Abstract

Objectives: To estimate the incremental cost per QALY in patients with Parkinson’s Disease (PD) with varying disease severity and to ascertain which patient subgroup would accrue the greatest net monetary benefits to Ontario’s public health perspective as a result of Deep Brain Stimulation (DBS).

Design: A cost-utility study and a net monetary benefit framework approach under Ontario’s public health care perspective, the Ministry of Health and Long Term Care (MOHLTC).


Intervention and comparator: DBS surgery compared to no DBS surgery (pharmacotherapy).

Assumptions: The comparator was assumed to be PD patients with varying disease severity who did not undergo DBS surgery. It was also assumed that the pre-surgical health of PD patients who underwent DBS surgery would be identical as their post-surgical health would be had they not undergone surgery in the same time frame.

Main outcome measures: Incremental cost per QALY gained and net monetary benefits attributable to DBS.

Results: DBS resulted in incremental cost savings of $2,686.3, $2,752.4, and $7348.4 and incremental QALY gains of 0.33, 0.09 and 0.04 in patients with mild, moderate and severe PD. The ICER for PD patients with varying disease severity who underwent DBS treatment compared to patients with varying disease severity who did not undergo surgery was $16,076.2/QALY. At a willingness-to-pay threshold of $50,000/QALY, the greatest net monetary benefits accrued to Ontario’s MOHLTC were from treating patients with mild PD with DBS. A series of sensitivity analyses demonstrated that both
cost savings and QALY gains in patients who underwent DBS were sensitive to variations in the costs of temporary and permanent complications associated with the intervention.

_Conclusions:_ From the perspective of the MOHLTC, DBS yielded cost savings and QALY gains for patients with varying PD severity. At $50,000/QALY, DBS surgery was found to be a cost-effective PD treatment compared to pharmacotherapy. The greatest net monetary benefits accrued to the Ontario’s public health perspective were from treating patients with mild PD severity. The findings provided pertinent information to health policy decision-makers when determining the magnitude of resources to be allocated to DBS as a treatment strategy in PD, in particular, to patients at an early stage rather than at an advanced stage of the disease.