100. A Multidisciplinary Approach to Improve Communication Between Pediatric Neurosurgery and Pediatric Nurses: A Team Communication Tool Pilot

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Introduction: Surgical services that work in open admission units often encompass various difficulties with managing their patients related to daily work flow in comparison with traditional medical services. A Neurosurgery Nursing Communication Tool (NNCT) was adapted to the pediatric neurosurgery (NSGY) population to improve team communication and understanding of patient care. There is limited research on rounding tools amongst the multi-disciplinary care team especially NSGY with nurses (RNs).

Methods: This is a prospective cohort study utilizing a pre/post-implementation surveys with RNs on the pediatric unit was distributed to assess perceptions of baseline team communication. Each NNCT was assessed for various data components.

Results: The pre-implementation survey showed that 63% felt their concerns were addressed and 42% feel confident speaking in team rounds. In the first month, there was a NNCT completion rate of 65% with less than 50% of NCCT data completed. Admission diagnoses were only correct on 55.6% of NCCTs. Post implementation surveys showed 85.7% felt it was user friendly. All RNs felt it took less than 5 minutes to complete. 71.4% of RNs felt it has helped to know more about their patient, 81.2% felt their concerns are addressed and 85.7% reported that it has improved communication.

Conclusions: By implementing a brief NNCT, there was improved RN confidence and RN understanding of their patient, as well as, improved quality of RN-NCCT perceived communication after a month. This pilot study empathizes that all team members are accountable in patient care and communication. It also demonstrates the need for larger studies with better nursing involvement.


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Introduction: Readmissions within 30 days of hospitalization are utilized as a quality of care benchmark. We reviewed 30 day hospital readmissions for Neuroscience patients who were readmitted to the hospital within 30 days. The following data points were utilized in the review: age, sex, length of stay, Charlson comorbidity index, ICU stay, elective or urgent surgery, and discharge disposition.

Results: All patients were reviewed from January 2013 to December 2017, totaling 3966 patients that were not readmitted and 295 (6.9%) patients that were unplanned readmissions within 30 days. Factors associated with readmission included: increased length of stay (p <0.0001, mean 5.4 days (SD 6.8) versus 3.8 (SD 4.5), Charlson comorbidity myocardial infarct, congestive heart failure, peripheral vascular disease, cerebrovascular disease (p<0.0001), dementia (p<0.0001), chronic pulmonary disease (p<0.0001), ulcer, diabetes (p<0.0001), hemiplegia (p<0.0001), moderate or severe renal disease, metastatic solid tumor (p<0.0001), other cancer (p<0.0001), brain/nervous system tumor (p<0.0001), total disease flag count (p<0.0001), ICU stay (p<0.0001), discharge to skilled nursing facility or rehabilitation facility (p<0.0001). Factors without statistical significance included: age, sex, mild liver disease, AIDS, rheumatic disease.
Conclusion: This study has the largest total sample size examining neuroscience patient risk factors for readmission. This data suggests that patients with more comorbidities or decreased functional ability are associated with readmissions. This analysis is the basis for a future a prospective multivariate regression model to quantify readmission risk in neuroscience patients to guide future interventions.

102. Impact of Patient-Controlled Analgesia on Clinical Outcomes after Posterior Lumbar Spinal Fusion Surgery

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Introduction: Optimal post-operative pain control is critical after lumbar fusion surgery. However, there is significant variability in the use of intravenous opioid patient-controlled analgesia (PCA) and little data evaluating its utility compared to multimodal nurse-controlled analgesia (NCA) in this patient population.

Methods: A single institution retrospective review was conducted in patients receiving posterior lumbar fusion for degenerative pathology. Baseline demographics, treatment data, and clinical outcomes were collected. Patients were divided into two cohorts: those treated postoperatively with PCA and NCA. Post-operative numerical rating scale (NRS) pain scores, length of stay, and total opioid consumption were collected. Patients were stratified according to pre-operative opioid consumption as naïve, low (<60 morphine milligram equivalents (MME) daily), high (61-90 MME) or very high (>90 MME).

Results: 240 patients were identified: 62 and 178 in PCA and NCA groups, respectively. PCA patients had higher mean pre-operative opioid consumption compared to the NCA patients (49.2 vs 24.3 MME, p=0.009). After stratifying by preoperative opioid consumption, PCA patients had higher 72-hour opioid consumption in all groups. With opioid naïve patients, PCA was associated with higher post-operative NRS scores at 24 and 24-72 hours (p=0.046 and 0.023, respectively) despite greater opioid intake. In the Very High opioid consumption group (>90MME), PCA had increased maximal reported pain scores between 24-72 hours (p=0.014) and a greater rate of opioid-related adverse events per patient (0.86 vs 0.43, p=0.046). Pain control and adverse event rates were comparable between PCA and NCA in the middle groups (1-90 MME).

Conclusion: Postoperative PCA utilization is associated with significantly more opioid consumption and equal or worse post-operative pain scores compared to NCA after lumbar spinal fusion surgery, particularly in opioid naïve patients. The increased opioid consumption with PCA may also lead to higher rates of opioid-related adverse events in subsets of patients.

103. Impact of Bracing after Thoracolumbar Spinal Fusion: A Systematic Review

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Introduction: Thoracolumbar fusion is indicated in a variety of spinal pathologies, including trauma, tumor, degenerative disk disease, and scoliosis. However, significant variability exists in the implementation of postoperative orthoses following these procedures. The potential stability conferred by immobilization must be balanced by the potential morbidity and associated discomfort. Limited clinical evidence is available to codify the risks and benefits of bracing following thoracolumbar fusion. Via a systematic review of the literature, this study aims to assess the utility of external fixation of the thoracolumbar spine following fusion procedures.

Methods: A systematic review was performed using Medline. Our search included studies that evaluated the impact of post-operative bracing on complications or quality-of-life following spinal fusion, and was limited to literature published between 1990 and 2018.

Results: Our search identified a total of 1706 publications. Of these, 29 publications evaluated bracing in the post-operative setting. These were subsequently narrowed to only five studies that specifically analyzed postoperative bracing in thoracolumbar patients following spinal fusion. Data extracted from each of the five papers included demographic information, surgical details, complication rates, and a variety of quality of life measures. Mean complication rates, instrumentation failure rates, pseudarthrosis rates, Oswestry Disability indices, visual analog scale Spine Scores, SF-12v2 scores, American Spinal Injury Association impairment scores, and Roland Morris Disability scores, were calculated across bracing and control cohorts and compared using independent samples t-test. Ultimately, thoracolumbar bracing was not found to significantly affect complication rates, or impact postoperative quality of life.

Conclusion: This study does not find any significant effect of postoperative bracing on complication rates or quality-of-life for patients recovering from thoracolumbar fusion. This systematic review was limited by a dearth of available literature, and indicates a need for further exploration of this topic to determine optimal postoperative management of such patients.