



School of Medicine

# Severe Traumatic Brain Injury: Does compliance to management guidelines affect outcomes?



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## BACKGROUND

Traumatic Brain Injury (TBI) is the leading cause of death and disability for individuals between the ages of 1 to 45. Evidence-based guidelines have demonstrated to improve patient care, but adherence has been limited. Noncompliance with these guidelines can prolong patient rehabilitation and recovery, and can lead to a higher cost of care.

## OBJECTIVE

To examine whether compliance with the evidence-based neurosurgical guidelines within the first-24 hours after a severe TBI will influence patient outcomes between discharge and month follow-up. 1-6

## METHODS

Patients aged 18-75 presenting to the ED of two large hospitals in Detroit, Michigan with blunt head trauma and a Glasgow Coma Score (GCS) between 4-8 were screened for this IRB-approved, prospective, observational study. Patients were excluded if presenting with penetrating brain injury, spinal cord injury, known prior cerebral injury or history of chronic seizures.

Data was collected in the web-based Evidence-Based Medicine (EBM) Care® tool for the first 24-hours post-TBI. Compliance with current guidelines entails MAP above 90mmHg, ICP below 20mmHg and PaCO2 above 25mmHg. Patient outcome was measured by the Glasgow Outcome Scale (GOS), comparing initial injury to 1-6 month follow-up GOS. GOS status was defined as deteriorating, equivalent, and improving. A cross-tabular frequency comparison was performed to assess GOS status, relative to compliance level.

### Inclusion Criteria:

- Age 18 -75 years
- Blunt Head Injury
- Glasgow Coma Score (GCS) between 4-8

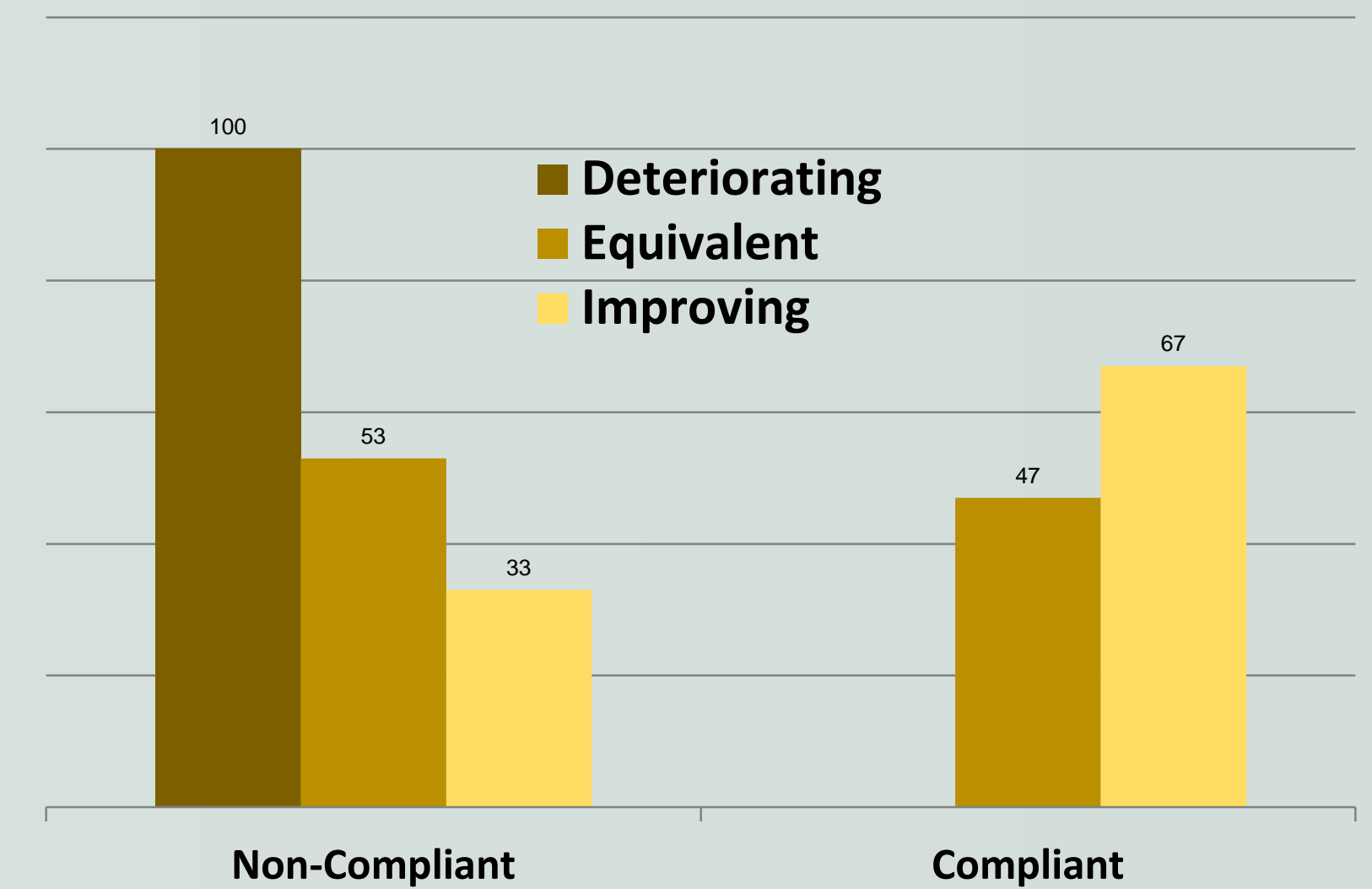
### Exclusion Criteria:

- Penetrating Brain Injury
- Spinal Cord Injury
- Prior Cerebral Injury
- History of Chronic Seizures

## RESULTS

30 patients (mean age 36.4 years [SD±12.91]; 83.3% male; 60.0% black) were included., 6.6% had deteriorating GOS, 63.3% had an equivalent GOS, and 30% had an improved GOS score.

Of the 9 patients with improved GOS scores at follow up, 66% were treated according to the guidelines. Of the 2 patients with declining GOS scores, neither were compliant with guidelines. Of the 19 patients who had equivalent GOS scores, 47% met EBM care measurements. The deteriorating group showed a mean change of -2.5, from initial GOS of 5.0 to final of 2.5. The improving group shows mean change of +1.8 from initial mean of 3.6 to 5.3.



## CONCLUSIONS

Our data shows that two-third of the patients with improved outcomes were managed according to the guidelines signifying the need for better adherence.