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 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.

**USE OF 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), directed 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 (f’(Ea), f’(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(ΔE). Namely, the width is variable, not constant, depending on both p and ΔE. 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
outcome of a cost-effectiveness analysis. This impact is most acute when the members of a large population can mix freely (there is little compartmentalisation), for example across different age groups, there is significant transmission (the mean number of secondary infections generated by each primary infection is greater than one) and where transmission is rapid (short incubation period). This final condition is important if the cost-effectiveness analysis has a short time horizon, particularly where costs are accumulated sooner than benefits (as in a vaccination program). This has been demonstrated in the analysis of both varicella zoster and hepatitis B virus vaccination programs. The circumstances in which transmission modelling is of greatest value will be further discussed, as too will those in which an individual based analysis suffices.

**THE USE OF ADMINISTRATIVE DATABASE IN ITALY: INSIGHTS FROM THE FRIULI VENEZIA GIULIA CASE**

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**OBJECTIVES:** The project AIDA (Atlas of Italian Administrative Database) recently shown that collection of administrative data in Italy is widespread both at national and local level; Aim of this study is to evaluate the use of these databases in health economics field in Italy focusing on Friuli Venezia Giulia (FVG) Region as pilot. **METHODS:** A PubMed search was carried out using 11 different key words to match studies based on administrative data collected on FVG population published till December 2006. The articles included in the analysis were then classified according to therapeutic area, period, data source, population, other data. **RESULTS:** Initially our search identified 123 articles, but only 24 were eligible for inclusion in our project. 7 studies were focused on drugs efficacy and related AEs, 8 studies estimated prevalence, incidence or risk factor of some major diseases such as cancer, coronary or ischemic disease; 6 studies evaluated the effectiveness of surveillance campaigns and 2 studies were focused on quality of care provided by Regional Healthcare System. The articles were all published in the period between 1990 and 2006, and 58% were published in the last 7 year. All the studies included in the analysis gave information about resources use and consumption, but only one study appraised the direct cost. Hospital discharge records, prescriptions registries and disease registries were most commonly used database in the eligible studies. **CONCLUSION:** FVG Healthcare Informative System is one of the best developed and with the highest quality of data collection at a local level in Italy, for this reason we have chosen it as pilot; our search showed that in recent years use of administrative data as proxy outcome and cost estimation was implemented compared to years ’90 but they remain still underused in Health Technology Assessment.

**PREVALENCE OF CONDITIONS IN THE US EMPLOYER INSURED POPULATION: A METHODOLOGY FOR PROJECTING FROM A CONVENIENCE SAMPLE**

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**OBJECTIVES:** This study presents a methodology to estimate prevalence rates for specific diagnosed conditions among the ~170 million Americans covered by employer-sponsored insurance (ESI). Individuals with ESI represent over 58% of the U.S. population, a large group with fewer cost barriers to care. **METHODS:** Estimates were made from the 2005 MarketScan® databases, which include all health care claims for approximately 20 million employees, dependents, and retirees with ESI. The Sample Select Prevalence tool identified patients diagnosed with asthma, osteoporosis, allergic rhinitis (AR), essential hypertension, rheumatoid arthritis (RA), type II diabetes, congestive heart failure (CHF), or hypercholesterolemia (using relevant ICD-9-CM diagnosis codes), and calculated prevalence rates. Weights were developed based on the Medical Expenditure Panel Survey (MEPS), a probability sample that estimates the number of Americans by health insurance type. The ratio of MEPS population estimate to MarketScan population within certain strata of demographic characteristics provided the projection weights. Prevalence rates were calculated for the total population and by age, gender, geographic region, and health plan type. **RESULTS:** Based on the 2005 MarketScan databases, annual rates per 100,000 were as follows: 11,175.69 (hypertension), 4,813.54 (type II diabetes), 4,739.46 (AR), 4,275.79 (hypercholesterolemia), 3,164.33 (asthma), 962.80 (osteoporosis), 736.29 (CHF), 521.59 (RA). These rates varied by age, gender, and geography. Annual expenditures per patient ranged from $5,788 (AR) to $37,105 (CHF). **CONCLUSION:** Reliable estimates of prevalence and costs for diagnosed health conditions are valuable to policy makers, providers, and payers. This study demonstrates a reliable projection methodology for estimating annual prevalence, treatment events, and costs associated with a diagnosed disease or condition based on a large convenience sample of health care claims data.

**SPATIAL INTERPOLATION**

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**OBJECTIVES:** The Expected Value of Perfect Parameter Information (EVPPI) requires three level simulation in non-linear micro-simulation models, which is time consuming. Meta-modelling approaches reduce the time needed to evaluate the influence of uncertainty in complex health economic models. Here, two meta-modelling approaches are compared: spatial interpolation (SI) and ordinary least squares (OLS). **METHODS:** Both methods are applied to a drug-drug comparison in a micro-simulation schizophrenia model. The Net Benefits appear to depend rather non linearly on the underlying variables as assessed using the R2 and the RESET-test. Ordinary least squares is applied using 950 model runs. SI is applied using 100 and 950 model runs. Subsequently both meta-modelling methods are used to predict 50 out-of-sample runs and evaluated with the Root Mean Squared Prediction Error (RMSPE) and the time needed to estimate the EVPPI. **RESULTS:** One run of the micro-simulation model takes 11 minutes. The SI 950 is more accurate than the OLS and SI 100, which are comparable (average RMSPE for net benefits for two treatments 3006, 4842, and 4823 respectively). The SI 950 EVPPI calculation takes much longer time to complete the calculations; the SI 100 on the other hand is much quicker than the OLS (11005 minutes for the OLS and 2672 minutes for the SI 100). **CONCLUSION:** The SI is a frequentistic approach with great resemblance with the Bayesian Gaussian Process meta-modelling method. If a simulation model takes very long to come up with results or the model is non-linear, SI is the superior meta-modelling technique. If the model is linear, SI is fancy but not ideal.