

Preface



Robert D. Stevens, MD



Romergryko G. Geocadin, MD

Guest Editors

The collective burden of critical neurologic illnesses is staggering. Stroke occurs in an estimated 780,000 individuals each year in the United States, and is a leading cause of death and long-term functional dependence [1]. In contemporary series, case-fatality rates following ischemic stroke are 15% to 20%, whereas these rates are two to three times higher in patients who have primary intracerebral and aneurysmal subarachnoid hemorrhage [1]. Traumatic brain injury (TBI) afflicts an estimated 10 million people per year worldwide [2]. TBI is the single most important cause of death and disability in individuals between the ages of 1 and 45 years [3], with case-fatality rates of 10% to 20% in the most recent studies [4,5]. The number of patients who have hypoxic-ischemic encephalopathy following resuscitation from cardiac arrest is 100,000 to 200,000 per year in the United States; these patients face overwhelming odds of death or vegetative state in the post-acute phase [1,6]. Expenditures associated with the acute care and rehabilitation of patients who have stroke and brain injury are collectively measured in the tens of billions of dollars annually, and are increasing [1,3].

Although these figures seem alarming, there is also room for optimism. Mortality has been steadily decreasing for patients who have ischemic stroke [7], primary intracerebral hemorrhage [8], subarachnoid hemorrhage [9], and TBI [10]. Aggressive management strategies have been associated with improvements not only in survival but also in functional outcome in subsets of patients who have devastating ischemic stroke [11], aneurysmal subarachnoid hemorrhage [12], and hypoxic-ischemic brain injury [13]. Evidence-based or guideline-driven care has been linked to significant ameliorations in the outcomes of patients who have TBI [14,15]. There are many reasons

for these encouraging results, yet it is increasingly appreciated that specialized, neurologically oriented critical care may be a determining factor [16–18].

Since the publication of the last *Neurologic Clinics* issue dedicated to neurologic critical care in 1995 [19], the field of neurocritical care has grown significantly. Advances have been made not only in the scientific understanding of the clinical disorders and in the care provided to patients but also in the formal organization of the discipline, with the formation of the Neurocritical Care Society and the board certification process in neurocritical care by the United Council on Neurological Specialties.

This present issue of *Neurologic Clinics* dedicated to critical care neurology provides state-of-the-art summaries of key areas in critical care neurology. The issue is composed of three thematic parts. The first concerns primary neurologic disorders (ischemic stroke, intracerebral hemorrhage, status epilepticus, traumatic brain injury, and neuroinfectious disorders). The second part is devoted to neurologic complications of critical illness (critical illness brain dysfunction, postresuscitation encephalopathy, and critical illness neuromyopathy). The third part looks at specific therapeutic interventions and strategies in neurologic critical care (management of intracranial hypertension, mechanical ventilation, blood pressure control, and temperature management). Most of these articles appeared in a previously published volume of *Critical Care Clinics* [18] but have been significantly updated and revised. Two articles are new to this issue, one a contemporary review of traumatic brain injury management (Marshall and Ling) with a special emphasis on combat-related injuries, and the other a discussion of mechanical ventilation in patients who have brain injury (Stevens, Lazaridis, and Chalela). Although we have sought to cover essential domains of neurocritical care, there are some specific and important topics that we were not able to include because of constraints of space. Notwithstanding, we anticipate that the articles presented here will provide a comprehensive view of what is being accomplished in the realm of neurologic critical care today.

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Robert D. Stevens, MD
Romergrzyko G. Geocadin, MD
Division of Neurosciences Critical Care
Departments of Neurology, Neurosurgery, and Anesthesiology/
Critical Care Medicine
Johns Hopkins University School of Medicine
600 North Wolfe Street, Meyer 8-140
Baltimore, MD 21287, USA

E-mail addresses: rstevens@jhmi.edu (R.D. Stevens);
rgeocadi@jhmi.edu (R.G. Geocadin)

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