

PCN131

COST EFFECTIVENESS OF BORTEZOMIB, RITUXIMAB, CYCLOPHOSPHAMIDE, DOXORUBICIN AND PREDNISONE FOR THE FIRST-LINE TREATMENT OF MANTLE CELL LYMPHOMA NOT ELIGIBLE FOR STEM CELL TRANSPLANTATION: A SCOTTISH PERSPECTIVE

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OBJECTIVES: Mantle cell lymphoma (MCL) is a rare but aggressive form of non-Hodgkin's lymphoma with one of the poorest outlooks. In Scotland, patients unsuitable for stem cell transplantation (SCT) primarily receive rituximab, cyclophosphamide, doxorubicin, vincristine and prednisone (R-CHOP). The LYM-3002 trial demonstrated that the use of bortezomib, rituximab, cyclophosphamide, doxorubicin and prednisone (VR-CAP) almost doubled progression-free survival (PFS) relative to R-CHOP (24.7 vs 14.4 months; HR=0.63, p<0.001). The objective of this analysis was to assess the cost effectiveness of VR-CAP versus R-CHOP as first-line treatment for MCL-patients unsuitable for SCT, from the perspective of the Scottish National Health Service (NHS). **METHODS:** A cost-effectiveness model was constructed based upon line of treatment, progression status and survival; extrapolating LYM-3002 clinical trial data using parametric models fit to PFS, overall survival (OS) and treatment-free interval Kaplan-Meier curves. Utilities were derived from trial-based EQ-5D data, supplemented with published values for long-term health status. Resource use including second-line treatment was taken from the LYM-3002 trial and UK clinician advice. Costs were derived from standard UK sources. Probabilistic and structural sensitivity analyses were conducted to assess the uncertainty of the results. **RESULTS:** Total lifetime costs were £45,453 and £26,291 for VR-CAP vs. R-CHOP. Treatment with VR-CAP resulted in greater life years (7.49) compared to R-CHOP (6.58), and quality-adjusted life years (QALYs), 4.05 and 3.31 for VR-CAP and R-CHOP, respectively. Thus the additional cost associated with VR-CAP was partially offset by additional benefit; resulting in an incremental cost-effectiveness ratio of £23,020. Probabilistic sensitivity analysis estimated an 82% chance that VR-CAP was cost effective below £30,000/QALY. The model was most sensitive to extrapolation assumptions for PFS and OS and utility associated with post-progression from second-line treatment. **CONCLUSIONS:** VR-CAP is a cost-effective treatment for previously untreated patients with MCL who are unsuitable for SCT in NHS Scotland.

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COST-EFFECTIVENESS OF VEMURAFENIB AS A FIRST-LINE TREATMENT IN PATIENTS WITH BRAF V600 MUTATION-POSITIVE UNRESECTABLE OR METASTATIC MELANOMA IN SPAIN

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OBJECTIVES: Genetically-targeted therapies are both promising and costly advances in the field of oncology. This study aims to evaluate the cost-effectiveness of vemurafenib versus ipilimumab as first-line treatments in patients with BRAF V600 mutation-positive unresectable or metastatic melanoma from a Spanish healthcare system perspective. **METHODS:** We performed a cost-effectiveness analysis to compare both strategies for patients with BRAF positive metastatic melanoma using a probabilistic model. Since head-to-head trials are not available, overall (complete and partial) response rates were obtained from the phase III randomized-controlled trials of vemurafenib (57.0%; 95% CI 51.6-65.2%) and ipilimumab (15.2%; 95% CI 12.2-18.2%). The cost of treatment regimens was calculated using the recommended dose schedules as per the Summary of Product Characteristics. The treatment duration with vemurafenib was 6.9 months (median progression-free survival). Four doses of ipilimumab were considered. The prices used in the analysis correspond to those currently approved in Spain (in EUR, 2015). Monte-Carlo simulation was chosen as it allows simulating the effect of changes in different parameters obtained from clinical studies and other sources to describe real-life distributions. Parameters used in the simulation were the progression free survival, body weight and overall response rates. Additional threshold sensitivity analyses for possible ipilimumab price discounts were performed. **RESULTS:** 1,000 model iterations were generated. The cost per overall response with vemurafenib and ipilimumab was €111,928 (95% CI €108,403; €115,969) and €447,462 (95% CI €370,285; €538,214) respectively. Therefore, the cost of ipilimumab per patient that responds to treatment would be 4.0 (3.4-4.6) times greater than treating with vemurafenib. The cost per responder would be equal amongst both treatments, only with a discount of 71.1% in the price of ipilimumab. **CONCLUSIONS:** In BRAF V600 mutation-positive unresectable or metastatic melanoma, first-line vemurafenib could reduce the health care costs per overall response in comparison to ipilimumab.

PCN133

THERAPEUTIC AND ECONOMIC VALUE OF EVEROLIMUS PLUS EXEMESTANE FOR THE TREATMENT OF POSTMENOPAUSAL WOMEN WITH HORMONE RECEPTOR-POSITIVE, HER2/NEU NEGATIVE ADVANCED BREAST CANCER

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OBJECTIVES: Up to 70% of women with hormone-sensitive advanced breast cancer (ABC) need further therapy lines following first-line hormonal therapy. Although treatment guidelines provide useful recommendations for treating patients with ABC they rarely compare different treatment options or provide guidance on how to optimize their value. This research aimed to assess the therapeutic and economic value of everolimus 10mg plus exemestane 25mg daily (everolimus+exemestane) in comparison to fulvestrant (500mg intramuscularly on days 0, 14 and 28, and every 28 days thereafter) for the treatment of hormone receptor-positive, HER2/neu negative ABC postmenopausal women who failed first-line hormonal therapy. **METHODS:** We used a discrete-time, state-transition model to estimate the long term overall survival (OS) and treatment costs in ABC patients failing first-line hormonal therapy.

Evidence on relative treatment effects concerning OS, progression-free survival (PFS) and discontinuation due to any reason (treatment persistence) and adverse events (tolerability) was estimated using a mixed treatment comparison following a systematic review of randomized clinical trials enrolling post-menopausal women with hormone-sensitive ABC. Health service costs were included and a lifetime perspective adopted (5% annual discount rate). **RESULTS:** Everolimus+exemestane is estimated to significantly delay progression or death (HR PFS = 0.53; 95% CI: [0.37; 0.76]) and to increment life expectancy by 6.8 months in comparison to fulvestrant (HR OS = 0.82; 95% CI: [0.50; 1.36]), resulting in a 0.45 discounted life year (LY) gain. Corresponding incremental health service costs amount to 16,544€/patient starting everolimus+exemestane. This results in an incremental cost-effectiveness ratio of 36,703€/LY gained with everolimus+exemestane. Probabilistic sensitivity analysis showed a greater than 60% probability of everolimus+exemestane being cost-effective against fulvestrant, at a willingness to pay of 50,000€/LY. **CONCLUSIONS:** We evidence how valuable information from clinical trials can be pooled and used to inform about the therapeutic and economic value of guideline recommended therapies for advanced breast cancer.

PCN134

COST-EFFECTIVENESS OF PEMBROLIZUMAB FOR UNRESECTABLE METASTATIC MELANOMA AFTER PROGRESSION WITH IPIILIMUMAB IN ENGLAND

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OBJECTIVES: To assess the cost-effectiveness of pembrolizumab to treat unresectable or metastatic melanoma in patients progressing after treatment with ipilimumab, and if BRAFv600positive mutation, a BRAF inhibitor. The relevant comparator is English best supportive care (BSC), including dacarbazine. **METHODS:** A three-state partitioned survival model was developed to estimate the cost-effectiveness of pembrolizumab compared with BSC over a 30 year time horizon. Efficacy and quality of life were derived from KEYNOTE-002, a phase II clinical trial comparing pembrolizumab to investigators choice of chemotherapy. Since overall survival (OS) data were affected by a high degree of crossover, various statistical models were used to adjust for crossover with the 2-stage adjustment, using progression as a secondary baseline, found to be the most appropriate. Pembrolizumab OS was extrapolated using long-term ipilimumab data, supported by results of the KEYNOTE-002 clinical trial, and melanoma clinical experts' feedback on commonality of expected long-term survival profile. Quality of life was based on time to death health states using KEYNOTE-002 EQ-5D data. Adverse events were incorporated based upon KEYNOTE-002 data which showed a favourable safety profile when compared to chemotherapy, with grade 3-5 adverse events numerically higher in the chemotherapy control arm. **RESULTS:** Pembrolizumab was predicted to increase the life expectancy of patients by 1.59 years, which corresponds to a gain of 1.19 QALYS. In the base case analysis, the ICER is £42,923 (confidential discount included). These results are sensitive to curve fit parameters for progression-free survival and the hazard-ratio for overall survival estimated from the cross-over adjustment and a robust to changes in value parameters and assumptions in the cost-effectiveness analysis. **CONCLUSIONS:** As an end of life therapy for English patients with advanced melanoma previously treated with ipilimumab, pembrolizumab is a cost-effective therapeutic option when compared to best supportive care (including conventional chemotherapy).

PCN135

REVISITING THE SIMULATION EVIDENCE FOR THE INCREMENTAL COST-EFFECTIVENESS OF BREAST CANCER SCREENING OF AVERAGE-RISK WOMEN

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OBJECTIVES: Breast cancer screening is established practice in most developed countries, typically with a two-year screening interval. The cost-effectiveness evidence supporting screening is primarily from simulation models. It is recognised that cost-effectiveness analyses (CEAs) of biennial screening should include triennial strategies as comparators if the incremental cost-effectiveness ratio (ICER) is to be correctly estimated. The objective of this study is to assess how many published CEAs of breast screening include triennial comparator strategies against which to compare biennial screening. **METHODS:** We assessed 26 simulation-based CEAs of breast screening of average-risk women identified in a recently published systematic review. We reviewed how many included triennial comparators to biennial screening and assessed the relevant ICERs. **RESULTS:** Of the 26 CEAs, 18 did not include comparators with intervals of three years or more. Therefore the ICER estimates for biennial screening from these studies are on the basis of insufficient comparators. Of the remaining studies, six included the necessary triennial comparators. Of these, two provide ICERs of biennial screening that are clearly acceptable relative to commonly cited willingness to pay thresholds. The results from the remaining four studies leave it unclear if biennial screening is cost-effective. **CONCLUSIONS:** Despite the widely expressed view that breast screening is cost-effective, the proportion of published CEAs that provide appropriately estimated ICERs of biennial screening is small and the number clearly indicating biennial screening is cost-effective is even smaller. This does not suggest that biennial breast screening is cost-ineffective, but rather that most CEAs published to date do not present sufficient evidence to demonstrate cost-effectiveness.

PCN136

ECONOMIC ASSESSMENT OF ERIBULIN AGAINST TREATMENT OF PHYSICIAN'S CHOICE (TPC) IN TAIWAN

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OBJECTIVES: The objective of this study was to estimate Incremental Cost-Effectiveness Ratio (ICER) of utilizing eribulin against Treatment of Physician's Choice (TPC) for third line treatment of Metastatic Breast Cancer (MBC) in Taiwan. **METHODS:** Efficacy and safety data was obtained from a multicentre phase III clinical trial (EMBRACE) comparing eribulin against TPC. A five-year partitioned survival cost-effectiveness analysis (CEA) with a Quality-adjusted Time Without Symptoms and Toxicity (Q-TWiST) as the effectiveness measure was developed. Costs included in the model were drugs & administration, post-treatment resource use, toxicity management and indirect treatment costs. Cost effectiveness was evaluated using the Gamma distribution for Overall Survival (OS), Weibull for Progression Free Survival (PFS), response duration and, toxicity time. Health state utilities were applied to each component and aggregated. In base-case analysis, 3% discounting was applied for both benefits and costs. Deterministic sensitivity analysis was used to evaluate sensitivity of the key variables. **RESULTS:** OS based on Gamma extrapolation was 17.26 months in eribulin group versus 14.39 months in TPC group for a difference of 2.87 months. Mean time without progressive disease was 4.68 months for eribulin and 3.96 months for TPC for a difference of 0.72 months. The Quality Adjusted Life Years were 0.83 in the eribulin group compared to 0.70 in TPC group for a mean incremental improvement of 0.13 years. Treatment costs were NTD 351,875 for eribulin and NTD 113,552 for TPC for a difference of NTD 238,323. In base-case analysis, the ICER with discounting was NTD 1,823,482. Survival time was most sensitive variables on the ICER in this CEA. **CONCLUSIONS:** With an ICER of NTD 1,823,482 compared to TPC, eribulin was found to be cost-effective in third and later line MBC population in Taiwan. Given the limited number of effective therapeutic options available to these patients, eribulin represents a valid option for optimizing treatment pathways.

PCN137

AFLIBERCEPT IN COMBINATION WITH FOLFIRI IN PATIENTS WITH METASTATIC COLORECTAL CANCER: COST-EFFECTIVENESS BASED ON VELOUR BEST EFFICACY SUBGROUP POST-HOC ANALYSIS

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OBJECTIVES: To estimate the incremental cost per life-year gained (LYG) of aflibercept in combination with FOLFIRI as second-line treatment in metastatic colorectal cancer (mCRC) in Best Efficacy Subgroup (BES) patients previously treated with oxaliplatin compared to FOLFIRI. **METHODS:** A post-hoc analysis of the VELOUR clinical trial revealed an improvement of aflibercept efficacy in a specific subgroup. BES was composed by patients with performance status (PS) 0 with any number of metastatic sites or PS 1 with <2 metastatic sites, exclusive of adjuvant fast relapsers. A Markov model with 3 health states (stable disease, progression and death) was used to estimate lifetime costs and outcomes (2-weeks cycle duration). Transition from stable disease to progression implied the interruption of second-line treatment and administration of a third-line chemotherapy (72%) or best supportive care (28%). According to the National Health System (NHS) perspective only direct costs were considered. Cost estimation (€; 2015) included pharmaceutical and administration cost, adverse event management and hospital and medical visits consumption. Ex-factory price with mandatory deduction was applied for drug cost estimation. Costs and outcomes were 3% annually discounted. Sensitivity analyses (SA) were performed. **RESULTS:** Administration of aflibercept + FOLFIRI as second-line treatment on BES was more effective than FOLFIRI, yielding 1.92 LYG (23 life-months gained) compared to 1.55 LYG (18.6 months). Aflibercept + FOLFIRI accounted a total cost of €40,449, compared to €25,698 estimated for FOLFIRI. The incremental cost-effectiveness analysis provided a €33,373/LYG ratio for aflibercept in combination with FOLFIRI versus FOLFIRI for BES. SA results confirmed the model robustness. **CONCLUSIONS:** According to a post-hoc analysis, aflibercept in combination with FOLFIRI could increase overall survival versus FOLFIRI on BES. Aflibercept + FOLFIRI could be an efficient strategy for second-line treatment in specific mCRC patients for the Spanish NHS.

PCN138

COST-EFFECTIVENESS OF CARDIOPROTECTIVE EFFECT OF DEXRAZOXANE (CARDIOXANE®) IN ADVANCED/METASTATIC BREAST CANCER PATIENTS TREATED WITH ANTHRACYCLINE-BASED CHEMOTHERAPY IN MÉXICO

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OBJECTIVES: The problem of anthracycline-induced clinical heart failure is an important public health concern as it may not be seen for many years and remains a life-long threat. We performed a cost-effectiveness analysis of the cardioprotective effect of Dexrazoxane in advanced/metastatic breast cancer patients treated with anthracycline-based chemotherapy in México. **METHODS:** A decision tree model was developed in order to compare dexrazoxane with no treating. The time horizon was one year. The main data for dexrazoxane efficacy (surgery requirement and functional loss) was obtained from two open label non-comparative studies. Main costs taken into account were the drug costs, administration and monitoring and surgical costs. **RESULTS:** Dexrazoxane may lead to important savings for the Mexican public health system when it is compared to no treating. The results derived from the model indicate that Dexrazoxane is associated with less cardiac events (39% versus 13%, $P < 0.001$) and a lower and less severe incidence of congestive heart failure (11% versus 1%, $P < 0.05$) which represent a saving of 200,000 USD per patient treated. Tumor response rate was unaffected by dexrazoxane therapy. The frequency of adverse events was similar between groups and there were no significant between-group differences in the number of dose modifications/interruptions. **CONCLUSIONS:** Dexrazoxane is a dominant alternative vs no treating since it significantly reduced the occurrence and severity of anthracycline-induced cardiotoxicity in patients at increased risk of cardiac dysfunction due to previous anthracycline treatment without compromising the antitumor efficacy of the chemotherapeutic regimen at a lower cost than no treating

PCN139

COST-EFFECTIVENESS ANALYSIS OF NEO-ADJUVANT PERTUZUMAB THERAPY IN WOMEN WITH LOCALLY ADVANCED, INFLAMMATORY, OR EARLY HER2-POSITIVE BREAST CANCER IN ITALY

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OBJECTIVES: The aim of this study was to evaluate the cost-effectiveness of pertuzumab in combination with trastuzumab and docetaxel as neo-adjuvant treatment for locally advanced, inflammatory, or early stage breast cancers that overexpress Human Epidermal growth factor Receptor 2 (HER2), from the Italian National Health System (SSN) perspective. **METHODS:** A six state Markov model was used to estimate outcomes and costs over a 50-year time horizon. Patients were assumed to receive standard neo-adjuvant therapy containing trastuzumab and docetaxel or the same regimen plus pertuzumab. Transition probabilities to progressive disease and death were based on total pathological complete response (pCR) rates observed in the NeoSphere study. A second analysis was carried out in which progression-free survival (PFS) was directly modelled on observed data. Expected survival was adjusted by utility weights for health states derived from literature. Direct medical unit costs were collected from official and published Italian sources. Costs and health gains were discounted at an annual 3% rate. Probabilistic sensitivity analysis (PSA) was carried out to evaluate uncertainty. **RESULTS:** Pertuzumab combination was associated with increased QALYs and costs relative to standard neo-adjuvant regimen. Acquisition drug cost of pertuzumab was the primary contributor to the difference in costs, partially offset through the prevention of relapse and worsening. The estimated ICERs range between € 3,000 and € 19,000 per QALY. In PSA, pertuzumab combination has very high probability of being cost effective relative to standard regimen for a WTP threshold of € 40,000 per QALY gained. **CONCLUSIONS:** Breast cancer with HER2 overexpression is associated with increased tumour aggressiveness, higher rates of recurrence and mortality. In the neo-adjuvant setting, pertuzumab in combination with trastuzumab and docetaxel is expected to be more effective (increased probability to reach higher pCR rate and longer PFS) than standard regimen, at a favourable cost per QALY gained.

PCN140

A COST UTILITY ANALYSIS OF CETUXIMAB FOR 1ST-LINE TREATMENT OF RAS WILD-TYPE METASTATIC COLORECTAL CANCER: A SUMMARY OF THE SUBMISSION TO ALL WALES MEDICINES STRATEGY GROUP (AWMSG)

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OBJECTIVES: Colorectal cancer is the third most common cancer in Wales, with 2444 new cases reported in 2012. Incidence increased by 28.5% between 2002 and 2012. While survival rates in colorectal cancer are improving globally, the UK continues to lag behind other major economies. Recent evidence demonstrates that cetuximab can result in significant life extension when added to chemotherapy as a first line treatment of RAS wild type metastatic colorectal cancer. At present, cetuximab is funded in Wales mainly through Individual Patient Treatment Requests which are increasing in number due to the rising demand from both patients and physicians. An evidence submission was submitted to AWMSG to highlight this clinical benefit and assess the cost effectiveness of cetuximab. **METHODS:** An economic model was developed to assess the cost effectiveness of cetuximab in the management of unresectable RAS wt metastatic colorectal cancer in comparison to comparators available in the Welsh NHS; FOLFOX, FOLFIRI, or CAPOX alone. This includes a small population of patients with metastases confined to the liver who may subsequently be eligible for curative resection after treatment with cetuximab plus chemotherapy. The time horizon is 10 years and the discount rate applied to both outcomes and costs is 3.5%. Cetuximab Welsh Patient Access Scheme (WPAS) price was used in all analyses and the dose was set to fortnightly dosing as typically prescribed in Wales. **RESULTS:** Economic analyses estimated an incremental cost effectiveness ratio of £29,512 per QALY gained for cetuximab + FOLFOX compared to FOLFOX alone and £35,731 per QALY gained for cetuximab + FOLFIRI compared to FOLFIRI alone. **CONCLUSIONS:** These analyses demonstrate that cetuximab is a cost effective treatment and a good use of NHS Wales resources through stratification of RAS wild type patients who are likely to respond to treatment and offer patients a life-extending treatment option.

PCN141

THE COST EFFECTIVENESS OF IDELALISIB IN CHRONIC LYMPHOCYTIC LEUKAEMIA IN ENGLAND AND WALES

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BACKGROUND: In September 2014 the European Commission granted marketing authorisation for idelalisib with rituximab (I+R) for the treatment of chronic lymphocytic leukaemia (CLL) in previously treated patients and treatment-naïve patients with a 17p deletion or TP53mutation. **OBJECTIVES:** This study evaluated the cost effectiveness of I+R in previously-treated patients according to their eligibility for chemo-immunotherapy in England and Wales. **METHODS:** A 5-state Markov model was constructed from a National Health Service (NHS) perspective over a lifetime horizon. Study 116 contained 220 patients for whom chemo-immunotherapy was unsuitable owing to poor previous response to such treatment, the presence of 17p deletion or TP53mutation, or their fitness, randomised 1:1 to I+R (intervention) or rituximab with placebo (comparator). Intervention-arm data from Study 116 were used to inform the effectiveness of I+R in terms of response, time on treatment, progression-free and overall survival. Comparator-arm data from Study 116 were used to inform the effectiveness of (i) rituximab monotherapy, and using further assumptions, (ii) ofatumumab monotherapy and