ADULT CONGENITAL HEART 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 adult congenital heart disease (ACHD) 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 an ACHD 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 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
Embryology and Anatomy	4%
Clinical Evaluation	10%
Noninvasive Diagnostic Testing Indications and Interpretation	20%
Diagnostic and Interventional Cardiac Catheterization	7%
Arrhythmias	15%
Congenital Cardiac Surgery	12%
Heart Failure and Pulmonary Hypertension	10%
Reproductive Health	5%
Acquired Cardiovascular Disease and Common Adult Medical Problems	5%
Extracardiac Manifestations of Congenital Heart Disease	7%
Life and Health Management	5%
	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 https://www.abim.org/about/abim-exams/exam-tutorials/

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.

Embryology and Anatomy	**4%** of Exam
Normal and abnormal development	2%
Situs abnormalities	
Venous connections	
Atrioventricular connections	
Septal defects	
Looping	
Conotruncal defects	
Conduction systems	
Coronaries	
Other normal and abnormal development	

Genetic syndromes and associations 2%

- Down
- DiGeorge and VACTERL
- Williams
- Turner
- Noonan
- Holt-Oram
- Alagille
- Other genetic syndromes and associations

Clinical Evaluation	**10%** of Exam

History 2.5%

- Symptoms
- Surgical
- Interventional
- Reproductive
- Social
- Family
- Other history

Physical examination 7.5%

- Septal defects
- Patent ductus arteriosus
- Coarctation of the aorta
- Left ventricular outflow tract obstruction
- Pulmonary stenosis
- Tetralogy of Fallot
- Dextro-transposition of the great arteries
- Congenitally corrected transposition of the great arteries
- Single ventricle/Fontan
- Truncus arteriosus
- Pulmonary hypertension/Eisenmenger syndrome
- Ebstein anomaly
- Other physical examination

Noninvasive Diagnostic Testing – Indications and Interpretation	**20%** of Exam

Electrocardiography 2%

- Wolff-Parkinson-White syndrome
- Ebstein anomaly

Congenitally corrected transposition of the great arteries	
Primum atrial septal defect	
Systemic right ventricle	
Tetralogy of Fallot	
Other electrocardiography	
Chest radiography	<2%
New diagnosis	
Post interventional catheterization/electrophysiology	
Post surgical	
Other chest radiography	
Transthoracic and transesophageal echocardiography	10%
Indications	
Septal defects	
Patent ductus arteriosus	
Coarctation of the aorta	
Left ventricular outflow tract obstruction	
Pulmonary stenosis	
Tetralogy of Fallot	
Dextro-transposition of the great arteries	
Congenitally corrected transposition of the great arteries	
Single ventricle/Fontan	
Truncus arteriosus	
Pulmonary hypertension/Eisenmenger syndrome	
Ebstein anomaly	
Coronary anomalies – origin and course	
Other echocardiography	
Magnetic resonance imaging	4%
Indications and contraindications	
Sinus venosus atrial septal defect	
Anatomy of pulmonary artery and vein	
Coarctation of the aorta	
Aortopathy	
Tetralogy of Fallot	
Dextro-transposition of the great arteries	
Congenitally corrected transposition of the great arteries	
Single ventricle/Fontan	
Truncus arteriosus	
Coronary anomalies – origin and course	
Other magnetic resonance imaging	

Computed tomography	<2%
Indications and contraindications	
Coronary arterial and venous anatomy	
Stents	
Other computed tomography	
Stress testing	<2%
Electrocardiography	
Cardiopulmonary exercise test	
Other stress testing	
Nuclear lung perfusion	<2%

Diagnostic and Interventional Cardiac Catheterization	**7%** of Exam

Diagnostic indications	<2%
Fontan	
Shunt lesions	
Pulmonary hypertension	
Coronary anomalies and coronary artery disease	
Inconclusive noninvasive imaging	
Other diagnostic indications	
Procedural considerations	<2%
Safety	
Access	
Other procedural considerations	
Hemodynamic	<2%
Vasoreactivity testing	
Pressure tracing	
Calculations	
Other hemodynamic	
Angiography	<2%
Coronary anomalies and acquired diseases	
Coarctation of the aorta	
Ventriculography	
Collaterals	
Single ventricle/Fontan	
Dextro-transposition of the great arteries	
Other angiography	
Interventional	3.5%
Indications	
Device closure of shunts	

Valvuloplasty/Angioplasty
Stents
Coils
Valve replacement
Other interventional

Arrhythmias	**15%** of Exam
Naturally acquired	<2%
Atrioventricular block	
Wolff-Parkinson-White syndrome	
Other naturally acquired	
Postoperative	5.5%
Atrioventricular node block	
Sinoatrial node	
Atrial flutter/intra-atrial re-entrant tachycardia	
Ventricular tachycardia, ventricular flutter, sudden cardiac death	
Atrial fibrillation	
Junctional ectopic tachycardia (JET)	
Other postoperative	
Medical management	<2%
Antiarrhythmic medication	
Anticoagulation	
Other medical management	
Electrophysiology and ablation	3%
Indications	
Outcomes	
Other electrophysiology and ablation	
Arrhythmia surgery	<2%
Indications	
Outcomes	
Other arrhythmia surgery	
Devices	3%
Indications	
Outcomes	
Implantable cardioverter-defibrillator	
Pacer	
Cardiac resynchronization therapy	
Other devices	

Congenital Cardiac Surgery	**12%** of Exam

- **Indications and risks** 3%
  - Septal defects
  - Coarctation of the aorta
  - Left ventricular outflow tract obstruction
  - Tetralogy of Fallot
  - Dextro-transposition of the great arteries
  - Congenitally corrected transposition of the great arteries
  - Single ventricle/Fontan
  - Truncus arteriosus
  - Ebstein anomaly
  - Coronary anomalies – origin and course
  - Right ventricular outflow tract
  - Valve replacement
  - Other indications and risks
- **Types** 2%
  - Coarctation of the aorta
  - Systemic to pulmonary artery shunts
  - Blalock-Hanlon
  - Atrial switches
  - Arterial switches
  - Rastelli
  - Ross procedure
  - Glenn/Fontan
  - Warden
  - Conduits
  - Septal defect repair
  - Tetralogy of Fallot repair
  - Valve replacement
  - Truncus arteriosus repair
  - Pulmonary artery banding
  - Other types
- **Perioperative assessment and management** <2%
  - Access
  - Coronary angiography
  - Assessment of comorbidities
  - Other perioperative assessment and management

Postoperative complications, residua, and sequelae 6%

- Acute postoperative complications
  - Cardiac
  - Noncardiac
  - Other complications of ACHD surgery
- Long-term residua and sequelae
  - Left-to-right shunts
  - Coarctation of the aorta
  - Left ventricular outflow tract obstruction
  - Right ventricular outflow tract obstruction
  - Tetralogy of Fallot
  - Dextro-transposition of the great arteries
  - Congenitally corrected transposition of the great arteries
  - Single ventricle/Fontan
  - Truncus arteriosus
  - Ebstein anomaly
  - Coronary anomalies
  - Other long-term residua and sequelae
- Other complications, residua, and sequelae

Heart Failure and Pulmonary Hypertension	**10%** of Exam

Evaluation of heart failure 4%

- Etiology
- Clinical examination
- Biomarkers
- Imaging
- Functional testing
- Catheterization
- Other heart failure evaluation

Medical management of heart failure <2%

- Heart failure medications
- Arrhythmia treatment
- Other heart failure medical management

Intervention for heart failure <2%

- Surgery
- Interventional catheterization
- Transplant
- Mechanical circulatory support
- Other heart failure intervention

Evaluation of pulmonary hypertension	2%
Etiology	
Clinical examination	
Biomarkers	
Imaging	
Functional testing	
Cardiac catheterization	
Other pulmonary hypertension evaluation	
Pulmonary arterial hypertension–specific therapies	<2%

Reproductive Health	**5%** of Exam

Pregnancy	3.5%
Risk assessment and preconception counseling	
Management during pregnancy	
Peripartum care	
Other pregnancy	
Genetic counseling	<2%
Contraception	<2%
Types and indications	
Risks	
Other contraception	
Gender-affirming care	
Sexual dysfunction	<2%

Acquired Cardiovascular Disease and Common Adult Medical Problems	**5%** of Exam

Acute and long-term ischemic heart disease	<2%
Risk factors	
Recognition	
Evaluation	
Management	
Other ischemic heart disease	
Noncardiac surgery	<2%
Risk assessment	
Perioperative management	
Other noncardiac surgery	
Adult medical issues	<2%
Sleep apnea	
Hypertension	

Obesity	
Lung disease	
Renal function	
Neurologic	
Liver disease	
Other adult medical issues	
Endocardiditis prophylaxis and management	<2%

Extracardiac Manifestations of Congenital Heart Disease	**7%** of Exam
Liver	<2%
Protein-losing enteropathy	<2%
Venous insufficiency	<2%
Thromboembolic	<2%
Collaterals	<2%
Cyanotic congenital heart disease	<2%
Hematologic	
Gout	
Embolism	
Brain abscess	
Other cyanotic congenital heart disease	
Infection risks	<2%
Vascular rings and slings	<2%
Lung	<2%
Kidney	<2%

Life and Health Management	**5%** of Exam
Exercise and athletic participation	<2%
Promotion	
Limitations	
Other exercise and athletic participation	
Recognition of psychosocial/neurocognitive/mood disorders	<2%
Access and delivery of care	<2%
Transition education	<2%
Best practices	
Employability and insurability	
Other transition education	
End-of-life/Advance directives	<2%