We aimed to determine the prevalence, magnitude and nature of these payments to neurological surgery in 2015. **Methods:** Records of payments to physicians identified by the 'neurological surgery' taxonomy code in 2015 were accessed via the OPD. The data were analyzed in terms of the type and amounts of payments, companies making payments, and in comparison to previous studies. **Results:** In 2015, 330 companies made 83,690 payments ($99,048,607) to 7,613 physicians. The mean payment ($13,010) was substantially greater than the median ($114). Royalties and licensing accounted for the largest proportion of total payment value (74.2%), but only 1.7% of the total number. Food and beverage payments were the most commonly reported transaction (75%), but only 2.5% of the total value. Neurological surgery had the second highest average total payment per physician of any specialty. **Conclusions:** The overall value of payments to the neurological surgery specialty is driven by a small number of payments that may represent appropriate compensation for novel device development. The OPD provides an opportunity for increased transparency and for the interpretation of research in light of potential conflicts of interest.

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Conflict of interest in neurosurgery: an analysis of disclosure policies in neurosurgical journals

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Background: Industry funding of neurosurgery research is on the rise and this creates a conflict of interest (COI) with the potential to bias results. The reporting and handling of COI is impacted by the variation in policies and definitions between journals. In this study we sought to evaluate the prevalence and comprehensiveness of COI policies amongst leading neurosurgical journals. **Methods:** We conducted a cross-sectional study of publicly available online disclosure policies in the 20 highest-ranking neurosurgical journals, as determined by Google Scholar Metrics, in July of 2016. **Results:** Eighteen (89.5%) of the top neurosurgical journals included COI policy statements. Ten journals requested declaration of non-financial conflicts, while two journals defined a time period of interest for conflicts. Sixteen journals required declaration from the corresponding author, 13 from all authors, six from reviewers and five from editors. Five journals included COI declaration verification, management or enforcement. Journals with more comprehensive COI policies were significantly more likely to have higher h5-indices (p=0.003) and higher impact factors (p=0.01). **Conclusions:** In 2016, the majority of high-impact neurosurgical journals had publicly available COI disclosure policies. Policies varied substantially across neurosurgical journals; but COI comprehensiveness was associated with impact factor and h5-index. More comprehensive and consistent COI policies will facilitate increased transparency in neurosurgery research.

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Preoperative predictors of poor postoperative pain control: systematic review and meta-analysis

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Background: Inadequate postoperative pain control is common and is associated with negative clinical outcomes. The objective is to identify preoperative predictors of poor postoperative pain control in the adult population undergoing inpatient surgery. **Methods:** Meta-analysis was performed according to MOOSE guidelines. Studies were included if they evaluated postoperative pain using a validated instrument in adults undergoing inpatient surgery and reported a measure of association between poor postoperative pain control and at least one preoperative predictor. Measures of association were pooled using random effects models. **Results:** A total of 33 studies representing 59,259 patients were included. Significant preoperative predictors of poor postoperative pain included sleeping difficulties (OR 2.32 [95% CI 1.46-3.69]), history of depressive symptoms (OR 1.71 [95% CI 1.32-2.22]), use of preoperative analgesia (OR 1.54 [95% CI 1.18-2.03]), smoking (OR 1.33 [95% CI 1.09-1.61]), female sex (OR 1.29 [95% CI 1.17-1.43]), presence of preoperative pain (OR 1.21 [95% CI 1.10-1.32]], history of anxiety symptoms (OR 1.22 [95% CI 1.09-1.36)], younger age (OR 1.18 [95% CI 1.05-1.32)], and higher BMI (OR 1.02 [95% CI 1.01-1.03]). **Conclusions:** Nine significant predictors of poor postoperative pain control were identified and these should be recognized as important factors when developing pre- and peri-operative strategies to improve pain outcomes.

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Foramen magnum decompression of Chiari malformation using minimally invasive tubular retractors

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Background: A surgical technique for foramen magnum decompression of Chiari malformation I in 11 patients is described. **Methods:** We used minimally invasive tubular retractors (METRx Quadrant) attached to a flexible arm to keep the retractor in a fixed position, while allowing flexible angulation under fluoroscopic guidance. Despite the small surgical opening, this approach allowed access to a wide working area, minimized soft tissue exposure, and optimized extent of decompression. For some patients, only the outer layer of dura was opened, but in cases where clinically indicated, a duraplasty was performed. **Results:** Postoperative CT head demonstrated satisfactory bony removal, and MRI with CSF flow study showed restoration, or significant improvement to CSF flow around the foramen magnum. There was a low incidence of post-operative complications, and the average length of hospital stay was around 1 day (1.2). For 10 out of 11 patients; their symptoms completely resolved on last follow-up, and for those who had syringomyelia, they demonstrated a radiological evidence of syrinx reduction or resolution. **Conclusions:** Based on our experience with this technique in foramen magnum decompression of Chiari malformation I, minimally

invasive tubular retractor is a useful tool, providing the surgeon with enhanced visualization of the operative field, while reducing potential damage to tissue, and optimizing surgical outcomes.

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Functional status in neurosurgery and out of hospital outcomes: insights from a 12 year, 2300 patient retrospective cohort study

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Background: Limited information exists in neurosurgery regarding the association between functional status at hospital discharge and adverse events following discharge. **Methods:** A retrospective cohort study included all adults in one Boston teaching hospital who underwent neurosurgery between 2000-2012, survived hospitalization and had a Physical Therapist functional status assessment within 48-hours of discharge. 90-day post-discharge all-cause mortality was obtained from the US Social Security Administration Death Master File. Logistic regression analysis was used. **Results:** 2,369 patients were included, comprising 65% cranial and 35% spinal. Malignancy and trauma was 47% and 13%, respectively. 238 patients had independent functional status. 90-day mortality and readmission was 8.3% and 28%, respectively. Second, third and lowest quartile of functional status was associated with a 3.16 (95%CI 1.08-9.24), 6.00 (2.11-17.04) and 6.26 (2.16-18.16) respective increased odds of 90-day post-discharge mortality compared to patients with independent functional status, adjusting for age, gender, race, length of stay, presence of malignancy and Deyo-Charlson comorbidity. Good discrimination (AUC 0.82) and calibration (Hosmer-Lemeshow $\chi 2$ P = 0.23) were demonstrated. Adjusted odds of 90-day readmission in patients with the lowest quartile of functional status was 1.89 (1.28-2.80) higher than patients with independent functional status. **Conclusions:** Lower functional status at hospital discharge following neurosurgery is associated with increased post-discharge mortality and hospital readmission.

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Is idiopathic normal pressure hydrocephalus familial—what do we know thus far? Case report and critique of the literature

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Background: One aspect of idiopathic normal pressure hydrocephalus (iNPH) that has garnered interest is whether it can be familial. Thus far, the literature consists of several case reports, and two larger pedigree cohorts. Our objective is to highlight key deficiencies in such studies so far, illustrating them through a family case study of our own, and to propose a set of criteria that studies on familial iNPH should incorporate. **Methods:** Our case study is a retrospective chart review of three siblings, two male and one female, who were diagnosed with iNPH after the age of 60, and whose symptoms improved with cerebrospinal fluid (CSF) shunting. An interview with them revealed that their mother also exhibited symptoms of iNPH, but was never treated with a shunt. **Results:** Our family case is reflective of several deficiencies of familial iNPH research as a whole—unconfirmed diagnosis, especially confirmation with shunt responsiveness, and lack of measures of symptom improvement. **Conclusions:** Research on familial iNPH should focus on patients whose diagnosis is confirmed by shunt responsiveness, and should involve a system to objectively measure signs of NPH. Studies should also compare the prevalence of iNPH among first degree relatives of NPH patients to that in the general population.

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A nation-wide prospective multi-centre study of external ventricular drainage accuracy, safety, and related complications: Interim analysis

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Background: External ventricular drain (EVD) insertion is a common neurosurgical procedure performed in patients with life-threatening conditions, but can be associated with complications. The objectives of this study are to evaluate data on national practice patterns and complications rates in order to optimize clinical care **Methods:** The Canadian Neurosurgery Research Collaborative conducted a prospective multi-centre registry of patients undergoing EVD insertions at Canadian residency programs **Results:** In this interim analysis, 4 sites had recruited 46 patients (mean age: 53.9 years, male:female 2:1). Most EVD insertions occurred outside of the operating theatre, using free-hand technique, and performed by junior neurosurgery residents (R1-R3). The catheter tip was in the ipsilateral frontal horn or body of the lateral ventricle in 76% of cases. Suboptimally placed catheters did not have higher rates of short-term occlusion. EVD-related hemorrhage occurred in 6.5% (3/45) with only 1 symptomatic patient. EVD-related infection occurred in 13% (6/46) at a mean of 6 days and was associated with longer duration of CSF drainage (P=0.039; OR: 1.13) **Conclusions:** Interim results indicate rates of EVD-related complications may be higher than previously thought. This study will continue to recruit patients to confirm these findings and determine specific risk factors associated with them

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Single centre review of lumboperitoneal shunt outcomes

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Background: Ventriculoperitoneal (VP) shunts are an established treatment modality for CSF diversion. An alternative to VP shunting is lumboperitoneal (LP) shunting. There is a paucity of evidence on LP shunt use in the literature, but available studies demonstrate that it is a safer and similarly efficacious method for conditions such as normal pressure hydrocephalies (NPH) and idiopathic