[1]UMIT - University for Health Sciences, Medical Informatics and Technology; Oncotyrol - Center for Personalized Cancer Medicine, Hall i.T.;Innsbruck, Tyrol, Austria, [2]Department of Public Health and Health Technology Assessment, UMIT - University for Health Sciences, Hall, Austria, [3]Department of Public Health and Health Technology Assessment, UMIT - University for Health Sciences, Hall i.T., Austria, [4]University of Toronto, Toronto, ON, Canada, [5]Toronto Health Economics and Technology Assessment (THETA) Collaborative, Toronto, ON, Canada, [6]UMIT/ Oncotyrol/ Harvard University, Hall i.T.;Innsbruck, Tyrol, Austria

OBJECTIVES: Breast cancer is the most common malignant disease in Western women. In the ONCOTYROL research center, a decision-analytic Breast Cancer Outcomes & Policy (BCOP) model is being developed to evaluate the cost-effectiveness of the new 21-gene assay that supports personalized decisions on adjuvant chemotherapy. Model validation is essential to build confidence in the model results and to influence decision makers. Based on the new ISPOR-SMDM best practice recommendations, the process of model validation will be presented. **METHODS:** The 21-gene assay was evaluated by simulating a hypothetical cohort of 50year old women over a lifetime time horizon, adopting a societal perspective. Main model outcomes were life-years gained, quality-adjusted life-years (QALYs) gained and costs. The major focus of the presentation is on cross validation, i.e. the comparison of modeling results between the discrete event simulation (DES) BCOP-model and the Markov model of the THETA (Toronto Health Economics and Technology Assessment) Collaborative. Therefore, the BCOP-model has been populated with the Canadian parameters of the THETA-model. **RESULTS:** Cross validation started with comparison of model parameters related to the natural history of the disease (undiscounted life years, number of breast cancer recurrences/deaths). Thereafter, quality of life and cost outcomes were compared. The comparison included point estimates of the outcomes of the deterministic analysis of the Markov model as well as the probabilistic run with the DES results and combination (ICERs). The absolute differences of expected life years gained for women after surgery ranged from -0.35 to 0.43 years depending on the treatment strategy for specific risk groups. For the probabilistic analysis, confidence intervals as well as distributions of model outcomes were compared. **CONCLUSIONS:** Cross model validation is a suitable approach to identify and correct modeling errors and to explain remaining differences of modeling results.

PRM17

COST-UTILITY ANALYSIS OF DONEPEZIL FOR THE TREATMENT OF ALZHEIMER'S DISEASE IN THAILAND

Permsuwan U[1], Niwatananun W[1], Pimkrai A[2]
[1]Chiang Mai University, Chiang Mai, Thailand, [2]Chiang Mai Neurological Hospital, Chiang Mai, Thailand

OBJECTIVES: Treatments for Alzheimer's disease (AD) have currently been proved for effectiveness but the selection needs to determine whether the clinical benefits justify their additional costs. This study aimed to evaluate the cost-effectiveness of donepezil treatment of mind to moderate AD compared with usual care in the perspective of provider and society. **METHODS:** A Markov model composed of 4 health states (mild, moderate, severe, and death) was constructed to extrapolate the results over a 5-year period. The study included costs of donepezil, costs of comorbidity treatment, and costs of informal care. Effectiveness was measured in terms of quality-adjusted life year (QALY). Cost and utility data were directly collected from Thai AD population, but transition probabilities and the effect of donepezil were derived from literature review. All costs and effects were discounted at 3% per annum. One-way and probabilistic sensitivity analyses were performed. **RESULTS:** The results demonstrated that with the threshold level of Thai 1GPD per capita (approximately 148,000 Baht/QALY in 2011), donepezil was not a cost-effective treatment for mild or moderate AD for both societal (incremental cost-effectiveness ratio (ICER) = 284,473 Baht/QALY) and provider perspectives (ICER = 369,148 Baht/QALY). The results were very sensitive to utility value and the effect of donepezil. Donepezil became more cost-effective than usual care when the willingness to pay level increased to at least 155,000 and 375,000 Baht/QALY for societal and provider perspectives respectively. **CONCLUSIONS:** With a limited health care resources, using donepezil for the treatment of AD might not be cost-effective in Thai context.

PRM18

MODELING LONG-TERM HEALTH OUTCOMES IN CHRONIC KIDNEY DISEASE

Levy AR[1], Johnston K[1], Sullivan SD[2], Schnitzler M[3], Sood V[4], Agnese W[4], Osenenko KM[5], Perkins RM[6]
[1]Oxford Outcomes, Vancouver, BC, Canada, [2]University of Washington, Seattle, WA, USA, [3]St. Louis University, St. Louis, MO, USA, [4]Mitsubishi Tanabe Pharma America, Inc., Warren, NJ, USA, [5]Oxford Outcomes, Vancouver, BC, Canada, [6]Geisinger Medical Center, Danville, PA, USA

OBJECTIVES: Chronic kidney disease (CKD) is a common and growing global health issue characterized by reduced glomerular filtration rate (GFR, mLs/min/1.73m^2). While investigators have used short-term changes in GFR as an endpoint, the relationship between this endpoint and long-term outcomes has not been reported. The objective here was to estimate and quantify this relationship in order to predict the timing and number of cases of end-stage renal disease (ESRD) occurring over the lifetime of a cohort of hypothetical CKD patients with moderate and advanced disease. **METHODS:** We constructed a three-state Markov model (functioning kidney, ESRD, and death) with an annual cycle length to project GFR on long-term health outcomes. Using published GFR-specific risk equations, and adjusting for confounders, we estimated the probability of ESRD (assumed at GFR <10) and time to death according to baseline GFR categories defined by the United States (U.S.) Kidney Disease Outcomes Quality Initiative. Included in the modeling was a term representing two types of CKD patients characterized by "slow" and "fast" progression. **RESULTS:** For CKD patients aged 55 years, projected lifetime probabilities of progressing to ESRD were: 0.05, 0.25, 0.81, and 0.97 in GFR categories 45-59, 30-44, 15-29, and <15, respectively. Projected mean survival times were: 16.7, 13.7, 11.4, and 9.4 years for the same GFR categories. The model was calibrated with mortality data reported by the U.S. Renal Data System. **CONCLUSIONS:** The model can project the potential impact of baseline GFR on long-term outcomes in CKD. Estimating the time spent in GFR categories allows quantification of the entire trajectory of CKD until renal failure or death. In future, the model may be refined by incorporating additional empirical data describing longer-term follow-up.

PRM19

USING PANEL DATA TO INFORM ECONOMIC EVALUATION

Church J[1], Norman R[2], Goodall S[1], Reeve R[1]
[1]University of Technology, Sydney, Broadway, NSW, Australia, [2]University of Technology, Sydney, Australia

OBJECTIVES: To demonstrate if a nationally representative panel dataset can be used to evaluate if quality of life (QoL) impacts are associated with changes in body mass index (BMI). The aim was to estimate the utility increments (or decrements) associated with weight loss (or gain) for application in economic evaluations of obesity interventions. **METHODS:** Data from the Household, Income and Labour Dynamics in Australia survey (HILDA) was used in the analysis. HILDA is a household-based panel with 17,209 individuals from 6,987 households collected annually since 2001. This survey uses the SF-36 and the transformed SF-6D utility weight to capture quality of life. Currently, there are 5 waves providing information on BMI. The panel nature of the data was exploited with econometric techniques to show the effect of changes in BMI (between different BMI classification groups) on quality of life. **RESULTS:** The results demonstrated that being under-weight, over-weight or obese is associated with reduced quality of life. When adjusting for other explanatory variables, only the association between the obese category and diminished quality of life remained. The results from the panel data identified that only those who remain severely obese over time experience significant reductions in quality of life. Movements between other BMI categories were not associated with significant impacts on quality of life. **CONCLUSIONS:** Economic models that assess the cost-effectiveness of obesity interventions using cross-sectional data may overestimate the QoL gain following a reduction in BMI. This could lead to non-optimal policy oriented decisions. Population panel datasets may provide a better estimate. Using econometric techniques alongside traditional cost-effectiveness models offers a richer avenue of obtaining model inputs and more certainty in regards to quantifying gains and losses in QoL.

PRM20

CONSTRUCTION OF THE MARKOV MODEL FOR HEPATITIS B VIRUS RELATED DISEASES IN JAPAN

Yoda T, Yoshioka A, Suzue T, Hirao T
Faculty of Medicine, Kagawa University, Kita-gun, Kagawa, Japan

OBJECTIVES: Hepatitis B virus (HBV) is estimated to infect 350 million people all over the world. Most infection with HBV do not induce clinical liver disease, while less than 30% of them develop severe liver disease. We do not know, however, the approximate number of the annual newly HBV infection and/or HBV development in Japan. Then, we make Markov model with HBV infection and estimate annual probability to disease development. **METHODS:** We reviewed clinical research paper related to HBV infection published in Japan until December 2011. To research Japanese original data, we used 'Igaku Chuo Zasshi' (Japanese medical journals database), and Japanese Ministry of Health, Labour and Welfare research database. We then extracted some parameters (e.g., patients outcome, treatment, time horizon) and calculated annual probability of disease development. **RESULTS:** We made HBV infection model and estimate annual probability to disease development from 22 eligible Japanese research papers and reports. The HBV Markov model started from HBs antigen negative, then HBV infection, divided into 2 columns (asymptomatic career, acute hepatitis) and so on. Each columns annual probability were detected from clinical trial data in Japan. **CONCLUSIONS:** We estimated HBV infection and related diseases progress probability by one-year in Japan. We will estimate the cost of each diseases treatment, patient's quality of life, and then we will make Japanese HBV Markov model near future.

RESEARCH ON METHODS - Patient-Reported Outcomes Studies

PRM21

VALIDITY AND RELIABILITY OF THE 8-ITEM MORISKY MEDICATION ADHERENCE SCALE IN PATIENTS TAKING WARFARIN IN SINGAPORE

Wang Y[1], Kong MC[2], Ko Y[1]
[1]National University of Singapore, Singapore, Singapore, [2]Singapore General Hospital, Singapore, Singapore, Singapore

OBJECTIVES: A reliable and valid measure is essential to evaluating and enhancing patient medication adherence. There is no validated patient-reported medication adherence measure in Singapore. This study aimed to validate the 8-item Morisky Medication Adherence Scale (MMAS) in patients taking warfarin in Singapore. **METHODS:** A cross-sectional survey was conducted in a convenient sample of 174 patients taking warfarin at an anticoagulation clinic in Singapore in 2011. Sociodemographics and International Normalized Ratio (INR) values were obtained from patient interview and hospital databases. Respondents completed the MMAS in English or Chinese depending on their preference. The scale scores ranged from 0 to 8, with higher scores indicating better medication adherence. Reliability was assessed using Cronbach's alpha. Criterion-related validity was examined by relating the MMAS score to warfarin refill rate. Construct validity was examined via factor analysis and hypothesis testing. **RESULTS:** The reliability of the MMAS was moderate (Cronbach's alpha = 0.56). The scale scores were associated with warfarin refill rates ($p = 0.02$). Confirmatory factor analysis showed that the eight items

loaded onto one factor (RMSEA = 0.048). Respondents with higher MMAS scores had a higher percentage of INRs within the therapeutic range during the past 2 weeks ($p = 0.02$), higher adherence to diet recommendations ($p = 0.01$), and less perceived difficulty in taking all medications ($p < 0.01$). Respondents with higher scale scores were also more likely to take warfarin at the same time every day ($p < 0.001$) and follow the prescribed dosage ($p = 0.04$). The hypotheses regarding the association between the scale score and the time within the therapeutic INR range, however, were not met. **CONCLUSIONS:** The 8-item MMAS had a good validity and moderate reliability in patients taking warfarin. Future research requires investigation of the scale's reliability and psychometric properties in other patient populations and clinical settings.

PRM22

TESTING THE EQUIVALENCE OF THE LABEL WORDING FOR EQ-5D-5L RESPONSE OPTIONS ACROSS DIFFERENT LANGUAGES IN SINGAPORE

Wong KY[1], How CH[2], Thumboo J[3], Shen L[1], Tay EG[2], Luo N[1]
[1]National University of Singapore, Singapore, Singapore, [2]SingHealth Polyclinics, Singapore, Singapore, [3]Singapore General Hospital, Outram, Singapore

OBJECTIVES: The EQ-5D-5L questionnaire describes a person's health using five 5-point Likert scales (i.e. no/slight/moderate/severe/extreme problems), with one scale for each of its five dimensions including mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The purpose of this study was to assess the equivalence of the response options of the EQ-5D-5L scales across the three major languages (English, Chinese and Malay) in Singapore. **METHODS:** Visitors to 9 government-run polyclinics were interviewed face-to-face according to participants' language preference. Participants' perception of the severity of health problems represented by the response labels of the EQ-5D-5L was measured using a 0 (no problems) to 100 (the worst problems) visual analog scale. The participants were also asked to use the response labels to describe 25 predefined scenarios of health states. Severity ratings and choice of labels were analyzed using multiple linear and logistic regression models, respectively. **RESULTS:** A total of 743 participants (54% ethnic Chinese, 35.3% Malays and 6.6% Indians, age ranged 19 - 83 years) rated the severity of the EQ-5D-5L response labels in English (n=257), Chinese (n=256) or Malay language versions (n=230). Using English labels as reference, the Chinese response labels perceived were similar in severity of health problems. Higher severity scores of 'slight problems' and lower scores of 'extreme problems' however were assigned to Malay response labels. When asked to describe hypothetical health states, users of the Chinese labels tended to use mild wording while users of the Malay labels tended to use more severe wording. **CONCLUSIONS:** The interpretations of the labels for some EQ-5D-5L response options differ between Malay and other languages in Singapore. Future research is needed to improve the equivalence of the EQ-5D-5L response options so that the questionnaire can be used to compare the health status of culturally different populations in Singapore.

PRM23

DISCRIMINATIVE PROPERTIES OF SF36V2 HEALTH SURVEY IN GENERAL POPULATION OF PENANG STATE (MALAYSIA) USING NORM BASED SCORING ALGORITHMS

Shafie AA[1], Atif M[2], Sulaiman SA[1], Hassali MA[1], Saleem F[1], Haq N[1]
[1]Universiti Sains Malaysia, Penang, Malaysia, [2]Universiti Sains Malaysia, Penang, P.Pinang, Malaysia

OBJECTIVES: To obtain population norms (using norm based algorithms) of SF36v2 health survey and association of SF36v2 summary component scores with demographic and socioeconomic variables in Penang general population. This study also aimed to find out effect size difference between United States and Penang specific summary scores. **METHODS:** A cross-sectional study was carried out among 398 residents randomly selected from 10 grids in Penang Island during January 2011 using the official translation of SF-36v2 Health Survey questionnaire in Malay, Mandarin, Tamil and English. 0-100 scoring of questionnaire was done by scoring software version 4 for SF-36v2 and then these scores were transformed into norm based scores by using means and standard deviations derived from Penang general population. PCS and MCS scores were derived from Penang specific z-scores of eight health domains and factor coefficients derived from U.S standard population. Penang specific scores considered measurement equivalence, if the effect size difference was <0.5. **RESULTS:** Mean (±SD) norm based scores for PF, RF, BP, GH, VT, SF, RE and MH were 49.6±10.6, 50.0±9.9, 50.0±9.9, 50.0±10.0, 50.0±10.0, 50.0±9.9, 49.9±10.1, 50.0±9.9, respectively. Penang specific PCS and MCS were 49.9±9.2, 50.0±9.2, respectively. Physical health was determined by age group, marital status and level of education whereby, Malay ethnicity, un-employment and lower level of education & monthly income was associated with poor mental health. The effect size difference between U.S standard and Penang specific PCS and MCS scores were <0.5. **CONCLUSIONS:** Since norm based means scores for SF-36v2 health survey were not available for Malaysian population, therefore these findings can serve as a baseline for comparisons in future surveys looking at HRQoL in general and diseased population. The high level of measurement equivalence of the PCS and MCS between U.S and Penang populations suggests that data pooling between two populations could be possible.

PRM24

ECONOMIC VALUATION OF INFORMAL CARE – TASK BASED APPROACH

Goodall S[1], Lannin N[2], Oates J[3]
[1]University of Technology, Sydney, Broadway, NSW, Australia, [2]La Trobe University, Melbourne, Australia, [3]Evaluate, Sydney, NSW, Australia

OBJECTIVES: The cost of informal care is often ignored in economic evaluation. For certain conditions, such as palliation or patients with long-term chronic conditions, informal care costs may be substantial. Previous studies have suggested a limited framework for valuing informal care. The aim of this study was to investigate whether different tasks provided by informal carers are quantified and valued differently. **METHODS:** Sixty adults in New South Wales (Australia) with traumatic brain injury or spinal cord injury that required long-term 24-hour care were recruited into the study. The amount of care provided to each patient (divided into tasks, such as: personal care, food preparation, organisational and social support) was recorded using diary and recall methods. Informal care was valued using contingent valuation, with carers being asked how much they would be willing to accept from the Government to provide an extra hour of care. Respondents were asked to value each task separately. **RESULTS:** The estimates of informal care provided differed between recall and diary methods (61 hrs/week versus 29 hrs/week; $p<0.01$). There were good correlation for some tasks (outdoor journeys) and large disparities for other tasks (personal care, food preparation and cleaning). Social support was considerably under reported using the diary method (3 hrs/week vs. 15 hrs/week; $p<0.01$). In terms of task valuation, personal care ($46/hr) was valued more highly than household tasks ($29/hr) and social support ($29/hr). **CONCLUSIONS:** The method used to estimate the amount of informal care provided is important. Our findings suggest that informal carers have different valuations for different tasks. Consequently applying a single monetary value for informal care in economic evaluations may not be appropriate, since it does not accurately reflect the heterogeneity of informal care.

PRM25

FIRST DRIVE-THROUGH PHARMACY SERVICE IN TAIWAN

Wang HY, Huang YC, Chien HY
Shuang Ho Hospital, Taipei Medical University, New Taipei City, Taiwan

OBJECTIVES: Drive-Through is a very convenient service in many fast food restaurants. Our hospital is newly opened in the middle 2008. Due to growing numbers of drug refill visits and limited parking space, pharmacy aims to establish a convenient service for patient to refill their prescriptions. **METHODS:** We visited many hospitals of drug refill process. Several meetings were held to design the optimal system in our institution. We divided the process into two steps; first, make an appointment, second, pick up medicine. After one month constructing facilities and training related staffs and pharmacists, the first Drive-Through Pharmacy Service in Taiwan was grand opened in Taipei Medical University Shuang-Ho Hospital on July 1st 2011. We assess the efficacy of this device by utility rate and patient satisfaction. **RESULTS:** After starting the Drive-Through service, the utility rate raised from 17.7% to 47.4% dramatically. More than 80% of patients were satisfied with this innovate service. Patients needn't to park vehicles, and wait in line for payment and receiving medication. Significant time and cost-savings benefits for patients by making an appointment of prescription refill via the internet or telephone and by picking up medications in three minutes on that day. Comparing with traditional method that takes at least forty minutes to complete the whole process, the new service not only save patient's time but also the parking fee. From pharmacist prospective, pharmacists dispense those ordered medication during midnight. In the day time, usually busier than midnight, we can then create more time to provide more advanced clinical service. Consequently, both patient and pharmacist are benefit from our Drive-Through Pharmacy service. **CONCLUSIONS:** Our innovate service, Drive-Through Pharmacy, provide patient a much easier, convenient, and cheaper way to pick up their medication. At the same time, pharmacist has more time to provide more valuable pharmaceutical service.

PRM26

COMPARISON OF THREE MEDICATION ADHERENCE MEASURES IN PATIENTS TAKING WARFARIN

Wang Y[1], Kong MC[2], Ko Y[1]
[1]National University of Singapore, Singapore, Singapore, [2]Singapore General Hospital, Singapore, Singapore, Singapore

OBJECTIVES: Assessments of adherence to warfarin therapy help improve patients' warfarin-taking behavior and reduce mortality. This study aimed to compare three medication adherence measures, i.e., the 8-item Morisky Medication Adherence Scale (MMAS), the 100-point Visual Analogue Scale (VAS), and pharmacy refill rates, in patients taking warfarin in Singapore. **METHODS:** A cross-sectional survey was conducted in a convenient sample of 174 patients taking warfarin at an anticoagulation clinic in Singapore in 2011. Respondents completed the MMAS and the VAS in Chinese or English depending on their preference. Pharmacy refill rates for warfarin and International Normalized Ratio (INR) values were retrieved from hospital pharmacy databases. The associations among the three measures were examined by the Spearman correlation. Their associations with INR values were examined by the Spearman correlation and Mann-Whitney U test. **RESULTS:** The mean (SD) of the MMAS, the VAS and pharmacy refill rates were 7.0 (1.1), 91.9 (10.8) and 0.9 (0.1), respectively. Using an 80% refill rate as the cut-off point, 85.1% of the respondents were adherent to their warfarin therapy. The MMAS scores were associated with VAS scores and pharmacy refill rates ($r_s = 0.23$ and 0.18; $p < 0.01$ and 0.02, respectively). No association was found between the VAS scores and pharmacy refill rates. The MMAS and pharmacy refill rates were associated with the percentage of INRs within range in the past 2 weeks ($p = 0.02$ and 0.03, respectively). Moreover, pharmacy refill rates were associated with the percentage of time within the therapeutic INR range in the past 3 months and 2 weeks ($r_s = 0.21$ and 0.16; $p = 0.01$ and 0.05, respectively). **CONCLUSIONS:** Most of the patients on warfarin were adherent. Pharmacy refill rate may be a better measure for assessing adherence to warfarin and shows a stronger correlation with INR control than MMAS and VAS.