

# The Blood Banking and Transfusion Medicine Milestone Project

*A Joint Initiative of*

The Accreditation Council for Graduate Medical Education

and

The American Board of Pathology



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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 competency 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 and Transfusion Medicine Milestones**

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## Milestone Reporting

This document presents Milestones designed for programs to use in semi-annual review of fellow performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine Milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe each fellow's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert in the subspecialty. These levels do not correspond with post-graduate year of education.

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

**Level 1:** The fellow demonstrates milestones expected of an incoming fellow.

**Level 2:** The fellow is advancing and demonstrates additional milestones, but is not yet performing at a mid-fellowship level.

**Level 3:** The fellow continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for fellowship.

**Level 4:** The fellow has advanced so that he or she now substantially demonstrates the milestones targeted for fellowship. This level is designed as the graduation target.

**Level 5:** The fellow has advanced beyond performance targets set for fellowship and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional fellows will reach this level.

## **Additional Notes**

Level 4 is designed as the graduation *target* and *does not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to the ACGME supervision guidelines, 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.

*Answers to Frequently Asked Questions about Milestones are available on the Milestones web page:*

<http://www.acgme.org/acqmeweb/Portals/0/MilestonesFAQ.pdf>.

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

PC1 — Consultation				
Level1	Level2	Level3	Level4	Level5
<p>Understands the role of the consultant in blood banking/transfusion medicine (BB/TM) (including therapeutic apheresis)</p> <p>Observes and assists in the consultation</p> <p>Able to use the electronic medical record (EMR) and other electronic resources to obtain clinical and disease information</p>	<p>Performs timely, clinically useful consultation for requests for blood products, apheresis, transfusion reactions, and other immunohematology work-ups and evaluations</p> <p>Independently prepares full and complete consultative reports</p>	<p>Effectively communicates consultative recommendations and action plans</p> <p>Develops a portfolio of consultations</p>	<p>Competently and independently performs consultation during night and weekend emergent situations as well as during normal hours</p> <p>Effectively teaches rotating residents and fellows in performing consultations</p>	<p>Demonstrates proficiency at BB/TM consultation</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level1 <input type="checkbox"/>

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

PC1 — Consultation				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Understands the role of the consultant in blood banking/transfusion medicine (BB/TM) (including therapeutic apheresis)</p> <p>Observes and assists in the consultation</p> <p>Able to use the electronic medical record (EMR) and other electronic resources to obtain clinical and disease information</p>	<p>Performs timely, clinically useful consultation for requests for blood products, apheresis, transfusion reactions, and other immunohematology work-ups and evaluations</p> <p>Independently prepares full and complete consultative reports</p>	<p>Effectively communicates consultative recommendations and action plans</p> <p>Develops a portfolio of consultations</p>	<p>Competently and independently performs consultation during night and weekend emergent situations, as well as during normal hours</p> <p>Effectively teaches rotating residents and fellows in performing consultations</p>	<p>Demonstrates proficiency at BB/TM consultation</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PC2 — Interpretation, Reporting, and Diagnosis				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Observes and assists in the interpretation of immunohematology tests</p> <p>Understands basic indications for tests</p>	<p>Accurately interprets and reports results</p> <p>Understands basic test platforms and methodology</p>	<p>Prepares a differential diagnosis for abnormal test results or findings</p> <p>Demonstrates knowledge of the current literature related to test results and testing algorithms</p> <p>Critically evaluates and applies the current literature</p>	<p>Interacts with other health care teams to discuss test results and make recommendations</p> <p>Understands justifications for additional testing</p> <p>Effectively teaches rotating residents and fellows in performing consultations</p>	<p>Demonstrates proficiency in interpretation, reporting, and diagnosis in BB/TM</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>Comments:</b></p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

PC3 — Procedures				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Understands basic concepts underlying common procedures performed in BB/TM and apheresis (therapeutic and donor)</p> <p>Obtains an appropriate history and performs an appropriate physical examination on the apheresis patient</p>	<p>Understands indications, contraindications, and potential complications for procedures</p> <p>Applies concepts and knowledge of therapeutic apheresis in clinical situations</p> <p>Performs a “time-out” and obtains informed consent</p>	<p>Able to discuss with attending staff member(s) the role of the BB/TM physician in procedures</p> <p>Actively participates in apheresis procedures including therapeutic, hematopoietic stem cell (HSC) collection, and donor collections</p> <p>Manages therapeutic apheresis procedures with minimal oversight</p> <p>Demonstrates ability to manage complications and to support ancillary staff</p>	<p>Documents, and discusses, with the clinical care team, indications, contraindications, and complications of the procedure</p> <p>Demonstrates competence in the independent oversight and management of the procedure in all settings (as appropriate)</p> <p>Can independently act in the role of an apheresis consultant</p>	<p>Demonstrates proficiency at BB/TM procedures</p> <p>Proficient in the oversight and management of apheresis in all settings</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

MK1 — Fundamental and Diagnostic Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the key resources for learning in BB/TM	Demonstrates basic textbook-level knowledge in BB/TM  Uses multiple learning sources to acquire knowledge  Performs self-directed learning	Applies evidence-based medicine principles to patient care  Teaches rotating residents and fellows	Demonstrates competence of knowledge in all aspects of BB/TM  Teaches across departments	Demonstrates proficiency of knowledge in all aspects of BB/TM  Serves as an educational resource for the community at-large
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

MK2 — Apheresis				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the general principles and risks of apheresis	Demonstrates knowledge and appropriate use of basic clinical tests for assessment and management of apheresis patients	Demonstrates expertise in the knowledge of diseases commonly treated with apheresis  Demonstrate the ability to manage the unique problems associated with apheresis of donors giving blood component, stem cells, or cellular therapy products	Demonstrates competence in knowledge of common risk factors in therapeutic apheresis related to medications, including ACE inhibitor use, anti-diabetic medications, antibiotics, and anticoagulants	Proficient in knowledge of apheresis across all settings
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

SBP1 — Regulatory				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Understands that laboratories are regulated by state, federal, and professional organizations</p> <p>Understands the use of proficiency testing</p> <p>Understands the basics of quality assurance</p> <p>Demonstrates compliance with national regulations for patient privacy and confidentiality (e.g., HIPAA, state laws, institutional policies)</p>	<p>With substantial guidance implements state, federal, and professional organization standards or elements of checklists in the laboratory</p> <p>Reviews proficiency testing results</p>	<p>With minimal guidance, implements state, federal, and professional organization standards or elements of checklists in the laboratory</p> <p>Able to implement corrective action based on proficiency testing results</p>	<p>Participates as a team member in a mock or actual inspection of a laboratory or blood center, or equivalent (e.g., tracers, self-inspection)</p>	<p>Actively participates in, or performs, inspections of a laboratory or blood center at an outside facility</p> <p>Able to lead an inspection of a laboratory</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

SBP2 — Health Care Teams				
Level 1	Level 2	Level 3	Level 4	Level 5
Understands the importance of the transfusion medicine physician’s role in the health care team	With substantial guidance, plays a role in the health care team (e.g., case presentation, consultation, test selection guidance)	With minimal guidance, plays a role in the health care team (e.g., case presentation, consultation, test selection guidance)	Independently plays a role in the health care team (e.g., case presentation, consultation, test selection guidance)	Effectively plays a lead role in the health care team (e.g., case presentation, consultation, test selection guidance)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

SBP3 — Lab Management: Resource Utilization (personnel and finance)				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Aware of the roles of a transfusion medicine physician in managing personnel; interprets an organizational chart</p> <p>Recognizes different budget types (e.g., capital vs. operating budget)</p>	<p>Knows the personnel and lines of reporting in the laboratory</p> <p>Describes the elements of a budget (e.g., personnel, capital equipment)</p>	<p>Describes the process of personnel management and employment laws (e.g., interview questions, Family and Medical Leave Act, termination policies)</p> <p>Understands the basics of transfusion medicine practice finance (e.g., Part A and Part B, Centers for Medicare &amp; Medicaid Services [CMS])</p>	<p>Participates in employee interviews/performance evaluation (real or simulated experiences)</p> <p>Participates in a budget cycle exercise (draft, defend, and propose logical cuts and/or additions)</p>	<p>Manages personnel effectively</p> <p>Develops a budget</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PBLI1 — Evidence-based Utilization				
Level 1	Level 2	Level 3	Level 4	Level 5
Understands the importance of evidence-based utilization of laboratory tests, results, blood utilization and management, and apheresis	With substantial guidance, critically reviews the literature addressing evidence-based utilization of laboratory tests, results, blood utilization and management, and apheresis	With minimal guidance, critically reviews the literature addressing evidence-based utilization of laboratory tests, results, blood utilization and management, and apheresis	Independently performs a critical review of the literature addressing evidence-based utilization of laboratory tests and results, blood utilization and management, or apheresis; and designs utilization guidelines	Implements institutional utilization guidelines for laboratory tests and results, blood utilization and management, and apheresis
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PBLI2 — Process Improvement and Patient Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates awareness of common sources of error in laboratory and donor processes and transitions in care</p> <p>Understands the importance of identity and integrity of the specimen and requisition form and verifies the identity</p>	<p>Consistently demonstrates work habits that minimize error; consistently and promptly communicates discrepancies to health care providers (as appropriate)</p> <p>Consistently checks identity and integrity of specimen; independently obtains clinical information when needed; incorporates other resources, such as EMR and radiology; handles deviations from policies (waivers) with supervision</p>	<p>Contributes to practice change based on an identified error or systematic problem (e.g., post-analytic, pre-analytic, laboratory, or interpretative)</p> <p>Trouble-shoots pre-analytic problems, including deviations from policies (waivers), with minimal supervision</p>	<p>Participates in and completes a laboratory quality improvement project</p> <p>Trouble-shoots patient safety issues (including pre-analytic, analytic, and post-analytic)</p>	<p>Routinely uses identified errors and discrepancies to improve practice and laboratory processes</p> <p>Models patient safety practices; able to write and implement policies on patient safety; completes maintenance of certification (MOC) patient safety module</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PBLI3 — Research and Scholarly Activity				
Level 1	Level 2	Level 3	Level 4	Level 5
Has knowledge of the basic principles of research (demographics, IRB, human subjects), including how research is conducted, evaluated, explained to patients, and applied to patient care	Applies evidence-based medicine in presentations, such as at journal club, and, as appropriate, identifies research project early in fellowship	Educates others through BB/TM journal clubs	Applies evidence-based medicine in presentations at local or regional meetings  Completes research project, if undertaken	Prepares for and presents at national or international meetings  Prepares and submits articles for peer-reviewed publication
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PROF1 — Receiving and Providing Feedback				
Level 1	Level 2	Level 3	Level 4	Level 5
Receives feedback constructively	Modifies practice in response to feedback	Consistently receives feedback and modifies practice	Modifies and maintains changes in practice based on feedback  Provides constructive feedback	Encourages and actively seeks and provides feedback to improve performance
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PROF2 — Accountability, Honesty, and Integrity				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Completes assigned tasks on time</p> <p>Is honest and understands the concepts of ethical behavior; seeks counsel when ethical questions arise</p>	<p>Reliably completes assigned tasks in a timely manner; assists team members when requested; respects assigned schedules</p> <p>Acknowledges personal limitations, near misses and errors, and putting the needs of patients first; engages in ethical behavior</p>	<p>Anticipates team needs and steps in to assist as needed</p> <p>Identifies personal limitations and takes responsibility for errors</p>	<p>Anticipates team needs and takes leadership role to independently implement solutions</p> <p>Institutes corrective measures for errors</p> <p>Is viewed by members of the health care team as accepting personal responsibility, and always putting the needs of the patient above his/her own interests</p> <p>Serves as a role model for ethical and professional behavior</p>	<p>Exemplifies effective management of multiple competing tasks, with reliable follow-up; is a source of support/guidance to other members of the health care team</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

PROF 3 — Cultural Competency				
Level 1	Level 2	Level 3	Level 4	Level 5
Respects diversity and autonomy; recognizes vulnerable populations	Embraces diversity and respects vulnerable populations; aware of potential for bias or cultural differences to affect care and the workplace  Understands and complies with institutional policies affecting cultural competency	Demonstrates cultural competency; recognizes cultural differences that may affect care and the workplace, and identifies and avoids biases	Exemplifies cultural competency; recognizes cultural differences, and identifies and avoids biases that may affect care and the workplace	Models cultural competency, and recognition of cultural differences that may affect care and the workplace; works with peers to avoid biases
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

ICS1 — Communication with Health Care Providers, Families, Patients, and Donors (as applicable)				
Level 1	Level 2	Level 3	Level 4	Level 5
Understands the importance of timely and effective communication with health care providers, families, patients, and donors (as applicable)	With substantial guidance, provides timely and effective communication with health care providers, families, patients, and donors (as applicable)	With minimal guidance, provides timely and effective communication with health care providers, families, patients, and donors (as applicable)	Effectively communicates complex, difficult, or challenging information (e.g., errors, complications, adverse events, and bad news)	Serves as a role model for effective and professional communication to health care providers, families, patients, and donors (as applicable)
Understands that the written report is a form of communication that must be clear and understandable	With substantial guidance, produces a clear and understandable written report	With minimal guidance, produces a clear and understandable written report	Independently and consistently produces a clear and understandable written report	
Effectively utilizes the electronic health record				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>

ICS2 — Personnel Management and Conflict Resolution				
Level 1	Level 2	Level 3	Level 4	Level 5
Understands the importance of conflict and complaint resolution	With substantial guidance manages conflicts and complaints	With minimal guidance manages conflicts and complaints	Independently manages conflicts and complaints	Anticipates, mitigates, and manages potential conflicts and complaints
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				Not yet achieved Level 1 <input type="checkbox"/>