INTRODUCTION:

Rising costs and the rapidly increasing volume of findings from research in health care are driving the demand for comprehensive information to inform the allocation of resources. Health technology assessment (HTA) applies rigorous processes to provide high-quality synthesized information to policymakers and healthcare payers. HTA involves combining large amounts of research publications to systematically evaluate the properties, effects, and impacts on a topic of interest.

METHODS:

The time and resources required to complete a full HTA are often demanding. There is an opportunity to apply high-performance computing (inclusive of artificial intelligence and machine learning disciplines) to HTA. This project applied high-computing technology to create a research synthesis tool to support HTA and then developed a service that integrates as much relevant data as possible to strengthen HTA. This was a joint project that combined expertise from the areas of health technology, machine learning, information technology, and innovation.

RESULTS:

The information gathered for this phased project from HTA subject matter experts and other stakeholders was collated to inform a research synthesis tool and a broader concept of the project.

CONCLUSIONS:

The results of this study will inform the design of a research synthesis tool that covers the entire HTA process (literature search, screening titles and abstracts, data extraction, quality assessment, and analysis). The collaborators included Alberta Innovates, the Alberta Machine Intelligence Institute, the University of Alberta, Cybera, and PolicyWise. Alberta Innovates, which is an accelerator and innovator of research in the province of Alberta, Canada, was the primary source of funding for this project.

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PD70 Cost-Effectiveness Of Deep Brain Stimulation For Epilepsy In Australia

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INTRODUCTION:

Deep brain stimulation (DBS), which uses an implantable device to modulate brain activity, is an adjunctive treatment for partial-onset seizures in patients with medically refractory epilepsy. Our objective was to perform an exploratory cost-utility analysis of DBS in conjunction with medical therapy, compared with medical therapy alone, using the latest clinical data and costs for the Australian healthcare system.

METHODS:

A deterministic five-state Markov model was used to project treatment response and outcomes over the patients' lifetimes, based on 5-year data from the recent Stimulation of the Anterior Nucleus of the Thalamus for Epilepsy (SANTE) DBS trial and drug outcome data identified through a literature search. Costs were based on 2017 data for the Australian healthcare system, and response-specific utilities were derived from published literature. We estimated the lifetime discounted incremental cost-effectiveness ratio (ICER) in Australian dollars per quality-adjusted life-year (QALY) for patients 36 years of age, fifty-five percent of whom were men. Costs and effects were discounted at five percent per annum. The robustness of projections was evaluated through scenario and sensitivity analyses.

RESULTS:

Under assumed continued treatment benefit, DBS was projected to add 3.48 QALYs over the patients' lifetimes, at an increased cost of AUD 142,304 (USD 105,960), resulting in an ICER of AUD 40,951 (USD 30,492) per QALY gained. Reducing the analysis horizon to 20 years increased the ICER to AUD 49,803 (USD 37,083). Increasing the DBS generator life from 3 to 6 years decreased the ICER to AUD 23,956 (USD 17,838) per QALY. Longer follow-up periods and younger age at treatment were associated with greater cost effectiveness. Results were sensitive to assumptions about health state-specific utility estimates and long-term treatment effects.

CONCLUSIONS:

Our exploratory findings suggest that DBS is a cost-effective treatment strategy in the Australian healthcare system for patients with medically refractory epilepsy. DBS therapy might meaningfully improve patient outcome at a health economic profile that compares favorably to other well accepted therapies. Consideration of indirect costs would further add to this value proposition.

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