

Blood Banking/Transfusion Medicine Milestones

The Accreditation Council for Graduate Medical Education



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Blood Banking/Transfusion Medicine Milestones

The Milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the fellow in key dimensions of the elements of physician competence in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Blood Banking/Transfusion Medicine Milestones Work Group

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American Association of Blood Banks

American Board of Pathology

Review Committee for Pathology

Understanding Milestone Levels and Reporting

This document presents the Milestones, which programs use in a semi-annual review of fellow performance, and then report to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME Competencies organized in a developmental framework. The narrative descriptions are targets for resident/fellow performance throughout their educational program.

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

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

Selection of a level implies the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page vi).

Additional Notes

Level 4 is designed as a graduation *goal* but *does not* represent a graduation *requirement*. Making decisions about readiness for graduation and unsupervised practice is the purview of the program director. Furthermore, Milestones 2.0 include revisions and changes that preclude using Milestones as a sole assessment in high-stakes decisions (i.e., determination of eligibility for certification or credentialing). Level 5 is designed to represent an expert fellow whose achievements in a subcompetency are greater than the expectation. Milestones are primarily designed for formative, developmental purposes to support continuous quality improvement for individual learners, education programs, and the specialty. The ACGME and its partners will continue to evaluate and perform research on the Milestones to assess their impact and value.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to ACGME supervision guidelines as described in the Program Requirements, as well as to institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

A Supplemental Guide is also available to provide the intent of each subcompetency, examples for each level, assessment methods or tools, and other available resources. The Supplemental Guide, like examples contained within the Milestones, is designed only to assist the program director and Clinical Competency Committee, and is not meant to demonstrate any required element or outcome.

Supplemental Guides and other resources are available on the Milestones page of each specialty section of the ACGME website. On www.acgme.org, choose the applicable specialty under the "Specialties" menu, then select the "Milestones" link in the lower navigation bar.

The diagram below presents an example set of milestones for one subcompetency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each subcompetency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

Level 1	Level 2	Level 3		Level 4	Level 5
Establishes personal and professional goals, identifying gap(s) between goals and current performance	Demonstrates receptiveness to feedback, analyzing and reflecting on factors contributing to gap(s) between goals and current performance	•	ly, and institutes I change(s)	Seeks feedback consistently, and sustains behavioral change as necessary	Role models consistently seeking performance data with adaptability and humility, and coaches others on reflective practice
	Designs and implements a learning plan, with prompting	and imple	ently creates ments an zed learning	Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	Facilitates the design and implementing learning plans for others
Comments:				Not Yet C	completed Level 1
Selecting a	response box in the		Selecting a re	sponse box on the line in	n
middle of a level implies that milestones in that level and in lower				s indicates that mileston	
levels have been substantially				have been substantially as well as some	′
demonstrate	•			the higher level(s).	

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Patient Care 1: Consultation					
Level 1	Level 2	Level 3	Level 4	Level 5	
Describes the use of a consultation and lists useful resources	For simple consultations, delineates the clinical question, obtains additional clinical information, can access available resources, recommends next steps, and documents, with assistance	For complex consultations, delineates the clinical question, obtains additional clinical information, applies relevant resources, and recommends next steps with assistance; manages simple consultations independently	Manages complex consultations independently with comprehensive, timely documentation of findings and recommendations	Recognized as an expert in providing comprehensive consultations	
Comments:			Not Yet (Not Yet F	Completed Level 1	

Patient Care 2: Therapeutic and Donor Procedures				
Level 1	Level 2	Level 3	Level 4	Level 5
Manages uncomplicated apheresis procedures (e.g., therapeutic, hematopoietic progenitor cell collection, donor collections) with assistance	Independently manages uncomplicated apheresis procedures	Manages complicated apheresis procedures, with assistance	Independently manages complicated apheresis procedures	Serves as an expert resource in apheresis management
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Patient Care 3: Interpretation and Diagnosis					
Level 1	Level 2	Level 3	Level 4	Level 5	
Develops a differential diagnosis based on test results, with assistance	Independently develops a differential diagnosis based on test results	Integrates test results and the clinical scenario to make recommendations for clinical care, with assistance	Independently integrates test results and the clinical scenario to make recommendations for clinical care	Serves as a local expert to inform clinical care	
Comments:			Not Yet C Not Yet R	ompleted Level 1 otated	

Patient Care 4: Reporting				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the key elements of a complete report and demonstrates understanding of timely reporting	Generates timely reports for simple cases, including recommendations, with assistance	Generates timely reports that includes ancillary testing for complex cases, with assistance; independently generates reports for simple cases	Independently generates timely reports that include ancillary testing for complex cases	Independently generates nuanced reports that expresses the ambiguity and uncertainty of complex cases
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Medical Knowledge 1: Immunohematology Testing				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies components of basic donor and patient/ recipient immunohematology test results	Distinguishes normal and abnormal donor and patient/recipient immunohematology test results	Interprets basic and complex donor and patient/recipient immunohematology test results, with assistance	Independently interprets basic and complex donor and patient/recipient immunohematology test results	Serves as an expert resource in immunohematology
Describes basic principles and methodology of immunohematology tests	Differentiates donor versus patient/recipient immunohematology testing	Recognizes limitations of immunohematology testing methodology	Directs additional immunohematology testing as necessary to resolve complex problems	
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Medical Knowledge 2: Donor Management and Component Manufacture				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic principles and methodology of donor infectious disease screening and eligibility	Interprets donor infectious disease test results and determines donor eligibility, with assistance	Independently interprets donor infectious disease test results, determines donor eligibility, and product disposition	Directs additional infectious disease testing as necessary to resolve donor eligibility issues	Serves as an expert resource in interpretation of donor infectious disease testing and donor eligibility
Describes basic principles and methodology of component manufacturing	Identifies component acceptability criteria and potential issues in manufacturing	Resolves common manufacturing issues, with assistance	Independently resolves common and unusual manufacturing issues	Suggests or implements workflow process changes to prevent manufacturing issues
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Medical Knowledge 3: Apheresis				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic principles, methodology, and risks of apheresis	Uses basic clinical tests and physical exam findings/vital signs in the assessment and management of apheresis patients	Identifies potential complications of apheresis	Integrates advanced knowledge of common risk factors and complications in therapeutic apheresis	Serves as an expert resource in therapeutic apheresis
Identifies resources to guide apheresis practice	Demonstrates knowledge of diseases commonly treated with apheresis	Seeks and integrates evidence-based information to inform application of therapeutic apheresis to uncommon cases, with assistance	Independently seeks and integrates evidence-based information to inform application of therapeutic apheresis to uncommon cases	
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Medical Knowledge 4: Transfusion Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes blood components and their generally accepted indications	Identifies blood bank and supplemental testing (e.g., hematology, hemostasis) to guide transfusion practice, including blood product selection	Interprets common supplemental testing results and integrates with blood bank testing results to guide transfusion practice	Interprets complex supplemental testing results and integrates with blood bank testing results to guide transfusion practice	Serves as an expert resource in transfusion practice and sets institutional guidelines
Comments:			Not Yet (Not Yet I	Completed Level 1

Medical Knowledge 5: Cellular Therapy and Transplantation				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes different collection procedures and sources of hematopoietic progenitor cells and their clinical application	Distinguishes clinical scenarios that require different hematopoietic progenitor cell sources	Recognizes complications unique to hematopoietic progenitor cell source	Integrates knowledge of hematopoietic progenitor cell sources, collection, and monitoring of engraftment into patient care	Serves as an expert resource in cellular therapy
Describes basic principles and methodology of product processing and manufacturing	Identifies product acceptability criteria and special considerations for processing, manufacturing, and storage	Recommends when special modifications are needed	Applies special modifications for patient care and assesses efficacy of product	
Identifies the importance of specialized testing relevant to transplantation (e.g., human leukocyte antigen)	Describes specialized testing methods relevant to transplantation	Integrates specialized test results relevant to transplantation, with assistance	Independently integrates specialized test results relevant to transplantation	
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Medical Knowledge 6: Clinical Reasoning				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a basic framework for clinical reasoning	Demonstrates clinical reasoning to determine relevant information	Synthesizes information to inform clinical reasoning, with assistance	Independently synthesizes information to inform clinical reasoning in complex cases	Demonstrates intuitive approach to clinical reasoning for complex cases
Identifies appropriate resources to inform clinical reasoning	Selects relevant resources based on scenario to inform decisions	Seeks and integrates evidence-based information to inform diagnostic decision making in complex cases, with assistance	Independently seeks out, analyzes, and applies relevant original research to diagnostic decision making in complex clinical cases	
Comments: Not Yet Completed Level 1 Not Yet Rotated				

Systems-Based Practice 1: Patient Safety and Quality Improvement (QI)				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common patient safety events	Identifies system factors that lead to patient safety events	Participates in analysis of patient safety events (simulated or actual)	Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)	Actively engages teams and processes to modify systems to prevent patient safety events
Demonstrates knowledge of how to report patient safety events	Reports patient safety events through institutional reporting systems (simulated or actual)	Participates in disclosure of patient safety events to clinicians and/or patients and families, as appropriate (simulated or actual)	Discloses patient safety events to clinicians and/or patients and families, as appropriate (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic QI methodologies and metrics	Describes departmental and institutional QI initiatives	Participates in departmental and institutional QI initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a QI project	Creates, implements, and assesses QI initiatives at the institutional or community level
Comments: Not Yet Completed Level 1				

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of case coordination	Coordinates care of patients in routine cases effectively using interprofessional teams	Coordinates care of patients in complex cases effectively using interprofessional teams	Models effective coordination of patient-centered care among different disciplines and specialties	Analyzes the process of care coordination and leads in the design and implementation of improvements
Identifies key elements for safe and effective transitions of care and hand-offs	Performs safe and effective transitions of care/hand-offs in routine situations	Performs safe and effective transitions of care/hand-offs in complex situations	Models and advocates for safe and effective transitions of care/hand- offs within and across health care delivery systems	Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes
Demonstrates knowledge of population and community health needs and disparities	Identifies pathology's role in population and community health needs and inequities for the local population	Identifies opportunities for pathology to participate in community and population health	Recommends and/or participates in changing and adapting practice to provide for the needs of communities and populations	Leads innovations and advocates for populations and communities with health care inequities

Systems-Based Practice 3: Physician Role in Health Care System				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies key components of the complex health care system (e.g., inpatient /outpatient care, blood donor center, finance, personnel, technology)	Describes how components of a complex health care system are interrelated, and how this impacts patient care	Discusses how individual practice affects the broader system (e.g., blood product inventory, product/test use, turnaround time)	Manages various components of the complex health care system to provide efficient and effective patient care and transitions of care	Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transitions of care
Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models	Documents testing detail and explains the impact of documentation on billing and reimbursement	Engages with clinicians and/or patients in shared decision making, such as use of preauthorization for complex testing	Practices and advocates for cost effective patient care with consideration of the limitations of each patient's payment model	Participates in health policy advocacy activities
Comments: Not Yet Completed Level 1				

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge that laboratories must be accredited	Demonstrates knowledge of the components of laboratory accreditation and regulatory compliance (e.g., Food and Drug Administration, AABB, Foundation for the Accreditation of Cellular Therapy [FACT], College of American Pathology, Clinical Laboratory Improvement Amendments), either through training or experience	Identifies the differences between accreditation and regulatory compliance; discusses the process for achieving accreditation and maintaining regulatory compliance	Participates in an internal or external laboratory inspection	Serves as a resource for accreditation at the regional or national level
Discusses the need for quality control and proficiency testing	Interprets quality data and charts and trends, including proficiency testing results, with assistance	Demonstrates knowledge of the components of a laboratory quality management plan	Reviews the quality management plan to identify areas for improvement	Creates and follows a comprehensive quality management plan
		Discusses implications of proficiency testing failures	Analyzes proficiency testing failures and recommends a course of action, with oversight	Independently formulates a response for proficiency testing failures

Systems-Based Practice 5: Utilization					
Level 1	Level 2	Level 3	Level 4	Level 5	
Identifies general pathology work practices and workflow (e.g., blood product issuing, immunohematologic testing)	Explains rationale for optimizing utilization	Identifies opportunities to optimize utilization of pathology resources	Initiates efforts to optimize utilization	Completes a utilization review and implements change	
Comments:			Not Yet (Completed Level 1	

Practice-Based Learning and Improvement 1: Evidence-Based Practice and Scholarship					
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates how to access and select applicable evidence	Identifies and applies the best available evidence to guide diagnostic work-up of simple cases	Identifies and applies the best available evidence to guide diagnostic work-up of complex cases	Critically appraises and applies evidence to guide care, even in the face of conflicting data	Teaches others to critically appraise and apply evidence for complex cases; and/or participates in the development of guidelines	
Is aware of the need for patient privacy, autonomy, and consent as applied to clinical research	Develops knowledge of the basic principles of research (e.g., demographics, Institutional Review Board, human subjects), including how research is evaluated, explained to patients, and applied to patient care	Applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice, with supervision	Proactively and consistently applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice	Suggests improvements to research regulations and/or substantially contributes to the primary literature through basic, translational, or clinical research	
Comments: Not Yet Completed Level 1					

Level 1	Level 2	Level 3	Level 4	Level 5	
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to receiving performance data and feedback in order to inform goals	Seeks performance data and feedback with humility	Actively and consistently seeks performance data and feedback with humility	Models seeking performance data and accepting feedback with humility	
Identifies the gap(s) between expectations and actual performance	Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance	Institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Critically evaluates the effectiveness of behavioral changes in narrowing the gap(s) between expectations and actual performance	Coaches others reflective practice	
Actively seeks opportunities to improve	Designs and implements a learning plan, with assistance	Independently creates and implements a learning plan	Uses performance data to measure the effectiveness of the learning plan and improves it when necessary	Facilitates the design and implementing learning plans for others	

Professionalism 1: Professional Behavior and Ethical Principles				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	Analyzes straightforward situations using ethical principles	Recognizes the need and uses appropriate resources to seek help in managing and resolving complex ethical situations	Independently resolves and manages complex ethical situations	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution
Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers; identifies and describes potential triggers for professionalism lapses	Demonstrates insight into professional behavior in routine situations; takes responsibility for one's own professionalism lapses	Demonstrates professional behavior in complex or stressful situations	Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others	Coaches others when their behavior fails to meet professional expectations
Comments:			Not Yet C	Completed Level 1

Professionalism 2: Accountability and Conscientiousness					
Level 1	Level 2	Level 3	Level 4	Level 5	
Responds promptly to instructions, requests, or reminders to complete tasks and responsibilities	Takes appropriate ownership and performs tasks and responsibilities in a timely manner with attention to detail	Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner and describes the impact on team	Anticipates and intervenes in situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Takes ownership of system outcomes Designs new strategies to ensure that the needs of patients, teams, and systems are met	
Comments: Not Yet Completed Level 1					

	Awareness and Help-Seekii			
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes limitations in the knowledge/skills/ behaviors of self or team, with assistance	Independently recognizes limitations in the knowledge/skills/ behaviors of self or team and seeks help when needed	Proposes and implements a plan to remediate or improve the knowledge/ skills/behaviors of self or team, with assistance	Independently develops and implements a plan to remediate or improve the knowledge/skills/ behaviors of self or team	Serves as a resource or consultant for developing a plan to remediate or improve the knowledge/ skills/behaviors
Recognizes status of personal and professional well-being, with assistance	Independently recognizes status of personal and professional well-being and seeks help when needed	Proposes and implements a plan to optimize personal and professional well-being, with assistance	Independently develops and implements a plan to optimize personal and professional well- being	Coaches others when responses or limitations in knowledge/skills do not meet professional expectations
Comments: Not Yet Completed Level 1				

This subcompetency is not intended to evaluate a fellow's well-being. Rather, the intent is to ensure that each fellow has the fundamental knowledge of factors that affect well-being, the mechanisms by which those factors affect well-being, and available resources and tools to improve well-being.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication					
Level 1	Level 2	Level 3	Level 4	Level 5	
Uses language and nonverbal behavior to demonstrate respect and establish rapport	Establishes a relationship in straightforward encounters using active listening and clear language	Sensitively and compassionately delivers medical information, with assistance	Independently, sensitively, and compassionately delivers medical information and acknowledges uncertainty and conflict	Mentors others in the sensitive and compassionate delivery of medical information	
Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system	Identifies complex barriers to effective communication (e.g., health literacy, cultural)	When prompted, reflects on personal biases while attempting to minimize communication barriers	Independently recognizes personal biases while attempting to proactively minimize communication barriers	Models self-awareness while teaching a contextual approach to minimize communication barriers	
Comments:	Comments: Not Yet Completed Level 1				

Interpersonal and Communication Skills 2: Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Uses language that values all members of the health care team	Communicates information effectively with all health care team members	Uses active listening to adapt communication style to fit team needs	Coordinates recommendations from different members of the health care team to optimize patient care	Models flexible communication strategies that value input from all health care team members, resolving conflict when needed
Describes the utility of constructive feedback	Solicits feedback on performance as a member of the health care team	Integrates feedback from team members to improve communication	Communicates feedback and constructive criticism to superiors	Facilitates regular health care team-based feedback in complex situations
Comments: Not Yet Completed Level 1				

Interpersonal and Communication Skills 3: Communication within Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Safeguards patient personal health information by communicating through appropriate means as required by institutional policy (e.g., patient safety reports, cell phone/pager usage)	Appropriately selects forms of communication based on context and urgency of the situation	Communicates while ensuring security of personal health information, with guidance	Independently communicates while ensuring security of personal health information	Guides departmental or institutional communication around policies and procedures regarding the security of personal health information
Identifies institutional and departmental structure for communication of issues	Respectfully communicates concerns about the system	Uses institutional structure to effectively communicate clear and constructive suggestions to improve the system	Initiates conversations on difficult subjects with appropriate stakeholders to improve the system	Facilitates dialogue regarding systems issues among larger community stakeholders (e.g., institution, health care system, field)
Comments: Not Yet Completed Level 1				