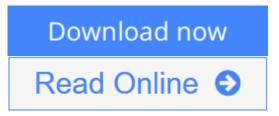
# Clinical Laboratory Hematology

# **Clinical Laboratory Hematology (2nd Edition)**

By Shirlyn B. McKenzie Ph.D. CLS (NCA)



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Designed to meet the needs of both clinical laboratory technicians and clinical laboratory scientists, *CLINICAL LABORATORY HEMATOLOGY* has been updated into a brand new edition. This comprehensive--yet easy to read--guide to hematology and hemostasis features cutting-edge technologies, high-quality photographs and micrographs, case studies, and convenient dual-level (basic and advanced) presentation of information. Visual cross-referencing (symbols) throughout make finding information exceptionally easy. Key chapters are presented by a number of different authors and experts in the field and include information on: cellular homeostasis; the Stucture and Function of Hematopoietic Organs; Hemolytic anemia; Nonmalignant lymphocyte disorders and much more.

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#### **Editorial Review**

From the Back Cover

Revised and thoroughly updated, this bestseller remains a comprehensive, yet reader-friendly text of hematology and hemostasis written for students at all levels of laboratory education. Readers will master the content with ease by engaging in a vivid presentation of content supplemented by a variety of thought-provoking learning features.

#### **Featrues include:**

\* A flexible format withs two levels of chapter-concluding review questions, matched to the two levels of objectives at the start of every chapter.

\* Integrated companion website study guide (www.pearsonhighered.com/mckenzie) with additional images and quiz questions to test comprehension of the chapter material. Featrues immediate tabulation of quiz results.

\* High-quality, full-color blood and bone marrow micrographs presented throughout the text.

\* Real-life scenarios presented in running case studies throughout each chapter.

\* Checkpoints in each chapter provide learning "speed bumps" along the way to help readers apply and assess comprehension as they progress through each chapter.

\* Clear and understandable coverage of new technologies within the worlds of molecular diagnostics, flow cytometry, and cytogenetics.

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Clinical Laboratory Hematology is a comprehensive, yet easy-to-read text of hematology and hemostasis written for students at all levels in clinical laboratory science programs, including clinical laboratory technicians, CLT (medical laboratory technicians, NET), and clinical laboratory scientists, CIS (medical technologists, MT). Other health professional students and practitioners may also benefit from this book, including pathology residents, physician assistants, and nurse practitioners. This text replaces Textbook of Hematology published by Lea & Febiger in 1988 and by Williams & Wilkins in 1996. However this text should be considered as a brand new publication because of its wide variety of changes and enhancements. Included among these changes are the following: we have assembled an extensive team of authoritative contributing authors to write chapters on specialized subjects within their respective fields of expertise; we have developed a striking design that will be conducive to today's visually oriented student; we have developed an exciting set of learning features that will help readers grasp the content more easily; we have developed a book-specific online study guide (wwwprenhall.com/mckenzie); and finally, we have packaged the text with a free student version of the Chronolab CD-ROM photomicrograph atlas.

## **ORGANIZATION OF THE BOOK**

Understanding hematologic/hemostatic diseases is dependent on a thorough knowledge and understanding of normal processes. Thus, the book begins with a section on normal hematopoiesis and progresses through anemias, nonmalignant and malignant leukocyte disorders. Hemostasis adheres to a similar format with normal hemostasis functions discussed first, followed by abnormalities in hemostasis.

The text is divided into sections and maybe studied by section or chapter sequence. This gives the instructor flexibility td fit the book to their specific course design. The first two sections cover an introduction to hematology and normal hematopoiesis. This includes a discussion of the cell morphology, cell cycle, and its regulation. The section includes a discussion on oncogenes emphasizing the concept that neoplasms are the result of mutations in normal genes that control cell proliferation and development. This concept is further discussed in the introduction to hematopoietic neoplasms. The third section, includes procedures that are routine and performed in most laboratories. These are included at the beginning of the book so the students will have basic laboratory test information as they proceed through the subsequent chapters on hematopoietic disorders which focus on laboratory diagnostic protocols.

The next sections cover the hematopoietic disorders and special laboratory procedures. The fourth section includes the anemias and begins with an introduction to anemia chapter. The fifth section is nonmalignant disorders of the leukocytes. The sixth section includes a discussion of special laboratory procedures that are useful in diagnosis and classification of hematopoietic neoplasms: flow cytometry, cytogenetics, and molecular diagnostics. This section may be studied before or after the seventh section on neoplastic hematopoietic disorders, depending on the reader's knowledge level of the neoplasms. If this is the reader's first exposure to the neoplasms, it may be better to cover section 7 before section 6. Alternatively, sections 6 and 7 can be integrated and studied together.

Section 8 is a study of body fluids. Body fluid analysis is often a function of the hematology laboratory, since analysis includes cell counts and review of cell morphology. As much of the analysis includes identification of cells and differentiation of malignant cells from reactive or normal cells, this section has many microphotographs.

Section 9 is a study of hemostasis. It begins with a study of normal hemostasis processes and proceeds to abnormalities that are associated with bleeding and thrombosis. Due to the high frequency of thrombotic disorders and the rapid discovery of mechanisms responsible for thrombosis, the laboratory's role in diagnosis of thrombotic disorders is expanding. Thus, an entire chapter is devoted to hypercoagulability (thrombophilia). This section also includes laboratory testing procedures for evaluation of hemostasis.

The last section includes special hematology procedures and quality assurance and safety in the laboratory. Automation in hematology and hemostasis will be supplemented on the Web page with extensive use of graphics to illustrate abnormal results and teach evaluation and interpretation of data.

The book incorporates ethical issues and management issues of test utilization and value, as well as critical testing pathways. This is the soft side of science but alerts the students to issues they will be facing in their work and communities. In many cases the laboratorian is the one who has the breadth of information needed to help make critical decisions involving the laboratory and its effective, efficient, ethical use.

#### SUITS ALL LEVELS OF LEARNING

This book has been designed for both CLT/MLT and CLS/MT students. Using only one textbook is beneficial and economical in laboratory science programs offering both levels. Use of the book is also

helpful to programs that design articulated curricula. The CLS/MT program can be confident of the CLT's/MLT's knowledge level in hematology without doing an extensive CLT/MLT course analysis.

CLT/MLT instructors will need to communicate to their students what is expected of them. They may want their students to find the information in the text that allows them to satisfy the checklist, or they may assign particular sections to read. If not assigned specific sections, the CLT/MLT student may read more than expected which is certainly not a bad thing! The students and instructors should use the checklists to determine the material to be read.

The case study questions and checkpoints are not delineated by level. CLT/MLT students should try to answer as many of these as possible. CLT/MLT instructors should select appropriate chapters for their students. Some chapters, such as molecular techniques, cytogenetics, and flow cytometry may not be included in a CLT/MLT curriculum. Each program will need to assess what fits its particular curriculum.

CLS/MT students should be able to meet both Level I and Level II checklists in most cases, but of course there may be differences among expectations of programs. Therefore, instructors are encouraged to review the checklists to ensure their appropriateness for the course. Although all chapters are appropriate for the CLS/MT student, if the program has two levels of hematology courses, Level I and Level II, instructors may choose to use the book as for a CLT/MLT program in the first course and the remainder of the book in the second course.

In all cases the instructor should begin the course with sections 1 through 3. The remaining sections can be rearranged and used as the instructor desires. The "Background Basics" feature will help the instructor determine which concepts the student should have mastered before beginning a unit of study. This concept should help instructors customize their courses.

#### UNIQUE PEDAGOGICAL FEATURES

This text has a number of unique pedagogical features that will help the student assimilate, organize, and understand the information. Each chapter begins with a group of components intended to set the stage for the content to follow.

- Background Basics alert students to material that should be learned or reviewed before starting the chapter. In most cases it refers readers to previous chapters to help them find the material if they want to review it.
- Objectives are comprised of two levels of checklists: Level I for basic or essential information and Level II for more advanced information. These checklists were reviewed by clinical (medical) laboratory technician (CLT/MLT) educators who made recommendations that aimed the Level I checklists to their students. Clinical laboratory science/medical technologist (CLS/MT) educators may expect their students to meet both Level I and Level II checklists requirements.
- Overview gives the reader an idea of the chapter content and organization.

Each chapter offers students a variety of opportunities to assess their knowledge and ability to apply it.

- Case Study is a running case feature that first appears at the beginning of each chapter and focuses the student's attention on the subject matter that the chapter will cover. Throughout the chapter at appropriate places, additional information on the case may be given such as laboratory test results, and then questions are asked. The questions relate to the material presented in preceding sections. There is a case summary and answers to the questions in the appendix.
- Checkpoints! are integrated throughout the chapter. These are questions that require the student to pause along the way to recall or apply information covered in preceding sections. The answers are in the appendix.

- Summary concludes the text portion of each chapter in order to help the student bring all the material together.
- Review Questions appear at the end of each chapter. There are two sets of questions, Level I and Level II, that are referenced to the Level I and Level II objectives checklists. Answers are in the appendix.

The page design features a number of enhancements intended to aid the learning process.

- **Bold symbols** are used within the chapter text to help the student quickly cross-reference from the tables and figures to the text.
- A oo symbol is also used when referring the student to another chapter.
- **Figures and tables** are used liberally to help the student organize and conceptualize information. This is especially important to visual learners.
- Algorithms (critical pathways, reflex testing pa...

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#### Arielle Griffin:

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