

## INTRODUCTION

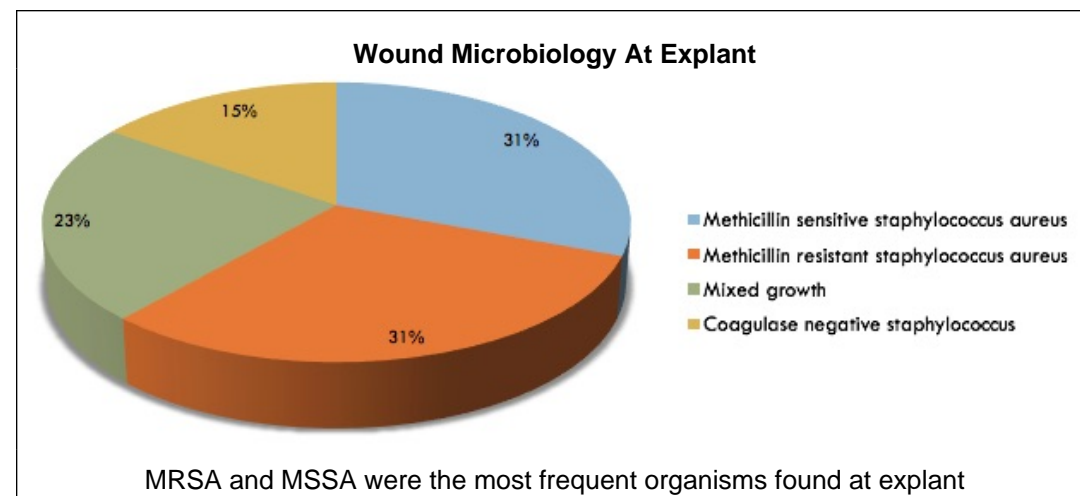
Deep brain stimulation (DBS) hardware infection is a serious complication, often leading to multiple hardware salvage attempts, numerous hospitalizations, and long term antibiotic therapies. This can result in a significant economic burden and increased healthcare costs. We report the cost of DBS explantation secondary to infection at a single institution.

## METHODS

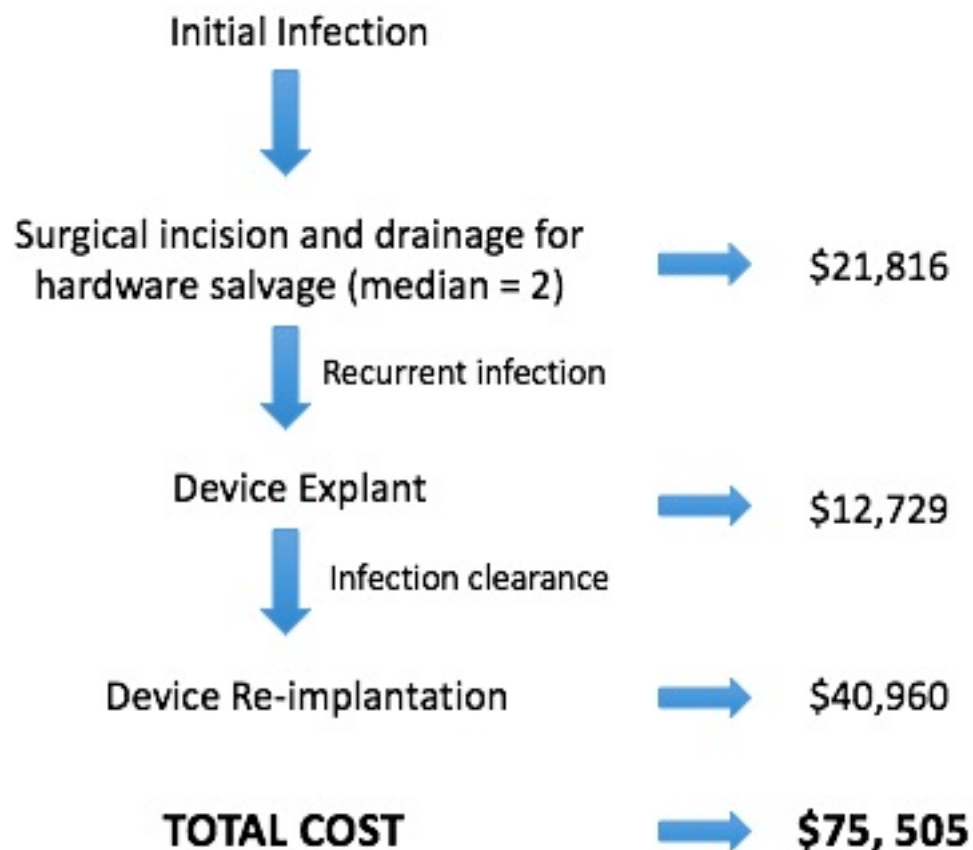
362 patients underwent 540 electrode placements between January 1, 2010 and December 30, 2014. 15 patients (4.1%) underwent complete explant. Financial data was available for 13 patients [7 Parkinson's disease (53.8%), 4 essential tremor (30.8%), 2 dystonia (15.4%)]. Hospital costs were calculated utilizing cost-to-charge ratios for each respective fiscal year. Physician fees were calculated by insurance reimbursements.

## RESULTS

The number of hardware salvage procedures ranged from 1-5 per patient (average  $2.46 \pm 1.45$ , median 2). 7 patients (53.8%) underwent re-implantation after infection clearance. Operating room and anesthesia costs were the highest revenue categories for hardware revisions and explants. Medical and surgical supplies along with operating room costs were the highest revenue categories for device re-implantation. There were no differences in cost categories between revisions and explants. There were no recurrent infections or peri-operative deaths during the follow up period after re-implantation (25.25 months  $\pm 10.41$ ).



### Total Cost of DBS Infection



Average cost for a patient undergoing the median number of hardware revisions (2), explanation, and re-implantation after infection clearance was \$75,505. 28.9% of this cost was attributable to hardware salvage procedures.

## CONCLUSIONS

DBS infection incurs significant healthcare costs associated with hardware salvage attempts, explants, and re-implantations. 28.9% of the total infection cost (\$75,505) was attributable to hardware salvage procedures. We believe complete explant at the time of initial infection is potentially more cost effective than attempting multiple hardware salvages. In 2014, we instituted a strict infection prevention protocol which includes pre-operative MRSA screening and treatment. Since initiation, 437 patients have undergone implantation without infection.

## REFERENCES

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2. Bhatia S, Zhang K, Oh M, Angle C, Whiting D. Infections and Hardware Salvage after Deep Brain Stimulation Surgery: A Single-Center Study and Review of the Literature. *Stereotact Funct Neurosurg* 2010;88:147-155.
3. Jacob RL, Geddes J, McCartney S, et al.: Cost analysis of awake versus asleep deep brain stimulation: a single academic health center experience. *J Neurosurg*:1-7, 2015.