

# Interventional Cardiology Milestones

The Accreditation Council for Graduate Medical Education



Second Revision: December 2020 First Revision: October 2014

## Interventional Cardiology 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.

## **Interventional Cardiology Milestones Work Group**

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American Board of Internal Medicine

Review Committee for Internal Medicine

Society for Cardiovascular Angiography and Interventions

## **Understanding Milestone Levels and Reporting**

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

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

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

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

### **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 <a href="https://www.acgme.org">www.acgme.org</a>, choose the applicable specialty under the "Specialties" menu, then select the "Milestones" link in the lower navigation bar.

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

Systems-Based Practice 1: Patient Safety and Quality Improvement						
Level 1	el 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 analy patient safety events (simulated or actual)	sis of	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 disclo of patient safety ever 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 quality improvement initiatives at the institutional or departmental level	Participates in quality improvement initiatives at the institutional or departmental level		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						
Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.			een l ver le onstr	a response box on the evels indicates that mevels have been substated as well as <b>some</b> in the higher level(s)	ilestones antially	

Patient Care 1: Pre-Procedural Care and Procedural Selection							
Level 1	Level 2	Level 3	Level 4	Level 5			
Lists indications, risks, and benefits for straightforward procedures	With direct supervision, identifies the indications, risks, and benefits to individualized patient care	With guidance, selects procedures based on indications, risks, and benefits to individualized patient care	Independently selects procedures based on indications, risks, and benefits to individualized patient care	Demonstrates advanced decision making in complex clinical scenarios and procedural selection			
Lists prerequisite diagnostic testing and	With direct supervision, evaluates diagnostic	With guidance, evaluates diagnostic testing and	Independently evaluates diagnostic	Demonstrates advanced decision making in			
optimal medical	testing and optimizes	optimizes medical	testing and optimizes	managing complex			
management strategies	medical management	management	medical management	clinical scenarios			
Comments:							
	Not Yet Completed Level 1 Not Yet Assessable						

Patient Care 2: Technical Skills for Percutaneous Intervention							
Level 1	Level 2	Level 3	Level 4	Level 5			
With direct supervision, performs straightforward procedures (e.g., angioplasty, stenting)	With guidance, performs straightforward procedures (e.g., invasive imaging, mechanical support)	Independently performs straightforward procedures (e.g., invasive imaging, mechanical support)	Independently performs complex procedures (e.g., atherectomy, bifurcation left main intervention)	Demonstrates superior technical skill in the most complex, high-risk procedures			
With direct supervision, performs basic clinical management in straightforward situations	With guidance, demonstrates intra- procedural decision making, composure, and clinical and complication management in straightforward situations	Independently demonstrates intra- procedural decision making, composure, and clinical and complication management in straightforward situations	Independently demonstrates intra- procedural decision making, composure, and clinical and complication management in complex situations	Demonstrates advanced leadership in the complex catheterization laboratory environment			
Comments:  Not Yet Completed Level 1 Not Yet Assessable							

Level 1	Level 2	Level 3	Level 4	Level 5	
Evaluates for post- procedural issues  Manages straightforwar care and issues		Manages complex care and issues	Anticipates issues and manages complex post-procedural care	Develops a clinical pathway or guideline for management of complex post-procedural issues	
With direct supervision, optimizes patient care in the outpatient setting	With guidance, optimizes straightforward care of patients in the outpatient setting	With guidance, optimizes complex care of patients in the outpatient setting	Independently optimizes patient care in the outpatient setting	Implements strategies for advancing multidisciplinary care	
Comments:			Not Vot C	ompleted Level 1	
			Not Yet A		

		g satisfactory development of the knowledge, skill, and attitudes/behaviors needed to advance in the training
		nonstrating a learning trajectory that anticipates the achievement of competency for unsupervised practice that
includes the deli	ivery or sa	fe, effective, patient-centered, timely, efficient, and equitable care.
Yes	No	Conditional on Improvement

Medical Knowledge 1: Anatomy and Physiology							
Level 1	Level 2	Level 3	Level 4	Level 5			
Identifies normal anatomy during procedures	Identifies anatomic variants during procedures	Identifies the implications of varying anatomy for procedural planning	Identifies therapeutic options targeted to complex anatomy	Demonstrates a command of medical knowledge regarding rare anatomic variants			
Demonstrates knowledge of pathophysiology of straightforward conditions	Demonstrates knowledge of pathophysiology of complex conditions	Demonstrates knowledge of pathophysiology and treatment of patients with straightforward conditions	Demonstrates knowledge of pathophysiology and treatment of patients with complex conditions	Contributes to peer- reviewed literature on pathophysiology and/or treatment			
Comments:				Completed Level 1			

Medical Knowledge 2: Pharmacology						
Level 1	Level 2	Level 3	Level 4	Level 5		
Demonstrates basic knowledge of pharmacologic agents	Demonstrates knowledge of selection and dosing of commonly used pharmacologic agents	Demonstrates knowledge of the indications, contraindications, side effects, and complications of pharmacologic agents	Integrates knowledge of pharmacology into procedures and peri- procedural care	Develops pharmacologic protocols or departmental guidelines		
Comments:  Not Yet Completed Level 1  Not Yet Assessable						

Medical Knowledge 3: D	evices, Techniques, and Ou	utcomes		
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies commonly used devices	Demonstrates knowledge of commonly used devices, techniques, and outcomes	Demonstrates knowledge of the indications, contraindications, side effects, and complications of commonly used devices, techniques, and outcomes	Integrates knowledge of devices, techniques, and outcomes into procedures and peri- procedural care	Achieves a superior level of knowledge to effectively teach others about devices, techniques, and outcomes
Comments:				
				ompleted Level 1 Ssessable
program. The fellow is dem	satisfactory development of onstrating a learning trajector e, effective, patient-centered, Conditional on Improvemen	ry that anticipates the achieve timely, efficient, and equitable	ement of competency for u	

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 quality improvement initiatives at the institutional or departmental level	Participates in quality improvement initiatives at the institutional or departmental level	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 the 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 effective transitions of care	Performs effective transitions of care in routine clinical situations	Performs effective transitions of care in complex clinical situations	ransitions of care in advocates for effective			
	Demonstrates general knowledge of financial, cultural, and social barriers to adherence of care	Identifies financial, cultural, and social barriers to adherence of care to specific populations	Adapts practice to address the financial, cultural, and social barriers to adherence of care	Leads innovations and advocates for populations with health care inequities		
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 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 and transition of care			
Describes basic health payment systems, (e.g., 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			
	Demonstrates essential skills for documentation required for independent practice (e.g., electronic health record, documentation required for billing and coding)	Seeks knowledge in non- clinical topics needed for independent practice (e.g., malpractice insurance, government regulation, compliance)	Applies knowledge in non-clinical topics needed for independent practice	Educates others in non- clinical topics to prepare them for independent practice			
Comments:  Not Yet Completed Level 1							

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The fellow is demonstrating satisfactory development of the knowledge, skill, and attitudes/behaviors needed to advance in the training
program. The fellow is demonstrating a learning trajectory that anticipates the achievement of competency for unsupervised practice that
includes the delivery of safe, effective, patient-centered, timely, efficient, and equitable care.

\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_ Conditional on Improvement

Practice-Based Learning	and Improvement 1: Evide	ence-Based and Informed P	Practice	
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access and use available evidence to manage a patient with cardiovascular disease	Articulates clinical questions and elicits patient preferences to guide evidence-based care	Locates and applies the best available evidence to the care of patients with cardiovascular disease while integrating patient preference	Critically appraises and applies available, potentially conflicting evidence to guide care of an individual patient	Develops initiatives to educate others to critically appraise and apply evidence for complex patients and/or participates in the development of guidelines
Comments:			Not Yet C	ompleted Level 1

Practice-Based Learning	and Improvement 2: Refle	ctive Practice and Commit	ment 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 feedback and performance data in order to form goals	Occasionally seeks feedback and performance data with adaptability and humility	Systematically seeks feedback and performance data with adaptability and humility	Coaches others to seek feedback and performance data
Acknowledges limits and gaps between expectations and performance; demonstrates self-awareness	Analyzes the factors which contribute to limits and gaps; demonstrates appropriate help-seeking behaviors	which contribute to limits and gaps; demonstrates appropriate help-seeking a learning plan to a learning pla	Uses performance data to assess learning plan and improves it when necessary	Facilitates the design and implementation of learning plans for others
Comments:			Not Yet C	ompleted Level 1

## **Practice-Based Learning and Improvement**

The fellow is demonstrating satisfactory development of the knowledge, skill, and attitudes/behaviors needed to advance in the training program. The fellow is demonstrating a learning trajectory that anticipates the achievement of competency for unsupervised practice that includes the delivery of safe, effective, patient-centered, timely, efficient, and equitable care.

Yes	No	Conditional	on Ir	nprovement
1 00	110	Conditional	O11 11	IIPI O V CITICITI

Professionalism 1: Profe	ssional Behavior and Ethic	cal Principles		
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies and describes 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 self and others	Coaches others when their behavior fails to meet professional expectations
Demonstrates knowledge of ethical principles (e.g., informed consent, advance directives, confidentiality, patient autonomy)	Applies knowledge of ethical principles to routine situations	Recognizes need to seek help in managing and resolving complex ethical situations	Uses appropriate resources for managing and resolving ethical dilemmas (e.g., ethics consultations, risk management)	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution
Comments:			Not Yet C	ompleted Level 1

Professionalism 2: Acco	untability/Conscientiousne	ess		
Level 1	Level 2	Level 3	Level 4	Level 5
Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future	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 detail in complex or stressful situations	Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Engages with the system to improve outcomes
Recognizes the principles of conflict of interest in relationships with industry and other entities	Recognizes personal potential conflicts with industry	Seeks assistance in managing personal relationships with industry and other entities to minimize bias and undue influence in practice	Identifies, discloses, and manages relationships with industry and other entities to minimize bias and undue influence in practice	
Comments:			Not Yet C	ompleted Level 1

Professionalism 3: Self-A	Awareness and Well-Being			
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the importance of personal and professional well-being	status of personal and proposes a plan to professional well-being professional and proposes a plan to personal and personal and		l	Participates in a system change to improve well-being in self and others
Comments:			Not Yet C	ompleted Level 1
program. The fellow is deminicudes the delivery of safe	onstrating a learning trajector	the knowledge, skill, and atti ry that anticipates the achieve timely, efficient, and equitabl	ement of competency for ur	9

Interpersonal and Comm	nunication Skills 1: Patient-	and Family-Centered Com	munication	
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates respect and establishes rapport in patient encounters	Establishes a therapeutic relationship in routine patient encounters	Establishes a therapeutic relationship in challenging patient encounters, with guidance	Independently establishes a therapeutic relationship in challenging patient encounters	Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships
Knows barriers to effective communication (e.g., language, disability, health literacy, cultural, personal bias)	Identifies barriers to effective communication in patient encounters	Attempts to minimize communication barriers, including reflection on any personal biases	Proactively minimizes communication barriers and independently manages personal biases	Role models self- awareness to minimize communication barriers
Identifies the need to adjust communication strategies to achieve shared decision making	Organizes and initiates communication with patient/family to facilitate shared decision making	Uses shared decision making to implement a personalized care plan, under guidance	Independently, uses shared decision making to implement a personalized care plan	Role models shared decision making
Comments:			Not Yet C	ompleted Level 1

Interpersonal and Comm	nunication Skills 2: Interpro	fessional and Team Comm	unication	
Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully receives a consultation request	Respectfully and thoroughly completes consultations with effective documentation and communication in common cases, with direct supervision	Completes consultations with effective documentation and communication in common cases, with indirect supervision	Completes consultations with effective documentation and communication in complex cases	
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	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
	Participates in team- based discussions to optimize team performance	Initiates team-based discussions to optimize team performance	Facilitates team-based discussions to optimize team performance	Facilitates regular health care team-based feedback in complex situations
Comments:			Not Yet C	ompleted Level 1

Interpersonal and Comm	unication Skills 3: Commu	nication within Health Care	e Systems	
Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record and safeguards patient personal health information	Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record	Concisely reports diagnostic and therapeutic reasoning in the patient record	Independently communicates timely information in a written format and verbally when appropriate	Models written communication to improve others' performance
	Identifies appropriate communication channels (e.g., cell phone/ pager usage, medical record, email) as required by institutional policy	Respectfully communicates concerns about the system	Uses appropriate channels to offer clear and constructive suggestions to improve the system	Guides departmental or institutional communication around policies and procedures
Comments:			Not Yet C	completed Level 1

## **Interpersonal and Communication Skills**

The fellow is demonstrating satisfactory development of the knowledge, skill, and attitudes/behaviors needed to advance in the training program. The fellow is demonstrating a learning trajectory that anticipates the achievement of competency for unsupervised practice that includes the delivery of safe, effective, patient-centered, timely, efficient, and equitable care.

V	es	No	Conditional	on I	mprovement
I	62	INO	Conditional	OH	mprovement

## **Overall Clinical Competence**

Thi	s rating represents the assessment of the fellow's development of overall clinical competence during this year of training:
	_Superior: Far exceeds the expected level of development for this year of training
	_Satisfactory: Always meets and occasionally exceeds the expected level of development for this year of training
	Conditional on Improvement: Meets some developmental milestones but occasionally falls short of the expected level of development for this year of training. An improvement plan is in place to facilitate achievement of competence appropriate to the level of training.
	Unsatisfactory: Consistently falls short of the expected level of development for this year of training.