Factors associated with prolonged length of stay after DBS

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Objective: To determine the frequency and reasons for a prolonged hospital stay following deep brain stimulation surgery (DBS).

Background: There have been many factors reported to be associated with a prolonged hospital stay following DBS electrode implantation. These include number of microelectrode recording (MER) passes, decreasing MMSE, and disease severity [1]. Given the older age of patients being implanted, other factors thought to be associated with prolonged length of stay are medical comorbidities and management of medications. A prolonged hospital stay inconveniences the patient and increases the cost of DBS surgery. It is important to determine if any of these factors might be susceptible to change.

Methods: A retrospective review of the electronic medical record was performed on all patients who underwent DBS electrode placement at Vanderbilt Medical Center from 01/1995 to 06/2011 whose chart was available in the electronic medical record. This chart review included clinic notes, operative notes, and CT scans. The data was then validated by a second reviewer. PLOS was defined as a stay greater than 24 hours after electrode placement. The reasons for PLOS were then classified into broad categories.

1. Lead Placement
2. Intracerebral Hemorrhage
3. Medical comorbid condition
4. Sedation/Confusion
5. Unclear

For analysis we focused on conditions that are amenable to changes in pre-op and post-op nursing care/management, therefore ICH was not included as it is viewed as a surgical complication.

Results: A total of 447 records were reviewed and 14.6% were found to have a PLOS. 17 patients (30.9%) had PLOS due to insertional effect of DBS electrode placement. 17 patients (30.9%) had PLOS due to sedation/confusion. 10 due to medical comorbid conditions and 10 were unclear (due to incomplete electronic medical records (paper chart). The total number of “prolonged” days in the hospital were 262, an average of 5 days per patient with the minimum being 3 days and the maximum 22 days.

Significant risk factors for PLOS were current smoker and for our Parkinson’s patients Mild Cognitive impairment (MCI). Interestingly age, diagnosis and a staged procedure (generally electrode placement is done 7-10 days apart), were not significant.

Conclusions: Our review demonstrated multiple reasons for PLOS. The significant risk factors pre-operatively were smoking and MCI. The most amenable to change is smoking status, one could consider requiring prospective patients to attend a smoking cessation course prior to surgery. For post-operative reasons for PLOS there are possible changes to post-op care that can shorten the length of stay. These would include more aggressive pain management with a close eye on limiting sedating medications and quick resumption of standard disease specific medications.