PMD23

LONG-TERM CLINICAL EFFECTIVENESS AND COST-EFFECTIVENESS OF CATHETER-BASED RENAL DENERVATION IN THE UK. A MODEL-BASED PROJECTION BASED ON THE SYMPLICITY HTN-2 TRIAL

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OBJECTIVES: Catheter-based renal denervation (RDN) is a new approach to treat resistant hypertension, a condition that affects approx. 10-15% of hypertensives. Our objective was to develop a decision-analytic model to assess clinical and cost-effectiveness of (RDN) from the U.K. National Health Service perspective. **METHODS:** A 34-state Markov model predicted cardiovascular endpoints, mortality, quality-adjusted life years (QALYs), and costs. Input parameters were derived from multivariate risk equations and other published sources, including the recently published NICE Hypertension Guidance. We evaluated the impact of a 32 mmHg reduction in systolic blood pressure (SBP), from a baseline SBP of 178 mmHg, in a 42.5% female, 34% diabetic, and 16% smoking cohort with a mean age of 58, as observed in the Symplicity HTN-2 randomized controlled trial. We calculated ten-year relative risks and the lifetime incremental cost-effectiveness ratio (ICER) in £/QALY discounted at 3.5% per year for numerator and denominator. **RESULTS:** Relative risks for clinical endpoints were 0.70 for stroke, 0.68 for myocardial infarction, 0.78 for all coronary heart disease, 0.79 for heart failure, 0.72 for end-stage renal disease, 0.65 for cardiovascular and 0.82 for all-cause mortality, respectively. The ICER was £4,870/QALY. **CONCLUSIONS:** Our model projections suggest RDN reduces and delays cardiovascular events and is a cost-effective therapy in the U.K.

PMD24

ECONOMICAL ASPECTS OF THE REIMBURSEMENT OF EXTRACORPOREAL PHOTOPHERESIS (ECP) IN TREATMENT OF PATIENTS WITH GRAFT-VERSUS-HOST DISEASE (GVHD) AFTER ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION (HCT) WHO ARE REFRACTORY TO STEROID TREATMENT

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OBJECTIVES: Determining cost-effectiveness of ECP in the treatment of patients with steroid-refractory GvHD after allogeneic HCT, as well as the impact of its reimbursement on the Polish public payer expenditures. **METHODS:** The evaluation of the cost-effectiveness of ECP was conducted separately for children/adults with acute/chronic steroid-refractory GvHD by means of Markov decision model. Due to the lack of standards of treatment for this group of patients and adequate clinical studies, analysis was performed without a comparator. Polish cost data were estimated from the perspective of the public payer (NHF). Discount rates 5% for costs and 3.5% for health outcomes were used. There was also calculated extra cost incurred by NHF caused by ECP reimbursement. Two scenarios were considered: the existing (no ECP reimbursement) and the new (ECP reimbursed) on the 2-year time horizon. For assuming current expenses incurred on GvHD treatment data published by NHF were used. Savings resulting from the decreased number of other health services used in GvHD treatment were not considered, so incremental cost consists merely of the costs of ECP procedure performed. Target population was estimated at 37-38 patients. **RESULTS:** The most favorable ratio of health benefits to costs of therapy in 3-year time horizon was achieved for treatment of adult patients with acute GvHD – CER ratio 24,103.30 PLN/LY. Others ratios of health benefits to costs are: 26,772.15 PLN/LY for children with chronic GvHD; 30,473.46 PLN/LY for adults with chronic GvHD and 35,854.39 PLN/LY for children with acute GvHD. After ECP reimbursement, annual expenses of the public payer on the treatment of acute and chronic GvHD are going to grow by 1,224,736-1,269,300 PLN (47.92%-49.66%) in the following years of the time horizon. **CONCLUSIONS:** ECP seems to be a cost-effective therapy for patients with steroid-refractory, acute and chronic GvHD with limited impact to Polish public payer budget.

PMD25

FINANCIAL IMPACT OF ADAPTIVE CARDIAC RESYNCHRONIZATION THERAPY (ACRT) DEVICE ALGORITHMS IN THE UNITED KIGDOM, GERMANY, AUSTRALIA AND CANADA: ARE THERE SAVINGS ASSOCIATED WITH DEVICE SELECTION?

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OBJECTIVES: Heart Failure (HF) admission costs are an important component of health care resource utilization through the developed world and especially in the above 65 age group. Cardiac Resynchronization Therapy (CRT) devices have been proven to reduce HF admissions in indicated patients. "Optimal" CRT performance requires periodic device re-programming using simultaneously perfromed cardiac ultrasounds; however, newer CRT device algorithms continuously and automatically re-program. Ultimately, this continuous optimization maximizes CRT response. We approximated health care system cost-savings when aCRT devices are used over "Traditional" CRT from the perspective of 4 developed geographies. **METHODS:** A stratified propensity score analysis estimated Clinical Composite Score (CCS) differences between technologies. HF admissions/patient-year were calculated using average rates by CCS. HF admission costs for Payers were obtained for the UK, Germany, Australia and Canada. Admission rates were extrapolated for 7 years (average CRT-D battery life). **RESULTS:** Basecase analyses indicate that aCRT patients could experience an estimated 0.21 less admissions per device implanted (~17% overall admission reduction) leading to a direct saving per device of GBP699 (95% CI GBP322-GBP1,001) in the UK; EUR522 (95% CI EUR185-EUR791) in Germany; AUD1,211 (95% CI AUD427-AUD1,834) in Australia; and CAD1,580 (95% CI CAD560-CAD2,395) in Canada. Sensitivity analyses which varied the timeframe of admission rate by CCS and used 0-12 month CCS admission rates estimated a mean number of avoided HF admissions could reach 0.67 (~21.51% overall admission reduction) which in turn may result in a near tripling of the payer savings mentioned above. **CONCLUSIONS:** aCRT devices appear significantly cost-saving throughout diverse payment settings; estimates are likely understated since they include neither follow-up visits (which may be avoided with aCRT) nor avoided cardiac ultrasounds nor well-documented effects of HF disease progression. CRT already is proven to reduce mortality and increase QoL at a highly cost-effective level. aCRT, therefore, certainly has the potential to further improve these outcomes.

PMD26

COST EFFECTIVENESS OF HIV TESTING IN NON-TRADITIONAL SETTINGS – THE HINTS STUDY

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OBJECTIVES: This prospective study assessed the costs and cost-effectiveness of routine HIV testing in non traditional settings using Oral fluid-based HIV testing and a fourth-generation assay. **METHODS:** HIV tests were offered to patients aged 16-65 over 3 months in 4 settings: Emergency Department, Acute Care Unit, Dermatology Outpatients and Primary Care in London. We assessed and compared the costs and the cost-effectiveness ratio of screening in terms of costs for newly diagnosed HIV-infected patients using the real data derived from each setting. Additionally, the Survey of Prevalent HIV Infections Diagnosed (SOPHID) was used to estimate the number of undiagnosed individuals attending each setting over one year. A sensitivity analysis was run using the SOPHID data to simulate the costs and cost-effectiveness of the HIV screening in different scenarios, changing the prevalence and the compliance rates. **RESULTS:** HIV testing in non traditional settings cost £19,056.31 per newly diagnosed patient. Using the SOPHID data and assuming the same compliance rate, the cost for a newly diagnosed patient is £4,460.59. In the best scenario, assuming 100% compliance, the cost will decrease to £2,940 per patient. These figures do not take into account the additional cost savings that may result from earlier diagnosis of HIV-infected individuals. **CONCLUSIONS:** The results of the study are really encouraging and suggest that a screening programme in a high prevalence area could identify HIV-infected patients at a very low cost. Earlier diagnosis of HIV infection may subsequently have further cost benefits in terms of aversion of incident infections and early treatment of infected individuals.

PMD27

BUDGET IMPACT OF SELECTING CARDIAC RESYNCHRONIZATION THERAPY (CRT) DEVICES WITH ADAPTIVE ("ACRT") PROGRAMMING ALGORITHMS UNDER THE UNITED STATES MEDICARE PAYMENT SETTING

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OBJECTIVES: CRT for Heart Failure (HF) Patients is established as cost-effective. Nevertheless, optimal functionality requires periodic device re-programming ("optimization") using data from contemporaneous cardiac ultrasounds. Newer CRT device algorithms continuously re-program, increasing the number of patients responding to therapy while eliminating the ultrasounds. Maximizing CRT response further reduces HF re-admissions. We sought to estimate payer savings stemming from aCRT device use. **METHODS:** A stratified propensity score analysis was performed to estimate response rates, as measured by Clinical Composite Score (CCS), between aCRT and Traditional CRT. Rates of future HF admissions were estimated by 6-month CCS using pooled patient-level data from prior CRT studies. HF admission costs were obtained from the 2009 Medicare Fee Schedule. Resource utilization and costs were modeled for 7 years following implantation (average CRT-D Battery Life). **RESULTS:** Basecase Analyses indicate that aCRT patients could experience an estimated 0.05 fewer HF hospitalizations in the first 6 months, 0.01 fewer in the next 6 months, and 0.15 fewer in years 2-7 (~17% overall admission reduction). At a cost of $7,977/admission, aCRT is estimated to save $1,477 per patient; factoring in reductions in cardiac ultrasounds, savings increase to $1,644 (95% CI $675 – $2,346). Sensitivity Analyses using 0-12 month admission rates by CCS extrapolated through 7 years estimate that the mean number of avoided HF admissions could reach 0.67 (~21.51% overall admission reduction) – translating to $5,345 saved. **CONCLUSIONS:** aCRT Devices appear cost-saving to payers; Base Case estimates are likely understated since they include neither any other medical procedures that may be performed in parallel to the cardiac ultrasound nor the well-documented effects of HF disease progression. Further research could better quantify the amount of savings aCRT devices can deliver; since CRT generally reduces mortality and increases QoL, aCRT may have the potential to improve the cost-effectiveness of the entire device class.

PMD28

COMPARING THE COST AND DIAGNOSTIC EFFICIENCY OF GADOXETIC ACID-ENHANCED MRI VERSUS EXTRACELLULAR CONTRAST MEDIA-ENHANCED MRI AND MULTIDETECTOR COMPUTED TOMOGRAPHY IN PATIENTS WITH SUSPECTED HEPATOCELLULAR CARCINOMA IN THAILAND AND KOREA

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OBJECTIVES: To compare the clinical and cost consequences of Gadoxetic Acid-enhanced magnetic resonance imaging (PV-MRI) to extracellular contrast media-enhanced MRI (ECCM-MRI) and Multidetector Computed Tomography (MD-CT) in patients with suspected hepatocellular carcinoma (HCC) in South Korea and Thailand. **METHODS:** The clinical pathway of patients with suspected HCC from the initial imaging procedure (PV-MRI, ECCM-MRI or MD-CT) to the confirmed treatment decision was presented in an economic decision-tree model. The model compared payer relevant costs of the three diagnostic procedures as first line imaging for suspected HCC and the subsequent costs to reach a confirmed treatment decision. The probabilities and resource consumptions were estimated and validated by clinical experts through a Delphi panel process. Costs for diagnostic and treatment options were derived from published sources. **RESULTS:** Using PV-MRI as first imaging procedure in patients with suspected HCC evokes total cost of US$ 3,098/patient in Korea. This is 0.1% higher than the costs for MD-CT (US$ 3,094/patient), but 9.9% lower (US$ 306) than the costs of ECCM-MRI (US$ 3,405/patient). In Thailand, PV-MRI (US$ 702/patient) is the least costly alternative compared to ECCM-MRI (US$ 930/patient) and MDCT (US$ 872/patient) and leads to cost savings of US$ 228 US$and US$ 170, respectively. The higher acquisition cost of PV-MRI are more than compensated by the cost saving achieved through the reduced need for confirmatory imaging procedures and the reduced need for changes in the surgical protocol during resection. **CONCLUSIONS:** Using PV-MRI compared to ECCM-MRI and MD-CT for the first imaging in patients with suspected HCC leads to relevant cost savings for the statutory health insurance in both countries. The impact on health outcomes (e.g. mortality, quality of life) and total cost needs to be shown in an extended study approach.

PMD29

COMPARING THE ECONOMIC IMPACT OF PROSTHESIS CHOICE IN UNICOMPARTMENTAL KNEE ARTHROPLASTY PROCEDURES: DEVELOPMENT OF AN ECONOMIC MODEL

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OBJECTIVES: The purpose of this study was to develop an economic impact model to calculate and compare the net present cost of unicompartmental knee prostheses. These implants are used in knee arthroplasty procedures and are one of the key cost drivers of the overall procedural cost. **METHODS:** A model was developed using revision rates published in the Australian National Joint Replacement Registry, to calculate the economic impact on health care systems. It was assumed that the cost of the primary procedure remained constant regardless of the implant used. Only prostheses reporting more than 1 year follow-up (n=14) were included. A sensitivity analysis was performed to examine the influence of varying time horizons and discount rates. **RESULTS:** From a societal perspective, comparing the predicted number of revisions and net present cost of revisions resulted in substantial differences between implants. The longer the time horizon, the greater the differences reported between implants. The effect of different discount rates was less than the effect of different time horizons. For a one time cohort of 2,500 patients, a time horizon of 5 years, a discount rate of 3.5% and a national reimbursement rate for revision for an unicompartmental knee replacement of 10,000 Euros, the net present cost for a national health care system could be as high as 4,500,000 Euros (all patients treated with the implant with the highest revision rate) or as low as 1,200,000 Euros (all patients treated with the implant with the lowest revision rate). **CONCLUSIONS:** This model may be utilized by health care systems or payers to evaluate the economic impact of choosing implants with low revision rates. Furthermore, the model allows for evidence-based pricing discussions. This study provides important information, regardless of geography, for health systems and payers to consider when selecting an implant for unicompartmental knee arthroplasty procedures.

PMD30

SHORT TERM HEALTH-ECONOMIC OUTCOMES OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII) IN TYPE 1 DIABETES: A COST COMPARISON ANALYSIS

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OBJECTIVES: Typical cost-effectiveness studies of CSII therapy focus on long-term health-economic outcomes, with little emphasis on immediate clinical and economic benefits which underpin long-term complication-related savings. The objective was therefore to evaluate the short-term health-economic outcomes of CSII versus multiple daily injections (MDI), using best practice modelling methodology with a focus on changes in glycosylated haemoglobin (HbA_{1c}), severe hypoglycemic events (SHE), insulin consumption and complication and insulin related (CIR) costs. **METHODS:** The SWITCH costing model was developed based on regression equations for changes in HbA_{1c} and SHE. Model inputs were derived from best available evidence. Analysis was performed from a health care payer's perspective for the Netherlands. Model outputs included clinical benefits and potential reductions in CIR costs. Sensitivity analysis determined the robustness of the results. **RESULTS:** In a cohort representative of Netherlands, switching patients with poorly controlled HbA_{1c} on MDI [average HbA_{1c} 9%; 0.2 SHE per patient year (PPY)] to CSII results in the following calculated improvements PPY: 50% SHE potentially avoided [€65 expenditure reduction (ER)], insulin dose reduction of 7,597 IU [€141 ER]; and a relative HbA_{1c} reduction of 12% [€406 ER]. The total calculated short-term improvement in this subgroup is associated with potential savings in CIR cost of €612 PPY. Similarly, switching patients with frequent SHE on MDI [average HbA_{1c} 7%; 1.0 SHE PPY] to CSII results in the following calculated improvements PPY: 80% SHE potentially avoided [€523 ER], insulin dose reduction of 3,799 IU PPY [€71 ER]; and a relative HbA1c reduction of 1% [€10 ER]. The total calculated short-term improvement in this subgroup is associated with potential savings in CIR cost of €603 PPY. **CONCLUSIONS:** In addition to long-term benefits; depending on baseline values, switching patients from MDI to CSII potentially results in improved clinical outcomes with significant reductions in short-term CIR costs.

PMD31

IMPACT OF USING A VESSEL SEALER SYSTEM AND THE HARMONIC SCALPEL IN HOSPITAL OUTCOMES AND COST OF THYROIDECTOMY PROCEDURES

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OBJECTIVES: To analyze cost, surgical time, hospitalization time, bleeding and pain scores postoperatively, regarding patients who underwent thyroidectomy using vessel sealer system or harmonic scalpel technique compared to convencional. **METHODS:** A retrospective study. Thyroidectomies performed between 2007 and 2010 (n = 460), segmented by conventional or minimally invasive technique, used to vessel sealer system or harmonic scalpel. Were analyzed: sex, age, principal diagnosis, type of procedure (total thyroidectomy with or without lymphadenectomy, thyroidectomy with or without lymphadenectomy). The outcomes analyzed were duration of surgery, hospital stay, need for blood transfusions and pain score. The conclusions were based on a significance level of 5% and statistical analyzes were performed using the software R. **RESULTS:** The outcome duration of surgery, the use of vessel sealer system resulted in increased duration of surgery about 47 minutes when compared to using the conventional technique ($p < 0.001$) and the use of harmonic scalpel led to a reduction of the length mean surgery in approximately 32 minutes compared to the conventional technique ($p < 0.001$). Patients who used vessel sealer system or harmonic scalpel had cost more than in patients with the conventional technique. In relation to the outcome scores of pain and blood transfusion there was no difference between the techniques. **CONCLUSIONS:** The use of harmonic scalpel was favorable in terms of reducing the duration of surgery, but wasn't observed impact on length of hospital stay and cost of the procedure was significantly higher (28%). Using the vessel sealing system are no results in favorable outcomes assessed and the cost increase was significant compared to the conventional technique.

PMD32

OUTCOMES AND COSTS OF ISOLATED AORTIC VALVE REPLACEMENTS ASSOCIATED WITH THE MINI-INVASIVE IMPLANTATION OF A NEW SUTURELESS AND COLLAPSED VALVE IN ITALY, FRANCE, GERMANY, AND UK

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OBJECTIVES: Aortic valve replacement (AVR) the most common heart valve operation, accounts for a majority of all valve surgery performed in the elderly. Mini-invasive aortic valve replacement (MiAVR) has several advantages over full sternotomy, mainly less surgical trauma, decreased blood loss, lower mortality and faster recovery. However, it's also associated with some draw-backs, as an increased technical complexity and higher aortic cross-clamp circulation times (CCTs). Perceval S is a new aortic valve which is implanted without need for suturing and a collapsed profile, thus allowing a significant reduction of cross-clamping times, an independent risk factor for worse outcomes, allowing to expand the pool of operable patients with MiAVR. Aim of this simulation study was to predict costs and outcomes of isolated AVR procedures associated with this new valve in 4 European countries (Italy, France, Germany, and UK), as compared to traditional valve implants, from the cost perspective of the hospital. **METHODS:** A probabilistic, patient-level simulation model was fully coded in WinBugs, permitting a seamless integration of parameter estimation and outcomes prediction, which was entirely based on the associated CCTs and on the surgical technique (mini-invasive vs. full sternotomy), through published correlations. Unit cost were retrieved from official and literature sources for all countries. Besides the incorporated probabilistic sensitivity analysis, a series of deterministic sensitivity analyses was performed. **RESULTS:** The model predicts less complications with the use of the Perceval S valve, and savings (valve cost excluded) ranging from slightly less than 6,000 € (Italy) to 6,700 £ (UK), mainly related to a reduction in surgery costs and ICU/hospital bed days. Extensive sensitivity analyses confirm the robustness of such findings. **CONCLUSIONS:** Reduced costs for the surgical procedure, shorter hospital stay and complications mangament wtih Perceval S offset its increased cost in all analysed countries.

PMD33

THE IMPACT OF THREE DIFFERENT IMAGING STRATEGIES ON SURGERY PLANNING FOR PATIENTS WITH COLORECTAL CANCER LIVER METASTASES

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OBJECTIVES: To compare Gadoxetic Acid-enhanced MRI (PV-MRI) with extracellular contrast media-enhanced MRI (ECCM-MRI) and 3-phase MD-CT (MD-CT) in the planning of surgery for patients with colorectal cancer liver metastases (CRCLM). **METHODS:** A decision-tree model was used. The probabilities were collected and validated by radiologists and liver surgeons in Germany, Italy and Sweden using a Delphi panel process. Cost was derived from published sources and the mean costs