

¹Optum, Burlington, ON, Canada, ²Alcon Laboratories, Inc, Fort Worth, TX, USA, ³Optum, Waltham, MA, USA

OBJECTIVES: Economic evaluations of medical devices pose some inherent challenges such as the difficulty in conducting randomized controlled trials (RCTs) and additional evidence development post-launch. We developed a cost-effectiveness model to evaluate the use of the LenSx® laser system for femtosecond laser-assisted cataract surgery (FLACS) compared to phacoemulsification cataract surgery (PCS) in medically necessary cataract removal in Canada. **METHODS:** A decision analytic model was designed to determine the quality-adjusted life-years (QALYs) gained and costs from the Canadian hospital perspective. Patients received monofocal or toric intraocular lens. Corrected distance visual acuity (CDVA), distance spectacle dependence, complication rates, CDVA utilities, and spectacle dependence and complications disutilities were obtained from published literature; assumptions were made in cases of unavailable data. Costs were obtained to fit the local Canadian setting. **RESULTS:** The cost-effectiveness ratios (ICERs) for FLACS vs PCS were \$169,086/QALY, \$37,790/QALY and \$18,099/QALY for 1-year, 5-year and lifetime (~13.6 years) time horizons, respectively. The main difference observed in clinical outcomes was more PCS patients remaining spectacle dependent compared to FLACS. As CDVA was assumed to be comparable in the absence of RCTs that showed a difference, the impact of the change in the time horizon was therefore due to the disutility applied to distance spectacle dependence. The ICER was most sensitive to changes in mean age (affecting time horizon), and spectacle dependence and CDVA distribution efficacy parameters. **CONCLUSIONS:** Our analysis demonstrates that FLACS is a cost-effective treatment when compared to PCS, but highlights the need to continuously re-evaluate given the strength of evidence generation post-launch.

PMD47

COST EFFECTIVENESS OF TRANSCATHETER AORTIC VALVE IMPLANTATION VERSUS SURGICAL AORTIC VALVE REPLACEMENT: THE COREVALVE HIGH RISK TRIAL FROM A DUTCH PERSPECTIVE

Geisler BP¹, Osnabrugge RL², Huygens SA², Reardon MJ³, Kappetein AP², Pietzsch JB¹
¹Wing Tech Inc., Irvine, CA, USA, ²Erasmus Medical Centre, Rotterdam, The Netherlands, ³The Methodist Hospital, Houston, TX, USA

OBJECTIVES: To assess the cost-effectiveness of transcatheter aortic valve implantation (TAVI) compared with surgical aortic valve replacement (SAVR) in high risk surgical candidates in the Netherlands. **METHODS:** A lifetime decision-analytic model projected quality-adjusted life years (QALYs), adverse events, and costs of the competing strategies. Event probabilities and utilities were derived from two-year follow-up data of the CoreValve High Risk Study after stratifying by Kansas City Cardiomyopathy Questionnaire (KCCQ) above and below 60 and stroke status. Costs were based on a single-center analysis of pre-operative diagnostics, procedural, index hospitalization, and long-term resource utilization. Costs and effects were discounted at 4% and 1.5% per annum, respectively. In addition to deterministic sensitivity analyses, a "lean scenario" was explored for TAVI which considered a reduced length of stay. **RESULTS:** In the early post-operative period, a swifter recovery in health-related quality of life was observed after TAVI, along with improved functional cardiovascular outcomes evidenced by a higher proportion of patients in the higher KCCQ stratum. Undiscounted life expectancy increased by 0.65 (5.62 vs 4.97) years after TAVI. Over the lifetime horizon, TAVI was projected to add 0.41 (3.69 vs. 3.27) QALYs at increased cost of €9,048 (€51,068 vs. €42,020), resulting in an incremental cost-effectiveness ratio (ICER) of €21,946 per QALY gained. Results were relatively insensitive to changes in input parameters. Threshold analysis of the "lean scenario" indicated that a further cost reduction of approximately €5,400 would make TAVI the dominant strategy. **CONCLUSIONS:** TAVI for high-risk surgical candidates is a cost-effective treatment strategy at a level well below commonly accepted Dutch willingness-to-pay thresholds. This favorable health-economic value proposition can be expected to further improve in future years.

PMD48

COST-UTILITY OF PCR DETECTION AMONG PATIENTS WITH SUSPECTED PERITONEAL CANDIDIASIS IN THE INTENSIVE CARE UNIT: A MODEL SIMULATION

Pages A, Iriart X, Molinier L, Massip P, Juillard-Condat B
 University Hospital of Toulouse, Toulouse, France

OBJECTIVES: The intra-abdominal candidiasis in intensive care units represents a significant cause of morbidity and mortality. The polymerase chain reaction (PCR) allows to detect *Candida* spp. faster than the fungal culture which is the gold standard. The aim of this study was to perform a cost-utility analysis of two PCR-based diagnostic strategies compared to the fungal culture-based strategy. One strategy involved the PCR detection of most common fluconazole resistant species (*Candida krusei* and *Candida glabrata*) and the other involved the PCR-based detection of all *Candida* strains regardless their species. **METHODS:** A decision tree model was constructed to perform the cost-utility analysis. The parameters used in the model came from the literature (data published until 1st December 2015), the European and French guidelines and expert opinions when the data were unavailable. We performed the analysis from the perspective of the French national health insurance. Non-neutropenic patients with a suspected intra-abdominal candidiasis in the intensive care unit represented the target population. **RESULTS:** Both PCR-based strategies were more effective and less expensive (cost saving) than the comparator. The probability of being cost saving versus fungal culture-based strategy was 81% for the PCR detection of *Candida krusei* and *Candida glabrata* and 77% for the PCR detection of all *Candida* spp. The results were sensitive to the prevalence of invasive candidiasis and the fungal culture sensitivity. Among the 3 strategies, PCR detection of all *Candida* spp. appeared to be the most cost-effective strategy (98.5% with a threshold of €50,000 per Quality-Adjusted Life Year (QALY) gained). **CONCLUSIONS:** The model results suggest that the PCR detection of all *Candida* spp. is cost-effective for non-neutropenic patients with suspected fungal peritonitis in intensive care

units (€50,000/QALY threshold). Thus, a randomized controlled trial remains necessary to confirm the conclusions of this study.

PMD49

COST EFFECTIVENESS OF LOCAL INSUFFLATION OF WARM HUMIDIFIED CO₂ DURING OPEN AND LAPAROSCOPIC COLORECTAL SURGERY IN THE UNITED STATES

Jenks M¹, Taylor M¹, Shore J¹, Oster G²

¹York Health Economics Consortium, York, UK, ²Policy Analysis Inc. (PAI) and Managing Co-Director, MINERVA Health Economics Network, Brookline, MA, USA

OBJECTIVES: To determine the cost-effectiveness of local insufflation (via a humidifier) of warm humidified CO₂ (WH-CO₂) compared with standard care in patients undergoing open or laparoscopic colorectal surgery. **METHODS:** A decision-analytic model was developed to estimate the costs and quality-adjusted life years (QALYs) associated with open and laparoscopic colorectal surgery from a US payer perspective. WH-CO₂ was compared with no insufflation in open surgery patients and with unheated CO₂ (U-CO₂) in laparoscopic surgery patients. Efficacy data for open surgery patients were derived from a published randomised controlled trial reporting on the proportion of patients with hypothermia and a United States (US) hospital database analysis of post-surgery hypothermia. Data for laparoscopic surgery patients were from a United Kingdom before and after study of laparoscopic surgery patients. Other parameter inputs were obtained from published literature. Clinical event cost estimates referred to the total cost of admission to hospital for a given event. Sensitivity and scenario analyses were conducted to assess the robustness of results. **RESULTS:** Based on 200 patients using the device each year, WH-CO₂ dominates standard care, as it is both cost saving (\$2,355 per patient) and generates greater QALYs (0.004 per patient), over a one-year time horizon where 30% of the patients modelled underwent open surgery and 70% laparoscopic surgery. WH-CO₂ dominated no insufflation in open surgery patients in 99.9% of model iterations and dominated U-CO₂ in laparoscopic surgery in 99.4% of model iterations. WH-CO₂ remained cost-effective at a willingness-to-pay threshold of \$50,000 per QALY throughout all sensitivity analyses considered, except in the most extreme cases where the rate of clinical complications in laparoscopic patients was lower with U-CO₂ than with WH-CO₂. **CONCLUSIONS:** The analyses suggest that, based upon currently available clinical evidence, WH-CO₂ is a cost-effective use of resources for patients undergoing open or laparoscopic colorectal surgery within the US.

PMD50

COST-EFFECTIVENESS OF PERCUTANEOUS RENAL MASS BIOPSY IN THE MANAGEMENT OF SMALL RENAL MASSES

Wang Y¹, Althaus AB¹, Leow JJ¹, Tinay I², Gelpi-Hammerschmidt FJ¹, Rosen D¹, Chang SL¹

¹Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA, ²Marmara University School of Medicine, Istanbul, Turkey

OBJECTIVES: This study aimed to evaluate the cost-effectiveness of percutaneous renal mass biopsy (RMB) in the management of small renal masses (SRMs). **METHODS:** A Markov model was developed to compare the lifetime costs and quality-adjusted life years (QALYs) of RMB with possible delayed treatment and immediate treatment from the societal perspective in a hypothetical cohort of 65-year-old healthy patients with asymptomatic unilateral SRMs. The treatments included percutaneous ablation (PA), laparoscopic ablation (LA), robotic partial nephrectomy, open partial nephrectomy (OPN), laparoscopic radical nephrectomy, and open radical nephrectomy. The willingness-to-pay threshold was \$50,000/QALY-gained. Robustness of the model was assessed using sensitivity analyses. **RESULTS:** Among all the options, RMB with possible PA had the lowest total costs and QALYs. RMB with possible OPN was the optimal choice compared with RMB with possible PA (incremental cost-effectiveness ratio: \$6,397/QALY-gained). In pairwise comparisons, RMB was preferred to the corresponding immediate treatment. If chronic kidney disease (CKD)-incurred costs were above the treatment-specific threshold, RMB was preferred. RMB with possible LA or partial nephrectomy was favored over the immediate treatment in old patients. RMB with possible radical nephrectomy was preferred to the immediate treatment regardless of age at diagnosis, tumor size and comorbidities. However, immediate PA was preferred to RMB in old patients with a large tumor. **CONCLUSIONS:** RMB with possible OPN was the optimal strategy. Among pairwise comparisons, RMB was preferred to immediate treatment. The results were sensitive to CKD-incurred costs, age and tumor size.

PMD51

HEALTH ECONOMIC COMPARISON OF GD-EOB-DTPA-ENHANCED MRI VERSUS EXTRACELLULAR CONTRAST MEDIA-ENHANCED MRI AND MULTIDETECTOR CT FOR DIAGNOSIS OF HEPATOCELLULAR CARCINOMA IN CHINA AMONG PATIENTS AT RISK

He X¹, Wu J¹, Holtorf A², Rinde H², Xie S³, Shen W³, Hou J³, Li X⁴, Li Z⁴, Lai J⁴, Wang Y⁵, Zhang L⁵, Wang J⁵, Li X⁵, Ma K⁵, Ye F⁶, Ouyang H⁶, Zhao H⁶

¹Tianjin University, Tianjin, China, ²Health Outcomes Strategies, Basel, Switzerland, ³Tianjin First Central Hospital, Tianjin, China, ⁴The 1st affiliated Hospital, Sun Yat-sen University, Guangzhou, China, ⁵Southwest Hospital, Chongqing, China, ⁶Cancer Hospital, Chinese Academy of Medical Sciences, Beijing, China

OBJECTIVES: To compare the total cost of hepatocyte-specific Gd-EOB-DTPA enhanced MRI (PV-MRI) to extracellular contrast media-enhanced MRI (ECCM-MRI) and multidetector CT (MDCT) as initial imaging procedures among patients with suspected hepatocellular carcinoma (HCC) from China healthcare perspective. **METHODS:** A decision-tree model based on the Chinese clinical guidelines and validated by clinical experts was used to compare the diagnostic effectiveness of alternative initial imaging procedures to optimize therapeutic decisions for suspected HCC patients. Patients with suspected HCC as identified by ultrasound and alpha fetoprotein (AFP) levels entered the model. The three initial imaging methods were compared based on HCC prevalence in the included population, diagnostic accuracy (sensitivity and specificity) of the imaging alternatives, transition probabilities and costs as derived from published literature or expert opinion from 4