Hematology LKA: Classical (nonmalignant) Focused Assessment Blueprint

Purpose

The Hematology LKA: Classical (nonmalignant) focused assessment is based on the general Hematology Blueprint, but includes a larger proportion of questions covering topics related to hematopoietic system and coagulation. Overall, there is about a 70% overlap with the current general Hematology blueprint. This overlap allows the focused assessment to better represent physicians with a focus in classical hematology while ensuring the focused assessment is comparable enough to uphold the same certification. Physicians taking the Hematology LKA: Classical (nonmalignant) focused assessment will continue to be reported as certified in Hematology.

ABIM assessments are designed to evaluate whether a certified hematologist has maintained competence and currency in the knowledge and judgment required for practice. The MOC assessments emphasize diagnosis and management of prevalent conditions, particularly in areas where practice has changed in recent years. As a result of the blueprint review by ABIM diplomates, MOC assessments place less emphasis on rare conditions and focus more on situations in which physician intervention can have important consequences for patients. For conditions that are usually managed by other specialists, the focus is on recognition rather than on management.

Longitudinal Knowledge Assessment format

The Hematology LKA: Classical (nonmalignant) focused assessment is only available as a Longitudinal Knowledge Assessment. ABIM's Longitudinal Knowledge Assessment (LKA ™) is a five-year cycle in which physicians answer questions on an ongoing basis and receive feedback on how they are performing along the way. More information about this assessment can be found here: https://www.abim.org/maintenance-of-certification/assessment-information/assessment-options/longitudinal-knowledge-assessment/. More information on how assessments are developed can be found at abim.org/about/exam-information/exam-development.aspx.

Most assessment questions describe patient scenarios and ask about the work done (that is, tasks performed) by physicians in the course of practice:

- **Diagnosis**: making a diagnosis or identifying an underlying condition
- **Testing:** ordering tests for diagnosis, staging, or follow-up

- **Treatment/Care Decisions:** recommending treatment or other patient care
- **Risk Assessment/Prognosis/Epidemiology:** assessing risk, determining prognosis, and applying principles from epidemiologic studies
- **Pathophysiology/Basic Science:** understanding the pathophysiology of disease and basic science knowledge applicable to patient care

Clinical scenarios presented take place in outpatient or inpatient settings as appropriate to a typical hematology practice. Clinical information presented may include patient photographs, radiographs, photomicrographs, and other media to illustrate relevant patient findings. Exam tutorials, including examples of question format, can be found at abim.org/maintenance-of-certification/exam- information/hematology/exam-tutorial.aspx.

Content distribution

Listed below are the major medical content categories that define the domain for the Hematology traditional, 10-year MOC exam and LKA. The relative distribution of content is expressed as a percentage of the total assessment. The Hematology Approval Committee and Specialty Board have determined the Hematology LKA: Classical (nonmalignant) focused assessment medical content category targets are appropriate, as shown below.

Medical Content Category	% of Exam
Hematopoietic System	44%
Coagulation	38%
Hematologic Neoplastic Disorders	12%
Transfusion Medicine	5%
Cellular Therapy	1%
	100%

ABIM is committed to working toward health equity and believes that board-certified physicians should have an understanding of healthcare disparities. Therefore, health equity content that is clinically important to each discipline will be included in assessments, and the use of gender, race, and ethnicity identifiers will be re-evaluated.

Hematopoietic System — **44%** of Exam

- **Normal hematopoiesis** — <2%
- **Disorders of red blood cells or iron** — 36%
  - Red blood cell production disorders
    - 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
    - Thalassemias
      - Alpha thalassemia
      - Beta thalassemia
      - Hemoglobin E disorders
    - Sickle cell disorders
      - 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 3%

- Granulocyte disorders
  - Quantitative granulocyte disorders
  - Qualitative granulocyte disorders
- Lymphocytopenia and lymphocyte dysfunction syndromes
- Leukocytosis
- Eosinophilia
- Hemophagocytic syndromes

Bone marrow failure syndromes 4%

- Aplastic anemia
  - Inherited aplastic anemia
  - Acquired aplastic anemia
- Pancytopenia

Coagulation — **38%** of Exam

Platelet and megakaryocyte disorders 10%

- Inherited disorders of platelet function
- Acquired disorders of platelet function
  - Drug-induced disorders
  - Non-drug-induced disorders
- Thrombocytopenia
  - 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 14%

- Molecular basis of coagulation and hemostatic agents
  - Normal hemostasis
  - Laboratory evaluation
  - Hemostatic drugs
- Inherited bleeding disorders (non-platelet)
  - 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 14%

Molecular basis of natural anticoagulants, fibrinolytic pathway, and anticoagulant therapy
- Normal anticoagulant and fibrinolytic mechanisms
- Laboratory evaluation
- Anticoagulant drugs

Thrombotic disorders

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 — **12%** of Exam

Myeloproliferative neoplasms <2%

Chronic myeloid leukemia

Polycythemia vera and secondary erythrocytosis

Primary myelofibrosis

- Essential thrombocythemia
- Mastocytosis
- Chronic neutrophilic leukemia

Acute leukemias and myelodysplasia 3%

- 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 4%

- 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
  - 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 *PDGFRA*, *PDGFRB*, or *FGFR1* <2%

Complications of hematologic malignancies <2%
Tumor lysis syndrome
Spinal cord compression
Paraneoplastic disorders

Pharmacology <2%
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%

Cellular Therapy — **1%** 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

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%
Chimeric antigen receptor (CAR) T-cell therapy and other genetically modified cell therapy	<2%

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