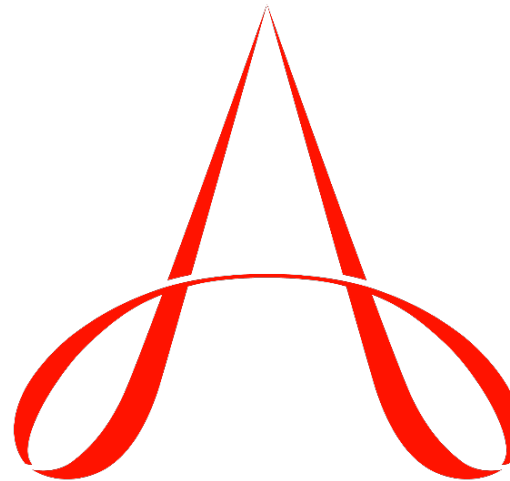




Preventive Medicine – Aerospace Medicine Milestones

The Accreditation Council for Graduate Medical Education



ACGME

Implementation Date: July 1, 2021
Second Revision: December 2020
First Revision: August 2013

Preventive Medicine – Aerospace Medicine Milestones

The Milestones are designed only for use in evaluation of residents or 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.

Preventive Medicine – Aerospace Medicine Milestones Work Group

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The ACGME would like to thank the following organizations for their continued support in the development of the Milestones:

American Board of Preventive Medicine

Review Committee for Preventive Medicine

Understanding Milestone Levels and Reporting

This document presents the Milestones, which programs use in a semi-annual review of resident or 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 resident/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 resident/fellow may achieve higher levels early in his/her educational program just as a senior resident/fellow may be at a lower level later in his/her educational program. There is no predetermined timing for a resident/fellow to attain any particular level. Residents/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 resident/fellow.

Selection of a level implies the resident/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 resident/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 sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a resident's/fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that resident's/fellow's performance in relation to those milestones.

Practice-based Learning and Improvement 1: Evidence Based and Informed Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access and use available evidence, and incorporate patient preferences and values in order to take care of a routine patient	Articulates clinical questions and elicits patient preferences and values in order to guide evidence-based care	Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients	Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of guidelines
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

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).

Patient Care 1: Health and Performance Optimization				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies techniques to improve human performance	Describes techniques to improve human performance	Uses techniques to improve human performance at the individual level	Directs the evaluation of techniques to improve human performance	Develops techniques to improve human performance
Identifies risks factors for development of disease and injury	Describes approach to decrease risk factors for development of disease and injury	Develops a plan using primary, secondary, and tertiary approaches for disease and injury prevention for an individual patient	Develops a plan using primary, secondary, and tertiary approaches for disease and injury prevention for the community	Develops and implements a policy to improve community health efforts
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Patient Care 2: Fitness for Duty and Medical Standards				
Level 1	Level 2	Level 3	Level 4	Level 5
Acquires a history and performs a basic physical exam to assess for workplace or environmental exposures	Assesses work-relatedness of common workplace problems	Formulates a differential diagnosis, assessment, treatment, and plan, including return-to-work accommodations for simple cases	Formulates a differential diagnosis, assessment, treatment, and plan, including return-to-work accommodations for complex cases	Independently manages complex occupational injury and illness, using system-wide resources
Identifies individuals meeting all physical qualifications	Uses medical standards to identify disqualifying conditions	Selects and interprets medical standards applicable to the operational situation	Applies medical standards to certify or grant exceptions or waivers	Develops medical standards for certification or to grant exceptions or waivers
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Patient Care 3: Hazard Recognition, Mitigation, and Management				
Level 1	Level 2	Level 3	Level 4	Level 5
Lists the exposure levels and adverse effects of workplace hazards	Recommends prevention and mitigation of workplace hazards	Assesses effectiveness of prevention and mitigation of workplace hazards, and provides treatment to exposed individuals	Assesses effectiveness of prevention and mitigation of workplace hazards for at-risk populations	Modifies or develops exposure standards
Demonstrates basic skills in emergency medical care	Identifies key aspects of emergency preparedness programs and triage concepts	Participates in emergency preparedness programs (simulated or actual)	Develops and evaluates the medical portion of an emergency plan	Develops, implements, and evaluates emergency preparedness programs
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Patient Care 4: Clinical Care Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a history and physical examination, identifying significant historical events and findings on physical examination; formulates a broad differential diagnosis and initial assessment and plan	Performs an accurate history and physical examination, identifying significant historical events and findings on physical examination; formulates an accurate differential diagnosis, assessment, and plan	Identifies illness or injury and level of acuity; initiates diagnosis-specific treatment and intervention	Manages critical illness or injury within the standard of care for the clinical scenario and available medical resources	Triages and prioritizes use of available medical resources for multiple patients with complex conditions
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Patient Care 5: Air and Space Environment				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the hazards of aviation and space flight, including acceleration, radiation, microgravity, hypobaria, hypoxia, and isolation	Describes the adverse health risks and mitigation and counter measures of aviation and space flight	Participates in passenger, crew, and physician health education about the adverse health risks and mitigation and counter measures of aviation and space flight	Performs passenger, crew, and physician health education about the adverse health risks and mitigation and counter measures of aviation and space flight	Designs and advances health education activities to promote flight safety
Identifies life support systems for air and space flight	Describes life support systems for air and space flight	Operates life support systems for air and space flight	Troubleshoots life support systems for air and space flight	Analyzes and recommends life support systems for air and space flight
Lists elements of operational medical support for launch, flight, orbital operations, and landing, including air frames, space habitats, and support systems	Describes key elements of operational medical support for launch, flight, orbital operations, and landing, including air frames, space habitats, and support systems	Participates in planning of operational medical support for launch, flight, orbital operations, and landing, considering air frames, space habitats, and support systems	Provides operational medical support in the field for launch, flight, orbital operations, and landing, considering air frames, space habitats, and support systems	Leads, plans, and/or designs operational medical support for launch, flight, orbital operations, and landing, considering air frames, space habitats, and support systems
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Patient Care 6: Aeromedical Transport				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies physiologic and clinical criteria for and contraindications to safe aeromedical transport of patients	Describes physiologic and clinical criteria for and contraindications to safe aeromedical transport of patients	Applies physiologic and clinical criteria for safe aeromedical transport of patients	Demonstrates clinical decision-making skills to validate patients for aeromedical transport	Oversees treatment plans and restrictions, and supervises clearance of patients for aeromedical transport
Describes patient movement categories/priorities	Assigns patients to movement categories/priorities	Participates in planning of aeromedical transport mission	Leads planning of aeromedical transport mission	Creates policies or guides for aeromedical transport
Identifies biomedical equipment to support air and space flight	Describes biomedical equipment to support air and space flight	Participates in the evaluation of biomedical equipment to support air and space flight	Evaluates and troubleshoots biomedical equipment to support air and space flight	Develops biomedical equipment to support air and space flight
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Medical Knowledge 1: Biostatistics and Epidemiology				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes and defines common statistical concepts and tests	Describes that statistics is a method for making population inferences from sample data	Critically appraises statistical methods in published research	Selects and applies statistical tests appropriate to the data being analyzed	Synthesizes results of statistical analysis to make correct population inferences
Recognizes and defines basic measures of disease frequency	Recognizes and defines basic measures for comparing risk	Describes methods for calculating basic measures of disease frequency and risk	Calculates measures of disease frequency and one or more risk factors for a specified disease or condition	Uses data to characterize and compare the health of populations, and assesses the importance of different risk factors
Describes commonly used epidemiologic concepts	Critically appraises, epidemiologic literature for study designs, identifying purpose, population, design, and biases	Selects and applies epidemiologic methods appropriate to the population and risk factors being studied	Designs and conducts an epidemiologic study	
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Medical Knowledge 2: Regulatory				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies relevant regulatory agencies and their jurisdictions for aeromedical certification, flight safety, mishap and hazard response, and aviation and space operations	Identifies relevant regulations for aeromedical certification, flight safety, mishap and hazard response, and aviation and space operations	Applies and interprets relevant regulations for aeromedical certification, flight safety, mishap and hazard response, and aviation and space operations based on operational scenarios (simulated or actual)	Assesses compliance with relevant regulations for aeromedical certification, flight safety, mishap and hazard response, and aviation and space operations (simulated or actual)	Prepares an evidence-based proposal for modifying an existing regulatory standard
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐ Not Yet Assessable ☐				

Systems-Based Practice 1: Patient Safety and Quality Improvement				
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 patients and families (simulated or actual)	Discloses patient safety events to patients and families (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Systems-Based Practice 2: System Navigation for Patient-Centered Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of care coordination	Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams	Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams	Role 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 clinical situations	Performs safe and effective transitions of care/hand-offs in complex clinical situations	Role models and advocates for safe and effective transitions of care/hand-offs	Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Systems-Based Practice 3: Population Health				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of population and community health needs and disparities	Identifies specific population and community health needs and inequities for their local population	Uses local resources effectively to meet the needs of a patient population and community	Participates in changing and adapting practice to provide for the needs of specific populations	Leads innovations and advocates for populations and communities with health care inequities
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Systems-Based Practice 4: Physician Role in Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, 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	Manages various components of the complex health care system to provide efficient and effective patient care and transition of care	Advocates for or leads systems change that enhances high-value, efficient and effective patient care and transition of care
Describes basic health payment systems, (e.g., employer, government, private, public, uninsured care) and practice models	Delivers care with consideration of each patient's payment model (e.g., insurance type)	Engages with patients in shared decision making, informed by each patient's payment models	Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model	Participates in health policy advocacy activities
Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	Describes core administrative knowledge needed for transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	Analyzes practice patterns and professional requirements in preparation for practice	Educates others to prepare them for transition to practice
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access and use available evidence, and incorporate patient preferences and values in order to take care of a routine patient	Articulates clinical questions and elicits patient preferences and values in order to guide evidence-based care	Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients	Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of guidelines
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to performance data (feedback and other input) in order to inform goals	Seeks performance data episodically, with adaptability, and humility	Intentionally seeks performance data consistently with adaptability, and humility	Role models consistently seeking performance data with adaptability and humility
Identifies the factors which contribute to gap(s) between expectations and actual performance	Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance	Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance	Coaches others on reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	Facilitates the design and implementation of learning plans for others
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Professionalism 1: Professional Behavior and Ethical Principles				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies basic ethical principles of medicine	Demonstrates knowledge of the ethical principles underlying professional practice	Analyzes straightforward situations using ethical principles	Analyzes complex situations using ethical principles	Articulates, models, and teaches ethical behavior from first principles as applied to the working environment
Identifies common lapses in professionalism	Describes when and how to appropriately report lapses in professionalism, including strategies for addressing common barriers	Recognizes situations that may trigger lapses in professionalism and intervenes to prevent lapses in self and others	Demonstrates professional behavior in complex or stressful situations	Coaches others when their behavior fails to meet professional expectations
Identifies and describes potential triggers of lapses in professionalism	Demonstrates professional behavior in routine situations and takes responsibility for own lapses in professionalism	Recognizes need to seek help in managing and resolving complex ethical situations	Recognizes and uses appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede resolution
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Professionalism 2: Accountability/Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Takes responsibility for task completion and identifies factors, behaviors, and strategies that ensure timely task completion	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Performs tasks and responsibilities in a timely manner with appropriate attention to priority and detail in complex or stressful situations	Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner and proposes alternate paths to task completion	Proactively works with others to develop and implement strategies to ensure that the needs of patients, teams, and systems are met
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

Professionalism 3: Self-Awareness and Help-Seeking				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the importance of addressing personal and professional well-being of self and others	Recognizes institutional resources that are meant to promote well-being of self and others	Describes institutional factors that affect the well-being of self and others	Describes institutional factors and programs that positively or negatively affect well-being of self and others	Creates institutional level interventions that promote well-being of self and others
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				

This subcompetency is not intended to evaluate a resident's or fellow's well-being. Rather, the intent is to ensure that each resident or 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 Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system	Establishes a therapeutic relationship in straightforward encounters using active listening and clear language Identifies complex barriers to effective communication (e.g., health literacy, cultural)	Establishes a therapeutic relationship in challenging patient encounters When prompted, reflects on personal biases while attempting to minimize communication barriers	Independently, uses shared decision making to align patient/family values, and health/occupational goals with aeromedically acceptable treatment options to make a personalized care plan Independently recognizes personal biases while attempting to proactively minimize communication barriers	Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships Role models self-awareness while identifying a contextual approach to minimize communication barriers
☐	☐	☐	☐	☐
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
Respectfully requests a consultation	Clearly and concisely requests a consultation	Checks own understanding of consultant recommendations	Coordinates recommendations from different members of the team and stakeholders to optimize patient care and return to flying duties	Educates consultants on aeromedical significance of certain medical conditions
Respectfully receives a consultation request	Clearly and concisely responds to a consultation request	Checks recipient's understanding of recommendations when providing consultation	Discusses consultation with multidisciplinary team, including external stakeholders; determines aeromedical disposition	Role models flexible communication strategies that value input from all team members, resolving conflict when needed
Uses language that values all members of the team	Communicates information effectively with all team members	Uses active listening to adapt communication style to fit team needs		
	Solicits feedback on performance as a member of the team	Communicates concerns and provides feedback to peers and learners	Facilitates regular team-based feedback in complex situations	Communicates feedback and constructive criticism to superiors
☐	☐	☐	☐	☐
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
Accurately records information in the patient record	Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record	Concisely reports diagnostic and therapeutic reasoning in the patient record and aeromedical waiver or Special Issuance narrative	Communicates clearly, concisely, timely, and in an organized written form, including anticipatory guidance	Creates local, regional or national medical documentation standards
Safeguards patient personal health information	Documents required data in formats specified by institutional policy	Appropriately selects direct (e.g., telephone, in-person, telemedicine) and indirect (e.g., progress notes, text messages) forms of communication based on context	Achieves written or verbal communication (e.g., patient notes, email) that serves as an example for others to follow	Guides departmental or institutional policies and procedures around communication
Communicates through appropriate channels as required by institutional policy (e.g., patient safety reports, cell phone/pager usage)	Respectfully communicates concerns about the system	Uses appropriate channels to offer clear and constructive suggestions to improve the system	Initiates difficult conversations with appropriate stakeholders to improve the system	Facilitates dialogue regarding systems issues among larger community stakeholders (institution, health care system, field)
☐	☐	☐	☐	☐
Comments: Not Yet Completed Level 1 ☐				