Surgery Milestones

for Singapore

May 2017

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The Milestones are designed only for use in evaluation of residents in the context of their participation in ACGME-I-accredited residency programs. The Milestones provide a framework for the assessment of the development of the resident in key dimensions of the elements of physician competency in a specialty. 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.

Milestones Reporting

This document presents milestones designed for programs to use in semi-annual review of resident performance and reporting to the ACGME-I. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME-I competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a learner moves from entry into their program through graduation.

For each period, review and reporting will involve selecting milestone levels that best describe each resident's current performance and attributes. Milestones are arranged in numbered levels. Tracking from "Level 1" to "Level 5" is synonymous with moving from novice to expert in the specialty. These levels do not correspond with time in the educational program. Dependent upon previous education and experience, residents may enter a program at varying points in the Milestones.

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

> **Level 1:** Describes behaviors of an incoming resident.
>
> **Level 2:** Describes behaviors of an early learner.
>
> **Level 3:** Describes behaviors of a resident who is advancing and demonstrating improvement in performance related to milestones.
>
> **Level 4:** Describes behaviors of a resident who substantially demonstrates the milestones identified for a physician who is ready for unsupervised practice. This column is designed as the graduation target, but the resident may display these milestones at any point during residency.
>
> **Level 5:** Describes behaviors of a resident who has advanced beyond those milestones that describe unsupervised practice. These milestones reflect the competence of an expert or role model and can be used by programs to facilitate further professional growth. It is expected that only a few exceptional residents will demonstrate these milestones behaviors.

Additional Notes

The "Level 4" Milestones are designed as the graduation *target* and *do not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the program director. Study of Milestones performance data will be required before the ACGME-I and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data overall are of sufficient quality to be used for high-stakes decisions.

Answers to Frequently Asked Questions about Milestones are posted on the ACGME-I website.

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

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 (actual or simulated)	Participates in disclosure of patient safety events to patients and families (simulated or actual)	Discloses patient safety events to patients and families (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level

Comments: Not yet achieved 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: Pre-Operative				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs a focused, efficient, and accurate initial history and physical of a full spectrum of patients admitted to the hospital, including critically-ill patients	Accurately diagnoses *some* "core" surgical conditions in the Singapore General Surgery Residency curriculum, and initiates appropriate management for *a few* "core" conditions	Accurately diagnoses *many* "core" surgical conditions in the Singapore General Surgery Residency curriculum, and initiates appropriate management for *some* "core" conditions Develops a diagnostic plan and implement initial care for patients seen in the Emergency Department (ED)	Accurately diagnoses *most* "core" conditions in the Singapore General Surgery Residency curriculum and *some* "advanced" conditions, and initiates appropriate management for *most* "core" and some "advanced" surgical conditions independently	Leads a team that cares for patients with "core" and "advanced" conditions in the Singapore General Surgery Residency curriculum and delegates appropriate clinical tasks to other health care team members Recognizes atypical presentations of a large number of the aforementioned conditions

<table>
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Comments:

Not Yet Achieved Level 1   ☐

Patient Care 2: Post-Operative				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes and manages common post-operative problems, such as fever, hypotension, hypoxia, confusion, and oliguria with assistance of senior residents or staff members who are physically present	Recognizes and manages *some* common post-operative problems, such as fever, hypotension, hypoxia, confusion, and oliguria with assistance of senior residents or staff members who are available for consultation but not physically present	Recognizes and manages *all* common post-operative problems, such as fever, hypotension, hypoxia, confusion, and oliguria with assistance of senior residents or staff members who are available for consultation but not physically present	Recognizes and manages complex post-operative problems, such as sepsis, systemic inflammatory response syndrome, and multiple system organ failure independently	Leads a team and provides supervision in the evaluation and management of complex post-operative problems, such as sepsis, systemic inflammatory response syndrome, and multiple system organ failure
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Comments:			Not Yet Achieved Level 1 ☐	

Patient Care 3: Technical Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
Has basic surgical skills, such as airway management, knot tying, simple suturing, suture removal, use of Doppler ultrasound, administration of local anesthetic, universal precautions, and aseptic technique	Demonstrates respect for tissue some of the time, and is developing skill in basic instrument handling	Demonstrates respect for tissue, and is developing skill in instrument handling	Demonstrates proficiency in the handling of most instruments and exhibits efficiency of motion during procedures	Demonstrates proficiency in use of instruments and equipment required for "essential" operations, guides the conduct of most operations, and makes independent intra-operative decisions
Reliably performs basic procedures, including venipuncture, arterial puncture incision and drainage, minor skin excisions, and placement of IV, nasogastric tube, or urinary catheter	Moves through portions of common operations with coaching	Moves through portions of common operations without coaching and makes straightforward intra-operative decisions	Moves through the steps of *most* operations without much coaching and makes intra-operative decisions	Performs *most* of the "core" operations and has significant experience in the "advanced" operations
Performs basic operative steps in "core" operations/procedures of the Singapore General Surgery Residency curriculum	Performs some of the "core" operations in the Singapore General Surgery Residency curriculum with assistance	Performs *some* of the "core" operations in the Singapore General Surgery Residency curriculum with minimal assistance	Performs *many* of the "core" operations and beginning to gain experience in "advanced" operations	Effectively guides other residents in "core" operations
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Comments:				Not Yet Achieved Level 1 ☐

Patient Care 4: Decision-Making				
Level 1	Level 2	Level 3	Level 4	Level 5
Makes appropriate, timely decisions for *some* "core" conditions in the Singapore General Surgery Residency curriculum, with assistance	Makes appropriate, timely decisions for *some* "core" conditions in the Singapore General Surgery Residency curriculum, with minimal assistance	Makes appropriate, timely decisions for *many* "core" conditions in the Singapore General Surgery Residency curriculum, with minimal assistance	Makes appropriate, timely decisions for *most* "core" conditions in the Singapore General Surgery Residency curriculum and *some* "advanced" conditions	Makes appropriate, timely decisions, considering multiple factors, and is able to prioritize and justify clinical decisions
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Comments: Not Yet Achieved Level 1 ☐				

Medical Knowledge 1: Fundamental Surgical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a basic understanding of the symptoms, signs, and treatments of the "core" diseases in the Singapore General Surgery Residency curriculum, and has basic knowledge about common surgical conditions to which a medical student would be exposed in clerkship	Demonstrates basic knowledge about *some* of the "core" diseases in the Singapore General Surgery Residency curriculum, and can make a diagnosis and knows the appropriate initial management	Demonstrates basic knowledge about *many* of the "core" diseases in the Singapore General Surgery Residency curriculum, and can make a diagnosis and recommend appropriate initial management Recognizes variation in presentation of common surgical conditions	Demonstrates significant knowledge about *many* "core" diseases in the Singapore General Surgery Residency curriculum, as well as a basic knowledge of the "advanced" diseases in the Singapore General Surgery Residency curriculum, and can make a diagnosis and initiate appropriate initial management	Demonstrates a comprehensive knowledge of the varying patterns of presentation and alternative and adjuvant treatments for "core" diseases in the Singapore General Surgery Residency curriculum, and can make the diagnosis and provide initial care for the "advanced" diseases
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Comments:
Not Yet Achieved Level 1 ☐

Medical Knowledge 2: Peri-Operative Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a basic knowledge of the "core" surgical operations in the Singapore General Surgery Residency curriculum to which a medical student would be exposed in clerkship	Demonstrates basic knowledge of the operative steps, peri-operative care, and post-operative complications for *some* of the "core" operations in the Singapore General Surgery Residency curriculum	Demonstrates basic knowledge of the operative steps, peri-operative care, and post-operative complications for *many* of the "core" operations in the Singapore General Surgery Residency curriculum	Demonstrates significant knowledge of the operative steps, peri-operative care, and post-operative complications for *most* of the "core" operations in the Singapore General Surgery Residency curriculum, as well as a basic knowledge of some of the "advanced" operations	Demonstrates a comprehensive level of knowledge of the operative steps, peri-operative care, and post-operative complications for the "core" operations in the Singapore General Surgery Residency curriculum, and a basic knowledge of many of the "advanced" operations
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Comments: Not Yet Achieved Level 1   ☐

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 (actual or simulated)	Participates in disclosure of patient safety events to patients and families (simulated or actual)	Discloses patient safety events to patients and families (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level
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Comments:			Not Yet Achieved 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 utilizing the roles of the interprofessional teams	Coordinates care of patients in complex clinical situations effectively utilizing the roles of their interprofessional teams	Role models effective coordination of patient-centered care among different disciplines and specialties	Analyses the process of care coordination and leads in the design and implementation of improvements
Identifies key elements for safe and effective transitions of care and hand-offs	Performs safe and effective transitions of care/hand-offs in routine clinical situations	Performs safe and effective transitions of care/hand-offs in complex clinical situations	Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems, including outpatient settings	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 and disparities	Identifies specific population and community health needs and inequities for their local population	Uses local resources effectively to meet the needs of a patient population and community	Participates in changing and adapting practice to provide for the needs of specific populations	Leads innovations and advocates for populations and communities with health care inequities

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Not Yet Achieved Level 1   ☐

Systems-Based Practice 3: Physician Role in Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies components of the complex health care system	Describes the physician's role and how the interrelated components of complex health care system impact patient care	Analyzes how personal practice affects the system (e.g., length of stay, readmission rates, clinical efficiency)	Manages the interrelated components of the complex health care systems for efficient and effective patient care	Advocates for or leads change to enhance systems for high value, efficient, and effective patient care
Describes basic health payment systems, including government, private, public, and uninsured care and different practice models	Delivers care informed by patient specific payment model	Utilizes shared decision making in patient care, taking into consideration payment models	Advocates for patient care understanding the limitations of each patient's payment model (e.g., community resources, patient assistance resources)	Participates in advocacy activities for health policy to better align payment systems with high value care
		Identifies resources and effectively plans for transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	Describes basic elements needed to transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	
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Comments:			Not Yet Achieved Level 1 ☐	

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

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to performance data (feedback and other input) in order to inform goals	Seeks performance data episodically, with adaptability and humility	Intentionally seeks performance data consistently, with adaptability and humility	Role models consistently seeking performance data, with adaptability and humility
Identifies the factors that contribute to gap(s) between expectations and actual performance	Analyzes and reflects on the factors that contribute to gap(s) between expectations and actual performance	Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance	Coaches others on reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Uses performance data to measure the effectiveness of the learning plan and, when necessary, improves it	Facilitates the design and implementation of learning plans for others

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Comments: Not Yet Achieved Level 1 ▢

Professionalism 1: Professional Behavior and Ethical 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
Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers	Takes responsibility for own professionalism lapses	Analyzes complex situations using ethical principles	Recognizes and utilizes appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	Analyzes straightforward situations using ethical principles	Recognizes need to seek help in managing and resolving complex ethical situations		

Comments:

Not Yet Achieved Level 1 ☐

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Professionalism 2: Accountability/Conscientiousness

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	Takes ownership of system outcomes
Responds promptly to requests or reminders to complete tasks and responsibilities	Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner	Proactively implements strategies to ensure that the needs of patients, teams, and systems are met		

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Comments: Not Yet Achieved Level 1   ☐

Professionalism 3: Self-Awareness and Help-Seeking				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes status of personal and professional well-being, with assistance	Independently recognizes status of personal and professional well-being	With assistance, proposes a plan to optimize personal and professional well-being	Independently develops a plan to optimize personal and professional well-being	Coaches others when emotional responses or limitations in knowledge/skills do not meet professional expectations
Recognizes limits in the knowledge/skills of self or team, with assistance	Independently recognizes limits in the knowledge/skills of self or team	With assistance, proposes a plan to remediate or improve limits in the knowledge/skills of self or team	Independently develops a plan to remediate or improve limits in the knowledge/skills of self or team	
	Demonstrates appropriate help-seeking behaviors			

Comments: Not Yet Achieved Level 1

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication

Level 1	Level 2	Level 3	Level 4	Level 5
Uses language and non-verbal behavior to demonstrate respect and establish rapport	Establishes a therapeutic relationship in straightforward encounters using active listening and clear language	Establishes a therapeutic relationship in challenging patient encounters	Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity	Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships
Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system	Identifies complex barriers to effective communication (e.g. health literacy, cultural)	When prompted, reflects on personal biases while attempting to minimize communication barriers	Independently recognizes personal biases while attempting to proactively minimize communication barriers	Role models self-awareness practice while identifying teaching a contextual approach to minimize communication barriers
Identifies the need to adjust communication strategies based on assessment of patient/family expectations and understanding of their health status and treatment options	Organizes and initiates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying an understanding of the clinical situation	With guidance, sensitively and compassionately delivers medical information; elicits patient/family values, goals and preferences; and acknowledges uncertainty and conflict	Independently uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a personalized care plan	Role models shared decision making in patient/family communication in situations with a high degree of uncertainty/conflict

Comments: Not Yet Achieved Level 1 ☐

Interpersonal and Communication Skills 2: Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully requests a consultation	Clearly and concisely requests a consultation	Checks own understanding of consultant recommendations	Coordinates recommendations from different members of the 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
Respectfully receives a consultation request	Clearly and concisely responds to a consultation request	Checks understanding of recommendations when providing consultation	Communicates feedback and constructive criticism to superiors	Facilitates regular health care team-based feedback in complex situations
Uses language that values all members of the health care team	Communicates information effectively with all health care team members	Uses active listening to adapt communication style to fit team needs		
	Solicits feedback on performance as a member of the health care team	Communicates concerns and provides feedback to peers and learners		
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Comments:			Not Yet Achieved Level 1 ☐	

Interpersonal and Communication Skills 3: Communication within Health Care Systems

Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record	Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record	Concisely reports diagnostic and therapeutic reasoning in the patient record	Communicates clearly, concisely, in a timely manner, and in an organized written form, including anticipatory guidance	Models feedback to improve others' written communication
Safeguards patient personal health information	Demonstrates accurate, timely, and appropriate use of documentation shortcuts	Appropriately selects direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context	Produces written or verbal communication (e.g., patient notes, e-mail, etc.) that serves as an example for others to follow	Guides departmental or institutional communication around policies and procedures
Communicates through appropriate channels as required by institutional policy (e.g. patient safety reports, cell phone/pager usage)	Documents required data in formats specified by institutional policy

Respectfully communicates concerns about the system | Uses appropriate channels to offer clear and constructive suggestions to improve the system | Initiates difficult conversations with appropriate stakeholders to improve the system | Facilitates dialogue regarding systems issues among larger community stakeholders (e.g., institution, health care system, field) |

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Comments: Not Yet Achieved Level 1   ☐