

**2007**

(Please see also the “Policies and Procedures.”)

## **DEFINITION**

Maternal-Fetal Medicine is a medical subspecialty concerned with the prevention, diagnosis and treatment of those conditions responsible for morbidity and mortality of the mother, fetus and early newborn.

## **GOALS**

Upon completion of training, a resident is expected to be a competent specialist in Maternal-Fetal Medicine capable of assuming a consultant’s role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research. The Maternal-Fetal Medicine consultant possesses the appropriate medical, surgical and obstetrical knowledge and skills with educational and research interests, administrative ability and special training in the identification and management of high risk obstetrical problems. Subspecialists in Maternal-Fetal Medicine are viewed primarily as consultants to the practising Obstetrician and related health care providers. Their practice is focussed on referred high risk obstetrical patients in a tertiary health care institution, and they function as regional consultants in matters of organization, standards and education in the broad field of Maternal-Fetal Medicine.

Only candidates recognized as certificated by the Royal College of Physicians and Surgeons of Canada in Obstetrics and Gynecology may be eligible for the Certificate of Special Competence in Maternal-Fetal Medicine.

## **MATERNAL-FETAL MEDICINE COMPETENCIES**

At the completion of training, the resident will have acquired the following competencies and will function effectively as a:

## Medical Expert

### **Definition:**

As *Medical Experts*, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS framework.

**Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...**

### **1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical and patient-centered medical care**

- 1.1. Effectively perform a consultation, including the presentation of well-documented assessments and recommendations in written and/or verbal form in response to a request from another health care professional
- 1.2. Demonstrate effective use of all CanMEDS competencies relevant to their practice
- 1.3. Identify and appropriately respond to relevant ethical issues arising in patient care
- 1.4. Effectively and appropriately prioritize professional duties when faced with multiple patients and problems
- 1.5. Demonstrate compassionate and patient-centered care
- 1.6. Recognize and respond to the ethical dimensions in medical decision-making
- 1.7. Demonstrate medical expertise in situations other than patient care, such as providing expert legal testimony or advising governments, as needed

### **2. Establish and maintain clinical knowledge, skills and attitudes appropriate to their practice**

- 2.1. Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Maternal-Fetal Medicine, including:
  - 2.1.1. Normal fetal development including immunology of pregnancy and fetus, trophoblast biology, early placental development and embryogenesis, role of maternal nutrition, placental respiratory gas exchange and fetal oxygenation, transplacental transfer of nutrients, fetal acid-base balance and behavioural activity, fetal lung development and maturation
  - 2.1.2. Normal embryonic growth, fetal growth and development and transition from fetal to neonatal life
  - 2.1.3. Fetal cardiovascular physiology, autonomic control of the fetal heart and fetal arrhythmia
  - 2.1.4. Dynamics and disorders of amniotic fluid volume
  - 2.1.5. Multiple gestation
  - 2.1.6. Prenatal diagnosis and management of fetal growth aberrations
  - 2.1.7. Fetal anomalies

*OBJECTIVES OF TRAINING IN MATERNAL-FETAL MEDICINE (2007)*

- 2.1.8. Maternal diseases resulting in abnormal fetal development such as diabetes, hypertensive disorders, immunologic disorders, infectious disorders, hematologic disorders, cardiac diseases, thyroid gland diseases, connective tissue disorders, malignancies
  - 2.1.9. Maternal hypertensive disorders, cardiac diseases, renal disease, thrombophilias and coagulation disorders
  - 2.1.10. Neurological disorders including seizure disorder
  - 2.1.11. Use of narcotics, alcohol and other illicit drugs and their effect on the fetus and newborn
  - 2.1.12. Isoimmunization: diagnosis and management
  - 2.1.13. Maternal infection
  - 2.1.14. Pre / post maturity
  - 2.1.15. Antepartum hemorrhage and severe intrapartum hemorrhage
  - 2.1.16. Preterm labor and delivery: etiology, diagnosis, treatment and prevention
  - 2.1.17. Intrapartum complications including prolonged rupture of membranes, early detection and prevention of intrapartum asphyxia
  - 2.1.18. Principles of effective neonatal resuscitation and neonatal management of anomalies
  - 2.1.19. Prenatal diagnosis, genetics and screening for aneuploidy and metabolic disorders
  - 2.1.20. Principles of ultrasound physics and instrumentation
  - 2.1.21. Knowledge of core diagnostic and therapeutic procedures including first, second and third trimester ultrasound, amniocentesis, chorionic villus sampling, cordocentesis, intrauterine transfusions, cervical cerclage, amnioreduction and amnioinfusion
  - 2.1.22. Epidemiology and biostatistics applied to perinatal care and population health
  - 2.1.23. The use of evidence-based medicine in effective decision-making strategies
  - 2.1.24. Medical and surgical methods of pregnancy termination for genetic and structural anomalies
  - 2.1.25. Maternal trauma
- 2.2. Describe the RCPSC framework of competencies relevant to Maternal-Fetal Medicine
  - 2.3. Apply lifelong learning skills of the Scholar Role to implement a personal program to keep up-to-date, and enhance areas of Maternal-Fetal Medicine competence
  - 2.4. Contribute to the enhancement of quality care and patient safety in their practice, integrating the available best evidence and best practices

**3. Perform a complete and appropriate assessment of a patient**

- 3.1. Effectively identify and explore issues to be addressed in a patient encounter, including the patient's context and preferences
- 3.2. For the purposes of prevention and health promotion, diagnosis and or management, elicit a history that is relevant, concise and accurate to context and preferences
- 3.3. For the purposes of prevention and health promotion, diagnosis and/or management, perform a focused physical examination that is relevant and accurate
- 3.4. Select medically appropriate investigative methods such as diagnostic imaging in a resource-effective and ethical manner
- 3.5. Demonstrate effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans

**4. Use preventive and therapeutic interventions effectively**

- 4.1. Implement an effective management plan in collaboration with a patient and their family
- 4.2. Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions relevant to the physician's practice
- 4.3. Ensure appropriate informed consent is obtained for therapies
- 4.4. Ensure patients receive appropriate end-of-life care

**5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic**

- 5.1. Demonstrate effective, appropriate, and timely performance of diagnostic procedures relevant to Maternal-Fetal Medicine, including:
  - 5.1.1. Diagnostic amniocentesis-singleton pregnancy
  - 5.1.2. Diagnostic amniocentesis-multiple pregnancy
  - 5.1.3. First trimester ultrasound
  - 5.1.4. Second trimester ultrasound, including fetal anomaly screening
  - 5.1.5. Third trimester ultrasound including assessment of fetal growth and fetal health
  - 5.1.6. Endovaginal ultrasound
  - 5.1.7. Fetal cardiac screening ultrasound
  - 5.1.8. Ultrasound assessment of multifetal pregnancies
  - 5.1.9. Biophysical scoring
  - 5.1.10. Fetal Doppler studies to assess placental function and fetal anemia

- 5.2. Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to Maternal-Fetal Medicine practice
    - 5.2.1. Elective cerclage
    - 5.2.2. Emergency cerclage
    - 5.2.3. External cephalic version
    - 5.2.4. Therapeutic amnioreduction
  - 5.3. Ensure appropriate informed consent is obtained for procedures
  - 5.4. Appropriately document and disseminate information related to procedures performed and their outcomes
  - 5.5. Ensure adequate follow-up is arranged for procedures performed
- 6. Seek appropriate consultation from other health professionals, recognizing the limits of their expertise**
- 6.1. Demonstrate insight into their own limitations of expertise via self-assessment
  - 6.2. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care
  - 6.3. Arrange appropriate follow-up care services for a patient and their family

## **Communicator**

### ***Definition:***

As *Communicators*, physicians effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

***Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...***

- 1. Develop rapport, trust, and ethical therapeutic relationships with patients and families**
  - 1.1. Recognize that being a good communicator is a core clinical skill for a Maternal-Fetal Medicine subspecialist, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes
  - 1.2. Establish positive therapeutic relationships with patients and their families that are characterized by understanding, trust, respect, honesty and empathy
  - 1.3. Respect patient confidentiality, privacy and autonomy
  - 1.4. Listen effectively
  - 1.5. Be aware and responsive to nonverbal cues

- 1.6. Effectively facilitate a structured clinical encounter
  
  - 2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals**
    - 2.1. Gather information about a disease, but also about a patient's beliefs, concerns, expectations and illness experience
    - 2.2. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals
  
  - 3. Accurately convey relevant information and explanations to patients and families, colleagues and other professionals**
    - 3.1. Deliver information to a patient and family, colleagues and other professionals in a humane manner and in such a way that it is understandable, encourages discussion and participation in decision-making
      - 3.1.1. Provides counselling to patients and families in an empathetic and supportive manner and provides clear and thorough explanations of diagnosis, investigation and management
    - 3.2. Deliver information on a complex maternal-fetal medicine disorder, cytogenetics and molecular diagnostic results, obstetrical ultrasound and fetal Doppler results to the patient and family in a humane manner and in such a way that it is understandable, encourages discussion and promotes patient's participation in decision-making to the degree that they wish
  
  - 4. Develop a common understanding on issues, problems and plans with patients, families, and other professionals to develop a shared plan of care**
    - 4.1. Effectively identify and explore problems to be addressed from a patient encounter, including the patient's context, responses, concerns, and preferences
    - 4.2. Respect diversity and difference, including but not limited to the impact of gender, religion and cultural beliefs on decision-making
    - 4.3. Encourage discussion, questions, and interaction in the encounter
    - 4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care
    - 4.5. Effectively address challenging communication issues such as obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding
  
  - 5. Convey effective oral and written information about a medical encounter**
    - 5.1. Maintain clear, accurate, and appropriate records (e.g., written or electronic) of clinical encounters and plans
    - 5.2. Effectively present verbal reports of clinical encounters and plans
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- 5.3. When appropriate, effectively present medical information to the public or media about a medical issue

## **Collaborator**

### ***Definition:***

As *Collaborators*, physicians effectively work within a healthcare team to achieve optimal patient care.

### ***Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...***

#### **1. Participate effectively and appropriately in an interprofessional healthcare team**

- 1.1. Clearly describe their roles and responsibilities to other professionals
- 1.2. Describe the roles and responsibilities of other professionals within the health care team
- 1.3. Identify and describe the role, expertise and limitations of all members of an interdisciplinary team required to optimally achieve a goal related to patient care, a research problem, an educational task, or an administrative responsibility
- 1.4. Recognize and respect the diversity of roles, responsibilities and competences of other professionals in relation to their own
- 1.5. Work with others to assess, plan, provide and integrate care for individual patients (or groups of patients)
  - 1.5.1. Understand and demonstrate the importance of cooperation and communication among health professionals involved in the care of individual patients such that the roles of these professionals are delineated and consistent messages are delivered to patients and their families
- 1.6. Where appropriate, work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities
- 1.7. Participate effectively in interprofessional team meetings
- 1.8. Enter into interdependent relationships with other professions for the provision of quality care
- 1.9. Describe the principles of team dynamics
- 1.10. Respect team ethics, including confidentiality, resource allocation and professionalism
- 1.11. Where appropriate, demonstrate leadership in a healthcare team

**2. Effectively work with other health professionals to prevent, negotiate, and resolve interprofessional conflict**

- 2.1. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team
  - 2.1.1. Demonstrate the ability to accept, consider and respect the opinions of other team members, while contributing specialty-specific expertise him/herself. This will include the ability to communicate effectively with the members of the Maternal-Fetal Medicine interdisciplinary team in the resolution of conflicts, as well as the provision of feedback
- 2.2. Work with other professionals to prevent conflicts
- 2.3. Employ collaborative negotiation to resolve conflicts
  - 2.3.1. Adopt specific strategies to heighten personal and professional awareness and explore and resolve interpersonal difficulties in professional relationships
- 2.4. Respect differences, misunderstandings and limitations in other professionals
- 2.5. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension
- 2.6. Reflect on interprofessional team function

**Manager**

***Definition:***

As *Managers*, physicians are integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system.

***Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...***

**1. Participate in activities that contribute to the effectiveness of their healthcare organizations and systems**

- 1.1. Work collaboratively with others in their organizations
- 1.2. Participate in systemic quality process evaluation and improvement, such as patient safety initiatives
  - 1.2.1. Understand the principles of quality assurance and administration, as well as the importance of principles of cost-effectiveness and continuous quality improvement relevant to Maternal-Fetal Medicine care
  - 1.2.2. Participate in planning, budgeting, evaluation and outcome of a patient care program that involves perinatal outreach to the community



## *OBJECTIVES OF TRAINING IN MATERNAL-FETAL MEDICINE (2007)*

- 1.3. Describe the structure and function of the healthcare system as it relates to Maternal-Fetal Medicine, including the roles of physicians
  - 1.3.1. Describe how health care governance influences patient care, research and educational activities at a local, provincial, regional, and national level. More specifically, be able to describe and understand regionalization of level 2 and level 3 perinatal and neonatal care
- 1.4. Describe principles of healthcare financing, including physician remuneration, budgeting and organizational funding
  - 1.4.1. Understand how to function effectively in health care organizations, ranging from an individual clinical practice to organizations at the local, regional and national level

### **2. Manage their practice and career effectively**

- 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities and personal life
- 2.2. Manage a practice including finances and human resources
- 2.3. Implement processes to ensure personal practice improvement
- 2.4. Employ information technology appropriately for patient care
- 2.5. Understand population-based approaches to maternal-fetal medicine health care services and their implication for medical practice
- 2.6. To be able to understand issues related to the organization of personal and equipment resources pertinent to the practice of Maternal-Fetal Medicine

### **3. Allocate finite healthcare resources appropriately**

- 3.1. Recognize the importance of just allocation of healthcare resources, balancing effectiveness, efficiency and access with optimal patient care
- 3.2. Apply evidence and management processes for cost-appropriate care

### **4. Serve in administration and leadership roles, as appropriate**

- 4.1. Chair or participate effectively in committees and meetings
- 4.2. Lead or implement a change in health care
- 4.3. Plan relevant elements of health care delivery (e.g. work schedules)

## Health Advocate

### **Definition:**

As *Health Advocates*, physicians responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.

**Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...**

### **1. Respond to individual patient health needs and issues as part of patient care**

- 1.1. Identify the health needs of an individual patient
- 1.2. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care resources, internal and external to the institution

### **2. Respond to the health needs of the communities that they serve**

- 2.1. Describe the practice communities that they serve
- 2.2. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately
  - 2.2.1. The general population by describing health care issues relevant to Maternal-Fetal Medicine currently; indicating how these changes might affect health outcomes and advocating policy changes to decrease the burden of illness (e.g. smoking, alcohol and other substance abuse during pregnancy, folic acid supplementation, guidelines for antenatal care for twins) through a relevant specialty society such as the Society of Obstetricians and Gynecologists of Canada, a community-based advocacy group (addictions foundation), or other organizations such as the Canadian Medical Association
  - 2.2.2. Assume an advocacy role when monitoring and allocating needed resources such as diagnostic imaging, primarily for the individual but also in the context of societal needs
- 2.3. Appreciate the possibility of competing interests between the communities served and other populations

### **3. Identify the determinants of health for the populations that they serve**

- 3.1. Identify the determinants of health of the populations, including barriers to access to care and resources, including:
  - 3.1.1. Determinants of maternal, fetal and newborn health by identifying the most important determinants of health (e.g. poverty, unemployment, early childhood education, social support systems, domestic and other types of abuses) and applying this understanding to common problems and conditions in Maternal-Fetal Medicine specialty

- 3.1.2. The importance of identifying local and regional "at risk" groups within Maternal-Fetal Medicine practice; applying the available knowledge about prevention to "at risk" groups within the practice; and contributing "group data" for better understanding of health problems within the population (e.g. rates of adolescent and unwanted pregnancy, low birth weight, perinatal mortality and morbidity)

- 3.2. Identify vulnerable or marginalized populations within those served and respond appropriately

#### **4. Promote the health of individual patients, communities, and populations**

- 4.1. Describe an approach to implementing a change in a determinant of health of the populations they serve
- 4.2. Describe how public policy impacts on the health of the populations served
  - 4.2.1. Public health policies that affect the health of the mother, fetus or newborn, either positively or negatively (e.g. communicable diseases, tobacco, substance abuse); and citing examples of how policy was changed as a result of actions by physicians (e.g. folic acid supplementation and incidence of neural tube defects; prenatal diagnosis screening program for common aneuploidy, antenatal screening of congenital heart disease)
- 4.3. Identify points of influence in the healthcare system and its structure
- 4.4. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism
- 4.5. Appreciate the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper
- 4.6. Describe the role of the medical profession in advocating collectively for health and patient safety

#### **Scholar**

##### ***Definition:***

As *Scholars*, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

##### ***Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...***

#### **1. Maintain and enhance professional activities through ongoing learning**

- 1.1. Describe the principles of maintenance of competence
- 1.2. Describe the principles and strategies for implementing a personal knowledge management system

- 1.3. Recognize and reflect learning issues in practice
  - 1.4. Conduct a personal practice audit
  - 1.5. Pose an appropriate learning question
  - 1.6. Access and interpret the relevant evidence
  - 1.7. Integrate new learning into practice
  - 1.8. Evaluate the impact of any change in practice
  - 1.9. Document the learning process
- 2. Critically evaluate medical information and its sources, and apply this appropriately to practice decisions**
- 2.1. Describe the principles of critical appraisal
  - 2.2. Critically appraise retrieved evidence in order to address a clinical question
    - 2.2.1. Apply criteria for critical appraisal of studies seeking to establish causation, determine natural history and prognosis, assess accuracy of diagnostic tests or evaluate therapy of maternal, fetal and neonatal disease; as well demonstrate ability to assess current scientific developments related to more effective patient care in Maternal-Fetal Medicine
  - 2.3. Integrate critical appraisal conclusions into clinical care
- 3. Facilitate the learning of patients, families, students, residents, other health professionals, the public and others, as appropriate**
- 3.1. Describe principles of learning relevant to medical education
  - 3.2. Collaboratively identify the learning needs and desired learning outcomes of others
  - 3.3. Select effective teaching strategies and content to facilitate others' learning
  - 3.4. Demonstrate an effective lecture or presentation
  - 3.5. Assess and reflect on a teaching encounter
  - 3.6. Provide effective feedback
  - 3.7. Describe the principles of ethics with respect to teaching
- 4. Contribute to the development, dissemination, and translation of new knowledge and practices**
- 4.1. Describe the principles of research and scholarly inquiry
  - 4.2. Describe the principles of research ethics
  - 4.3. Pose a scholarly question
  - 4.4. Conduct a systematic search for evidence
  - 4.5. Select and apply appropriate methods to address the question

- 4.6. Appropriately disseminate the findings of a study
  - 4.6.1. Produce a manuscript in a publishable format based on an investigative hypothesis that contains original data from a protocol designed and implemented by the candidate and approved by the residency program

## **Professional**

### ***Definition:***

As *Professionals*, physicians are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.

### ***Key and Enabling Competencies: Maternal-Fetal Medicine subspecialists are able to...***

#### **1. Demonstrate a commitment to their patients, profession, and society through ethical practice**

- 1.1. Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect and altruism
- 1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence
- 1.3. Recognize and appropriately respond to ethical issues encountered in practice
  - 1.3.1. Understand the complex ethical issues relating to maternal-fetal medicine and the ability to use this understanding in facilitating appropriate patient care (e.g. multiple gestation with assisted reproductive technologies, fetal therapies, breaking bad news)
- 1.4. Use appropriate strategies to maintain and advance professional competence
- 1.5. Appropriately manage conflicts of interest
- 1.6. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law
- 1.7. Maintain appropriate relations with patients

#### **2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation**

- 2.1. Appreciate the professional, legal and ethical codes of practice
  - 2.1.1. Understand and be able to apply federal and provincial legislation, case law and institutional regulations relevant to the specialty in order to guide one's clinical practice and research (e.g., Children's Aid Society, Provincial hospital privacy act, Human Ethics Review Board for Research involving human subjects)

*OBJECTIVES OF TRAINING IN MATERNAL-FETAL MEDICINE (2007)*

- 2.2. Fulfill the regulatory and legal obligations required of current practice
- 2.3. Demonstrate accountability to professional regulatory bodies
- 2.4. Recognize and respond to others' unprofessional behaviours in practice
- 2.5. Participate in peer review

**3. Demonstrate a commitment to physician health and sustainable practice**

- 3.1. Balance personal and professional priorities to ensure personal health and a sustainable practice
- 3.2. Strive to heighten personal and professional awareness and insight
- 3.3. Recognize other professionals in need and respond appropriately

**EDITORIAL REVISION** – April 2008