ACGME International

Advanced Specialty Program Requirements for Graduate Medical Education in Neonatology (Pediatrics)

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I Introduction

I.A. Definition and Scope of Specialty

Neonatology is a subspecialty of pediatrics that consists of the medical care of the newborn infant, especially the ill or premature newborn infant. It is a hospital-based specialty, and is usually practiced in neonatal intensive care units (NICUs). The principal patients of neonatologists are newborn infants who are ill or requiring special medical care due to prematurity, low birth weight, intrauterine growth restriction, congenital malformations (birth defects), sepsis, or birth asphyxias.

I.B. Duration of Education

I.B.1. The education program in neonatology must be 36 or 48 months in length.

II Institutions

II.A. Sponsoring Institution

II.A.1. The Sponsoring Institution must sponsor an ACGME International (ACGME-I)-accredited program in pediatrics, and must be affiliated with an ACGME-I-accredited obstetrics and gynecology residency program.

II.A.1.a) The obstetrics and gynecology program must be within the same geographic location as the fellowship, and must have certified maternal-fetal medicine specialists.

II.B. Participating Sites

See International Subspecialty Foundational Requirements, Section I.B.

III Program Personnel and Resources

III.A. Program Director

See International Subspecialty Foundational Requirements, Section II.A.

III.B. Faculty

III.B.1. At least four full-time neonatologists must contribute sufficient time and effort to the educational program to fulfill the supervisory, teaching, and mentoring requirements of the program.

III.B.2. The full range of pediatric subspecialists necessary for teaching and consultation must be available.

III.B.3. Other physician faculty members must be available, including:

III.B.3.a) appropriate consultants in related disciplines, to include a pediatric neurologist, a geneticist, a consultant skilled in neurodevelopment, and a pediatric radiologist; and,

III.B.3.b) a full range of surgical subspecialists with experience in pediatrics, for teaching and consultation, to include consultant faculty members from cardiothoracic surgery, neurological surgery, ophthalmology, orthopaedic surgery, otolaryngology, pediatric surgery, and urology.

III.C. Other Program Personnel

III.C.1. The program must have access to the following professional staff skilled in the care of critically-ill and/or premature neonates: medical social workers skilled in management of families in crisis and end-of-life care; nurses; nutritionists skilled in the management of both enteral and parenteral nutrition; pharmacists; respiratory therapists; specialists in physical and occupational therapy applied in a developmentally appropriate way; specialists in the assessment of hearing; and therapists skilled in evaluating feeding difficulties initially or in follow-up.

III.D. Resources

III.D.1. A neonatal database of all patient admissions, diagnoses, and outcomes must be available for fellow education.

III.D.2. A specially-designated NICU must be located at the primary clinical site.

III.D.2.a) Facilities and equipment in that unit must meet the generally-accepted standards of modern intensive care units, and appropriate laboratory services must be available 24-hours a day.

III.D.2.b) Facilities and resources must include portable x-ray, ultrasound imaging, electrocardiography (ECG), neonatal echocardiography, and electroencephalography (EEG) services.

III.D.2.b).(1) EEG services should be available on a 24-hour-a-day basis with 24-hour-a-day interpretation services available.

III.D.2.c) The NICU follow-up clinic must have staff members with expertise in performing developmental assessments, as well as skilled neonatal or pediatric faculty members as teachers for fellows.

III.D.3. The perinatal service must have facilities and equipment which meet the generally-accepted standards for high-risk newborn resuscitation.

III.D.4. The program must provide the patient care experiences necessary for fellows to acquire skill in delivery room stabilization and resuscitation of critically-ill neonates, including:

III.D.4.a) a sufficient number and variety of high-risk obstetrical patients to ensure that fellows become knowledgeable in identifying high-risk pregnancies and evaluating fetal well-being and maturation; and,

III.D.4.b) a sufficient number of infants discharged to a NICU.

III.D.5. The primary clinical site must meet the generally-accepted standards for modern laboratories and services needed for management of high-risk pregnancies and critically-ill neonates, including:

III.D.5.a) microchemistry and hematology laboratories;

III.D.5.b) blood gas analysis;

III.D.5.c) perinatal diagnostic laboratory;

III.D.5.d) pathology services, to include those for evaluation of placental pathology;

III.D.5.e) diagnostic bacteriology and virology laboratories;

III.D.5.f) blood bank; and,

III.D.5.g) accessible computed tomography (CT) and magnetic resonance imaging (MRI) facilities.

III.D.6. Participating sites should have access to the following:

III.D.6.a) screening laboratory for inborn errors of metabolism;

III.D.6.b) clinical toxicology laboratory;

III.D.6.c) nuclear medicine facilities;

III.D.6.d) cytogenetics laboratory; and,

III.D.6.e) audiology services.

IV Fellow Appointment

IV.A. Eligibility Criteria

IV.A.1. Prior to appointment in the program, fellows should have completed an ACGME-I-accredited core specialty program in pediatrics.

IV.B. Number of Fellows

See International Subspecialty Foundational Requirements, Section III.B.

V Specialty-Specific Educational Program

V.A. Regularly Scheduled Didactic Sessions

V.A.1. All core educational sessions must have at least one faculty member present, and must be scheduled to ensure peer-peer and peer-faculty interaction.

V.A.2. Patient-based teaching must include direct interaction between fellows and faculty members, bedside teaching, discussion of pathophysiology, and the use of current evidence in diagnostic and therapeutic decisions. The teaching must be:

V.A.2.a) formally conducted on all inpatient, outpatient, and consultative services; and,

V.A.2.b) conducted with a frequency and duration that ensures a meaningful and continuous teaching relationship between the assigned supervising faculty member(s) and fellows.

V.A.3. Fellows must receive instruction in practice management relevant to neonatology.

V.A.4. The program must provide fellows with instruction in related basic sciences.

V.A.5. Seminars, conferences, and courses must be offered in the basic disciplines related to pregnancy, the fetus, and the neonate, and must include:

V.A.5.a) maternal physiological, biochemical, and pharmacological influences on the fetus;

V.A.5.b) fetal physiology;

V.A.5.c) fetal development;

V.A.5.d) placental function (placental circulation, gas exchange, growth);

V.A.5.e) physiological and biochemical adaptation to birth;

V.A.5.f) cellular, molecular, and developmental biology and pathology relevant to diseases of the neonate;

V.A.5.g) psychology of pregnancy and maternal-infant interaction, breast feeding and lactation, and growth and nutrition; and,

V.A.5.h) genetics.

V.A.6. Fellows must have formal instruction in the general principles of critical care, including in techniques of neonatal resuscitation, venous and arterial access, evacuation of air leaks, endotracheal intubation, preparation for transport, ventilator support, continuous monitoring, temperature control, and nutritional support.

V.A.7. Fellows must have instruction in the psychosocial implications of disorders of the fetus, neonate, and young infant, as well as in the family dynamics surrounding the birth and care of a sick neonate.

V.A.8. Fellows must have instruction on how to be effective consultants in neonatal-perinatal medicine.

V.A.9. Fellows must receive instruction in conducting and interpreting relevant scholarly efforts in neonatal-perinatal medicine and teaching neonatal-perinatal medicine effectively.

V.A.10. Fellows must receive instruction on the care of neonates requiring cardiac surgical procedures and their post-operative complications.

V.A.11. Fellows must learn to identify the high-risk pregnancy, and must become familiar with the methods used to evaluate fetal well-being and maturation.

V.A.12. Fellows must become familiar with factors that may compromise the fetus during the intrapartum period, and recognize the signs of fetal distress.

V.A.13. Fellows should receive instruction about and participate in the education of physicians and other health care professionals regarding emerging issues and factors impacting regional perinatal morbidity and mortality.

V.A.14. Fellows should receive instruction about the tabulation and evaluation of an institutional database.

V.A.15. Fellows should receive instruction and experience in techniques of collation and critical interpretation of data pertaining to immediate outcome and sequelae of various diseases.

V.A.15.a) This experience should be closely related to the evaluations of various modalities of therapy used in these disorders.

V.B. Clinical Experiences

V.B.1. Fellows must have at least 18 months of clinical experience.

V.B.2. Fellows must be directly involved in the care of critically-ill surgical patients to attain competence in their evaluation, diagnosis, and pre- and post-operative management.

V.B.2.a) There must be coordination of care and collegial relationships between pediatric surgeons, neonatologists, and critical care intensivists concerning the management of medical problems in these complex critically-ill patients.

V.B.3. Fellows must have clinical experience adequate to manage critically-ill neonates, including in use of the following techniques:

V.B.3.a) continuous monitoring;

V.B.3.b) endotracheal intubation;

V.B.3.c) evacuation of air leaks;

V.B.3.d) neonatal resuscitation;

V.B.3.e) nutrition support;

V.B.3.f) preparation for transport;

V.B.3.g) temperature control;

V.B.3.h) venous and arterial access; and,

V.B.3.i) ventilator support.

V.B.4. Fellows must be able to identify the high-risk pregnancy, and apply the methods used to evaluate fetal well-being and maturation.

V.B.5. Fellows must readily recognize and address factors that may compromise the fetus during the intrapartum period, and the signs of fetal distress.

V.B.6. Fellows must participate in the follow-up of high-risk neonates.

V.B.7. Fellows must have exposure to critically-ill neonates with diverse medical and surgical conditions.

V.B.8. Fellows must participate in the care of a sufficient number of neonates who require ventilatory assistance in order to become skilled in their management.

V.B.9. Fellows must participate in the care of neonates requiring cardiac surgical procedures and their post-operative complications.

V.B.10. Fellows should have clinical experience in patient consultation, communication with referring physicians, and in organizing transport of neonates within the framework of an integrated regional system with different levels of perinatal care.

V.B.11. NICU follow-up clinic experiences should enable fellows to:

V.B.11.a) understand the relationship between neonatal illnesses and later health and development; and,

V.B.11.b) become aware of the socioeconomic impact and psychosocial stress that such infants may place on a family.

V.C. Fellows' Scholarly Activities

See International Subspecialty Foundational Requirements, Section IV.C.

V.D. Duty Hour and Work Limitations

See International Subspecialty Foundational Requirements, Section VI.

VI ACGME-I Competencies

VI.A. Patient Care

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows must demonstrate proficiency in:

VI.A.1. the evaluation, diagnosis, and pre- and post-operative management of neonatal-perinatal patients;

VI.A.2. coordinating care between pediatric surgeons, neonatologists, and critical care intensivists;

VI.A.3. psychosocial implications of disorders of the fetus, neonate, and young infant;

VI.A.4. family dynamics surrounding the birth and care of a sick neonate;

VI.A.5. identifying high-risk pregnancy;

VI.A.6. methods used to evaluate fetal well-being and maturation;

VI.A.7. factors that may compromise the fetus during the intrapartum period, and in recognizing the signs of fetal distress;

VI.A.8. follow-up of high-risk neonates;

VI.A.9. consulting in neonatal-perinatal medicine;

VI.A.10. providing ventilatory assistance to neonates;

VI.A.11. providing care of neonates requiring cardiac surgical procedures and their post-operative complications; and,

VI.A.12. evaluating various modalities of therapy used for neonatal-perinatal disorders.

VI.B. Medical Knowledge

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Fellows must demonstrate proficiency in their knowledge of:

VI.B.1. the relevant basic sciences;

VI.B.2. basic disciplines related to pregnancy, the fetus, and the neonate;

VI.B.3. maternal physiological, biochemical, and pharmacological influences on the fetus;

VI.B.4. fetal physiology;

VI.B.5. fetal development;

VI.B.6. placental function (placental circulation, gas exchange, growth);

VI.B.7. physiological and biochemical adaptation to birth;

VI.B.8. cellular, molecular, and developmental biology and pathology relevant to diseases of the neonate;

VI.B.9. psychology of pregnancy and maternal-infant interaction;

VI.B.10. breast feeding and lactation;

VI.B.11. growth and nutrition;

VI.B.12. genetics;

VI.B.13. the tabulation and evaluation of an institutional database; and,

VI.B.14. techniques of collation and critical interpretation of data pertaining to immediate outcome and sequelae of various diseases.

VI.C. Practice-based Learning and Improvement

Fellows must demonstrate proficiency in their ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

VI.D. Interpersonal and Communication Skills

Fellows must demonstrate proficiency in their interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

VI.E. Professionalism

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

VI.F. Systems-based Practice

Fellows must demonstrate proficiency in their awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.