AT WHAT COST? A REVIEW OF DRUG ACQUISITION COST ISSUES IN MODELLED ECONOMIC EVALUATIONS.
Wonder M1, Backhouse M2, Gnanasakthy A2
1Novartis Pharmaceuticals, Sydney, Australia; 2Novartis Pharmaceuticals, Basel, Switzerland
OBJECTIVE: Payers are increasingly using economic evaluation methods in their decision-making process for new health technologies. Payers offer only have the results from short-term clinical trials at their decision time point. For new drugs for chronic diseases/conditions such as hypertension, diabetes mellitus & multiple sclerosis, they may want to see how these benefits translate into long term outcomes via a model (i.e. a modelled economic evaluation). The appropriate time horizon for some modelled evaluations may be greater than the drug’s remaining patent life. In a situation where the acquisition cost of a new drug is the major cost driver, the use of an adjusted acquisition cost after patent expiry could have a major effect on the modelled cost-effectiveness ratio. We set out to review issues associated with the acquisition costs of (new) drugs in modelled economic evaluations. METHODS: We reviewed the latest published versions of the guidelines of the major drug reimbursement agencies (PBAC, NICE, DQTC, AMCP) and health economics reference text books (Gold, Drummond, Bootman) as well as modelled economic evaluations of drugs published in ISPOR Value in Health in 2003 & 2004 to see how others have dealt with this issue. RESULTS: Although we could find frequent citations on the discounting of the acquisition cost of drugs if the time horizon of an evaluation is greater than 12 months, we found very little discussion on the merits of the adjustment of drug acquisition costs post patent expiry. CONCLUSION: The concept of adjusting the acquisition costs of (new) drugs after their patent expiry in modelled economic evaluations is underdeveloped. The merits & demerits of the concept will be discussed in more detail in the poster.

USING MARKOV MATRICES TO INTEGRATE RISK/BENEFIT CONSIDERATIONS OF HEALTH CARE INTERVENTIONS EVALUATED USING HEALTH-RELATED QUALITY OF LIFE INSTRUMENTS
Casado A, Herdman MJ
3D Health Research, Barcelona, Barcelona, Spain
OBJECTIVES: To show how Markov matrices can be used to quantify and integrate the risks and benefits of health care interventions when these are measured using health-related quality of life (HRQOL) instruments. To provide an example of this type of evaluation for an HRQOL measure which uses Likert scales for the response options. METHODS: A brief theoretical explanation of the nature and purposes of Markov matrices will be followed by practical examples of their potential in the field of outcomes research using the COOP-WONCA charts in a hypothetical longitudinal study. RESULTS: Markov matrices defining between-state transition probabilities (HRQOL dimension score at each measurement time point) are developed and use of the matrices will be illustrated by providing quantitative definitions and interpretations of the probabilities associated with the principal sub-matrices (main diagonal, upper and lower triangles, upper and lower linear bounds, and simple elements). CONCLUSIONS: The use of theoretical definitions and practical examples will be useful in introducing and discussing the application of Markov matrices as a means of integrating risk and benefit considerations associated with health care interventions measured using HRQOL instruments.

BRIDGING BEYOND REGRESSION–ARTIFICIAL NEURAL NETWORK IN MAPPING FROM SF-36 TO HEALTH UTILITY
Yu AP1, Yu YF2, Nichol MB1
1University of Southern California, Los Angeles, CA, USA; 2HealthCore, Inc, Wilmington, DE, USA; 3University of Southern California, School of Pharmacy, Los Angeles, CA, USA
OBJECTIVES: Linear regression was often used to develop models bridging SF-36 to utility, with assumptions of linearity and independence among subscales. Artificial neural networks (ANN) are capable to detect complex patterns among data, thus may provide as a promising alternative algorithm to bridge from SF-36 subscales to utility. This study is to investigate the predictive power of an ANN algorithm, in contrast to that of linear regression. METHODS: Data included a cohort of 6923 Southern California Kaiser Permanente members who filled both SF-36 and HUI2 during 1994–1995. A random sample containing half of total members was used as a training sample to generate mapping algorithms based on linear models and ANN respectively, and the other half was used as testing sample to compare accuracy of prediction between the two methods. Both models used 8 domain scores plus age and gender as predictors. Model prediction accuracy was evaluated based on mean squared error, mean absolute error, percentage of correct prediction within 0.01, 0.03 and 0.1 error range. Observed and predicted utility scores by both methods in testing sample were summarized and compared. This random sample tests were conducted multiple times in order to examine the stability of such cross-validation procedure. RESULTS: The “trained” neural network model was a 10-3-1 network. After cross-validation, the mean squared error was 0.128 for linear model vs. 0.127 for ANN, and absolute error was 0.095 vs. 0.093. Within 0.01 error range, linear model predicted 8.38% correctly, and ANN 8.73%. The rates were 23.8% vs. 24.9% with 0.03 error range, and 63.4% vs. 65.4% with 0.10 error range. The testing process was repeated multiple times and results were stable. CONCLUSIONS: When testing to an independent sample, the bridging algorithm based on ANN showed improved predictive accuracy and can be used as an alternative to linear prediction algorithm.

MENTAL HEALTH—Alcololism/Drug Abuse

HEALTH CARE AND WORKLOSS COSTS OF OPIOID ABUSE AMONG AN EMPLOYED POPULATION IN THE US
White AG1, Birnbaum H1, Mareva MN1, Daher M1, Katz N2, Vallow S1, Schein J1, Doshi D1, Sikirica V1
1Analysis Group, Inc, Boston, MA, USA; 2Inflexxion, Inc, Newton, MA, USA; 3Janssen Medical Affairs, LLC, Titusville, NJ, USA; 4Janssen Medical Affairs, LLC, San Diego, CA, USA
OBJECTIVES: To describe demographics of opioid abusers, and compare medical/drug utilization, workloss patterns, and medical costs of opioid abusers to those of a control group, 1999–2002. METHODS: A claims database of insured patients was used to identify patients with claims with ICD-9 codes for opioid abuse (304.0, 304.7, 305.5, and 965.0). In total, 749 such patients aged 12–64 were identified. A control group of non-abusers was selected using a matched sample (by age, gender, and census region). All costs were calculated from a private payer’s perspective in 2003 USD. RESULTS: Opioid abusers, compared to controls, had higher medical and drug utilization. Almost 60% of opioid abusers had claims for opioids, versus 20% for controls. Prevalence rates for hospital inpatient care for opioid abusers were 12 times higher than controls (p < 0.01). Opioid
Abstracts

OBJECTIVES: To determine quality-adjusted life-year (QALY) gains associated with buprenorphine treatment for opiate addiction, and estimate the potential cost savings of this treatment from the societal perspective. METHODS: In a randomized clinical trial of buprenorphine therapy, subjects completed the short-form-36 (SF-36) at baseline and every four weeks through week-16, creating up to five data collection points for each patient. We converted SF-36 data to SF-6D to calculate QALYs for each patient-month through published techniques based upon standard gamble methods. Dependent t-tests were used to identify significant differences in QALYs at baseline versus QALYs at the end of each month. Our base case used a buprenorphine 12mg/day dosage plus annual buprenorphine treatment clinic costs ($2356/person). We incorporated social costs of untreated opiate addiction from the literature ($42,957/person-year) and performed a sensitivity analysis using 8mg and 16mg buprenorphine dosages. RESULTS: Due to dropouts, our sample size was 100, 80, 69, 59, and 44 patients at baseline and months one-four, respectively. QALY values (mean ± SD) for each month were: 0.73 ± 0.091 at baseline, 0.76 ± 0.068 at month-one, 0.75 ± 0.087 at month-two, 0.75 ± 0.087 at month-three, and 0.75 ± 0.090 at month-four. Thus, an improvement of 0.027 QALYs (P = 0.008) between baseline and month-one occurred (95% CI = 0.007–0.047). There were no other significant improvements, possibly due to patient dropouts. The sensitivity analysis showed direct medical costs for buprenorphine treatment ranged from $4206 to $6056 per person-year. By incorporating societal costs of untreated opiate addiction, a savings of $36,901 to $38,752 per person-year was estimated. CONCLUSIONS: From a societal perspective, buprenorphine treatment saves money and increases QALYs. For every 37 (95%CI = 21–143) patients treated there is a gain of one QALY. Wide-spread adoption of proper office-based buprenorphine treatment is clearly indicated; undertreatment leads to exorbitant social costs without QALY gains.

MENTAL HEALTH—Anxiety

PMH2

EMERGENCY DEPARTMENT USE FOR ACUTE ALCOHOL INTOXICATION BY COLLEGE AGE PERSONS: TIME AND COST OF TREATMENT

O’Brien JA1, Pitioniak-Morse C1, Jacobs LM2
1Caro Research Institute, Concord, MA, USA; 2University of Connecticut Medical School, Farmington, CT, USA

OBJECTIVES: To examine use, timing and cost of Emergency Department (ED) visits by those of college age (17–22 years) for acute alcohol intoxication. METHODS: Cases were identified from Massachusetts 2002 ED and hospital databases using ICD-9 principal diagnosis codes 305.00–305.09. Hospital cases were limited to those admitted via ED. Cost estimates include facility, accommodations and ancillary services, reported in 2002 USD. Charges were adjusted using a 0.55 cost-to-charge ratio. RESULTS: Of 1803 cases identified, 52% were male and 55% were less than 20-years old. Ambulances were used to transport 54%; law enforcement was involved in 1.5% of cases. The majority (69%) arrived between 10:00 PM and 4:00 AM, and 70% of all visits occurred Friday through Sunday. Significantly (p = 0.004) more visits occurred in September and October than any other month. The majority (94%) were treated and released from ED, 1% was hospitalized, 2% eloped or left AMA, 2% were transferred and 1% was recorded as unknown. Mean duration of ED visit was 5.4 hours (median: 4). Mean cost per ED visit was $482 (median: $382) for those treated and released, and $537 (median: $460) for those hospitalized. On average, those admitted (n = 20) spent 2.5 days (median: 1) in the hospital at a cost of $4540 (median: $2154). The cumulative hours of ED time used in one year for treating alcohol intoxication in this age group was $254. Cumulative cost of ED and inpatient care for the year was roughly $938,000. Managed care organizations and commercial insurers were the responsible payers for most cases (60%). Self-pay was noted for 24%. CONCLUSIONS: Alcohol intoxication among those of college age results in a substantial direct medical cost, as well as an opportunity cost for ED resources during the year, particularly at the start of the school year.

PMH3

QUALITY-ADJUSTED LIFE YEARS GAINED WITH BUPRENORPHINE TREATMENT FOR OPIATE ADDICTION

Campbell HM1, Raisch DW1, Ling W2
1VA Cooperative Studies Program, Albuquerque, NM, USA; 2David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

OBJECTIVES: To estimate the QALY gains associated with buprenorphine treatment for opiate addiction and to estimate the potential cost savings of this treatment from the societal perspective. METHODS: A randomized clinical trial of buprenorphine therapy was conducted, subjects completed the short-form-36 (SF-36) at baseline and every four weeks through week-16, creating up to five data collection points for each patient. We converted SF-36 data to SF-6D to calculate QALYs for each patient-month through published techniques based upon standard gamble methods. Dependent t-tests were used to identify significant differences in QALYs at each baseline versus QALYs at the end of each month. Our base case used a buprenorphine 12mg/day dosage plus annual buprenorphine treatment clinic costs ($2356/person). We incorporated social costs of untreated opiate addiction from the literature ($42,957/person-year) and performed sensitivity analyses using 8mg and 16mg buprenorphine dosages. RESULTS: Due to dropouts, our sample size was 100, 80, 69, 59, and 44 patients at baseline and months one-four, respectively. QALY values (mean ± SD) for each month were: 0.73 ± 0.091 at baseline, 0.76 ± 0.068 at month-one, 0.75 ± 0.087 at month-two, 0.75 ± 0.087 at month-three, and 0.75 ± 0.090 at month-four. Thus, an improvement of 0.027 QALYs (P = 0.008) between baseline and month-one occurred (95% CI = 0.007–0.047). There were no other significant improvements, possibly due to patient dropouts. The sensitivity analysis showed direct medical costs for buprenorphine treatment ranged from $4206 to $6056 per person-year. By incorporating societal costs of untreated opiate addiction, a savings of $36,901 to $38,752 per person-year was estimated. CONCLUSIONS: From a societal perspective, buprenorphine treatment saves money and increases QALYs. For every 37 (95%CI = 21–143) patients treated there is a gain of one QALY. Wide-spread adoption of proper office-based buprenorphine treatment is clearly indicated; undertreatment leads to exorbitant social costs without QALY gains.

PMH4

COST-EFFECTIVENESS OF ALPRAZOLAM IN ANXIETY DISORDERS

1Mexican Institute of Social Security, Mexico City, Mexico

OBJECTIVE: To estimate cost-effectiveness of Alprazolam versus Clonazepam, Fluoxetine and Imipramine in anxiety disorders in the Mexican Institute of Social Security (IMSS). METHODS: A cost-effectiveness study was carried out with a time horizon of one year, no discount rate was used. Utilization of resources and effectiveness data were taken from an expert panel of psychiatrists working at the IMSS and private sector. Inclusion criteria for experts were: psychiatrists with more than five years of clinical experience, that were certified by the Mexican Council of Psychiatry and that had experience in using the studied drugs in anxiety disorders. Use of resources included hospitalisation, emergency services, visits, laboratory and diagnostic tests, as well as pocket expenses. Unit costs were taken from Administrative and Financial departments of IMSS. Costs were expressed in 2004 USD. Effectiveness measure was days free of symptoms. Sensitivity analysis was univariate and probabilistic. RESULTS: Annual treatment cost of anxiety disorders with Alprazolam was $13,110, with Clonazepam $13,367, with Fluoxetine $13,423 and with Imipramine $14,803. Effectiveness results were 224 days without symptoms for Alprazolam, 232...