VALIDITY OF PROPORTIONAL HAZARDS (PH) WEIBULL MODELS FOR ANALYZING PROGRESSION FREE SURVIVAL (PFS) AND OVERALL SURVIVAL (OS) IN PATIENTS WITH TRASTUZUMAB (TZ)-REFRACTORY ERBB2+ (HER2+) METASTATIC BREAST CANCER (MBC) RECEIVING LAPATINIB PLUS CAPECITABINE (L+C) VERSUS CAPECITABINE ONLY (C-ONLY)

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OBJECTIVES: Lapatinib is an oral small molecule dual targeted therapy that binds intracellularly to the ATP binding site of the EGFR and ErbB2 (HER2) receptors. In the EGF100151 trial, L+C improved time to progression (TTP) and progression free survival (PFS) vs C-only in women with ErbB2+ MBC who had received prior therapy including TZ. Following achievement of the primary endpoint, enrollment was halted, preventing demonstration of a significant difference in OS. METHODS: To inform ongoing analyses of the cost-effectiveness of L+C vs. C-only, Weibull survival functions for PFS and OS were fitted to observed failure time data from EGF100151 using Accelerated Failure Time (AFT) regression. Survival function parameters were estimated using a single regression equation for each outcome with treatment groups entered as an independent variable. Hazard Ratios (HRs) for progression and death with L+C were assumed to be proportionate to HRs for C-only. Expected PFS, OS, and post-progression survival (PPS) were calculated for each group. The validity of the Weibull model and PH assumption were assessed using graphical and analytical methods. RESULTS: Expected PFS, PPS and OS for L+C were 36.89, 43.78, and 80.67 weeks, respectively. Corresponding values for C-only were 22.49, 45.03, 67.47 weeks, respectively. Graphical tests of transformed residuals, supremum test for proportional hazards assumption, and comparisons of HRs for L+C vs. C-only by quarter post-randomization; provided no strong evidence of non-proportionality. CONCLUSION: Proportional hazards Weibull survival models are valid for modeling survival time data in patients with trastuzumab-refractory ErbB2-overexpressing MBC receiving L+C versus C-only, and suggest that lapatinib provides substantial benefit in terms of PFS and OS in patients with ErbB2+ MBC.

A BUDGET IMPACT ANALYSIS OF IXABEPILONE IN TREATING METASTATIC CANCER PATIENTS

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OBJECTIVE: To evaluate the budget impact to a health plan after introducing Ixabepilone as a treatment option for metastatic breast cancer patients who have previously failed Anthracycline and Taxane based regimens. METHODS: The analysis was conducted from a U.S. payer’s perspective over a three-year time horizon. The model specifically considered 2 segments of MBC patients for which Ixabepilone is indicated: 1) patients pretreated with Anthracycline and Taxane (AT_p); and 2) patients pretreated with Anthracycline, Taxane, and Capecitabine (ATC_p). After combining epidemiological data (SEERs, NCI), market uptake assumptions from market research forecasting, and current drug treatment costs (based on WAC price and average number of treatment cycles a patient received), the model estimated the incremental budget impact after adopting Ixabepilone as a treatment option. The model assumed that during the first year, 9.41% of AT_p patients receive Ixabepilone and Capecitabine combination therapy; and 62.7% of ATC_p patients are treated with Ixabepilone monotherapy. A plausible range of parameter values were considered in the sensitivity analysis. RESULTS: In a hypothetical health plan with approximately 0.06% of members estimated to be diagnosed with MBC, it was assumed that 37% were AT_p and 5% were ATC_p patients. In the year after introduction of Ixabepilone, the overall incremental cost per member per month (PMPM) was estimated to be approximately $0.03. For the AT_p patient segment, the incremental PMPM cost was estimated to be $0.03. However, for the ATC_p population, the model estimated a savings of $0.002 in PMPM. The incremental cost per treated MBC member per month (PMPM) was estimated to be approximately $545.29 for Year 1, and $640.76 and $668.01 for Years 2 and 3, respectively. CONCLUSION: In patients with MBC who have few viable treatment options after failing AT or ATC treatments, the budgetary impact of adding Ixabepilone to a health plan was estimated to be minimal.

USE OF HEALTH RESOURCES IN LUNG CANCER PATIENTS: A BRAZILIAN ANALYSIS IN THE PRIVATE PAYER PERSPECTIVE

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OBJECTIVE: To evaluate the HRU in a supplementary medicine environment in Brazil comparing intravenous (IV) treatments used in clinical practice. The health resources utilization (HRU)
in lung cancer treatment is variable according to several items: the country where the treatment is performed, hospitalization, administration and drug costs. METHODS: A total of 344 lung cancer patients were selected within the records of a private hospital in Brazil. Of those, 69 patients that received pemetrexed or docetaxel as second line chemotherapy were considered. The chemotherapy protocols considered were: Pemetrexed 500mg/m² every 3 weeks, Docetaxel 75mg/m² every three weeks, Docetaxel 35mg/m² weekly (3 times per cycle) and Docetaxel 40mg/m² weekly (3 times per cycle). HRU frequency (hospitalization, clinical visits, complementary examinations, medication, transfusions) related to lung cancer treatment was reviewed retrospectively from clinical records. The costs were calculated in dollars (US$) following the original records for each cycle. The values for neutropenia were also calculated. RESULTS: Pemetrexed 500mg/m² every three weeks was used by 20.5% of the patients; Docetaxel 75mg/m² every three weeks by 17.1%; Docetaxel 35mg/m² weekly (3 times per cycle) by 8.1% and Docetaxel 40mg/m² weekly (3 times per cycle) by 1.1%. The cost of each cycle was US$6897.00 for Docetaxel 75mg/m²; US$5919.00 for Docetaxel 35mg/m² and US$6669.00 for Docetaxel 40mg/m². The costs of neutropenia and febrile neutropenia episodes were respectively US$1310.00 and US$6000.00. CONCLUSION: Besides the cost of the drug is a mean point in health resources utilization we have to consider other variables to have a clear picture of each chemotherapy scheme costs and were the resources have been used. Since the chance of toxicity is different for every kind of treatment, all the inputs to reach the total cost of treatment are necessary.

PCN13

BUDGET IMPACT ANALYSIS OF SORAFENIB IN THE TREATMENT OF HEPATOCELLULAR CARCINOMA IN CANADA

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OBJECTIVE: To determine the financial impact of sorafenib in the treatment of hepatocellular carcinoma (HCC), the most common form of liver cancer, from a Canadian provincial drug plan perspective for 2008–2010. METHODS: A prevalence-based approach was used to estimate the number of HCC patients in Canada. Liver cancer prevalence from 2008–2010 was estimated using the GLOBOCAN 2002 database, supplemented with actual and projected Canadian liver cancer incidence figures from 2003–2010, and survival rates for each stage of HCC. Liver cancer figures were condensed to HCC figures as ~90% of liver cancers are HCC. HCC figures were then segmented using the Barcelona Clinic Liver Cancer staging system and diagnosis rates provided the clinical community. Age and geographic distribution patterns, market share assumptions and provincial drug plan coverage factors were then applied to the HCC figures to determine the number of HCC patients eligible for treatment with sorafenib and coverage from the province. Drug costs including wholesale and pharmacy mark ups were multiplied with the median treatment duration and patient number to determine the financial impact of sorafenib. RESULTS: The prevalence of liver cancer in Canada in 2008 has been estimated to be 1284 increasing to 1324 by 2009 and 1366 by 2010. Of these an estimated 206 HCC patients will be treated with sorafenib in 2008, increasing to 321 in 2009 and 438 in 2010. The number of HCC patients treated with sorafenib that are eligible to receive coverage through their provincial drug plan are 154, 240 and 328 in 2008, 2009 and 2010 respectively. The financial impact of sorafenib to the provincial drug plans is $3.7 million in 2008, $7.1 million in 2009 and $9.7 million in 2010. CONCLUSION: The financial impact of sorafenib to the provincial drug plans will range from $3.7 million to $9.7 million from 2008–2010.

PCN14

A SYSTEMATIC REVIEW OF ECONOMIC ANALYSES OF HER2 TESTING & TRASTUZUMAB THERAPY

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OBJECTIVE: We sought to systematically review economic analyses (EAs) of HER2 testing and trastuzumab therapy in all stages of breast cancer (BC) with specific attention to the methodological quality, quantification of uncertainty and incorporation of diagnostic test characteristics. METHODS: EAs of trastuzumab in BC or HER2 diagnosis with either immunohistochemistry or fluorescence in situ hybridisation techniques were considered. Biosis, Cochrane, CRD, EconLit, Embase, HEED, Medline and PubMed databases were searched. The reference lists of each retrieved article, relevant reviews, and abstracts of the San Antonio Breast Cancer Symposium were hand-searched. Citations were reviewed in duplicate and relevant articles were qualitatively rated per Drummond. RESULTS: Twenty studies, conference abstracts and health technology assessments were selected for full review from among 641 citations as of December 2007 (reviewer agreement kappa = 0.85). Studies examined trastuzumab in metastatic (7/20) or adjuvant (10/20) settings or had a testing focus (4/20). HER2 diagnosis strategy and trastuzumab treatment were evaluated jointly in only one study. Few decision models were calibrated against epidemiological data (3/20). Probabilistic sensitivity analysis was infrequently used to characterise uncertainty (3/20) and decision uncertainty in the form of cost-effectiveness acceptability curves was presented in a single study. The overall reported quality of EAs was comparatively poor. CONCLUSION: Testing and treatment were rarely examined in tandem, despite a 2004 EA addressing this very issue in metastatic disease. Given the controversy around trastuzumab funding in many jurisdictions, the need for adequate attention to testing and uncertainty analysis is not met in the literature.

PCN15

MODELING THE COST IMPACT OF POSSIBLE CROSS-PROTECTION DIFFERENCES OF TWO CERVICAL CANCER VACCINES IN CANADA USING MULTIPLE PROBABLISTIC SENSITIVITY ANALYSIS

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OBJECTIVE: Two vaccines against cervical cancer are now available. One reduces the burden of genital warts; with the other the model estimates it may have better cross-protection against oncogenic non-vaccine HPV-types. We aimed to understand the extent to which cross-protection could have an equivalent cost impact and the likelihood this would occur. METHODS: A population model was developed in Excel(r) to evaluate the expected annual health care cost of protecting cervical diseases with vaccines against specific HPV-types. The type-specific vaccine effect was assessed on the number of abnormal pap smears, pre-cancer lesions, genital warts and cervical cancer cases prevented. Vaccine effect was calculated by multiplying the proportion of HPV-types per lesion, as reported in the literature, by a range of vaccine efficacy values. A health care perspective was selected, with unit costs (2006 CDNS) for each intervention obtained from official tariff data. No discounting was applied as