Infectious Disease Blueprint

Certification Examination (CERT)

Purpose of the exam

The exam is designed to evaluate the knowledge, diagnostic reasoning, and clinical judgment skills expected of the certified infectious disease specialist 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 infectious disease specialist.

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
Bacterial Diseases	27%
Human Immunodeficiency Virus (HIV) Infection	15%
Antimicrobial Therapy	9%
Viral Diseases	7%
Travel and Tropical Medicine	5%
Fungi	5%
Immunocompromised Host (Non-HIV Infection)	5%
Vaccinations	4%
Infection Prevention and Control	5%
Internal Medicine and Non-Infectious Syndromes	18%
	100%

ABIM is committed to working toward health equity and believes that board-certified physicians should have an understanding of health care 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.

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, electrocardiograms, recordings of heart or lung sounds, 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/infectious-disease/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. The inherent complexity of the field of infectious disease leads to considerable overlap in content categories, and each question can only be assigned to a single blueprint topic. Thus, a question addressing the cause of fever and rash likely would be classified under the specific organism, while a similar question addressing the treatment of that same illness would be classified under the antimicrobial agent used. Please note: actual exam content may vary.

Bacterial Diseases — **27%** of Exam

Gram-positive cocci

- *Staphylococcus aureus*
- *Streptococcus*
- *Enterococcus*

Gram-positive rods

- *Listeria*
- *Corynebacterium*
- *Bacillus*
- *Erysipelothrix*

Gram-negative cocci and coccobacilli

- *Neisseria*
- *Haemophilus*

Gram-negative rods

- Enterobacteriaceae
- *Pseudomonas*
- *Stenotrophomonas*
- *Burkholderia*
- *Acinetobacter*
- *Aeromonas*
- *Salmonella*
- *Shigella*
- *Campylobacter*
- *Vibrio*
- *Pasteurella*
- *Yersinia*
- *Legionella*
- *Capnocytophaga*
- *Bartonella*
- *Brucella*
- *Bordetella*
- *Streptobacillus*
- *Francisella*
- *Helicobacter*

Anaerobes

- Gram-positive cocci
- Gram-positive rods
- Gram-negative rods

Actinomycetes

- *Actinomyces*
- *Nocardia*

Spirochetes

- *Treponema*
- *Borrelia*
- *Leptospira*

Mycoplasma

- *M. pneumoniae*
- *M. genitalium*

Tropheryma whipplei

Chlamydia

- *C. trachomatis*
- *C. pneumoniae*
- *C. psittaci*

Rickettsia

- *R. conorii*
- *R. akari*
- *R. rickettsii*
- *R. prowazekii*
- *R. typhi*
- *Orientia tsutsugamushi*
- *R. parkeri*
- *R. africae*
- *Coxiella burnetii*

Ehrlichia

- *E. chaffeensis*
- *E. ewingii*
- *Anaplasma phagocytophilum*

Mycobacterium

- *M. tuberculosis*
- *M. bovis*
- *M. leprae*
- Nontuberculous mycobacteria

Syndromes characterized by bacterial pathogens

- Head and neck
- Respiratory
- Gastrointestinal
- Ophthalmologic

Genitourinary
Dermatologic (including skin and soft-tissue infections)
Musculoskeletal
Neurologic
Cardiovascular

Human Immunodeficiency Virus (HIV) Infection — **15%** of Exam

Epidemiology
- Transmission
- Testing and counseling
- Initial laboratory evaluation
- Prevention

Pathogenesis
- Virology
- Immunopathogenesis
- Acute HIV infection

Laboratory testing
- Diagnostic evaluation
- Baseline evaluation

HIV treatment regimens
- Antiretroviral therapy drug classes
- Adverse effects of treatment
- Drug-drug interactions
- When to start therapy
- Selection of optimal initial regimen
- Laboratory monitoring
- Treatment-experienced patients

Opportunistic infections (OIs)
- Prevention
- When to start HIV therapy in the context of active OIs
- Immune reconstitution inflammatory syndrome
- Bacteria
- Mycobacteria
- Fungi
- Parasites
- Viruses

Malignancies
- Kaposi sarcoma
- Lymphoma

- Cervical cancer
- Anal cancer

Other complications of HIV

- Hematologic
- Endocrine
- Gastrointestinal
- Renal (HIV-associated nephropathy [HIVAN])
- Cardiac (HIV cardiomyopathy)
- Pulmonary
- Head, eye, ear, nose, and throat
- Musculoskeletal
- Neurologic
- Psychiatric
- Dermatologic

Related issues

- Substance use
- Organ transplantation
- Primary care
- Miscellaneous non-HIV-related complications that may occur more commonly in those who have HIV
- Pregnancy

Antimicrobial Therapy — **9%** of Exam

Antibacterials

- Aminoglycosides
- Antifolates
- Carbapenems
- Cephalosporins
- Fluoroquinolones
- Glycopeptides, glycolipopeptides, and lipopeptides
- Lincosamides
- Macrolides
- Monobactams
- Nitroimidazoles
- Oxazolidinones
- Penicillins
- Polymyxins
- Rifamycins

- Tetracyclines
- Non-sulfonamide (sulfa drug), non-trimethoprim urinary tract agents
- Pleuromutilins (e.g., lefamulin)
- Topical antibacterials
- Other routes of administration

Antivirals (non-HIV)

- For influenza
- For herpes simplex
- For cytomegalovirus
- For hepatitis C and respiratory syncytial virus (RSV)
- For hepatitis B
- Interferon alfa 2a and alfa 2b
- For hepatitis C

Pharmacology and outpatient parenteral antimicrobial therapy (OPAT)

- Susceptibility testing
- Drug resistance
- ADME (absorption, distribution, metabolism, and excretion)
- Dosing
- Drug interactions
- Toxicity
- Outpatient parenteral antimicrobial therapy

Viral Diseases — **7%** of Exam

DNA viruses

- Herpesviruses
- Adenovirus
- Papillomavirus
- Polyomavirus
- Poxviruses
- Hepadnaviridae
- Parvovirus

RNA viruses

- Reoviridae (e.g., rotavirus)
- Togaviridae (e.g., chikungunya)
- Flaviviridae
- Coronaviridae

Paramyxoviridae
Rhabdoviridae
Filoviridae (hemorrhagic fever viruses)
Orthomyxoviridae (influenza)
Bunyaviridae (e.g., Rift Valley fever, Crimean-Congo hemorrhagic fever, Sin Nombre virus)
Arenaviridae (e.g., lymphocytic choriomeningitis virus)
Non-HIV retroviridae
Picornaviridae
Calciviridae
Hepatitis E

Prions

Travel and Tropical Medicine — **5%** of Exam

Protozoal intestinal infections

Balantidium coli
Blastocystis hominis
Cryptosporidium parvum and *C. hominis*
Cyclospora cayetanensis
Cystoisospora (*Isospora) belli*
Dientamoeba fragilis
Entamoeba histolytica (amebiasis)
Giardiasis
Microsporidiosis

Protozoal extraintestinal infections

Amebic meningoencephalitis
Babesiosis
Leishmaniasis
Malaria
Toxoplasmosis
Trichomonas vaginalis
Trypanosomiasis (general)

Nematode intestinal infections

Anisakiasis
Ascaris lumbricoides (ascariasis)
Capillaria philippinesis (capillariasis)
Enterobius vermicularis (pinworm)
Hookworm

Strongyloides stercoralis

Trichuris trichiura (whipworm)

Nematode extraintestinal infections

Angiostrongylus cantonensis

Bayliascariasis (raccoon roundworm)

Cutaneous larva migrans (dog and cat hookworm)

Dracunculus medinensis (Guinea worm)

Filariasis

Gnathostoma spinigerum

Toxocariasis

Trichinella spiralis (trichinellosis)

Cestode infections

Diphyllobothrium latum (fish tapeworm)

Hymenolepis (dwarf tapeworm)

Echinococcus granulosus (hydatid disease)

Echinococcus multilocularis (alveolar disease)

Taenia saginata (beef tapeworm)

Taenia solium (pork tapeworm; intestinal)

Trematode infections (flukes)

Clonorchis sinensis (Chinese liver fluke)

Fasciolopsis buski (intestinal fluke)

Fasciola hepatica and *gigantica* (sheep liver fluke)

Paragonimus westermani (lung fluke)

Schistosomiasis (general)

Ectoparasitic infections

Myiasis (human botfly or tumbu fly)

Pediculus humanus (body, head, and pubic lice)

Tick bites—identification and tick paralysis

Tungiasis (*Tunga penetrans*)

Bed bugs

General principles of travel medicine

Pretravel preparation

Post-travel Illness

Immigrants, refugees, and adoptees

Travelers with specific needs

Fungi	**5%** of Exam

Yeasts

- *Candida*
- *Cryptococcus*
- Other yeasts (including *Trichosporon* and *Saccharomyces*)

Endemic mycoses

- *Histoplasma*
- *Blastomyces dermatitidis*
- *Coccidioides immitis* (*C. posadasii*)
- *Sporothrix schenckii*
- *Paracoccidioides brasiliensis*
- *Talaromyces (Penicillium) marneffei*

Molds

- *Aspergillus*
- Hyaline molds
- Agents of zygomycosis (mucormycosis)
- Dematiaceous molds (*Bipolaris*, *Exophila*, and others)

Superficial and subcutaneous mycoses

- Mycetoma
- Chromoblastomycosis
- *Malassezia*
- Dermatophytes

***Pneumocystis jirovecii* pneumonia (PJP)**

Therapy

- Agents
- Pharmacokinetics
- Drug interactions
- Spectrum
- Toxicity
- Prophylaxis
- Susceptibility testing
- Drug resistance

Diagnostic testing

- Histopathology
- Culture
- Nonculture methods

Syndromes

- Mucosal
- Skin
- Pulmonary
- Central nervous system and eyes
- Cardiac
- Disseminated

Immunocompromised Host (Non-HIV Infection) — **5%** of Exam

Primary immunodeficiency

- Anatomic lesions
- Lymphocyte defects
- Combined immunodeficiency syndromes (including severe combined immunodeficiency [SCID])
- Phagocytes
- Complement deficiencies
- NK cell deficiencies

Hematologic malignancies and stem cell transplantation

- Infections associated with chemotherapy-induced neutropenia
- Stem cell transplant
- Syndromes
- Noninfectious conditions

Solid-organ transplantation

- Donor-derived infections
- Surgical site infections
- Hospital-acquired infection
- Opportunistic infections
- Noninfectious conditions

Complications of immunosuppression in non-transplant population (disease-modifying agents, including tumor necrosis factor [TNF] blockers, corticosteroids)

- Bacteria
- Fungi
- Viruses
- Parasites and protozoa

Infection prevention in the immunosuppressed host

- Immunizations
- Antimicrobials
- Environmental control

Vaccinations — **4%** of Exam

Active immunizations (vaccines)

- Pneumococcal
- Influenza
- Tetanus, diphtheria, and acellular pertussis
- *Haemophilus influenzae*
- Hepatitis B
- Hepatitis A
- Measles, mumps, and rubella
- Polio
- Meningococcal
- Rabies
- Varicella
- Herpes zoster
- Human papillomavirus (HPV)

Passive immunizations

- Varicella-zoster virus
- Rabies
- Hepatitis B
- Tetanus
- Immune globulin
- Other (including cytomegalovirus immune globulin)

Infection Prevention and Control — **5%** of Exam

Applied epidemiology and biostatistics

- Outbreak investigation
- Healthcare quality improvement

Healthcare-associated infections (HAIs) of organ systems

- HAIs related to intravascular devices, short-term and long-term (including contaminated infusions)
- HA urinary tract infections and pneumonia infections
- HA surgical site infections
- HAIs of other organ systems (including gastrointestinal tract infections, and central nervous system infections)

Epidemiology and prevention of HAIs caused by specific pathogens

- Bacterial infections
- Mycobacterial and fungal infections
- Viral infections

Epidemiology and prevention of HAIs in special patient populations

- HAIs in obstetrics
- HAIs in neoplastic diseases
- HAIs in organ transplant and hematopoietic stem cell transplant

Epidemiology and prevention of HAIs in therapeutic procedures

- Infection risks of endoscopy
- HAIs associated with hemodialysis and peritoneal dialysis
- HAIs related to other procedures (including cardiology and respiratory therapy)
- HAIs following transfusion of blood and blood products
- Fecal transplantation

Prevention of HAIs related to hospital support services

- Environmental services
- Disinfection and sterilization

Epidemiology and prevention of HAIs in healthcare workers

- Prevention of occupationally acquired viral hepatitis in healthcare workers
- Prevention of occupationally acquired HIV infection in healthcare workers
- Vaccination of healthcare workers
- Prevention of occupationally acquired diseases of healthcare workers spread by contact, droplet, or airborne precautions (other than TB, and including diagnostic laboratories)

Organization and implementation of infection control programs

- Surveillance of HAIs
- Isolation precautions
- Hand antisepsis
- Epidemiology and prevention of infections in residents of long-term care facilities
- Infection control in countries with limited resources

Internal Medicine and Non-Infectious Syndromes — **18%** of Exam

General internal medicine

- Malignancies
- Hemophagocytic lymphohistiocytosis (Hemophagocytic syndrome)
- Noninfectious inflammatory disorders (e.g., vasculitis, lupus, inflammatory bowel disease)
- Dermatologic disorders

- Hematologic disorders
- Noninfectious central nervous system disease
- Bites, stings, and toxins
- Drug fever
- Ethical and legal decision making

Surgical infections

- Orthopedic
- Neurosurgery
- Ear, nose, and throat
- General surgery and intra-abdominal
- Thoracic and cardiothoracic
- Urologic
- Obstetric and gynecologic
- Plastic and reconstructive
- Vascular

Critical care medicine

- Systemic inflammatory response syndrome (SIRS) and sepsis
- Ventilator-associated pneumonias
- Noninfectious pneumonias (eosinophilic and acute respiratory distress syndrome [ARDS])
- Bacterial pneumonias
- Viral pneumonias
- Hyperthermia and hypothermia
- E-cigarette or vaping product use–associated lung injury (EVALI)

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