

INTRODUCTION:

An increasing number of anti-cancer medications are indicated for multiple tumors. Existing pharmacoeconomic evaluations routinely examine the cost-effectiveness (CE) and budget impact (BI) of such drugs by indication, as and when each indication is reviewed. The impact of indication-specific conclusions on the holistic value of such medications across all indicated patients is not currently evaluated, yet is important to stakeholders including health technology assessment (HTA) agencies, payers and patients. We introduce a holistic framework that considers the value of multiple indications together at a product level. Application of this approach is illustrated via an example across multiple indications for a novel, targeted anti-cancer therapy (pembrolizumab) in Canada.

METHODS:

Previously-HTA-evaluated indication-specific CE and BI models serve as the foundation for this multi-indication model. Comparing to standard of care (SoC) per indication, the model evaluates the potential BI, clinical outcomes and CE of pembrolizumab among the individual indications along with the overall multi-indication patient population from the perspective of a third-party payer. For the contextual model, incremental costs and quality-adjusted life years (QALYs) were weighted using indication populations derived from national incidence rates.

RESULTS:

The indication-specific incremental cost-effectiveness ratios (ICER) from CE analyses of ipilimumab-treated advanced melanoma, ipilimumab-naïve advanced melanoma, second-line non-small cell lung cancer (NSCLC), first-line NSCLC and fourth-line classical Hodgkin lymphoma range from USD 52 K to USD 163 K per QALY. Accounting for the relative contributions of the various sizes of indication-specific patient populations results in an overall ICER for pembrolizumab vs. SoC of USD 100 K.

CONCLUSIONS:

A holistic model can provide stakeholders with a tool to evaluate the overall value of multi-indication drugs. Results enable an understanding of the outcomes and economic consequences of treatment with pembrolizumab versus SoC by both individual indications and across all indications. Insights from this contextual approach will enable data from less-developed clinical trials to be considered when

previously they might have gone unevaluated by decision-makers.

OP49 An Alternative Cost-Effectiveness Model For Health Technology Delivery

AUTHORS:

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INTRODUCTION:

The cost-effectiveness of endovascular therapy (EVT) compared to tissue plasminogen activator (tPA) alone for acute ischemic stroke (AIS) has been established in the literature. However, decision-makers still face challenges of how to best deliver EVT in a timely manner to maximize patient outcomes while minimizing the burden to the healthcare system, given that AIS has time-dependent treatment outcomes. The objective of this presentation is to report an optimization approach for improving health system value and outcomes for patients with AIS who are eligible for EVT in Alberta.

METHODS:

An economic model was developed to compare combinations of “mothership” (transport directly to a comprehensive stroke center [CSC] to receive tPA and EVT) and “drip-and-ship” (transport to a primary stroke centre to receive tPA, followed by transport to a CSC to receive EVT) methods across Alberta. The model considered geographical variation and searched for the best delivery methods through a pairwise comparison of all possible strategies. The controlled variables including in the model were population densities, disease epidemiology, time/distance to hospitals, available medical services, treatment eligibility and efficacy, and costs. Patient outcomes were measured by functional independence. The model defined optimal strategies by identifying the transport methods that produced the highest probability of improved health outcomes at the lowest cost.

RESULTS:

The analysis produced an optimization map showing optimal strategies for EVT delivery. The lifetime cost

(standard deviation [SD]) per patient and likelihood (SD) of good outcomes was CAD 291,769 (CAD 11,576) [USD 226,207 (USD 8,975)] and 41.82 percent (0.013) when considering optimal clinical outcomes, and CAD 287,725 (CAD 4,141) [USD 223,097 (USD 3,211)] and 41.67 percent (0.016) when considering optimal economic efficiency.

CONCLUSIONS:

Our model reduces the gap that exists between health technology implementation and cost-effectiveness analysis; namely, neither fully addresses relative efficiency driven by geographical variation, which may misrepresent system value in local settings. Implementation strategies generated in our model capture full values in terms of patient outcomes and costs.

OP53 Comparing Approaches To Univariate Sensitivity Analysis

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INTRODUCTION:

Fully probabilistic analyses are now standard for economic models, with all parameters varied according to probability distributions. Using univariate sensitivity analyses to explore the influence of different parameters on the model results are also standard. Although there are several approaches available, there has been little discussion of the merits of each or justification for the method used in any given analysis. The aim of this study was to compare three approaches to univariate sensitivity analysis using a case study.

METHODS:

We considered three univariate sensitivity analysis approaches: (i) set one parameter at its upper and lower bounds while all others are set at their mean value; (ii) analysis of variance; and (iii) set one parameter at its mean and vary all others. We compared these approaches using an economic model of mechanical thrombectomy for the treatment of acute ischemic stroke, considering outcomes of incremental costs, incremental quality-adjusted life-years (QALYs), and net monetary benefit (NMB).

RESULTS:

For incremental costs and QALYs the correlation between the approaches was moderate to high, with correlation coefficients between 0.46 and 0.94. For NMB the correlation between approaches was also high (range 0.89 to 0.98), but some of the most influential parameters were ranked differently. Setting one parameter at its upper and lower bounds was the only method that facilitated an analysis of direction of influence.

CONCLUSIONS:

The three approaches addressed different but relevant questions. Setting individual parameters at their bounds is effectively a systematic scenario analysis and may be misleading to decision makers. Analysis of variance may be more easily interpreted, but it has disadvantages. Setting a parameter at its mean, while varying other parameters, is similar to value of information analysis. As with any sensitivity analysis, it is imperative that the uncertainty associated with each parameter is adequately captured in the model.

OP56 Rehabilitation Of Memory In Brain Injury: A Cost-Utility Analysis

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INTRODUCTION:

People with traumatic brain injuries (TBIs) commonly report memory impairments which are persistent, debilitating, and reduce quality of life. As part of the Rehabilitation of Memory in Brain Injury trial, a cost-effectiveness analysis was undertaken to examine the comparative costs and effects of a group memory rehabilitation program for people with TBI.

METHODS:

Individual-level cost and outcome data were collected. Patients were randomized to usual care (n=157) or usual care plus memory rehabilitation (n=171). The primary outcome for the economic analysis was the EuroQol-5D quality of life score at 12 months. A UK NHS costing perspective was used. Missing data was addressed by multiple imputation. One-way sensitivity