it is a direct measure of treatment effect on tumour burden and measures only the effect of the study drug. FFS has also been accepted by regulatory bodies as a measure of the efficacy of cancer treatments. CONCLUSIONS: OS is generally regarded as the preferable endpoint (from a payer’s perspective) for demonstrating clinical efficacy in NTR. There are challenges, however, with demonstrating OS benefit of new therapies for NSCLC. FFS data may be more appropriate for use in certain situations, especially those in which subsequent lines of therapy exist.

PCN127  
METHODS FOR INDIRECT COMPARISON OF EFFECTIVENESS IN COST-EFFECTIVENESS ANALYSES OF ONCOLOGY AGENTS: THE PROPORTIONAL HAZARDS ASSUMPTION MATTERS  
Dacquaraj P, Zhao Z, Barber B, Gao S, Graham CN 1  
1Amgen (Europe) GmbH, Zug, Switzerland, 2Amgen, Inc., Thousand Oaks, CA, USA, 3RTI Health Solutions, Research Triangle Park, NC, USA  
OBJECTIVES: The objective of the study was to propose an alternative indirect comparison method and compare it to the standard method. METHODS: In the absence of head-to-head trials, the standard method for estimating indirect relative effectiveness is to obtain an indirect estimate of HR from a common comparator in drug A trial to generate the adjusted curve for drug B. This was done for Progression free Survival (FFS) and Overall Survival (OS) from parametric estimates across the observed and extrapolated periods. Trial data for cetuximab and panitumumab 1,8,10,11,12 line treatment of wild-type KRAS metastatic colorectal cancer was used to examine the PH assumption and compared the two methods for estimating the relative treatment effect between the two agents. RESULTS: The functional form for the FFS and OS distributions was found to be different for panitumumab and cetuximab 8,10. A line treatment of wild-type KRAS metastatic colorectal cancer was used to examine the PH assumption and compared the two methods for estimating the relative treatment effect between the two agents. RESULTS: The functional form for the FFS and OS distributions was found to be different for panitumumab and cetuximab. The Walf–Weibull (parameter value for: PFS 1.616 versus 1.761, OS 1.314 versus 1.336) of panitumumab trial was set as the reference (the estimated mean PFS = 0.917 years and mean OS = 2.649 years). Using the standard method and our proposed method, the indirectly estimated FFS and OS for cetuximab were: mean PFS 0.846 vs 0.920 years; mean OS= 2.393 versus 2.312 years, respectively. CONCLUSIONS: The standard methodology for indirect comparison allows easy execution. However, if the PH assumption is violated, alternative methods, such as the one proposed in this study, can be considered.

PCN128  
LINKING MEDICARE, MEDICAID AND CANCER REGISTRY DATA TO STUDY BURDEN OF CANCERS IN WEST VIRGINIA (FUNDING: AHQR - R24 HS18622-01)  
Nadapra P, Madhavan S  
West Virginia University, Morgantown, WV, USA  
OBJECTIVES: The objective of this study was to develop a unique linked Medicare-Medicaid-WV Cancer Registry (WVCR) de-identified dataset to determine health care utilization, costs and overall burden of breast, colorectal, lung, and prostate cancers diagnosed in persons ≥ 65 years of age who live in WV and to compare them to national trends. METHODS: The linkage was performed using four phases, following process as originally described by Potosky (1993) and adapted by Bradley (2007) and Koroukian (2008). In phase one, a list of individual’s ≥ 65 years of age with incident diagnosis of any cancer between January 1, 2002 and December 31, 2007 were extracted from WVCR data. The SSN, Sex, and Date of Birth of these individuals were sent to CMS to create a crosswalk file for these individuals to include with purchased WV Medicaid data. In phase two, Medicare data were linked with WVCR data using the crosswalk file provided by CMS. In phase three, WVCR data were linked with Medicare enrollment file data using personal identifiers. In phase four, conversion was made to create a dataset for research data set. RESULTS: In phase one, we identified 42,288 individuals ≥ 65 years of age with incident diagnosis of any cancer from 2002 to 2007 in the WVCR data. When linked with Medicare data in the second phase, 41,575 (98.3 %) individuals were matched. In phase three, WVCR data were matched with Medicaid enrollment data for 5790 (13.7%) individuals using SSN, First Name, and Last Name, for 5860 (13.9%) individuals using SSN, Last Name, Month of Birth, and Sex; and, for 5747 (13.6%) individuals using SSN, First Name, Month of Birth, and Sex. CONCLUSIONS: Non-participant states in SEER-Medicare can build a powerful linked Medicare-Medicaid-Cancer Registry dataset to identify and target cancer disparities to improve outcomes in their elderly and dual-eligible citizens.

PCN129  
USE OF ELECTRONIC MEDICAL RECORDS (EMR) FOR ONCOLOGY OUTCOMES RESEARCH: ASSESSING THE COMPARABILITY OF EMR INFORMATION TO PATIENT REGISTRY AND CLAIMS DATA  
Lau EL1, Mostow FS2, Kelish MA2, Legg J, Engel-Nitz NM3, Watson HN1, Collins H2, Nordbye HK, Whyte JL  
1Eponove, Menlo Park, CA, USA, 2Amgen, Inc., Thousand Oaks, CA, USA, 3 research, CA, USA  
OBJECTIVES: Electronic medical records (EMR) are used increasingly for research. Our objectives were a) to understand the utility of an EMR oncology database compared with SEER and Medicare registry data and b) to identify areas for improvement in data collection, analysis, and interpretation in clinical oncology, epidemiology, and comparative effectiveness research. METHODS: Demographic, clinical, and treatment characteristics in the four databases were compared using six tumor types: breast, lung/bronchus, head/neck, colorectum, prostate, and NHL. Data imputation was performed using the hot-deck method; patient characteristics were compared using Cohen’s effect size. We described patient and clinic inclusion criteria, treatment definitions, and purposes of each database to enable comparisons. RESULTS: Sex and 10-year age distributions were similar across all databases. There are challenges, however, with demonstrating OS benefit of new therapies for NSCLC. FFS data may be more appropriate for use in certain situations, especially those in which subsequent lines of therapy exist.
RESULTS: At a threshold of $100,000/QALY, the CEAC for PSA1 showed a 97% probability that TxB is cost-effective versus TxA, corresponding results for PSA2, and PSA3, were 54%, and 58%, respectively. CONCLUSIONS: Failure to consider uncertainties owing to FFS/OS data in oncology models, and to the ensuing calibration procedures, can lead to under-representation of uncertainty in cost-effectiveness results.

PCN132
MODELING THE LIFETIME EFFECTIVENESS OF DENOSUMAB AND ZOLLEDRONIC ACID (ZA) IN THE PREVENTION OF SKELETAL RELATED EVENTS (SRE) IN PATIENTS WITH BONE METASTASES FROM SOLID TUMORS
Dannenmann J1, Brucco A2, Macanas D2, Chung K3, Bavlier A3, Halperin M1, Lotrofen M2
1Outcomes Insights, Inc., Westlake Village, CA, USA, 2Amgen (Europe) GmbH, Zug, Switzerland, 3Amgen, Inc., Thousand Oaks, CA, USA
OBJECTIVES: Because bone metastases can cause costly SREs, lifetime estimates of SREs prevented can help payers compare the effectiveness of treatment options. Denosumab was recently approved in the US for SRE prevention in patients with bone metastases from solid tumors. This study presents a model for SRE predictions based on phase III trials comparing denosumab and ZA in different tumors. METHODS: A three-state Markov model (On Treatment, Off Treatment, and Dead) was developed using constant SRE incidence rates for each tumor type and treatment. Results were compared between the model and trial for the 3-year trial duration and extrapolated to the patient lifetime. Lifetime SREs were estimated for the US population based on the estimated annual number of new patients with bone metastases. Mortality rates were between identification and treated estimates using trial-based generalized gamma distributions. Lifetime treatment was assumed. RESULTS: The number of all SREs observed (rate per patient-year) for denosumab and ZA were 660 (0.488) and 853 (0.631) for breast cancer, 353 (0.254) and 494 (0.347) for lung cancer, and 588 (0.438) and 533 (0.390) for other solid tumors. Comparison between trial results and model projections over the trial time horizon resulted in differences in SRE counts ranging from -1.5% to 2.0%. Over the expected patient lifetime, estimated SREs per patient were 1.80 and 2.32 (denosumab and ZA) for breast cancer, 1.65 and 2.08 for prostate cancer, and 1.36 and 1.60 for other solid tumors. In annual incidence cohorts of patients with bone metastases, the model projects 43,765 and 56,408 (denosumab and ZA) lifetime SREs in breast cancer and 30,429 and 38,159 lifetime SREs in prostate cancer. CONCLUSIONS: The model output is consistent with the clinical trial evidence, and can be used to compare estimates of the predicted lifetime SREs for denosumab and ZA.

PCN133
ESTIMATING THE EPIDEMIOLOGY OF LATE-STAGE CANCERS – A MATHEMATICAL APPROACH
Pan F, Sorensen S, Stern S
Avalere Health Consulting Corporation, Bethesda, MD, USA
OBJECTIVES: Accurate estimates of cancer epidemiology are fundamental to quantifying the economic burden of cancer as well as supporting a variety of researches in public health and commercial activities. However, the complete prevalence and incidence of late-stage cancers is difficult to obtain as most surveillance programs report cases at initial diagnosis, so recurrent cases, by definition are not captured. The objective of this study is to present a simple mathematical approach to estimating the epidemiology of late-stage cancers. METHODS: We developed an Excel-based mathematical epidemiology of late-stage cancers with limited historical information. Data need include annual national or local cancer-related mortality rates, late-stage cancer survival rates and population size. Our approach starts with the patients who died from the specific cancer and tracks back to estimate the incidence and prevalence at a certain point in time. The approach then moves forward to estimate the cancer are late-stage disease. We tested our approach by estimating the incidence and prevalence of metastatic breast cancer and metastatic melanoma with historic lifetime mortality and survival data from the National Cancer Institute Surveillance, Epidemiology and End Results (SEER) Program. RESULTS: We estimated that the 2007 US incidence of stage IV breast cancer and melanoma were approximately 32.4% and 100,000 women and 2.7% per 100,000 persons, respectively. These results corresponded to a total of 49,505 patients (10,426 newly diagnosed and 39,079 recurrent cases) for stage IV breast cancer and total of 6,279 patients (5,690 newly diagnosed and 6,089 recurrent cases) for late-stage melanoma. Results are also available by age and gender groups. CONCLUSIONS: Comparison of results using this epidemiology tool with estimates from databases and chart review studies demonstrated that our approach is reasonably accurate in its estimation. This approach could be adapted for uncommon cancers or regions with scarce data.

PCN134
HUMANISTIC CONSEQUENCES OF PREVENTABLE BLADDER TUMOR RECURRENCE IN NON-MUSCLE INVASIVE BLADDER CANCER (NMIBC)
Barocas DA1, Globe D2, Colayco D3, Gilmore A4, Bramley T1
1Vanderbilt University Medical Center, Nashville, TN, USA, 2Allergan, LLC, Irvine, CA, USA, 3Stryker, LLC, Palm Harbor, FL, USA
OBJECTIVES: Bladder cancer is a common malignancy with ~70,500 incident cases per year in the US, 70% present as non-muscle invasive bladder cancer (NMIBC). Perioperative instillation of chemotherapy after transurethral resection of the bladder (TURBT) can reduce the risk of recurrence. Our objective was to estimate the loss of quality-adjusted life years (QALY) due to unnecessary recurrences for patients not receiving perioperative chemotherapy (PC). METHODS: A decision-tree model estimating QALYs following recurrence in NMIBC patients not receiving PC. Therapy utilization rates were obtained from a chart review study of 1010 NMIBC patients treated by 259 US urologists. In this sample, 17% of patients received PC after the initial TURBT and 27% received perioperative therapy after the first recurrence. In addition, 48.6% received induction therapy with BCG (85%) or mitomycin-C (MMC, 15%) after the first recurrence. The estimated 2-year recurrence rates in NMIBC patients were 53% with TURBT alone and 36% with TURBT and PC. QALY estimates were obtained from literature with disutilities of ~0.10 for each recurrence, ~0.026 for BCG therapy, and an assumed ~0.01 for MMC therapy. RESULTS: According to the model, our approach is reasonably accurate in its estimation. This approach could be used to compare the humanistic burden of unnecessary recurrences in NMIBC.

PCN135
ECONOMIC CONSEQUENCES OF PREVENTABLE BLADDER TUMOR RECURRENCES IN NON-MUSCLE INVASIVE BLADDER CANCER
Lee CT1, Globe D2, Colayco D3, Gilmore A4, Bramley T1
1University of Michigan, Ann Arbor, MI, USA, 2Allergan LLC, Irvine, CA, USA, 3Stryker, LLC, Palm Harbor, FL, USA
OBJECTIVES: In 2010, an estimated 70,500 new cases of bladder cancer will be diagnosed in the US, 70% will present as non-muscle invasive bladder cancer (NMIBC). The instillation of intravesical chemotherapy after transurethral resection of bladder tumor (TURBT) can reduce the risk of tumor recurrence. The objective of this study is to estimate the economic consequences associated with unnecessary recurrences in patients deprived of perioperative chemotherapy (PC). METHODS: A decision-tree model estimated the economic consequences of recurrence in patients who did not receive perioperative chemotherapy. Costs were obtained using prevailing Medicare reimbursement rates for TURBT ($1,982), BCG induction therapy ($201/instillation), MMC induction therapy ($252/instillation) and perioperative MMC ($166/instillation). RESULTS: Within the cohort, 17% of patients received PC after the initial TURBT. The overall recurrence rate was 39%. For first recurrence, 27% received PC and 48.6% received induction therapy with BCG (85%) or MMC (15%). Data from the randomized trial indicate that at 2 years, 36% of patients receiving PC recur compared with 53% receiving TURBT alone. Population estimates were generated. Total costs were estimated using prevaling Medicare reimbursement rates for TURBT ($1,982), BCG induction therapy ($201/instillation), MMC induction therapy ($252/instillation) and perioperative MMC ($166/instillation). CONCLUSIONS: Greater use of PC after TURBT can reduce economic loss related to preventable bladder tumor recurrences with substantial savings to the health care system over two years.

PCN136
ESTIMATING UTILITIES IN CANCER: A COMPARISON OF EQ-SD AND FACT-BASED ALGORITHMS
Pickard AS1, Ganguli A2, Ray S3, Cella D2
1University of Illinois at Chicago, Chicago, IL, USA, 2Astellas Pharmaceuticals, Inc., San Francisco, CA, USA, 3Northwestern University, Chicago, IL, USA
OBJECTIVES: Although utility-based algorithms have been developed for the Functional Assessment of Cancer Therapy (FACT), their properties are not well-known compared to more widely used utility measures such as the EQ-SD. The objective of this study was to compare the properties and relationships between EQ-SD and FACT-based health utility scores in cancer patients. METHODS: A retrospective analysis was conducted on cross-sectional data collected from 534 cancer patients who completed both FACT-G and EQ-SD. Properties of scores from 3 FACT-based and 2 EQ-SD based algorithms were examined. Known groups based on physician and patient-rated ECOG performance status. Relative efficiency measures and utility algorithms were examined using ratios of F-statistics. RESULTS: Mean scores for the overall cohort were lowest using Kind and Macran’s FACT UK societal (0.55, SD 0.09), followed by Dolan’s EQ-5D UK societal (0.72, SD 0.23), Cheung et al’s FACT mapped to EQ-5D (0.74, SD 0.11), Shaw et al’s EQ-5D US societal (0.79, SD 0.15), and highest using Dobrez et al’s FACT US patient algorithm (0.83, SD 0.14). When stratified by ECOG status, the largest differences in mean scores were generally observed for EQ-5D UK societal scores and smallest for the FACT-based US patient scores; however, FACT UK societal scores had twice the statistical certainty of the other algorithms. CONCLUSIONS: We found important differences according to estimates, 49,350 new cases of NMIBC in the US in 2010. The model demonstrated prevention of 6962 bladder recurrences with perioperative MMC after initial TURBT, with an estimated savings of $2608 per patient. This translates into aggregate savings of $18.1 million to the US health care system over two years. CONCLUSIONS: Greater use of PC after TURBT can reduce economic loss related to preventable bladder tumor recurrences with substantial savings to the health care system.

PCN137
COMPREHENSIVE REVIEW OF MANAGEMENT EFFICIENCY STRATEGIES AMONG ONCOLOGY PRACTICES: EXISTING EVIDENCE AND OPPORTUNITIES FOR FUTURE RESEARCH
Gorman K1, Miller R2, McGarvey N2, Corey-Lisle P3
1University of Illinois at Chicago, Chicago, IL, USA, 2Abbott Laboratories, Abbott Park, IL, USA, 3Northwestern University, Chicago, IL, USA
OBJECTIVES: Facing with decreasing reimbursement costs, greater patient volumes, higher operating costs and pressure to adopt quality standards, community oncology practices and infusion centers operate in an increasingly challenging environment. This study sought to assess the practice efficiency techniques cur-