

Hematology

Certification Examination Blueprint

Purpose of the exam

The exam is designed to evaluate the knowledge, diagnostic reasoning, and clinical judgment skills expected of the certified hematologist in the broad domain of the discipline. The ability to make appropriate diagnostic and management decisions that have important consequences for patients will be assessed. The exam may require recognition of common as well as rare clinical problems for which patients may consult a certified hematologist.

Exam content

Exam content is determined by a pre-established blueprint, or table of specifications. The blueprint is developed by ABIM and is reviewed annually and updated as needed for currency. Trainees, training program directors, and certified practitioners in the discipline are surveyed periodically to provide feedback and inform the blueprinting process.

The primary medical content categories of the blueprint are shown below, with the percentage assigned to each for a typical exam:

Medical Content Category	% of Exam
Hematopoietic System	25%
Coagulation	27%
Hematologic Neoplastic Disorders	35%
Transfusion Medicine	5%
Hematopoietic Cell Transplantation (HCT)	8%
	100%

Exam questions in the content areas above may also address topics related to pregnancy and contraception that are important to the practice of hematology (approximately 4% of the exam).

Exam format

The exam is composed of multiple-choice questions with a single best answer, predominantly describing patient scenarios. Questions ask about the work done (that is, tasks performed) by physicians in the course of practice:

- Making a diagnosis
- Ordering and interpreting results of tests
- Recommending treatment or other patient care
- Assessing risk, determining prognosis, and applying principles from epidemiologic studies
- Understanding the underlying pathophysiology of disease and basic science knowledge applicable to patient care

Clinical information presented may include patient photographs, radiographs, photomicrographs, and other media to illustrate relevant patient findings.

A tutorial including examples of ABIM exam question format can be found at <http://www.abim.org/certification/exam-information/hematology/exam-tutorial.aspx>.

The blueprint can be expanded for additional detail as shown below. Each of the medical content categories is listed there, and below each major category are the content subsections and specific topics that *may* appear in the exam. Please note: actual exam content may vary.

Hematopoietic System	25% of Exam
Normal hematopoiesis	<2%
Disorders of red blood cells or iron	21%
Red blood cell production disorders	4%
Nutritional deficiencies	
Iron deficiency	
Nutritional anemia, non-iron deficiency	
Anemia of chronic inflammation	
Red cell aplasia and hypoplasia	
Sideroblastic anemia	
Red blood cell destruction disorders	15%
Thalassemias	
Alpha thalassemia	
Beta thalassemia	
Hemoglobin E disorders	

Sickle cell disorders	4.5%
Sickle cell trait	
Sickle cell anemia (hemoglobin SS disease)	
Hemoglobin SC disease	
Sickle cell- β^0 and sickle cell- β^+ -thalassemias	
Non-sickle hemoglobinopathies	
Autoimmune hemolytic anemias (AIHA)	
Warm antibody-mediated autoimmune hemolytic anemia	
Cold antibody-mediated autoimmune hemolytic anemia	
Drug-induced hemolysis	
Metabolic abnormalities and enzyme deficiency hemolytic anemias	
Oxidant hemolysis, including glucose-6-phosphate dehydrogenase (G6PD) deficiency	
Pyruvate kinase deficiency and other metabolic deficiencies	
Paroxysmal nocturnal hemoglobinuria	
Red blood cell membrane disorders	
Microangiopathic hemolytic anemias (other than TTP, HUS, or DIC)	
Non-autoimmune, acquired hemolytic anemias	
Erythrocytosis	
Porphyrias	
Hemochromatosis	
White blood cell disorders	<2%
Granulocyte disorders	
Quantitative granulocyte disorders	
Qualitative granulocyte disorders	
Lymphocytopenia and lymphocyte dysfunction syndromes	
Leukocytosis	
Eosinophilia	
Hemophagocytic syndromes	
Bone marrow failure syndromes	2%
Aplastic anemia	
Inherited aplastic anemia	
Acquired aplastic anemia	
Pancytopenia	

Coagulation	27% of Exam
--------------------	--------------------

Platelet and megakaryocyte disorders 7%

- Inherited disorders of platelet function
- Acquired disorders of platelet function
 - Drug-induced disorders
 - Non-drug-induced disorders

Thrombocytopenia 4.5%

- Inherited thrombocytopenia
- Acquired thrombocytopenia
 - Immune thrombocytopenic purpura (ITP)
 - Drug-induced thrombocytopenia
 - Thrombotic thrombocytopenic purpura (TTP)
 - Hemolytic uremic syndrome (HUS)
 - Thrombocytopenia secondary to liver disease and splenic disorders

Thrombocytosis

Hemostasis 10%

- Molecular basis of coagulation and hemostatic agents
 - Normal hemostasis
 - Laboratory evaluation
 - Hemostatic drugs

Inherited bleeding disorders (non-platelet) 6%

- Von Willebrand disease
 - Types 1, 2A, 2M, 2N, and 3
 - Type 2B
 - Modifiers of von Willebrand factor levels
- Hemophilias A and B
 - Hemophilia A
 - Hemophilia B
- Factor XI deficiency
- Factor deficiencies other than factor XI
- Inherited vascular abnormalities

Acquired bleeding disorders (non-platelet)

- Factor inhibitors
- Disseminated intravascular coagulation (DIC)
- Acquired vascular abnormalities
- Secondary acquired factor deficiencies

Thrombosis	10%
Molecular basis of natural anticoagulants, fibrinolytic pathway, and anticoagulant therapy	5.5%
Normal anticoagulant and fibrinolytic mechanisms	
Laboratory evaluation	
Anticoagulant drugs	
Thrombotic disorders	4.5%
Inherited thrombotic disorders	
Factor V Leiden and prothrombin G20210A	
Deficiencies of natural anticoagulants (antithrombin, proteins C and S)	
Hyperhomocysteinemia	
Acquired thrombotic disorders	
Heparin-induced thrombocytopenia (HIT)	
Anti-phospholipid antibody syndrome (APS)	
Cancer-related thrombotic disorders	
Thromboembolism at unusual sites	
Thrombosis management (non-disease-specific)	
Complications of thrombotic disorders	

Hematologic Neoplastic Disorders	35% of Exam
-----------------------------------------	--------------------

Myeloproliferative neoplasms	4.5%
Chronic myeloid leukemia	
Polycythemia vera and secondary erythrocytosis	
Primary myelofibrosis	
Essential thrombocythemia	
Mastocytosis	
Chronic neutrophilic leukemia	
Acute leukemias and myelodysplasia	8%
Acute promyelocytic leukemia	
Acute myeloid leukemia (non-promyelocytic)	
Therapy-related myeloid neoplasms	
Myeloid sarcoma/extramedullary leukemia	
Myelodysplastic syndromes	
Chronic myelomonocytic leukemia and myelodysplastic/myeloproliferative neoplasm overlap syndromes	
B-cell acute lymphoblastic leukemia/lymphoma (B-ALL)	
T-cell acute lymphoblastic leukemia/lymphoma (T-ALL)	

B-cell neoplasms	13%
Chronic lymphoid leukemias	
Chronic lymphocytic leukemia/small lymphocytic lymphoma	
Monoclonal B-cell lymphocytosis	
Hairy cell leukemia	
Plasma cell neoplasms	
Multiple myeloma	
Plasmacytomas	
Amyloidosis	
Castleman disease and POEMS syndrome (polyneuropathy, organ enlargement, endocrinopathy, Monoclonal plasma-proliferative disorder, skin changes)	
Monoclonal gammopathy of undetermined significance (MGUS)	
Non-Hodgkin lymphomas, B-cell	7%
Diffuse large B-cell lymphoma	
Follicular lymphoma	
Mantle cell lymphoma	
Marginal zone B-cell and mucosa-associated lymphoid tissue (MALT) lymphomas	
Burkitt lymphoma	
Primary central nervous system lymphoma	
Lymphoplasmacytic lymphoma (including Waldenström macroglobulinemia)	
General lymphoma issues (not specific to lymphoma type)	
Immunodeficiency-associated lymphoproliferative disorders	<2%
Post-transplantation lymphoproliferative disorders (solid organ transplant)	
Lymphomas associated with human immunodeficiency virus (HIV) infection or primary immune disorders	
Lymphoproliferative disorders associated with iatrogenic immunodeficiency	
T-cell and NK-cell neoplasms	<2%
Cutaneous T-cell lymphoma (mycosis fungoides and Sézary syndrome)	
T-cell lymphomas	
Adult T-cell leukemia/lymphoma	
Large granular lymphocyte leukemia	
Prolymphocytic leukemia	

Hodgkin lymphoma	2%
Classical Hodgkin lymphoma	
Nodular lymphocyte-predominant Hodgkin lymphoma	
Histiocytic and dendritic cell neoplasms	<2%
Myeloid and lymphoid neoplasms with eosinophilia and Abnormalities of <i>PDGFRA</i>, <i>PDGFRB</i>, or <i>FGFR1</i>	<2%
Complications of hematologic malignancies	<2%
Tumor lysis syndrome	
Spinal cord compression	
Paraneoplastic disorders	
Pharmacology	2.5%
Toxicities and complications, including cytopenic complications	
Drug dosing and dose modifications	
Clinical trial design and interpretation	<2%

Transfusion Medicine	5% of Exam
Clinical indications for the use of blood products	<2%
Red blood cell preparations	
Platelet preparations	
Fresh frozen plasma	
Cryoprecipitate	
Risks associated with blood products	4%
Risks associated with administration	
Allergic reactions	
Nonanaphylactic allergic reactions	
IgA deficiency	
Anaphylactic reactions	
Graft-versus-host disease	
Electrolyte disturbances	
Infectious organisms	
Alloimmunizations	
Transfusion reactions	
Hemolytic reactions	
Febrile reactions	
Transfusion-related acute lung injury (TRALI)	
Transfusion-associated circulatory overload (TACO)	
Post-transfusion purpura and other risks associated with administration	

Risks associated with therapeutic apheresis procedures	
Management of patients who refuse transfusion	<2%

Hematopoietic Cell Transplantation (HCT)	8% of Exam
Hematopoietic cell biology and engraftment	<2%
Biology of hematopoietic cell transplantation	
Biologic and immunologic relationship between donor and host	
Hematopoietic cell transplantation in the management of hematologic diseases	2%
Autologous HCT	
Allogeneic HCT	
Donor selection	
Stem cell source	
Conditioning regimens	<2%
Regimen intensity	
Toxicities	
Supportive care	<2%
Preventing infectious disease	
Transfusion support, including graft compatibility and blood product issues	
Graft-versus-host disease (GVHD)	<2%
Acute GVHD	
Chronic GVHD	
Other complications after hematopoietic cell transplantation	<2%
Engraftment failure or rejection	
Infections	
Organ toxicity	
Transplant-associated thrombotic microangiopathy	
Post-transplant lymphoproliferative disorder	
Late effects	
Disease relapse	<2%

January 2021