

# Evidence-Based Practice (EBP) - E173

Oral

## **Abstract Title:**

Effective Implementation of a Traumatic Brain Injury (TBI) Quality Initiative: A Community Based Model for Concussion Management

## **Authors:**

Kelley Lau, RN, BSN, MBA and Shelly Almroth, RN, BSN, CEN

## **Background & Purpose:**

Traumatic brain injury is a public health issue that is especially prevalent in our region. Trauma data showed that our community has 17 times more TBI's per capita than the national statistic. The use of C.T. to exclude intracranial injury is the medical standard. 40-50% of patients who present to the ED with a head injury get a C.T. There is growing concern for medical radiation exposure from C.T. scans with an estimated 10% increase in the use of C.T. each year in the U.S. The purpose of this study was to establish an evidence-based pathway for patients with very low risk of clinically important traumatic brain injuries (ciTBI) for medical and nursing staff at this facility.

## **Study/Project Design:**

Retrospective analysis pre and post TBI Quality Initiative.

## **Setting:**

Level III Trauma Center, Community Hospital with 550 annual trauma admissions.

## **Sample:**

All patients in trauma registry from 01/01/2009-12/31/2012.

## **Procedures:**

Review of data from Centers for Disease Control identified risk factors for those who are very low risk for (ciTBI). Criteria for neuroimaging was presented to ED physicians and nurses. Community-Based Concussion Management Program education was provided to medical staff, nurses, parents, school nurses, and coaches in 2009. Standardized aftercare instructions with a symptom log were developed and provided to patients and caregivers. The importance of brain rest was emphasized. A letter of education was included for schools and/or employers at time of discharge to encourage reduction of mental and physical activity to allow the brain to recover. Follow-up phone calls were made within 48 hours for patients with concussion by ED RN's. A resource list of providers who specialize in care of the TBI patient was developed. TBI support groups were established for teen and adult populations.

## **Findings/Results:**

Recreational injuries from skiing and snowboarding represent 76% of our trauma patients, followed by biking, motorcycling, and ATV riding. Helmet use for skiing/snowboarding increased from 44% in 2009 to 58% in 2012. 4,460 records were analyzed over a 4 year data collection period. The trauma registry population consists of ages <14, 10%, 15-64, 80% and >65, 10%. Total number of head C.T.s was 1,521. Concussion rate averages 26% to 30% annually. In 2009, 40% of trauma patients had a head C.T. In 2012, after implementation of selected criteria, 28% had C.T of the head. The most significant reduction was found in the pediatric population with a 32% decrease in neuroimaging from 47% to 15%. The geriatric imaging rate was unchanged. There was a cost savings of \$3,000 per head C.T resulting in more than \$350,000 saved. Through review of the data, there were no readmissions, missed injuries or complications observed due to this practice change.

## **Discussion/Conclusions/Implications:**

A community based model for concussion management was successful with increasing awareness of TBI in our region. This successful collaborative effort has developed a strong network of individuals involved in the care of the TBI patient. Prevention efforts aimed towards helmet use for recreation sports may reduce severity of injury. Neuroimaging decision remains at the discretion of attending physician. The change of culture in the ED to allow longer observation periods before use of C.T. is an acceptable evolution in practice for those identified to be at very low risk (ciTBI's). Judicious use of neuroimaging has reduced the number of head CT's by 12% in our population. .