Objectives of Training in Neonatal-Perinatal Medicine

2007

This document applies to those who begin training on or after July 1st, 2007.
(Please see also the “Policies and Procedures.”)

DEFINITION

Neonatal-Perinatal Medicine is a medical subspecialty concerned with the maintenance of health and long-term development of the fetus, neonate, and infant, requiring special knowledge, skills and attitudes for the prevention, diagnosis and management of disorders of this patient population.

GOALS

Upon completion of training, a resident is expected to be a competent subspecialist in Neonatal-Perinatal Medicine capable of assuming a consultant’s role in the subspecialty. The resident must acquire a working knowledge of the theoretical basis of Neonatal-Perinatal Medicine, including its foundations in the basic medical sciences and research.

Only candidates certificated by the Royal College of Physicians and Surgeons of Canada in Pediatrics may be eligible for the Certificate of Special Competence in Neonatal-Perinatal Medicine.

Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient and family-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to address issues of gender, age, culture, ethnicity and ethics in an appropriate manner as per the CanMEDS Roles.

NEONATAL-PERINATAL 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: Neonatal-Perinatal 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 for the pregnant woman and neonate and their families, 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, such as Maternal-Fetal Medicine specialist, family physician, pediatrician, obstetrician, midwife and other Neonatal-Perinatal Medicine specialist

   1.2. Demonstrate effective use of all CanMEDS competencies relevant to Neonatal-Perinatal Medicine

   1.3. Identify and appropriately respond to the ethical issues that arise in the practice of Neonatal – Perinatal Medicine, such as limits of viability and life-threatening congenital anomalies

   1.4. Effectively and appropriately prioritize professional duties when faced with multiple patients and problems

   1.5. Demonstrate compassionate patient and family-centered care

   1.6. 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 the subspecialty of Neonatal-Perinatal Medicine

      2.1.1. Demonstrate knowledge of the basic sciences applicable to the full range of the practice of Neonatal-Perinatal Medicine including:

         2.1.1.1. common disorders of pregnancy

         2.1.1.2. fetal physiology, growth and development, in health and in disease

         2.1.1.3. effect of maternal disease, maternal medications, maternal substance use and environmental agents on the fetus

         2.1.1.4. placental function, including placental circulation, gas exchange and growth

         2.1.1.5. physiological and biochemical adaptation at birth
2.1.1.6. normal physiology of the neonatal period, including differences between the term and preterm infant
2.1.1.7. basic clinical sciences relevant to the diseases of the fetus, neonate and infant
2.1.1.8. maternal/fetal and maternal/infant interaction and parenting, especially in the high risk setting
2.1.1.9. growth, development and nutrition of the normal and abnormal neonate and infant
2.1.1.10. long-term outcome of newborn disease and prematurity
2.1.1.11. epidemiology and biostatistics of perinatal, neonatal and infant care

2.1.2. demonstrate knowledge of the principles and functioning of the biomedical devices used in the care of the fetus, neonate and infant

2.2. Describe the RCPSC framework of competencies relevant to Neonatal-Perinatal 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 professional 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 clinical encounter with a patient and patient’s family, including the family’s context and preferences

3.2. For the purposes of prevention and health promotion, diagnosis and or management, elicit a maternal, perinatal, neonatal and family 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 of the neonate or infant that is relevant and accurate, sufficiently elaborate and adapted to the patient’s status and gestational age

3.4. Recommend or select medically appropriate investigations of the mother, fetus, neonate or infant, including diagnostic imaging and genetic testing, in a cost-effective, ethical and useful manner, taking into consideration special circumstances that apply to the neonate and infant, such as volume of blood and minimizing pain

3.5. Demonstrate effective clinical problem solving and judgment to address problems of the fetus, neonate, infant and family, including interpreting available data and integrating antenatal and postnatal information to generate differential diagnoses and management plans

3.5.1. interpret information from antenatal and postnatal monitoring
3.5.2. demonstrate competence in clinical assessment of critically ill newborn infants including:

3.5.2.1. continuous cardiorespiratory monitoring
3.5.2.2. diagnostic procedures
3.5.2.3. general principles of critical care including maternal-fetal and neonatal transport
3.5.2.4. assessment and management of pain and distress in newborn infants including those on assisted ventilation, those requiring frequent or potentially painful procedures and those in the postoperative phase

4. Use preventive and therapeutic interventions effectively

4.1. Implement an effective management plan in collaboration with the patient’s family and members of the health care team

4.2. Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions relevant to Neonatal-Perinatal Medicine

4.2.1. Demonstrate knowledge of the physiology of the neonate and infant when prescribing medications and other therapies
4.2.2. Understand the impact of maternal therapies on the fetus and neonate
4.2.3. Recognize and manage emergency situations that arise in the delivery room, NICU, newborn nursery and emergency room
4.2.4. Demonstrate special competence in clinical assessment and direction of the management of critically ill neonates and infants, including:

4.2.4.1. principles and techniques of resuscitation and post-resuscitation stabilization
4.2.4.2. vascular access
4.2.4.3. cardiorespiratory support, including assisted ventilation
4.2.4.4. continuous cardiorespiratory monitoring
4.2.4.5. temperature regulation
4.2.4.6. diagnostic procedures
4.2.4.7. general principles of critical care including maternal/fetal and neonatal transport and pretransport stabilization
4.2.4.8. assessment and management of pain and distress in newborn infants including those on assisted ventilation, those requiring frequent or potentially painful procedures and those in the postoperative phase

4.2.5. Support of the family

4.3. Ensure appropriate informed consent is obtained for investigations, therapies and where appropriate for participation in research projects

4.4. Ensure patients and their family receive appropriate, compassionate and ethical
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 Neonatal-Perinatal Medicine practice

5.1.1. Blood sampling (capillary, venous, arterial, catheter)
5.1.2. Lumbar puncture
5.1.3. Suprapubic aspiration of the bladder
5.1.4. Thoracentesis
5.1.5. Paracentesis

5.2. Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to Neonatal-Perinatal Medicine practice, including:

5.2.1. Neonatal resuscitation and post resuscitative care (Neonatal Resuscitation Program provider status)
5.2.2. Peripheral IV catheter placement
5.2.3. Peripheral arterial catheter placement
5.2.4. Umbilical arterial and venous catheter placement
5.2.5. Peripherally inserted central catheter (PICC) placement
5.2.6. Endotracheal intubation
5.2.7. Thoracentesis / chest tube placement
5.2.8. Exchange transfusion
5.2.9. Paracentesis and pericardiocentesis
5.2.10. Oro / nasogastric tube placement
5.2.11. Urinary catheter placement
5.2.12. Surfactant administration

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

5.5.1. Demonstrate knowledge of patient safety issues including complications of procedures and their resolution
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

6.2.1. Appropriate consultants may include other physicians, surgeons, pharmacist, dietitian, physio or occupational therapist, social worker, chaplain, bioethicist, and legal experts

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: Neonatal-Perinatal 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 physicians, and that effective physician-patient and physician-family communication can foster patient and family 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

1.2.1. Demonstrate an understanding of the family’s perspective and concern for the health of the fetus, neonate and infant and the impact of their illness on the family

1.2.2. Support and counsel families who are experiencing the stress of a high-risk pregnancy, critically ill or dying infant

1.2.3. Show respect and understanding of factors such as parental age, religion, ethno-cultural background, socioeconomic status which may affect the family’s experience and decision making

1.3. Respect patient and family 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 that includes other health care professionals involved in the care of the fetus and newborn as well as family
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 family’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
   
   2.2.1. Seek out and utilize information from other health care professionals, including physicians, nurses, social workers and midwives who are involved in care of the mother, infant and/or family
   
   2.2.2. Seek out and utilize information about the pregnancy including maternal perinatal screening, serology and fetal ultrasound when providing care for the infant

3. **Accurately convey relevant information and explanations to patients and families, colleagues and other professionals**
   
   3.1. Deliver information to families, colleagues and other professionals in a humane manner and in such a way that it is understandable, encourages discussion and participation in decision-making within their comfort level

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 and family encounter, including the family’s context, responses, concerns, and preferences
   
   4.2. Respect diversity and difference, including but not limited to the impact of age, gender, religion and cultural beliefs on decision-making
   
   4.2.1. Gather information not only about the disease of the fetus, newborn and young infant but also about the family’s beliefs, concerns and expectations about the illness, while considering the influence of factors such as cultural and socio-economic background and spiritual values
   
   4.3. Encourage discussion, questions, and interaction in the encounter
   
   4.4. Engage families and relevant health professionals in shared decision-making to develop a plan of care
   
   4.4.1. Understand and demonstrate the importance of cooperation and communication amongst members of the interprofessional team so that consistent messages are delivered to families
4.5. Effectively address challenging communication issues such as obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding

4.5.1. Demonstrate skills in working with families with different ethno-cultural or language background

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

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: Neonatal-Perinatal 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 Neonatal-Perinatal health care team such as nurses, nurse-practitioners, respiratory therapists, social workers, pharmacists, dieticians, therapists

1.3. Recognize and respect the diversity of roles, responsibilities and competences of other professionals in relation to their own

1.4. Work with others to assess, plan, provide and integrate care for individual patients (or groups of patients)

1.4.1. Develop a care plan for the fetus, neonate and infant, including investigation, treatment and continuing care, in collaboration with the members of the interprofessional team.

1.4.2. Understand the role of and work with community and governmental agencies who may be involved with the infant or family during or after hospitalization

1.4.3. Demonstrate the importance of cooperation and communication with allied health professionals of the Neonatal-Perinatal interprofessional team, such that the roles of these professionals are delineated and consistent messages are delivered to patients and their families
1.5. Where appropriate, work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities

1.6. Participate effectively in interprofessional team meetings

1.7. Enter into interdependent relationships with other professions for the provision of quality care

1.8. Describe the principles of team dynamics

1.9. Respect team ethics, including confidentiality, resource allocation and professionalism

1.10. 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

   2.2. Work with other professionals to prevent conflicts

   2.3. Employ collaborative negotiation to resolve conflicts

   2.4. Respect differences, misunderstandings and limitations in other professionals

   2.5. Recognize one’s own differences, misunderstandings 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: Neonatal-Perinatal 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. Demonstrate a particular understanding of patient safety issues in the NICU, that arise because of the vulnerability of the high risk infant and the use of medical technology
1.2.2. Understand the principles of quality assurance and administration, as well as the importance of principles of cost effectiveness and continuous quality assurance/improvement relevant to perinatal care

1.3. Describe the structure and function of the healthcare system as it relates to Neonatal-Perinatal Medicine, including the roles of physicians
   1.3.1. Understand basic concepts of physical design and function of the NICU
   1.3.2. Describe systems of regionalized perinatal and neonatal care, including the levels of maternal and neonatal care and their capabilities
   1.3.3. Understand appropriate placement of mothers and infants within a regionalized perinatal and neonatal health care system to ensure optimal care and effective use of health care resources
   1.3.4. Understand population-based approaches to neonatal-perinatal health care services and their implication for medical practice

1.4. Describe principles of healthcare financing, including physician remuneration, budgeting and organizational funding

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
      2.2.1. Participate in planning, budgeting, evaluation and outcome of a Neonatal-Perinatal patient care program
   2.3. Implement processes to ensure personal practice improvement
   2.4. Employ information technology appropriately for patient care
      2.4.1. Demonstrate ability to utilize electronic databases as a source of patient information
      2.4.2. Demonstrate understanding of perinatal and neonatal databases in provision of patient care and as sources of population data

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: Neonatal-Perinatal 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 and family considering factors such as maternal age, education, occupation, socio-economic and nutritional status
   1.1.1. Assess each patient's/family’s ability to access services in the health and social system

   1.2. Identify opportunities for advocacy, health promotion and disease prevention with patients and families to whom they provide care
   1.2.1. Promote and support policies which improve health outcomes for the fetus and infant such as breastfeeding, cessation of smoking, and immunization
   1.2.2. Assist families in accessing appropriate services and financial resources necessary for the care of their infant and family, before birth, during hospitalization and after discharge
   1.2.3. Provide anticipatory guidance to families with regard to care and safety of their child particularly in preparation for discharge from hospital including optimal follow-up

   1.3. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care
   1.3.1. Demonstrate leadership in clinical care and act as an advocate for further improvements in outcome for the fetus and newborn
   1.3.2. Assume an advocacy role when monitoring and allocating needed resources, primarily for the individual but also in the context of societal needs

2. **Respond to the health needs of the communities that they serve**
   2.1. Describe the practice communities that they serve
   2.1.1. Identify groups within practice community who are at risk of adverse pregnancy and neonatal outcomes such as adolescents, recent immigrants and First Nations

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2.1.2. Describe the use of population data to identify health problems within communities and populations (e.g. rates of adolescent pregnancy, low birth weight, perinatal mortality and morbidity)

2.2. Identify and respond appropriately to opportunities for advocacy, health promotion and disease prevention in the communities that they serve

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. Issues of maternal health that affect fetal, neonatal or infant health (i.e., poverty, unemployment, education, social support systems)

3.1.2. Health care issues in the general population such as substance abuse which are relevant to Neonatal-Perinatal Medicine

3.2. Identify vulnerable or marginalized populations, in particular those who are at risk of adverse pregnancy and neonatal outcomes such as adolescents, recent immigrants, First Nations, and apply available knowledge about prevention to the “at risk” groups

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. Be familiar with examples of policy implementation or change effected as a result of actions by physicians and the impact on maternal, fetal and neonatal health (such as folic acid supplementation and incidence of neural tube defects)

4.3. Describe how public policy impacts on the health of the mother, fetus, infant or neonate, either positively or negatively (e.g., communicable diseases, tobacco, substance abuse)

4.4. Identify points of influence in the healthcare system and its structure including the role of governmental and non-governmental organizations such as the Canadian Paediatric Society and community advocacy groups in developing health policies and advocating for infants and families

4.5. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism

4.6. Appreciate the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper

4.7. 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: Neonatal-Perinatal 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 profile that includes insight and self assessment
   1.5. Pose an appropriate learning question which includes recognizing gaps in knowledge, formulating and implementing a plan, evaluating the outcome and reassessing (self audit)
   1.6. Access and interpret the relevant evidence
      1.6.1. Be familiar with tools that are available to access information relevant to Neonatal-Perinatal Medicine such as the Cochrane Collaboration database
   1.7. 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 relevant to Neonatal-Perinatal Medicine
   2.3. Apply critical appraisal conclusions into clinical care of the fetus, neonate, infant
   2.4. Assess new scientific developments related to effective patient care and improved outcome in Neonatal-Perinatal Medicine

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
      3.3.1. Apply principles of adult learning in teaching
3.3.2. Demonstrate ability to effectively teach, supervise and evaluate junior trainees and students in the clinical setting

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 as they apply to infants and children
   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

**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: Neonatal-Perinatal 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. Use appropriate strategies to maintain and advance professional competence. This will include continually evaluating one's abilities, knowledge and skills and knowing one's limitations
   1.4. Recognize and appropriately respond to ethical issues relating to Neonatal-Perinatal Medicine and use this understanding in providing care.
   1.5. Understand and appropriately manage conflicts of interest
1.6. Recognize the principles and limits of patient and family confidentiality as defined by professional practice standards and the law

1.7. Maintain appropriate relations with patients and families

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, including:

   2.1.1. Withholding and withdrawal of treatment

   2.1.2. Truth-telling

   2.1.3. Informed consent

   2.1.4. Advanced directives

   2.1.5. Confidentiality

   2.1.6. End-of-life care

   2.1.7. Conflict of interest

   2.1.8. Resource allocation

   2.1.9. Research ethics

   2.2. Describe the regulatory and legal obligations required of current Neonatal-Perinatal Medicine 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