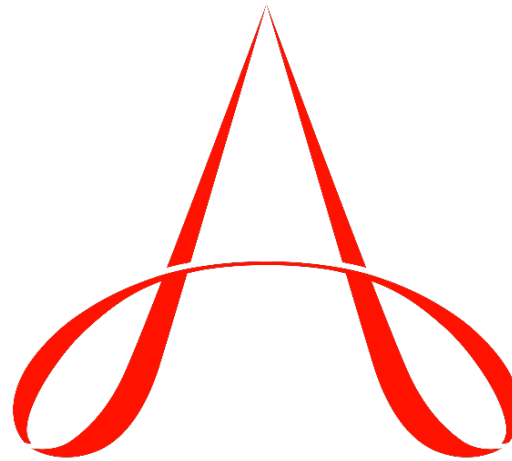# Critical Care

Anesthesiology Milestones

The Accreditation Council for Graduate Medical Education

ACGME

Implementation Date: July 2022
Second Revision: May 2022
First Revision: January 2016

Critical Care Anesthesiology 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.

Critical Care Anesthesiology Milestones Work Group

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American Board of Anesthesiology

Review Committee for Anesthesiology

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 the educational program just as a senior fellow may be at a lower level later in the 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 resident's performance on the milestones for each subcompetency will be indicated by selecting the level of milestones that best describes that resident's performance in relation to those milestones.

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 form 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 performance deficits	Analyzes and acknowledges the factors which contribute to performance deficits	Institutes behavioral change(s) to improve performance	Considers alternatives to improve performance	Models reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Integrates performance data to adapt the learning plan	Facilitates the design and implementation of learning plans for others

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: Patient Assessment and Development of a Care Plan

Level 1	Level 2	Level 3	Level 4	Level 5
Efficiently gathers a focused history and physical examination to identify disease processes	Orders and interprets imaging and laboratory evaluation	Integrates data into a comprehensive patient assessment	Continuously assesses the patient and recognizes unusual presentations	Serves as a peer reference for unusual presentations
Formulates a differential diagnosis	Formulates a care plan and communicates it to the team	Develops and prioritizes a care plan	Adapts care plan for complex clinical situations	Participates in the development of clinical pathways
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 2: Crisis Management				
Level 1	Level 2	Level 3	Level 4	Level 5
Responds to crisis situations as a team coordinator	Develops a differential diagnosis that includes the most likely etiologies for acute clinical deterioration	Determines the level of patient acuity to prioritize and implement an actionable care plan	Independently anticipates clinical deterioration and leads the multidisciplinary team	Triages available institutional resources to effectively resolve patient deterioration
☐	☐　　☐	☐　　☐	☐　　☐	☐　　☐

Comments:

Not Yet Completed Level 1　☐
Not Yet Assessable　☐

Patient Care 3: Procedural Skills/Technical Abilities/Interpretation				
Level 1	Level 2	Level 3	Level 4	Level 5
Selects equipment, performs common intensive care unit (ICU) procedures (e.g., peripheral arterial or central venous catheterization), and recognizes complications, with guidance	Performs advanced ICU procedures (e.g., bronchoscopy, chest tube), with guidance	Performs common and advanced ICU procedures and troubleshoots common complications	Proficiently performs common and advanced ICU procedures and troubleshoots complex complications	Serves as a consultant for performing difficult procedures
Interprets data obtained from common ICU procedures, with guidance	Interprets data obtained from advanced ICU procedures, with guidance	Synthesizes data obtained from common and advanced ICU procedures to modify the care plan	Proficiently synthesizes data obtained and identifies unusual findings from common and advanced ICU procedures	Introduces new evidence-based ICU procedures

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Comments:

Not Yet Completed Level 1   ☐

Not Yet Assessable   ☐

Patient Care 4: Respiratory Failure and Ventilation Management

Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes respiratory failure and develops a differential diagnosis and care plan, with guidance	Integrates relevant data to develop a patient care plan	Identifies more complex etiologies for respiratory failure	Continuously assesses a patient and recognizes unusual presentations	Serves as a consultant to respiratory care service in development of policies and procedures to optimize patient care
Selects and implements basic ventilation strategies (e.g., assist control, pressure support, non-invasive strategies)	Selects from a variety of modes of ventilation or respiratory care techniques and initiates the appropriate interventions to optimize gas exchange and minimize complications	Identifies the need for advanced intervention (e.g., extracorporeal membrane oxygenation (ECMO), inhaled vasodilators) and adjunctive therapies (e.g., proning, nitric)	Independently implements and adapts evidence-based ventilation strategies and advanced interventions	Directs evidenced-based protocol development and refinement of ventilator strategies
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not Yet Completed Level 1　☐

Not Yet Assessable　☐

Patient Care 5: Management of Organ Dysfunction and Shock

Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes a patient in circulatory shock and initiates indicated therapies	Identifies the underlying etiology for a shock state, actively manages the resuscitation, and continually assesses the response to therapy	Actively manages an unstable patient in a shock state, anticipates and acts to minimize multisystem organ dysfunction, and recognizes atypical or subtle presentations of shock	Anticipates and acts independently to minimize the long-term consequences of circulatory shock and associated organ dysfunction	Is recognized by others as a resource in the management of shock and multisystem organ failure
Initiates a basic diagnostic work-up to delineate the etiology of circulatory shock	Utilizes advance diagnostic modalities, with knowledge of advantages and limitations of each, to determine the etiology of shock	Incorporates data from advanced diagnostic modalities to develop treatment plans	Synthesizes data from advanced diagnostic modalities to develop a comprehensive treatment plan	Develops diagnostic algorithms for the diagnosis and management of circulatory shock

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Medical Knowledge 1: Pharmacology				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the pharmacology, clinical indications, and application of medications used in the care of critically ill patients, including vasoactive drugs, sedatives, analgesics, immunotherapy, and antibiotics	Applies knowledge of the pharmacology, clinical indications, and selection of medications used in the care of critically ill patients	Applies knowledge of the pharmacology, clinical indications, and selection of medications used in the care of complex critically ill patients	Integrates knowledge of pharmacology, clinical indications, and selection of medications (including medication interactions) to care for critically ill patients	Serves as a consultant in pharmacotherapy for critically ill patients
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Comments:

Not Yet Completed Level 1   ☐
Not Yet Assessable   ☐

Medical Knowledge 2: Pathophysiology of Critical Illness				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common pathophysiology and complications related to critical illness	Applies knowledge of common pathophysiology and complications to treat critical illness	Applies knowledge of complex pathophysiology and complications to treat critical illness	Serves as a resource for knowledge of pathophysiology and complications related to critical illness	Is recognized as an expert in synthesizing and prioritizing differential diagnosis complex critical care conditions and anticipating potential complications
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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 events that impact patient safety	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 patients' families (simulated or actual)	Discloses patient safety events to patients and patients' 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 departmental quality improvement initiatives	Participates in department 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 level or above

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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 interprofessional team members	Coordinates care of patients in complex clinical situations effectively using the roles of interprofessional team members	Role models effective coordination of patient-centered care among different disciplines and specialties	Analyzes the process of care coordination and participates 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 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	Identifies specific population and community health needs for the local population	Uses institutional 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	Advocates for populations and communities with health care needs in the peri-operative setting

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Comments:

Not Yet Completed Level 1   ☐

Systems-Based Practice 3: 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 (e.g., length of stay, readmission rates, clinical efficiency)	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
States factors impacting the costs of critical care	Documents patient details to facilitate accurate billing and reimbursement	Explains the impact of documentation on billing and reimbursement	Practices and advocates for cost-effective patient care	Engages in external activities related to advocacy for cost-effective care

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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
Accesses and uses evidence in routine patient care	Articulates clinical questions and elicits patient preferences and values to guide evidence-based care	Compares and applies the best available evidence, integrated with patient preference, to the care of complex patients	Appraises and applies evidence, even in the face of uncertainty and conflicting evidence, to guide individualized care	Coaches others to 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) to form 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 that contribute to performance deficits	Analyzes and acknowledges the factors that contribute to performance deficits	Institutes behavioral change(s) to improve performance	Considers alternatives to improve performance	Models reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Integrates performance data to adapt the learning plan	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 potential triggers for professionalism lapses	Demonstrates insight into professional behavior in routine situations	Demonstrates professional behavior in complex or stressful situations	Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in oneself	Coaches others when their behavior fails to meet professional expectations
Describes when and how to report lapses in professionalism	Takes responsibility for one's own professionalism lapses	Recognizes need to seek help in managing and resolving complex interpersonal situations	Actively solicits help and acts on recommendations to resolve complex interpersonal situations	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution
Demonstrates knowledge of the ethical principles underlying patient care	Analyzes straightforward situations using ethical principles	Analyzes complex situations using ethical principles	Recognizes and uses resources for managing and resolving ethical dilemmas	
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Comments:
Not Yet Completed Level 1   ☐

Professionalism 2: Accountability/Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Responds promptly to requests or reminders to complete tasks	Performs tasks and responsibilities in a timely manner	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Prioritizes tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations	
Takes responsibility for failure to complete tasks	Recognizes situations that may impact one's own ability to complete tasks and responsibilities in a timely manner	Takes responsibility for tasks not completed in a timely manner and identifies strategies to prevent recurrence	Proactively implements strategies to ensure that the needs of patients, teams, and systems are met	Designs and implements an institutional systems approach to ensure timely task completion and shared responsibility

Comments:

Not Yet Completed Level 1 ☐

Professionalism 3: Well-Being				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the importance of addressing personal and professional well-being	Lists available resources for personal and professional well-being	With assistance, proposes a plan to promote personal and professional well-being	Independently develops a plan to promote personal and professional well-being	Creates institutional-level interventions that promote colleagues' well-being
	Describes institutional resources that are meant to promote/support well-being	Recognizes which institutional factors affect well-being	Describes institutional factors that positively and/or negatively affect well-being	Describes institutional programs designed to examine systemic contributors to burnout
☐	☐	☐	☐	☐	☐	☐	☐	☐

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
Communicates with patients and their families in an understandable and respectful manner	Customizes communication in the setting of biases and barriers with patients and patients' families	Explains complex and difficult information to patients and patients' families	Facilitates difficult discussions with patients and patients' families	Mentors others in the facilitation of crucial conversations
Provides timely updates to patients and patients' families	Actively listens to patients and patients' families to elicit patient preferences and expectations	Uses shared decision-making to make a personalized care plan	Effectively negotiates and manages conflict among patients, patients' families, and the health care team	Mentors others in conflict resolution

Comments:

Not Yet Completed Level 1 ⬚

Interpersonal and Communication Skills 2: Complex Communication around Serious Illness

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the need to assess a patient's/patient's family's expectations and understanding of health status and treatment options	Assesses a patient's family's/caregiver's understanding of the patient's condition and identifies preferences for receiving information	Delivers difficult information and attends to emotional responses of a patient and patient's family/caregivers	Tailors communication according to disease characteristics and trajectory, patient consent, patient's family's needs, and medical uncertainty, and is able to address intense emotional response	Coaches others in the communication of prognostic information
Identifies key communication elements for shared decision making	Facilitates communication with a patient/patient's family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying an understanding of the clinical situation	Sensitively and compassionately delivers medical information; elicits a patient's/patient's family's values, goals, and preferences; and acknowledges uncertainty and conflict, with guidance	Independently uses shared decision making to align the patient's/patient's family's values, goals, and preferences with treatment options to make a personalized care plan in situations with a high degree of uncertainty and conflict	Coaches others in shared decision making in communication with a patient/patient's family

Comments:

Not Yet Completed Level 1 ☐
Not Yet Assessable ☐

Interpersonal and Communication Skills 3: Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully requests or receives consultations	Clearly, concisely, and promptly requests or responds to a consultation	Uses closed-loop communication to verify understanding	Coordinates recommendations from different members of the health care team to optimize patient care	Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed
Uses language that values all members of the health care team	Communicates information effectively with all health care team members	Adapts communication style to fit team needs	Maintains effective communication in crisis situations	Facilitates regular health care team-based feedback in complex situations
Respectfully receives feedback from health care team members	Solicits feedback on performance as a member of the health care team	Communicates concerns and provides feedback to peers and learners	Communicates constructive feedback to superiors	
☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not Yet Completed Level 1   ☐

Interpersonal and Communication Skills 4: Communication within Health Care Systems				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Accurately records information in the patient record; demonstrates judicious use of documentation shortcuts	Accurately gathers all essential medical records from other institutions	Accurately records information in the electronic health record (EHR) and communicates complex care decisions for complex cases	Uses EHR functionality to highlight challenges in anesthetic care to facilitate future peri-operative management	Explores innovative uses of the EHR to facilitate effective critical care management
Safeguards patient personal health information	Documents required data in formats specified by institutional policy	Appropriately selects direct and indirect forms of communication based on context	Models exemplary written or verbal communication	Guides departmental or institutional policies and procedures around communication
Communicates through appropriate channels as required by institutional policy	Respectfully communicates concerns about the system	Respectfully communicates concerns about the system and contributes to solutions	Uses appropriate channels to offer clear and constructive suggestions to improve the system	Initiates difficult conversations with appropriate stakeholders to improve the system

Comments:

Not Yet Completed Level 1 ☐