Upon completion of the chapter, the reader will be able to:

1. Describe the most common causes of severe traumatic brain injury (TBI) and the typical age distribution for patients sustaining such injuries.
2. Differentiate between primary and secondary brain injury.
3. Explain the central role of ischemia in triggering secondary neuronal injury and the cascade of biochemical events proposed to occur following a severe TBI.
4. Evaluate the neurological state of a severe brain injury patient using the Glasgow Coma Scale (GCS) and factors that may affect the GCS in addition to TBI.
5. Summarize the impact of the Brain Trauma Foundation Guidelines for the Management of Severe Brain Injury on the consistency of care and outcomes for severe TBI patients.
6. Outline several general short-term treatment goals in the acute management of the TBI patient.
7. Formulate a general treatment plan for severe TBI patient during the initial resuscitation and postresuscitative care periods.
8. Devise an overall monitoring and treatment plan for the acute management of increased intracranial pressure (ICP) in a TBI patient including pharmacologic and nonpharmacologic strategies.
9. Compare and contrast the relative advantages and disadvantages of the commonly used analgesics, sedatives, and paralytics in the management of the TBI patient.
10. Compare and contrast the relative advantages and disadvantages of the osmotic agents mannitol and hypertonic saline in the management of the TBI patient.
11. Discuss the appropriate use of hyperventilation for ICP control including timing of therapy and treatment goals.
12. Compare and contrast the relative advantages and disadvantages of the major anticonvulsants used for the prevention of posttraumatic seizures following severe TBI, and formulate an appropriate anticonvulsant dosing regimen including selection of agent and duration of therapy.
13. Discuss the current role in therapy for hypothermia in the management of the TBI patient.
14. Develop a plan for preventing and/or treating several common systemic and extracranial complications in the severe TBI patient.
15. Summarize various pharmacologic strategies that have been or are currently being investigated for the attenuation of secondary brain injury.
16. Outline the evidence for the off-label use of several central nervous system (CNS) pharmacologic agents in the acute management and rehabilitation of TBI patients.