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:

<table>
<thead>
<tr>
<th>Medical Content Category</th>
<th>% of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematopoietic System</td>
<td>25%</td>
</tr>
<tr>
<td>Coagulation</td>
<td>27%</td>
</tr>
<tr>
<td>Hematologic Neoplastic Disorders</td>
<td>35%</td>
</tr>
<tr>
<td>Transfusion Medicine</td>
<td>5%</td>
</tr>
<tr>
<td>Cellular Therapy</td>
<td>8%</td>
</tr>
</tbody>
</table>

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 up to 240 single-best-answer multiple-choice questions, of which approximately 40 are new questions that do not count in the examinee’s score. Most questions describe patient scenarios and 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. Learn more information on how exams are developed.

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

<table>
<thead>
<tr>
<th>Hematopoietic System</th>
<th>25% of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal hematopoiesis</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Disorders of red blood cells or iron</td>
<td>21%</td>
</tr>
<tr>
<td>Red blood cell production disorders</td>
<td>4%</td>
</tr>
<tr>
<td>Nutritional deficiencies</td>
<td></td>
</tr>
<tr>
<td>Iron deficiency</td>
<td></td>
</tr>
<tr>
<td>Nutritional anemia, non–iron deficiency</td>
<td></td>
</tr>
<tr>
<td>Anemia of chronic inflammation</td>
<td></td>
</tr>
<tr>
<td>Red cell aplasia and hypoplasia</td>
<td></td>
</tr>
<tr>
<td>Sideroblastic anemia</td>
<td></td>
</tr>
</tbody>
</table>
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-β⁰ 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

Classical Hodgkin lymphoma
Nodular lymphocyte-predominant Hodgkin lymphoma

Histiocytic and dendritic cell neoplasms <2%

Myeloid and lymphoid neoplasms with eosinophilia and
Abnormalities of PDGFRB, PDGFRB, or FGFR1 <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
### Cellular Therapy

#### 8% of Exam

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematopoietic cell biology and engraftment</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>- Biology of hematopoietic cell transplantation</td>
<td></td>
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<tr>
<td>- Biologic and immunologic relationship between</td>
<td></td>
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<tr>
<td>donor and host</td>
<td></td>
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<tr>
<td>Hematopoietic cell transplantation in the management of hematologic</td>
<td>2%</td>
</tr>
<tr>
<td>diseases</td>
<td></td>
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<tr>
<td>Autologous HCT</td>
<td></td>
</tr>
<tr>
<td>Allogeneic HCT</td>
<td></td>
</tr>
<tr>
<td>Conditioning regimens</td>
<td>&lt;2%</td>
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<tr>
<td>- Regimen intensity</td>
<td></td>
</tr>
<tr>
<td>- Toxicities</td>
<td></td>
</tr>
<tr>
<td>Supportive care</td>
<td>&lt;2%</td>
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<tr>
<td>- Preventing infectious disease</td>
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<tr>
<td>- Transfusion support, including graft compatibility and</td>
<td></td>
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<tr>
<td>blood product issues</td>
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<tr>
<td>Graft-versus-host disease (GVHD)</td>
<td>&lt;2%</td>
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<tr>
<td>- Acute GVHD</td>
<td></td>
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<tr>
<td>- Chronic GVHD</td>
<td></td>
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<tr>
<td>Other complications after hematopoietic cell transplantation</td>
<td>&lt;2%</td>
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<tr>
<td>- Engraftment failure or rejection</td>
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<tr>
<td>- Infections</td>
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<td>- Organ toxicity</td>
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<tr>
<td>- Transplant-associated thrombotic microangiopathy</td>
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<tr>
<td>- Post-transplant lymphoproliferative disorder</td>
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<tr>
<td>- Late effects</td>
<td></td>
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<tr>
<td>Disease relapse</td>
<td>&lt;2%</td>
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<tr>
<td>Chimeric antigen receptor (CAR) T-cell therapy and</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>other genetically modified cell therapy</td>
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</tbody>
</table>

January 2023