

NF-1, (b) bilateral acoustic neuroma (NF-2), and (c) other neurofibromatosis. We report a case of NF-2. A 20 yr old male was diagnosed with NF-2 in childhood and is followed by multiple specialists. He has multiple NF-2 related issues. He was seen in early 2013 at our centre for consideration of bevacizumab treatment for hearing loss. He had multiple issues and brain tumors including- Bilateral vestibular schwannoma Right CP angle meningioma, small intracranial meningiomas Spinal tumors, schwannoma involving c5-6, cauda eqina Peripheral schwannoma-left brachial plexus, left neck Dysphagia- right vocal cord paralysis, laryngoplsty in sept 2012 Amblyopia, bilateral cataracts Hearing loss- right ear Obstructive hydrocephalous- VP shunt in Dec of 2012 Resection of papillary thyroid cancer followed by radioactive iodine Treatment-He received bevacizumab 5mg/kg IV every 2 weeks since April 2013 and he has well tolerated 23 doses so far. Outcome and discussion- Hearing is improved in right ear with better word recognition. We are aware of only one study where bevacizumab improved the hearing in NF2 patients. According to this study VEGF is expressed in all vestibular schnommas and after bevacizumab treatment tumors shrank and imaging response was maintained in patients during 11 to 16 months of follow-up.

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Proficiency versus competency-based training paradigm for neurosurgical training

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Introduction: Competency-based training emphasizes acquiring the minimal standard of a profession rather than acquiring expertise. A fundamental question one should ask: Are the present training programs supposed to train surgeons to an “expert” or only “competent” level of performance? Proficiency-based training and assessment implies that the trainee must achieve a set of predefined criteria during their training to move to the next level in a safe and controlled learning environment. Our purpose was to develop benchmarks for a set of objective measures (metrics) of technical skills performance using a virtual reality simulator (NeuroTouch). **Methods:** We recruited 17 board certified neurosurgeons, 9 junior neurosurgery residents and 7 senior neurosurgery residents. Each participant resected 18 simulated brain tumors. Our metrics include: surrounding brain volume removed, maximum force applied (MFA), sum of forces utilized (SFU), percentage of tumor resected, instrument path lengths and pedal activation frequency (FPA). **Results:** Neurosurgeons resected less surrounding brain tissue and tumor

tissue than residents. The mean values for SFU, MFA, FPA and Instrument path length were less for neurosurgeons compared to senior residents and higher compared to junior residents. Experts’ performance focused more on safety of the surgical procedure compared to novices. Experts’ neurosurgical technical skills performance on these different metrics is used to establish benchmarks for proficiency-based training. **Conclusion:** Examining ‘expert’ neurosurgical performance in simulated settings provides researchers with novel metrics for assessment of technical skills and development of proficiency-based training benchmarks. Identification of expert proficiency can lead to improvements in resident training and assessment.

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Contemporary treatment of glioma with PCV chemotherapy in Manitoba

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Background Recent evidence from phase III trials (RTOG 9802 and 9402, and EORTC 26951) indicates a survival advantage with the use of PCV (procarbazine, lomustine, vincristine) chemotherapy for patients with grade III oligodendroglioma and oligoastrocytoma, particularly for those with chromosome 1p and 19q codeletion. The use of PCV remains hindered by historical concerns with tolerability. We sought to describe the management issues with the use of PCV in a contemporary cohort. **Methods** Patients initiated on PCV in Manitoba since October 2012, have had their data prospectively collected. Data included demographics, pathology, and treatment factors. **Results** In total, 14 patients (7 males, 7 females) have been initiated on PCV in Manitoba. Median age was 41 (range 27-54). Most recent histology was Grade III oligodendroglioma in 5 (37.5%), Grade II oligodendroglioma in 6 (42.9%), and Grade II oligoastrocytoma in 3 (21.4%), with 12 patients codeleted (85.7%). Sixty-four cycles of PCV have been initiated, with 55 completed cycles to date. Five patients (35.7%) have completed their intended course of treatment with a median of 6 cycles. Of the 55 completed cycles, 37 (67.2%) required dose reductions or delays because of cytopenia. Five patients and a total of 14 cycles (25.5%) required growth factor support. **Conclusion** There is a high rate of dose reductions and delays in treatment with PCV chemotherapy. Despite this relative toxicity, a high percentage of patients have completed the intended treatment course.