SAVINGS OF THE USE OF RH BMP-2 IN OPEN TIBIA FRACTURES FOR EUROPEAN HEALTH CARE SYSTEMS FROM A PAYER AND SOCIETAL PERSPECTIVE

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OBJECTIVES: Recombinant human bone morphogenetic protein (rhBMP-2) is a growth factor for new bone formation. The objective was to calculate cost savings for the use of rhBMP-2 in grade III open tibia fractures for Germany, France and UK from a public health care system and a societal perspective, respectively. METHODS: A health economic model was developed based on clinical data from a previously published randomized controlled trial (BESTT study) comparing rhBMP-2 + standard of care (soft tissue management and intramedullary nailing) with standard of care alone. Clinical data were transferred using reimbursement 2005 tariffs (German-DRG, UK-NHS, French-Social Security tariffs) and published data for sickness payments and productivity loss for a one year time horizon. RESULTS: In Germany and France sickness payments are provided by public health care insurances and therefore, the payer perspective is identical to the societal perspective. In Germany, the use of rhBMP-2 for grade III open tibia fractures savings of direct costs of €1359 per patient and of €2714 for sickness payment resulting in total savings of €4073 per patient that offset the price of rhBMP2 (€2950). For France, there are total savings of €3476 with savings in direct costs of €1197 and in indirect costs of €2279 which outbalance the price of rhBMP-2. For UK, rhBMP-2 achieves savings of ≤1126 from a payer perspective which is below price of rhBMP-2 (≤1790). However, from a UK societal perspective total savings of ≤5139 make rhBMP-2 a cost saving strategy. For all three different countries the major driver for cost savings is the faster fracture healing with reduced expenses for sickness leave payments and productivity loss for a one year time horizon.

METHODS & CONCEPTS

FORECASTING WITH TIME SERIES MODELS TO EXAMINE THE AVAILABILITY OF INPATIENT BEDS

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OBJECTIVES: To examine the relationship of admissions to discharges in the availability of inpatient beds at a medium sized southern hospital. METHODS: Data collected from several EDs were modeled using time series analysis to investigate the relationship of time of admission to length of stay; in addition, discharge data were collected to examine the time between admission and discharge to see if the time lag is related to bed availability. RESULTS: In the emergency department (ED) where arrivals can occur randomly, the peak time is between 9AM and 5PM in one hospital, increasing the length of stay for non-urgent patients while patients admitted to inpatient beds have considerable variability in their stay in the ED. At a second hospital, the peak time occurred at 3PM during the standard time of shift change. In addition, there is a time lag in beds, with admissions trailing discharges. CONCLUSION: Time series forecasting can find problems in the availability of beds; once identified, the problems can be solved. These time series techniques can be used to drill down into every 24-hour period to examine where increased waiting times result for bed unavailability.
non-traded goods (NON-TRADED); and 3) Costs evenly split between traded and non-traded goods (MIX). STD-CARE costs freely varied from 0–100% traded goods. GDP was about $600 using the exchange rate, IS1865 using PPP. The outcome measure was the incremental cost-effectiveness ratio stated as multiples of GDPs/DALY (Disability-adjusted Life Year). We considered the commonly used threshold of 1GDP, as well as WHO recommendations: ≤1GDP “very cost-effective”, 1–3GDP “cost-effective”. Parameters were chosen to achieve an ICER of 4GDP for XCHG. RESULTS: By definition, the ICER is constant (4GDP) for XCHG. For NON-TRADED using $I$, the ICER was ≥4GDP in all cases. For TRADED using IS, the ICER was <1 when <79% of STD-CARE costs were traded goods. For MIX using IS, ICERs were never below 1GDP, but were below 3GDP when <76% of STD-CARE costs were traded goods. CONCLUSION: Adjusting prices using purchasing power parity (IS’s) as opposed to the unadjusted official exchange rate can dramatically alter conclusions when comparing interventions involving different proportions of traded goods. In particular, an intervention with costs primarily from traded goods (e.g., vaccination) may be clearly not cost-effective using the exchange rate, yet appear very cost-effective after adjusting for purchasing power parity.

EVALUATING AN ONLINE CALCULATOR FOR ANALYZING INCREMENTAL NET BENEFIT AND THE EXPECTED VALUE OF PERFECT INFORMATION FROM PATIENT LEVEL DATA

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OBJECTIVES: To evaluate an online calculator for analyzing incremental net benefit and expected value of perfect information. METHODS: An online calculator was developed that generates incremental net benefit (INB) and expected value of perfect information (EVPI) statistics and graphs from patient level cost and effectiveness data and is freely available at http://www.HealthStrategy.com. The calculator was compared to two other software options: Obenchain’s ICEplane software which can be downloaded from http://www.math.iupui.edu/~indyasa/bobdown.htm and an MS Excel module developed by Nixon, Wonderling and Grieve, and downloadable through http://www.mrc-bsu.cam.ac.uk. For the comparison, three datasets were utilized from published studies dealing with fluoxetine (FLUX), a randomized test dataset (RND), and acupuncture (ACCU). RESULTS: INB values on the three datasets at various lambda threshold values (WTP) between HealthStrategy, ICEplane and Nixon were as follows: ACCU (WTP at mean ICER, 10088): 2.0 vs 2.7 vs 2.0; RND (WTP at 1.0): 2.0 vs 2.4 vs 2.0; and FLUX (WTP at 1742): 57472 vs 56570 vs 56979. ICEplane does not calculate EVPI, but the Nixon module was adapted by adding a column for the estimation of the unit normal loss integral as documented by Griffin and Chilcott. The respective HealthStrategy and Nixon module EVPI values for each dataset were as follows: ACCU (WTP at mean ICER): 67.9 vs 66.7; RND (WTP at 0.0): 0.167 vs 0.105; and FLUX (WTP at 0.0): 169.8 vs 169.8. CONCLUSION: All three software provide basic statistics and graphs including scatter plots, confidence intervals and acceptability curves. For INB and EVPI, the HealthStrategy and Nixon packages use parameter calculations requiring assumptions not always met with cost effectiveness data. For future research, more comprehensive software should be added to this comparison like Stata, the R statistical package and Winbugs, along with consideration of population EVPI and expected value of sample information (EVSI).

A PRE-POST TIME IN MOTION METHODOLOGY TO EXAMINE PRODUCT WASTAGE REDUCTION: PILOT RESULTS IN MAGNETIC RESONANCE CONTRAST MEDIA PHARMACY BULK PACK

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OBJECTIVES: To demonstrate the applicability of time in motion methodology in detecting difference in MR contrast media wastage and the potential costs savings of magnetic resonance (MR) contrast media Pharmacy Bulk Pack (PBP) use. METHODS: Time in motion methodology has been demonstrated as an effective tool in highlighting efficiencies in process-oriented tasks and increasingly used in health care to measure efficiency. We designed a prospective, time in motion study to examine the pre and post use of MR contrast media PBPs. Seven MR imaging centers collected 30 continuous observations (for approximately 2 weeks). During the pre period, data were collected via a quantitative Case Report Form on the time and number of MR procedures, patient weight, body part scanned, contrast media details (volume used, packages opened, volume discarded), and total scan time. MR center-specific contrast media usage algorithms, which incorporated gadopentetate dimeglumine PBP, were developed based on data collected in the pre-period to enhance efficiency and reduce wastage, and were