designed to support both the collection of PRO data and the development of an economic model.

PMC19

COST-EFFECTIVENESS ANALYSES OF BEHAVIORAL INTERVENTIONS: TOWARDS A MORE REALISTIC COST-EFFECTIVENESS RATIO BY INCLUDING INTERMEDIATE OUTCOME MEASURES

Prenger R[1], Braakman-Jansen LM[1], Pieterse ME[1], van der Palen J[2], Seydel ER[1]
[1]University of Twente, Enschede, The Netherlands, [2]Medisch Spectrum Twente Hospital, Enschede, The Netherlands

OBJECTIVES: Behavioral health interventions traditionally use a simple dichotomous outcome criterion: 'success' or 'failure'. In reality, though, behavior change is a complex process in which several steps towards success are taken. There has been little consideration, however, about whether future behavior change should be incorporated in cost-effectiveness analyses (CEAs). The aim of the present review is to identify and evaluate the usage of cognitive, intermediate outcomes in CEAs of behavioral interventions. **METHODS:** Electronic data sources (PsycInfo, WebofScience, Medline, ScienceDirect and Scopus) were searched for CEAs published before February 2008. **RESULTS:** Most CEAs and CUAs reporting cognitive, intermediate outcomes of behavior change fail to incorporate partial behavior changes. Only nine studies were eligible for inclusion in this review. Smith et al 2007 [1] conducted the only study in which partial behavior change was incorporated in the final outcome by modeling cognitive, intermediate outcomes: the stages of change, derived from the Transtheoretical model (TTM). The TTM is a stage-oriented model that describes the process by which a change in behavior takes place. It describes the readiness to change and the processes employed by individuals to achieve behavioral change. With inclusion of future behavior change, Smith et al showed that the incremental cost-effectiveness ratio declined compared to the standard analysis. **CONCLUSIONS:** The results suggest that CEAs of behavioral interventions can be further optimized by the measurement of intermediate outcomes and use these to determine partial behavior change at the end of an intervention period as well. In other words, when partial behavior change and relapse rates are incorporated in CEAs of behavioral treatments, a more realistic and transparent final outcome can be calculated. [1] Smith, MY, Cromwell, J, DePue, J, et al. Determining the cost-effectiveness of a computer-based smoking cessation intervention in primary care. Managed Care 2007;16:48–55.

PMC20

QUANTITATIVE APPROACH TO DETERMINE THE EFFECT OF SEGMENTATION ON REVENUE GENERATION, POSITIONING AND PRICING OF PHARMACEUTICALS

Bolle M[1], Mukku SR[2], Sparrowhawk K[2], Tutt S[2]
[1]University of Cambridge, Cambridge, UK, [2]PriceSpective, London, UK

OBJECTIVES: To develop a quantitative model that can determine the effect of segmentation and positioning on revenue generation based on different variables, health economic considerations and pricing scenarios, creating a tool which is easy to use for the first evaluation of options. **METHODS:** Literature review and interviews with industry experts were conducted followed by the development of qualitative framework, logic and the subsequently a quantitative model. The model was tested and validated using real life examples. **RESULTS:** A qualitative model was developed which presents an iterative strategy to align stakeholders' interest with different scenarios of segmentation. From a given asset base of active ingredients, the pharmaceutical company defines therapeutic areas for a component and determines segments within them, evaluating both attractiveness and specific propositions for patients, payers and prescribers in comprehensive scenarios. For the payer's perspective in particular, health economic benefits of the proposed segmentation approach must be contemplated. Following this analysis, objectives and strategies for the chosen segments are developed and a holistic value proposition can be delivered to the market. Ideally, the process should be initiated early during development in order to design clinical trials according to the segmentation strategy. The process should also be monitored throughout the marketing and sales process in order to make improvements, and to react to changes in health care policies or the competitive landscape. Following the qualitative analysis, a quantitative model was developed in Excel that captures the effect of multiple variables such as age, gender, disease severity, co-morbidities, insurance type and multiple price points on revenue generation, positioning and pricing of pharmaceuticals. The model was tested and validated using the example of bipolar disorder (BPD) in women with childbearing potential. A new product with lower teratogenic risks was evaluated along different segmentation scenarios in order to determine improved overall cost-effectiveness when compared to conventional treatments. **CONCLUSIONS:** Segmentation is an important tool that could lead to better revenue generation from the company's perspective and is accepted positively by payers due to optimized budget impact with better health outcomes.

PMC21

ASSESSING THE RELATIONSHIP BETWEEN COMPUTATIONAL SPEED AND PRECISION: A CASE STUDY USING A DISCRETE EVENT SIMULATION MODEL IN DIABETES CARE

Gordon JP[1], Bergenheim K[2], Yuan Y[3], Tetlow AP[1], McEwan P[1]
[1]Cardiff Research Consortium, Cardiff, UK, [2]AstraZeneca, Mölndal, Sweden, [3]Bristol-Myers Squibb, Princeton, NJ, USA

BACKGROUND: In model-based health economic evaluations, to achieve a given level of precision surrounding modelled outputs there is a trade-off between treatment effect estimates and the computational time associated with the programming format used to 'code' the model. **OBJECTIVES:** To explore the relationship between modelled effect size, statistical precision and the computational time associated with two commonly used programming frameworks. **METHODS:** A published and validated cost-utility discrete event simulation (DES) diabetes model (Cardiff model) was programmed in MS Excel with Visual Basic (VB), and more recently reprogrammed in C as with other models in this area, to illustrate the efficiency gains in terms of computational speed achieved under different programming frameworks. A treatment effect of 0.4% HbA1c improvement was applied to a mean cohort profile of 10,000 patients; precision in the predicted number of clinical events was used to assess relative efficiency of VB and C. **RESULTS:** In the C programmed model in order to show a significant difference at the 95% level in the predicted number of events in the control and treatment arms required 50 iterations of the model using mean values. This equated to a model run time of 1 minute. The equivalent number of iterations in VB took 133 minutes to demonstrate a significant difference in the predicted number of events. Typically, one-way sensitivity analysis using this model to explore 40 scenarios would equate to a run time of 40 minutes in C and 5,320 minutes (88.7 hours) in VB. **CONCLUSIONS:** Programming format can impact the computational time associated with running the model with subsequent practical implications for the usability of the model. We conclude that with reasonably complex models,