

Symposium

Introduction

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Hematology: Updates, Evidence-Based Care, and Implications for Future Practice

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Hematology as a discipline encompasses a wide range of disease processes involving the entire body. As with all other aspects of the care of acutely ill patients, the specialty of hematology continues to change and grow with our understanding of the intricate relationships of these systems. Although seemingly disparate subjects, hematopoiesis, coagulation, oncology, and immunology are interwoven and interdependent.¹ Critical care nurses and advanced practice clinicians need to remain current in their approach to common disease states, such as thromboembolic disease, while developing familiarity with newer, unfamiliar treatment regimens. Maintaining best practices with blood conservation requires an understanding of the elements of blood components and the scientific evidence regarding the risks and benefits of transfusions. At the same time, clinicians must remain cognizant of the ever-changing landscape of hematologic and oncologic practices. Previously underrecognized disease states, such as hemophagocytic lymphohistiocytosis (HLH), pose additional challenges to advanced practice nurses, requiring that they continually expand their knowledge base. The evolution of the science of oncology and available treatment modalities creates opportunities for professional education as well as potentially life-saving novel therapies.

In “Immunology and Immunotherapy in Critical Care: An Overview,” Munro reviews the basic principles of immunology, highlighting both innate and humoral immunity. Specific attention is paid to the lymphoid line and its mechanisms for creating antigen-specific antibodies and antigenic memory. She discusses current and prospective immunomodulating therapies that alter and employ the patient’s native immunity for treatment of malignancies. Manipulation of T cells and their specific processes for identifying and eradicating nonself antigens holds great promise for future therapies.²

In “Anticoagulant Medications for the Prevention and Treatment of Thromboembolism,” Brien outlines both the traditional anticoagulant therapies familiar to most critical care providers as well as the novel anticoagulants (NOAC) that have fundamentally altered the way advanced practice nurses provide care for patients with thromboembolic disease. Although certain therapies such as heparin and warfarin are time-tested and generally well understood by providers, use of NOACs provides both patients and providers with attractive options. With some limited exceptions, randomized controlled trials establish

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that novel anticoagulants provide at least equal, if not superior, systemic anticoagulation compared with warfarin. Furthermore, the predictable pharmacodynamics of these anticoagulants provide reliable anticoagulation with a lower bleeding risk and eliminate the need for routine monitoring, both of which directly benefit patients.³

Blood product transfusion science continues to evolve. Not only has research been conducted focusing on appropriate ratios of transfused products, additional products and medications have been developed that allow providers to treat very specific blood component losses. Passerini's "Contemporary Transfusion Science and Challenges" provides a brief historical perspective on transfusions and a review of the current guidelines. The article includes a discussion of specific blood components and alternatives to blood products available to critical care providers treating both frank hemorrhage and coagulopathies.

Skinner and Shelton provide an in-depth review of HLH. This hematologic disorder mimics malignancy in many ways and can be difficult to diagnose, resulting in delayed treatment. A case study helps to illustrate the process of assessing and managing a patient with suspected HLH. Although mortality associated with HLH remains high, the data support improved survival with prompt diagnosis and treatment.

Finally, VanDruff's article, "Management of Select Thrombocytopenias," reviews those thrombocytopenias that are caused by immune-mediated destruction. Immune

thrombocytopenia, drug-induced immune thrombocytopenia, heparin-induced thrombocytopenia, thrombotic thrombocytopenia, and hemolytic uremic syndrome have similar presentations and basic etiologies.⁴ However, the management of each of these diseases is different and requires critical care providers to maintain a working knowledge of their pathophysiologies to promote rapid diagnosis and initiation of treatment.

Maintaining evidence-based standards of practice for patients with hematologic and oncologic disorders requires frequent review of the current scientific literature as these specialties continually evolve. Inevitably new treatment modalities are developed for familiar diseases. Constellations of symptoms are identified as new disease states and new diagnostic classifications are introduced. Development of immunotherapy treatments for malignancies continues at a rapid pace. The result is a multitude of exciting challenges for critical care providers.

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