Several structural abnormalities involving the brain and surrounding structures have perioperative implications. This article reviews the pre-operative assessment and preparation of patients with intracranial masses, vascular lesions, cerebrospinal fluid abnormalities, traumatic injuries, and dementia. Until definitive treatment of the underlying condition occurs, prevention of secondary injury to the patient’s brain is the goal of medical management and final functional outcome.

This article describes the pre-operative preparation of patients with neuromuscular disorders. These entities are a relatively rare and diverse group of diseases that can affect various organ systems in addition to the central nervous system. The anesthetic implications for the various comorbidities are varied and can be profound. These patients should be optimized before surgery, with the involvement of a multidisciplinary team of specialists.

Ischemic heart disease (IHD) occurs when myocardial oxygen supply is not adequate for myocardial oxygen demand. Patients with IHD who are undergoing surgery are at risk for development of perioperative cardiac events (PCEs), and this risk depends on the type of surgery, the presence of clinical risk factors, and functional status of the patients. Appropriate perioperative management of medications such as dual antiplatelet therapy and β-blockers has a significant impact on outcomes. Perioperative management decisions should be communicated clearly between the surgeon, cardiologist, and anesthesiologist in charge of the patient. Appropriate perioperative management reduces the incidence of PCEs.

The preparation of patients with a cardiac implantable electronic device (CIED) for the perioperative period necessitates familiarity with recommendations from the American Society of Anesthesiologists and Heart Rhythm...
Society. Even clinicians who are not CIED experts should understand the indications for implantation, as well as the basic functions, operations, and limitations of these devices. Before any scheduled procedure, proper CIED function should be verified and a specific CIED prescription obtained. Acquiring the requisite knowledge base and developing the systems to competently manage the CIED patient ensures safe and efficient perioperative care.

Patients with Vascular Disease

Ann-Marie Manley and Sarah E. Reck

When conducting a pre-operative evaluation of a patient with vascular disease, it is crucial to compile a detailed history and perform a thorough physical examination. One must assess for other comorbidities as well as the extent of the disease, as patients with vascular disease often have coexisting ischemic heart disease, hypertension, cerebrovascular disease, or chronic renal insufficiency. The goal of the preoperative evaluation is to identify modifiable risk factors, coordinate a treatment plan with other members of the perioperative care team, and optimize the patient’s medical condition to shift the balance of risk/benefit ratio before proceeding with nonemergent surgery.

Patients with Chronic Pulmonary Disease

Caron M. Hong and Samuel M. Galvagno Jr

Chronic pulmonary disease is common among the surgical population and the importance of a thorough and detailed pre-operative assessment is monumental for minimizing morbidity and mortality and reducing the risk of perioperative pulmonary complications. These comorbidities contribute to pulmonary postoperative complications, including atelectasis, pneumonia, and respiratory failure, and can predict long-term mortality. The important aspects of the pre-operative assessment for patients with chronic pulmonary disease, and the value of pre-operative testing and smoking cessation, are discussed. Specifically discussed are pre-operative pulmonary assessment and management of patients with chronic obstructive pulmonary disease, asthma, restrictive lung disease, obstructive sleep apnea, and obesity.

Patients with Chronic Kidney Disease

Alicia Gruber Kalamas and Claus U. Niemann

Chronic kidney disease (CKD) is a major public health problem worldwide. Roughly 1 in 10 adult Americans has CKD. These patients are at significant risk for excessive morbidity and mortality during the perioperative period. Given the health and cost burden of end-stage renal disease (ESRD), preventing or avoiding progression of CKD to ESRD is critical. Therefore, identifying risk factors and implementing risk mitigation strategies to prevent further deterioration of renal function during the perioperative period is of paramount importance. This article reviews patient risk stratification, pre-operative evaluation and management, and perioperative interventions for renal protection.
Patients with Chronic Endocrine Disease

Mary Josephine Njoku

This article summarizes the key features and clinical considerations related to pre-operative management and planning for the care of patients of common endocrine disorders (diabetes mellitus, adrenal insufficiency, thyroid disease), a less common disorder but one that has significant perioperative implications (acromegaly), and two disorders for which pre-operative management is essential to good postoperative outcomes (pheochromocytoma and carcinoid syndrome). There are few evidence-based guidelines for pre-operative management of chronic endocrine disease; hence, this review is based on recent subspecialty society consensus guidelines and professional society clinical practice recommendations.

Patients with Immunodeficiency

Michael J. Hannaman and Melissa J. Ertl

Patients presenting in an immunocompromised state merit special consideration when being evaluated for fitness to undergo surgery. A variety of immunodeficient conditions and their respective therapies, including human immunodeficiency virus, cancer, and transplantation, exert numerous systemic effects that may lead to multiorgan dysfunction. Understanding the potential impact of these disease manifestations, and their proper evaluation, is essential in achieving optimal perioperative outcomes for these patients.

Patients with Disorders of Thrombosis and Hemostasis

Andrea Orfanakis and Thomas DeLoughery

Surgery, by definition, is a challenge to the hemostatic system. In addition, a surgical procedure may provoke inappropriate venous or arterial thrombosis, such as is suggested historically by Virchow’s Triad. For these reasons, proper functioning of the hematologic system is integral in a successful and safe perioperative period. Patients with a disorder of either coagulation or hemostasis, therefore, present an exciting challenge to the pre-operative physician. Diagnosis of a hematologic disorder may be more or less occult. A proper bleeding and clotting history can serve to elucidate such a disorder and is therefore paramount to the pre-operative workup. For those patients with a previously diagnosed disorder of the hematologic system, appropriate laboratory investigation and a concise therapeutic plan for the day of surgery can help to minimize risks in the perioperative period.

Patients Requiring Perioperative Nutritional Support

T. Miko Enomoto, Dawn Larson, and Robert G. Martindale

One of the most important factors affecting outcome and recovery from surgical trauma is pre-operative nutritional status. Research in perioperative nutritional support has suffered from a lack of consensus as to the definition of malnutrition, no recognition of which nutrients are important to surgical healing, and a paucity of well-designed studies. In the past decade, there has been some activity to address this situation, recognizing
the importance of nutrition as a therapy before surgery, after surgery, and possibly even during surgery.

Patients with Chronic Pain

Joseph Salama-Hanna and Grace Chen

Pre-operative evaluation of patients with chronic pain is important because it may lead to multidisciplinary pre-operative treatment of patients' pain and a multimodal analgesia plan for effective pain control. Pre-operative multidisciplinary management of chronic pain and comorbid conditions, such as depression, anxiety, deconditioning, and opioid tolerance, can improve patient satisfaction and surgical recovery. Multimodal analgesia using pharmacologic and nonpharmacologic strategies shifts the burden of analgesia away from simply increasing opioid dosing. In more complicated chronic pain patients, multidisciplinary treatment, including pain psychology, physical therapy, judicious medication management, and minimally invasive interventions by pain specialists, can improve patients' satisfaction and surgical outcome.

Index