

CARDIOVASCULAR SYSTEM : ANATOMY & PHYSIOLOGY

FUNCTION OF CIRCULATION

Delivers O₂ , nutrients, hormones and antibodies to organs, tissues and cells
Removes the end product of cellular metabolism

FUNCTION OF THE HEART

Pumps oxygenated blood into the arterial system to supply capillaries and tissue
Pumps oxygen poor blood from the venous system through the lungs to be reoxygenated.

ANATOMY OF THE HEART

Cone shaped organ located in the mediastinal space.
The pericardial sac encases the heart and protects it, lubricates and holds 5-20 ml of pericardial fluid. This has two layers.

- ✦ the parietal pericardium which is the outer membrane
- ✦ the visceral pericardium is the inner membrane attached to the heart.

CONSISTS OF 3 LAYERS

- ✦ Epicardium : outermost layer of the heart
- ✦ Myocardium: middle layer of the heart, the contracting muscle
- ✦ Endocardium: innermost layer of the heart, lines the inner chambers and the valves.

4 CHAMBERS

- ✦ Right atrium: carries deoxygenated blood from the body via superior and inferior vena cava.
- ✦ Right ventricle: carries blood from the right atrium and pumps it into the lungs through the pulmonary artery
- ✦ Left atrium: carries oxygenated blood from the pulmonary veins
- ✦ Left ventricle: carries oxygenated blood from the left atrium and pumps it into the systemic circuit through the aorta.

4 VALVES

Two atrioventricular valves that close at the beginning of ventricular contraction. They prevent blood from flowing back into the atria.

- ✦ Tricuspid valve : on the right side of the heart
- ✦ Bicuspid valve: on the left side of the heart

Two semilunar valves that prevent blood from flowing back into the ventricles during relaxation

- ✦ Pulmonic semilunar valve: between the right ventricle and pulmonary artery
- ✦ Aortic semilunar valve: between the ventricle and the aorta.

CORONARY ARTERIES

- ✦ Right main coronary artery: supplies the right atrium and ventricle, the inferior left ventricle, posterior septal wall, SA and AV nodes.
- ✦ Left main coronary artery: consists of two main branches left anterior descending which supplies blood to the left ventricle and the ventricular septum and circumflex arteries which supply blood to the left atrium and the lateral/posterior aspects of the left ventricle.

BLOOD FLOW OF THE HEART

1. From the superior and inferior vena cava oxygen poor blood goes to the
2. Right atria through the tricuspid valve
3. Right ventricle to the pulmonary valve
4. To the pulmonary trunk and arteries into the lungs Co₂ is lost and O₂ is gained in the pulmonary capillaries
5. O₂ rich blood enters the pulmonary veins to the left atrium
6. Blood travels through the bicuspid valve and enters the left ventricle
7. Blood moves through the aortic valve and travels through the aorta to the systemic circuit



Sectional Anatomy of the Heart

ELECTRICAL CONDUCTION

- ✦ SA node: pacemaker of the heart and initiates contraction at 80- 100 BPM.
- ✦ AV : receives impulses from the SA node initiates and sustains impulses at 40-60 BPM
- ✦ Bundle of His: continuation of the AV node and branches into the the bundle branches which terminate in the purkinje fibers
- ✦ Purkinje fibers: network of conducting strands beneath the ventricular endocardium. They can act as a pacemaker when the SA and AV fail as pace makers. They can sustain at 20-40 BPM

Study Guide For Heart And Circulation

**Andreas P. Kalogeropoulos, Hal A.
Skopicki, Javed Butler**



Study Guide For Heart And Circulation:

Pediatric Advanced Life Support Study Guide Aehlert, 2017-01-16 Fully revised to meet the 2015 CPR ECC Guidelines and to prepare students and professionals for PALS certification and recertification Pediatric Advanced Life Support Study Guide Fourth Edition provides a clear and complete approach to managing pediatric emergencies Designed for use by the spectrum of healthcare professionals the Fourth Edition provides users with the critical information needed to approach real life pediatric emergencies The Fourth Edition includes End of chapter quizzes with answers and objectives as well as a comprehensive posttest to gauge material comprehension Case studies at the end of appropriate chapters for practice with real world material application Clear procedural explanations written in descriptive yet accessible language A refined Table of Contents including standalone chapters on cardiac dysrhythmias for focused learning and study PALS Pearl boxes for text to everyday clinical application In text references for deeper research if desired **Critical Care Study Guide** Gerard J. Criner, Rodger E. Barnette, Gilbert E. D'Alonzo, 2010-06-27 Critical care medicine is a dynamic and exciting arena where complex pathophysiologic states require extensive knowledge and up to date clinical information An extensive knowledge of basic pathophysiology as well as awareness of the appropriate diagnostic tests and treatments that are used to optimize care in the critically ill is essential Since our first edition 7 years ago new information crucial to the care and understanding of the critically ill patient has rapidly accumulated Because this knowledge base crosses many different disciplines a comprehensive multidisciplinary approach presenting the information is essential similar to the multidisciplinary approach that is used to care for the critically ill patient We have strived to provide this content in an easily digestible format that uses a variety of teaching tools to facilitate understanding of the presented concepts and to enhance information retention To meet the demand to provide comprehensive and diverse education in order to understand the pathogenesis and optimum care of a variety of critical illnesses we have substantially revised the prior topics in the first edition with updated information We have also markedly expanded the number of topics covered to include acute lung injury and the acute respiratory distress syndrome an expanded discussion of the physiology and operation of mechanical ventilation obstetrical care in the ICU neurosurgical emergencies acute coronary syndromes cardiac arrhythmias role of whole body rehabilitation in the ICU ethical conduct of human research in the ICU and nursing care of the ICU patient [Study Guide for Perry's Maternal Child Nursing Care in Canada, E-Book](#) Lisa Keenan-Lindsay, Cheryl A Sams, Constance L. O'Connor, Shannon E. Perry, Marilyn J. Hockenberry, Deitra Leonard Lowdermilk, David Wilson, 2021-10-21 The new Study Guide for Perry's Maternal Child Nursing Care in Canada is designed to help you review and master content from the core text and learn how to think critically in applying your knowledge Chapters parallel those in the text and provide review critical thinking applications engaging activities and more with an answer key at the back of the book This comprehensive study guide also contains case studies to help you integrate information and develop the critical thinking clinical reasoning and clinical judgement skills required to

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Heart Disease Diagnosis and Therapy M. Gabriel Khan,2007-10-27 M Gabriel Khan MD concisely assembles in a reader friendly format all the clinically useful information that an internist needs in both his daily rounds and abusus office practice to find correct clinical diagnoses and choose optimal pharmacologic therapies for their patients Highlights include a simplified method for recognition of and a practical therapeutic approach to arrhythmias as well as a more logical approach to drug management of hypertension than that given by the Joint National Committee instructive algorithms that simplify the diagnosis and treatment of syncope and extensive diagnostic information on hypertrophic cardiomyopathy A large number of illustrative electrocardiograms that help to clarify the most often misinterpreted of all cardiologic tests and extensive discussions of practical cardiovascular pharmacology complete this magisterial survey

Aging and Heart Failure Bodh I. Jugdutt,2014-02-19 This book synthesizes the major research advances in molecular biochemical and translational aspects of aging and heart failure over the last four decades and addresses future directions in management and drug discovery It presents clinical issues and molecular mechanisms related to heart failure including the changing demographics in the aging population with heart failure hypertension and prevention of diastolic heart failure in the aging population polypharmacy and adverse drug reactions in the aging population with heart failure changes in the heart that accompany advancing age from humans to molecules aging associated alterations in myocardial inflammation and fibrosis and aging related changes in mitochondrial function and implications for heart failure therapy The book succinctly summarizes the large volume of data on these key topics and highlights novel pathways that need to be explored Featuring contributions from leading clinician scientists Aging and Heart Failure Mechanisms and Management is an authoritative resource on the major clinical issues in heart failure therapy in the elderly for cardiologists gerontologists and internists

Braunwald's Heart Disease E-Book Douglas L. Mann,Douglas P. Zipes,Peter Libby,Robert O. Bonow,2014-07-30 Ideal for cardiologists who need to keep abreast of rapidly changing scientific foundations clinical research results and evidence based medicine Braunwald s Heart Disease is your indispensable source for definitive state of the art answers on every aspect of contemporary cardiology helping you apply the most recent knowledge in personalized medicine imaging techniques pharmacology interventional cardiology electrophysiology and much more Practice with

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Heart Failure Howard Eisen,2017-02-21 This comprehensively covers everything from pathophysiology to the evaluation of patients presenting with heart failure to medical management device therapy heart transplantation and mechanical circulatory support and include relevant cardiac imaging studies such as echocardiograms and magnetic resonance imaging studies which could be seen in their entirety as well as pathology slides hemodynamic tracings and videos of cardiac surgery such as heart transplants and ventricular assist device implantation Finally the book would have videos of patients with heart failure heart transplants or ventricular assist devices describing their clinical presentation and experiences It is structured so that it can be used as a guide by physicians studying for the general Cardiology or Advanced Heart Failure and Cardiac Transplantations Boards

Heart Failure in the Child and Young Adult Joseph Rossano,John Lynn Jefferies,Anthony C Chang,Jeffrey A. Towbin,Robert E Shaddy,2017-12-05 Heart Failure in the Child and Young Adult From Bench to Bedside combines multiple etiologies for pediatric heart failure including congenital heart disease cardiomyopathies infectious diseases and metabolic abnormalities This comprehensive resource combines research from multiple contributors with current guidelines to bridge the knowledge gap for the recognition and management of heart failure in children Coverage begins with the basic science of heart failure then progresses through diagnosis management treatment and surgery finally concluding with advanced special topics including genetics self management and nanomedicine Provides coverage of the basic science of heart failure its epidemiology and economic aspects outpatient and inpatient management and advanced therapies including mechanical circulatory support and heart transplantation Combines cutting edge research with current guidelines from the field

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Heart Failure in Women, An Issue of Heart Failure Clinics Gina Price Lundberg, Laxmi S. Mehta, 2018-11-21 This issue of Heart Failure Clinics guest edited by Gina Price Lundberg and Laxmi S Mehta with consulting editor Eduardo Bossone will focus on Heart Failure in Women Topics include but are not limited to Gender Based Differences in Risk Factors for Development of Heart Failure Imaging of Heart Failure Heart Failure with Preserved Ejection Fraction in Women Heart failure with Reduced Ejection Fraction in Women Peripartum Cardiomyopathy Stress Induced Cardiomyopathy Atrial fibrillation and Heart Failure in Women Breast Cancer and Heart Failure Valvular Heart Disease and Heart Failure in Women Congenital Heart Disease and Heart Failure Advanced Therapies for Advanced Heart Failure in Women CRT and ICDs in Women Heart Transplants and Women Sleep apnea and Heart Failure in Women and Pulmonary Hypertension in Women

Teacher's Wraparound Edition: Two Biology Everyday Experience Albert Kaskel, 1994-04-19

The Cardiac Care Unit Survival Guide Herzog, 2012 This book is geared toward cardiologists trainees and housestaff anyone who rotates or practices in the CCU who must grasp the subtleties when treating patients in a cardiac care unit It is organized in a way to help you understand the simplified pathophysiology of the disease the diagnosis modalities the initial critical care management in the CCU the clinical care in a step down unit and plan for discharge therapy Dr Herzog has developed unified pathways for the management of patients presenting with acute chest pain or its equivalent acute heart failure atrial fibrillation and flutter syncope cardiac arrest hypertension and hyperglycemia Algorithms and pathways for management are provided in each chapter for easy implementation in any health care system In addition because specialized units are frightening to the patients and their families there is a section in each chapter on what the patient and family need to know that encompasses a capsulated explanation of the condition and treatment management A companion website accompanies the text that includes fully searchable text and patient information

Heart Failure Andreas P. Kalogeropoulos, Hal A. Skopicki, Javed Butler, 2022-07-11 This patient oriented book was written as a meeting ground for practicing clinicians allied health professionals and clinical researchers to provide a practical guide for the contemporary assessment and management of patients with heart failure and cardiomyopathy It revolves around broad patient scenarios to elegantly or expertly guide diagnostic and management strategies Combining the talents of over one hundred experts in the field the book also endeavors to challenge the reader with areas of current controversies and opportunities for clinical investigation with the goals of both orienting clinicians and stimulating their research passions Key

Features Provides practical guidance based on real life heart failure scenarios Discusses both acute and chronic care patient oriented scenarios Covers up to date and novel concepts in heart failure Features the perspectives of current debates and controversies in heart failure Highlights the opportunities for research in this field

Chronic Coronary Artery Disease: A Companion to Braunwald's Heart Disease E-Book James de Lemos,Torbjørn Omland,2017-01-03 Featuring expert guidance from Drs James de Lemos and Torbjørn Omland as well as other globally known leaders in cardiology Chronic Coronary Artery Disease covers every aspect of managing and treating patients suffering from chronic coronary syndromes This brand new companion to Braunwald's Heart Disease was designed as a stand alone reference for physicians treating patients who present with complex unique challenges offering the latest information on the use of imaging modalities in diagnosis and treatment advances in interventional and surgical approaches to revascularization new medications to improve symptoms and outcomes in chronic CAD and much more Covers every aspect of evaluation and treatment of patients who suffer from chronic coronary syndromes Provides both evidenced based recommendations from the most recent guidelines from the major cardiology societies AHA ACC and ESC as well as practical management tips from leading experts with extensive clinical experience Highlights new developments concerning epidemiology and prevention pathophysiology and clinical findings as well as laboratory testing invasive and non invasive testing risk stratification clinical decision making and prognosis and management of chronic coronary syndromes Features information on today's hot topics including the use of novel imaging modalities in diagnosis and treatment and emerging therapies to improve outcomes in chronic CAD

Oxford Textbook of Geriatric Medicine Jean-Pierre Michel,B. Lynn Beattie,Finbarr C. Martin,Jeremy D. Walston,2018 The third edition of the definitive international reference book on all aspects of the medical care of older persons will provide every physician involved in the care of older patients with a comprehensive resource on all the clinical problems they are likely to encounter as well as on related psychological philosophical and social issues

This book delves into Study Guide For Heart And Circulation. Study Guide For Heart And Circulation is a vital topic that needs to be grasped by everyone, from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Study Guide For Heart And Circulation, encompassing both the fundamentals and more intricate discussions.

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