1st Asia-Pacific Meeting of the Society for Medical Decision Making

Keynote Addresses, KEY-1 through KEY-3 .................................................. E2
Concurrent Oral Presentations, Decision Analysis 1, COS1-1 through COS1-5 ................................................................. E3
Concurrent Oral Presentations, Cost-Effectiveness Analysis, COS2-1 through COS2-5 ......................................................... E4
Concurrent Oral Presentations, Health Economics and Policy, COS3-1 through COS3-5 ......................................................... E7
Concurrent Oral Presentations, Decision Analysis 2, COS4-1 through COS4-6 ................................................................. E10
Plenary Session, PL-1 through PL-3 .................................................................................................................. E12
Student Oral Abstract Presentations, STU-1 through STU-5 .................................................................................. E13
Health Policy Round, HPR-1 through HPR-3 ......................................................................................................... E15
Poster Session 1, P1-1 through P1-36 .................................................................................................................. E16
Poster Session 2, P12-1 through P2-33 .................................................................................................................. E30
E2  •  MEDICAL DECISION MAKING/APRIL 2014

Abstracts

KEY-1 WELCOME FROM THE PRESIDENT-DESIGNATE, NATIONAL UNIVERSITY OF SINGAPORE
Decision Psychology and Shared Decision Making (DEC)
Chorh Chuan Tan, National University of Singapore, Singapore
Welcome to Singapore from Professor Chorh Chuan Tan, President-Designate, National University of Singapore

KEY-2 KEYNOTE ADDRESS
Chih-Liang Yaung, PhD, Asia University, Taiwan
The keynote address features the Honorable Dr. Chih-Liang Yaung, who was Taiwan’s minister of health from 2009 to 2011. Dr. Yaung was also the dean of the College of Public Health at National Taiwan University and is currently on faculty in the Department of Healthcare Administration at Asia University. Dr. Yaung held senior government and academic positions in which he led the development of Taiwan’s health insurance plan, delivered health services to large populations, and responded to health crises like SARS. Drawing on his broad policy and academic experience, Dr. Yaung will highlight key challenges and opportunities in achieving important health goals for the Asia-Pacific region and comment on how past knowledge and experience might be used effectively to address them. He will explicitly address the important roles that SMDM’s core disciplines can play in this important endeavor.

KEY-3 KEYNOTE
Decision Psychology and Shared Decision Making (DEC)
Philip Clarke, PhD, The University of Melbourne, Carlton, Victoria, Australia
Keynote presentation from Philip Clarke, University of Melbourne

COS1-1 A RANDOMIZED TRIAL OF TRAINING STUDENT CLINICIANS IN HOW TO FACILITATE SHARED DECISION MAKING AND COMMUNICATE EVIDENCE: IS THIS THE IGNORED STEP IN EVIDENCE-BASED PRACTICE?
Decision Psychology and Shared Decision Making (DEC)
Sally Bennett, PhD, (Honors), Claire Tomsett, BOccThy, (Hons), Del Mar, MBBS, MA, MD, 1, Bond University, Gold Coast, Australia, (2)University of Queensland, Brisbane, Australia

Purpose: Successful evidence-based practice requires clinicians to practice patient-centred care. Central to this is shared decision making, of which a key skill is communicating evidence clearly to patients. Many clinicians do this poorly, if at all. One reason is lack of training: evidence-based practice courses and workshops typically do not include these skills. Teaching these skills to student clinicians during evidence-based practice training may be valuable, but methods for doing this have not been evaluated. This study aimed to evaluate, in a multisite randomized trial, the effectiveness of a brief intervention designed to increase student clinicians’ ability to facilitate shared decision making and evidence communication.

Method: Medical, physiotherapy, and occupational therapy undergraduate, honours, and postgraduate students (n = 107) were randomly allocated to an intervention or control group. Intervention group participants received brief training in shared decision making and evidence communication skills. At baseline and post intervention, participants performed role-plays that were videorecorded and evaluated by a blinder assessor. The primary outcomes were shared decision making and evidence communication skill, measured using the Observing Patient Involvement (OPTION) scale (range 0–100) and selected items from the Assessing Communication about Evidence and Preferences (ACEPP) Tool (range 0–5). Secondary outcome measures were confidence in these skills, which were measured with an 11-item visual analogue scale; and attitudes toward patient-centred communication, which were measured with the Patient Practitioner Orientation Scale (PPOS), which participants completed as a questionnaire.

Results: Post intervention, intervention group participants scored significantly higher on the OPTION scale (mean between-group difference = 19.2; 95% CI: 12.3 to 26.0), ACEPP items (difference = 1.0, 95% CI: 0.5 to 1.4), confidence measure (difference = 13.3, 95% CI: 7.3 to 19.4), and the Sharing subscale of the PPOS (difference = 0.5, 95% CI: 0.2 to 0.7). The between-group difference for the Caring subscale of the PPOS was not significant.

Conclusion: This brief intervention was effective in improving student clinicians’ ability in, attitude toward, and confidence in shared decision-making facilitation. Following further testing of the longer term effects of this intervention, incorporation of this brief intervention into evidence-based practice courses and workshops should be considered so that student clinicians graduate with these important skills, which are typically neglected in clinician training yet crucial to the uptake of shared decision making.

COS1-2 THE “DELIBERATION-WITHOUT-ATTENTION” EFFECT IN MEDICAL DIAGNOSIS
Decision Psychology and Shared Decision Making (DEC)
Amanda Woolley, BSc and Olga Kostopoulou, PhD, King’s College London, London, United Kingdom

Purpose: Unconscious thought theory states that, in complex tasks that involve working memory load, better decisions can be made after a period of distraction than either immediately or after a period of conscious deliberation. This is known as the Deliberation Without Attention (DWA) effect. The theory purports to apply to a range of cognitive tasks, including diagnosis. Studies that attempted to replicate the effect in clinical diagnosis produced conflicting results but also changed the conditions of the experimental paradigm. We sought to replicate the DWA effect with family physicians in the United Kingdom.

Method: In a mixed factorial design, we presented participants with 3 patient cases on computer. The cases were based on real patients for whom the diagnosis was known. Each case consisted of a number of cues (items of information) presented sequentially and only for 4 seconds each, to increase working memory load. Participants were allocated randomly to 1 of 3 thinking modes: immediate response (limited to 20 seconds), distracted (participants completed an unrelated memory task before diagnosing each case), or self-paced (participants took as long as they needed to diagnose). After each case, participants gave their diagnosis and indicated their confidence in the diagnosis.

Results: Participants were 116 family physicians. Only 27% of responses were correct, that is, they matched the
patients' real diagnoses. Thinking mode was related neither to diagnostic accuracy ($p = 0.43$) nor to confidence ($p = 0.15$). Physicians in the self-paced condition did not take time to think and tended to diagnose within seconds (median: 7 seconds). A significant, inverse relationship was found between diagnostic accuracy and confidence ($t = 3.03, df = 329, p < 0.01$).

Conclusion: The study did not replicate the DWA in medical diagnosis, despite maintaining the conditions of the experimental paradigm. It thus resolves the uncertainty surrounding the effect on clinical diagnosis. The quick responses of physicians in the self-paced condition and the lack of differences in accuracy suggest that all 3 groups used similar cognitive processes, constructing their diagnoses “online” rather than at the end. The period of distraction did not improve information processing. The higher confidence associated with inaccurate diagnoses suggests that high confidence in an initial diagnosis may discourage physicians from revising it to account for subsequent, inconsistent information.

COS1-3 CONCORDANCE IN PREFERENCES FOR END-OF-LIFE CARE BETWEEN ADVANCED CANCER PATIENTS AND THEIR CAREGIVERS IN SINGAPORE: A DISCRETE CHOICE EXPERIMENT

Decision Psychology and Shared Decision Making (DEC)

Chetna Malhotra, MD, MPH1, Eric A. Finkelstein, PhD, MHA1, Ravindran Kanesvaran, MD2 and Assad Farooqui, BA1, (1)Duke-NUS Graduate Medical School, Singapore, Singapore, (2)National Cancer Centre, Singapore, Singapore

Purpose: To assess preferences for end-of-life (EOL) care among advanced cancer patients and their caregivers and the extent of concordance in preferences within patient–caregiver dyads.

Method: A discrete choice experiment was administered to 138 patients with advanced cancers and their caregivers in which they were asked to choose between 2 EOL care scenarios. Each scenario was described through 7 attributes with between 2 and 4 levels for each: severity of pain, amount of care required from family, expected length of survival, quality of health care experience, expected cost of treatment from diagnosis to death, source of payment, and place of death. Ten scenarios were presented to each respondent. Annual willingness to pay (WTP) for specific EOL improvements was estimated for patients and their caregivers. Attribute importance was assessed for each respondent, and the proportion of dyads in which patients and caregivers matched on their top and bottom-ranked attributes was calculated.

Results: Caregivers had a greater WTP for specific EOL improvements compared to patients. Only 28% of the patient–caregiver dyads matched on their topmost EOL attribute, which was most commonly place of death. Similarly, 27% of the dyads matched on their bottom-ranked attribute, which was most commonly care required from family members or friends.

Conclusion: Patients’ priorities for EOL treatments systematically differ from those of their caregivers. As a result, caregivers are likely to make decisions that are not consistent with the patient’s wishes. To the extent possible, physicians should work to ensure that patient’s preferences are elicited as opposed to relying on the recommendations of caregivers when it comes to EOL treatment.

COS1-4 TRANSLATION AND APPLICATION OF THE NUMERACY UNDERSTANDING IN MEDICINE INSTRUMENT IN JAPAN

Decision Psychology and Shared Decision Making (DEC)

Marilyn Schapira, MD, MPH1, Masako Okamoto, PhD2, Yasushi Kytoku, PhD2, Yurie Sugimoto3, Lester Clowney2, Ippeita Dan, PhD2, Tamara Miller, PT, MS4 and Cynthia M. Walker, PhD5, (1)University of Pennsylvania, Philadelphia, PA, (2)Obihiro University of Agriculture and Veterinary Medicine, Obihiro Hokkaido, Japan, (3)Chuo University, Tokyo, Japan, (4)Kyushu Institute of Technology, Tokyo, Japan, (5)Jichi Medical University, Shimotsuke-shi, Japan, (6)University of Wisconsin–Milwaukee, Milwaukee, WI

Purpose: Although understanding numerical information is a crucial factor when people make medical decisions, health numeracy has been understudied in Japan due to the absence of adequate assessment tools. In the United States, one such tool is the Numeracy Understanding in Medicine Instrument (NUMi), which was developed based on an empirically derived health numeracy framework. In the current study, we aimed to examine the validity of NUMi for the Japanese public, and to compare the Japanese (NUMi-J) and original versions.

Method: NUMi-J was prepared using a forward and backward translation, with context and wordings being modified based on feedback from experts in clinical medicine and statistics and pilot respondents ($N = 1054$). In the main survey, responses from a quota sample ($N = 2000$) approximating the composition of the Japanese population were collected. As in the original study, both classical test theory (CTT) and item response theory (IRT) were used to examine the psychometrical nature of NUMi-J. Validity was assessed by examining the association of NUMi-J scores with other measures of numeracy, literacy, psychographics, and levels of understanding of medical information.

Results: The performance of the Japanese sample was better than in the original study (mean scores of 14.5 vs. 13.2, respectively). Consequently, the IRT parameter for difficulty was lower, with the 20 items ranging respectively from −2.70 to 0.96 in the current study and −1.70 to 1.45 in the original study. Except for the difficulty parameter, the results from NUMi-J were comparable with the original ones, with sufficient reliability (Cronbach $\alpha = 0.83$) and discriminability (range of IRT parameter: 0.33 to 2.48). As expected, performance on NUMi-J was more strongly correlated with numeracy scores (11-item objective scale, $r = 0.52$; Berlin Numeracy test, $r = 0.47$) than literacy scores (Health Knowledge test, $r = 0.35$; Science Literacy test, $r = 0.40$), or psychographic scores (Rational-Experiential Index–ability, $r = 0.19$; Self-Efficacy, $r = 0.05$). Finally, logistic regression analysis indicated that the predictive ability of NUMi-J on the understanding of quantitative medical information was the best among all the other parameters (numeracy, literacy, and psychographic; all of the independent variables were standardized; odds ratio of NUMi-J: 2.3).

Conclusion: In its translated form, NUMi worked well in this culturally different population and will be a useful tool for assessing patients’ health numeracy in Japan, especially for those with relatively lower numeracy levels.

COS1-5 PATIENT VERSUS PHYSICIAN PERCEPTIONS OF THE VALUE OF A MEDICAL SERVICE WITH AMBIGUOUS BENEFITS

Decision Psychology and Shared Decision Making (DEC)

Sorapop Kiatpongsan, MD1, Anjali Kaimal, MD, MAS2, Michael I. Norton, PhD3 and Milton C. Weinstein, PhD4, (1)Harvard...
Interfaculty Initiative in Health Policy, Cambridge, MA, (2) Massachusetts General Hospital, Harvard Medical School, Boston, MA, (3) Harvard Business School, Boston, MA, (4) Harvard School of Public Health, Boston, MA

**Purposes:** To compare patients’ and physicians’ perceptions of the value of a medical service, such as cord-blood stem cell banking, whose future benefits are ambiguous, and to investigate if the differences in perceptions derive from discrepant assessments of the probability of realizing benefits, of the magnitude of benefits, or both. Also, to investigate if the differences in perceptions depend on whether the service offers unambiguous benefits, (B) both unambiguous and ambiguous benefits, or (C) only ambiguous benefits—and reported their family’s willingness to pay for the service. Physicians were also asked to predict a typical family’s willingness to pay in each scenario.

**Methods:** Four hundred thirty-nine 18–45-year-old U.S. women (“patients”) and 59 U.S. obstetric providers (“physicians”) were asked to predict benefits (probability and magnitude) of cord-blood stem cell banking within the next 5, 10, 20, and 40 years. Patients were then randomly assigned to 1 of 3 scenarios representing varying degrees of ambiguity about the benefits—(A) only unambiguous benefits, (B) both unambiguous and ambiguous benefits, or (C) only ambiguous benefits—and reported their family’s willingness to pay for the service. Physicians were also asked to predict the typical family’s willingness to pay in each scenario.

**Results:** Patients’ predictions of the probability of realizing benefits are significantly more favorable than physicians’ (16%, 26%, 39%, and 52% versus 2%, 4%, 7%, and 12% at 5, 10, 20, and 40 years, respectively; \(p < 0.001\) for all). See Figure 1. Predictions of magnitude of benefits, in contrast, were not significantly different at 5, 10, and 20 years, but were significantly more favorable among patients at 40 years (\(p < 0.01\)).

Physicians underestimated families’ willingness to pay in all scenarios for families with income < $50,000 (\(p < 0.05\)) but not for families with income $50,000–100,000. Interestingly, a service offering both unambiguous and ambiguous benefits has significantly lower value than a service with only unambiguous benefits to families with income $50,000–100,000 (\(p < 0.05\)), but not to physicians or to families with income < $50,000.

**Conclusions:** Patients and physicians have different perceptions of the value of a medical service with ambiguous future benefits, owing primarily to different perceptions of the probability of realizing the benefits. Physicians underestimated willingness to pay for a service in low-income families. These differences suggest the value of improved communication between physicians and patients when the benefits of a medical service are ambiguous.
Conclusions: Our contemporary evaluation of radical cystectomy in the United States suggests an inverse relationship between surgeon volume and postoperative 90-day major complication rates as well as 90-day direct hospital costs. Preventing major complication via centralization of care may reduce the burden of disease. Primary mechanisms underlying this effect, such as perioperative process of care variables, need to be investigated.

COS2-2 ISSUES WITH COST-EFFECTIVENESS MODELING OF DIAGNOSTIC TESTS—CASE STUDY OF ISCHEMIC CARDIOMYOPATHY
Health Policy, Health Services, and Applied Health Economics (HEP)
Praveen Thokala, PhD, University of Sheffield, Sheffield, United Kingdom

Purpose: To estimate the cost-effectiveness of diagnostic pathways for assessing patients with ischemic cardiomyopathy to identify patients with viable myocardium with a view to revascularization.

Method: A decision analytic model was developed to estimate the cost-effectiveness of diagnostic strategies for assessing patients with ischemic cardiomyopathy. The different diagnostic pathways were applied to a hypothetical cohort of patients with ischemic cardiomyopathy, and the probability of successful identification of viable myocardium and nonviable myocardium was determined by the accuracy of the diagnostic pathway. It was assumed that patients diagnosed with viable myocardium would be managed promptly by revascularization and that the patients diagnosed with nonviable myocardium would be on medical therapy. The model assigned each patient a risk of death and rehospitalization depending on whether they are truly viable and whether they had revascularization or not. Each patient then accrued lifetime QALYs. Health care costs were also accrued through measuring diagnostic costs and treatment costs, depending on the pathway and their treatment status.

Results: All the diagnostic pathways are cost-effective when compared with no testing at the current UK National Institute for Health and Care Excellence threshold; this suggests that all the current services for diagnosing viable myocardium are a cost-effective use of National Health Service resources irrespective of the diagnostic pathway used. For services that need to decide the most cost-effective strategy starting from scratch, then stress cardiac magnetic resonance is the most cost-effective strategy.

Conclusion: There are a number of issues with abstracting the data for cost-effectiveness modeling of diagnostic tests. For
example, the diagnostic accuracy depends on the type of index test, gold standard test, and threshold used. Furthermore, the benefits of treatments after diagnosis are not always clear and might be linked to the type of diagnostic test. Appropriate caution needs to be taken when evaluating diagnostic tests.

COS2-3 COST-EFFECTIVENESS ANALYSIS OF HLA-B*5801 TESTING IN PREVENTING ALLOPURINOL-INDUCED SJS AND TEN IN THAILAND

Health Policy, Health Services, and Applied Health Economics (HEP)
Surasak Saokaew, BPharm, PharmD1, Wichittra Tassameeyakul, PhD2, Ratree Maenthaisong, PhD3 and Nathorn Chaiyakunapruk, PharmD, PhD4, (1)University of Phayao, Phayao, Thailand, (2)Khon Kaen University, Khon Kaen, Thailand, (3)Mahasarakham University, Mahasarakham, Thailand, (4)Monash University Sunway Campus, Selangor, Malaysia

Purpose: Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), caused by allopurinol therapy are strongly associated with the human leukocyte antigen (HLA) HLA-B*5801. Identification of the HLA-B*5801 genotype before prescribing allopurinol offers the possibility of avoiding this drug in individuals with such susceptibility and preventing allopurinol-induced SJS and TEN. Because there is a paucity of evidence about the economic value of such testing, this study aims to determine the cost-effectiveness of genetic testing for HLA-B*5801 compared with usual care (no genetic testing) before allopurinol administration in Thailand.

Method: A decision analytical model was used to estimate life year costs and outcomes represented as quality-adjusted life years (QALYs) gained. Use of the Markov model is needed to reflect long-term outcomes because some surviving SJS and TEN patients may suffer from long-term sequelae. The model was populated with relevant information of the association between gene and allopurinol-induced SJS and TEN, test characteristics, costs, and epidemiologic data for Thailand from a societal perspective. Input data were obtained from the literature and a retrospective database analysis. The results were expressed as incremental cost per QALY. A base-case analysis was performed for patients at age 30 from the societal perspective. A series of sensitivity analyses including threshold, scenario, one-way, and probabilistic sensitivity analyses were constructed to explore the robustness of the findings.

Results: Based on a hypothetical cohort of 1000 patients, the incremental total cost was 923,919 Thai baht (THB) and incremental QALY was 4.65 with an incremental cost-effectiveness ratio of 198,486 THB (US$6403) per QALY. Genetic testing for HLA-B*5801 before allopurinol administration was not considered a cost-effective intervention, based on a standard cost-effectiveness threshold of 160,000 THB per QALY in Thailand. However, when the cost of genetic testing was less than 822 THB (US$26.50), the test becomes cost-effective at the societal willingness-to-pay level of 160,000 THB (US$5161) per QALY.

Conclusion: Genetic testing for HLA-B*5801 before allopurinol administration might not be considered as a cost-effective intervention. However, consideration of other factors, including ethical, legal, and social implications, is needed to make informed policy decision making.

COS2-4 COST-EFFECTIVE SCREENING FOR METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) COLONIZATION UPON HOSPITAL ADMISSION

Health Policy, Health Services, and Applied Health Economics (HEP)
Yan Sun, PhD1, Palvannan Kannapiran1, Kelvin Teo1, Bee Hoon Heng, MBBS2 and Brenda Ang, MBBS2, (1)National Healthcare Group, Singapore, Singapore, (2)Tan Tock Seng Hospital, Singapore, Singapore, Singapore

Purpose: MRSA is one of the most common sources of nosocomial infections, and it significantly contributes to poorer clinical outcomes and higher utilization. Screening for MRSA colonization on admission and isolation of identified MRSA carriers have been proposed as strategies to prevent nosocomial spread of MRSA. There are a few screening approaches available: universal screening versus selective screening; and rapid polymerase chain reaction (PCR) screening versus culture screening. The goal of this study is to identify the most-cost effective screening strategy in the Singaporean context by comparing rapid PCR screening for all, rapid PCR for selected high-risk patients, culture screening for all, culture screening for selected high-risk patients, and no screening at all.

Method: All admitted patients to Tan Tock Seng Hospital in 2012 were included. A risk prediction model was developed and validated to select high-risk patients for screening, using logistic regression and Bayesian information criteria. Markov decision analysis was applied to identify the most cost-effective screening strategy. The 5 strategies were compared in terms of the cost per infection prevented: PCR screening for all, PCR screening for selected high-risk patients, or no screening. The modeling cycle (time length of transition) is 1 hour. The total modeled exposure time in hospital is about 120 hours (5 days). Costs to hospital will be used as the primary cost measure. We will also measure the cost from the perspectives of patients.

Results: In the risk stratification model, the important predictors identified were MRSA colonization history; elder age; infection or hospitalization in last 3 months; admitted from nursing homes; and with kidney diseases or stroke. The c-statistics of the receiver operating characteristic (ROC) of the prediction model was 0.82 (95% CI: 0.81–0.83). The MRSA prevalence at admission was about 7.3% in 2012. Considering the cost of infection treatment, the incidence rate of hospital infection, and the sensitivity and specificity of predicting the high-risk patients, the most cost-effective screening strategy was selective screening, which cost about $15,800 (95% CI: $7800–21,900) per infection prevented compared with no screening.

Conclusion: The study provides an evidence-based decision tool for policy makers to standardize care and set guidelines on cost-effective infectious disease control in hospitals.

COS2-5 COST-EFFECTIVENESS ANALYSIS OF INNOVATIVE TRIPLE THERAPY WITH PROTEASE INHIBITORS IN TREATMENT-NAÏVE PERSONS WITH HEPATITIS C USING A STOCHASTIC AGENT-BASED MODEL

Health Policy, Health Services, and Applied Health Economics (HEP)
Hla-Hla Thein, MD, MPH, PhD1, Marija Gojovic, PhD2, Shamin Kinathil, MSc1, Lisa Maher, PhD3, Gregory Dore, MD, PhD3 and David Wilson, PhD3, (1)Dalla Lana School of Public Health,
Purpose: Hepatitis C virus (HCV) protease inhibitors in combination with pegylated interferon and ribavirin (PEG-IFN–RBV) are the new standard-of-care treatment for persons infected with HCV genotype 1. Despite treatment advances for hepatitis C, treatment uptake has remained low in Australia. Our objectives were to simulate the spread of HCV and HIV infections in Australia, and assess the burden of disease and cost-effectiveness of innovative triple therapy in treatment-naïve persons with HCV throughout a lifetime from a societal perspective.

Method: We developed a stochastic agent-based model. An artificial population of 10,000 agents with demographic and behavioral characteristics was created to represent the population of Australia. Contacts among the agents were based on mixing groups according to an agent’s personal and behavioral characteristics. The probability of infection in a given period of time was determined by the number of contacts, transmission probability per contact established, susceptibility of the observed agent, and infectivity of the contacted agent. The HCV model describes the progression of HCV stages: acute HCV, fibrosis stages 0–4, decompensated cirrhosis, hepatocellular carcinoma, liver transplantation, and liver-related death. Treatment scenarios include 1) dual therapy (PEG-IFN–RBV), 2) response-guided dual therapy (RGT), 3) triple therapy with boceprevir, and 4) triple therapy with telaprevir for persons with HCV genotype 1. Model calibration, uncertainty, and sensitivity analyses were performed. An economic model was developed to conduct cost-utility analysis. Outcomes included numbers of HCV infections averted, lifetime health care costs, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratios.

Results: In 2010, approximately 4000 persons with hepatitis C were treated with standard dual therapy. Our model estimated that there were approximately 10,000 new cases of hepatitis C, 560 new cases of decompensated cirrhosis, 143 new cases of hepatocellular carcinoma, 42 liver transplant cases, and 347 liver-related deaths. Throughout the lifetime with the same treatment rates, these new cases would relatively increase between 37% and 116% under standard dual therapy. Compared to standard dual therapy, there would be a significant decline in the number of new advanced cases and the number of persons receiving liver transplantation in triple therapies, QALY gains, and cost savings in both triple therapies and RGT.

Conclusion: Both triple therapies and response-guided therapy are cost saving. Strategies to improve new treatment uptake are critical to mitigate the future burden of hepatitis C.

COS3-2 QUANTITATIVE RISK–BENEFIT ANALYSIS ON DOSAGE OF INTRAVENOUS TISSUE-TYPE PLASMINOGEN ACTIVATOR ON ASIAN PATIENTS WITH STROKE THROMBOLYSIS

Cheng-Yang Hsieh, MD, Jason C. Hsu, PhD and Yea-Huei Kao Yang, National Cheng Kung University, Tainan, Taiwan

Purpose: Intravenous tissue-type plasminogen activator (t-PA) is the only effective treatment for acute ischemic stroke in current practice. Recently, it has been used at lower doses in Asian countries due to concerns regarding the safety and cost of the
standard dose approved in Western countries. We aimed to evaluate the risk–benefit ratio of t-PA for Asian stroke patients at diverse dosages of the 1) standard dose (0.9 mg kg⁻¹) and 2) low dose (0.7 mg kg⁻¹) to provide evidence for decision making of prescribing and reimbursement.

**Method:** A decision model was created to compare the risk–benefit ratio of the standard and low doses of t-PA. The risk measures were the occurrence of symptomatic intracerebral hemorrhage (SICH) and mortality respectively and in combination; the efficacy measures were the proportion of patients with a modified Rankin Scale (mRS) score ≤3 at 1 months. The estimates were obtained from the published meta-analysis literature about Asian populations. The risk and benefit of both dosages were compared in the form of incremental risk–benefit ratios (IRBRs). Probabilistic sensitivity analysis and one-way sensitivity analysis were conducted to incorporate uncertainty in model parameters and to estimate the impact of changing each key parameter individually.

**Results:** When SICH was used as the risk measure, low-dose t-PA (IRBR = 0.3729) showed increased risk and benefit as compared to standard-dose t-PA. However, standard-dose t-PA was dominated over by low-dose t-PA (IRBR = −0.5329), when mortality was used as the risk measure. Furthermore, the result of combined SICH and mortality revealed that the standard-dose t-PA was favorable as compared with low-dose t-PA with the IRBR of −0.3529. In sensitivity analyses, the IRBR ratios were robust to variations in utility of effectiveness and mortality of low-dose t-PA.

**Conclusion:** Our results indicated that the standard-dose t-PA might be preferred over low-dose t-PA considering both risks and benefits. Selecting an appropriate dosage of t-PA according to both risk and benefit simultaneously is suggested to achieve better treatment goals for acute ischemic stroke in Asian populations.

**COS3-3 IMPROVING CERVICAL CANCER SCREENING—BALANCING DETECTED CANCER PRECURSORS AND RESOURCE USE**

**Health Policy, Health Services, and Applied Health Economics (HEP)**

**Kine Pedersen**, Sveinung Wergeland Sørbye, MD, PhD², Stefan Lönnerg, MD, PhD², Emily Burger, MPH³ and Ivar Sambø Kristiansen, MD, PhD, MPH³, (¹)University of Oslo, Oslo, Norway, (²)University Hospital of North Norway, Tromsø, Norway, (³)Cancer Registry of Norway, Oslo, Norway

**Purpose:** Norwegian health authorities are considering implementing primary human papillomavirus (HPV) testing in screening for cervical cancer for women 34–69 years. We aim to compare the current screening algorithm (i.e., primary cytology every 3 years) with primary HPV testing every 6 years to enumerate resource trade-offs in terms of detection of high-grade cancer precursors (CIN2+) and number of colposcopies performed.

**Method:** We developed a probabilistic decision tree simulation model to estimate outcomes associated with different screening algorithms. The model uses epidemiologic data from the Cancer Registry of Norway and follows individual women attending primary screening at baseline through subsequent 6 years, allowing for loss to follow-up and spontaneous regression of CIN2+. We compared the current Norwegian strategy (Strategy 1) entailing primary cytology with cotesting (HPV and cytology) for delayed triage of atypical and low-grade cytology results (ASC-US–LSIL) with 2 alternative HPV strategies. Both HPV strategies involve primary HPV testing followed by reflex cytology for any HPV-positive result. For Strategy 2, the threshold for diagnostic colposcopy or biopsy is high-grade atypical cells or worse (ASC-H+), whereas Strategy 3 involves a lower threshold on the cytology result, that is, any atypical cells (ASC-US+). Primary outcomes were CIN2+ detected and the number of colposcopies and biopsies performed.

**Results:** Among 100,000 women, we project the 3 strategies would detect, respectively, 503, 338, and 715 CIN2+, and require 2685, 1925, and 3696 colposcopies. Consequently, the number of colposcopies per CIN2+ detected was 5.34, 5.70, and 5.17 for Strategy 1, 2, and 3, respectively. Strategy 2 results in a 32% reduction in detected CIN2+ while simultaneously increasing the number of colposcopies per CIN2+ by 7% compared to the current strategy, thus providing a less efficient algorithm. Conversely, Strategy 3 may increase detection of CIN2+ by 42% at a cost of 38% more colposcopies, and detect CIN2+ more efficiently than the current strategy (i.e., decreasing the colposcopy-to-CIN2+ ratio by 3%).

**Conclusion:** There is a potential for improving the current screening algorithm by implementing screening with primary HPV testing. However, unless the lower threshold for referral to colposcopy and biopsy is used, primary HPV testing may detect fewer cancer precursors and require more colposcopies per detected case. The differential effectiveness of the 3 algorithms in terms of preventing invasive cancer will depend on the extent to which cancer precursors regress or progress into cancer.

**COS3-4 HEALTH CARE RESOURCE USE AND COSTS ANALYSIS FROM A CHINESE PAYER PERSPECTIVE OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS NOSOCOMIAL PNEUMONIA (MRSA-NP) PATIENTS TREATED WITH LINEZOLID OR VANCOMYCIN, WITH A FOCUS ON PATIENTS DEVELOPING RENAL FAILURE**

**Health Policy, Health Services, and Applied Health Economics (HEP)**

**Yin Wan, MS¹, Qiang Li, MSc², Xiyi Chen, MSc², Seema Haider, PhD³, Sizhu Liu, MS³ and Xin Gao, PhD³, (¹)Pharmerit, Bethesda, MD, (²)Surgical Intensive Care Unit, Department of General Surgery, Jiangsu Province Hospital, Nanjing, China, (³)Pfizer Inc., Beijing, China, (⁴)Pfizer Inc., Groton, CT

**Purpose:** To assess the health care resource utilization (HCRU) and costs from a Chinese payer’s perspective (Nanjing city) for MRSA-NP in hospitalized adults treated with linezolid or vancomycin, including the economic impact of renal failure.

**Method:** A post-hoc analysis was conducted using data from a phase IV, randomized, double-blind, global multicenter study (Wunderink, CID: 2012, NCT00084266) in culture-proven MRSA-NP patients [microbiologic-confirmed intent-to-treat (MITT) cohort]. Renal failure was defined by ≥1 of the following: 1) investigator-reported renal failure adverse events, 2) acute kidney injury defined renal failure using RIFLE criteria, and/or 3) initiated dialysis after study drug started. HCRU from treatment initiation through end-of-study visit (EOS) included study drug use, mechanical ventilator (MV) days, intensive care unit (ICU) days, length of stay (LOS), and dialysis days. Chinese costs were calculated by applying Nanjing-specific unit costs (2012 ¥) to the HCRU collected from the global trial. Between-group differences were tested using a chi-square test for renal failure rates and a t test for HCRU and costs, and the nonparametric Wilcoxon rank-sum test for comparisons with sample size <30.
ABSTRACTS

Table 1

<table>
<thead>
<tr>
<th>Mean (¥)±SD(¥)</th>
<th>N</th>
<th>Total Costs (¥)</th>
<th>Bed-Day Costs (¥)</th>
<th>MV Costs (¥)</th>
<th>Dialysis Costs (¥)</th>
<th>Study Drug Costs(¥)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MITT Cohort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Linezolid</td>
<td>224</td>
<td>77,089±51,211</td>
<td>64,708±46,381</td>
<td>2978±3333</td>
<td>358±3051*</td>
<td>9045±3867*</td>
</tr>
<tr>
<td>- Vancomycin</td>
<td>224</td>
<td>77,695±52,450</td>
<td>67,168±45,935</td>
<td>2914±3276</td>
<td>164±7688*</td>
<td>5968±3792*</td>
</tr>
<tr>
<td>MITT Cohort by Renal Failure</td>
<td>448</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Without developing renal failure</td>
<td>405</td>
<td>74,944±49,632*</td>
<td>64,385±45,238*</td>
<td>2798±3243*</td>
<td>72±992*</td>
<td>7689±4091*</td>
</tr>
<tr>
<td>- Developing renal failure</td>
<td>43</td>
<td>100,449±65,080*</td>
<td>80,569±52,089*</td>
<td>4337±3555*</td>
<td>9762±16,473*</td>
<td>5782±4081*</td>
</tr>
<tr>
<td>Renal Failure Patients†</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Linezolid</td>
<td>9</td>
<td>81,468±42,519</td>
<td>62,222±33,972</td>
<td>2720±1312</td>
<td>6894±12,962</td>
<td>9632±4381*</td>
</tr>
<tr>
<td>- Vancomycin</td>
<td>34</td>
<td>105,474±69,484</td>
<td>85,462±55,294</td>
<td>4765±3843</td>
<td>10,521±17,372</td>
<td>4763±3382*</td>
</tr>
</tbody>
</table>

*Significantly different at α = 0.05 versus VAN or versus patients developing renal failure.
†Renal failure developed after randomization.
MV, mechanical ventilator; MITT, microbiologic-confirmed intent to treat.

Results: MITT patients (224 linezolid and 224 vancomycin) were followed for 23.3±10.1 days (linezolid 23.0±10.0 and vancomycin 23.6±10.2), with 39% hospitalized at EOS for both linezolid and vancomycin. Linezolid versus vancomycin had similar total costs: ¥77,089±¥51,211 versus ¥77,695±¥52,450, p = 0.90. Linezolid patients had a significantly lower incidence of renal failure versus vancomycin (4% [n = 9] vs. 15% [n = 34], p < 0.001). Patients with renal failure (vs. no renal failure) had significantly more MV days (12.0±9.9 vs. 7.8±9.0, p = 0.004) and ICU days (13.5±9.9 vs. 10.0±8.5, p = 0.013), had similar LOS (18.8±9.8 vs. 18.2±9.6, p = 0.74), and incurred higher total costs (¥100,449±¥65,080 vs. ¥74,944±¥49,632, p = 0.002; Table 1). Linezolid-treated (vs. vancomycin-treated) patients who developed renal failure trended toward lower HCRU (MV days: 7.6±3.6 vs. 13.2±10.7, p = 0.21; ICU days: 9.9±6.6 vs. 14.4±10.5, p = 0.30; LOS: 16.1±11.0 vs. 19.5±9.5, p = 0.26) and, when correcting for mortality differences using a per-person day approach, tended to incur lower per person-day total cost (¥4,805±¥1,930 vs. ¥5,347±¥2,395, p = 0.32). Table 1 reports the unadjusted mean costs for various cohorts.

Conclusion: Linezolid was associated with a significantly lower incidence of renal failure than vancomycin. HCRU and costs from a Chinese (Nanjing) payer perspective were similar between linezolid and vancomycin. Patients who developed renal failure incurred more HCRU and greater costs versus those who did not.

Purpose: To estimate and compare real-world total health care costs for clinically relevant androgen deprivation therapy (ADT) regimens and indications for prostate cancer (PC).

Method: Using a cancer registry and health care administrative databases in the province of Ontario, Canada, PC patients who started >90 days of ADT at age >66 in 1995–2003 were selected and classified by ADT regimen and indication. We used an outpatient prescription drugs database and hospital records to determine the ADT regimen: medical castration, orchietomy, anti-androgen monotherapy, combined androgen blockade (CAB) medical (medical castration plus anti-androgen), or CAB surgical (orchietomy plus anti-androgen). We used prescription drug data, hospital procedure codes, and diagnostic codes to determine indications for ADT: neoadjuvant, adjuvant, metastatic disease, biochemical recurrence, or primary (nonmetastatic). Using nonparametric regression methods, we computed first-year, 5-year, and 10-year longitudinal total direct medical costs (CAD2009).

Results: The cohort numbered 21,818 (mean age: 75 years; 54% alive on December 31, 2007). Mean first-year costs were highest among metastatic patients: from $24,403 for orchietomy to $32,221 for anti-androgen monotherapy. Mean first-year costs for all other regimens and indications were below $20,000 except for medical castration for recurrence ($24,716). Primary treatment with orchietomy was the least costly ($14,218). CAB medical was the most costly regimen in the first year for primary, neo-adjuvant, and adjuvant indications. Mean 5-year and 10-year costs were lowest for neoadjuvant treatment, with differences of <$3,000 between regimens. Orchiectomy regimens were the least costly, but were limited to primary and metastatic indications. CAB medical was generally more costly than anti-androgen monotherapy or medical castration alone. Annual costs were highest in the first year of ADT, likely due to drug or orchietomy and costs associated with indication (radiation, metastases, and recurrence). Outpatient drugs, including pharmacological ADT, accounted for 17–65% of total first-year costs.

Conclusion: Surgical castration, if clinically relevant, represents considerable cost savings over pharmacological ADT. Monotherapies are more economical than CAB. Metastatic disease is the most costly indication. Administrative data allow the
estimation of costs in large population-based cohorts throughout long periods of time. Their lack of detailed clinical data can be overcome by developing algorithms (e.g., for treatment regimens and indications). Our real-world costs provide high-quality data for PC cost-effectiveness and decision models.

**COS4-1 CAN AN INTERACTIVE DECISION AID IMPROVE SHARED DECISION MAKING? PRELIMINARY BASELINE RESULTS FROM DATES (DECISION AID TO TECHNOLOGICALLY ENHANCE SHARED DECISION MAKING)**

Decision Psychology and Shared Decision Making (DEC)

Masahito Jimbo, MD, PhD, MPH1, Melissa Plegue, MA1, Ananda Sen, PhD1, Sarah T. Havley, PhD, MPH2, Karen Kelly-Blake, PhD3 and Mack Ruffin IV, MD, MPH1, (1)University of Michigan, Ann Arbor, MI, (2)University of Michigan, Ann Arbor VA Health System, Ann Arbor, MI, (3)Michigan State University College of Human Medicine, East Lansing, MI

**Purpose:** Provide a preliminary baseline report on the impact of a web-based decision aid (DA) on colorectal cancer (CRC) screening in a 4-year National Cancer Institute–funded study (R01CA152413), Decision Aid to Technologically Enhance Shared Decision Making (DATES).

**Method:** This is a 2-armed randomized controlled trial (target: 300 patients per arm). The intervention arm features DATES Web, the interactive DA that elicits patient risk for CRC and clarifies preference for a specific CRC screening test option. The control arm features a web-based DA with the same information but without the interactive features. Settings are 10 community- and university-based primary care practices in Metro Detroit. Participants are adults aged 50 to 75 years, not currently on CRC screening, and scheduled for a regular visit with their physicians. In the clinic before the patient–physician encounter, participants complete a Patient Baseline Survey before being randomized. Data are collected after the patient reviews the respective website (Post-Intervention Survey), during the patient–physician encounter (digital audio recording), and after it (Post-Encounter Survey). A 6-month chart audit is performed to determine whether the patient underwent CRC screening. Primary outcomes are patient uptake of CRC screening, patient decision quality (knowledge, preference clarification, and intent), degree of shared decision making, and patient–physician agreement regarding test preference. Independent samples t tests and Pearson’s chi-square tests were used to compare the baseline demographic and web usage data between the arms.

**Results:** So far, 258 participants have been recruited. Mean age ± standard deviation is 58.9 (6.9) years; racial distribution is 44.1% Caucasian and 48.0% African American; and gender distribution is 52.5% women and 47.5% men, with difference between the 2 arms statistically not significant (NS). Differences in knowledge, attitude, perceived self-efficacy, decision-making preference, and test preference at baseline are statistically NS between the 2 arms. Average duration of website usage is 23.9 minutes in the control arm vs. 25.6 minutes in the intervention arm (NS).

**Conclusion:** The recruitment and randomization processes have been successful. The results of our study will be among the first to examine the effect of a real-time preference assessment exercise on CRC screening and mediators, and, in doing so, will shed light on patient–physician communication and the shared decision-making “black box” that currently exists between the delivery of DAs to patients and the subsequent patient behavior.

**COS4-2 PHYSICIAN ROLE IN PATIENTS’ DECISIONS ABOUT PROSTATE CANCER TREATMENT**

Decision Psychology and Shared Decision Making (DEC)

Angela Fagerlin, PhD1, Margaret Holmes-Rovner, PhD2, Sara J. Knight, PhD3, Bruce Ling, MD, MPH4, Stewart Alexander, PhD5, James A. Tulsuk, MD5, David Rovner, MD5, Valerie C. Kahn, MPH5 and Peter A. Ubel, MD6, (1)VA Ann Arbor Healthcare System & University of Michigan, Ann Arbor, MI, (2)Center for Ethics, East Lansing, MI, (3)Department of Veterans Affairs, Washington, DC, (4)University of Pittsburgh, Pittsburgh, PA, (5)Duke University, Durham, NC, (6)Michigan State University, East Lansing, MI, (7)University of Michigan, Ann Arbor, MI

**Purpose:** The role of physicians in medical decisions is critical, and it is important to understand how patients’ interactions with their physicians affect their treatment preferences and their perception of the decision-making process.

**Method:** 1015 men were recruited from 4 VA hospitals immediately after receiving a biopsy for suspicion of prostate cancer. Men received an education intervention and completed 3 surveys: at their biopsy, immediately before receiving their cancer diagnosis, and 1 week following diagnosis. Only patients with a positive biopsy result indicating localized prostate cancer (PSA < 20 and Gleason score of 6–7) were eligible to complete the Time 2 and 3 surveys (N = 335). Key measures included the COMRADE (Combined Outcome Measure for Risk Communication and Treatment Decision Making Effectiveness), the PICS (Perceived Involvement Scale), perceptions of physician recommendations, treatment preferences, and treatment received.

**Results:** Overall, patients reported high satisfaction with their physician and their communication with their physician (Ms = 4.25 and 4.43 on COMRADE subscales and M = 0.73 on the PIC Doctor Facilitation subscale). Neither race, nor education, nor literacy, nor numeracy predicted patients’ satisfaction with their physician. Higher scores on PICS predicted more desire for a strong physician role in decision making (and thus less of a patient role in decision making; B = -0.14, p = 0.03).

Patients indicated that they believed that it is very important to undergo the treatment that their doctor thinks is best for them (M = 8.6 on a 10-point scale). 73.8% of patients received a treatment recommendation from their urologist (45.0% of the recommendations were for surgery, 3.3% for radiation, and 32.8% for active surveillance). Patients indicated that the recommendations were moderately strong (M = 3.8 on 5-point scale) and were moderately influential on their treatment decision (M = 3.7 on 5-point scale).

After talking to their doctor about their treatment choices, the only factor that influenced the treatment that patients received was their physicians’ recommendations (factors not influential included race, numeracy, literacy, patients’ own treatment preferences, and knowledge).

**Conclusion:** Physicians play an important role in patients’ decisions, both by self-report and as reflected in the patients’ actual treatment decisions. Patients reported high satisfaction with their interaction with their urologists and believe that their recommendations play a role in their decision-making process. However, there is concern that patients’ values may not be
reflected in decisions given the strong impact of physicians’ recommendations.

COS4-3 CERVICAL CANCER INFORMATION NEEDS OF DISADVANTAGED, RURAL WOMEN IN TAMIL NADU, INDIA: DESIGNING A PATIENT-CENTERED INTERACTIVE VOICESITE ACCESSED VIA MOBILE PHONE

Decision Psychology and Shared Decision Making (DEC)

Lyndal Trevena, MBBS, MPH, PhD1, Rita Isaac, PhD2, Ian Olver, MBBS, PhD1 and Madelon Finkel, PhD2, (1)University of Sydney, Sydney, Australia, (2)Christian Medical College, Vellore, India, Vellore, India, (3)Weill Cornell Medical College, New York, NY

Purpose: Cervical cancer is the most common cause of cancer death in Indian women. Once-only “Screen and Treat” using Visual Inspection with Acetic Acid (VIA) and cryotherapy can reduce mortality by one-third. Some states are implementing such programs, but challenges remain to improve women’s cervical cancer literacy. Peer education programs through women’s self-help groups (SHGs) are effective at raising awareness about screening options, but peer educators often lacked credibility and women want more informational support. This study explores the informational needs of women with a view to developing an interactive audio-site accessed via mobile phones.

Method: Focus group discussions with 62 peer educators and members of SHGs in 3 villages of the KV Kuppam block, Tamil Nadu. Discussions about barriers and facilitators to screening and women’s information needs were audio-recorded, translated, and transcribed from Tamil to English. One foreign and one local researcher independently analyzed the data and identified key themes. The VoiceSite design was informed by these data.

Results: Seven core themes were found. 1) Competing priorities were a challenge for some women. 2) Information needs were the greatest barrier to cervical cancer prevention and treatment. 3) Women wanted to make an informed choice, and understand the advantages and disadvantages of screening, along with available treatment options. 4) Stigma was a major barrier to information seeking. 5) Most households had at least one mobile phone; audio information using female voices via mobile phones would provide some anonymity and be acceptable for most women. 6) Women preferred cervical cancer to be discussed in the broader context of women’s health. 7) Most household mobile phones were controlled by husbands, and the VoiceSite should be clearly associated with the well-respected local hospital. The VoiceSite design has 4 sections: 1) a story of 2 villages, 2) a dialogue answering 10 questions, 3) clinic schedules, and 4) an opportunity to “post” questions. Uptake and patterns of use and acceptability are being tested in 2 villages (n = 2000).

Conclusion: Disadvantaged, rural women want to make informed choices about cervical cancer screening and treatment. Stigma, low literacy, and spouse roles are major barriers to information access. A mobile phone–delivered VoiceSite is being developed and pilot tested to address these needs.

COS4-4 EVALUATION OF RISK FACTORS TO PREDICT NOSOCOMIAL INFECTION IN CHILDREN IN INDONESIA

Decision Psychology and Shared Decision Making (DEC)

Indah K. Murni, MD, MMed1, Trevor Duke, MD, PhD, FRACP2, Sharon Kinney, MN, PhD, Andrew J. Daley, MBBS, MMed, FRACP3 and Yati Soenarto, MD, PhD1, (1)Department of Pediatrics, Dr. Sardjito Hospital/Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia, (2)Centre for International Child Health, Department of Pediatrics, the Royal Children’s Hospital, the University of Melbourne, Melbourne, Australia, (3)Department of Nursing and Pediatrics, The University of Melbourne, The Royal Children’s Hospital Melbourne, Melbourne, Australia, (4) Department of Microbiology, Infection Prevention and Control, The Royal Children’s Hospital Melbourne, Melbourne, Australia, (5)Department of Pediatrics, Dr. Sardjito Hospital/Faculty of Medicine Universitas Gadjah Mada, Yogyakarta, Indonesia.

Purpose: Nosocomial infections are one of the significant causes of morbidity and mortality. Evaluating risk factors to predict nosocomial infection is important to improve clinical outcomes. We aimed to evaluate the accuracy of risk factors to predict nosocomial infections in children.

Method: A prospective cohort study was conducted during 28 months at a teaching hospital in Yogyakarta, Indonesia. All consecutive patients admitted to the pediatric ICU and pediatric wards >48 hours were eligible. Those eligible patients were observed daily to identify the presence of nosocomial infection based on Centers for Disease Control and Prevention (CDC) criteria. The risk factors of nosocomial infections were identified. Logistic regression was used to identify independent predictors and assigned the risk score (value). We then computed the score for each patient and chose the cutoff value of score. We finally performed a receiver operating characteristic (ROC) curve analysis and computed the area under the curve (AUC).

Results: A total of 2646 patients were recruited. Of them, 400 were diagnosed as nosocomial infections. The cumulative incidence of nosocomial infection was 15.1%. In multivariate analysis, length of stay >7 days; suffered from syndrome; use of central venous line (CVL), urine catheter, or mechanical ventilation; and exposure to irrational antibiotics were independently associated with increased risk of nosocomial infections with the following adjusted odds ratios (95% CI): 22.46 (14.73–34.26); 1.98 (1.33–2.93); 2.45 (1.18–5.08), 3.56 (2.34–5.40), and 2.50 (1.57–3.99); and 2.13 (1.58–2.87), respectively. A score of these risk factors accurately predicts nosocomial infections with the AUC of 0.86.

Conclusion: This study proves that length of stay >7 days; presence of syndrome; use of CVL, urine catheter, or mechanical ventilation; and irrational antibiotics increased the risk of nosocomial infections in children. The score of these risk factors accurately predicts nosocomial infections.

COS4-5 VALUATION OF PATIENT AND PHYSICIAN PREFERENCES FOR STROKE PROPHYLAXIS IN ATRIAL FIBRILLATION

Decision Psychology and Shared Decision Making (DEC)

I. fan Kuo, BSc, PharmD1, Carlo A. Marra, PharmD, PhD2, Ross Tsuyuki, BSc(Pharm), PharmD, MSc3, Karin Humphries, MBA, DSc3, Robert Boone, MD, MSc, Epi3 and Larry D. Lynd, PhD1, (1)University of British Columbia, Vancouver, BC, Canada, (2)University of Alberta (Cardiology), Edmonton, AB, Canada, (3)Providence Health Care Research Institute, Vancouver, BC, Canada, (4) Providence Health Care St. Paul’s Hospital, Vancouver, BC, Canada

Purpose: To derive and compare relative preferences of physicians and patients for selecting oral antithrombotics in atrial fibrillation (AF).

Method: Elicitation task: Best-worst scaling (BWS) choice experiments were constructed from literature review and expert opinion, reflecting 4 attributes relevant to oral antithrombotics
selection in the setting of stroke prevention in AF—frequency of laboratory monitoring, annual risk of stroke, annual risk of major bleed, and availability of reversible agent.

Main survey. BWS experimental design was developed using Sawtooth Software. Each physician respondent answered 20 questions, and each patient respondent answered 16 questions. Patients were recruited through the Atrial Fibrillation Clinic at Vancouver General Hospital, and physicians were invited to participate through the local health authority’s email listserver and research broadcast.

Analysis. Relative utilities based on the BWS choice data were derived using the latent class analysis. To determine the difference in preference for each attribute level between physician and patient respondents, the Wilcoxon signed-rank test was performed to assess the difference between the best-worst score for the 2 groups.

Results: The survey was completed by 33 physicians and 58 patients. Both groups favored “annual stroke risk of 0%” as the most valued attribute level with mean utility estimates of 4.58 ($p$ value < 0.001) and 6.50 ($p$ value < 0.001), respectively. In comparison, “annual stroke risk of 10%” was chosen as the least favourable attribute level for both physicians and patients with mean utility estimates of −3.66 ($p$ value < 0.001) and −4.86 ($p$ value < 0.001), respectively. Patients preferred “having reversibility agent available” over “laboratory monitoring every year” and deemed “annual stroke risk of 6%” to be a better attribute level than “annual major bleeding risk of 6%.” The reverse was found for the physician respondents in both cases. Wilcoxon signed-rank results revealed significant preference differences between the 2 perspectives for several of the attribute levels, including “laboratory monitoring every month,” “annual stroke risk of 10%,” “annual bleeding risk of 2%,” and “reversibility agent not available.”

Conclusion: Preferences for stroke prophylaxis differ between physicians and AF patients. This is the first study known to compare valuation between the 2 perspectives using a BWS choice experiment, and it provides important insights to clinical decision making in a patient-centered care model.

COS4-6 A RANDOMIZED STUDY OF THE IMPACT OF INFORMATION ON POTENTIAL SIDE EFFECTS AND OVERTREATMENT ON INTENT TO PARTICIPATE IN CERVICAL CANCER SCREENING

Anita L. Iyer, MPhil1, Mary Kate Bundorf, PhD2, Dorte Gyrd-Hansen3, Jeremy D. Goldhaber-Fiebert, PhD2 and Ivar Sanbø Kristiansen, MD, PhD, MPH1. (1)University of Oslo, Oslo, Norway, (2)Stanford University, Palo Alto, CA, (3)University of Southern Denmark, Odense, Denmark

Purpose: Cervical cancer is the 13th most prevalent female cancer in Norway. A national screening program has existed since 1995 but is currently facing declining participation. Efforts have been made to increase screening participation through the use of information letters. The aims of this study were to evaluate the extent to which additional information regarding overtreatment and potential side effects associated with cervical cancer screening affects the stated intention of women to participate in screening and pursue recommended treatment, to study women’s preferences regarding the timing of such information, and to explore women’s knowledge about the incidence of cervical cancer.

Method: A 27-question web-based questionnaire was developed and administered to a panel of Norwegian women aged 25–69. Respondents were randomized into 3 groups based on when in the screening process information regarding overtreatment and the potential impact of surgical treatment on future pregnancy was first introduced: 1) when a Pap test is first suggested, 2) when a second test is recommended following the detection of abnormal cells, and 3) when surgical treatment is recommended. A fourth group served as a control group and was not provided information about overtreatment or side effects during all 3 points. This project is part of a larger international comparative study.

Results: 1060 women responded to the survey. Additional information about overtreatment and side effects made no significant difference on women’s stated intentions at the first 2 time points; however, it appears to create uncertainty when surgery becomes an option, $\chi^2(df = 6, N = 1060, p = .014)$. Of the women surveyed, 945 (89.2%) believed that cervical cancer is among the 3 most common types of cancer among Norwegians. This overestimation is reflected in estimations of incidence: 302 women (28.5%) correctly identified cervical cancer incidence rates in Norway at approximately 300 cases per year, whereas 71 (6.7%) underestimated the incidence rate and 422 (39.8%) placed incidence rates at greater than 1000 cases a year. Over 80% of women state a preference for receiving information about all potential side effects.

Conclusions: Norwegian women overestimate the risk of cervical cancer. Their intention to undergo Pap tests is largely unaffected by the presence of additional information; however, this information may result in greater uncertainty when surgical intervention is suggested.

PL-1 PRESENTER 1

Decision Psychology and Shared Decision Making (DEC)

Chirk Jenn Ng, Faculty of Medicine, University of Malaya, Wilayah Persekutuan, Malaysia

Dr. Chirk Jenn Ng is a professor in the Department of Primary Care Medicine, University of Malaya, Malaysia. He practices as a consultant family physician at the University Malaya Medical Centre and teaches family medicine at the undergraduate and postgraduate levels in the Faculty of Medicine, University of Malaya. He is the deputy editor of the Malaysian Family Physician and chaired the Malaysian Primary Care Research Group 2010–2012. He is involved in promoting primary care research in Malaysia and the region by organizing research conferences and conducting regular research workshops. He is currently the coordinator of the research module of the Advanced Training Programme at the Academy of Family Physicians of Malaysia. Professor Ng obtained his PhD from the United Kingdom, focusing on the implementation of shared decision making in general practice. He currently leads various research on medical decision making among private, public, and university-based settings. His other research interests include evidence-based medicine and men’s health.

PL-2 PRESENTER 2

Decision Psychology and Shared Decision Making (DEC)

Somsak Chunharas, Ministry of Public Health

Dr. Somsak is a medical doctor with a master’s degree in public health and additional training in medical education, health financing, and project management. Starting his career as
a physician and director in community hospitals in rural Thailand, he then shifted to international health and health planning with particular interest and experiences in health policy and system research, research ethics, information system, human resource development, and knowledge management and learning organizations, with articles and book chapters in Thai and English. He has worked extensively with various international organizations, for example WHO, UNICEF, COHRED, ASPHR, and UNESCO. He currently runs NHF, a nongovernmental organization working to promote knowledge-based health policy and system development.

**PL-3 PRESENTER 3**

Decision Psychology and Shared Decision Making (DEC)

Lyndal Trevena, MBBS, MPH, PhD, University of Sydney, Sydney, Australia

Dr. Trevena will discuss research findings in general and her latest research in particular that address issues related to adapting Western-based models of patient-centered care in Asian cultures and resource-constrained environments. As a key member of the Centre for Medical Psychology & Evidence-based Decision-making (CeMPED) and an active general practitioner, Dr. Trevena’s main research interest is the application of evidence in general practice, particularly in evidence-based clinical decision making. She continues to develop and evaluate a number of decision tools and clinical practice guidelines, which assist clinicians and patients to individualize population-level research into practice. Much of this work has been in cancer and other disease prevention.

More detail about this research program can be found at http://www.psych.usyd.edu.au/cemped/. She is particularly interested in preventive primary care strategies in disadvantaged groups and has worked with homeless people, low-literacy groups, and more recently in low-income-country settings.

**STU-1 THE IMPACT OF A PUBLIC-PRIVATE MIX ON IMPROVEMENTS IN TUBERCULOSIS (TB) AND MULTIDRUG-RESISTANT (MDR) TB OUTCOMES: AN INDIAN MICROSIMULATION CASE STUDY**

Health Policy, Health Services, and Applied Health Economics (HEP)

Sze-chuan Suen, MS1, Eran Bendavid, MD, MS1, Kimberly Babiaz, MA, PhD2 and Jeremy Goldhaber-Fiebert, PhD3, (1) Stanford University, Stanford, CA, (2) Centers for Health Policy and Primary Care and Outcomes Research, Stanford, CA

**Purpose:** Despite the availability of public sector TB control programs in many Asian countries, private sector clinics provide a substantial proportion of care. Such clinics often use inappropriate diagnostics and ineffective treatments that can select for MDR TB. Given the rollout of new TB technologies and the StopTB advocacy of a public-private mix (PPM) to improve private sector care in countries including India, China, and Thailand, we evaluate the likely impacts if improvements are made in the public sector, private sector, or both, using India as a case study.

**Method:** We developed a dynamic transmission microsimulation model that follows India’s population stratified by age, sex, TB, drug resistance, and treatment status. We calibrate the model to Indian demographic, epidemiologic, and TB healthcare patterns in the public and private sectors. Control interventions include 1) improving treatment effectiveness in the public sector only, 2) improving the accuracy and rapidity of TB diagnosis and drug sensitivity testing in the public and/or the private sector, 3) increasing referrals from the private sector to the public sector through PPM, 4) reducing inappropriate medication use to prevent MDR in the private sector, and 5) combinations of these efforts. Outcomes include incidence and prevalence of active non-MDR and MDR TB in 2023 relative to 2013 levels.

**Results:** Without interventions, the model projects declines in non-MDR TB incidence (12%) and prevalence (12%) and increases in MDR incidence (15%) and prevalence (19%). For non-MDR TB, increasing referrals from the private to the public sector (through PPM) alone or in combination with improved diagnostics yield 15–17% lower incidence and 34–47% lower prevalence. Synergies provided by combined public and private sector interventions are evident for MDR outcomes. Exclusively private sector interventions result in MDR incidence and prevalence increases of 13–16%, whereas exclusively public sector interventions result in 2–7% declines. Combinations of PPM and increases in non-MDR TB treatment effectiveness to avoid generating MDR reduce incidence by 13–19%. Likewise, although MDR prevalence increases 14–18% with PPM alone, PPM combined with rapid, accurate diagnostics results in MDR prevalence declines of 55–58%.

**Conclusion:** Combining public and private sector interventions to improve and link TB care and rapid, accurate diagnostics is a promising approach for reducing non-MDR and MDR TB in India and similar Asian countries.

**STU-2 TOWARD AN AUTOMATED MEDICAL IMAGE DATABASE SEARCH FRAMEWORK FOR SUPPORTING CLINICAL DECISION MAKING**

Quantitative Methods and Theoretical Developments (MET)

Anh T. Dinh, Bachelor1, Tomi Silander, PhD 1, Tchoyoson C. C. Lim6, Tze-Yun Leong, PhD1 and Parvathy Sudhir Pillai, (1) National University of Singapore, Singapore, Singapore, (2) National Neuroscience Institute, Singapore, Singapore

**Purpose:** To retrieve relevant images from medical image databases for diagnosis, research, and education.

**Method:** Currently, many challenges in segmentation, feature design, and modeling make medical image mining a labor-intensive process that requires medical expertise. Consequently, much of the information in medical image databases is currently not effectively used to support diagnosis, research, and education. We propose to sidestep segmentation and feature design by automatically extracting general-purpose, localized visual features using Gabor filters. We then sidestep model construction and model-based classification by applying an ensemble of of case-based image reconstruction methods that yield a sparse presentation of the new image. This combination of techniques offers an easy-to-deploy system for retrieving useful old images that are similar to the new image from image databases.

The symbolic information in the old images can then be used to automatically suggest annotations to the new image. In our work, we have used the pathology class information attached to the computer tomography (CT) images of traumatic brain injury (TBI) to suggest classification of the new images. However, the method is not specific to CT scans, and it scales well to large image databases.

**Results:** We applied our method to 847 CT images of TBI obtained from the database of the Neuroradiology Department in...
a tertiary referral hospital specializing in neurological diseases in Singapore. Our stratified cross-validation results demonstrate the capability of our method to automatically classify the types of TBIs into subdural hematoma, extradural hematoma, and intracerebral hemorrhage. This functionality allows searching for medical images by their diagnosis based on the image content only. We also demonstrate a tool that shows the relevant images used in these automatic classifications.

Conclusions: Our method offers an easy way to use information in medical image databases. The tool based on the methodology can be used to support diagnosis and possibly, in future, prognosis in the medical decision-making process.

STU-3 IMPLEMENTATION OF A PATIENT DECISION AID ON TYPE 2 DIABETES: OPPORTUNITIES AND CHALLENGES FACED BY HEALTH CARE PROFESSIONALS IN MALAYSIA

Yew Kong Lee, BA1, Chirk Jenn Ng2, Khatijah Lim Abdullah2, Syahidulir Akmal Azmi, B.Sc3, Ee Ming Khoo3, Ping Yein Lee3, MBBS, MMed, (Family, Medicine)3, Wah Yun Low4 and Azah Abdul Samad, MBBS4, (1)University of Malaya, Kuala Lumpur, Malaysia, (2)Faculty of Medicine, University of Malaya, Wilayah Persekutuan, Malaysia, (3)Universiti Putra Malaysia, Serdang, Malaysia, (4)Ministry of Health Malaysia, Kuala Lumpur, Malaysia

Purpose: This study aimed to explore the challenges and opportunities faced by Malaysian health care professionals (HCPs) when implementing a patient decision aid (PDA) on insulin initiation in patients with type 2 diabetes.

Method: We conducted a qualitative study to capture the experiences of HCPs who have used the PDA in primary care consultations. In-depth interviews and focus group discussions were conducted after the consultations at university-based primary care clinics, public health care clinics, and private general practices in 2012–2013. Participants included general practitioners (n = 2), medical officers (n = 7), diabetes nurses (n = 3), and pharmacists (n = 1). The interviews were audio-recorded, transcribed verbatim, checked, and managed using NVivo 9 software. A thematic analysis was used.

Results: The challenges faced by HCPs include patient barriers (e.g., patient unwillingness to read the PDA or visual impairment), system barriers (e.g., lack of time to use the PDA in consultations, or lack of reading space for patients), and potential medicolegal risks in using the PDA (e.g., negative health outcomes).

HCPs identified opportunities to use PDAs at 2 levels: the health system and individual consultations. At the system level, HCPs suggested incorporating PDA use into the existing patient care pathway and individualizing the timing of introducing the PDA to patients (e.g., before, during, or take home after consultations). When selecting patients to use the PDA, the HCPs considered the patients’ literacy, the decision maker (patient or significant others), patient preparedness to decide, and patient knowledge of insulin.

At the individual consultation level, the use of the PDA by the HCPs was influenced by the following factors: being aware of different ways of using the PDA (e.g., from cover to cover, focusing only on patient concerns, or using the PDA over multiple consultations), being willing to modify their consultation style to use the PDA, giving more guidance to patients who had difficulty in understanding the PDA, and being able to use different language versions of the PDA. Some HCPs would avoid discussing the PDA at the initial consultation as they perceived that this might influence the patient’s decision to start insulin.

Conclusion: HCPs identified patient and system barriers in implementing the PDA. The implementation of the PDA would depend on integrating the PDA into existing clinic pathways and being flexible when using the PDA with individual patients.

STU-4 GEOGRAPHIC VARIATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) GUIDELINE COMPLIANCE RATES ACROSS HOSPITAL REFERRAL REGIONS (HRR) IN TEXAS: AN ANALYSIS OF PRIVATE INSURANCE POPULATION

Suthira Taychakhoonavudh, BPharm, Msc1 and Luisa Franzini, PhD2, (1)University of Texas School of Public Health, Bangkok, Thailand, (2)University of Texas School of Public Health, Houston, TX

Purpose: To explore the geographic variation in adherence to guideline-recommended care in patients post discharge from COPD-related hospitalizations or emergency department (ED) visits in a private insured population in Texas.

Method: All hospital admissions and ED visits for COPD during the period of 2008–2011 were identified from Blue Cross Blue Shield of Texas claims data. Patients were included in the study if they were enrolled in a PPO, PPO+, RPO, or POS plan; had drug benefits with the BCBS of TX plan; were 40 years of age or older; and resided in a Texas Hospital Referral Region (HRR). Patients were identified as a recipient of guideline-recommended care if, within 30 days of discharge, they had at least one claim of prescription fills for any long-acting bronchodilators (either beta2-agonists and/or anticholinergics with or without inhaled corticosteroids) and had at least one follow-up visit with a primary care physician or pulmonologist. The adherence to guideline-recommended care rates for each HRR was calculated by dividing the number of discharges that received guideline-recommended care by the number of COPD-related hospitalizations and ED visits for each HRR. An index of variation (each HRR guideline compliance rate compared to overall Texas means) and coefficients of variation (CVs; standard deviations from the Texas means) were calculated to examine the variation in the guideline compliance rate.

Conclusion: Variations in guideline compliance rates were found among HRRs in Texas, indicating inefficiencies in the treatment of COPD patients. Further investigation into factors contributing to this variation will provide insights for better policies and program interventions that may increase guideline compliance rates and reduce preventable COPD readmission.

STU-5 FEASIBILITY AND EFFECTIVENESS OF A SMARTPHONE APP FOR SMOKING CESSATION DECISION MAKING IN ASIA-PACIFIC

Health Policy, Health Services, and Applied Health Economics (HEP)
ABSTRACTS

**HPR-1 PRESENTER 1**
*Decision Psychology and Shared Decision Making (DEC)*

**Martin Prince, MD MSc FRCPsych**, Institute of Psychiatry, London, United Kingdom

Martin Prince is the professor of epidemiological psychiatry at the Institute of Psychiatry (IoP) in London. He is the co-director (with Vikram Patel) of the new KHP/LSHTM Centre for Global Mental Health. He trained in psychiatry at the Maudsley Hospital (with Vikram Patel) and in epidemiology at the London School of Hygiene and Tropical Medicine.

His main focus is on mental health priorities in developing countries. In the IoP’s Section of Epidemiology, PhD students from Ethiopia, Pakistan, India, China, Thailand, Sri Lanka, and Brazil have studied diverse topics: women’s mental health, maternal depression and infant development, migration, suicide, and problem drinking, all of them public health and social priorities for the regions concerned. He has coordinated, since 1998, the 10/66 Dementia Research Group, a network of more than 100 researchers, mainly from the developing world, who have worked together to promote more good research into dementia in those regions. 10/66 is part of Alzheimer’s Disease International, and a major aim of the group is to disseminate evidence in such a way as to increase awareness of the major problems to be faced now and in the future. Aside from his work in developing countries, Martin coordinates the study of mental and cognitive health in the 10-nation Study of Health and Retirement in Europe, and the UK National Psychiatric Morbidity Survey. He was a co-editor, with Vikram Patel and Shekhar Saxena, of the Lancet Series on Global Mental Health.

**HPR-2 PRESENTER 2**
*Decision Psychology and Shared Decision Making (DEC)*

**Jacob Roy Kuriakose**, Alzheimer’s Disease International (ADI)

Dr. Jacob Roy Kuriakose, an Indian national, graduated from Mysore University in 1976 with a diploma in child health and from National University of Ireland in 1983, and he is a fellow of the Royal Academy of Medicine, Ireland. He has been a senior consultant at the Malankara Medical Mission Hospital, Kunnamkulam, Kerala, since 1985. He also worked as a medical officer in the Maldives and Nigeria. In 1986, he founded the Tropical Health Foundation of India, a voluntary organization working in the realm of rehabilitation of the disabled. He is also the founder of Alzheimer’s & Related Disorders Society of India, a national voluntary organization dedicated to dementia care, support, and research that was established in 1992. He joined Alzheimer’s Disease International (ADI), the world federation of 79 national Alzheimer’s associations, in 1993 and served ADI as a member of the executive, elected board and as vice chairman. In 2012 he was elected as chairman for 3 years, the first Asian to get this honor. He is a global dementia advocate, a pioneer in developing services for people with dementia, and an invited speaker to a number of national and international dementia conferences.

**HPR-3 PRESENTER 3**
*Decision Psychology and Shared Decision Making (DEC)*

**Raymond Chua**, Health Sciences Authority, Singapore

Assistant Professor Raymond Chua began his medical career after graduating from the Faculty of Medicine in National University of Singapore in 1997. He underwent numerous medical and surgical postings in the public sector hospitals until October 2000. Assistant Professor Chua then took up his public health training with the Ministry of Health, Singapore, before he became certified as a registered public health specialist and follow with the Academy of Medicine, Singapore, in 2007. He was awarded a scholarship by the Ministry of Health to take up a master’s of science in public health with the London School of Hygiene and Tropical Medicine, University of London, in 2002. Assistant Professor Chua also holds an MBA degree from the University of Nottingham and a graduate diploma in change management from the Institute of Public Administration and Management, Singapore (2007).

In 2007, he left the public service to join Eisai Co Ltd in June 2007 as the managing director of Eisai Clinical Research Singapore, to oversee, execute, and manage the development and
operations of global and regional clinical research activities within Asia-Pacific and the Middle East. In 2010, he joined Shire Pharmaceuticals as their international medical director to oversee the growth and development of Shire’s products in Asia-Pacific. In July 2011, Assistant Professor Chua joined Health Sciences Authority (HSA) and was designated as the group director of the Health Products Regulation Group (HPRG), a position he has held since May 2012. He oversees and provides strategic direction to the HPRG, a national professional pre- and postmarket regulatory body of all health-related products, including drugs, medical devices, complementary health products, and tobacco, taking into account the wider context of regional and international regulatory advances in alignment with the vision and mission of the HSA.

Assistant Professor Chua also holds appointments as a council member of the Singapore Medical Council and an adjunct assistant professor in the Saw Swee Hock School of Public Health in National University of Singapore. In addition, he is an appointed member of the International Committee, Faculty of Pharmaceutical Physicians, London; fellow of the Royal College of Physicians and Surgeons (Glasgow); and a fellow of the Royal College of Public Health (London). He also has been a deputy registrar of the Registrar of Marriages since 2004.

P1-1 TREATMENT PREFERENCES OF PATIENTS WITH ENDOMETRIAL CANCER AND CLINICIANS

Decision Psychology and Shared Decision Making (DEC)

Marleen Kunneman, MA1, Arwen H. Pieterse, PhD1, Anne M. Stiggelbout, PhD1, Remi A. Nout, MD, PhD1, Moniek Kamps2, Oswald J.A. Mattheussens, MD2, Rudy C.H.W. Lutgens, MD, PhD3, Roy F.P.M. Kruithoven, MD, PhD3 and Carien L. Creutzberg, MD, PhD3, (1)Leiden University Medical Center, Leiden, Netherlands, (2)Maastricht University Medical Center, Maastricht, Netherlands, (3)Rijnland Hospital, Leiden, Netherlands, (4)MAASTricht Radiation Oncology Clinic, Maastricht, Netherlands

Purpose: The contribution of vaginal brachytherapy (VBT) to local control in high-intermediate-risk endometrial cancer (EC) has been established, but VBT is associated with several side effects and does not improve overall survival. Furthermore, 5-year local control, including treatment for relapse, is estimated to be nearly similar for VBT and a watchful waiting policy (WWP). Our aim was to assess treatment preferences of EC patients and clinicians regarding VBT and WWP.

Methods: Individual face-to-face interviews were held with 95 treated EC patients, half of whom were treated with surgery alone (low risk) and half with surgery and postoperative VBT (high-intermediate risk). Patients received information on both VBT and WWP, local recurrence rates, possible harms, and burden of treatment options, elicit patients’ preferences, and how they value local control, harms, and burden of treatment. We determined patients’ preferred level of involvement in decision making, the actual involvement they experienced, and their involvement as assessed by observers.

Results: At an initial 12% absolute local control benefit of VBT was 4% (radiation oncologists), 0% (irradiated patients), 17% (gynecologists), 8% (gynecologic oncologists), and 6% (nonirradiated patients). Of the irradiated patients, 92% indicated to choose VBT even if there was no additional benefit. Of the nonirradiated patients, 13% preferred WWP even for a local control benefit of 50% from VBT.

Conclusions: Our research showed a considerable variation between, as well as within, the patient and clinician groups in how they value local control, harms, and burden of treatment. We recommend that clinicians inform patients on the benefits and harms of treatment options, elicit patients’ preferences, and support patients in a process of shared decision making.

PI-2 BREAST CANCER PATIENTS’ INVOLVEMENT IN ADJUVANT SYSTEMIC THERAPY DECISION MAKING: THE LEVEL OF INVOLVEMENT DIFFERS DEPENDING ON WHO ASSESSES IT AND THE TYPE OF THERAPY

Decision Psychology and Shared Decision Making (DEC)

Ellen G. Engelhardt, MSc1, Anine J. Griffioen1, Nanny van Duijnbakker1, Anja van der Hout, MSc1, Koos J.M. van der Hoeven, Dr, MD1, Ellen MA Smets, PhD2, J. (Hanneke) CJM de Haes, PhD2, Arwen H. Pieterse, PhD1 and Anne M. Stiggelbout, PhD1, (1) Leiden University Medical Center, Leiden, Netherlands, (2) Academic Medical Center, University of Amsterdam, Amsterdam, Netherlands

Purpose: Deciding about adjuvant hormonal and/or chemotherapy for breast cancer can be difficult. Many factors, medical as well as personal, need to be considered. Currently, there is no consensus about which instrument best captures patient involvement in decision making or whom (patient, doctor, or observer) can best determine it. We used the Control Preferences Scale (CPS) to determine patients’ preferred level of involvement in decision making, the actual involvement they experienced, and their involvement as assessed by observers.

Method: We audiotaped and transcripted consultations with oncologists in which hormonal therapy and/or chemotherapy was discussed. Based on these transcripts, 2 researchers independently assessed the patient’s level of involvement using the CPS categories. Within 3 days after the consultation, patients were interviewed by telephone and asked whom they felt had made the final treatment decision (open-ended question). Two other researchers independently coded the patients’ answers using the CPS categories. In the patient questionnaire, patients were asked to indicate their preferred role in decision making using the CPS. All analyses were performed using SPSS 20.

Results: To date, we have coded 34 consultations and telephone interviews, and analyzed the questionnaire data for 77 patients. As of January 2014, we could present data for at least these 77 patients. Their median age was 60 years (range: 37–81). Overall, 43% of patients reported preferring to share decisions, 30% preferred to decide for themselves, and 27% preferred to defer decision making to their oncologist. 47% of patients <50 years preferred to decide for themselves, whereas almost 50% of the patients >50 years preferred to share decisions. For both the hormonal and/or chemotherapy decisions, and contrary to the
ABSTRACTS

1ST ASIA-PACIFIC MEETING OF THE SOCIETY FOR MEDICAL DECISION MAKING

ABSTRACTS

ABSTRACTS

observers’ assessment, patients more often reported that they had made the decision themselves (Figure 1). According to the observers, the oncologist made the final decision without any input from the patient in 65% of the hormonal therapy decisions, whereas patients were more frequently involved in the chemotherapy decision.

Conclusion: A majority of patients prefer an active role in decision making. The observers’ assessment of patients’ actual involvement in decision making differed from the patients’ assessment, with patients experiencing a higher level of involvement. According to the observers’ assessment, patients were rarely involved in hormonal therapy decisions. Results suggest that observers are less lenient than patients when it comes to judging behavior as participation.

P1-3 HEALTH EXPENDITURE AND ECONOMIC GROWTH
Health Policy, Health Services, and Applied Health Economics (HEP)
Hiroaki Kakihara, PhD, MD, MSc, Michitoshi Yamaguchi, PhD, XinXin Ma, PhD and Hiroyasu Yoneda, PhD, Kyoto University, Kyoto, Japan

Purpose: Whether health expenditure in developed countries stimulates or stifles their economic growth is often questioned but still inconclusive. We investigate these relationships to shed light on future health policy in aging and highly developing Asia.

Method: We performed moderate-N and moderate-T time series analyses using 14 OECD countries’ panel data. Data were collected from multiple sources (Penn World Table and OECD Health data) and 20 to 50 observations (1960–2010, at most) for each country.

Results: A panel unit root test revealed the nonstationary nature of variables, and a mean-group estimator implied the existence of co-movement between per capita health expenditure and per capita GDP. At the same time, though, the long-run relationship between them was insignificant. We then proceeded to countrywise first-differenced VAR analysis. In most countries, bidirectional Granger causality was found to exist between the growth of per capita health expenditure and the growth of per capita GDP. Interestingly, the positive shock on health spending growth in Japan brought a significant positive response in its economic growth for the next couple of years, but not vice versa.

Conclusion: Most developed countries worry about skyrocketing medical expenses and their effect on the national budget. That expense is sometimes thought of as a stumbling block for economic growth. There are several theoretical pathways through which health promotes economic growth, but those were hardly supported empirically in developed countries. Our results indicate that health expenditure may positively affect GDP growth, or at least has no harm on it, even in developed countries. Keeping national health expenditures in check itself is often thought of as a policy goal, although people’s health and welfare should be top priorities. “Health promotes wealth” may ease some budget pressure, although further investigation of the testable logic behind it is surely needed.

P1-5 NAÏVELY OPTIMISTIC? A SYSTEMATIC REVIEW OF PATIENTS’ EXPECTATIONS OF THE BENEFITS AND HARMS OF TREATMENTS, SCREENING, AND TESTS
Decision Psychology and Shared Decision Making (DEC)
Tammy C. Hoffmann, PhD, BOccThy, (Hons) and Chris Del Mar, MBBChir, MA, MD, Bond University, Gold Coast, Australia

Purpose: Patients’ expectations of the benefits and/or harms of interventions can profoundly influence decision making and health care. The purpose of this systematic review was to synthesize all studies that had quantitatively assessed patients’ expectations of the benefits and/or harms of any treatment, test, or screening test.

Methods: A comprehensive search, using a combination of free text words and MeSH subject headings, was run in 4
influence of conflicts of interest (COIs) on shared decision making. A medical service affects patient and physician perceptions of the family’s WTP would be when a physician’s COI was disclosed. To predict a family’s WTP in each scenario for families with (both before and after the disclosure of a COI).

The overestimation of the COI effect by physicians could be a barrier to COI disclosure during a shared decision-making intervention. Ten studies assessed participants’ expectations about the harm of the focus interventions, of which 8 compared participants’ quantitative estimates with a “correct” estimate of the harm. In 7 of these, most participants underestimated the harms of the intervention.

Conclusions: Patients generally overestimate intervention benefit and underestimate intervention harm, with this finding consistent across a range of treatments, tests, and screening tests. These findings reinforce the importance of undertaking shared decision making when any intervention is being considered, including eliciting patients’ expectations and ensuring that patients have the opportunity to make an informed decision.

Physicians predicted that WTPs would be reduced by 36–54% in all scenarios for both income strata (p < 0.05). Seventy-one percent of physicians indicated that it is absolutely unacceptable to have financial relationships with companies.

Conclusions: Physicians overestimated the effect of COIs in low-income families when the service involved unambiguous benefits but not when the service offered only ambiguous benefits. The overestimation of the COI effect by physicians could be a barrier to COI disclosure during a shared decision-making process. COIs reduced patients’ trust and willingness to share the decision with their physician, regardless of the ambiguity about future benefits.

Purpose: This study aimed to compare patients’ and health care professionals’ (HCPs) expectations of a patient decision aid (PDA) on insulin initiation in type 2 diabetes.

They were also asked to rate the importance (from 0 = not important to 10 = very important) of avoiding financial relationships with companies that offer services that they might recommend to patients.

Results: Disclosure of a physician’s COI significantly reduced WTP by 26–53% (p < 0.05) in both income strata in Scenario C but only in families with income $50,000–100,000 in Scenarios A and B (see Figure 1). Trust in having the physician make the decision for their family and willingness to share the decision were both reduced significantly in all scenarios after COI disclosure.

Figure 1 Comparison of Changes (%) in Patients’ Reported Willingness to Pay (WTP) and in Physicians’ Predicted WTP after the Disclosure of a Conflict of Interest in Families with Incomes <$50,000 and Incomes between $50,000 and $100,000.
Table 1  Description of the Patient Decision Aid (PDA) Content

<table>
<thead>
<tr>
<th>PDA Sections</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are your concerns?</td>
<td>Highlights common concerns and misconceptions about type 2 diabetes mellitus and insulin. This also includes a short answer to address the concerns.</td>
</tr>
<tr>
<td>Information about diabetes and treatment</td>
<td>Explains what is insulin and the reasons for starting insulin.</td>
</tr>
<tr>
<td>About insulin therapy</td>
<td>Explains how one starts insulin and its side effects.</td>
</tr>
<tr>
<td>Knowing your blood sugar</td>
<td>Explains how blood glucose control can be assessed by using HbA1c, fasting blood glucose, and glucometers. The target blood glucose readings are also presented.</td>
</tr>
<tr>
<td>What are your choices?</td>
<td>List of treatment options:</td>
</tr>
<tr>
<td>● Do nothing.</td>
<td></td>
</tr>
<tr>
<td>● Follow a stricter diet and exercise.</td>
<td></td>
</tr>
<tr>
<td>● Start insulin injection.</td>
<td></td>
</tr>
<tr>
<td>● Add another oral diabetes medication.</td>
<td></td>
</tr>
<tr>
<td>● Start a new non-insulin injection (GLP agonist).</td>
<td></td>
</tr>
<tr>
<td>● Use complementary and alternative medicine.</td>
<td></td>
</tr>
<tr>
<td>Advantages and disadvantages of the treatment options</td>
<td>Advantages and disadvantages of the treatment options based on the latest research evidence.</td>
</tr>
<tr>
<td>Knowing the facts</td>
<td>Assess whether the patient has understood the information on the advantages and disadvantages of the treatment options presented in the PDA.</td>
</tr>
<tr>
<td>Knowing what is important to you</td>
<td>Explores the preferences and concerns of the patient with regard to the treatment options.</td>
</tr>
</tbody>
</table>

HbA1c, glycated hemoglobin; GLP, glucagon-like peptide-1.

Method: This qualitative study explored the acceptability of the PDA use in 3 different primary care settings in Malaysia between 2012 and 2013. We conducted 26 in-depth interviews and 2 focus group discussions with HCPs and patients with type 2 diabetes who had been advised to start insulin. The PDA was given to patients in advance, and it was used during the consultations to facilitate decision making. Both HCPs and patients were interviewed after completing a consultation session using the PDA. The participants included general practitioners (n = 2), medical officers (n = 7), diabetes nurses (n = 3), pharmacists (n = 1), and patients (n = 18). A semistructured topic guide was used to guide the interviews. The interviews were audio-recorded, transcribed verbatim, checked, and managed using NVivo9 software using a thematic approach. The content of the PDA is summarized in Table 1.

Results: Most of the patients viewed the PDA content as adequate, simple, clear, and systematic. However, the HCPs felt that the PDA might not be understood by patients with low literacy who would benefit from a more simplified PDA with fewer words and more pictures. In terms of information quantity, HCPs thought the amount of information in the PDA was too much to be covered in one consultation. This could be overcome by patients taking it home to read.

On insulin initiation, the HCPs tended to focus on information related to the benefit of insulin initiation and favored insulin as the treatment option. Patients, in contrast, wanted to know the impact of insulin on their quality of life, how to store insulin while traveling, and the side effects and sources of insulin. Patients preferred to use numbers to compare the risks and benefits of the treatment options. This opposed the HCPs’ views that presenting numbers in a PDA would be too complex for patients to understand.

Conclusion: Patients and HCPs have different expectations of a PDA. Patients wanted more practical information on insulin initiation and how insulin might affect them psychologically. It is important to consider these issues when developing and implementing a PDA.

P1-8 INFORMATION-SEEKING BEHAVIOR OF NURSES DURING POSTOPERATIVE PAIN ASSESSMENT AND MANAGEMENT DECISION MAKING

Decision Psychology and Shared Decision Making (DEC)

Thurayya Eid, PhD, MSN, BSN1, Elizabeth Manias, PhD, MNursStud, GradCertCrtCare, MPharm, BPharm2 and Tracey Bucknall, PhD, GradDipAdvNurs, BN(Honors), IUCCert3, (1)King Abdulaziz University Hospital, King Abdulaziz University, Jeddah, Saudi Arabia, (2)The University of Melbourne, Melbourne, Australia, (3)Deakin University, Melbourne, Australia

Purpose: To identify the information sought and used by nurses during postoperative pain assessment and management in Saudi Arabia.

Method: The study used process-tracing methodology, comprising naturalistic observation and concurrent think aloud by nurses. The study was conducted in 3 surgical wards in a tertiary teaching hospital in Jeddah, Saudi Arabia. Nurses were eligible to participate if they were permanently employed in surgical wards. Nurses were observed for 4 hours while thinking aloud about their pain assessment and management practices with patients. Observation occurred during the following time periods: 08:00–12:00, 14:00–18:00, and 20:00–24:00. An observation checklist and audio recording were used to record verbal protocols. Data were analyzed using protocol analyses, which involved 2 major steps: informal exploratory analysis and content analysis of statements.
Results: Overall, 137 patient–nurse pairs were observed. Of the patients participating, 4.4% experienced no pain, 29.9% experienced mild pain, 49.2% experienced moderate pain, and 17.5% experienced severe pain. Nurses’ mean age was 33 years. Of the nurses, 28 (58.3%) were Indian, 18 (37.5%) were Filipinos, 1 (2.1%) was Saudi, and 1 (2.1%) was Tunisian. In surgical wards, 79.0% of nurses initiated pain assessments, whereby 63.0% were purposefully initiated by nurses and 16.0% occurred opportunistically during medication rounds. On other occasions, 21.0% of pain assessments were initiated by patients, 11.0% when they complained of pain, and 10.0% opportunistically during medication rounds. During pain reassessment, 88.1% of nurses asked superficial questions of patients, and 11.9% involved patient-initiated complaints of pain. In providing analgesics to patients, nurses tended to follow analgesic prescribed times for administration, which took priority over the time nominated by patients of when they wished to receive an analgesic. Few nurses used pain measurement scales in seeking information.

Conclusion: Most information seeking involved nurses deliberately seeking out information from patients. However, superficial questioning was used to elicit details about the effectiveness of analgesics administered. Rather than using patients as a resource for determining when to administer analgesics, nurses relied mainly on documented orders, which may not have addressed patients’ individualized needs for pain relief. More attention needs to be placed on encouraging nurses to use pain measurement scales in seeking information, in asking clear and targeted questions about patients’ pain experiences, and in using patients as a resource for revising pain management needs.

P1-10 DECISION MAKING FOR PAP TESTING AMONG PACIFIC ISLANDER WOMEN
Jie W. Weiss, PhD1, Michele Mouttapa, PhD1, Jasmine DeGuzman Lacsamana, MPH1, Lourdes Quitigua1, Lola Lola Sablan-Santos, MPH1 and Sora Park Tanjasiri, DrPH1, (1)California State University, Fullerton, Fullerton, CA, (2)Guam Communications Network, Long Beach, CA

Purpose: To examine whether multi-attribute utility predicts Pap testing among Pacific Islanders (PI) residing in southern California.

Method: This study is a community-based participatory research collaboration between 1 university and 4 community organizations. PI couples were recruited from Samoan, Tongan, and Chamorro churches and cultural social networks (i.e., clans). Participating women had to be between 21 and 65 years old and married or in a long-term relationship. A questionnaire assessed knowledge and beliefs regarding Pap tests, and utility parameter scores for 8 anticipated consequences of getting a Pap test. Compared to the No Pap women, Pap women had significantly higher subjective value scores for the following consequences: detecting cervical cancer early, peace of mind, and protecting my family. For the subjective probability parameter, Pap women had higher scores than No Pap women for the consequences of protecting my family and time spent. For the momentary salience parameter, Pap women had higher scores than No Pap women for the following consequences: detecting cervical cancer early, peace of mind, protecting my family, and time spent. Pap and No Pap women did not differ on any of the parameters for the following consequences: feeling discomfort, feeling scared, and feeling embarrassed.

Conclusion: Family values and logistical concerns appeared to be the strongest predictors of having a Pap test in the PI population. Among the 3 model parameters, subjective values and momentary salience were more predictive than perceived likelihood. The connection between utility and behavior offers a promising pathway for intervention. An intervention designed to increase utility is underway.

P1-11 PERSPECTIVES ON DECISION MAKING FROM PARENTS OF ADULTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITY
Kathleen M. Fisher, PhD1, Joan R. Bloch, PhD2 and Marcia R. Gardner, PhD1, (1)Drexel University, Philadelphia, PA, (2)Seton Hall University, South Orange, NJ

Purpose: The purpose of this phenomenological study was to examine decision making for future and advanced-care planning by parents of adults with intellectual and developmental disability (I/DD) that will improve understanding of how these decisions are made.

The life expectancy of people with I/DD is increasing and approaching that of the general population. Consequently, those with I/DD are aging and will outlive family caregivers, creating uncertainty for future caregiving and housing needs. A knowledge gap exists among health care workers in relation to this vulnerable population as well as a lack of sensitivity to their many physical and psychosocial needs.

Method: Participants signed informed consent following university institutional review board approval. Interpretive phenomenology was used in obtaining description and narratives (i.e., data) that focus on the decision-making processes and lived experiences of raising an individual with I/DD. Snowball sampling continued until saturation at a dozen families. Qualitative data analysis guided by the work of Max van Manen of transcripts; field notes and peer review were completed and analyzed using MAX QDA software.

Results: Decision making and inclusion of the adult with I/DD varied and multiple strategies were used by parents. The majority of adult children represented were older than 35 years; the oldest was 58. Seven of the caregivers were older than 66 years; the youngest parent was 55. Most described a “24/7” responsibility, related their experiences of getting the diagnosis and adjusting to it, and discussed their thoughts for future planning. The following themes were identified: 1) “this is the way it is...” 2) transition = “falling off the cliff”; 3) structuring = worrying about how to “invent” meaningful activity; and 4) advocacy = worry for the future and over what you can’t control.
Conclusion: This study identified that advanced care planning is an ongoing activity in a person’s life, which is especially critical in developing policies that guide care at the end of life for those with I/DD. Complex decision processes for future and advanced care were identified, as state policies, available resources, medical insurance, and inheritance portend a myriad of decision points. Public health care professionals are well positioned for familial support and need to conduct further research studies for these families living in all our communities.

P1-13 ELDERLY PEOPLE’S SATISFACTION WITH HOME TELEHEALTH SERVICES AND USE INTENTION

Health Policy, Health Services, and Applied Health Economics (HEP)
Shu-Lin Uei, PhD candidate1 and Yu-Ming Kuo, Dr2, (1)Mennonite Christian Hospital, Hualien, Taiwan, (2)Tzu Chi College of Technology, Chia-Yi, Taiwan

Purpose: This study aimed to explore the satisfaction of elderly people with home telehealth services and the relationship to intention to continue use.

Method: Sixty elderly people were recruited in a remote area of Taiwan who had adopted telehealth services for at least 1 year. This study developed a satisfaction scale that comprised 5 items regarding home telehealth users: 1) You believe your health condition improved after using telehealth services, 2) home telehealth reduces your care time for health issues, 3) telehealth services alleviate your concerns with health, 4) home telehealth reduces your expenditures on health care, and 5) telehealth has superior overall service quality. In this Likert-type scale, 1 = strongly disagree and 5 = strongly agree. A linear regression analysis was used to understand the influence of elderly people’s satisfaction with telehealth and their intention to continue use.

Results: The findings revealed that participants’ mean age was 65±4.5 years. 66.7% were women, 71.7% lived with their family, 28.3% lived alone, 53.3% lived in the mountains, and 85% had suffered 2 or more chronic diseases. The satisfaction with telehealth services scored an average of 3.83±0.75 (Table 1). Telehealth service satisfaction of elderly people was significantly associated with the continued-use intention (p < .001; Table 2).

Conclusion: These results will assist medical institutions to understand elderly home telehealth users’ experiences and provide future services that better comply with clients’ requirements.

P1-14 OPTIMIZING REPACK SIZES FOR OUTPATIENT PHARMACY AUTOMATED DISPENSING SYSTEMS

Health Policy, Health Services, and Applied Health Economics (HEP)
Hong Yee Lim1, Eric Yng Xixin Yang1, Hui Hui Wang2, Wee Chuan Hing1, Kiock-Liang Teow, MSc3, Zhecheng Zhu 2 and Angeline Chiam1, (1)Tan Tock Seng Hospital, Singapore, Singapore, (2) National Healthcare Group, Singapore, Singapore, (3)National University Hospital, Singapore, Singapore

Purpose: Three public health care institutions’ outpatient pharmacies are deploying automated drug-dispensing systems for better safety and improved efficiency. For the machines to pick the drug items, they have to be in boxes of predetermined sizes. Therefore, an optimization model for repack sizes is needed to make a balance between the efficiency and the cost of the system.
quantities, rather than in loose tablets. The purpose of the study is to design and implement a method that will optimize the repack configurations for greatest efficiency and lowest cost.

**Method**: This is the first time that such machines are to be deployed in a situation in which we need to determine the repacked box sizes to meet each patient’s prescription order. A team of pharmacists and operations researchers came together to study the trade-offs among the multiple objectives, such as the extent of complete automation and the number of boxes. Historical prescription patterns were analyzed to and formed the basis of the quantities needed by the patients. Mathematical programming (mixed-integer programming) was used as the framework to model and solve the problem at the drug item level. The key objectives were maximizing the extent of automation (i.e., prescriptions orders completely fulfilled by automation machines) and minimizing the number of boxes used. The implicit constraint was to fulfill the quantity needed and within a given number of box configurations. This model was repeatedly used to find the optimal repacked sizes for each of the hundreds of drug items, each based on its prescription patterns and characteristics.

**Results**: In total, there were about 800 drug items being studied that were equivalent to more than 5 million orders annually. A few options per drug item were given further deliberation. Of these items studied, we could achieve overall 95% automation and 2 boxes per line item. These results became the basis for inventory planning and workflow design.

**Conclusion**: The problem was combinatorial in nature, and no simple “greedy” algorithm would guarantee an optimal solution. The mathematical programming framework provided a scientific method to break down the problem and ensured the solution search would be efficient and complete. The results were customized to individual drug item usage. In view of growing health care demand, this model helped us to tap the full potential of the automated dispensing machines. Also, the approach allowed the flexibility for one to fine-tune the model if there were changes in constraints and optimization criteria.

**P1-15 EVALUATION OF THE NET BENEFIT OF BREAST CANCER MASS SCREENING: AN ANALYSIS OF BENEFIT AND HARM USING A MATHEMATICAL MODEL OF AGE-SPECIFIC POPULATION DYNAMICS**

*Miwako Tsunematsu, MHS and Masayuki Kakehashi, PhD,* Hiroshima University, Hiroshima, Japan

**Purpose**: In contrast to the downgraded recommendation by the U.S. Preventive Services Task Force (USPSTF) for breast cancer screening for women aged 40–49 years in 2009, Japanese women in their 40s have been successively encouraged to attend breast cancer screenings since 2004. The aim of this study is to examine whether these different mass-screening strategies are justifiable by the different situations of these countries and to find out the best strategy.

**Methods**: We used a mathematical model of age-specific population dynamics. The model is also specific to the stages of breast cancer progression and screening status (i.e., cancer has been detected or not yet). The basic demographic parameters of the model were obtained from health statistics, and transition probabilities were estimated to be fit to observed data in Japan and the United States. Performance of screening strategies (biennial intervals, and initiating and terminating ages) was evaluated. Benefits (extended average life expectancy) and harm (false-positive results) of these strategies were calculated. To evaluate the net benefit of each strategy, the critical increase of the average life expectancy was calculated. If the harmful effect produced by false positives can be larger than the critical value, then it implies that the net benefit of mass screening should be invalidated. The benefit of mass screening depends on the degree of mortality reduction due to medical care provided after the detection of cancer. Sensitivity analysis was performed as to this aspect because of the lack of data.

**Results**: Critical increases of average life expectancy in the age groups of 40–69 and 50–69 years in Japan were 58 and 69 days, respectively. They were, respectively, 109 and 138 days in the United States. According to the result of sensitivity analysis on the degree of reduced mortality due to medical care, the robustness of this conclusion was retained. The best strategy was dependent on the actual harm level of the false positives in Japan and the United States.

**Conclusions**: The critical increase of average life expectancy was calculated to be approximately 55 days in Japan and approximately 120 days in the United States. If the harmful effect produced by false positives can be estimated to be lower than the critical increase in each country, mass screening of breast cancer should have net advantage, taking harmful effect into account. The conclusion was retained independent of the levels of mortality reduction due to starting medical care early.

**P1-16 A COST-EFFECTIVENESS ANALYSIS OF TREATMENT STRATEGIES FOR SYMPTOMATIC UTERINE FIBROIDS**

*Chung Yin Kong, PhD,* Massachusetts General Hospital, Boston, MA

**Purpose**: To perform a cost-effectiveness analysis of hysterectomy (HYST), uterine artery embolization (UAE), and magnetic resonance-guided focused ultrasound (MRgFUS) for treatment of uterine fibroids while taking into account long- and short-term utilities associated with different treatment modalities.

**Method**: Cost-effectiveness analysis was performed from a societal perspective to compare MRgFUS with HYST and UAE. We developed a microsimulation model with a 6-month cycle length to evaluate the treatment options for premenopausal women with symptomatic uterine fibroids at age 40. Lifetime costs and utilities were calculated after modeling 3 scenarios in which each treatment strategy was the first-line strategy. Long- and short-term utilities specific to each treatment modality were incorporated to weigh the effectiveness values. We included hospital, physician, and treatment-related costs incurred, as well as lost-productivity costs. Incremental cost-effectiveness ratios (ICERs) below a willingness-to-pay (WTP) threshold of $50,000 per quality-adjusted life year (QALYs) were considered cost-effective. Extensive sensitivity analysis was performed on costs and probability estimates to determine the robustness of our results.

**Results**: In base case analysis, UAE was the most effective and highest costing strategy (22.75 QALYs; $22,968), followed by MRgFUS (22.73 QALYs; $20,252) and then HYST (22.54 QALYs; $11,253). MRgFUS was cost-effective relative to HYST, with an associated ICER of $47,891/QALY, whereas UAE was not; an ICER...
of $234,565/QALY is much higher than the WTP threshold. Cost-effectiveness of MRgFUS improved as the starting age approached the age of menopause. At post-MRGFUS, with symptom relief rates lower than 80% (base case 93%), UAE became the more cost-effective strategy. For most instances, MRgFUS remained the most cost-effective strategy. However, HYST became the most cost-effective with post-UAE recurrence rates higher than 4.7% (base case: 3.2%) and at presymptom relief utility values lower than 0.67 (base case: 0.815). UAE only became cost-effective only if the WTP is increased to $75,000 and the probability of fibroid recurrence of UAE to lower than 2.0%.

Conclusion: Taking into account lifetime costs and utilities, MRgFUS was a cost-effective starting strategy for treatment of uterine fibroids beginning at age 40. Results were stable to changes in most parameters, except for post-UAE recurrence rates and presymptom relief utility values.

P1-17 MANILA DOCTORS HOSPITAL STRATEGY FOR QUALITY AND EFFECTIVE STROKE CARE (MDH QUEST STUDY)

Health Policy, Health Services, and Applied Health Economics (HEP)

Cristine C. Santelices, MD, Jeffrey S. Delos Santos, MD and Bernadette Tumanan-Mendoza, MD, Manila Doctors Hospital, Manila, Philippines

Purpose: 1) To determine the compliance of practice patterns to clinical practice guidelines for acute ischemic stroke patients in Manila Doctors Hospital (MDH), a tertiary private hospital in the Philippines; and 2) to determine the effectiveness of the stroke pathway system of the MDH Acute Stroke Unit in reducing time to diagnostics and initiation of treatment for acute ischemic stroke.

Method: This study dealt with chart review of acute ischemic stroke patients before and after the stroke pathway system was instituted in Manila Doctors Hospital (MDH) in the Philippines in May 2009. It was divided into pre- and poststroke pathway phases. Data collected and compared for statistical significance were practice patterns, the time interval from emergency room consultation to instituting diagnostic and therapeutic interventions, and the length of hospitalization.

Results: There was high compliance (94.8–100%) to level I guideline recommendations in both phases of the study in many diagnostic examinations and therapeutic interventions. On the other hand, carotid and transcranial Doppler use significantly increased in phase II, which was also seen for citicoline and statin usage. A non–statistically significant improvement in the time lag was noted during phase II.

Conclusion: High compliance rates to many level I guideline recommendations in both diagnostic and therapeutic practice patterns in acute ischemic stroke were seen in MDH. Adherence to the stroke pathway system has probably resulted in increased usage of recommended diagnostic and therapeutic interventions; however, there is a need to improve the time interval from emergency room consultation to commencement of diagnostic procedures and delivery of appropriate therapy.

P1-19 METHODS FOR EVALUATION OF MEDICAL DEVICES

Health Policy, Health Services, and Applied Health Economics (HEP)

Praveen Thokala, PhD, University of Sheffield, Sheffield, United Kingdom

Purpose: Evaluation of medical devices faces different challenges from that of pharmaceutical drugs (i.e., the approaches for cost-effectiveness modeling of pharmaceutical drugs are not suitable for evaluation of devices). For example, the value of a device goes beyond its health benefits (i.e., QALYs) to the patient because it might include other aspects such as increased efficiency, patient dignity, and so on. Similarly, traditional cost-modeling techniques are not suitable for evaluation of devices. The costs are not evenly spread throughout time and depend on implementation strategies (i.e., parameters such as volume, scale, etc.), and there is a need for a modeling framework that can output the time profile of costs by stakeholder. Furthermore, the cost-effectiveness depends on the service setting (i.e., parameters such as volume and scale of deployment).

Method: This presentation describes the lessons learned while evaluating the cost-effectiveness of diagnostic tests and devices. The details of the different projects are as follows: 1) financial modeling of telemonitoring for heart failure and chronic obstructive pulmonary disease, 2) cost-effectiveness of cardiac magnetic resonance imaging for ischemic cardiomyopathy, and 3) cost-effectiveness of telemonitoring technologies for congestive heart failure.

Results: A brief description of the context that makes the health technology assessment (HTA) of medical devices of interest and characteristics of the devices that make them different from pharmaceutical drugs are detailed. An overview of current approaches of evaluating devices at different HTA bodies such as NICE, MSAC, HAS, CVZ, and so on is then provided. A taxonomy is given that represents the value of medical devices along with methods for incorporating patients’ preferences, with examples of specific case studies. Finally, a financial modeling framework is given for evaluating devices that provides a time profile of costs by stakeholder.

Conclusion: Cost-effectiveness evaluation of medical devices is quite different from that of pharmaceutical drugs. An overview of current methods for the evaluation of devices and the issues involved are described, along with a tentative framework proposal for cost-effectiveness modeling of devices.

P1-20 CONTEMPORARY PROFILE OF DIABETES-RELATED EMERGENCY DEPARTMENT (ED) VISITS IN THE UNITED STATES—A REPORT FROM A 2006–2010 HCUP NATIONWIDE ED SAMPLE

Health Policy, Health Services, and Applied Health Economics (HEP)

Lakshmi Venkitachalam, PhD, Mary Gerkovitch, PhD, Stephen Simon, PhD, Arif Ahmed, BDS, PhD, MSPH, Karen Williams, PhD and William Lafferty, MD, University of Missouri–Kansas City, Kansas City, MO

Purpose: In spite of temporal improvements in risk factor control, the status of diabetes care in the United States remains suboptimal. The contemporary burden imposed by this cardiovascular risk factor on the nation’s emergency system is less well understood. We sought to better characterize emergency department (ED) visits among adults ≥18 years that included a diagnosis of diabetes in the 2006–2010 Nationwide Emergency Department Sample.

Methods: We defined 3 diabetes-related outcomes—any, uncontrolled and uncomplicated, and those with long-term complications—using ICD-9 codes based on Agency for Healthcare
Abstracts

Research and Quality indicators for potentially preventable conditions. Appropriate sampling weights were applied to obtain national estimates and 95% confidence intervals.

Results: During the 5-year period, the estimated total annual ED visits among adults in the United States was 98.3 million, and 11% of these visits included diabetes; this proportion tended to increase throughout time, and it varied among geographic regions, age groups, and payer and neighborhood income (Table). Less than 1% of total ED visits were related to uncontrolled and uncomplicated diabetes, and <2% were related to long-term complications; however, these proportions also differed by sociodemographic, insurance, and hospital teaching status.

Conclusion: Between 2006 and 2010, an estimated 1100 per 10,000 visits to the ED each year include a diabetes-related diagnosis among adults. For payer source, the proportion of ED visits with uncontrolled diabetes and long-term complications was greatest among Medicare patients. Further research is warranted to determine the burden of diabetes in preventable ED visits.

P1-21 UNDERSTANDING PATIENT FLOWS AND CONSULTATION PATTERNS FOR CARE DELIVERY IN EMERGENCY DEPARTMENTS
Health Policy, Health Services, and Applied Health Economics (HEP)
Fanwen Meng, PhD1, Palvannan R. K., MSc1, Kiok-Liang Teow, MSc1, Eugene Guo Liang Lam, BNurs2 and Chee Kheng Ooi, MBBS, MSc1, (1)National Healthcare Group, Singapore, Singapore, (2)Tan Tock Seng Hospital, Singapore, Singapore

Purpose: To identify patient flow patterns in emergency departments (ED) and to assess cross-consultation patterns of 3
consult areas with slightly different functions in an ED in Singapore, through analyzing patient-level data.

Method: A retrospective descriptive study was carried out using patient data from an ED of an acute 1200-bed hospital in Singapore. At ED, there are different functional areas, including triage, a consult area, a resuscitation area, a decontamination area, an observation room, and an isolated area for febrile cases. Three consult areas, called AUC, EDC, and EDX consult, operate in the ED. Generally, AUC is for ambulatory urgent care; EDC and EDX are both for ED urgent care, and the latter is specifically for febrile cases. For each patient, individual movements at various areas within the ED were identified using touch points and location change to exhaustively map patient flow patterns. Consultations crossing the consult areas were estimated based on the established flow patterns.

Results: Three-month data of 41,231 patients (approximately 448.2 daily visits) were reviewed. The patients were prioritized into 4 patient acuity categories (PACs). 270 different patient flow patterns were identified. There were 204 patient flow patterns for PAC2 patients, 134 patterns for PAC3 patients, 88 patterns for PAC1 patients, and 16 patterns for PAC4 patients. Overall, the top 15 flow patterns accounted for 91.8% of total attendances, ranging from 2.5 to 117.1 visits per day. Among all consultations in the ED, 7.6% were cross-consultations among the 3 consult areas, in which 63.3% were from AUC to either EDC or EDX consult, and 30.7% were from EDC to EDX consult, and the latter is specifically for febrile cases. For each patient, individual movements at various areas within the ED were identified using touch points and location change to exhaustively map patient flow patterns. Consultations crossing the consult areas were estimated based on the established flow patterns.

Conclusion: This study helps clinicians and managers better understand the complexity of ED patient flows and consultation patterns. The obtained results concerning cross-consultations can be helpful to improve the care process, especially at triage. Emergency repeat requests always tax resources in a stochastic network. Describing patient flow in the ED provides a database for further analytical or discrete event simulation models. We seek to continue studying ED diagnosis or case mix linking to patient flows. This will help to predict the resource impact if there is a slow change in the presenting population trend due to aging or sharp surges during casualty or novel flu epidemics.

P1-22 A CONTEMPORARY POPULATION-BASED COMPARATIVE ANALYSIS OF OUTCOMES AND COSTS FOLLOWING ROBOTIC AND NONROBOTIC RADICAL CYSTECTOMIES IN THE UNITED STATES
Health Policy, Health Services, and Applied Health Economics (HEP)
Jeffrey J. Leow, MBBS, MPH1, Stephen Reese1, Wei Jiang, MS1, Stuart R. Lipsitz, ScD1, Benjamin L. Chung, MD2 and Steven L. Chang, MD, MS1, (1)Brigham and Women’s Hospital, Boston, MA, (2)Stanford University Medical Center, Stanford, CA

Purpose: Radical cystectomy (RC), the gold standard treatment for invasive bladder cancer, is a morbid procedure associated with high costs, and the increasing adoption of robotic technology requires evaluation.

Methods: We captured all who underwent an RC (ICD-9 code 57.71) from 2004 to 2010 from a nationally representative discharge database representing over 600 nonfederal hospitals throughout the United States. Robotic RC (RRC) procedures were classified procedures through a detailed review of the charge description master (CDM) for each patient that specifically identified supplies unique to robotic procedures, as previously described. Given the limited number of nonrobotic, laparoscopic RCs in the study cohort, we combined these procedures with the open RC and defined this group as nonrobotic. Patient characteristics (age, gender, race, marital status, insurance status, and Charlson comorbidity), hospital characteristics (bed size, teaching status, location, and region), and surgical characteristics (year of procedure, type of approach and urinary diversion, and receipt of pelvic lymphadenectomy) were evaluated. Annual volume was based on the number of cystectomies performed by the hospital or surgeon in the year the procedure was performed on a given patient. Multivariate propensity-weighted regression analyses were performed with clustering by hospitals and survey weighting to ensure nationally representative estimates. The primary outcome was 90-day major complications (Clavien 3-5) as defined by ICD-9 diagnosis codes. Secondary outcomes were inpatient length of stay (LOS) and direct patient costs.

Results: The weighted cohort included 43,733 patients who underwent an RC from 2004 to 2010 in the United States with an overall complication rate of 57.0%. Compared to nonrobotic RC, RRC was not significantly associated with decreased odds of mortality (p = 0.53) or major complication (p = 0.43). However, RRC had a 46% decreased odds of minor complications (OR = 0.54, 95% CI: 0.32–0.94, p = 0.03). RRC had $4302 higher adjusted 90-day median direct hospitals (p = 0.02). Although RRC had a significantly shorter length of stay (1.5 days, p = 0.01), cost breakdowns reveal that there were no significant differences in room and board costs (p = 0.18). Supplies costs for RRC were significantly higher ($2396, p < 0.0001) (Figure).

Conclusions: Our contemporary evaluation of RC suggests that there is no significant mortality and morbidity advantage for RRCs. Costs differences can be attributed to supplies, which may decrease with increasing adoption. Long-term oncological and functional outcomes of RRCs remain to be seen.

Figure

P1-23 ASIA’S RAPID ECONOMIC DEVELOPMENT AND TRENDS IN NUTRITIONAL HETEROGENEITY ACROSS AGE AND SEX: A MULTICOUNTRY COMPARISON
Health Policy, Health Services, and Applied Health Economics (HEP)
Kimberly Babiarz, MA, PhD1, Karen Eggleston, Phd2, Qiulin Chen, PhD2 and Jeremy Goldhaber-Fiebert, PhD2, (1)Centers for Health Policy and Primary Care and Outcomes Research, Stanford,
CA, (2) Stanford University, Stanford, CA, (3) Chinese Academy of Social Sciences, Beijing, China

Purpose: Asia's rapid economic development has increased individual consumption, including nutritional intake with its important health implications. Despite steady poverty reductions, income inequality has increased, raising concerns about nutritional gains in vulnerable groups. We examine how distributions of anthropometric markers of nutrition have changed in China, Indonesia, and India, anticipating future trends through comparisons to the United States.

Method: We compute Body Mass Index (BMI: kg/m²) and sex- and age-specific z-scores using international reference standards for BMI, weight, and height among children. We use available waves of periodically collected surveys, including the China Health and Nutrition Survey, the Indonesian Family Life Survey, India’s National Family and Health Survey, and the US National Health and Nutrition Examination Survey. Outcomes are stratified by sex and age (children, adults (15–45 years), and the elderly (65+ years)).

Results: The distribution of BMI among the Chinese population has shifted to the right throughout time, resulting in reductions in underweight prevalence and increases in obesity with larger shifts for the elderly and adult men. BMI distributions for adult women have not changed substantially. In stark contrast, Indonesia’s largest shifts in BMI distribution occur among adult women and children: obesity has not changed measurably among the elderly, and underweight prevalence among the elderly, although declining, remains high. Although Indian data are sparse, there is no evidence of substantial reductions in underweight status or increases in obesity among young children or adult women or men. In all countries, an apparent paradoxical drop in children’s BMI distributions is due to increases in height-for-age preceding and exceeding increases in weight-for-age, although weight continues to increase after height distributions stabilize. Trends in Asian countries appear similar to trends in the United States during the 1970s, and if they continue, obesity with long exposure starting in childhood could become the norm along with obesity-related chronic disease.

Conclusion: Economic development has reduced undernutrition but has done so unequally, with some groups becoming obese whereas others remain undernourished (e.g., the elderly and women). The heterogeneous examples of China, Indonesia, and India suggest that economic growth has the potential to alter the dynamics of nutritional inequality, threatening higher and longer term obesity and related chronic disease exposure in the future for the elderly, even with the persistence of undernourished subpopulations.

P1-25 BUDGET IMPACT ANALYSIS OF LINEZOLID IN THE TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)-CONFIRMED NOSOCOMIAL PNEUMONIA IN CHINA

Health Policy, Health Services, and Applied Health Economics (HEP)

Seng Chuen Tan, MSc1, Benquan Wu, MD2, Xue Wang, MD3, Qiang Li, MSc3, XiChen, MSc3, Petr Hajek, MSc3 and Dipen Patel1. (1)IMS Health Asia Pacific, Singapore, Singapore, (2) Respiratory and Critical Care Centre, The 3rd Affiliated Hospital, Sun Yat-sen University, Guangzhou, China, (3)CU, First Affiliated Hospital of Medical College of Xi’an Jiaotong University, Xi’an, China, (4) Surgical Intensive Care Unit, Department of General Surgery, Jiangsu Province Hospital, Nanjing, China, (5) Pfizer Inc., Beijing, China, (6) Pfizer Inc., Prague, Czech Republic, (7) Pharmerit International, Bethesda, MD

Purpose: Nosocomial pneumonia (NP) caused by methicillin-resistant Staphylococcus aureus (MRSA) imposes an increasingly high burden on healthcare. Compared to vancomycin, linezolid is a relatively new alternative in China. This study aimed to evaluate the 1-year budget impact from the payer perspective of different adoption rates of linezolid versus vancomycin for treating patients with MRSA-NP in China.

Method: Given that MRSA-NP is acquired during hospital stays, a hospital population budget impact model was constructed using local epidemiological data. Drug acquisition and direct medical costs in 16 Tier-3A hospitals across 4 geographically representative Chinese cities were averaged to provide estimates for an overall national budget impact of a total of 773 Tier-3A hospitals in China, with each being assumed to receive an annual average of 20,000 in-patients. The data reported in a recent head-to-head study were referenced to provide model inputs on efficacy and resource use. A survey with local clinicians suggested that equal adoption rates between linezolid and branded vancomycin were common in current clinical practice. The budgetary impact of having more patients treated with linezolid was explored at both the national and city levels. Scenario analyses, such as removal of the hospital margin of 13% on drug costs as part of the national healthcare reform, were conducted. All costs were reported in 2013 Chinese RMB.

Results: At the national level, an increase of the total budget of ¥972,156 was estimated when the proportion of patients treated with linezolid increased from 50% to 70%, equivalent to an additional ¥38.0 per treated patient. Similarly, an incremental budget of ¥11,603, ¥349, and ¥47,052 was estimated for Beijing, Nanjing, and Xi’an, respectively. In Guangzhou, a total cost saving of ¥20,210 was predicted. In the scenario of removing the margin on drug costs, the increase at the national level reduced to ¥218,271, equivalent to an additional ¥8.5 per treated patient. Total budget savings were estimated in the same scenario for Beijing, Guangzhou, and Nanjing, whereas a smaller increase was estimated in Xi’an.

Conclusion: With its better treatment outcomes reported in the head-to-head study, an increased adoption of linezolid in treating MRSA-NP is likely to cause relatively small incremental budget savings with potential of cost savings to payers in China, which is attributed to partial total cost offset by better efficacy and hence a shorter hospital stay for patients treated with linezolid.

P1-26 DERIVING A MAPPING ALGORITHM FOR CONVERTING SF-36 SCORES TO EQ-5D UTILITIES IN THE KOREAN POPULATION

Health Policy, Health Services, and Applied Health Economics (HEP)

Seon Ha Kim, PhD1, Sang-il Lee, PhD2, Min Woo Jo, PhD2 and Seon-Ok Kim, MS3. (1)Eulji University, Seongnam, South Korea, (2)University of Ulsan College of Medicine, Seoul, South Korea, (3)Asan Medical Center, Seoul, South Korea

Purpose: This study aimed to explore a predict model for EQ-5D index using the SF-36 health profile based on individual-based data from several studies.

Method: Individual-level data (n = 2211) collected from 3 different studies were separated into a derivation set (n = 1660) and an internal validation set (n = 551). Data of 123 colon cancer patients were analyzed for external validation. Prediction models
were analyzed using an ordinary least square (OLS) regression, a 2-part model, and a multinomial logit model using 8 scale scores, 2 summary scores, and its interaction terms of SF-36 as independent variables. An EQ-5D index from the Korean value set or each dimension of EQ-5D was used for dependent variables on approaches. Performances of models were compared in the perspectives of the mean absolute errors (MAEs) and $R^2$ in the derivation, internal validation, and external validation data sets.

Results: Our findings offered that 3 different scoring algorithms have similar performances in respective to MAEs and $R^2$. Considering familiarity and parsimony, the OLS model, including PF, BP, SF, RE, and MH, could be recommended as the final algorithm in this study. The MAEs for OLS models showed consistent results in both the derivation set (0.087 to 0.109) and external validation set (0.082 to 0.097).

Conclusion: This study provided mapping algorithms to estimate EQ-5D index from the SF-36 profile using an individual-based data set and showed that algorithms had high explanatory power and low prediction errors.

P1-27 THE ECONOMIC COST OF DIABETES IN SINGAPORE
Health Policy, Health Services, and Applied Health Economics (HEP)
Joanne Yoong, AB, PhD, May Ee Png, BSc, Chuen Seng Tan, Hwee-Lin Wee, PhD and E-shyong Tai, MB, ChB (with commendation), MRCP (UK), FRCP, PhD, National University of Singapore, Singapore, Singapore

Purpose: The objective of our analysis is to provide estimates of the economic burden of diabetes in Singapore and to provide a breakdown of these costs.

Method: We use an adapted version of the most recently updated methodology of the American Diabetes Association (2013). This methodology uses a prevalence-based approach that combines current estimates of population demographics and diabetes prevalence rates with macro- and microeconomic data from Singapore for the year 2010. We compute both disease-related direct medical costs and the costs of indirect productivity losses. Indirect productivity losses affect individuals both inside and outside the labor force. For those employed, productivity losses include diabetes-related days absent from work (absenteeism) and diabetes-related reductions in on-the-job productivity (presenteeism). Productivity losses also include the years of lost work from individuals who withdraw from the labor force due to diabetes-related disability, and the years of lost work from premature mortality. These losses can be sizable.

Results: We estimate productivity losses of approximately USD 500–600 million, including estimated losses due to absenteeism, presenteeism, lost productivity from nonparticipation in the labor force due to diabetes, and lost productive capacity due to early mortality. Including estimates of direct medical costs raises the estimates of the total costs of diabetes in excess of USD 1 billion in 2010.

Conclusion: The economic burden of diabetes in Singapore is substantial. For working-age adults in particular, the indirect productivity costs exceed disease-related direct medical costs. Public health planning and management should take not only the direct but also the indirect costs of diabetes into account when considering an appropriate response, because the prevalence of diabetes in Singapore is rising and projected to further increase throughout time in younger populations.

P1-28 MANAGING, CREATING, AND USING EVIDENCE TO SUPPORT CLINICAL DIAGNOSIS IN PRIMARY CARE
Health Policy, Health Services, and Applied Health Economics (HEP)
Brendan C. Delaney, MB, Derek Corrigan, MSc, Przemyslaw Kazienko, PhD, Roxana Danger Mercaderes, Dr, Tomasz Kajdanowicz, PhD, Tomasz Wrobel, Jean-Karl Soler, PhD, Olga Kostopoulou, PhD, Vasa Kurcin, PhD and Thomas Fahey, PhD, (1) King’s College London, London, United Kingdom, (2)Royal College of Surgeons in Ireland, Dublin, Ireland, (3)Wroclaw University of Technology, Wroclaw, Poland, (4)Imperial College, London, United Kingdom, (5)Mediterranean Institute of Primary Care, Marsa, Malta

Purpose: Diagnostic error accounts for the majority of litigation cases against family practitioners in Europe and the United States. Decision support for diagnosis integrated with the electronic health record has been suggested as one part of dealing with this problem. Clinical prediction rules (CPRs), formal statements about the relationship between presenting problems, symptoms, signs, and diagnoses, are increasingly available. However, both a formal means of representing CPRs so that computer systems can use them and a lack of evidence by which to populate them have been barriers to adoption.

Method: The TRANSFoRM project (http://www.transformproject.eu) is a 5-year €9 million EU project that is developing a digital infrastructure for the learning health care system in Europe. Part of this project focuses on the delivery of a knowledge translation system for diagnosis in primary care. A formal representation for diagnostic evidence has been produced, along with a means of populating that evidence using both published rules and data mining.

Results: We developed a formal ontology for diagnostic reasoning, with concepts for the reason for encounter (RFE), diagnostic cue, prevalence, and diagnosis. The ontology was developed in Protégé and made available as a web service using Sesame. The ontology can support both numerical and categorical rules, along with the concept of red flags (low-predictive-value cues for very serious outcomes). The ontology was populated with evidence from a review of literature for the diagnosis of chest pain, abdominal pain, and shortness of breath in primary care. To further expand the knowledge available, we used a data-mining approach based on the KNIME tool. The TransHiS data set, consisting of 67,000 episodes of care with RFEs and diagnoses recorded by general practitioners in the Netherlands and Malta, was used to derive classifiers based on naive Bayes or random forest methods, and then imported into the ontology.

Conclusion: Using an ontology to store diagnostic information allows for 3 important requirements of an automated information system to support clinical diagnosis: 1) the system can provide a ranked list of potential diagnoses in real time as information is gathered, 2) the system can reason backward to suggest relevant cues to gather based on potential diagnoses, and 3) new data can be added, and the ontology will suggest new logical associations based on those data.

P1-29 COST-EFFECTIVENESS OF 72-WEEK VERSUS 48-WEEK TREATMENT WITH PEGYLATED INTERFERON PLUS RIBAVIRIN IN CHRONIC HEPATITIS C GENOTYPE 1-INFECTED JAPANESE PATIENTS
Health Policy, Health Services, and Applied Health Economics (HEP)
Haku Ishida, MD1, Shuji Terai, MD2, Isao Hidaka, MD2, Isao Sakaida, MD2 and Yuji Inoue, MD3, (1)Yamaguchi University Hospital, Ube, Japan, (2)Yamaguchi University Graduate School of Medicine, Ube, Japan

Purpose: Extended pegylated interferon (PEG-IFN) plus ribavirin treatment for 72 weeks has been shown to be more effective than the standard 48 weeks of this treatment in patients with late virological responder (LVR) of chronic hepatitis C virus infection (CHC) genotype 1. The purpose of this study was to evaluate the cost-effectiveness of this extended-duration treatment compared with standard-duration treatment in Japanese patients.

Method: We created a Markov decision model of HCV natural history and progression toward advanced liver disease to evaluate the cost-effectiveness of alternative treatment strategies in a previously untreated Japanese cohort of CHC patients aged 50 years using a lifetime time horizon. We compared 3 strategies: no treatment, standard treatment (48 weeks), and extended treatment (72 weeks) with PEG-IFN-2b+ribavirin. The data sources of the natural history model were derived mainly from Japanese epidemiological studies. The data of the effectiveness of extended treatment in the CHC genotype 1–infected late viral responders were derived from systematic reviews by the Cochrane Collaboration. The costs for treatment of CHC and complicated liver disease such as liver cirrhosis or hepatocellular carcinoma were obtained from insurance claim data in our hospital.

Results: Our model estimated that the standard- and extended-duration strategies could yield 0.47 and 0.49 of the sustained viral response, respectively. In the base case analysis, the extended-treatment (72-week) strategy could increase by 0.12 and 3.11 the quality-adjusted life years (QALYs) compared to the standard and no-treatment strategies, and a lifetime of no treatment was more costly than the other strategies. The extended-treatment strategy produced an incremental cost-effectiveness ratio (ICER) of 0.38 million yen per QALY gained versus the standard-treatment strategy. Sensitivity analyses showed that the lower rate of sustained viral response (SVR) provided by the extended treatment relative to the standard treatment increased the ICER significantly, whereas the model results were relatively insensitive to other inputs. The probabilistic sensitivity analysis showed that the extended treatment would be cost-effective in cases of more than 98% probability at conventional willingness-to-pay thresholds.

Conclusion: Extended (72-week) treatment with PEG-IFN+ribavirin would be a fairly cost-effective strategy compared to standard (48-week) treatment for untreated patients chronically infected with HCV of genotype 1 in Japan.

P1-30 IMPROVED SURVIVAL IN PATIENTS WITH VIRAL HEPATITIS–INDUCED HEPATOCELLULAR CARCINOMA UNDERGOING RECOMMENDED ULTRASONOGRAPHIC SURVEILLANCE

Health Policy, Health Services, and Applied Health Economics (HEP)

Hla-Hla Thein, MD, MPH, PhD1, Michael Campitelli, MPH2, Latifa Yeung, MD, MSc2 and Craig Earle, MD, MSc2, (1)Dalla Lana School of Public Health, Toronto, ON, Canada, (2)University of Toronto, Toronto, ON, Canada, (3)Institute for Clinical Evaluative Sciences, Toronto, ON, Canada

Purpose: Hepatocellular carcinoma (HCC) is an increasing public health problem worldwide. Practice guidelines recommend surveillance for high-risk patients to detect HCC at an early stage when curative treatments can be applied to achieve long-term survival benefit. There are, however, limited data on the use of recommended HCC surveillance in Canada. We examined the impact of routine ultrasonographic surveillance on mortality in patients diagnosed with viral hepatitis–induced HCC and determined predictors of receiving routine ultrasonographic surveillance using Ontario Cancer Registry–linked health administrative data.

Method: We conducted a retrospective cohort study of all eligible viral hepatitis patients who developed HCC throughout the period 1990–2009. The timing and intensity of HCC surveillance for 2 years before HCC diagnosis were assigned hierarchically as follows: 1) ≥2 abdominal ultrasound screens annually, 2) 1 screen annually, 3) inconsistent screening, and 4) no screening. Survival rates were estimated using the Kaplan–Meier method and parametric models to correct for lead time bias. Association between the timing and intensity of HCC surveillance and the risk of mortality after HCC diagnosis was examined using Cox proportional hazards regression models adjusting for sociodemographics, clinical characteristics, index year, and HCC treatment. Log binomial regression models were constructed to determine predictors of receiving ≥1 ultrasound screening annually for 2 years before HCC diagnosis.

Results: The study cohort comprised 1443 patients with viral hepatitis–induced HCC. An estimated 12.5% of patients received ≥2 screens annually for 2 years before HCC diagnosis, 33.8% received 1 screen annually, 43.2% received inconsistent screening, and 10.5% did not receive screening. Compared to those not screened, those receiving ≥2 screens or 1 screen annually were significantly associated with a lower mortality risk, corrected for lead time bias (HCC sojourn time 70 days: HR (95% CI): 0.64 (0.48–0.84) and 0.64 (0.51–0.79), respectively; and HCC sojourn time 140 days: HR (95% CI): 0.68 (0.52–0.90) and 0.69 (0.55–0.85), respectively). High-risk viral hepatitis patients with cirrhosis or esophageal varices, and those diagnosed in most recent years (2005–2009 vs. 1990–1994), were independently associated with increased odds of receiving routine ultrasonographic surveillance.

Conclusion: Our findings suggest that routine ultrasonography of the liver in patients with viral hepatitis is associated with reduced mortality in a population-based setting. Information about the effectiveness of HCC surveillance is important to inform health policy to improve the health care system.

P1-33 A BAYESIAN LEARNING MODEL OF STROKE PATIENTS’ UTILIZATION OF REHABILITATION SERVICE

Health Policy, Health Services, and Applied Health Economics (HEP)

Yuan Tian, MSc1, Xing Zhang, BA2, Gerald C. H. Koh, PhD2 and David B. Matchar, MD1, (1)Duke-NUS Graduate Medical School, Singapore, Singapore, (2)National University of Singapore, Singapore, Singapore

Purpose: Although evidence suggests that rehabilitation can improve poststroke functional status, the outpatient rehabilitation service is often underused. The authors propose a dynamic model within a Bayesian learning framework, and apply it to rehabilitation service usage data of a cohort of stroke patients in Singapore to unveil the behavior of stroke patients and inform policies to raise the uptake of rehabilitation service.

Method: We constructed a discrete choice learning model of the individual behaviors of stroke patients in an environment in which there is uncertainty about the efficacy of the rehabilitation service.
and hence the optimal quantity of service consumption. In our model, the usage experience gives stroke patients imperfect information about the efficacy of each rehabilitation consumption level. Stroke patients initially hold their prior beliefs about the efficacy of the rehabilitation service, and their posterior beliefs about the efficacy are further updated by their usage experience through a Bayesian learning process. In addition, stroke patients make a choice about the quantity to use based on their prescribed amount. Stroke patients’ preferences are mapped onto a utility function taking the perceived efficacy of different quantity usage and the corresponding costs of service into consideration. We calibrate the model against the data using maximum likelihood estimation to quantify the uncertainty of stroke patients’ belief regarding rehabilitation service, as well as unveil their sensitivity to the price of the service. Using the estimated coefficients, we performed 2 policy experiments to find how the timing of introducing monetary incentives affects the uptake of the rehabilitation service.

Results: The counterfactual experiments show that introducing 1-month free trials of the rehabilitation service to stroke patients in the 1st month post discharge can increase more use of the service than the free trials that are introduced in the 6th month post discharge. Based on the model estimates, the results show that introducing 1-month free trials to those who fully adhere to their prescription in the 1st month post discharge can increase the uptake of the rehabilitation service by 3%.

Conclusion: To increase the uptake of the rehabilitation service, the model implies that the policy makers could consider designing incentives to facilitate patients learning about the true efficacy of the service. The timing of introducing the incentive is important, and the first few rehabilitation service visits post discharge are crucial.

P1-34 FRAMINGHAM RISK FACTORS MODELING TO PREDICT CARDIOVASCULAR DEATHS AMONG FILIPINOS

Quantitative Methods and Theoretical Developments (MET)

Briddith S. Peñaranda, MS, Public Health-Biostatistics¹, Maria Luz Joanna B. Sorta, MD², Eduardo L. Cruz Cruz, MS² and Rody G. Sy, MD³, (1)University of the Philippines, Muntinlupa City, Philippines, (2)Cardinal Santos Medical Center, San Juan City, Metro Manila, Philippines, (3)University of the Philippines, Quezon City, Philippines

Background: The majority of Filipino physicians are aware of only the Framingham cardiovascular disease (CVD) risk factors for stratifying patients’ risks for heart disease. Some variances in the Filipino lifestyle and genetic profile may require some modifications on the existing international Framingham risk equation.

Purpose: This study aims to create a prediction model that can estimate risk for CVD death among Filipinos based on currently known risk factors using survival analysis.

Methods: Baseline characteristics of age, sex, high-density lipoprotein (HDL), low-density lipoprotein (LDL), diabetes mellitus (DM), hypertension, and smoking among Filipinos were derived from the Food and Nutrition Research Institute (FNRI) data of 1998. The 2007 data of the Philippine Cardiovascular Outcomes Study (PhilCOS) identified the CVD outcomes after 9 years. Six out of 13 national regions were included in the cohort of 1749 responders. The model selection used was a stepwise procedure. Survival techniques, specifically the Weibull regression model and frailty model, to account for the other unmeasured risk factors were fitted to the data. Predicted survival time in years was computed and compared to the observed data.

Results: Age, gender, blood pressure, DM disease, and smoking history significantly predicted CVD death among Filipinos. The effects of HDL and LDL were not statistically significant in the model development. In general, predicted values were higher by an average of 1.1 years.

Conclusions: Among Filipinos, the most significant risk factors for CVD death were age, gender, blood pressure, DM disease, and smoking history. Filipinos who had a greater chance of survival were younger females, those with normal blood pressure, nondiabetics, and never smokers. A sex-specific model using Weibull distribution was chosen to be the distribution of choice. Incorporating frailty was not needed in these data.

P1-36 COMPARISON OF SYSTEM DYNAMICS AND DISCRETE EVENT SIMULATION IN THE APPLICATION OF SPECIALIST OUTPATIENT CLINIC MODELING

Quantitative Methods and Theoretical Developments (MET)
Zhecheng Zhu, PhD and Kiok-Liang Teow, MSc, National Healthcare Group, Singapore, Singapore

Purpose: This study aims to compare 2 simulation techniques, system dynamics (SD) and discrete event simulation (DES), in the application of specialist outpatient clinic modeling.

Method: SD and DES are 2 modeling techniques frequently used to describe the mechanism of a system, understand how the system evolves throughout time, and test how the system responds when some internal or external conditions change. Although both techniques can be applied to study the same system, their emphases and approaches could be different. SD projects the trends due to interactions of the feedback structures and time delays using stock and flow definitions. DES studies the network of activities and queues and uncertainties in a system. In this study, both techniques are applied to tackle problems prevailing in specialist outpatient clinic (SOC) settings. SOCs are complex systems involving many interactions and variations. SOCs accept referrals from internal departments within the hospital and external facilities such as primary care centers. Patients may have multiple visits (one first visit and several follow-up visits) before being discharged from the system. Appointment slots are divided into first-visit slots and follow-up-visit slots accordingly to accommodate different demand. In this study, both SD and DES are applied to model the patient flow of the SOC using computer software (Powersim for SD and Simul8 for DES). Comparison is conducted in terms of objective, model focus, problem scale, model structure, model resolution, model complexity, variability, data requirement, model validation, and model output.

Results: The table lists some prevailing problems in SOC and the suitability of the techniques in tackling the problems.

It is observed from the table that SD focuses on dynamic trends rather than point predictions, whereas DES is more suitable for studying the uncertainties in the system and quantify the impact of modifying different parameters.

Conclusion: As 2 commonly used simulation methods, SD and DES can both be used to model the complexity of a health care system, although the focus and strength of these 2 methods may differ.
Table

<table>
<thead>
<tr>
<th>Problem</th>
<th>System Dynamics</th>
<th>Discrete Event Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No show</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Force(double) booking</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FV/RV ratio and slot allocation</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Elastic demand and capacity</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Manpower configuration</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Appointment time</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Consultation waiting time</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clinic overtime</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Uncertainties in SOC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointment scheduling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**P2-1 HOW MUCH SHOULD DOCTORS BE PAID? CROSS-CULTURAL EVIDENCE OF PREFERENCES FOR PAY RATIOS**

*Health Policy, Health Services, and Applied Health Economics (HEP)*

**Sorapop Kiatpongsan, MD**1 and Michael I. Norton, PhD2, (1) Harvard Interfaculty Initiative in Health Policy, Cambridge, MA, (2)Harvard Business School, Boston, MA

**Purpose:** To assess the estimated (perceived) and ideal (preferred) incomes of doctors, executive officers, cabinet ministers, and unskilled workers in Asia, Australia, Africa, Europe, and America—and examine whether ideal income gaps between skilled and unskilled workers were smaller than estimated gaps.

**Methods:** Data were from the latest International Social Survey Programme, which was published in 2012 (conducted in 2009). Respondents from 40 countries (N = 55,238) on 5 continents were asked to estimate how much a general practitioner (GP), a chair of a large corporation (CEO), a cabinet minister, and an unskilled worker earn. Then, they reported how much these people *should* earn. Ratios of incomes were calculated using the income of an unskilled worker as the denominator. Ratios of estimated incomes were compared to ratios of ideal incomes.

**Results:** Median ratios of estimated incomes of GPs to unskilled workers ranged from 1.25 (in Ukraine) to 12.00 (in South Africa). Median ratios of estimated incomes of CEOs to unskilled workers ranged from 3.85 (in Denmark) to 41.67 (in South Korea). Median ratios of estimated incomes of ministers to unskilled workers ranged from 2.50 (in Norway) to 25.71 (in South Africa).

Median ratios of ideal incomes of GPs to unskilled workers ranged from 1.50 (in Ukraine and China) to 8.28 (in South Africa). Median ratios of ideal incomes of CEOs to unskilled workers ranged from 2 (in Denmark) to 20 (in Taiwan). Median ratios of ideal incomes of ministers to unskilled workers ranged from 2 (in Norway) to 10 (in South Africa).

Most importantly, the median ratio of ideal incomes (GPs’ to workers’) was significantly lower than the median ratio of estimated incomes in 35 of the 40 countries (p < 0.05)—excepting only Argentina, Estonia, Russia, Ukraine, and Venezuela. Similarly, median ratios of ideal incomes (both CEOs’ to workers’ and ministers’ to workers’) were significantly lower than median ratios of estimated incomes in all 40 countries (p < 0.05 for all).

**Conclusions:** There is an international consensus that the ideal gaps in incomes between CEOs and ministers, on one hand, and workers, on the other hand, should be smaller. In the vast majority of countries, people believed that the gap in income between doctors and workers should also be smaller.

**P2-2 THE GAP BETWEEN PHYSICIANS’ PERCEPTIONS OF THE IMPORTANCE OF SHARED DECISION MAKING AND THEIR REPORTS OF ITS OCCURRENCE IN THEIR PRACTICES**

*Decision Psychology and Shared Decision Making (DEC)*

**Sorapop Kiatpongsan, MD**1, Sandra Feibelmann, MPH2 and Karen R. Sepucha, PhD2, (1)Harvard Interfaculty Initiative in Health Policy, Cambridge, MA, (2)Massachusetts General Hospital, Boston, MA

**Purpose:** To assess physicians’ perceptions of the importance of having well-informed patients and having explicit discussions of patients’ preferences in menopausal symptom management decisions, and the frequency that they report both in their practices.

**Methods:** 188 U.S. physicians who had seen patients with menopause symptoms within the past year were invited (they were identified through the American Medical Association Master file), and 108 (57%) agreed to participate. Respondents stated how important it is that a patient is well informed and that her preference is explicitly discussed before a decision is made. Participants then self-assessed how well this happened in their practices. Perceptions of the importance of informed and shared decision making and reported practices were evaluated in aggregate and stratified by physicians’ characteristics (gender, specialist status, duration of practice, the number of menopausal patients, and knowledge).

**Results:** 57 (53%) physicians were female. 55 (51%) physicians identified themselves as a specialist (obstetrician and gynecologist). The mean duration in practice was 19.7 years (SD = 9.1). The median number of patients with menopausal symptoms seen per year was 100 (interquartile range = 250; 50–300). The mean knowledge score was 80.3% (SD = 9.1). 64% of physicians reported that they used educational materials, such as a brochure or a decision aid, to help inform patients before treatment decisions are made.

92% of physicians felt that it is very or extremely important that their patients are well informed about treatments for menopause, but only 48% of physicians reported that their patients are very or extremely well informed about treatments for their menopause. 97% of physicians felt that it is very or extremely important to explicitly discuss patients’ preferences before a treatment decision is made, and 84% of physicians reported that they always explicitly discuss patients’ preference before a treatment decision is made.

Specialist physicians were more likely to feel that their patients are extremely well informed compared to nonspecialist physicians (16% vs. 2%; p = 0.006). Female physicians were more likely to feel that it is extremely important to explicitly discuss patients’ preferences compared to male physicians (82% vs. 63%; p = 0.022).

**Conclusions:** There are significant gaps between the perceptions of the importance of informed and shared decision making and the frequency of its occurrence in practices in menopausal symptom management.
P2-3 MULTICRITERIA DECISION ANALYSIS METHODS IN HEALTH CARE: CURRENT STATUS, GOOD PRACTICE, AND FUTURE RECOMMENDATIONS
Decision Psychology and Shared Decision Making (DEC)
Praveen Thokala, PhD, University of Sheffield, Sheffield, United Kingdom

Purpose: There has been an increase in the number of multicriteria decision analysis (MCDA) applications in health care since the 1990s, but there is still confusion among potential users regarding their appropriate use, and this paper reports on an expert MCDA meeting organized to address these issues.

Method: An expert meeting was held in June 2013 at the University of Sheffield with 29 representatives from a variety of governmental, academic, and pharmaceutical institutes, which had the objective to discuss the role, options, and limitations of MCDA in health (full details of the participants are provided). The key messages and good practice recommendations developed by the participants of the expert meeting are described along with a description of the future work underway.

Results: The key messages and good practice recommendations developed by the participants of the expert meeting are as follows: 1) problem structuring is key—the first aspect of the MCDA process is the problem structuring, and it is recommended that enough time is allocated to understand and specify the decision problem under consideration; 2) numerical MCDA modeling is not always necessary—there are different ways to use the same information, and deliberative discourse with the performance matrix as a starting point is sufficient in some situations rather than numerical MCDA models; 3) a variety of weighting and scoring techniques—there are a number of different methods to estimate the value scores and to elicit the weights, but not all scoring methods and weighting techniques are suitable for every MCDA method; and 4) visualization and transparency are important—for the decision makers to have confidence in the MCDA model, the model outputs need to be adequately visualized, and the model needs to be transparent; and 5) uncertainty modeling—appropriate care needs to be taken in performing uncertainty analysis due to the interdependence of uncertainty in evidence and uncertainty in committee members’ preferences.

Conclusion: MCDA has already been used and is well suited to support a broad range of health care decision problems, but there is a need to develop a framework to select the appropriate MCDA technique for specific health care decisions. Future work is underway to develop the guidelines for choosing the most appropriate MCDA method to be applied for a given health care decision problem.

P2-4 COST-EFFECTIVENESS ANALYSIS OF PERCUTANEOUS RENAL MASS BIOPSY TO GUIDE THE MANAGEMENT OF SMALL RENAL MASSES
Health Policy, Health Services, and Applied Health Economics (HEP)
Jeffrey J. Leow, MBBS, MPH and Steven L. Chang, MD, MS, Brigham and Women’s Hospital, Boston, MA

Purpose: The majority of localized solid renal tumors are small renal masses (SRMs; 4 cm³) of which 15–30% are benign. Percutaneous renal mass biopsy (RMB) is an optional preoperative evaluation that can potentially identify benign lesions to avoid unnecessary treatment. We performed a cost-effectiveness analysis to determine the utility of RMB to guide management decisions for SRM.

Methods: We developed a decision-analytic model estimating the costs and benefits of RMB, compared to immediate curative-intent therapies, to inform the decision for the following treatments: percutaneous or laparoscopic ablation, open or laparoscopic partial nephrectomy (PN), and open or laparoscopic radical nephrectomy (RN). Using published literature, we modeled a 15% nondiagnostic rate, 97.5% sensitivity, 91.2% specificity, and a 0.01% complication rate. RMB showing that malignancy or a nondiagnostic biopsy led to treatment; the finding of a nonmalignant SRM led to active surveillance. Our base case was a healthy 65-year-old patient with an asymptomatic unilateral 3 cm SRM. Outcomes were measured in quality-adjusted life years (QALYs) and 2012 US dollars, respectively. We used a societal perspective, lifetime horizon, 3% discount rate, 3-month cycle length, and $50,000/QALY willingness-to-pay threshold. Alternative clinical scenarios were assessed with sensitivity analysis.

Results: In the base case scenario, RMB was the cost-effective strategy for all patients considering RN options, whereas it was not cost-effective to guide the management for patients considering PN or ablative options (Figure). The open and laparoscopic approaches for PN and RN did not affect the utility for RMB. For RN, sensitivity analyses showed that RMB remained cost-effective across a wide range of tumor sizes, patient ages, and healthy states. In contrast, RMB prior to PN and laparoscopic ablation became the cost-effective strategy for smaller tumors (<2.5 cm), younger patients (<60 years), or less healthy individuals (>5% risk of perioperative mortality). For patients planning for percutaneous ablation, RMB was cost-effective only among younger patients (<60 years) with SRMs <2 cm in size. The results were primarily driven by the risks for procedural complications and postoperative chronic kidney disease.

Conclusion: For all patients with an SRM considering RN, RMB is recommended. Among patients with an SRM planning for PN or laparoscopic ablation, RMB is recommended for patients <60 years old, with an SRM <2.5 cm, or in poor health. For patients electing for percutaneous ablation, RMB is recommended only for patients <60 years old with an SRM <2 cm.

P2-7 IMPROVEMENT OF QUALITY OF CARE FOR POSTPARTUM HEMORRHAGE BY MULTIFACETED INTERVENTION
Decision Psychology and Shared Decision Making (DEC)
Pattarawalai Talungchit, MD, PhD, Tippawan Liabsuetrakul, MD, PhD, and Gunilla Lindmark, MD, PhD, (1)Mahidol University, Bangkok, Thailand, (2)Prince of Songkla University, Hat Yai, Songkhla, Thailand, (3)Uppsala University, Uppsala, Sweden

Purpose: To assess the improvement of quality of care for postpartum hemorrhage by multifaceted intervention.

Methods: A quasi-experimental study was conducted in 6 district hospitals and 3 referral hospitals in one province of southern Thailand. Multifaceted intervention, including educational outreach, audit and feedback, reminder, and involvement of opinion leader, was implemented. Doctors and nurses who are responsible for case management and care policy in the hospitals participated in the intervention. The checklist of quality of care, developed from evidence-based guidelines and assessed by practicability, was used for medical record audit. One-year medical records of women diagnosed with postpartum hemorrhage in participating hospitals before the educational outreach were reviewed using the checklist. The findings of audit were feedback to all doctors and nurses who acted as the opinion leaders during educational outreach. After the meeting, the list of care reminders was distributed and placed at the
relevant wards and rooms. One-year medical records of postpartum hemorrhage were again reviewed using the same checklist. The improvement of quality of care was evaluated by comparing before and after intervention.

Results: One hundred and forty-five health providers in all participating hospitals took part in the multifaceted intervention. For district hospitals, 132 and 142 medical records of pregnancy diagnosed as postpartum hemorrhage in, respectively, the pre- and postintervention periods were reviewed. Diagnosis and general managements were generally improved. Indwelling of bladder catheter and hemodynamic monitoring were significantly increased in the postintervention period ($p < 0.001$). Improvement of specific managements for uterine atony and retained placenta was found, but not a significant difference. For referral hospitals, 228 and 303 medical records of women with postpartum hemorrhage were reviewed. Hemodynamic monitoring was
significantly improved. A high rate of proper care was found, and the significance of improvement could not be identified.

**Conclusion:** Quality of care for postpartum hemorrhage was improved by multifaceted intervention to health providers. The intervention should be extended to other hospitals, and the effect of quality of care to severe maternal morbidity and mortality needs to be monitored.

**P2-9 USING CONSENSUS METHODS TO DEVELOP A COUNTRY-SPECIFIC MASTER OF PUBLIC HEALTH (MPH) CURRICULUM AT THE MALDIVES NATIONAL UNIVERSITY**

**Decision Psychology and Shared Decision Making (DEC)**

**Monica C. Robotin, MBBS (Hons), FRACS, MAppEpid, MIntH, MBA¹, Muthau Shaheem, BPolSc, MBA² and Aishath S. Ismail, BSc (Hons), AppHNutrit, MPH³, (1)Faculty of Medicine, University of Sydney, Sydney, Australia, (2) Faculty of Health Sciences, Maldives National University, Male, Maldives, (3) Maldives National University, Male, Maldives**

**Purpose:** During recent decades and despite multiple challenges, the public health system in the Maldives has achieved substantial improvements, reflected in improved child and maternal mortality indicators and the control of many communicable diseases of public health importance. However, these health gains are gradually being undermined by the effects of epidemiological transition, requiring new public health skills for its health care practitioners. In this context, the Faculty of Health Sciences is developing the country’s first master of public health (MPH) program, taking into account the country’s health profile and needs.

**Method:** Following the identification of key stakeholder groups, a wide consultation process defined local MPH teaching needs and available expertise for subject development and teaching, appraised available evidence from other MPH curricula from different world regions, and sought agreement on key deliverables for a Maldivian MPH program. The recommendations of semi-structured interviews conducted with key stakeholders informed a nominal group process that sought agreement on overall course structure. The process was finalized through an online Delphi process, inviting participants to rank subjects according to local need. The Delphi process generated 19 recommendations for core subjects and 35 for elective subjects. Workshop participants agreed on the 6 core subjects and consolidated the 35 proposed elective subjects into 17 topics. These were prioritized through a modified online Delphi process. Eleven participants took part in this process, which reached consensus on 8 subjects that best meet local needs and for which teaching expertise is locally available.

**Conclusion:** Consensus methods allowed the engagement of diverse key stakeholders into the curriculum development process, ensuring local buy-in and support of the MPH course, which commenced in January 2014.

**P2-10 USING AN OPTION GRID TO FACILITATE INFORMED PARTICIPATION IN CERVICAL CANCER SCREENING IN RURAL PRIMARY CARE PRACTICE, TAMIL NADU, INDIA: A PHASE 1 STUDY**

**Decision Psychology and Shared Decision Making (DEC)**

**Lyndal Trevena, MBBS, MPH, PhD¹, Rita Isaac, PhD², Jan Olver, MBBS, PhD³ and Madelon Finkel, PhD³, (1)University of Sydney, Sydney, Australia, (2)Christian Medical College, Vellore, India, Vellore, India, (3)Weill Cornell Medical College, New York, NY**

**Purpose:** Cervical cancer (CC) is the most common cause of cancer death for women in India, and low-tech screening programs are being implemented. Health workers are being trained to screen women, but low cervical cancer literacy is a major barrier to implementation. CC education occurs in large groups, outreach “camps,” and one-on-one counseling prior to screening. Clear, relevant information is needed for health workers to identify and address women’s concerns despite high levels of illiteracy and time constraints in rural communities.

**Method:** An option grid tool (OG) was informed by focus groups with 62 rural women. Nine key messages were included as the rows in the English OG and provided to 20 health practitioners at a VIA training program, and feedback was collected. Forward and backward translation to Tamil was completed, and conceptual and linguistic challenges for shared decision making noted. The OG was then field tested by 4 health workers and 22 women as a group and 1 individually. Direct observation notes and written feedback were collected.

**Results:** Key messages include average CC incidence and mortality per village, signs and symptoms, etiology, screening test information and benefits, the meaning of a positive result (including false positives), the treatment of abnormal results, and who should be screened. The 20 health workers were positive about the grid. Most felt it could be used to counsel women prior to screening, but none had done so after 4 months. Translation highlighted the difficulties in conveying outcomes throughout time in communities with no calendars or diaries, difficulty with adapting trial evidence to the local context, and the need to find new ways of explaining precancerous lesions due to lack of words in the Tamil language. In field testing, the OG was useful for identifying gaps in women’s knowledge and facilitating interactive discussion, and staff used existing flipcharts to enhance and expand information visually. The individual was able to identify knowledge gaps about abnormal test results and treatment not previously addressed in traditional education, and she took a copy home. Staff felt the OG allowed women to “speak out more freely,” it was “clear” and “sufficient,” and it “allowed discussion of new issues” and helped to “motivate and raise awareness.”

**Conclusion:** Health workers in a low-resource setting found a one-page OG to be a useful tool to facilitate informed participation in cervical cancer screening.

**P2-11 “BUT IS THE NEEDLE VERY LONG?” THE FEAR OF NEEDLES IN CONSULTATIONS ON INSULIN THERAPY**

**Decision Psychology and Shared Decision Making (DEC)**

**Ayeshah Syed, Master of English as a Second Language and Zaraidah Mohd. Don, PhD, MA, BA(Hons), University of Malay, Kuala Lumpur, Malaysia**

1ST ASIA-PACIFIC MEETING OF THE SOCIETY FOR MEDICAL DECISION MAKING

E33
Purpose: The aim of this presentation is to analyze the way in which the doctor elicits and manages a patient’s fears of needles in talk-in-interaction.

Method: The sites for the collection of the primary data were hospital and clinics in Malaysia. Extracts from 7 doctor–patient consultations were selected for examination. Jefferson’s transcription conventions were used to transcribe the consultations to capture the linguistic and nonlinguistic elements of interaction. The consultations, which involved participants from different demographic groups, were conducted in English and Malay. We then analyzed the selected samples using the analytical tools derived from conversation analysis to discover the participants’ interactional conduct, including language, tone, laughter, and pauses.

Results: The findings are presented according to the following research questions: 1) who initiated needle-related topics, and how were they brought into the talk? And 2) how did the doctor go about allaying the patient’s fear of needles? Our initial analysis shows that some patients were forthcoming about their fear of needles, but in most consultations, the topic was initiated by the doctor via a series of questions, including general or specific questions. We will illustrate in our presentation how a patient who denies being afraid of needles at the beginning can eventually express very strong feelings of fear much later in the consultation.

Two important issues that we will highlight are how language proficiency inhibits communication and how silence, pauses, and nervous laughter are manifested as signs of fear in the interactions. It is also interesting to see how doctors attempted to reduce patients’ fears by providing some kind of assurance (e.g., downplaying the pain involved and the size of the needle) and providing suggestions on how to carry out the injection, which is designed to give confidence.

Conclusion: The fear of needles has been identified as a barrier to insulin therapy. However, patients may be reluctant to discuss these fears. Because communicative practices differ among individuals and among sociodemographic groups, the analysis of naturally occurring doctor–patient interaction will illustrate how doctors can elicit and help patients manage these fears. Further data collection may inform training efforts to equip doctors with insight and strategies to better manage patients’ fears when making decisions about treatment options.

P2-12 WHO MAKES THE DECISION? MALAYSIAN HEALTH CARE PROFESSIONALS’ VIEWS ON PROSTATE CANCER TREATMENT

Yew Kong Lee, BA1, Ping Yein Lee, MBBS, MMed, (Family, Medicine)2, Ai Theng Cheong, MBBS, M.Med, (Family, Medicine)2, Chirk Jenn Ng2, Khatijah Lim Abdullah1, Teng Aik Ong, MBBS, Master, of, Surgery2 and Azad Hassan bin Abdul Razack, MBBS, FRCSed1, (1)University of Malaya, Kuala Lumpur, Malaysia, (2) Universiti Putra Malaysia, Serdang, Malaysia, (3)Faculty of Medicine, University of Malaya, Wilayah Persekutuan, Malaysia

Purpose: This study aimed to explore the views of Malaysian health care professionals (HCPs) on the roles of various stakeholders who were involved in making decisions about prostate cancer treatment.

Method: Four in-depth interviews and 3 focus group discussions were conducted with HCPs from government and private hospitals in Malaysia between December 2012 and March 2013. HCPs consisted of private urologists (n = 4), government urologists (n = 6), urology trainees (n = 5), a government policy maker (n = 1), and oncologists (n = 3). There were 16 male and 3 female participants. Trained researchers used a topic guide to guide the interviews, which were audio-recorded, transcribed verbatim, checked, and managed with NVivo 10 software. A thematic approach was used to analyze the data.

Results: Three parties were involved in the decision-making process: HCPs, patients, and family. Patients who did not understand prostate cancer and its treatment had difficulty in making decisions. These patients tended to leave the decision to the HCPs.

Some patients made their own treatment decisions. Some patients avoid asking too many questions to avoid the possibility of being influenced toward one option by their HCP. HCPs would leave the final say to the patient because of 3 reasons: to avoid patients’ regret (“Patient will not be happy at the end of the day”), wanting the patient to “balance what they wanted and what was the reality of each option,” and knowing there was no single best treatment option.

The family members, especially children, made the decision for some patients. This may be due to Malaysia’s close-knit family culture, where patients were concerned about their children’s emotions. Although some patients were able to make their own decisions for noninvasive treatment (e.g., hormonal treatment), they would like to involve their family if they were considering surgery. HCPs observed that patients rarely involved their wives in decision making.

Conclusion: Decision making during prostate cancer treatment involves 3 parties: the HCP, patient, and family. The decisional roles depend on the patient’s personal preferences, his understanding of the illness, and the family dynamics.

P2-13 IMPROVING VASCULAR PREVENTION VIA RISK PERCEPTION: DEVELOPMENT OF ASSESSMENT TOOLS TO IMPROVE CONSULTATION IN CARDIOVASCULAR PREVENTIVE PRACTICE

Decision Psychology and Shared Decision Making (DEC)
Sharmila R. Sakthivel, University of Muenster, Dortmund, Germany

Purpose: The high rates of mortality due to vascular diseases and concurrent increasing prevalence of modifiable behavioral risk factors call for better comprehension of health risk perception and its use in vascular health prevention. The purpose of this study was to explore distortions between objective and subjective risk and to develop assessment tools to improve vascular preventive practice.

Method: An assessment questionnaire was designed based on a previous online survey, measuring personal and general risk perception (1st, an intuitive risk perception: reporting the most important death cause and risk factor; and, 2nd, risk ranking of various death causes and risk factors), sociodemographic characteristics, health status, knowledge, lifestyle, and personality. The objective mortality risk and population-attributable-risk-rates were eruated from data of the German Federal Office of Statistics and calculated with individual data based on a Framingham general cardiovascular disease (CVD) algorithm. Respondents were categorized into age and (low, moderate, or high) risk groups. Thus, deviations between the actual and perceived risks of death causes and risk factors were compared age and risk.
exposure to diseases or risk factors, a longtime healthy lifestyle, or groups. Best performance was present among people with experience, factors were deficitary. Optimistic bias was observed in all age correctly ranked, knowledge and ranking of lifestyle-related risk older regarding vascular death causes. Although hypertension was and subjective risks was present in the age group aged 40 years and overestimated as were genetic predisposition, and family history, whereas vascular incidents were underestimated. traffic accidents was overestimated as were genetic predisposition

Given reasons were uncontrollability, dreadfulness, exposure, and family history, whereas vascular incidents were underestimated. 

**Conclusion:** Risk perception is a complex and multidimensional construct influenced by various determinants to be addressed in the everyday practice of internists dealing with target-age groups. We suggest integrating individual-specific personalized approaches into primary prevention to increase the accuracy of risk perception and contribute to effective health promotion, and further research on improving health perception.

**P2-14 A SHARED DECISION-MAKING MODEL TO EVALUATE GENOMIC SEQUENCING IN PRENATAL AND NEWBORN SCREENING**

*Decision Psychology and Shared Decision Making (DEC)*

Kee Chan, PhD, Boston University, Boston, MA

**Purpose:** The benefit of early detection of genomic diseases is still unclear. Knowledge gained from these models aids in determining the best utility of procedures such as newborn screening. Here, our study focused on creating shared decision-making models that incorporate ethical concerns in addition to cost efficacy.

**Methods:** Models were created using TreeAge, and data collected from systematic literature reviews. Specific keywords were related to patient perceptions of genetic screening procedures for family planning and primary care physician attitudes toward such procedures. With both stakeholders’ perspectives accounted for, a framework incorporating decision-making analysis was developed. Using data from literature and facilities providing screening services, we demonstrated the utility of this framework for 2 distinct conditions. Each condition analyzed has well-established genetic components but differs by disease onset, means of diagnosis, and medical management of the disease.

**Results:** Our shared decision-making model is interactive. The user is presented with key outcomes based on their risk assessment to assist in this complex decision making. With cystic fibrosis and Alzheimer’s disease as theoretical case studies, this framework’s applicability is broad. Our model concludes that physicians are encouraged to include their patients in this decision-making process. Our framework provided an opportunity for physician and providers to assess the related risks and benefits to patients during this process during prenatal testing and the value of genomic-sequencing information for early-onset and long-onset diseases.

**Conclusions:** This study provides a novel framework for determining whether prenatal or neonatal screening, or gene or genomic sequencing, may be appropriate for a given patient for family-planning purposes.

**P2-17 COST-EFFECTIVENESS OF NEW CATARACT SURGERY TECHNOLOGIES: FEMTOSECOND-LASER-ASSISTED AND STANDARD PHACOEMLSIFICATION CATARACT SURGERY WITH CONVENTIONAL AND PREMIUM INTRAOCULAR LENSES**

*Health Policy, Health Services, and Applied Health Economics (HEP)*

Christopher S. Sales, MD, MPH and Suzann Pershing, MD, Stanford University, Stanford, CA

**Purpose:** Cataract is the leading cause of preventable blindness worldwide, and cataract extraction with intraocular lens (IOL) implantation is the leading surgical procedure performed in many countries. Adoption of new surgical technologies, which vary in costs and effectiveness, has important implications for allocation of healthcare dollars.

**Method:** A Markov computer simulation model was developed to compare the lifetime effectiveness and costs of 5 surgical strategies: 1) conventional phacoemulsification (with a basic or monofocal IOL—this is the standard of care in most settings), 2) manual small-incision surgery with a basic or monofocal IOL, 3) femtosecond-laser-assisted phacoemulsification with a basic or monofocal IOL, 4) phacoemulsification with a toric IOL (a “premium” IOL that corrects astigmatism), and 5) phacoemulsification with a multifocal IOL (a “premium” IOL that provides both distance and near vision).

Inputs and treatment effects were derived from randomized clinical trials. Modeled complications included inflammation, infection, and intraoperative complications. Costs were assessed from a societal perspective, including treatment-related costs, caregiver time, and costs of low vision. Quality-of-life weights were computed based on changes in visual acuity. The primary outcome measure was quality-adjusted life years (QALYs). Deterministic sensitivity analyses were performed on model inputs among a wide range of assumptions.

**Results:** In our base case scenario, phacoemulsification with a multifocal IOL achieved the greatest lifetime benefit, gaining 0.86 QALYs at an additional lifetime cost of $3,834 compared to conventional phacoemulsification—an incremental cost-effectiveness ratio (ICER) of $6,810 per QALY gained. Femtosecond-laser-assisted phacoemulsification and phacoemulsification with a toric IOL each achieved greater effectiveness at higher cost than conventional phacoemulsification, but at insufficient value to be cost-effective options (extended dominance). Manual small-incision surgery was less effective than the other options, with an overall lifetime cost greater than conventional phacoemulsification. When femtosecond-laser-assisted phacoemulsification was evaluated assuming an optimized multifocal toric IOL, it was preferred to all other options (an ICER of $1,523 per QALY gained over conventional phacoemulsification). Results were highly sensitive to quality of life for astigmatism and presbyopia, and to fine visual discrimination (reflecting visual needs, particularly relevant in resource-poor settings).

**Conclusion:** In lifetime model-based analysis, phacoemulsification with premium IOLs may be more cost-effective than conventional phacoemulsification. If femtosecond-laser-assisted phacoemulsification can be performed with an optimal toric multifocal IOL, it becomes the most cost-effective option. Findings vary based on cataract severity, visual needs, and the value of obviating patients’ need for glasses; however, new technologies offer cost-effective additional benefit over standard care.
ABSTRACTS

P2-20 ECONOMIC EVALUATION OF NURSE-LED SERVICES IN THE ACUTE CARE SETTING—A SYSTEMATIC REVIEW
Health Policy, Health Services, and Applied Health Economics (HEP)
Shin Yuh Ang, BSc, MBA, Singapore General Hospital, Singapore, Singapore

Purpose: Nurses in Singapore are now taking on more roles by doing. Nonetheless, the roles and job scopes of advanced practice nurses (APNs) and specialty care nurses (SCNs) in Singapore tend to vary among departments, clinical disciplines, and institutions. Although the roles of APNs and SCNs should be reflective of local health care needs, it is useful to gather and appraise the evidence on nurse-led services and programs’ impacts on patients’ outcomes and health care costs.

This systematic review aimed to evaluate the cost-effectiveness of nurse-led services in the acute-care setting.

<table>
<thead>
<tr>
<th>Population</th>
<th>Patients who access inpatient and outpatient services in acute care settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Nurse-led services based in acute care</td>
</tr>
<tr>
<td>Comparison</td>
<td>Services or programs led by medical doctors</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Health care costs incurred</td>
</tr>
</tbody>
</table>

Method: A systematic review was performed using the databases of MEDLINE(OVID), CINAHL, EMBASE, PUBMED, Centre for Reviews and Dissemination, and the Cochrane Library with the following terms: (nurse-led) or (nursing-led) or (advanced practice nursing) or (advanced practice nurse) or (specialist nurse) or (clinical nurse specialist) AND (acute care) or (hospital) or (inpatient) or (tertiary care) or (acute clinic) or (specialist clinic). The search was done in June 2011. Studies were limited to those published in the past 10 years.

Papers were assessed by 2 independent reviewers using standardized critical appraisal tools. Any disagreements were resolved through discussion with a third reviewer.

Results: Only 6 cost-effectiveness and 1 cost-minimization studies were found. A wide range of medical conditions (rheumatology, respiratory, heart failure, diabetes, and internal medicine) were involved. 3 studies reported that nurse-led services provided equivalent care but were more costly; 2 studies found that such services were cost-effective at US$4,020/QALY (blood pressure lowering), US$19,950/QALY (lipid lowering), EUR17,543/QALY, and EUR15,169/Health Utility Index. Only 1 study was of good quality, whereas 2 suffer from major methodological flaws.

Conclusion: Although the cutoff point for what constitutes cost-effectiveness varies among societies, there was limited evidence that nurse-led services in the acute care setting are cost-saving or cost-effective. Henceforth, to ensure sustainability, it is pertinent that cost-effectiveness analysis forms part of the evaluation of nurse-led programs and services.

P2-21 SHOULD THALIDOMIDE BE INCLUDED IN THE PHILIPPINE NATIONAL FORMULARY FOR THE TREATMENT OF ERYTHEMA NODOSUM LEPROSUM?
Health Policy, Health Services, and Applied Health Economics (HEP)
Charissa Mia D. Salud-Gnilo, MD, FPDS and Suzette B. Sagun, MD, RPh, University of the Philippines–Philippine General Hospital, Manila, Philippines

Purpose: Leprosy remains an important public health problem in the Philippines. Despite the WHO recommendation of oral prednisone and clofazimine for the treatment of erythema nodosum leprosum (ENL), this view is not shared by all experts worldwide, and many have questioned the evidence behind this claim. This paper aims to analyze the need to reconsider thalidomide for inclusion in the Philippine National Formulary (PNF).

Method: Thalidomide was assessed based on the following criteria for inclusion in the core list: 1) burden of the illness, 2) efficacy and safety, 3) pharmacoeconomics, and 4) appropriateness to the capability of health workers at different levels of health care.

Results: Although the prevalence rate of leprosy is <1%, the Leprosy Control Program is still identified as one of the key health programs of the Department of Health (DOH). Because treatment of lepra reactions is a priority strategy for further reducing the leprosy burden, thalidomide may then be considered an important drug for the Leprosy Control Program. Thalidomide fulfills the efficacy criteria of PNF with a relative risk for thalidomide based on the outcome for preventing future ENL relapses of 0.18 (confidence interval: 0.071, 0.464) and NNT 1.66. The main concern regarding thalidomide use is its teratogenicity. There are still reports of thalidomide embryopathy (TE). Thirty-four cases of TE were reported between 1969 and 1996 in South America, and 2 suspected cases were identified between 2007 and 2008. Another disadvantage of thalidomide is the cost (Php76,881 per patient, with a cost-effectiveness ratio of Php163,576.60 per ENL case prevented), compared to prednisone (Php651 per patient, with a cost-effectiveness ratio of Php3,829.41) and clofazimine (which is free). Leprosy patients experiencing ENL require expert care. And because thalidomide may have serious side effects, it should only be used in specialty treatment centers.

Conclusion: After a thorough evaluation of thalidomide against the various criteria, thalidomide does not fulfill the criteria for inclusion in the core list of essential medicines in the PNF because of questions on its safety and cost-effectiveness. However, assuming strict regulations can be enforced to prevent birth defects, thalidomide may be recommended in the PNF complementary list as alternative treatment for patients unresponsive to oral steroids or clofazimine, or those seeking other treatment options due to the untoward effects of the other treatment modalities.

P2-22 EFFECT OF PHYSICIAN CHARACTERISTICS AND GEOGRAPHICAL REGION ON POSTDIAGNOSIS PHYSICIAN CONTACT AMONG PATIENTS WITH PROSTATE CANCER
Health Policy, Health Services, and Applied Health Economics (HEP)
Candice Yong, BSpPharm1, Ebere Onukwugha, PhD, MSc2 and Michael Naslund, MD3, (1) University of Maryland School of Pharmacy, Baltimore, MD, (2)University of Maryland, Baltimore, MD, (3)University of Maryland School of Medicine, Baltimore, MD

Purpose: Patients with advanced prostate cancer (PCA) can receive comprehensive care through multispecialist contact. Patient factors such as their comorbidity profile influence the number of physician types seen following PCA diagnosis; however, the role of nonpatient factors such as physician characteristics and geographical region has not been examined.

Method: We used Surveillance, Epidemiology, and End Results (SEER) cancer registry data linked with Medicare claims for
P2-26 MATERNAL EMPLOYMENT AND CHILD HEALTH IN JAPAN
Health Policy, Health Services, and Applied Health Economics (HEP)
Ma Xin Xin, PhD, MD1, Hiroaki Kakihara, PhD, MD2 and Goto Rei, PhD, MD2, (1)Kyoto University, Kyoto, Japan, (2)Graduate School of Economic, Kyoto, Japan

Purpose: It is well known that, compared with other developed countries, the labor participation rate of married women in Japan is low. With the decrease of the labor force due to an aging population, promoting maternal employment has become an important issue for the Japanese government. Although the maternal employment environment has improved since the 1980s, Japanese firms’ work conditions such as long work hours and job rotation are unfavorable for female regular employees. So there may exist a dilemma in encouraging women’s employment and child health status. This study investigates whether maternal employment negatively affects child health.

Method: Using Employment and Lifestyle of Households with Children Survey data from 2011, this study empirically assesses the effect of maternal employment on the health of children under the age of 18. Two indexes, child’s health status and school refusal behavior, are used as dependent variables. The analysis uses an ordered logistic regression model and a probit regression model. To corresponding to the endogeneity problem, we use 2-stage estimation methods.

Results: The main findings are as follows. First, regarding the child health status, the probability of children being in good health is higher in the case of working mothers than in the case of nonworking mothers. For both single and married mothers, compared with temporary workers’ children, regular workers’ children have a higher probability of good health. Second, regarding children’s school refusal behavior, children of working mothers have a lower probability of refusal than those of nonworking mothers. In addition, in the case of single mothers, compared with nonworking mothers, the probability of children’s school refusal behavior is lower for temporary working mothers. In the case of married mothers, compared with mothers continuing to work in the same firm, the probability of children’s school refusal behavior is lower for the employment interruption mothers.

Conclusion: These results reveal there is not a dilemma in encouraging women’s employment and child health, and promoting maternal employment policy should improve child health. It shows that to improve the welfare of the next generation, some policies to encourage the continued employment of women, such as work-life balance and enforcement of public child care service policies, are needed.

P2-28 DRUG-RELATED PROBLEMS AND THEIR ASSOCIATION WITH HOSPITAL LENGTH OF STAY OF PNEUMONIA PATIENTS
Health Policy, Health Services, and Applied Health Economics (HEP)
Azizah Nasution, Dra, MSc1, N. Hidayah, SFarm, Apt1, D. Rinza, Dra, MKes, Apt2, Rosidah Harun, Dr, Prof1 and U. Harahap, Dr, Prof2, (1)Universitas Sumatera Utara, Medan, Indonesia, (2)Haji Adam Malik Hospital, Medan, Indonesia

Purpose: The study aimed to analyze the incidence of DRPs and their impact on hospital length of stay (LOS) of patients with pneumonia.

Method: This retrospective cohort study was undertaken on 70 patients based on an insured database for a 6-month period (October 2010 through March 2011) in Haji Adam Malik Hospital (HAM) Hospital, Indonesia. Inclusion criteria were patients diagnosed with pneumonia who were 18 years old or older. Data collected include the type of drugs administered, supporting laboratory tests, and clinical outcomes. Characteristics of the patients were analyzed using descriptive statistics in SPSS version 19. Occurrence of DRPs (but limited only to indication without drugs, wrong provided antibiotic dose, and drug interactions) was analyzed using Stockley’s drug interaction, Medline, and Clinical Drug Data. Associations among DRPs and LOS were analyzed, applying multiple linear regression in SPSS version 19.

Results: Characteristics of the sample population were as follows: male, 51.40%; and female, 48.60%. Mean age of the patients was (51.63 with standard deviation of 15.56) years. Means of incidence of indication without drugs, 0.01±0.12; wrong antibiotic dose, 0.10±0.30; and drug interaction, 0.81±0.87. Mean LOS was (10.50 with standard deviation of 7.07) days. Multiple linear equation obtained was LOS = 8.40 + 2.60 indication without drugs + 4.13 antibiotics wrong dose + 2.03 drug interaction. Linear regression analysis indicated a weak association among DRPs and LOS (R2 = 0.12). This study showed that a wrong dose of antibiotics had the highest impact on hospital LOS of the pneumonia patients.
Conclusion: The occurrence of DRPs in the management of pneumonia in HAM Hospital was high. In the future, these DRPs must be highlighted to improve the patients' outcomes.

P2-29 THE COST-EFFECTIVENESS OF CONTACT-SCREENING AND MANAGEMENT STRATEGIES FOR CHILDREN WHO ARE CONTACTS OF TUBERCULOSIS CASES
Health Policy, Health Services, and Applied Health Economics (HEP)

Rina Triasih, Dr, MMed(Paed)1, Stephen M. Graham, A/Professor, PhD2, Trevor Duke, Professor2 and Colin Robertson, Professor2, (1) Sardjito Hospital/Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia, (2) The University of Melbourne, Melbourne, Australia, (3) Royal Children Hospital/The University of Melbourne, Melbourne, Australia

Purpose: To compare the cost-effectiveness of symptom-based screening to 2 previous strategies for contact screening and management of tuberculosis (TB) among child contacts aged younger than 5 years.

Method: We developed a decision analysis model to compare the yield, outcome, and cost incurred to both the family and health sectors of 3 child contact-screening strategies: 1) the tuberculin skin test (TST) and chest X-ray (CXR) were performed to all child contacts at initial screening (the TST and CXR approach); 2) the TST was performed to all child contacts at initial screening, and those with a positive TST would have a CXR performed (the TST approach); and 3) the TST and CXR were only performed to child contacts who have TB symptoms at initial screening (symptom based). A child contact was assessed as having TB disease if having TB symptoms and CXR-suggestive TB, irrespective of TST result, and as having latent TB infection (LTBI) if a child had positive TST but no TB disease. In the 2 previous strategies, isoniazid preventive therapy (IPT) was given to a child contact with LTBI, whereas in the symptom-based strategy it was given to all child contacts who did not have TB disease.

Results: A symptom-based screening strategy was most cost-effective to prevent TB disease among child contacts younger than 5 years. The cost for preventing TB disease among child contacts was USD 79.5 compared to USD 105.4 and USD 89.3 for the “TST and CXR” and “TST” approaches, respectively. Symptom-based screening was as effective as the other approaches in identifying TB disease among child contacts with the lowest cost.

Conclusion: Symptom-based screening provides a simple, effective, and low-cost approach to child TB contact management that can be implemented at the primary health care setting.

P2-33 VISUALIZATION TECHNIQUES APPLIED IN DECISION-ANALYTIC MODELING USING DISCRETE-EVENT-SIMULATION
Quantitative Methods and Theoretical Developments (MET)

Beate Jahn, PhD1, Ursula Rochau, MD, MSc2, Christina Kurzthaler, Bsc3, Martina Klubenschaedl, Bsc4, Christoph Urach5, Patrick Einzinger, MSc5, Harald Piringer, Msc5, Niki Popper, MSc5, and Uwe Siebert, MD, MPH, MSc, ScD1, (1) UMIT—Institute of Public Health, Medical Decision Making and HTA, Hall in Tyrol, Austria,