CLINICAL PRACTICE IS THE application of fundamental knowledge and sound judgment to the unique circumstances of an individual patient at a particular moment. No set of inflexible rules can be crafted to apply to the constellation of variables that are present when a physician is confronted with a therapeutic decision. However, guidance can be offered. The primary aim of the third edition of this book is unchanged from the first two editions published 6 and 12 years ago: to provide assistance to 1) clinicians who need to decide whether to prescribe a blood component transfusion and then assess its effects, or 2) those who are responsible for the care of patients who develop adverse events resulting from transfusions. In addition, this book is intended for specialists and trainees in transfusion medicine who will be providing primary and consultative care in this dynamic field.

The information necessary to define precisely when a transfusion should be given is not available. For example, we do not know myocardial cell mitochondrial \(\text{pO}_2\). We do not know the amount of oxygen delivery to individual organs or tissues. Furthermore, we do not know their precise oxygen requirements. We do not know the exact concentration of platelets or each coagulation factor required to prevent bleeding in any particular circumstance. In many clinical situations, we do not know the ideal way to customize a blood component prior to transfusion. We do not know how to quantify associated benefits of transfusion, such as the contribution to hemostasis of raising a patient’s hematocrit. We use surrogate measurements to guide us. Because of these limitations, it is hoped that a book offering practical suggestions will prove useful.

The addition of four chapters to this edition has not changed the intent to fill a niche between the weightier compendia and the handbooks already available. The abiding emphasis of the text is on clinical practices, with the inclusion of some pathophysiology to support recommendations. The chapters new to this edition address transfusion therapy in trauma and massive transfusion, transfusion in critical care, alloimmunization to red cell antigens, and the reduction of pathogens in blood components. The first two of these topics have outgrown their inclusion in the single chapter addressing transfusion in surgery, trauma, and critical care that appeared in the first two editions. (Transfusion therapy in surgery also has its own independent chapter in this edition.)

With the advent of genetic testing for red cell antigens, considerations regarding the prevention of alloimmunization to these antigens have gained increasing attention. The commercialization of pathogen-reduced platelets and plasma has been a major advance in transfusion therapy in many countries. This edition also has enhanced discussions of many topics, including pediatric transfusion, transfusion-induced immunomodulation, transfusion in
stem cell transplantation, and Rh Immune Globulin therapy.

In this edition, the chapters have been placed in sections devoted to transfusion therapy in clinical situations, the uses of particular components and products, cellular therapies and growth factors, adverse events, and quality, as well as a summation chapter. Unconventionally, I have placed the clinical situation chapters first to emphasize the focus of this text on clinical practices. It is not surprising that the editor of a book with 49 authors will encounter informed differences of opinion. I have attempted to provide a unified text by carefully shaping recommendations, calling attention to differences in practice, and by cross-referencing subjects among chapters. Current technology has permitted the inclusion of some information available only 6 weeks before the book’s release. Although this text is principally oriented to clinical care in the United States, I have broadened its scope by referring to practices elsewhere in a number of chapters, and by once again including a chapter on the hemovigilance programs in Europe.

Since the publication of the second edition, there have been a number of significant developments. A growing emphasis on increasing the safety of transfusion through improving patient and patient specimen identification is finding its way into practice. The testing of donors in the United States for antibodies to Trypanosoma cruzi, the etiologic agent of Chagas disease, and the increasing recognition of fatal transfusion-transmitted babesiosis, illustrate the growing understanding of the scope of infectious risks of blood transfusion. A platelet additive solution has become available for clinical use in the United States. In the Preface to the last edition, I wondered what the role would be of pathogen-reduced blood components, cold-stored platelets, alternative oxygen therapeutics, and universal group O red cells at the time this edition was published. Only the first of these has found its way into practice, though not in the United States. In fact, none of these are likely to be available soon in the United States. It is tempting to wonder what will (and will not) be included in the fourth edition of this text. How much better will we understand whether patient outcomes are affected by the storage age of red cells? Will pathogen-reduced Red Blood Cells become clinically available? Will alternative oxygen therapeutics finally enter into practice? Will red cells cultivated in vitro be well on their way to therapeutic use? Will lyophilized platelets and/or plasma become a clinical option?

At least one author from each of the 27 chapters in the second edition contributed to the updated and revised version of the chapter in this edition, a continuity also present from the first edition to the second. I am very grateful for their willingness to contribute to this work again, and their dedication to including comprehensive, authoritative, clear, and up-to-date information to help shape clinical care. I thank each of them for their capable and diligent scholarship, as well as their patience with me. I am deeply grateful for the outstanding editorial work of Laurie Munk, AABB Publications Director, and the expert assistance of her staff—Jennifer Boyer and Nina Hutchinson. I am particularly appreciative of the excellent technical proficiency, linguistic dexterity, and unfailingly gracious calm (amid turbulence) of my administrative assistant, Kat Parsons. I take responsibility for any errors or inconsistencies, and I welcome suggestions and questions.

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