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Foreword

Traumatic brain injury rehabilitation medicine

David X Cifu & Blessen C Eapen

Traumatic brain injury (TBI) is a major cause of death and disability worldwide and a serious public health problem [1]. Increasingly, awareness of the short and long-term impacts of TBI has made headlines and has driven the need to enhance knowledge on management strategies. More than 3.5 million individuals sustain TBIs in the USA annually, with a global incidence of 26–798 per 100,000 [2]. The actual incidence is likely far higher, but it is difficult to ascertain given the differences in definitions, consistent utilization of formal healthcare systems after injury, standardized reporting and outcome measures. TBI results from an impulsive force transmitted to the brain that produces a diminished or altered level of consciousness associated with loss of memory and which can lead to acute and chronic physical, cognitive and behavioral impairments [3,4].

Severity of injury from TBI spans a spectrum from mild, such as seen with a sports or blast concussion, to severe, such as seen with disorders of consciousness (coma). Making the diagnosis and assessing severity of TBI remains a clinical decision, although increasingly innovative imaging, biomarker and electrophysiologic technologies may offer opportunities to support these assessments. Survivors of TBI may be left with significant neurological deficits and develop permanent life-long disabilities with resulting socio-economic burden [5,6]. Although, current research supports little can be done to reverse the initial damage to the brain, advances in acute rehabilitation, medical and surgical care have enhanced survival and outcome and improved the management of short- and long-term symptoms.

In this book, we review the epidemiology, diagnostic approaches, clinical care, multiple organ system complications, sensory deficits, prognostic factors and the rehabilitation management of brain injury. Additionally, we discuss the use of advanced neuroimaging techniques and biomarkers to improve diagnosis, prognostication and to guide care recommendations. This book also provides updates on interventions to enhance return to full activities, school and work after TBI. Finally, we summarize emerging novel therapeutics, neuropharmacological therapy and the integration of complementary and alternative medicine into established brain injury treatment programs.

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