

tackling which accounted for 48.3% of all brain injuries $n=480$. *Conclusion:* Participation in rugby is rapidly increasing, and brain injury as a result of participation is a common occurrence. Possible changes to reduce injury include stricter penalties for high tackles to the head and neck area, and rules against blindside tackles.

P.072

A pilot study exploring pupil response measurement in mild traumatic brain injury

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Background: Pupillometry, the measurement of pupil response dynamics via the pupillary light reflex, is seldom used in the assessment of mild traumatic brain injury (mTBI). We hypothesized that there would be quantifiable differences in detailed pupil response measurements in patients with acute and chronic mTBI. *Methods:* We conducted 49 bilateral pupillometry measurements, in acute mTBI patients at 1-week ($N=11$), 2-4w ($N=9$), and 3-7mo post-injury ($N=3$); 14 patients with persistent post-traumatic symptoms (PTS) once, and healthy controls across a first visit ($N=7$) and second visit 2-4w later ($N=5$). *Results:* The percentage of left pupil diameter change was significantly greater in the acute mTBI group at second visit (mean=36.3% (2.96)), compared to controls at second visit (mean=31.6% (4.39)) ($F=5.87$, $p=0.0321$). We did not identify significant differences between acute mTBI patients and controls at first visit, PTS patients versus controls, and within the acute mTBI group across three longitudinal visits. *Conclusion:* While these preliminary data suggest that pupillometry under these conditions does not distinguish between patients who had a recent mTBI or those with PTS and healthy controls, further research is warranted investigating pupil behavior and its clinical utility in mTBI.

P.073

Compliance with brain trauma foundation (BTF) guidelines for management of traumatic brain injury (TBI) patients: systematic review and meta-analysis

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Background: TBI is a leading cause of death and disability. Management based on the BTF guidelines is widely accepted and thought to improve outcome. The objectives of this study were: 1) to review the rate of adherence to BTF guidelines; 2) to identify factors influencing adherence; and 3) to determine the effect of guideline-based management on outcome. *Methods:* We searched all electronic bibliographic databases. In duplicate and independently, two investigators screened titles, abstracts and articles to select appropriate studies reporting compliance rate, factors influencing compliance, and adjusted mortality or morbidity. Data extraction and assessment of bias risk were performed independently by both investigators. We excluded pediatric and military-related TBI studies. *Results:* A total of 30 articles met inclusion/exclusion criteria out of 1153 papers screened. Most are retrospective and cross-sectional observational studies; there were no randomized control trials. Preliminary analysis showed considerable variation in compliance rate with BTF

guidelines ranging from 5.6-96%. *Conclusions:* Variation in the care of TBI patients persists across the world. Compliance with BTF guidelines was strongly influenced by implementing a guidelines-based protocol. Heterogeneity of the article prevents outcome assessment. Well-conducted study to support the existing literature of the beneficial effect of current guidelines is needed.

NEUROSURGERY (GENERAL NEUROSURGERY)

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Emergent and urgent transfers to neurosurgical centres: examining access in Ontario

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Background: Critically ill neurosurgical patients require expedient access to neurosurgical centers (NC) to improve outcome. In Ontario, many patients are initially evaluated at a non-neurosurgical center (NNC) and subsequently transferred to a NC by a provincial service using air or ground vehicles. We characterized transfers from NNC to NC for critically ill patients. *Methods:* A retrospective observational analysis was undertaken. The cohort included patients in Ontario with emergent and urgent neurologic pathologies who underwent transfer from a NNC to NC between January 1, 2011 and December 31, 2013. Timing, clinical, and geographic data were collected for each transfer. *Results:* We identified 1103 emergent/urgent transfers. The mean transfer time to a NC was 3.4hrs (SD = 3.0) and varied by the geographic region of origin. 17% of patients bypassed a closer NC during transfer to their destination NC. Transfers that bypassed a closer NC travelled further (162km vs. 477km, $p<0.001$), took longer (3.1hrs vs. 3.9hrs, $p<0.001$), and in some regions were associated with a higher risk of in-transit clinical decline (3.0% vs. 8.3%, $p<0.05$) when compared with transfers that ended at the closest NC. *Conclusions:* Transport time to a NC varied across Ontario. Transfers occasionally bypassed the nearest NC, which may reflect neurosurgical bed availability, resource limitations, or patient needs.

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Use of drains versus no drains after burr-hole evacuation of chronic subdural hematoma

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Background: Chronic subdural hematomas (cSDH) are a common neurosurgical problem with significant morbidity and mortality. Current treatment methods are variable. Post-operative subdural drain used in conjunction with burr-hole craniostomy may reduce recurrence. This study compared recurrence rates for cSDH between two surgical practices with and without use of post-operative subdural drain at the QEII Health Sciences Center. *Methods:* A retrospective chart review was conducted to compare recurrence rates between surgical patients treated with or without a post-operative