# Orthopaedic Trauma Milestones

The Accreditation Council for Graduate Medical Education



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## **Orthopaedic Trauma 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.

#### **Orthopaedic Trauma Milestones Work Group**

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American Board of Orthopaedic Surgery

Review Committee for Orthopaedic Surgery

### **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 trainee'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 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 professional ability to enter autonomous 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 trainees, 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.

Additional resources are available in the <u>Milestones</u> section of the ACGME website. Follow the links under "What We Do" at <u>www.acgme.org</u>.

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 that best describes that fellow's performance in relation to those milestones.

Patient Care 3: Periarticular Fractures				
Level 1	Level 2	Level 3	Level 4	Level 5
Develops a surgical plan, with direct supervision	Develops a surgical plan, with indirect supervision	Develops a surgical plan for procedures that includes identification of potential challenges and technical complexities, with indirect supervision	Independently develops a surgical plan for procedures, including contingencies for complications	Independently plans complex procedures, including management of peri-operative complications
Demonstrates surgical skills for simple periarticular fractures and assists with procedures	Independently performs procedures for simple periarticular fractures	Performs critical steps of procedures with indirect supervision	Independently performs procedures for complex periarticular fractures	Independently performs complex revision procedures
Manages peri-procedural complications, with indirect supervision	Manages peri-procedural complications, with oversight	Manages complex intra- operative complications with indirect supervision	Independently manages complex intra-operative complications	Manages long-term complications in the outpatient setting
Comments: Not Yet Completed Level 1				
Selecting a respon- middle of a level im milestones in that levels have been so demonstrated.	plies that evel and in lower	Selecting a response between levels indica in lower levels have demonstrated as we milestones in the hig	ates that milestones been substantially Il as <b>some</b>	

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Level 1	Level 2	Level 3	Level 4	Level 5
Identifies when a patient needs damage control during initial resuscitation, with direct supervision	Identifies when a patient needs damage control during initial resuscitation, with indirect supervision	Performs damage control procedures, with indirect supervision	Independently performs damage control procedures	Independently anticipates changes in patient condition and plans and
Prioritizes management of polytrauma patients, with direct supervision	Prioritizes management of polytrauma patients, with indirect supervision	Determines timing for definitive management, with oversight	Independently prioritizes and manages complex polytrauma patients through interdisciplinary team care	implements contingencies
Counsels patients on acute diagnosis, with direct supervision	Counsels patients on acute diagnosis and expectations, with indirect supervision	Counsels patients on short-term prognosis, complications, and expectations, with oversight	Independently counsels patients regarding long- term prognosis, potential complications, and need for additional procedure(s)	Independently counsels patients regarding long- term prognosis, potential complications, and need for additional procedure(s); cites the evidence for each

Patient Care 2: Complex Diaphyseal Fracture (e.g., peri-prosthetic, open, bone loss, proximal/distal thirds)				
Level 1	Level 2	Level 3	Level 4	Level 5
Develops a surgical plan, with direct supervision	Develops a surgical plan, with indirect supervision	Develops a surgical plan for procedures, including identification of potential challenges and technical complexities, with oversight	Independently develops a surgical plan for procedures, including contingencies for complications	Independently plans complex procedures, including management of peri-operative complications
Demonstrates surgical skills (e.g., reduction and placement of nail) and assists with procedures	Performs critical steps of procedures, with direct supervision	Performs critical steps of procedures with indirect supervision	Independently performs procedures	Independently performs complex revision procedures
Manages peri-procedural complications, with indirect supervision	Manages peri-procedural complications with oversight	Manages complex intra- operative complications with indirect supervision	Independently manages complex intra-operative complications	Manages long-term complications in the outpatient setting
Comments:			Not Yet C Not Yet A	ompleted Level 1

Patient Care 3: Periarticu	ılar Fractures			
Level 1	Level 2	Level 3	Level 4	Level 5
Develops a surgical plan, with direct supervision	Develops a surgical plan, with indirect supervision	Develops a surgical plan for procedures, including identification of potential challenges and technical complexities, with indirect supervision	Independently develops a surgical plan for procedures, including contingencies for complications	Independently plans complex procedures, including management of peri-operative complications
Demonstrates surgical skills for simple periarticular fractures and assists with procedures	Independently performs procedures for simple periarticular fractures	Performs critical steps of procedures for complex periarticular fractures with indirect supervision	Independently performs procedures for complex periarticular fractures	Independently performs complex revision procedures
Manages peri-procedural complications, with indirect supervision	Manages peri-procedural complications, with oversight	Manages complex intra- operative complications with indirect supervision	Independently manages complex intra-operative complications	Manages long-term complications in the outpatient setting
Comments:				
				ompleted Level 1

Patient Care 4: Pelvic an	d Acetabular Fractures			
Level 1	Level 2	Level 3	Level 4	Level 5
Develops a surgical plan, with direct supervision	Develops a surgical plan, with indirect supervision	Develops a surgical plan for procedures, including identification of potential challenges and technical complexities, with oversight	Independently develops a surgical plan for procedures, including contingencies for complications	Independently plans complex procedures, including management of peri-operative complications
Demonstrates surgical skills for simple pelvic and acetabular fractures, and assists with procedures	Performs procedures for simple pelvic and acetabular fractures, with indirect supervision	Demonstrates surgical skills of complex pelvic and acetabular fractures, and assists with procedures	Independently performs procedures for complex pelvic and acetabular fractures	Independently performs complex revision procedures
Manages peri-procedural	Manages peri-procedural	Manages complex intra-	Independently manages	Manages long-term
complications, with	complications, with	operative complications	complex intra-operative	complications in the
indirect supervision	oversight	with indirect supervision	complications	outpatient setting
Comments:	Comments: Not Yet Completed Level 1			

Patient Care 5: Soft Tiss	ue			
Level 1	Level 2	Level 3	Level 4	Level 5
Performs standard surgical approaches with compromised soft tissue, and adjusts as needed	Performs comprehensive debridement of an open fracture and incorporates soft tissue status in fracture management, with indirect supervision	Performs comprehensive debridement of an open fracture and incorporates soft tissue status in fracture management, with oversight	Independently obtains adequate soft tissue coverage for complex injuries (e.g., through plastic surgery consultation)	Independently performs skin graft and local flap procedures
Recognizes urgent/emergent soft tissue concerns (e.g., acute compartment syndrome, vascular injury, mangled extremity) and acts/consults appropriately, with oversight	Performs procedures for urgent/emergent soft tissue concerns (e.g., fasciotomy) or impending soft tissue compromise and acquires appropriate consultations, with oversight	Recognizes chronic soft tissue concerns, with oversight	Independently designs procedures and acquires consultation for patients with chronic soft tissue concerns	Independently performs and coordinates for procedures in patients with chronic soft tissue concerns
Comments:			Not Yet C Not Yet As	ompleted Level 1

Medical Knowledge 1: P	olytrauma (Care of Multiply	Injured Patient)			
Level 1	Level 2	Level 3	Level 4	Level 5	
Discusses the basic pathophysiology of the multiply injured patient and identifies appropriate endpoints of resuscitation	Discusses the spectrum of instability of the multiply injured patient and recognizes indications for damage control orthopaedics (DCO) versus early appropriate care (EAC)	Demonstrates knowledge of complex pathophysiology of the multiply injured patient and discusses intra- operative markers of patient resuscitation	Triages order of injuries to be treated and titrates care based on patient resuscitation and surgical burden	Leads discussion about the nuances of polytrauma and functions in the "grey area"	
Discusses absolute surgical indications and types of fixation	Discusses relative surgical indications and types of fixation	Adapts absolute and relative surgical indications to a patient's condition and types of fixation	Anticipates long term sequela of surgical interventions and types of fixation		
Comments:				ompleted Level 1	

Medical Knowledge 2: Co	omplex Diaphyseal Fractur	e (e.g., peri-prosthetic, ope	n, bone loss, proximal/di	stal thirds)
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of surgically relevant normal anatomy and interprets imaging	Demonstrates knowledge of basic surgical approaches based on fracture pattern needs	Correlates imaging to surgical anatomy and selects surgical approach	Demonstrates knowledge of advanced surgical approaches based on fracture pattern needs	Leads advanced discussion around treatment nuances and controversies in management and techniques
Discusses absolute surgical indications and types of fixation	Discusses relative surgical indications and types of fixation	Adapts absolute and relative surgical indications to a patient's condition and types of fixation	Anticipates long-term sequela of surgical interventions and types of fixation	
Comments:				ompleted Level 1

Medical Knowledge 3: Pe	eriarticular Fractures			
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of surgically relevant normal anatomy and interprets imaging	Demonstrates knowledge of basic surgical approaches based on fracture pattern needs	Correlates imaging to surgical anatomy and selects surgical approach	Demonstrates knowledge of advanced surgical approaches based on fracture pattern needs	Leads advanced discussion around treatment nuances and controversies in management and techniques
Discusses absolute surgical indications and types of fixation	Discusses relative surgical indications and types of fixation	Adapts absolute and relative surgical indications to a patient's condition and types of fixation	Anticipates long-term sequela of surgical interventions and types of fixation	
Comments:			Not Yet C Not Yet As	ompleted Level 1

Medical Knowledge 4: Pe	elvic and Acetabular Fractu	ires		
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of surgically relevant normal anatomy and interprets imaging	Demonstrates knowledge of basic surgical approaches based on fracture pattern needs	Correlates imaging to surgical anatomy and selects surgical approach	Demonstrates knowledge of advanced surgical approaches based on fracture pattern needs	Leads advanced discussion around treatment nuances and controversies in management and techniques
Discusses absolute surgical indications and types of fixation	Discusses relative surgical indications and types of fixation	Adapts absolute and relative surgical indications to a patient's condition and types of fixation	Anticipates long-term sequela of surgical interventions and types of fixation	
Comments:				ompleted Level 1

_		x Problems [e.g., fracture-r PTOA), soft tissue issues (		
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies deviation from normal clinical course	Orders and interprets laboratory and imaging findings	Synthesizes information to arrive at diagnosis and treatment plan	Applies best available evidence to diagnosis and treatment	Adjusts plan based on treatment outcomes
Comments:				completed Level 1

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 their families (simulated or actual)	Discloses patient safety events to patients and their families (simulated or actual)	Role models or mentors others in the disclosure o patient safety events
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives	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 a the institutional or community level

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 multidisciplinary teams	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 straightforward 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

Systems-Based Practice	3: Physician Role in Healtl	h Care Systems		
Level 1	Level 2	Level 3	Level 4	Level 5
Describes basic health payment systems, including government, private, public, and uninsured care, as well as different practice models	Describes how working within the health care system impacts patient care, including billing and coding	Analyzes how personal practice affects the system (e.g., length of stay, readmission rates, clinical efficiency)	Uses shared decision- making in patient care, considering costs to the patient	Participates in advocacy activities for health policy
Comments:			Not Yet C	ompleted Level 1

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, and incorporate patient preferences and values to the care of a straightforward condition	Articulates clinical questions and elicits patient preferences and values to guide evidence- based care	Locates and applies the best available evidence, integrated with patient preference, to the care of complex conditions	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 conditions, and/or participates in the development of guidelines
Comments:			Not Yet C	ompleted 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 feedback and other input to inform goals	Responds to feedback and other input episodically, with adaptability and humility	Actively seeks feedback and other input, with adaptability and humility	Role models consistently seeking feedback and other input with adaptability and humility	
Identifies the strengths, deficiencies, and limitations in one's knowledge and expertise	Analyzes and reflects on the strengths, deficiencies, and limitations in one's knowledge and expertise to design a learning plan, with assistance	Creates and implements a learning plan to optimize educational and professional development	Uses ongoing reflection, feedback, and other input to measure the effectiveness of the learning plan and, when necessary, improves it	Coaches others on reflective practice	
Comments:			Not Yet C	ompleted Level 1	

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies and describes inciting events for professionalism lapses	Demonstrates insight into professional behavior in straightforward situations	Demonstrates professional behavior in complex situations	Recognizes situations that may promote professionalism lapses and intervenes to prevent lapses in oneself and others	Coaches others when their behavior fails to meet professional expectations
Demonstrates knowledge of the ethical principles underlying patient care (e.g., informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics)	Applies ethical principles in straightforward situations and takes responsibility for lapses	Integrates ethical principles and recognizes the need to seek help in complex situations	Recognizes and uses appropriate resources for managing and resolving ethical dilemmas (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 their resolution

Professionalism 2: Accountability/Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Reliably arrives to clinical activities on time and describes strategies for ensuring timely task completion	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in straightforward situations	Prioritizes tasks and responsibilities in a timely manner with appropriate attention to detail in complex situations	Recognizes barriers that may impact others' ability to complete tasks and responsibilities in a timely manner	Develops processes to enhance others' ability to efficiently complete patient care tasks and responsibilities
Responds promptly to requests or reminders to complete tasks and responsibilities	Completes tasks and responsibilities without reminders	Proactively completes tasks and responsibilities to ensure the needs of patients, teams, and systems are met		
Comments:			Not Yet C	ompleted 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 (e.g., physical and emotional health)	Lists available resources for personal and professional well-being	Discusses a plan to promote personal and professional well-being with institutional support	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 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 C	ompleted Level 1

This subcompetency is not intended to evaluate a fellow's well-being, but to ensure each fellow has the fundamental knowledge of factors that impact wellbeing, the mechanisms by which those factors impact well-being, and available resources and tools to improve well-being.

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates respect and establishes rapport with patients and their families (e.g., situational awareness of language, disability, health literacy level, cultural differences)	Establishes a therapeutic relationship in straightforward encounters	Establishes a therapeutic relationship in challenging encounters (e.g., shared decision-making)	Facilitates difficult discussions with patients and their families, (e.g., explaining complications, therapeutic uncertainty)	Coaches others in the facilitation of difficult conversations
Communicates with patients and their families in an understandable and respectful manner	Identifies barriers to effective communication (e.g., health literacy, cultural differences)	When prompted, reflects on personal biases while attempting to minimize communication barriers	Recognizes biases and integrates a patient's viewpoint and autonomy to ensure effective communication	Mentors others in situational awareness and critical self-reflection
Demonstrates basic understanding of the informed consent process	Answers questions about straightforward treatment plans, with assistance	Counsels patients through the decision-making process for straightforward conditions	Counsels patients through the decision- making process for complex conditions	Counsels patients through the decision-making process for uncommon conditions

Interpersonal and Comm	nunication Skills 2: Interpro	fessional and Team Comm	unication	
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the value and role of each team member and respectfully interacts with all members of the health care team	Communicates in a professional and productive manner to facilitate teamwork (e.g., active listening, updates in timely fashion)	Actively recognizes and mitigates communication barriers and biases with the health care team	Facilitates respectful communications and conflict resolution with the multidisciplinary health care team	Exemplar of effective and respectful communication strategies
Comments:			Not Yet C	ompleted Level 1

Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record while safeguarding patients' personal health information	Demonstrates accurate, timely, and efficient use of the electronic health record to communicate with the health care team	Concisely reports diagnostic and therapeutic reasoning while incorporating relevant outside data	Independently communicates via written or verbal methods based on urgency and context	Facilitates improved written and verbal communication of others
	Uses appropriate communication methods (e.g., face-to-face, voice, electronic)	Respectfully initiates communications about concerns in the system	Uses appropriate channels to offer clear and constructive suggestions to improve the system	Guides departmental or institutional communication around policies and procedures