URINARY/KIDNEY DISORDERS – Cost Studies

PUK5
THE FINANCIAL IMPACT OF INCREASING HOME-BASED HIGH DOSE HAEMODIALYSIS AND PERITONEAL DIALYSIS

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OBJECTIVES: The increasing prevalence of end-stage kidney disease in the UK has resulted in a heavy economic burden. The National Institute of Health and Care Excellence reported that patients receiving dialysis at home have better health outcomes and lower health care resource use. This study aims to assess the financial impact of increasing the use of home-based dialyses vs. UK current practice. **METHODS:** A Markov model was constructed to estimate the financial impact of different dialysis scenarios from the UK payer perspective. We modelled prevalent and incident dialysis patient population over 5 years. The current UK dialysis modality distribution of 15% prevalent and 20% incident peritoneal dialysis (PD), 82% prevalent and 79% incident in-centre haemodialysis (ICHD), 3% prevalent and 1% incident conventional home HD (HHD), and 0% high dose HHD was compared to 3 scenarios: 1) Increase high dose HHD to 10% among prevalent patients; 2) Increase high dose HHD to 10% and PD to 20% among prevalent patients and increase PD to 25% among incident patients; 3) Increase high dose HHD to 10% and PD to 25% among prevalent patients and increase PD to 30% among incident patients. In each scenario, the proportion of patients on ICHD changes accordingly, while conventional HHD is kept constant. Model inputs were from published sources. **RESULTS:** The base case results show that all 3 scenarios result in lower costs versus current UK practice. A prevalent population size of 22,654 patients was modelled, accounting for an annual incident population size of 5,393 in England. Scenario 1 saves £25 million (£559 per patient). Scenario 2 saves £67 million (£1,526 per patient). Scenario 3 saves £110 million (£2,493 per patient). Sensitivity analyses demonstrate consistent results. **CONCLUSIONS:** Under the current UK national tariff, increasing the proportion of patients on home-based dialyses is associated with lower total health care costs.

PUK6
BUDGET IMPACT OF SWITCHING FROM AN IMMEDIATE-RELEASE TO A PROLONGED-RELEASE FORMULATION OF TACROLIMUS IN RENAL TRANSPLANT RECIPIENTS IN THE UK BASED ON DIFFERENCES IN ADHERENCE

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OBJECTIVES: Advagraf® is a once-daily prolonged-release formulation of tacrolimus with proven non-inferiority to Prograf®, a twice-daily immediate-release formulation of tacrolimus, in biopsy-proven acute rejection in renal transplant recipients. Advagraf is associated with improved adherence compared with Prograf, which may ultimately improve long-term outcomes. The present study assessed the budget impact of switching patients from Prograf to Advagraf in the UK. **METHODS:** A budget impact model was constructed based on published data on acute rejection, graft failure and mortality in the UK setting. Patients were assumed to convert from Prograf to Advagraf on a 1:1 mg:mg basis. In a study comparing the adherence rates between once-daily versus twice-daily formulations of tacrolimus, the proportion of patients taking the prescribed number of daily doses was 88.2% in Advagraf patients and 78.8% in Prograf patients. The model applied a relative risk of graft failure of 3.47 to non-adherent patients based on data from a 2004 meta-analysis. Cost data were taken from the British National Formulary and 2012–13 NHS tariff information. The analysis was performed over a 5-year time horizon and future costs were not discounted, in line with International Society for Pharmacoeconomic and Outcomes Research guidelines. **RESULTS:** Over a 5-year time horizon, the mean cost per patient (including tacrolimus, concomitant immunosuppressive medications, dialysis after graft failure, and treatment for acute rejection) was GBP 29,290 for Advagraf versus GBP 33,032 for Prograf. The total cost saving of GBP 3,742 was driven by reduced Advagraf pharmacy costs and lower dialysis costs arising from the lower risk of graft failure in the larger proportion of adherent patients in the Advagraf arm. **CONCLUSIONS:** Conversion of renal transplant recipients from Prograf to Advagraf was associated with lower pharmacy and dialysis costs, with the reduction in dialysis costs being driven by improved adherence to Advagraf regimen and the consequent improvement in graft survival.

PUK8
AN ANALYSIS OF THE COST OF SWITCHING RENAL TRANSPLANT PATIENTS FROM AN IMMEDIATE-RELEASE TO A PROLONGED-RELEASE FORMULATION OF TACROLIMUS BASED ON DIFFERENCES IN TROUGH CONCENTRATION VARIABILITY IN THE UNITED KINGDOM

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OBJECTIVES: Randomized controlled trials have shown that Advagraf®, a once-daily prolonged-release tacrolimus formulation, is non-inferior to Prograf®, a twice-daily immediate-release tacrolimus formulation, in terms of biopsy-proven acute rejection in renal transplant recipients. However, relative to Prograf, Advagraf exhibits reduced variability in tacrolimus trough concentration, which has been associated with reduced graft failure. Based on these data, the present study evaluated the cost of switching UK renal transplant patients from Prograf to Advagraf. **METHODS:** UK-specific data on acute rejection, graft failure and mortality were used to construct a budget impact model to assess the costs of switching from Prograf to Advagraf on a 1:1 mg:mg basis. The model assumed that 3.1% of patients on Advagraf had high tacrolimus trough concentration variability compared with 17.4% on Prograf, based on a study comparing Advagraf and Prograf pharmacokinetics. The model applied a relative risk of graft failure of 2.38 to high variability patients based on data from a tacrolimus variability study. Cost data were taken primarily from the British National Formulary and 2012–13 NHS tariff information and the analysis was performed over a 5-year time horizon. **RESULTS:** The mean cost per patient (including tacrolimus, concomitant immunosuppressive medications, dialysis after graft failure, and treatment for acute rejection) was GBP 26,958 with Advagraf versus GBP 30,379 for Prograf over a 5-year period. The total cost saving (GBP 3,421) was driven by reduced Advagraf pharmacy costs and lower dialysis costs resulting from the lower proportion of patients with high variability in tacrolimus trough concentrations in the Advagraf arm, leading to lower risk of graft failure. **CONCLUSIONS:** Converting renal transplant recipients from Prograf to Advagraf was associated with lower pharmacy and dialysis costs, with the reduction in dialysis costs being driven by the lower proportion of Advagraf patients with high tacrolimus trough concentration variability and the resultant improvement in graft survival.

PUK9
ECONOMIC EVALUATION OF EPOETIN ALFA HEXAL (BINOCRIT) COMPARED TO DARBEPOETIN ALFA (ARANESP) IN THE TREATMENT OF CHRONIC HAEMODIALYSIS (CKD5) PATIENTS IN GERMANY

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OBJECTIVES: To compare the CKD5 budget requirements of utilizing epoetin alfa Hexal vs. darbepoetin alfa in the German health care system. **METHODS:** Chronic kidney disease (CKD) is a condition that is prevalent worldwide, and the number of patients affected continues to increase. ESAs and iron are the mainstays of treatment for haemodialysis patients. The purpose of this pharmacoeconomic analysis was to evaluate the cost-effectiveness of the short-acting biosimilar ESA epoetin-alfa Hexal (EA) 6,000-8,000 IU per week (TIW) vs. long-acting erythropoiesis-stimulating agent (ESA) darbepoetin alfa (DA) 30-40 mcg weekly (QW), for treating chronic haemodialysis patients. A budget impact model was constructed employing a payer perspective, per patient with 5 year time horizon. The treatment period considered was based on 52 weeks and was aligned with real world clinical experience data from germany[1]. Model inputs included: medical treatment, outcomes, and health care service utilization from published clinical studies[2]and summary of product characteristics recommendation. Effectiveness of therapeutic alternatives was determined by comparing haemoglobin maintenance rates. Costs presented reflect 2013 prices. The analysis was performed from the perspective of the German health care system. **RESULTS:** The average expected pharmaceutical costs per patient were €3791 to €5002 for DA QW (30-40mcg weekly) versus €2690 to €3520 for EA TIW (6,000-8,000IU weekly). Cost-savings associated with utilizing EA TIW was 41-42% for comparable DA doses. Previous German research has demonstrated that ESA consumption of patients on chronic haemodialysis based on DDD is similar for biosimilar and originator ESAs[1]. **CONCLUSIONS:** In the treatment of chronic haemodialysis patients in Germany, epoetin alfa Hexal is projected to provide substantial savings for the health care system when compared to darbepoetin alfa. German stakeholders could consider the extent that darbepoetin alfa is utilized in haemodialysis patients. [1] Horbrand et al. Eur J Clin Pharmacol 10/2012. [2] Horl et al. Clin. Nephrology 1/2012.

PUK10
ECONOMICS OF DIALYSIS DEPENDENCE FOLLOWING ACUTE KIDNEY INJURY (AKI) IN THE INTENSIVE CARE UNIT (ICU)

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OBJECTIVES: AKI is common in the ICU and often necessitates the provision of renal replacement therapy (RRT). Two main modalities exist: continuous (CRRT) or intermittent (IRRT) therapy. Neither modality has been found superior in terms of survival. However, dialysis dependence among survivors remains a significant medical and economic issue. A recent meta-analysis showed initial IRRT might be associated with higher rates of dialysis dependence than initial CRRT. We performed a preliminary cost-utility analysis comparing both modalities based on these recent data. **METHODS:** We assumed a pool of patients who would potentially be eligible for either modality and modeled LYG, QALYs gains and costs comparing initial CRRT vs. initial IRRT, all else being the same. Using the US perspective, we designed a 1-year Markov model with daily cycle and 2 health states (dialysis independence/dependence). Survival for both modalities was fitted from published estimates (Weibull regression). The proportion of dialysis independent survivors was fitted from published estimates for CRRT (Weibull regression). IRRT dialysis independence estimates were obtained by applying the meta-analysis risk-ratio to the fitted CRRT estimates. Sensitivity analysis was conducted on the daily implementation cost difference between CRRT and IRRT (from $250 to $1,000; basecase: $500) and the risk-ratio for dialysis dependence for IRRT as compared to CRRT (from 1.20 to 3.00; basecase: 1.99). **RESULTS:** The QALYs gain was slightly better for CRRT as compared to IRRT (0.301 vs. 0.292 respectively). Despite higher hospitalization costs for CRRT ($86,397 vs. $83,309 for IRRT), the one-year cumulative total cost including the cost of dialysis dependence was similar between the two modalities ($94,286 for CRRT vs. $94,118 for IRRT). In the basecase analysis, the ICER of CRRT vs. IRRT was $17,562/QALY. **CONCLUSIONS:** Initial CRRT may actually be cost-effective as compared to initial IRRT by reducing the rate of dialysis dependence among AKI survivors.

PUK11
IN-PATIENT HOSPITALIZATIONS FOR CHRONIC KIDNEY DISEASE IN THE UNITED STATES

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OBJECTIVES: To understand the trends in rate and cost of hospitalizations due to Chronic Kidney Disease (CKD) in the U.S. **METHODS:** We analyzed the last five years