

INCIDENCE RATES OF ICU COMPLICATIONS IN MODERATE-SEVERE TRAUMATIC BRAIN INJURY (TBI)

Susanne Muehlschlegel, MD, MPH^{1,2,3}; Raphael Carandang, MD^{1,3}; Cynthia Ouillette, RN¹; Wiley Hall, MD^{1,3}; Fred Anderson, PhD^{3,4}; Robert Goldberg, PhD⁵

Departments of ¹Neurology (Div. Neurocritical Care), ²Anesthesia/Critical Care and ³Surgery; ⁴Center for Outcomes Research; ⁵Department of Quantitative Health Sciences (Div. Epidemiology of Chronic Diseases), University of Massachusetts Medical School, Worcester, MA

Contact information:

Susanne Muehlschlegel, MD, MPH

Email: susanne.muehlschlegel@umassmemorial.org

Phone: 508-856-4684

Abstract:

Retrospective studies suggest that non-neurologic organ failure may contribute to 2/3 of all deaths after TBI, but the actual incidence rates of specific intensive care unit (ICU) complications in moderate-severe TBI are not known. In a prospective observational cohort study of consecutive TBI patients from a single Level I trauma center (UMASS) over the period 11/2009 – 2/2012, we identified the ten most common medical complications after ICU admission according to strict pre-specified criteria in 170 moderate-severe TBI patients. The mean age of the study sample was 51 years, 72% were men, and the median GCS and injury severity scores were 4 and 29, respectively. Incidence rates of the ten most common medical complications in the ICU were: hyperglycemia (75%), fever (62%), systemic inflammatory response syndrome (38%), cardiac complications (36%), hypotension requiring vasopressors (35%), pneumonia (any type [34%]); sepsis (33%), anemia requiring transfusion (31%), other pulmonary complications (ARDS, pulmonary edema [26%]), and hyponatremia (sodium \leq 134mEq/L; [23%]). Medical complications in moderate-severe TBI are very common, and their association with important patient outcomes should be further investigated. Specific medical complications may pose attractive modifiable treatment targets to improve the outcome of moderate-severe TBI patients.