



ACGME International

**Advanced Specialty Program Requirements for
Graduate Medical Education in
Hematology
(Internal Medicine)**

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I Introduction

I.A. Definition and Scope of Specialty

The medical specialty of hematology is concerned with the study of blood, the blood-forming organs, and blood diseases. Hematology includes the study of etiology, diagnosis, treatment, prognosis, and prevention of blood diseases.

I.B. Duration of Education

I.B.1. The education program in hematology must be 24 or 36 months in length.

II Institutions

II.A. Sponsoring Institution

See International Subspecialty Foundational Requirements, Section I.A.

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. Faculty members must teach and supervise the fellows in the performance and interpretation of procedures, and this must be documented in each fellow's record, including indications, outcomes, diagnoses, and supervisor(s).

III.C. Other Program Personnel

III.C.1. The program must have access to surgeons in general surgery and surgical specialties, including those with special interest in oncology.

III.C.2. The program must have access to other clinical specialists, including those in dermatology, neurological surgery, neurology, obstetrics and gynecology, orthopaedic surgery, otolaryngology, and urology.

III.C.3. Expertise in the following disciplines should be available to the program to provide multidisciplinary patient care and fellow education:

- III.C.3.a) genetic counseling;
- III.C.3.b) hospice and palliative care;
- III.C.3.c) oncologic nursing;
- III.C.3.d) pain management;
- III.C.3.e) psychiatry; and,
- III.C.3.f) rehabilitation medicine.

III.D. Resources

- III.D.1. Radiation oncology facilities must be available.
- III.D.2. The following laboratory and imaging services must be present at the primary clinical site or at participating sites:
 - III.D.2.a) a specialized coagulation laboratory;
 - III.D.2.a).(1) This may be located at institutions other than the primary clinical site.
 - III.D.2.b) a hematology laboratory;
 - III.D.2.c) cross-sectional imaging, including computed tomography (CT) and magnetic resonance imaging (MRI);
 - III.D.2.d) nuclear medicine imaging; and,
 - III.D.2.e) positron emission tomography (PET) scan imaging.
- III.D.3. There must be advanced pathology services, including:
 - III.D.3.a).(1) blood banking;
 - III.D.3.a).(2) immunopathology; and,
 - III.D.3.a).(3) transfusion and apheresis services.
- III.D.4. There must be a medical oncology clinical program with which hematology fellows may interact.
- III.D.5. The patient population must have a variety of hematologic disorders.

IV Fellow Appointment

IV.A. Eligibility Criteria

IV.A.1. Prior to appointment in the program, fellows should have completed an ACGME International (ACGME-I)-accredited core specialty program in internal medicine.

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. Fellows must participate in multidisciplinary case management or tumor board conferences and in protocol studies.

V.A.2. Fellows must receive instruction in:

V.A.2.a) the performance and interpretation of partial thromboplastin time, prothrombin time, platelet aggregation, and bleeding time, as well as other standard and specialized coagulation assays; and,

V.A.2.b) tests of hemostasis.

V.B. Clinical Experiences

V.B.1. At least 12 months must be devoted to clinical experience.

V.B.2. The program must provide at least one month of clinical experience in autologous and allogeneic bone marrow transplantation.

V.B.3. Inpatient assignments should be of sufficient duration to permit continuing care of a majority of the patients throughout their hospitalization.

V.B.4. Fellows must assume continuing responsibility for acutely- and chronically-ill patients in order to observe and manage both inpatients and outpatients with a wide variety of blood and neoplastic disorders, as well as the benefits and adverse effects of therapy.

V.B.5. Fellows must participate in training using simulation.

V.B.6. Fellows must have experience in the role of a hematology consultant in both the inpatient and outpatient settings.

V.B.7. Fellows should participate in the care of patients undergoing:

V.B.7.a) apheresis procedures; and,

V.B.7.b) bone marrow or peripheral stem cell harvest for transplantation.

- V.B.8. Fellows should have experience with:
- V.B.8.a) performance and interpretation of partial thromboplastin time, prothrombin time, platelet aggregation, and bleeding time, as well as other standard and specialized coagulation assays; and,
 - V.B.8.b) test of hemostasis.
- V.B.9. Fellows should have a structured continuity ambulatory clinic experience that exposes them to the breadth and depth of hematology.
- V.B.9.a) This experience should include an appropriate distribution of patients of each gender and a diversity of ages.
 - V.B.9.b) This experience should average one half-day each week throughout the program.
 - V.B.9.c) Each fellow should, on average, be responsible for four to eight patients during each half-day session.
 - V.B.9.c).(1) Each fellow should, on average, be responsible for no more than eight to 12 patients during each half-day ambulatory session.
 - V.B.9.d) The continuing patient care experience should not be interrupted by more than one month, excluding a fellow's vacation.

V.C. Fellows' Scholarly Activities

See International Subspecialty Foundational Requirements, Section IV.C.

V.D. Duty Hour and Work Limitations

- V.D.1. Direct supervision of procedures performed by each fellow must occur until competence has been acquired and documented by the program director.

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 practice of health promotion, disease prevention, diagnosis, care, and treatment of patients of each gender, from adolescence to old age, during health and all stages of illness;
- VI.A.2. providing consultations;

- VI.A.3. assessment of hematologic disorders by CT, MRI, PET scanning, and nuclear imaging techniques;
- VI.A.4. care and management of geriatric patients with hematologic disorders;
- VI.A.5. care and management of venous access devices;
- VI.A.6. care of patients with human immunodeficiency virus (HIV)-related malignancies;
- VI.A.7. correlation of clinical information with cytology, histology, and immunodiagnostic imaging techniques;
- VI.A.8. evaluation and management of diagnosis, pathology, staging, and management of neoplastic disorders of the:
 - VI.A.8.a) lymphoid organs; and,
 - VI.A.8.b) hematopoietic system.
- VI.A.9. indications and application of imaging techniques in patients with neoplastic and blood disorders;
- VI.A.10. intrathecal administration of chemotherapeutic agents;
- VI.A.11. management and care of indwelling access catheters;
- VI.A.12. management of the neutropenic and the immunocompromised patient;
- VI.A.13. management of pain, anxiety, and depression in patients with hematologic disorders;
- VI.A.14. multidisciplinary management of hematologic malignancies;
- VI.A.15. palliative care, including hospice and home care;
- VI.A.16. performance and interpretation of bone marrow aspiration and biopsy;
- VI.A.17. performance and interpretation of lumbar puncture and interpretation of cerebrospinal fluid;
- VI.A.18. performance of assessment and interpretation of complete blood count, including platelet and white cell differential, by means of automated or manual techniques, with appropriate quality control;
- VI.A.19. preparation staining and interpretation of blood smears, bone marrow aspirates, and touch preparations, as well as interpretation of bone marrow biopsies;
- VI.A.20. rehabilitation and psychosocial care of patients with hematologic disorders;

- VI.A.21. role and use of hematologic, infectious disease, and nutrition support;
- VI.A.22. tests of hemostasis and thrombosis for both congenital and acquired disorders and regulation of antithrombotic therapy;
- VI.A.23. treatment and diagnosis of paraneoplastic disorders;
- VI.A.24. treatment of patients with acquired and congenital disorders of hemostasis and thrombosis, including the biochemistry and pharmacology of coagulation factor replacement therapy and use of antithrombotic therapy;
- VI.A.25. use of chemotherapeutic agents and biological products through all therapeutic routes;
- VI.A.26. use of chemotherapeutic drugs, biologic products, and growth factors, as well as their mechanisms of action, pharmacokinetics, clinical indications, and limitations, including their effects, toxicity, and interactions; and,
- VI.A.27. use of multiagent chemotherapeutic protocols and combined modality therapy of hematologic malignancies.

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 knowledge of:

- VI.B.1. the scientific method of problem solving and evidence-based decision making;
- VI.B.2. indications, contraindications, and techniques for, and limitations, complications, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline, including the appropriate indications for and use of screening tests/procedures;
- VI.B.3. pathogenesis, diagnosis, and treatment of disease, including:
 - VI.B.3.a) basic molecular and pathophysiologic mechanisms, diagnosis, and therapy of diseases of the blood, including anemias, diseases of white blood cells and stem cells; and,
 - VI.B.3.b) disorders of hemostasis and thrombosis for both congenital and acquired disorders and regulation of antithrombotic therapy.
- VI.B.4. genetics and developmental biology, including:
 - VI.B.4.a) cytogenetics, and the nature of oncogenes and their products; and,

- VI.B.4.b) prenatal diagnosis where appropriate.
- VI.B.5. physiology and pathophysiology, including:
 - VI.B.5.a) hematopoiesis;
 - VI.B.5.b) molecular mechanisms of hematopoietic and lymphopoietic malignancies;
 - VI.B.5.c) principles of oncogenesis; and,
 - VI.B.5.d) tumor immunology.
- VI.B.6. clinical epidemiology and biostatistics, including clinical study and experimental protocol design, data collection, and analysis;
- VI.B.7. basic principles of laboratory and clinical testing, quality control, quality assurance, and proficiency standards;
- VI.B.8. immune markers, immunophenotyping, flow cytometry, cytochemical studies, and cytogenetic and DNA analysis of neoplastic disorders;
- VI.B.9. malignant and hematologic complications of organ transplantation;
- VI.B.10. gene therapy;
- VI.B.11. effects of systemic disorders and drugs on the blood, blood-forming organs, and lymphatic tissues;
- VI.B.12. transfusion medicine, including the evaluation of antibodies, blood compatibility, and the indications for and complications of blood component therapy and apheresis procedures;
- VI.B.13. principles of, indications for, and limitations of radiation therapy in the treatment of cancer;
- VI.B.14. indications for and complications of autologous and allogeneic bone marrow or peripheral blood stem cell transplantation;
- VI.B.15. principles of, indications for, and complications of peripheral stem cell harvests; and,
- VI.B.16. the mechanisms of action, pharmacokinetics, clinical indications for, and limitations of chemotherapeutic drugs, biologic products, and growth factors, including their effects, toxicity, and interactions.

VI.C. Practice-based Learning and Improvement

Fellows must demonstrate the 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 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 an 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.