economic evaluations based on models, published in 2006 were obtained from a PubMed search using terms “probabilistic sensitivity” or “probabilistic uncertainty”. Methodological items were extracted from each article and independently evaluated against the criteria by each researcher. Disagreements between evaluations were resolved through voting by the entire research team. RESULTS: All 43 economic evaluations identified by the search criteria were reviewed. 86% varied probability and utility inputs but only a minority (25%) did so for cost and resource use inputs. 79% of the studies reported parameter ranges used in the PSA but only half provided rationale for the ranges selected. The majority of analyses (65%) used a single data source to inform distributions, rather than attempt to integrate findings from multiple studies. Parameter correlation was only addressed in one instance and only two studies incorporated structural uncertainty in their analyses. In half of the studies, PSA was the only type of sensitivity analysis conducted, with no one- or multi-way sensitivity analyses. Cost-effectiveness acceptability curves derived from the PSAs were presented in all cases. Less than 10% of studies discussed limitations of their PSA. CONCLUSION: Although PSA has been pushed as standard practice for economic evaluations, the quality of these analyses was mixed. Greater consistency in terms of inclusion of inputs varied and more transparency in describing development of input probability distributions in the conduct of PSAs should improve quality and cross-study comparability of results.

USING A DIAGNOSIS-BASED RISK ADJUSTMENT MODEL TO ESTIMATE COSTS OF INDIGENT CARE IN A COMMUNITY AT MEDICAID REIMBURSEMENT RATES

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OBJECTIVES: The Indigent Care Collaboration (ICC) gathers data on hospital and clinic visits for medically indigent patients in the Austin, Texas, area. However, obtaining cost data is challenging within, and especially across, partner providers. A validated cost model would be instrumental in developing programs and initiatives to improve care. The objectives of this study were to estimate the annual costs of Austin, Texas, area medically indigent patients and to describe the prevalence and costs of chronic diseases and conditions using a diagnosis-based risk adjustment model. METHODS: This study used the Diagnostic Cost Groups (DCG) prospective Medicaid All-Encounters model, which uses diagnoses, age, and gender to assign relative risk (RR) scores to patients. The RR scores were multiplied by the per capita Texas Medicaid expenditure to obtain estimated annual costs. Chronic diseases were described in terms of prevalence and total estimated annual cost. RESULTS: A total of 471,194 encounters were recorded for 163,729 patients meeting the study inclusion criteria between March 1, 2004, and February 28, 2005. The mean estimated patient yearly cost was $1,306.81, and the total estimated yearly population cost was $228,909,529. The most common chronic diseases and conditions included hypertension, diabetes, depression, substance abuse, pregnancy, asthma, chronic obstructive pulmonary disease (COPD), and congestive heart failure (CHF). CONCLUSION: This study demonstrates how the unknown costs associated with caring for medically indigent patients in a community can be estimated at Medicaid reimbursement rates using the DCG model on aggregated patient encounter data.

THE OPERATIVE INTERVAL OF AN INCREMENTAL COST-EFFECTIVENESS RATIO: A NEW BENCHMARK FOR ASSESSING THE BOUNDARIES ON THE EFFICIENT FRONTIER CURVE

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OBJECTIVES: The concept of efficient frontier, given a series of cost-effectiveness estimates for different levels of programs, plays an important role in the incremental analysis. The purpose of the study is to exploit a theoretical aspect of the incremental cost-effectiveness ratios (ICERs) in the context of the efficient frontier curve, and then to identify the upper and lower limits that bound the ICER, considering a potential application of the limits for the pricing rule based on the ICER. METHODS: Let two points be PA(Ea, Ca) and PB(Eb, Cb) for programs A and B, respectively, on the E-C plane representing a set of effectiveness and cost. Theoretical developments were undertaken to find a solution for the question on the boundaries, supposed there exists a concave graph of the efficient frontier curve, C = f(E), directing upward from zero on the E-C plane. Model calculation was performed, for an example, when the curve is a quadratic function estimated as C = pE2 + qE + r (p, q, and r: constants). RESULTS: The interval with the derivatives:((′(Ea), ′(Eb)) on C = f(E), respectively, at the points PA and PB was identified as a solution, called ‘operative interval,’ which describes reasonable lower/upper boundaries of the ICER, considering the configuration of the graph. When the efficient frontier curve is quadratic, the width of the interval was estimated as 2p(ÆE). Namely, the width is variable, not constant, depending on both p and ÆE. Furthermore, the new benchmark identified four possible scenarios for making a decision to accept the ICER compared with a threshold of willingness-to-pay. CONCLUSION: The concept of the operative interval of an ICER has been introduced, and it suggested potential usefulness for assessing the acceptability.

THE USE OF DISEASE TRANSMISSION MODELLING IN COST-EFFECTIVENESS ANALYSES: STRENGTHS AND WEAKNESSES

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OBJECTIVES: To explore the contribution made by disease transmission modelling to cost effectiveness analyses. METHODS: Traditional cost-effectiveness analysis quantifies the costs and effects accumulated by an average individual exposed to a particular intervention, relative to one or more suitable comparators. When reacting to an infectious disease, however, many interventions alter the natural history of an infection or individuals’ behaviour in ways that affect the onward transmission of the pathogen. This, in turn, may influence the number of secondary infections generated by each infectious case. For a cost-effectiveness analysis to account for the averted/additional cases, a population level perspective including disease transmission modelling is required, but this comes at a cost. Transmission models take time to construct and parameterise and are often data hungry. Do the insights these models provide justify the investment in time and expertise they require? RESULTS: This exposition outlines the basic concepts underlying disease transmission modelling, presents a simple model for a directly transmitted disease (such as influenza) and demonstrates the enormous impact population level effects can have on the