidence-Based Practice and Scholarship SBP5: Utilization
PBLI2: Process Improvement and Patient Safety	SBP1: Patient Safety and Quality Improvement (QI)
PBLI3: Fellows' Scholarly Activity	PBLI1: Evidence-Based Practice and Scholarship
PBLI4A: Laboratory Management	No match
PBLI4B: Laboratory Management	No match

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PBLI4C: Laboratory Management	No match
PROF1: Receives and provides feedback	PBLI2: Reflective Practice and Commitment to Personal Growth
PROF2: Demonstrates accountability, honesty, and integrity	PROF1: Professional Behavior and Ethical Principles PROF2: Accountability and Conscientiousness PROF3: Self-Awareness and Help Seeking
PROF3: Demonstrates cultural competency	SBP2: Systems Navigation for Patient-Centered Care ICS1: Patient and Family-Centered Communication
ICS1: Communicates with health care providers, families, and patients	ICS1: Patient and Family-Centered Communication ICS2: Interprofessional and Team Communication
ICS2: Personnel Management and Conflict Resolution	ICS2: Interprofessional and Team Communication
No match	ICS3: Communication within Health Care Systems

### Available Milestones Resources

*Clinical Competency Committee Guidebook*, updated 2020 -

<https://www.acgme.org/Portals/0/ACGMEClinicalCompetencyCommitteeGuidebook.pdf?ver=2020-04-16-121941-380>

*Clinical Competency Committee Guidebook Executive Summaries*, New 2020 - <https://www.acgme.org/What-We-Do/Accreditation/Milestones/Resources> - Guidebooks - Clinical Competency Committee Guidebook Executive Summaries

*Milestones Guidebook*, updated 2020 - <https://www.acgme.org/Portals/0/MilestonesGuidebook.pdf?ver=2020-06-11-100958-330>

*Milestones Guidebook for Residents and Fellows*, updated 2020 -

<https://www.acgme.org/Portals/0/PDFs/Milestones/MilestonesGuidebookforResidentsFellows.pdf?ver=2020-05-08-150234-750>

Milestones for Residents and Fellows PowerPoint, new 2020 - <https://www.acgme.org/Residents-and-Fellows/The-ACGME-for-Residents-and-Fellows>

Milestones for Residents and Fellows Flyer, new 2020 <https://www.acgme.org/Portals/0/PDFs/Milestones/ResidentFlyer.pdf>

*Implementation Guidebook*, new 2020 - <https://www.acgme.org/Portals/0/Milestones%20Implementation%202020.pdf?ver=2020-05-20-152402-013>

*Assessment Guidebook*, new 2020 -

<https://www.acgme.org/Portals/0/PDFs/Milestones/Guidebooks/AssessmentGuidebook.pdf?ver=2020-11-18-155141-527>

*Milestones National Report*, updated each Fall -

<https://www.acgme.org/Portals/0/PDFs/Milestones/2019MilestonesNationalReportFinal.pdf?ver=2019-09-30-110837-587> (2019)

*Milestones Bibliography*, updated twice each year -

<https://www.acgme.org/Portals/0/PDFs/Milestones/MilestonesBibliography.pdf?ver=2020-08-19-153536-447>

*Developing Faculty Competencies in Assessment* courses - <https://www.acgme.org/Meetings-and-Educational-Activities/Other-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://dl.acgme.org/pages/assessment) - <https://dl.acgme.org/pages/assessment>

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