NC95
EFFECTIVITY ANALYSIS OF IPILIMUMAB IN PERU
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OBJECTIVES: Pricing and reimbursement is typically approached product by product, not in comparison across therapeutic areas in Peru. Within oncology, there are relatively few treatment options for advance stage cancer patients that have documentally been recently approved in Peru for the treatment of unselectable or metastatic melanoma. Given the rising costs of cancer care payers and physicians need to better understand the value of innovative oncology drugs for reimbursement decision making. This study assesses the cost per additional month of mean overall survival of ipilimumab and how this metric compares to other oncology agents approved in Peru in the metastatic setting.

METHODS: We selected agents that received regulatory authorizations for label extension in Peru within the last 5 years and had primary or secondary objective. Mean OS was obtained from published literature. Drug prices were obtained from “observatorio de precios de DIGEMID” a public database. The economic value of each agent is presented in terms of cost per additional month of mean OS from a private healthcare payer perspective. The analysis uses the cost to treat to mean progression of each agent divided by the months of mean overall survival. Progression-free and overall survival were discounted at 3.5%.

RESULTS: Seventeen drugs met inclusion criteria. Of these, 26 different indications were evaluated. The average cost per mean overall survival month gained was estimated at S/ 57,178, range S/3,108 – S/264,764. Ipilimumab is first and second second reimbursement framenent for metastatic melanoma as cost per additional mean overall survival at S/ 36,901 and S/ 41,740 respectively. CONCLUSIONS: In this cost efficacy analysis, ipilimumab’s cost per additional month of overall survival was estimated below the market average. At current private market prices ipilimumab may offer good value for money.

NC96
LONG-TERM OUTCOMES OF HPV VACCINATION IN PREVENTION OF ANAL CANCER IN OLDER HIV-POSITIVE MEN WHO HAVE SEX WITH MEN
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OBJECTIVES: Recent findings show that vaccinating older men who have sex with men (MSM) with history of high-grade anal intraepithelial neoplasia (HGAIN)–a precancerous lesion with quadrupled anal squamous cell carcinoma (SCC) rates–may reduce progression to invasive SCC. The reduction in risk with quadrivalent ( quadrivalent) HPV vaccine was associated with 50% decrease in the hazards for recurrent or persistent HGAIN. We evaluated the long-term clinical and economic outcomes of adding qHVPV to the HIV treatment regimen in HIV-positive MSM, with or without HGAIN over 27 years.

METHODS: Using Markov model of anal histology in HIV-positive MSM we compared two strategies–no qHVPV vaccination after treatment for HGAIN versus qHVPV vaccination for HGAIN–over 27 years. The model allows qHVPV to be given at any time after HGAIN treatment. The probability of HGAIN progression was conditional on patients’ CD4 count. Model parameters, including baseline prevalence, disease transitions, costs, and utilities were either obtained from literature or calibrated using a natural history model of anal carcinogenesis. Model output included lifetime costs, quality-adjusted life years (QALYs), and lifetime risk of developing invasive cancer. Results from the healthcare perspective were presented in the form of incremental cost-effectiveness ratios (ICERs) and decrease in lifetime risk of anal cancer. Deterministic and probabilistic sensitivity analyses were conducted on model parameters.

RESULTS: Vaccination after treatment for HGAIN decreased the lifetime risk of anal cancer by 63% compared to the no vaccination strategy. Vaccination resulted in the decrease in lifetime costs with increase in effectiveness by 0.16 QALYs. The predicted incidence of anal cancer after vaccination was almost one-third to that of the no vaccination strategy. The results were sensitive to the model parameters–progression from HGAIN to cancer, mortality attributed to anal cancer, cost of HGAIN treatment, and discount rate. CONCLUSIONS: Vaccinating the high-risk population of HIV-positive MSM aged ≥ 27 after treatment for HGAIN is a cost-saving strategy. Expansion of current vaccination guidelines to include this population should be a priority.

PC97
CASE STUDIES OF COST-EFFECTIVENESS FOR CO-ADMINISTERED BRANDED THERAPIES IN ONCOLOGY:
Pricing Insights from an Early Economic Model
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OBJECTIVES: The purpose of this study was to evaluate the maximum cost-effective price (CEP) supported for innovative drugs co-administered with existing branded therapies. METHODS: An early economic model was constructed in Microsoft Excel using available clinical trial data to evaluate the cost-effectiveness of two hypothetical add-on therapies co-administered without anchoers dosed to progression (here, rituximab) will permit higher prices while remaining cost-effective. This analysis highlights the utility of early economic models in evaluating potential pricing and HTA barriers early in the development process.

PC98
A NEW APPROACH FOR IDENTIFICATION OF DISEASE-RELATED MEDICAL BILLING CODES FOR CHRONIC LYMPHOCYTIC LEUKEMIA FOR USE IN COST ANALYSES IN ADMINISTRATIVE CLAIMS DATA
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OBJECTIVES: To evaluate a new empirical algorithm for selecting disease-related medical billing codes associated with chronic lymphocytic leukemia (CLL). METHODS: Patients in the SEER-Medicare database with a CLL diagnosis (2002 to 2010) were age/gender matched to a non-cancer sample. A proprietary coding algorithm based on code frequency (sensivity, specificity precision or accuracy) and cost was used to identify procedure (i.e., CPT and HCPCS) and diagnosis (ICD-9-CM) codes that differed between the CLL and non-cancer groups. Summarized costs for claims with the empirically identified codes were compared to a traditional approach of identifying disease-related claims based on presence of a CLL diagnosis in the first diagnosis field. The code set was applied to a sample from a prior CLL study conducted with commercial claims to assess generalizability. RESULTS: The analysis evaluated 10,531 unique billing codes with total costs of $11 billion (US; CLL 58.3%, non-cancer 41.7%) for 7,050 age and gender matched SEER-Medicare subjects per group. The empirical algorithm found 333 codes that identified 25.0% of the CLL group costs as cancer-related. The traditional approach used claims that contained $2,001 and identified a much lower 14.6%. Approximately 1% of costs were potentially missidentified in the non-cancer cohort, providing further confirmation of the codes selected by the empirical method. Qualitative review of codes revealed stronger content validity with the empirical approach compared to the traditional approach. Application of codes identified in the SEER-Medicare data to the commercial claims provided a cost reduction of 1% (WTP: 3.5% discount) in total costs as the traditional approach with 1% error rate. CONCLUSIONS: The traditional approach underestimates costs and captures costs from procedure codes that do not appear to be cancer-related. Use of an empirical approach to identify disease-related diagnosis and procedure codes will increase content validity.

PC99
HOSPITAL UTILIZATION IN PATIENTS WITH MANTLE CELL LYMPHOMA
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OBJECTIVES: To examine hospital utilization in patients diagnosed with mantle cell lymphoma (MCL). METHODS: A retrospective cross-sectional study was con-
ducted on the MedAssets health system data for inpatient and outpatient visits during 2000–2004 for the January 2009 to December 2014 timeframe. Age and gender, clinical comorbidities and measures of utilization including number of visits and length of stay (LOS) were described. Multivariable regression was used to identify significant drivers of hospital-based utilization. RESULTS: The MCL population contributed 10.9% of hospital inpatient days and 38.6% of hospital end-reimbursement dollars. The most common inpatient visits 84.6% occurred in the outpatient setting. Infection (OR = 7.4, p < 0.001), fluid, and electrolyte disorders (OR = 6.3, p < 0.001), plegia (OR = 5.9, p < 0.01), myelosuppression (OR = < 0.001) and nutritional deficiencies (OR = 3.3, p < 0.001) were associated with inpatient admissions. The most common complications of treatment included myelosuppression (21.7%), gastrointestinal issues (GI, 7.3%), infection (4.9%) and renal deficiency (4.8%). Pharmacy (49.2%), room and board (22.8%), laboratory testing (10.2%), diagnostic services (9.5%), and transformed stay (5.8%), were the most frequently observed complications in this population. When patients were admitted the average LOS was 8.3 days with an average cost of $18,291 and 5.0% in-hospital mortality rate. During inpatient hospitalizations 55.5% received chemotherapy, 26.1% had a blood transfusion, 5.2% had a bone marrow biopsy, 4.4% had a stem cell transplant, 2.3% had hemodialysis and 1.5% had radiotherapy. Nutritional deficiencies (IRR = 1.55, p < 0.001), plegia (IRR = 1.51, p < 0.001), infection (IRR = 1.46, p < 0.001), myelosuppression (IRR = 1.34, p < 0.001) and GI (IRR = 1.30, p < 0.001) were associated with longer LOS. Admissions occurred within 30 days for 28.6% of inpatient admissions with 41.4% of readmissions having maintenance chemotherapy or radiotherapy as the primary diagnosis. CONCLUSIONS: MCL patients primarily used outpatient services. Inpatient services are required to treat complications of treatment such as myelosuppression and infections as well as to provide follow-up treatments and care.

PCN102 ASSESSING THE BURDEN OF ILLNESS AND HOSPITAL UTILIZATION OF POLYCYANIA VERA
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OBJECTIVES: The objective of this analysis was to describe hospital-based resource utilization of patients with polycythaemia vera (PV). A retrospective cohort analysis was conducted on a cross-section of patients using hospital-based inpatient (N = 7974) and outpatient (N = 47078) services between 2013 and 2014 with a diagnosis of PCV. Multivariable logistic regression was used to evaluate risk factors for hospitalization controlling for patient and hospital characteristics as well as patient comorbidities. RESULTS: The mean age for PCV patients was 64.4 years with 58.5% male. Utilization was highest in the OP setting (85.5%) with 68.3% of OP visits having a primary diagnosis of PCV. The primary diagnosis for IP admissions varied with the most common including infectious and parasitic diseases (6.6%), cerebrovascular disease (6.2%), chronic obstructive pulmonary disease (5.5%), heart failure (5.2%) and ischemic heart disease (5.2%). PCV patients were primarily treated in large (> 500 beds) (60.3%) hospitals. The mean Charlson comorbidity score was 1.6 with chronic pulmonary disease (18.4%), diabetes (16.7%), congestive heart failure (10.3%), cardiovascular disease (10.0%) and renal disease (10.0%) as the most common conditions. Readmissions occurred within 30 days for 9.0% of IP visits for a variety of diagnoses including rehabilitation services (10.9%), chest pain/shortness of breath (6.8%), infectious and parasitic diseases (4.9%), cerebrovascular disease (4.1%) and respiratory failure (3.9%). Chronic pulmonary disease (OR = 1.25, p < 0.05), diabetes (OR = 1.18, p < 0.05) and hemiplegia (OR = 1.73, p < 0.05), renal disease (OR = 1.51, p < 0.001) and abdominal drainage procedures (OR = 2.60, p < 0.01) were associated with increased occurrence of readmission. CONCLUSIONS: PCV is primarily managed in the outpatient setting. As PCV-related complications develop patients are admitted for IP services. These patients are frequently readmitted within 30 days.

PCN103 TIME AND MOTION STUDY FOR RITUXIMAB SC VS IV IN COLOMBIAN PATIENTS WITH NON-HODGKIN LYMPHOMA
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OBJECTIVES: To estimate the economic impact in the treatment of Colombian patients with Non-Hodgkin lymphoma developing a time and motion study for the IV administration versus subcutaneous (SC) presentation of rituximab. METHODS: Time and motion study, observational, multicentric (two private hospitals, one public hospital), non-interventional describing costs and times from the admission of the patient until their discharge, recording healthcare professionals (HPC), drugs, consumables and procedures room. Population evaluated were patients in first chemotherapy with rituximab IV with diffuse large B-cell lymphoma and follicular lymphoma, in regular cycles and in maintenance phase. Finally, we calculated the cost of rituximab IV with diffuse large B-cell lymphoma and follicular lymphoma, at least 6 consecutive months. Duration of therapy was calculated as the time between a patient’s first and last fill, including the most recent day’s supply. RESULTS: For 38,085 MDS patients diagnosed in 2001 or later we estimated that the introduction of these 3 therapies was associated with a hazard ratio of 0.901 (p < 0.01). Approximately 25% of MDS patients used at least 1 of the 3 treatments over this period, implying an increase in median survival from 33 to 57.5 months, conditional on treatment observed in the community. Using an existing economic model to value survival gains, we estimated that the annual value of survival gains associated with the new therapies—i.e., the amount patients would be willing to pay for the improved survival profile—equalled $208,000 per year. Based on this, we estimated the net present value of the therapies to all future patients at $101.5 billion. Net of treatment costs, 85% of the total value accrues to patients. CONCLUSIONS: This study measured the value of survival gains attributable to 3 novel therapies for MDS and found significant benefits. For current and future MDS patients, these therapies will generate $101.5B in value from survival gains, with 85% accruing to patients.

CANCER—Patient-Reported Outcomes & Patient Preference Studies

PCN105 ADHESION TO TAMIXOFEN AND ARMOATEX INHIBITORS AMONG WOMEN WITH BREAST CANCER
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OBJECTIVES: Comprehensive Medicaid population based studies of adherence and persistence to tamoxifen and aromatase inhibitors (AIs) including anastrozole, exemestane, and letrozole among women with breast cancer are currently lacking. The purpose of this study was to estimate the adherence and persistence to tamoxifen and AIs among women with breast cancer enrolled across 38 state Medicaid programs. Factors predicting adherence and persistence to tamoxifen and AIs were also determined. METHODS: Study population included women aged 18–64 years who were continuously enrolled for a period of three years (2006–2008) in Medicaid programs across 38 states. Incident users of tamoxifen and AIs in 2007 were identified. To assess adherence (proportions of days covered) and persistence (gap between prescription refills) to tamoxifen and/or AIs among the final sample of women recipients with breast cancer, prescription drug claims data from index date to 12-month post index date were studied. Logistic regression was used to identify predictors of adherence and persistence, respectively. RESULTS: Roughly 56% of women with breast cancer were adherent with tamoxifen and AIs during 2006–2008. Adherence and persistence to letrozole, exemestane, and anastrozole were 70%, 69%, and 62%, respectively. Logistic regression analysis revealed that women with breast cancer residing in Northeast region (versus South and West region) and with stage I or III/IV cancer (versus stage 0) were more likely to be persistent with therapy. CONCLUSIONS: Adherence and persistent to tamoxifen and AIs was less than optimal among women with breast cancer enrolled in Medicaid programs. Policy makers should consider implementing strategies aimed at increasing treatment adherence and persistence among this population.

PCN106 THE EFFECTIVENESS OF CAREPAK ADHERENCE PACKAGING IN INCREASING LENALIDOMIDE THERAPY DURATION
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OBJECTIVES: Lenalidomide is a disease-modifying oral medication approved for the treatment of multiple myeloma as well as other myelodysplastic syndromes. A CarePak® is a drug regimen packaging tool that simplifies complex drug regimens for patients. This tool is frequently used for patients receiving drug regimens containing lenalidomide. The impact of this tool on duration of therapy has previously not been studied. METHODS: This study was a retrospective review of pharmacy claims data. Eligible patients included those who filled a lenalidomide prescription more than once, did not have a gap between fills longer than 60 days. Patients receiving a CarePak® must have received one with each refill, and a CarePak® must be dispensed at least 6 consecutive months. Duration of therapy was calculated as the time between a patient’s first and last fill, including the most recent day’s supply. RESULTS: A random sample of patients filling lenalidomide prescriptions from index date to 12-month post index date were studied. Logistic regression was used to identify predictors of adherence and persistence, respectively. CONCLUSIONS: Adherence and persistent to lenalidomide and CarePak® was less than optimal among women with breast cancer enrolled in Medicaid programs. Policy makers should consider implementing strategies aimed at increasing treatment adherence and persistence among this population.