The Critical Care Anesthesiology Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

The American Board of Anesthesiology





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The Milestones are designed only for use in evaluation of the fellow in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for 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.

Critical Care Anesthesiology 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 a 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.

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 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 the Next Accreditation System and Milestones are posted on the Next Accreditation System section of the ACGME website.

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.

Patient Care: Crisis Mana	gement			
Level1	Level2	Level3	Level4	Level5
Recognizes acutely ill or medically deteriorating patients; initiates basic medical care for common acute events; calls for help appropriately	Constructs prioritized differential diagnoses that include the most likely etiologies for acute clinical deterioration; initiates treatment with indirect supervision and seeks direct supervision appropriately	Identifies and manages clinical crises with indirect supervision; may required direct supervision in complex situations Identifies and consults with appropriate specials services to optimize management with indirect supervision	Identifies and manages ct clinical crises appropriately with conditional independence Identifies and consults with appropriate specialty services to optimize management with	Leads crisis team response Sets clinically appropriate priorities for resource utilization Serves as a consultant to other members of the health care team for crisis management
			ROC	
Comments:				
level implies tha	onse box in the middle of a t milestones in that level a ave been substantially	nd i	Selecting a response box on to ndicates that milestones in loos substantially demonstrated a n the higher level(s).	ower levels have been

Level 1	Level 2	Level 3	Level 4	Level 5
With direct supervision,	With indirect supervision,	With conditional	With conditional	Independently identifies,
identifies disease processes	identifies disease processes	independence, identifies	independence, identifies,	prioritizes, and develops a
and medical or surgical	and medical or surgical	disease processes and	prioritizes, and develops a	comprehensive plan that
ssues relevant to critical	issues relevant to critical	medical or surgical issues	comprehensive plan for	includes unusual clinical
care; may need guidance in	care	relevant to critical care	patients with unusual	presentations
prioritizing clinical issues			clinical presentations	
and their implications for	May need guidance in	With conditional		Is sought out as a
critical care	identifying unusual clinical	independence, identifies,	Supervises other trainees in	consultant in the
	presentations and their	prioritizes, and develops a	the development and	management of critically-i
Requires direct supervision	implications for critical care	plan to manage unusual	implementation of a plan of	patients
to formulate a plan of care		clinical presentations	care for the critically-ill	
that takes into account the	With indirect supervision,		patient	Utilizes consulting services
most critical issues	prioritizes and formulates a	Recognizes the need to		cost-effectively to advance
	plan of care that addresses	solicit expertise from	With conditional	clinical care and personal
Recognizes the need to	critical issues	consulting services to	independence, serves as a	expertise
solicit input into care plan		optimize patient care	consultant in the	
from patients, family	Solicits input about patient		management of a critically-	
members, and surrogates	preferences and goals of	Incorporates patient and	ill patient	
	care from patients and	surrogate preferences into	AACH INC. I	
	family members	care plan when appropriate	With conditional	
	\A/ith direct cup on icion	M/ith indinact consmision	independence, develops	
	With direct supervision,	With indirect supervision,	care plan in partnership	
	identifies appropriate level	identifies appropriate level	with patients and family	
	of care (e.g., intensive care unit [ICU], transitional care	of care (e.g., ICU, transitional care unit)	members when appropriate	
	unit)	transitional care unity	Appropriately utilizes	
			consulting services to	
			optimize patient care	

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Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes acutely ill or	Constructs prioritized	With indirect supervision,	With conditional	Sets clinically-appropriate
medically deteriorating	differential diagnoses that	identifies and manages	independence, identifies	priorities for resource
patients; initiates basic	include the most likely	clinical crises; may require	and manages clinical crises	utilization during crisis
medical care for common	etiologies for acute clinical	direct supervision in	appropriately	management
acute events; calls for help	deterioration; initiates	complex situations		
appropriately	treatment with indirect		With conditional	Serves as a consultant to
	supervision, and seeks	With indirect supervision,	independence, identifies	other members of the
	direct supervision	identifies and consults	and consults with	health care team for crisis
	appropriately	with appropriate specialty	appropriate specialty	management
		services to optimize	services to optimize	
		management	management	Serves as a resource
				related to crisis
		Identifies the need to	Provides appropriate	management within the
		address family and other	support to families during	institution and for national
		needs during crisis	crisis situations; identifies	specialty organizations
		management for a	needed support services,	
		critically-ill patient	and facilitates their	
			participation in addressing	
			family needs	

Patient Care: Procedural	Skills/Technical Abilities/Ir	nterpretation		
Level 1	Level 2	Level 3	Level 4	Level 5
Independently identifies	With direct supervision,	With indirect supervision,	With conditional	Serves as a consultant to
the clinical indications for	performs advanced	performs and supervises	independence, performs	other health care
arterial catheters and	procedures, including	others in advanced	and supervises others in	providers in use,
central venous catheters	thoracentesis, fiberoptic	procedures	advanced procedures	performance, and
	bronchoscopy, and			interpretation of data
Independently selects and	cricothyroidotomy	With indirect supervision,	With conditional	from advanced monitoring
inserts the appropriate catheters or devices	Under direct supervision,	performs, interprets, and modifies management	independence, performs, interprets, and modifies	techniques
	performs, interprets, and	based on data from	management based on	Where applicable, obtains
Recognizes and	modifies management	advanced monitoring	data from advanced	certification in advanced
appropriately	based on data from	techniques	monitoring techniques	monitoring techniques
troubleshoots	advanced monitoring			
malfunctions of standard	techniques, including		With conditional	
monitoring equipment	pulmonary artery		independence, instructs	
	catheterization and		and supervises other	
	ultrasound (to include		trainees in advanced	
	lung, abdominal, and		monitoring techniques	
	cardiac imaging)			
			Fulfills requirements to	
			apply for certification in	
			advanced monitoring	
			techniques	
Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes respiratory	Identifies more complex	With indirect supervision,	With conditional	Serves as a consultant to
failure and develops a	etiologies for respiratory	interprets relevant data to	independence, interprets	respiratory care service in
differential diagnosis and	failure	develop a patient care	relevant data to develop a	development of policies
care plan under direct		plan	patient care plan	and procedures to
supervision	With indirect supervision,			optimize patient care
	anticipates the interaction	With indirect supervision,	With conditional	
With direct supervision,	between the respiratory	selects from a variety of	independence, selects	Directs evidenced-based
selects and implements	system and other organ	modes of ventilation or	from a variety of modes of	protocol development and
basic ventilation strategies	systems, and the impact	respiratory care	ventilation or respiratory	refinement of ventilator
(e.g., assist control,	on this relationship on the	techniques, and initiates	care techniques, and	strategies
pressure support, non-	care plan	the appropriate	initiates the appropriate	
invasive strategies)		interventions to optimize	interventions to optimize	
	With direct supervision,	gas exchange and	gas exchange and	
	selects from a variety of	minimize complications	minimize complications	
	modes of ventilation or			
	respiratory care	With indirect supervision,	With conditional	
	techniques, and initiates	assesses the impact of	independence, assesses	
	the appropriate	derangements in other	the impact of	
	interventions to optimize	organ systems on	derangements in other	
	gas exchange and	respiratory function and	organ systems on	
	minimize complications	manages them	respiratory function and	
			manages them	

Patient Care: Palliative M	ledicine/End-of-Life Care			
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the need for a care plan that is consistent with patient/family goals for care	With direct supervision, manages pharmacologic and therapeutic interventions to alleviate discomfort and distress associated with palliative care Recognizes that the care plan to be culturally sensitive to the needs of patients, their families, and other health care providers Recognizes the need to modify management during the transition to palliative care	Delineates patient and family expectations with regard to outcome With indirect supervision, manages pharmacologic and therapeutic interventions to alleviate discomfort and distress associated with palliative care With indirect supervision, develops a culturally-sensitive care plan that incorporates the needs of patients, their families, and other health care providers	With conditional independence, manages pharmacologic and therapeutic interventions to alleviate discomfort and distress associated with palliative care With conditional independence, develops a culturally-sensitive care plan that incorporates the needs of patients, their families, and other health care providers	Participates in ethics or other institutional committees to guide policies on palliative care Serves as a liaison between the critical care and palliative care services
Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
With direct supervision, 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	With indirect supervision, applies the pharmacology, clinical indications, and selection of medications used in the care of critically-ill patients With indirect supervision, appropriately utilizes consulting services to optimize pharmacologic management	With conditional independence, applies the pharmacology, clinical indications, and selection of medications used in the care of critically-ill patients With conditional independence, appropriately utilizes consulting services to optimize pharmacologic management	Independently applies understanding of pharmacology, clinical indications, and selection of medications (including medication interactions) used in the care of critically-ill patients	Serves as a consultant in pharmacotherapy for critically-ill patients

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a basic knowledge of pathophysiology and pharmacology of critical illness	Demonstrates a comprehensive understanding of disease processes relevant to the practice of critical care	Applies a comprehensive understanding to the teaching of other trainees and members of the health care team	Integrates medical knowledge into clinical management to optimize patient care (e.g., leads rounds, case conferences)	Disseminates knowledge of critical illness at local and regional conferences or through publications
	medicine	Advances medical knowledge by participating in scholarly activity	Initiates a quality improvement or other scholarly activity	Contributes to development of institutional standards for management of critically-ill patients

Level 1	Level 2	Level 3	Level 4	Level 5
Requires direct	With indirect supervision,	With indirect supervision,	With conditional	Develops methods to
supervision to effectively	effectively collaborates	manages the	independence, leads the	optimize and coordinate
collaborate as a member	during routine care as a	interprofessional care	interprofessional care	care throughout the
of an interprofessional	member of an	team for all clinical	team for all clinical	continuum
team within the health	interprofessional care	situations within and	situations	
care system	team within the health	between health care		Serves as a role model and
	care system	systems	With conditional	teacher in demonstrating
Requires direct			independence,	effective methods for
supervision for effective	Requires direct	With direct supervision,	coordinates transitions of	coordination of care
transitions of care within	supervision to effectively	coordinates transitions of	care for all clinical	during transitions across
the health care system	collaborate during	care for all clinical	situations	health care systems
	complex clinical situations	situations within and		
	(e.g., emergencies) within	between health care		
	the health care system	systems		
	With indirect supervision,			
	manages transitions of			
	care within the health care			
	system			

Systems-based Practice:	Incorporation of Patient Sa	fety and Quality Improvem	nent into Clinical Practice	
Level 1	Level 2	Level 3	Level 4	Level 5
Needs prompting to consistently incorporate patient safety principles into clinical practice Needs prompting to incorporate principles of continuous quality improvement into clinical practice	Identifies common causes of adverse clinical events and medical device-related hazards and complications, and communicates them to faculty members and staff Reports near misses and complications associated with clinical care using the incident reporting system	Identifies opportunities and activities to optimize patient safety and quality of care, and initiates quality improvement processes to address them Collaborates with colleagues to identify ways to reduce the occurrence of near-misses and complications Participates in retrospective case	Substantially participates in a patient safety or quality improvement project Identifies opportunities to improve practice to optimize patient care Utilizes data about clinical practice to define opportunities to improve patient care	Serves as a role model and mentor in identifying patient safety or quality improvement initiatives within the institution and specialty organizations
		reviews, root cause analyses, and sentinel event reviews		
Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
Needs prompting to	Understands general	Consistently integrates	Substantially contributes	Leads a team or teams to
consider costs of	concepts related to the	cost awareness and cost-	to programs to reduce	determine the most cost-
medications, devices,	economics of clinical	benefit analysis into	costs and improve	effective strategies for all
tests, and procedures	practice, including the	clinical practice	efficiency of clinical care	aspects of a procedure
when making clinical	costs of care, cost vs.	·	,	
decisions	charge relationships, and		Identifies opportunities to	Substantially contributes
	cost-benefit implications		reduce total costs of care	to reengineering projects
	when selecting		without compromising	(e.g., LEAN) to improve
	medications, devices,		patient outcomes	clinical care and reduce
	tests, and procedures		•	costs

Level 1	Level 2	Level 3	Level 4	Level 5
Completes	Critically evaluates the	Independently integrates	Participates in	Participates in editorial
assigned/recommended	scientific literature and	evidence-based practices	development of evidence-	reviews and other
readings and reviews	understands limitations in	into clinical care	based clinical protocols	scholarly activity for peer-
literature related to	addressing clinical issues		and guidelines	reviewed medical journals
specific patient problems		Participates in clinical		
	Uses self-directed	research projects within	Identifies opportunities to	Participates in professiona
Participates in journal	literature review to modify	the subspecialty	improve personal clinical	societies and other
clubs, morbidity and	patient care		practices and learn from	activities to advance
mortality conferences, and		Analyzes and modifies	multiple sources	scholarship
other educational		practice based on self-		
activities		directed learning		
		Identifies resources to		
		facilitate critical appraisal		
		of the literature (i.e., data		
		analysis, statistics,		
		research design)		

Level 1	Level 2	Level 3	Level 4	Level 5
Understands the value of	With indirect supervision,	Seeks opportunities to	Actively promotes	Develops patient-oriented
disseminating educational	effectively explains clinical	provide thoughtful and	education of all team	educational materials to
information to medical	decision making and its	relevant communication	members and other	optimize communication
students, residents, and	rationale to other	to other members of the	providers regarding clinical	with patients and families
other health care team	members of the health	health care team in the	practice and optimization	
members	care team	clinical setting and	of patient care	Develops an educational
		through presentations at		curriculum for members of
Communicates plans for	Effectively presents	educational conferences	Disseminates educational	the health care team to
care and their rationale to	relevant information at	_	research through	optimize understanding of
other health care	educational conferences	Coordinates conferences	presentations and/or	clinical issues and quality
providers with prompting		and case discussions	publications	of care
				Serves as a role model for
				teaching and mentoring

Level 1	Level 2	Level 3	Level 4	Level 5
Complies with	Serve as a role model to	Serves as a role model and	Participates in divisional,	Participates in regional or
institutional policies and	other trainees on the	responsible representative of	departmental, and	national committees
regulations, including	importance of	the	institutional committees	
duty hours	professionalism in clinical	division/program/department		Chairs institutional,
	practice		Serves as a resource to	regional, or national
Acts as a reliable and		Demonstrates an	medical students and	committees related to
trustworthy team		appreciation of the	residents in addressing	professionalism and
member (e.g., is honest in		importance of effective	professional practice and	optimizing colleague
all communications,		communication at all levels	its impact on well-being	interactions
volunteers to assist				
colleagues, when		Understands and	Supports colleagues after	
appropriate, to cover		disseminates the importance	adverse clinical	
illnesses/absences)		of respectful and culturally-	outcomes, and identifies	
		sensitive interactions with	resources needed to	
Completes requested		colleagues	address concerns	
evaluations (e.g., faculty				
member, program, peer,				
ACGME Resident Survey)				
in a timely manner				
Consistently attends and				
participates in divisional				
and departmental				
activities				
uctivities				

Level 1	Level 2	Level 3	Level 4	Level 5
Seeks constructive feedback from faculty	Provides constructive feedback to residents and	Consistently seeks feedback from patients,	Provides constructive feedback to physician and	Effectively seeks and provides constructive
members and colleagues	medical students in a tactful and supportive way Accepts feedback from faculty members and incorporates suggestions into practice	family members, and other members of the care team (i.e., multisource feedback) Correlates feedback with self-reflection, and incorporates it into lifelong learning to enhance patient care	non-physician members of the patient care team in a tactful and supportive way to enhance patient care	feedback in challenging situations (e.g., when there is resistance, there are adverse outcomes, or an experienced practitioner is involved)

Professionalism: Responsibility to Maintain Personal Emotional, Physical, and Mental Health				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates basic	Demonstrates the ability	Reports concerns about	Teaches residents and	Serves as a resource for
professional responsibilities,	to balance personal,	the health or well-being of	students about the need	the development of
such as reporting for work	institutional, and	colleagues to a more	to balance patient,	organizational policies and
rested and prepared with	societal goals with	experienced individual	personal, institutional, and	procedures regarding
appropriate professional	professional		societal needs when	professional
attire and grooming	responsibilities	Reinforces to residents the importance of compliance	providing care	responsibilities
Demonstrates knowledge of	Identifies departmental	with systems to prevent	Serves as a resource to	Assists with or leads
basic requirements related	and institutional	impairment	medical students and	interventions for
to fatigue management,	resources available to		residents in addressing	suspected impaired
sleep deprivation, and	address issues related to	Recognizes the impact of	professional practice and	colleagues
principles of physician well-	personal well-being in	adverse patient outcomes	its impact on well-being	
being	self and others	on one's personal well-		Serves as resource for
		being and seeks assistance		colleagues returning from
Recognizes the need to		in addressing it		treatment for impairment
balance patient, personal,				
institutional, and societal				Serves on institutional
needs when providing care				physician wellness
				committee
Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
Effectively communicates	Effectively uses	With minimal supervision,	With conditional	Consistently ensures
routine information in a	appropriate resources	manages patient and	independence, manages	effective communication
respectful and culturally-	(e.g., translator, patient	family conflicts in complex	patient and family	and resolution of concerns
sensitive manner	representative) to	situations (e.g., when	conflicts in complex	occurs with patients
	optimize communication	there are cultural factors,	situations	and/or families
Obtains informed		end-of-life issues,		
consent/assent for routine	Identifies situations	custodial issues), including	With indirect supervision,	Independently manages
procedures using language	where patient and	communication with	discloses medical errors or	patient and family
appropriate to the patient's	family conflicts exist,	persons of different	complications to patients	conflicts in all situations
and family's level of	and appropriately seeks	socioeconomic and	and/or families	
understanding	assistance with reaching	cultural backgrounds		With conditional
	a resolution			independence, discloses
Recognizes situations where		Understands the		medical errors or medical
communication of	Manages simple patient	importance of disclosing		complications to patients
information requires the	and family conflicts	medical errors or		and/or families
assistance of another		complications to patients		
individual and asks for help		and/or families		Models cross-cultural
				communication and
Recognizes that institutional		Effectively participates in		establishes therapeutic
resources are available to		multidisciplinary		relationships with persons
assist with disclosure of		communication		of diverse socioeconomic
medical errors		Consulta anavanziata		and cultural backgrounds
		Consults appropriate institutional resources		
		(e.g., risk management, bioethics committee)		
		Dioetilics collillilitiee)		

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