

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	
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	

<ul style="list-style-type: none"> Sickle cell anemia (hemoglobin SS disease) Hemoglobin SC disease and C hemoglobinopathy Sickle cell-β^0 and sickle cell-β^+-thalassemias Non-sickle hemoglobinopathies Autoimmune hemolytic anemias (AIHA) <ul style="list-style-type: none"> Warm antibody-mediated autoimmune hemolytic anemia Cold antibody-mediated autoimmune hemolytic anemia Drug-induced hemolysis Metabolic abnormalities and enzyme deficiency hemolytic anemias <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Quantitative granulocyte disorders Qualitative granulocyte disorders 	
Lymphocytopenia and lymphocyte dysfunction syndromes	
Leukocytosis	
Eosinophilia	
Hemophagocytic syndromes	
Bone marrow failure syndromes	2%
Aplastic anemia <ul style="list-style-type: none"> Inherited aplastic anemia Acquired aplastic anemia 	
Pancytopenia	

Coagulation	27% of Exam
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Platelet and megakaryocyte disorders	7%
<ul style="list-style-type: none"> Inherited disorders of platelet function Acquired disorders of platelet function <ul style="list-style-type: none"> 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 and Burkitt-like lymphomas	
Primary central nervous system lymphoma	
Lymphoplasmacytic lymphoma	
General lymphoma issues (not specific to lymphoma type)	
Immunodeficiency-associated lymphoproliferative disorders	<2%
Post-transplantation lymphoproliferative disorders	
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
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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
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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%

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