Early economic evaluation of a hypothetical perfect test for predicting the effectiveness of implantable pacemaker-defibrillator devices (CRT-D) in patients with heart failure
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PMID83

COST-EFFECTIVENESS OF PEN DEVICES FOR NPH INSULIN ADMINISTRATION COMPARED WITH SYRINGE AND VIAL IN ADULT PATIENTS WITH DIABETES MELLITUS IN COLOMBIA

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OBJECTIVES: Although self-administration “pen” devices offer certain advantages, their higher cost has prevented its wider dissemination in patients with diabetes. The aim of this study was to determine their cost-effectiveness, compared to conventional vial and syringe, in adult patients in Colombia. METHODS: We designed a cost-effectiveness Markov model, with annual cycles, five-year time horizon (with analysis at 3 and 10 years), 5% discount rate, and third party payer perspective (Colombian health system). Transition probabilities and utilities in quality of life (QALY) were obtained from a systematic review of the literature. Costs, in 2014 Colombian pesos (1 euro = 2,660 COP), were obtained locally from different sources (following the methodology proposed by IHTA, the Colombian HTA agency). Cost-effectiveness threshold was three times per capita GDP. RESULTS: The total cost of treating a patient with a syringe and vial over five years would be €1,002, while the use of pen device would represent €1,226. In the same period, the patient would gain 3.1709 and 3.1849 QALY, respectively, representing an incremental cost effectiveness ratio (ICER) of €15,002 per additional QALY gained. By extending the time horizon, the ICER lowers (€10,424 in 10 years). Different discount rates, from 0 to 12%, do not substantially alter the results. With a price reduction of 31% the pen device reaches the threshold of 1 per capita GDP in the sensitivity analysis, the variables related to hypoglycemia (frequency and costs of treatment) are the ones that most modify the results. Cost-effectiveness, however, is maintained under different scenarios. CONCLUSIONS: Given the assumptions and limitations of this model, the pen-like devices for self-administration of insulin are cost-effective, compared with administration by vial and disposable syringes, in adult patients with diabetes in the Colombian context.

PMID84

COST-EFFECTIVENESS OF TRANSCATHETER AORTIC VALVE REPLACEMENT: CURRENT DECISION ANALYTIC MODELS AND FUTURE OPPORTUNITIES

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OBJECTIVES: Transcatheter aortic valve replacement (TAVR) is an important new therapy approach for the treatment of severe aortic stenosis. Our objective was to identify and review the growing body of published cost-effectiveness analyses of TAVR, and to identify opportunities for future modeling and analyses in light of new evidence. METHODS: A systematic search in PubMed, Embase, Cochrane, HTA agency databases and a grey search were conducted for the period from 2005 through 2014 to identify studies examining the cost-effectiveness of aortic valve replacement using a transcatheter-based intervention. Studies, selection study, and data extraction were performed according to a predefined protocol. We only included studies on cost-effectiveness of TAVR compared with either medical management (MM) or surgery (SAVR). Appraised studies were analyzed using the CHEERS checklist. RESULTS: Our search yielded n=15 studies, comprising 13 distinct decision-analytic models set in six countries: Belgium, Brazil, Canada, Spain, United Kingdom, and U.S.A. Four of the models were developed by national HTA agencies or accredited government research bodies. HTA reports differed from the published results. HTA agency criteria was poor to excellent. n=7 models compared TAVR to medical management, two to surgery, and n=5 evaluated the cost-effectiveness of TAVR compared to both n=13 studies compared efficiency of TAVR from PARTNER A and B. Only one study used patient-level data in an “along-the-trial” design. ICER in studies comparing TAVR to MM ranged from €12,600 to US$15,600 per QALYs. Compared with SAVR, ICER estimates ranged from TAVR dominating to be dominated by SAVR. CONCLUSIONS: Economic evaluations are lagging behind published clinical evidence. Future opportunities include economic evaluation of newer clinical trial data, long-term follow-up data from earlier studies, and more explicit evaluation of subpopulations of patient cohorts. Overall model structure and reporting of methods including data sources could be improved further.

PMID85

COST-UTILITY ANALYSIS OF SACRAL NERVE STIMULATION FOR THE TREATMENT OF FECAL INCONTINENCE REFRACTORY TO CONSERVATIVE TREATMENT: EFFECTIVENESS FOR OPTIMAL TREATMENT PATHWAY

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OBJECTIVES: To evaluate the cost-utility of including sacral nerve stimulation (SNS) in different treatment pathways for refractory fecal incontinence (FI). METHODS: The treatment pathways were surgically repairable sphincter defect (SD) and without (WSD), were modeled through a patient-level simulation model. Three comparators to SNS were included: sphincter repair (SR), NASHA/ D and non-invasive clinical nerve stimulation (CNS). The non-invasive treatment were modeled as last resort. Clinical data were based on a systematic literature review and expert opinion (EO). Resource use was based on EO, while cost data were based on hospital costs and national tariffs (GBP 2015-16). The UK National Health Service (NHS) perspective was used. RESULTS: For SD patients, the most effective treatment pathway was SNS followed by SR, NASHA/ D and CNS respectively. When CNS was used in the model, the total cost per patient would be £7,846, while the use of SNS and SR would be £7,555 and £7,062, respectively. The incremental cost per QALY gained was £6,618 for SNS, £7,255 for SR and £6,453 for CNS. CONCLUSIONS: SNS is the cost-effective treatment for patients with fecal incontinence. Further research is needed to support the results of this modeling study.

PMID86

EARLY ECONOMIC EVALUATION OF A HYPOTHETICAL PERFECT TEST FOR PREDICTING THE EFFECTIVENESS OF IMPLANTABLE PACEMAKER-DEFIBRILLATOR DEVICES (CRT-D) IN PATIENTS WITH HEART FAILURE

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OBJECTIVES: Implantable cardioverter-defibrillators (ICD) improve survival in patients with New York Heart Association Functional Classification (NYHA) class III/IV symptoms and a left ventricular ejection fraction (LVEF) ≤35%. Therefore, the current clinical guidelines recommend the implantation of the ICD in all the patients that fulfill the above conditions. However, as the costs of the ICD devices are relatively high, the prophylactic implantation of ICDs as per the guideline is not particularly cost-effective. A previous study demonstrated that short-term variability of QT (STVQT) may in fact reflect the increased susceptibility to SCD in patients with higher LVEF, and may therefore provide valuable information. The aim of this study was to explore the cost-effectiveness of short-term variability of QT (STVQT) as a biomarker for implanting ICDs as secondary prevention of SCDs in heart failure patients and assess the societal value (headroom) of a hypothetical perfect STVQT biomarker for risk assessment and subsequent treatment decision in implanting ICDs. METHODS: The study uses a decision analytic model. RESULTS: The results of the model suggest that STVQT as secondary prevention of SCDs in heart failure patients is a Cost-effective intervention. However, not all patients are susceptible for IT, and many patients currently receive this treatment without any effect. Component Resolved Diagnosis (CRD) is a technique that might help identifying susceptible patients. Our search yielded n=7 models comparing different treatment pathways for refractory fecal incontinence (FI). The total cost of treating a patient with a syringe and vial over five years would be €1,002, while the use of pen device would represent €1,226. In the same period, the patient would gain 3.1709 and 3.1849 QALY, respectively, representing an incremental cost effectiveness ratio (ICER) of €15,002 per additional QALY gained. By extending the time horizon, the ICER lowers (€10,424 in 10 years). Different discount rates, from 0 to 12%, do not substantially alter the results. With a price reduction of 31% the pen device reaches the threshold of 1 per capita GDP in the sensitivity analysis, the variables related to hypoglycemia (frequency and costs of treatment) are the ones that most modify the results. Cost-effectiveness, however, is maintained under different scenarios. CONCLUSIONS: Given the assumptions and limitations of this model, the pen-like devices for self-administration of insulin are cost-effective, compared with administration by vial and disposable syringes, in adult patients with diabetes in the Colombian context.
follow-up this may not always be the most cost-effective alternative. In fact, economic evaluations have shown that incremental cost-effectiveness ratios (ICERs) of CRT-D may be substantially higher than for comparators. A recent study demonstrated that certain biomarkers may in fact reflect the increased susceptibility to SCD in patients with HF and this may further contribute to increase cost-effectiveness of the CRT-D interventions. The objective of this study was to explore the cost-effectiveness of a hypothetical perfect biomarker for risk assessment and subsequent treatment decision in implanting CRT-Ds in heart failure patients who comply with the existing clinical guidelines and assess the societal value (health) of such test. METHODS: The study uses a decision analytical model. RESULTS: The use of a hypothetical perfect biomarker for implanting CRT-Ds in heart failure patients is a cost-effective healthcare intervention. The headroom (societal willingness to pay) for this intervention is estimated at €1,530 to €1,200 depending on the willingness to pay threshold. CONCLUSIONS: The use of a hypothetical perfect biomarker for implanting CRT-Ds in heart failure patients is cost-effective. The headroom (societal willingness to pay) for this intervention is estimated at €1,530 to €1,200 depending on the willingness to pay threshold.

PM112

LONG-TERM COST-EFFECTIVENESS OF TRANSLATIONAL IRRIGATION IN PATIENTS WITH NEUROGENIC BOWEL DYSFUNCTION WHO HAVE FAILED STANDARD BOWEL CARE

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OBJECTIVES: To evaluate the long-term cost-effectiveness of translational irrigation (TI) as second-line management in patients with neurogenic bowel dysfunction (NBD) who have failed first-line standard bowel care (SBC). METHODS: A decision model was developed to project the long-term economic outcomes, including quality-adjusted life expectancy (QALE), episodes of faecal incontinence (FI), urinary tract infections (UTIs), and stoma surgery when using TI compared to continuing SBC. Patients could transition from TI to (a) another route of care such as ileostomy/continent ileostomy or (b) standard care in patients with remaining incontinence ante (urinary anticholinergic or anticolon). Transition probabilities and QALE estimates were based on real-world data collected in a CUA in UK from 2007-2014, in NBD patients compared to standard of care patients. Lifetime cost-savings of €41,620 per patient was estimated for TI SBC in a SCI patient, primarily due to avoided hospitalizations and stoma surgeries. Incremental cost could differ due to altered life expectancy (and age of diagnosis) in the CUA vs. CUA scenarios. The objective of the study was to explore the cost-effectiveness of a hypothetical perfect biomarker for implanting CRT-Ds in heart failure patients who comply with the existing clinical guidelines and assess the societal value (health) of such test. METHODS: The study uses a decision analytical model. RESULTS: The use of a hypothetical perfect biomarker for implanting CRT-Ds in heart failure patients is a cost-effective healthcare intervention. The headroom (societal willingness to pay) for this intervention is estimated at €1,530 to €1,200 depending on the willingness to pay threshold. CONCLUSIONS: The use of a hypothetical perfect biomarker for implanting CRT-Ds in heart failure patients is cost-effective. The headroom (societal willingness to pay) for this intervention is estimated at €1,530 to €1,200 depending on the willingness to pay threshold.

PM113

COST-UTILITY ANALYSIS OF CONTINUOUS INFUSION PUMP WITH INTEGRATED MONITORING COMPARING WITH MULTIPLE DAILY INJECTION TREATMENT FOR PATIENTS 15-YEARS OR OLDER WITH TYPE 1 DIABETES MELLITUS IN COLOMBIA

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OBJECTIVES: To estimate the incremental cost-utility ratio (ICUR) for the use of a continuous infusion pump with integrated monitoring (SAP) compared with the application of multiple daily injections (MDI) in adult (>15-year-old) patients with type 1 diabetes mellitus (T1DM). METHODS: A one-cycle Markov model, with transition probabilities obtained from a systematic review of the literature. Included outcomes in the search were ketoadosisis, severe hypoglycaemia, multiple episodes of hypoglycaemia (nephrotoxicity, nephropathy), quality of life (expressed in quality-adjusted life years, QALYs, and obtained from Tufts database), as well as mortality. Other features of the model were: discount rate 3.5% for costs and QALYs, third party payer perspective (only direct medical costs), and a life expectancy of 79.5 years. Threshold used was the cost effectiveness of 1 QALY gained. RESULTS: Sensitivity analysis showed that the only critical variable was the annual cost of continuous infusion pump treatment, which would have to be reduced by 40% to reach the cost-utility threshold. CONCLUSIONS: Under the assumptions of the model, treatment with continuous pump would not be cost-effective for the average adult T1DM patient in Colombia. Further analysis would be required, addressed to certain selected subgroups of patients.

PM114

COST-UTILITY OF HEXAMINOEVULINATE BLUISH LIGHT CYSTOSCOPY (HBL) ASSOCIATED TRANURETHRAL RESECTION OF THE BLADDER TUMOUR (TURB) COMPARED TO TURB WITH WLC ALONE IN PATIENTS WITH NON-MUSCLE INVASIVE BLADDER CANCER (NMIBC) IN POLAND

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OBJECTIVES: To evaluate cost-utility of HBL assisted TURB in comparison to TURB with WLC alone diagnosed NMIBC in Poland. METHODS: Analysis was performed in 2014, from a public payer’s perspective with a lifetime horizon. “HBL cost-effectiveness model in non-muscle invasive bladder cancer (NMIBC)” by Pharmacist Setting. The model consists of two parts: a short-term decision tree to assess outcomes of TURB and a Markov cohort model developed in order to explore long-term outcomes. Clinical efficacy of HBL was on a systematic review of randomized clinical trials. Data concerning course of disease and associated costs were based on available observational studies, expert opinion and guidelines. Difference in utilization of resources between HBL assisted TURB and TURB with WLC alone was estimated on the basis of expert survey. Unit costs of drugs and medical procedures were based on Ministry of Health (MoH) and National Health Fund tariffs. Costs and effects were discounted at rates of 5% and 3.5%, respectively. The cost-effectiveness threshold was set to 119,577 PLN according to MoH requirements. Probabilistic sensitivity analyses (PSA) were conducted to assess the probability that HBL is cost-effective in Polish settings. RESULTS: The difference in health outcomes between HBL assisted TURB and TURB with WLC alone was 0.034 QALY in favor of HBL. HBL assisted TURB was approximately 172 PLN more expensive than TURB with WLC. Incremental cost per QALY was 22,335 PLN. PSA indicated that HBL was cost-effective with probability of 95.9% and dominant with probability of 44.6%. CONCLUSIONS: Use of HBL to assist TURB is cost-effective in Poland when compared with TURB with WLC alone.