

# Chapter 17 Blood

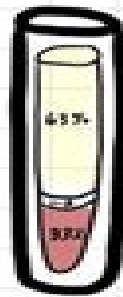
## Blood Content:

**plasma + formed elements**

**formed elements** - living blood

"cells" suspended in plasma

- **Erythrocytes** - (RBCs) red blood cells
- **leukocytes** - (WBCs) white blood cells
- **platelets** - cell fragments



- plasma

(Buffy coat)  
- WBCs + platelets

- RBCs

**plasma** - non living fluid matrix

90% water

60% albumin

36% Globulins

4% fibrinogen

- nutrients

- hormones

- wastes

- gases

- proteins

Sticky, opaque, metallic taste pH = 7.35 - 7.45

high  $O_2$  - scarlet, low  $O_2$  - dark red V = 5-6L men, 4-5L women

## Blood function:

1. **Distribution** - delivering  $O_2$  and nutrients to body cells; transporting metabolic wastes to lungs and kidneys for elimination; transporting hormones from endocrine organs to target organs
2. **Regulation** - maintaining body temp by absorbing and distributing heat; maintaining normal pH buffer; maintaining adequate fluid volume in circulatory system
3. **protection** - preventing blood loss - plasma proteins and platelets  $\rightarrow$  clot formation; preventing infection

## RBCs



**Spectrin** - provides flexibility to change shape

no nucleus

biconcave disks, **anucleate**, no organelles

**RBC function**: respiratory gas transport, hemoglobin binds with  $O_2$

• 97% hemoglobin

form fib function

**Hemoglobin** - protein in RBC that carries oxygen

Hb

**Globin**:

**Heme**:

- 4 polypeptide chains
- pigment bonded to globin
- 2 alpha + 2 beta chains
- chain - gives blood red color

**Oxyhemoglobin** - ruby red -  $O_2$  loading in lungs

**deoxyhemoglobin** - dark red -  $O_2$  unloading in tissues

**Carbaminothromoglobin** - 20%  $CO_2$  in blood binds to Hb

- heme iron (Fe) binds to 1  $O_2$
- RBC - 250mil Hb molecules
- Each Hb can produce 4  $O_2$

## Hematopoiesis

- formation of blood cells in red bone marrow

hemocytoblasts - hematopoietic  
Stem Cells

hematocrit - % of blood volume that  
is in RBCs

47%  $\pm$  5% (males), 42%  $\pm$  5% (females)

# Anatomy And Physiology Chapter Blood Test

**Paula Ingram,Irene Lavery**



## **Anatomy And Physiology Chapter Blood Test:**

Phlebotomy Exam Review Ruth E. McCall, 2023-08-15 Phlebotomy Exam Review Eighth Edition provides a comprehensive review of current phlebotomy theory and offers an ideal way to study for phlebotomy licensing or national certification exams. It also makes for an excellent study tool for students taking formal phlebotomy training programs. By answering the questions in this review, student can test their knowledge and application of current phlebotomy theory. Theory questions address recent federal safety standards Clinical and Laboratory Standards Institute CLSI guidelines and the National Accrediting Agency for Clinical Laboratory Sciences NAACLS phlebotomist competencies when applicable. Questions are standard multiple choice like those used on national exams with choices that often test your critical thinking abilities. 2024 380 pages

Paramedics! Test Yourself in Pathophysiology Katherine Rogers, William Scott, Stuart Warner, Bob Willis, 2011-09-16 This charming little book offers students and professionals alike a chance to review their knowledge of pathophysiology in a simple and easy to use manner. It summarises all key areas and offers the reader a quick questions and answers book which is unique in the paramedic literature world. A fantastic book. Ruth Lambert Qualified Paramedic UK

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**Nurses! Test Yourself In Pathophysiology** Rogers, Katherine, Scott, William, 2011-03-01 This book is in the new Nurses Test Yourself series and will offer a revision and study aid for student nurses undertaking their Year 1 2 3 pathophysiology altered physiology acute and critical illness module and related exam assessments

**Anatomy & Physiology (includes A&P Online course) E-Book** Kevin T. Patton, 2018-01-31 Anatomy Physiology includes A P Online course E Book

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management and catheter care Section three outlines complex clinical skills that require more in depth training such as medication and intravenous cannulation An invaluable resource for healthcare assistants and assistant practitioners this book will also be of use to newly qualified practitioners and students in health and social care

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*Phlebotomy Exam Review, Enhanced Edition* Ruth E. McCall, 2020-06-19 Phlebotomy Exam Review Enhanced Seventh Edition thoroughly prepares students for any of the national certification exams in phlebotomy

**Essentials Of Medical Laboratory Practice** Constance L Lieseke, Elizabeth A Zeibig, 2012-01-31 Inside you ll find a wealth of information on important laboratory terminology and the procedures you ll need to perform to become an effective member of a physician s office team Coverage of the advanced procedures performed outside of the physician s office explains what happens to the samples you send out There s also information on CLIA and other government regulations and how they affect each procedure

**Clinical Skills for Healthcare Assistants** Paula Ingram, Irene Lavery, 2009-07-07 Clinical Skills for Healthcare Assistants is an accessible easy to read guide outlining the fundamental and core skills integral to clinical practice Divided into three sections the first looks at fundamental skills applicable to all staff such as accountability communication and record keeping Section two explores core clinical skills for example respiratory care pulse blood glucose management catheter care and fluid balance Section three outlines complex clinical skills that require more in

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Clinical Skills for Paramedic Practice ANZ 1e Dianne Inglis, Jeff Kenneally, 2020-10-15 Written by Dianne Inglis and Jeffrey Kenneally the workbook includes more than 70 paramedic focused clinical skills that link underpinning theory and knowledge with expectations for contemporary clinical practice To ensure the skills are performed correctly and to standard the resource is further strengthened with a ready made assessment tool ideal for both self directed learning and instructor use The text is designed for practising skill development and preparation for assessment and clinical placement Clinical Skills for Paramedic Practice 1e includes two key components practical skill instruction and the Objective Structured Clinical Examination OSCE assessment checklist The skills sections contain clear step by step written and photographic instruction in basic to advanced clinical skills with rationales provided to enhance knowledge acquisition and clinical decision making The OSCE checklists allow students and instructors to easily track and assess progress in skill development Step by step skill instruction combined with an OSCE assessment checklist Structured reflection and end of chapter questions to assist with deeper understanding of key concepts and application to practice Designed specifically for use by Australian and New Zealand paramedics An eBook and downloadable skill and assessment sheets are included with purchase of the print book Additional resources on Evolve An eBook on VitalSource Student and Instructor Resources on Evolve Clinical skill work instructions Formative Clinical Skill Assessment F CSAT Summative Clinical Skill Assessment S CSAT Performance Improvement Plan PIP Formative Clinical Skill Assessment F CSAT key Direct Observation of Procedural Skills DOPS

Blood Science Andrew Blann, Nessar Ahmed, 2022-10-24 Blood Science The second edition of the leading introduction to blood science with updated new illustrations and case studies Blood Science Principles and Pathology integrates hematology and blood transfusion clinical biochemistry and immunology to provide a thorough introduction to this rapidly expanding discipline Reflecting recent changes in education and training for healthcare scientists this comprehensive textbook covers the analytical techniques used in blood science the diagnosis and management of various blood disorders and more Fully revised the second edition presents new case studies and high quality images throughout illustrating the practical skills and knowledge required by today's undergraduate students and practitioners Detailed yet accessible chapters contain learning objectives and summaries links to further readings and resources and real world case studies with easy to follow interpretations Throughout the text the authors highlight how laboratory data and clinical details are used to investigate patients with actual or suspected diseases in real world scenarios Multi disciplinary view merging biochemical hematological immunological and genetical knowledge into a single discipline Blood science Discusses advances

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evidence based respiratory care plan Respiratory Care Patient Assessment and Care Plan Development describes the purpose of patient assessment and then guides the reader through the process of the reviewing existing data in the medical record conducting the patient interview performing the physical assessment and finally evaluating the diagnostic studies needed and implementing a respiratory care plan Bridging the gap between patient assessment and treatment the reader will learn how to apply assessment skills to the development and implementation of respiratory care plans Integrated throughout each chapter are Clinical Focus exercises RC Insights and Key Points to help readers refine critical thinking and problem solving skills as well as strongly grasp important concepts Chapter 1 Introduction to Patient Assessment Chapter 2 Development and Implementation of Respiratory Care Plans Chapter 3 Review of the Medical Record Chapter 4 Patient History Chapter 5 Physical Assessment Chapter 6 Assessment of Oxygenation Chapter 7 Assessment of Ventilation Chapter 8 Blood Gas Analysis Hemoximetry and Acid Base Balance Chapter 9 Laboratory Studies Chapter 10 Cardiac Assessment and the Electrocardiogram Chapter 11 Cardiopulmonary Imaging Chapter 12 Adult Pulmonary Function Chapter 13 Bronchoscopy and Special Procedures Chapter 14 Acute and Critical Care Monitoring and Assessment Chapter 15 Obstructive Sleep Apnea Chapter 16 Neonatal and Pediatric Assessment

*Blood Collection* Marjorie Schaub Di Lorenzo, Susan King Strasinger, 2016-03-14 Cross training Continuing education Refresher Whether you re cross training continuing your education or taking a refresher course the knowledge and skills you need to master the essentials of phlebotomy are here This user friendly text focuses on the proper techniques for collecting quality blood specimens with minimal patient discomfort It s perfect for intensive one or two day phlebotomy courses

**Surgical Technology** Joanna Kotcher Fuller, Joanna Ruth Fuller, 2012-11-07 Deliver the best patient care before during and after surgery with this straightforward step by step guide to surgical skills and operating room procedures It provides comprehensive coverage of all the updated AST Core Curriculum 6th Edition components health care sciences technological sciences patient care concepts surgical technology and surgical procedures A mentoring approach makes even complex skills and techniques easy to understand User friendly features such as full color illustrations chapter outlines and summaries review questions critical thinking exercises and technique boxes help you focus on the most important concepts and make it easier to retain and recall critical information Chapter objectives correspond to the latest AST Core Curriculum objectives to ensure you have access to the most reliable information in the operating room Enhanced critical thinking scenarios at the end of each chapter help you strengthen your critical thinking and clinical decision making skills and highlight practical applications of key concepts Additional information on special populations including bariatric pregnant physically or mentally challenged isolation trauma language barrier and substance abuse patients highlights important considerations for the surgical technologist regarding transfer preparation and procedure set up Expanded coverage of surgical lasers keeps you up to date with the latest technology so you can effectively assess the function assembly use and care of equipment in the surgical suite UPDATED

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