ACGME International

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

Reformatted: 1 April 2022
Revised: 12 December 2015, Effective: 1 July 2016
Initial Approval: 8 January 2013

ACGME International Specialty Program Requirements for Graduate Medical Education in Hematology (Internal Medicine)

Int. Introduction

Background and Intent: Programs must achieve and maintain Foundational Accreditation according to the ACGME-I Foundational Requirements prior to receiving Advanced Specialty Accreditation. The Advanced Specialty Requirements noted below complement the ACGME-I Foundational Requirements. For each section, the Advanced Specialty Requirements should be considered together with the Foundational Requirements.

Int. I. Definition and Scope of the 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.~~ Hematology is the internal medicine subspecialty that focuses on the care of patients with disorders of the blood, bone marrow, and the lymphatic, immunologic, hemostatic, and vascular systems.

Int. II. Duration of Education

Int. II.A. The educational program in hematology must be 24 or 36 months in length.

I. Institution

I.A. Sponsoring Institution

I.A.1. A fellowship in hematology must function as an integral part of an ACGME-I- accredited residency in internal medicine.

I.B. Participating Sites

See International Foundational Requirements, Section I.B.

II. Program Personnel and Resources

II.A. Program Director

See International Foundational Requirements, Section II.A.

II.B. Faculty

II.B.1. Programs must appoint at least one of the core faculty members to be associate program director(s), and the associate program director(s) must be provided with support for education and administration of the program.

II.B.2. Qualified faculty members in the following subspecialties should be available for the education of fellows:

II.B.2.a) cardiovascular disease;

II.B.2.b) endocrinology;

II.B.2.c) gastroenterology;

II.B.2.d) hospice and palliative medicine;

II.B.2.e) infectious disease;

II.B.2.f) medical oncology; and,

II.B.2.g) pulmonary disease.

II.C. Other Program Personnel

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

II.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.

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

II.C.3.a) genetic counseling;

~~II.C.3.b) hospice and palliative care;~~

II.C.3.b) oncologic nursing;

II.C.3.c) pain management;

II.C.3.d) psychiatry; and,

II.C.3.e) rehabilitation medicine.

II.D. Resources

II.D.1. Radiation oncology facilities must be available.

II.D.2. The following laboratory and imaging services must be present at the primary clinical site or at participating sites:

II.D.2.a) cross-sectional imaging, including computed tomography (CT) and magnetic resonance imaging (MRI);

II.D.2.b) hematology laboratory;

II.D.2.c) nuclear medicine imaging;

II.D.2.d) positron emission tomography (PET) scan imaging. and,

II.D.2.e) specialized coagulation laboratory.

II.D.3. There must be advanced pathology services, including:

II.D.3.a) blood banking;

II.D.3.b) immunopathology; and,

II.D.3.c) transfusion and apheresis services.

II.D.4. There must be a medical oncology clinical program with which hematology fellows ~~may~~ interact.

II.D.5. ~~The patient population must have a variety of hematologic disorders~~.

II. Fellow Appointment

II.D. Eligibility Criteria

III.D.1. Prior to appointment in the program, fellows should have completed an ACGME-I-accredited residency program in internal medicine, or an internal medicine residency program acceptable to the Sponsoring Institution's Graduate Medical Education Committee.

III.E. Number of Fellows

See International Foundational Requirements, Section III.B.

IV. Specialty-Specific Educational Program

IV.A. ACGME-I Competencies

IV.A.1. The program must integrate the following ACGME-I Competencies into the curriculum.

IV.A.1.a) Professionalism

IV.A.1.a).(1) Fellows must demonstrate a commitment to professionalism and an adherence to ethical principles.

IV.A.1.b) Patient Care and Procedural Skills

IV.A.1.b).(1) Fellows must provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows must demonstrate competence in managing care of patients:

IV.A.1.b).(1).(a) <u>in a variety of health care settings, including inpatient and ambulatory settings;</u> ~~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;~~

IV.A.1.b).(1).(b) using critical thinking and evidence-based tools;

IV.A.1.b).(1).(c) using population-based data; and,

IV.A.1.b).(1).(d) with whom they have limited or no physical contact, through the use of telemedicine.

IV.A.1.b).(2) Fellows must demonstrate competence in:

IV.A.1.b).(2).(a) assessment of hematologic disorder severity and/or stage as measured by physical signs and laboratory evaluation;

IV.A.1.b).(2).(b) care and management of geriatric patients with hematologic disorders, including Castleman disease;

~~IV.A.1.b).(3).(c)~~ ~~care and management of venous access devices;~~

IV.A.1.b).(2).(c) care of patients with human immunodeficiency virus~~(HIV)~~ related malignancies;

IV.A.1.b).(2).(d) evaluating and managing diagnosis, pathology, staging, and management of ~~neoplastic~~ malignant disorders of the:

IV.A.1.b).(2).(d).(i) lymphoid organs, including lymphomas, myeloma, and plasma cell dyscrasias; and,

IV.A.1.b).(2).(d).(ii) hematopoietic system, including myeloproliferative neoplasms, myelodysplasias, acute and chronic leukemias, Castleman disease, and dendritic cell disorders.

IV.A.1.b).(2).(e) managing hematologic complications of infectious diseases;

~~IV.A.1.b).(1).(j)~~ ~~intrathecal administration of chemotherapeutic agents;~~

~~IV.A.1.b).(1).(k)~~ ~~management and care of indwelling access catheters;~~

IV.A.1.b).(2).(f) managing the neutropenic and the immunocompromised patient;

IV.A.1.b).(2).(g) managing pain, anxiety, and depression in patients with hematologic disorders;

IV.A.1.b).(2).(h) multidisciplinary management of hematologic malignancies;

IV.A.1.b).(2).(i)	providing hematologic care of pregnant patients and women of reproductive age;
~~IV.A.1.b).(1).(q)~~	~~performance and interpretation of lumbar puncture and interpretation of cerebrospinal fluid~~;
~~IV.A.1.b).(1).(s~~)	~~preparation staining and interpretation of blood smears, bone marrow aspirates, and touch preparations, as well as interpretation of bone marrow biopsies;~~
IV.A.1.b).(2).(j)	providing hematologic, infectious disease, and nutrition support;
IV.A.1.b).(2).(k)	providing palliative care, including hospice and home care;
IV.A.1.b).(2).(l)	providing rehabilitation and psychosocial care of patients with hematologic disorders;
IV.A.1.b).(2).(m)	treating and diagnosing paraneoplastic disorders;
IV.A.1.b).(2).(n)	treating 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;
~~IV.A.1.b).(1).(y)~~	~~use of chemotherapeutic agents and biological products through all therapeutic routes;~~
IV.A.1.b).(2).(o)	using 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;
IV.A.1.b).(2).(p)	using immunotherapeutic drugs, their mechanisms of action, pharmacokinetics, clinical indications, and limitations, and their effects, toxicity, and interactions, including the use of cellular immunotherapies (e.g., CAR-T therapies); and,
IV.A.1.b).(2).(q)	using multiagent chemotherapeutic protocols and combined modality therapy of hematologic malignancies.
IV.A.1.b).(3).	Fellows must be able to perform all medical, diagnostic, and surgical procedures considered essential for to the subspecialty, including:
IV.A.1.b).(3).(a)	performing diagnostic and therapeutic procedures

relevant to their individual specific planned career path, to include performing and interpreting bone marrow aspiration and biopsy.:

IV.A.1.b).(3).(b) treating their patient's conditions with practices that are patient-centered, safe, scientifically based, effective, timely, and cost-effective; and,

IV.A.1.b).(3).(c) using diagnostic and/or imaging studies relevant to the care of the patient, to include:

IV.A.1. b).(3).(c).(i) assessing malignant hematologic disorders by CT, MRI, PET scanning, and nuclear imaging techniques;

IV.A.1.b).(3).(c).(ii) assessing and interpreting complete blood count, including platelet and white cell differential, by means of automated or manual techniques, with appropriate quality control;

IV.A.1.b).(3).(c).(iii) correlating clinical information with cytology, histology, and immunodiagnostic imaging techniques;

IV.A.1.b).(3).(c).(iv) determining indications for and application of immunophenotypic and molecular studies for patients with neoplastic and blood disorders;

IV.A.1.b).(3).(c),(v) using indications and application of imaging techniques in patients with neoplastic and blood disorders; and,

IV.A.1.b).(3).(c),(vi) using tests of hemostasis and thrombosis for both congenital and acquired disorders and regulation of antithrombotic therapy.

IV.A.1.c) Medical Knowledge

IV.A.1.c).(1) 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 knowledge of:

IV.A.1.c).(1).(a) the scientific method of problem solving and evidence-based decision-making;

IV.A.1.c).(1).(b) 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;
IV.A.1.c).(1).(c)		acquired and congenital disorders of red cells, white cells, platelets, and stem cells;
IV.A.1.c).(1).(d)		basic principles of laboratory and clinical testing, quality control, quality assurance, and proficiency standards;
IV.A.1.c).(1).(e)		clinical epidemiology and biostatistics, including clinical study and experimental protocol design, data collection, and analysis;
IV.A.1.c).(1).(f)		effects of systemic disorders and drugs on the blood, blood-forming organs, and lymphatic tissues;
IV.A.1.c).(1).(g)		functional characteristics, indications, risks, and process of using indwelling venous access devices;
IV.A.1.c).(1).(h)		genetics and developmental biology, including:
IV.A.1.c).(1).(h).(i)		cytogenetics; ~~and the nature of oncogenes and their products; and,~~
IV.A.1.c).(1).(h).(ii)		molecular genetics;
IV.A.1.c).(1).(h).(iii)		the nature of oncogenes and their products; and,
IV.A.1.c).(1).(h).(iv)		prenatal diagnosis ~~where appropriate~~.
IV.A.1.c).(1).(i)		gene therapy;
IV.A.1.c).(1).(j)		hematopoietic and lymphopoietic malignancies of plasma cells;
IV.A.1.c).(1).(k)		immune markers, immunophenotyping, flow cytometry, cytochemical studies, and cytogenetic and DNA analysis of neoplastic disorders;
IV.A.1.c).(1).(l)		indications, complications, and risks and limitations associated with lesion biopsy detection of circulating DNA for disease-specific markers;
IV.A.1.c).(1).(m)		indications for and complications of autologous and allogeneic bone marrow or peripheral blood stem cell transplantation;
IV.A.1.c).(1).(n)		indications, risks, and process of performing therapeutic phlebotomy;
IV.A.1.c).(1).(o)		malignant and hematologic complications of organ

transplantation;

IV.A.1.c).(1).(p) management of post-transplant complications.

IV.A.1.c).(1).(q) pathogenesis, diagnosis, and treatment of disease, including:

IV.A.1.c).(1).(q).(i) basic molecular and pathophysiologic mechanisms, diagnosis, and therapy of diseases of the blood, to include anemias, and diseases of white blood cells and stem cells; ~~and,~~

IV.A.1.c).(1).(q).(ii) disorders of hemostasis and thrombosis for both congenital and acquired disorders and regulation of antithrombotic therapy; and,

IV.A.1.c).(1).(q).(iii) etiology, epidemiology, natural history, diagnosis, pathology, staging, and management of neoplastic diseases of the blood, blood-forming organs, and lymphatic tissues.

IV.A.1.c).(1).(r) physiology and pathophysiology, including:

IV.A.1.c).(1).(r).(i) basic and clinical pharmacology, pharmacokinetics, and toxicity;

IV.A.1.c).(1).(r).(ii) cell and molecular biology;

IV.A.1.c).(1).(r).(iii) hematopoiesis;

IV.A.1.c).(1).(r).(iv) molecular mechanisms of hematopoietic and lymphopoietic malignancies;

IV.A.1.c).(1).(r).(v) principles of oncogenesis; and,

IV.A.1.c).(1).(r).(vi) tumor immunology.

IV.A.1.c).(1).(s) preparation of blood smears, bone marrow aspirates, and touch preparations;

IV.A.1.c).(1).(t) principles of, indications for, and complications of peripheral stem cell harvests;

IV.A.1.c).(1).(u) principles of, indications for, and limitations of radiation therapy in the treatment of cancer; and,

IV.A.1.c).(1).(v) transfusion medicine, including the evaluation of antibodies, blood compatibility, and indications for and complications of blood component therapy and apheresis procedures.

IV.A.1.c).(2). Fellows must demonstrate knowledge of the mechanisms of action, pharmacokinetics, clinical indications, and limitations of:

IV.A.1.c).(2).(a) ~~pharmacotherapeutic and non-pharmacotherapeutic treatment of the broad spectrum of medical conditions and clinical disorders;~~ chemotherapeutic drugs, biologic products, and growth factors, including their effects, toxicity, and interactions; and,

IV.A.1.c).(2).(b) immunotherapeutic drugs, and their effects, toxicity, and interactions, including cellular immunotherapies (e.g., CAR-T therapies).

IV.A.1.c).(3) Fellows must demonstrate sufficient knowledge specific to the subspecialty of hematology, including application of technology appropriate for the clinical context, to include evolving technologies.

IV.A.1.d) Practice-Based Learning and Improvement

IV.A.1.d).(1) 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 lifelong learning.

IV.A.1.e) Interpersonal and Communication Skills

IV.A.1.e).(1) Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, patients' families, and health professionals.

IV.A.1.f) Systems-Based Practice

IV.A.1.f).(1) Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, including the social determinates of health, as well as the ability to call effectively on other resources in the system to produce optimal care.

IV.B. Regularly Scheduled Educational Activities

IV.B.1. The educational program must include didactic instruction based upon the core knowledge content in hematology.

IV.B.1.a) Fellows must have a sufficient number of didactic sessions to ensure fellow-fellow and fellow-and-faculty member interaction.

IV.B.2. The program must ensure that fellows have an opportunity to review all knowledge content from conferences that they could not attend.

IV.B.3. Fellows must receive instruction in practice management relevant to hematology.

IV.B.4. ~~Fellows must participate in multidisciplinary case management or tumor board conferences and in protocol studies~~. (moved to IV.C.7. below)

~~IV.B.5. Fellows must receive instruction in~~

~~IV.B.5.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,~~

~~IV.B.5.b) tests of hemostasis.~~

IV.C. Clinical Experiences

IV.C.1. Assignment of rotations must be structured to minimize the frequency of rotational transitions, and rotations must be of sufficient length to provide a quality educational experience, defined by continuity of patient care, ongoing supervision, longitudinal relationships with faculty members, and meaningful assessment and feedback.

IV.C.2. Rotations must be structured to allow fellows to function as a part of an effective interprofessional team that works together toward the shared goals of patient safety and quality improvement.

IV.C.3. Rotations must be structured to minimize conflicting inpatient and outpatient responsibilities.

IV.C.4. At least 12 months must be devoted to clinical experiences.

IV.C.4.a) The program must provide at least one month of clinical experience in autologous and allogeneic bone marrow transplantation.

IV.C.4.b) The hematology clinical experience must include an appropriate balance of inpatient and outpatient hematology for fellows to become proficient in all curricular requirements.

IV.C.5. Inpatient assignments should be of sufficient duration to permit continuing care of a majority of patients throughout their hospitalization.

IV.C.6. 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.

IV.C.7. Fellows must participate in multidisciplinary case management or tumor board conferences and in protocol studies. (moved from section IV.B. above)

IV.C.8. Fellows must have experience in the role of a hematology consultant in

both the inpatient and outpatient settings.

IV.C.9. Fellows should participate in the care of patients undergoing:

IV.C.9.a) apheresis procedures; and,

IV.C.9.b) bone marrow or peripheral stem cell harvest for transplantation.

IV.C.10. Fellows must be educated about and ~~should~~ have experience with:

IV.C.10.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,

IV.C.10.b) tests of hemostasis.

IV.C.11. The program must provide educational experiences in team-based care that allow fellows to interact with and learn from other health care professionals.

IV.C.12. The educational program must provide fellows with elective experiences relevant to their future practice or to further skill/competence development (such as, training to achieve competence in the interpretation of bone marrow biopsies or aspirates, lumbar punctures for diagnosis or administration of intrathecal chemotherapy, administering therapeutics through Ommaya reservoirs).

IV.C.13. Fellows must participate in training using simulation.

IV.C.14. Fellows should have a structured continuity ambulatory clinic experience for the duration of the program that exposes them to the breadth and depth of hematology.

IV.C.14.a) ~~This experience should include an appropriate distribution of patients of each gender and a diversity of ages~~.

IV.C.14.a). This experience should average one half-day each week throughout the program.

~~IV.C.14.a).(1) Each fellow should, on average, be responsible for four to eight patients during each half-day session.~~

~~IV.C.14.a).(1).(a) Each fellow should, on average, be responsible for no more than eight to 12 patients during each half-day ambulatory session.~~

IV.C.14.b) The continuing patient care experience should not be interrupted by more than one month, excluding a fellow's vacation.

IV.D. Scholarly Activity

IV.D.1. Fellows' Scholarly Activity

IV.D.1.a) While in the program, each fellow must complete at least one of the following scholarly activities: participation in grand rounds; poster presentations; workshops; quality improvement presentations; podium presentations; grant leadership, non-peer-reviewed print/electronic resources, articles or publications; book chapters; textbooks; webinars; service on professional committees, or service as a journal reviewer, journal editorial board member, or editor.

IV.D.2. Faculty Scholarly Activity

See International Foundational Requirements, Section IV.D.2.

V. Evaluation

See International Foundational Requirements, Section V.

VI. The Learning and Working Environment

VI.A. Principles

See International Foundational Requirements, Section VI.A.

VI.B. Patient Safety

See International Foundational Requirements, Section VI.B.

VI.C. Quality Improvement

See International Foundational Requirements, Section VI.C.

VI.D. Supervision and Accountability

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

VI.E. Professionalism

See International Foundational Requirements, Section VI.E.

VI.F. Well-Being

See International Foundational Requirements, Section VI.F.

VI.G. Fatigue

See International Foundational Requirements, Section VI.G.

VI.H. Transitions of Care

See International Foundational Requirements, Section VI.H.

VI.I. Clinical Experience and Education

See International Foundational Requirements, Section VI.I.

VI.J. On-Call Activities

See International Foundational Requirements, Section VI.J.