# The Maternal-Fetal Medicine Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education The American Board of Obstetrics and Gynecology and and The American College of Obstetricians and Gynecologists



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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.

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### **Working Group**

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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.

PC4: Obstetrical Compl		-	-	
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a comprehensive understanding of the presentation and treatment options for common obstetrical complications (e.g., pre- eclampsia, obstetric hemorrhage, preterm labor)	Develops a management strategy for patients with common obstetrical complications Demonstrates an understanding of the presentation and treatment options for complex obstetrical complications (e.g., amniotic fluid embolism, periviability, fetal abnormalities)	Manages complex obstetrical complications, with supervision Collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team, with supervision	Independently manages complex obstetrical complications Independently collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team	Applies an innovative evidence-based approach to the management of complex obstetrical complications
Comments:			Not	yet achieved Level 1
level implies t	sponse box in the middle of a hat milestones in that level a s have been substantially I.	nd Sel inc sul	lecting a response box on the li licates that milestones in lowe ostantially demonstrated as we the higher level(s).	r levels have been

PC1: Labor and Delivery Procedures				
Level 1	Level 2	Level 3	Level 4	Level 5
Independently identifies appropriate procedures for routine obstetrical patients Proficiently performs routine, common obstetrical procedures (e.g., Cesarean section, vaginal delivery, operative vaginal delivery, first trimester dilation and curettage) Identifies complications associated with obstetrical procedures and appropriately uses consultation	Assists with complex obstetrical procedures (e.g., Cesarean hysterectomy, rescue cerclage, breech delivery, fetal reduction, second trimester dilation and evacuation) Develops management strategy for complications associated with obstetrical procedures Supervises learners during routine, common obstetrical procedures	Identifies appropriate procedures for complex obstetrical patients, with supervision Performs complex obstetrical procedures, with supervision Manages surgical complications, with supervision Collaborates with and provides subspecialty- specific consultation to other members of the health care team, with supervision	Independently identifies appropriate procedures for complex obstetrical patients Independently and proficiently performs complex obstetrical procedures Anticipates, diagnoses, and independently manages complications associated with obstetrical procedures Independently collaborates with and provides evidence-based subspecialty-specific consultation to members of the health care team	Applies an evidence- based approach to innovative and complex obstetrical procedures
Comments:			Not	yet achieved Level 1

PC2: Sonographic Diagr		1		
Level 1	Level 2	Level 3	Level 4	Level 5
Proficiently performs limited obstetrical sonography, gestational age assessment, and antenatal assessment (e.g., fetal presentation, fetal biometry, biophysical profile)	Proficiently performs sonography for cervical length and standard sonography for complete fetal anatomic survey Selects appropriate candidates for prenatal diagnosis or therapeutic procedures (e.g., amniocentesis, chorionic villus sampling [CVS], percutaneous umbilical blood sampling [PUBS], fetal shunts)	<ul> <li>Performs detailed fetal assessment (including Doppler, first and second trimester anatomy, and nuchal translucency assessment), with supervision</li> <li>Performs appropriate procedures for prenatal diagnosis or therapy, with supervision</li> <li>Anticipates, diagnoses, and manages complications associated with prenatal diagnostic procedures, with supervision</li> <li>Collaborates with and provides subspecialty- specific consultation to other members of the health care team, with supervision</li> </ul>	Independently and proficiently performs detailed fetal assessment Independently selects and performs appropriate procedures for prenatal diagnosis or therapy Anticipates, diagnoses, and independently manages complications associated with prenatal diagnostic procedures Independently collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team	Proficiency in advanced ultrasound techniques (e.g., fetal echocardiography, advanced Doppler, 3D/4D imaging) Proficiency in advanced fetal therapeutic procedures (e.g., laser, radiofrequency ablation)
Comments:			Not	yet achieved Level 1

PC3: Medical Complications of Pregnancy					
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates a comprehensive understanding of the presentation of and treatment options for common medical comorbidities in pregnancy (e.g., diabetes, chronic hypertension)	Develops a management strategy for patients with common medical comorbidities in pregnancy Demonstrates an understanding of the presentation of and treatment options for complex medical comorbidities in pregnancy (e.g., sepsis, solid-organ transplant, cardiac disease)	Manages complex medical comorbidities in pregnancy, with supervision Co-manages patients in critical care settings, with supervision Collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team, with supervision	Independently manages complex medical co- morbidities in pregnancy Co-manages patients in critical care settings Independently collaborates with and provides evidence- based subspecialty-specific consultation to other members of the health care team	Independently manages patients in critical care settings Applies an innovative, evidence-based approach to the management of complex medical comorbidities in pregnancy	
Comments:			Not y	et achieved Level 1	

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates a comprehensive understanding of the presentation of and treatment options for common obstetrical complications (e.g., pre- eclampsia, obstetric hemorrhage, preterm labor)	Develops a management strategy for patients with common obstetrical complications Demonstrates an understanding of the presentation of and treatment options for complex obstetrical complications (e.g., amniotic fluid embolism, periviability)	Manages complex obstetrical complications, with supervision Collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team, with supervision	Independently manages complex obstetrical complications Independently collaborates with and provides evidence-based subspecialty-specific consultation to other members of the health care team	Applies an innovative evidence-based approach to the management of complex obstetrical complications
Comments: Not yet achieved Level 1				

MK1: Pathology, Anatomy, and Physiology				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies normal placental development Demonstrates knowledge of maternal pelvic anatomy Demonstrates knowledge of maternal physiologic adaptations to pregnancy	Identifies abnormal placental development Applies knowledge of maternal pelvic anatomy to the management of common obstetric procedures and complications Demonstrates knowledge of fetal physiology	Demonstrates knowledge of metabolic and endocrine functions of the placenta Demonstrates knowledge of clinicopathologic correlation between adverse perinatal outcome and specific etiologies (e.g., infection, aneuploidy, medical disease) Demonstrates advanced knowledge of newborn adaptation	Applies knowledge of clinicopathologic findings to optimize perinatal outcomes Applies knowledge of maternal pelvic anatomy to the management of complex obstetric procedures and complications	Develops innovative concepts and theories regarding placental structure and function Develops innovative concepts and theories regarding maternal and fetal physiology
Comments:			Not ye	et achieved Level 1

MK2: Medical Complications of Pregnancy				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common medical comorbidities that can affect obstetrical outcomes (e.g., diabetes, hypertension, asthma)	Applies knowledge of common medical comorbidities to optimize obstetrical outcomes Demonstrates knowledge of treatment modalities of common medical comorbidities in pregnancy (e.g., pharmacology, contraindications) Demonstrates knowledge of complex medical comorbidities that can affect obstetrical outcomes (e.g., solid-organ transplant, cardiac disease)	Demonstrates knowledge of treatment modalities of complex medical comorbidities in pregnancy (e.g., pharmacology, contraindications) Demonstrates knowledge of critical care management (e.g., ventilation, hemorrhagic shock, sepsis)	Applies knowledge of complex medical comorbidities and treatment modalities that can affect obstetrical outcomes Applies knowledge of critical care management to optimize patient outcomes	Develops innovative concepts and theories regarding complex medical comorbidities and treatment modalities that can affect obstetrical outcomes
Comments:			Not ye	et achieved Level 1

MK3: Obstetrical Complications				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common obstetrical complications (e.g., pre- eclampsia, obstetric hemorrhage, preterm labor)	Applies knowledge of common obstetrical complications Demonstrates knowledge of treatment modalities of common obstetrical complications (e.g., blood transfusion, corticosteroids) Demonstrates knowledge of complex obstetrical complications (e.g., amniotic fluid embolism, periviability)	Demonstrates knowledge of treatment modalities of complex obstetrical complications (e.g., pharmacology, contraindications) Demonstrates knowledge of obstetric anesthesia principles and complications Demonstrates knowledge of neonatology principles and complications	Applies knowledge of complex obstetrical complications and treatment modalities Applies knowledge of obstetric anesthesia and neonatology in collaboration with the multidisciplinary care team	Develops innovative concepts and theories regarding complex obstetrical complications and treatment modalities
Comments:			Nc	ot yet achieved Level 1

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of basic genetic principles and common hereditary syndromes Demonstrates knowledge of teratogens Demonstrates knowledge of basic genetic screening and diagnostic tests	Applies knowledge of basic genetics to patient counseling (e.g., AMA, soft markers) Applies knowledge of teratogens to patient counseling and evaluation Applies knowledge of basic genetic screening and diagnostic tests	Demonstrates knowledge of advanced genetic principles and uncommon hereditary syndromes Demonstrates knowledge of advanced genetic testing	Applies knowledge of advanced genetic principles to provide comprehensive counselling to patients and their families Applies knowledge of advanced genetic principles to optimize perinatal outcomes	Develops innovative concepts and theories regarding genetic principles and testing
Comments:				Iot yet achieved Level 1

MK5: Prenatal Imaging and Diagnosis				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of imaging modalities used to evaluate obstetric patients (e.g., ultrasound, magnetic resonance imaging [MRI]) Demonstrates knowledge of normal fetal anatomy and placentation (e.g., chorionicity) Demonstrates knowledge of normal maternal pelvic sonography	Demonstrates knowledge of bioeffects and safety of imaging modalities used to evaluate obstetric patients Demonstrates knowledge of abnormal fetal anatomy, growth, and placentation Demonstrates knowledge of abnormal maternal pelvic sonography (e.g., short cervical length, fibroids) Demonstrates knowledge of indications and complications of prenatal diagnostic procedures (e.g., amniocentesis, CVS, PUBS, fetal shunts)	Applies knowledge of imaging modalities and diagnostic techniques for prenatal diagnosis Demonstrates knowledge of prognosis for specific fetal anomalies and management options, including pregnancy termination Applies knowledge of abnormal fetal growth and placentation	Applies knowledge of specific fetal anomalies to develop a comprehensive management plan Applies knowledge of complex fetal anomalies in collaboration with the multidisciplinary care team to develop a comprehensive management plan	Develops innovative concepts and theories regarding advanced sonographic diagnosis and procedures
Comments: Not yet achieved Level 1				

SBP1: Computer Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Retrieves basic patient information from the electronic medical record (EMR)	Retrieves complex patient information from the EMR	Generates orders, communicates with referring physicians, and documents communication with patients	Uses EMR to its full potential and facilitates integration of computer- based communication with team	Recommends changes to computer systems/records to provide additional useful functionality
Comments:			Not yet	achieved Level 1

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of general obstetrics and gynecology guideline- based care (e.g., American College of Obstetricians and Gynecologists [ACOG] publications) Demonstrates knowledge of the importance of providing cost-effective care Understands the diversity and roles of all members of the health care team	Demonstrates knowledge of maternal-fetal medicine guideline-based care (e.g., Society for Maternal-Fetal Medicine [SMFM] practice guidelines and American Institute of Ultrasound in Medicine [AIUM] guidelines) Demonstrates knowledge of cost related to diagnostic and treatment plans Demonstrates knowledge of personnel and resources needed to facilitate value-based (high quality, cost-effective) care	Applies knowledge of maternal-fetal medicine guideline-based care, with supervision Incorporates cost- awareness into the development of diagnostic and treatment plans, with supervision (e.g., formulary drugs, generic drugs, tailoring of diagnostic tests) Coordinates personnel and resources to facilitate value-based care, with supervision	Independently applies knowledge of maternal- fetal medicine guideline- based care Independently incorporates cost- awareness into the development of diagnostic and treatment plans Independently coordinates personnel and resources to facilitate value-based care	Develops and/or applies innovative evidence-based approaches to value- based maternal-fetal medicine patient care

PBLI1: Scholarly Activity	PBLI1: Scholarly Activity				
Level 1	Level 2	Level 3	Level 4	Level 5	
Critically reviews and interprets publications with the ability to identify hypotheses, study aims, design, results, and limitations Demonstrates knowledge of commonly used study designs (e.g., randomized controlled trial [RCT], cohort, case- control) Demonstrates knowledge of basic principles underlying the ethical conduct of research and the protection of human subjects	Designs a hypothesis- driven or hypothesis- generating scholarly thesis, under the direction of a research mentor Demonstrates knowledge of advanced study designs and statistical methodology Applies the principles of ethics and good clinical practice to the protection of human subjects recruited to participate in research, as indicated	Executes a hypothesis- driven or hypothesis- generating scholarly thesis, under the direction of a research mentor Applies knowledge of advanced study design and statistical methodology to research, including a scholarly thesis Complies with research oversight regulations	Completes and defends a comprehensive written scholarly thesis that demonstrates: advanced research methodology and design statistical analysis synthesis of scientific literature, hypothesis testing, and descriptions of finding and results	Obtains external funding for research study Publishes original research in peer-reviewed journal	
Comments:			Not ye	et achieved Level 1	

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies problems in health care delivery	Begins working on a QI project, either as an individual or as a team member	Continues to develop a QI project, employing methods to measure and analyze the data	Completes a QI project, either as an individual or team member Displays effective teamwork skills	Develops and leads complex QI projects and is able to lead a root-cause analysis
Comments:			Not y	ret achieved Level 1

Level 1	Level 2	Level 3	Level 4	Level 5
Fully participates in required didactic activities	Teaches medical students and residents in a clinical setting Presents a well- organized, literature- based conference presentation	Teaches residents, medical students, and other health care professionals in a formal didactic setting Organizes didactic educational activities, including determination of educational content	Advises and provides guidance to junior colleagues and other team members Provides advanced clinical teaching of residents Identifies deficiencies in educational curriculum and develops modifications	Creates formal educational materials Participates in national education activities

Demonstrates integrity, respect, honesty, and completion of duties, records, and patient care       Is accountable in completion of duties, records, and patient care       Acknowledges errors with program director, faculty members, and/or patients       Serves as a role model for honesty, integrity, professionalism, and compassionate patient care       Demonstrates leadership         Understands HIPAA policies and appropriate use concepts       Is sensitive and responsive to diverse patient population and needs, regardless of gender, age, race, sexual orientation, religion, or disabilities       Responds well to constructive criticism       Demonstrates       Demonstrates         Demonstrates timeliness in completion of assigned rotations, reports, state licensure, and duties       Demonstrates knowledge of regulations for billing and coding       Takes on responsibility related to learning, coordination of care, patient care, Continuous Quality Improvement (CQI), and compliance issues       Demonstrates professionally and independently in various educational and patient care environments	Level 1	Level 2	Level 3	Level 4	Level 5
	Demonstrates integrity, respect, honesty, and compassion Understands HIPAA policies and appropriate use concepts Demonstrates timeliness in completion of assigned rotations, reports, state	Is accountable in completion of duties, records, and patient care Is sensitive and responsive to diverse patient population and needs, regardless of gender, age, race, sexual orientation, religion, or disabilities Demonstrates knowledge of regulations for billing	Acknowledges errors with program director, faculty members, and/or patients Responds well to constructive criticism Takes on responsibility related to learning, coordination of care, patient care, Continuous Quality Improvement (CQI), and compliance	Serves as a role model for honesty, integrity, professionalism, and compassionate patient care Demonstrates commitment to self- improvement Prioritizes and advocates for patient needs over self- interest Operates professionally and independently in various educational and	Demonstrates leadership in the institution and/or medical professional

Level 1	Level 2	Level 3	Level 4	Level 5
Understands the mportance of compassion, integrity, and respect for others Demonstrates sensitivity and responsiveness to patients	Consistently shows compassion, integrity, and respect in typical situations with patients, peers, and members of the health care team Consistently demonstrates sensitivity and responsiveness to diversity of patients' ages, cultures, races, religions, abilities, or sexual orientations Accepts constructive feedback to improve his or her ability to demonstrate compassion, integrity, and respect for others	Consistently shows compassion, integrity, and respect for patients who decline medical advice, request un-indicated tests or treatments, or have psychiatric comorbidities, and for team members experiencing conflict or high stress Modifies his or her own behavior based on feedback to improve his or her ability to demonstrate compassion, integrity, and respect for others	Consistently models compassion, integrity, and respect for others Coaches others to improve compassion, integrity, and respect for patients	Assumes long-term or leadership role in community outreach activities to improve the health of vulnerable populations

_evel 1	Level 2	Level 3	Level 4	Level 5
Understands the mportance of relationship development, information gathering and sharing, and teamwork	Demonstrates an understanding of the roles of health care team members, and communicates effectively within the team Demonstrates an understanding of transitions of care and team debriefing	Works effectively in interprofessional and interdisciplinary health care teams Participates in effective transitions of care and team debriefing Communicates effectively with physicians and other health care professionals regarding patient care	Leads interprofessional and interdisciplinary health care teams to achieve optimal outcomes Leads effective transitions of care and team debriefing Responds to requests for consultation in a timely manner, and communicates recommendations to the requesting team	Provides formal education to other health care professionals regarding maternal-fetal medicine

Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates adequate listening skills	Checks for patient and family understanding of illness and management	Communicates effectively with patients and families across a broad range of	Role models effective communication	Provides effective communication in the most challenging situations, and	
Communicates effectively in routine clinical situations	plan Allows for opportunities for patient questions Maintains communication with patient and family regarding plan of care	socio-economic and cultural backgrounds Communicates effectively when counseling patients and families in stressful, emergent, and complex situations (e.g., complications, poor prognosis, perinatal death, pregnancy termination)	Capable of informing patients and families about a medical error that caused harm	invites participation from all stakeholders	