

# ACGME Program Requirements for Graduate Medical Education in Pediatric Hematology-Oncology

*Effective: July 1, 2007*

## Introduction

### Int.A. Scope of Educational Experience

- Int.A.1. Subspecialty programs in pediatric hematology-oncology must provide an educational environment for fellows to develop an understanding of the pathophysiology of pediatric hematologic and oncologic disorders, as well as competence in the clinical diagnosis and management of these disorders. The program must provide a continuity of care experience that will allow fellows to understand the psychosocial aspects and natural history of these disorders. There must be training in the selection, performance, and evaluation of procedures necessary for appropriate assessment of these disorders.
- Int.A.2. The program must emphasize the fundamentals of clinical diagnosis, with special emphasis on history-taking, physical examination and interpersonal communication skills. There must be sufficient clinical experience with both inpatients and outpatients who have hematologic and oncologic disorders to allow fellows to develop skill in diagnosing and managing both common and unusual problems. The scope of clinical experience must lead to an understanding of and exposure to clinical research, enrollment on treatment protocols, and ethical issues in managing patients on institutional and multi-institutional protocols.

## VIII. Program Personnel and Resources

### VIII.A. Faculty

#### VIII.A.1. Pediatric Hematology-Oncology Specialists

At least four pediatric hematologists/oncologists must be based at the primary teaching site, and must devote sufficient time to the program both to ensure adequate teaching and to provide critical evaluation of the progress and competence of the fellows.

#### VIII.A.2. Other Physician Teaching and Consultant Faculty

In addition to the full range of pediatric subspecialists, appropriate consultants must be available in related disciplines, including radiation oncology, gynecology, neuro-oncology, pediatric pathology, hematopathology, neuropathology, immunopathology, pediatric radiology, nuclear medicine, pediatric general surgery, neurosurgery, ophthalmology, otolaryngology, orthopedics, urology, and transfusion medicine.

VIII.B. Other Program Personnel

Consultation should be available from pediatric psychiatry, pediatric psychology, physical medicine and rehabilitation, pain medicine, and palliative care. A pediatric oncology pharmacist or PharmD on the hematology-oncology team is suggested.

VIII.C. Resources

VIII.C.1. The program must provide space in an ambulatory setting equipped for optimal evaluation and care of patients, including facilities for outpatient chemotherapy and transfusions. An inpatient area with a full array of pediatric and related services staffed by pediatric fellows and faculty must also be present.

VIII.C.2. The program must have access to specialized laboratories capable of assaying red blood cell enzymes, identifying unusual hemoglobins, preparing and interpreting bone marrow aspirates and biopsies, performing human lymphocyte antigen typing, immunophenotyping of leukemic blast cells, performing flow cytometry, performing cytogenetic analyses, and identifying complex congenital and/or acquired abnormalities of hemostasis and thrombosis.

VIII.C.3. The principal training site should have available the diagnostic services of radiology, including full-body magnetic resonance imaging, nuclear medicine, computerized tomography, sonography, and angiography. Timely access to diagnostic service in clinical chemistry, microbiology, virology, immunology and cytogenetics must be available.

VIII.C.4. Patient Population

VIII.C.4.a) Adequate numbers of patients with hematologic and oncologic disorders, ranging in age from newborn through young adult, must be available to the training program. Each fellow must have continuing responsibility for the care of patients with malignant disease and with chronic hematologic problems over the duration of their training.

VIII.C.4.b) A program should have at least 60 patients with newly-diagnosed oncologic disease and at least 60 patients with newly-diagnosed hematologic disease each year. A program having fewer such patients must specifically demonstrate that it is able to provide the breadth of experience required for the number of fellows in the program.

VIII.C.4.c) To become familiar with the hematologic manifestations of a broad spectrum of pediatric illnesses, each fellow must provide consultation for a sufficient variety of patients. A program without a sizable population of patients with non-oncologic, hematologic disorders, such as one based in a cancer center, must demonstrate how fellows will learn how to diagnose and manage

sickle cell disease, hemophilia, and other acute and chronic hematologic problems (see IV.A.2. below). A program having fewer such patients must specifically demonstrate that it is able to provide the breadth of experience required for the number of fellows in the program.

IX. Educational Program

IX.A. Patient Care

IX.A.1. The program must demonstrate how it ensures that all fellows become familiar with the management of children with hematologic and oncologic diseases.

IX.A.1.a) The pediatric hematology component of the program must ensure that fellows demonstrate competence in the diagnosis and treatment of children with disorders of red blood cells, white blood cells, platelets, hemostasis and thrombosis, and bone marrow failure. The program must include formal structured educational experiences in the acute and chronic complications of blood disorders, including but not limited to sickle cell anemia, hemophilia, and aplastic anemia. These formal structured educational experiences must include the applications of new diagnostic techniques to patient care, and the roles of genetic testing and counseling.

IX.A.1.b) The pediatric oncology component of the program must include education in the staging and classification of tumors, the application of multimodal therapy, the epidemiology and etiology of childhood cancer, making appropriate observations, and keeping accurate patient data. The experience should include learning to function as a member of a multidisciplinary team serving patients with cancer and chronic hematologic disorders, and should ensure that fellows demonstrate competence in the uses and management of chemotherapy, as well as the pertinent aspects of surgical therapy and radiotherapy in managing patients with malignant diseases. The program must include formal education in the elements of long-term, follow-up care, including monitoring for late effects of treatment or disease.

IX.A.2. Fellows must have both inpatient and outpatient clinical experience caring for patients with a broad variety of hematologic and oncologic problems that should include but not be limited to the following categories:

IX.A.2.a) hematologic disorders of the newborn;

IX.A.2.b) hemoglobinopathies, including the thalassemia syndromes;

IX.A.2.c) inherited and acquired disorders of the red-blood-cell membrane and of red-blood cell metabolism;

- IX.A.2.d) autoimmune disorders, including hemolytic anemia;
- IX.A.2.e) nutritional anemia;
- IX.A.2.f) inherited and acquired disorders of white blood cells;
- IX.A.2.g) hemophilia, von Willebrand's disease, and other inherited and acquired coagulopathies;
- IX.A.2.h) platelet disorders, including idiopathic thrombocytopenic purpura (ITP), and acquired and inherited platelet function defects;
- IX.A.2.i) congenital and acquired thrombotic disorders;
- IX.A.2.j) leukemias, including acute lymphoblastic leukemia, acute and chronic myeloid leukemias, and myelodysplastic syndromes;
- IX.A.2.k) Hodgkin's disease and non-Hodgkin's lymphomas;
- IX.A.2.l) solid tumors of organs, soft tissue, bone, and central nervous system;
- IX.A.2.m) bone marrow failure;
- IX.A.2.n) transfusion medicine and use of blood products;
- IX.A.2.o) management of the patient undergoing long-term transfusion therapy;
- IX.A.2.p) bone marrow reconstitution, including use of allogeneic peripheral blood stem cells and umbilical cord blood; and,
- IX.A.2.q) graft versus host disease.
  
- IX.A.3. The program must also ensure that all fellows demonstrate competence in the diagnosis and management of complications of disease and therapy, including treatment of infections in the compromised host. Fellows must demonstrate their understanding of the indications and procedures for transfusion therapy, including proper use of blood components, coagulation factors, apheresis, and platelet pheresis.
  
- IX.A.4. Fellows must have a structured educational experience in stem cell transplantation, including the indications for transplantation, processes for donor identification, methods of stem cell harvest and infusion, preparative regimens before transplant, and management of transplant-related complications.
  
- IX.A.5. The program must ensure that all fellows demonstrate competence in the methods of physiologic support of the patient, including provision of nutrition (both enteral and parenteral), control of nausea and vomiting, and management of pain. The fellow must have structured educational

experiences in psychological and social support of patients, families, and staff, including the recognition and management of psychosocial stresses and problems, serving as a member of a multidisciplinary team, demonstrating skill in communication and counseling, and the provision of comprehensive care.

- IX.A.6. Throughout the three years of training, the fellow must attend a regularly-scheduled outpatient clinic that provides experience in continuity and follow-up care of patients under their care. The clinic must be supervised by one or more members of the pediatric hematology/oncology faculty.
- IX.A.7. The program must document that the fellow participates in the activities of the tumor board. The training program must provide structured educational experiences on how to collect and analyze accurate patient data to improve patient care, and how data recording and analysis is conducted as part of collaborative or cooperative group clinical trials.
- IX.A.8. Fellows must have appropriate structured educational experiences in the laboratories, including blood bank and tissue pathology. There must be instruction in the proper use of laboratory techniques for diagnosis, with recognition of the limitations of the various methods and the pitfalls in interpretation of laboratory results. This should include the normal variations in laboratory data that occur at different ages, as well as the influence of medications, toxins, and systemic disease on hematologic values test results.
- IX.A.9. The program must provide the instruction and experiential learning to enable fellows to perform and interpret:
- IX.A.9.a) bone marrow aspiration and biopsy;
  - IX.A.9.b) lumbar puncture with evaluation of cerebrospinal fluid;
  - IX.A.9.c) microscopic interpretation of peripheral blood films; and,
  - IX.A.9.d) all hematologic laboratory diagnostic tests.
- IX.A.10. Faculty should emphasize to fellows that they Review and interpret peripheral blood smear, bone marrow aspiration, and biopsy.

IX.B. Medical Knowledge

- IX.B.1. The training program should provide structured educational instruction in the related basic sciences. This should include, but not be limited to: the structure and function of hemoglobin and iron metabolism, the phagocytic system, splenic function, cell kinetics, immunology, coagulation, genetics, the principles of radiation therapy, the characteristics of malignant cells, tissue typing, blood groups, pharmacology of chemotherapeutic agents, molecular biology, microbiology and anti-infective agents in the compromised host, and nutrition.

IX.B.2.

Within the research conferences and clinical experiences, the program must address multi-site or multi-center collaborative clinical and research activities (such as those exemplified by the pediatric oncology cooperative groups, regional hemophilia, or thalassemia programs), as well as the problems and issues of data collection and analysis.

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