

hospital in Austria for the last two months of life of cancer patients. **METHODS:** Two groups of cancer patients, who had at least one stay in the inpatient palliative care unit, were formed retrospectively. All patients died in 2005 or 2006. Patients in the control group “no home care support team—NHCST” only got inpatient care. Patients in the intervention group “home care support teams—HCST” got additional home care support. Patients of NHCST and HCST were matched by age, sex and main diagnosis to ensure that patients in both groups were comparable ($N = 60$ for each group). Only public health care expenditures were considered. Data comprised of the Minimum Basic Data Set from all public hospitals in Styria and the follow-up costs dataset from the largest compulsory health insurance institution of Styria. Health care expenditures were allocated to costs for inpatient care, costs for outpatient care (general medicine, specialized medicine, drugs, assistive technology, costs of transport), and costs of home care support teams. Finally, health care expenditures of the last two months of life were compared for both groups. **RESULTS:** Mean costs for inpatient care of NHCST/HCST are €7502/€5843 (€1659/22.1% / $p = 0.035$). Mean costs for outpatient care of NHCST/HCST are €1106/€1391 (€ + 285 / + 25.8% / $p = 0.063$). The mean costs for home care support teams are €1290 for HCST group. Total health care costs are almost the same for both groups (HCST: €8524 vs. NHCST: €8608 / € + 84 / + 1% / $p = 0.988$). **CONCLUSIONS:** HCST shows tendency of being self-financing due to savings of inpatient care for the last two months of life of cancer patients.

PCN65

A PHARMACOECONOMIC MODEL FOR THE MANAGEMENT OF CANCER PAIN: OPIOID MARKET WITH OR WITHOUT OROS HYDROMORPHINE IN TURKEY

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OBJECTIVES: Opioids comprise the main option in the management of moderate-to-severe cancer pain. Different opioids are used in rotation to eliminate tolerance and opioid side effects that limit increasing dose. Since there are only two non-parenteral opioids—morphine and fentanyl—in Turkey, pain control with rotation might not be successfully done and invasive treatment modalities are to be selected much earlier than optimal. The aim of the study is to evaluate the contribution of the addition of a new long-acting oral opioid (OROS hydromorphone) into the current opioid market, with regard to the cost of treatment in moderate-to-severe cancer pain. **METHODS:** Model: Decision tree modeling to compare the current two-opioid-market with the hypothetical three-opioid-market, is used in the calculation of costs. Patients are treated with rotation of two and three opioids in the current and hypothetical market respectively. Time horizon is eight weeks. The study has been performed from the health care payer perspective. Data sources: The clinical data are acquired from the literature. Prices of medications, discount rates, other costs related to the treatment are obtained from Ministry of Health Drug Price List, Price List of Social Security Institution Health Implementation Guideline Appendix 2/D and 8, respectively. Analysis: Direct medical costs that are considered are the costs of opioids, invasive treatment modalities, side effects, physician visits and hospitalization. Because time horizon is shorter than 1 year, costs are not discounted. The results are presented as total costs of alternatives. **RESULTS:** Costs of treatment are calculated as €1528/patient for the current two-opioid-market and €1070€/patient for hypothetical three-opioid-market. The amount of saving is €458/patient. **CONCLUSIONS:** Inclusion of OROS hydromorphone into the Turkish market will both increase the chance of patients be treated with non-

parenteral opioids without need to non-invasive methods and also provide saving in the total medical costs of treatment.

PCN66

HOW COSTLY IS RADIOTHERAPY WITH PARTICLES? COST ANALYSIS OF EXTERNAL BEAM RADIOTHERAPY WITH CARBON IONS, PROTONS AND CONVENTIONAL PHOTONS

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OBJECTIVES: Particle therapy (PT) with protons or carbon-ions appears more effective in cancer treatment than conventional treatment with photons. The investment costs are however much higher. For a reliable estimate of the cost-effectiveness of particle therapy an objective cost estimate is crucial. Therefore, an extensive cost analysis was performed for each facility. **METHODS:** An analytical framework with all relevant parameters based on literature review and expert opinion was built in Excel. Costs were calculated for: (A) combined carbon-ion and proton facility (B) proton-facility, (C) photon-facility. The total costs per year were calculated as the sum of the capital costs divided by the life cycle of the facility (30 years) and the running costs per year. The cost per fraction was calculated as total costs per year divided by number of fractions per year. The number of fractions per year was calculated in an operational model. **RESULTS:** The capital costs per facility are: (A) €138.6 m, (B) €94.9 m, (C) €23.4 m. The annual running costs are: (A) €21 m, (B) €14.2 m (C) 6.9 m. The costs per fraction per facility are: (A) €787, (B) €516, (C) €187. The cost ratio is 4.2 for the combined-facility vs photon-facility and 2.8 for the proton-facility vs photon-facility. The incremental costs are €600 and €329 per fraction, respectively. The costs per fraction for (C) increased to 543€ when special treatment category tumors only were included. A $\pm 20\%$ variation in the annual number of fractions, capital costs and running costs, resulted in changes in the cost per fraction from -17% to $+25\%$. The number of fractions caused the biggest change, the capital costs the smallest. **CONCLUSIONS:** A combined carbon-ion/proton facility is the most costly facility, followed by a proton facility. The outcomes are most sensitive for the patient throughput, patient mix, and average time per fraction.

PCN67

COST UTILITY ANALYSIS OF ALEMTUZUMAB COMPARED TO CHLORAMBUCIL IN UNTREATED PATIENTS WITH HIGH-RISK (17P-) CHRONIC LYMPHOCYTIC LEUKEMIA IN THE UNITED KINGDOM

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OBJECTIVES: To compare costs and outcomes of alemtuzumab and chlorambucil as first line treatment for patients with high-risk (17p-) chronic lymphocytic leukemia (CLL) in the UK. **METHODS:** A lifetime Markov model was developed. Patients were modeled receiving treatment and moving through post-treatment response and progressive disease. Three possible lines of chemotherapy were considered, followed by final disease progression and death. Patients had CLL, were chemotherapy naïve and exhibited deletion of the chromosome 17p, a defect associated with poor prognosis and failure to respond to other CLL therapies. Response rate and duration at first line were taken from a recent randomized study, the CAM307 trial, for subsequent lines

of therapy. A review of clinical literature was conducted. Utility was estimated from a survey of the general public using a time-trade-off methodology. Costs were calculated from the perspective of the UK National Health Service. Future costs and benefits were discounted at 3.5%. **RESULTS:** When overall survival (OS) was assumed to be equal, treatment with alemtuzumab instead of chlorambucil increased lifetime cost per patient from £10,957 to £17,938 and increased QALYs per patient from 1.59 to 1.96 at a cost of £18,788 per QALY gained. When OS was allowed to vary to reflect differences in progression free survival the cost per QALY fell to £14,604. Findings were most sensitive to the cost of the interventions, response rate and duration at first line. **CONCLUSIONS:** This study found that in the UK, the cost per QALY gained with first-line alemtuzumab therapy over chlorambucil is £18,788 in high-risk (17p-) CLL patients.

PCN68

COST-UTILITY ANALYSIS OF DOCETAXEL VERSUS STANDARD REGIMEN IN THE NEOADJUVANT THERAPY OF LOCALLY ADVANCED BREAST CANCER IN POLAND

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OBJECTIVES: To conduct a cost utility analysis of docetaxel-doxorubicin (AT) vs standard doxorubicin-cyclophosphamide (AC) chemotherapy as neoadjuvant therapy for patients with locally advanced breast cancer in Poland. **METHODS:** We developed a cost-utility Markov model from a public payers' perspective (National Health Fund), using clinical data from published sources, Polish cost data, and a lifetime horizon. **RESULTS:** Based on a systematic review, only one randomized clinical trial was included in the comparison: AT (docetaxel 75 mg/m² + doxorubicin 50 mg/m², every 3 weeks, mean number of cycles 5.5) vs AC (doxorubicin 60 mg/m² + cyclophosphamide 600 mg/m², every 3 weeks, mean number of cycles 5.5). Average costs of the treatment for locally advanced breast cancer (including neoadjuvant chemotherapy, treatment of serious adverse events, surgery, additional post-operative therapy, health state monitoring, local and distant relapse treatment and palliative care) were 53,677 PLN for AT and 33,716 PLN for AC. Treatment effects (per patient) were 8,258 QALY and 9,081 LYG for AT and 7,191 QALY and 8,075 LYG for AC. ICER for the AT vs AC comparison were 18,729 PLN/QALY and 19,842 PLN/LYG. The ICER values were below the acceptable threshold for very cost-effective treatment in Poland (27 000 PLN). **CONCLUSIONS:** The docetaxel regimen is more effective and more expensive in the neoadjuvant treatment of patients with locally advanced breast cancer compared with AC chemotherapy. ICERs are below the acceptable threshold, therefore the docetaxel therapy can be considered a cost-effective treatment for locally advanced BC in Poland.

PCN69

PHARMACOECONOMIC ANALYSIS OF THE ADDITION OF RITUXIMAB TO FIRST-LINE CHEMOTHERAPY TREATMENT REGIMENS IN SPANISH PATIENTS WITH ADVANCED FOLLICULAR LYMPHOMA

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OBJECTIVES: Rituximab has recently received European approval for its use in combination with any chemotherapy. The

aim of this study is to evaluate the cost-effectiveness of rituximab added to the most commonly used chemotherapy regimens, performed from the Spanish National Health System perspective. **METHODS:** We developed a Markov model based on 3 randomized controlled clinical trials comparing the addition of rituximab to chemotherapy regimens of CVP; MCP or CHOP vs chemotherapy alone, in patients with advanced follicular lymphoma. Progression-free survival (PFS) and overall survival were the endpoints evaluated in these trials. Rates of disease progression were derived from the PFS Kaplan-Meier curves, mortality rates were obtained from the Scotland-Newcastle Lymphoma Group database and Spanish age-specific mortality tables; resource consumption data was based on a local expert panel questionnaire and patient utilities to account for quality of life were applied to the PFS and progressed health states. Medication and supportive care costs, and quality-adjusted life years (QALYs) were estimated over 10 years and discounted at 3.5%. Univariate and probabilistic sensitivity analysis were performed. **RESULTS:** The addition of rituximab to chemotherapy increased QALYs by 0.795, 1.129 and 0.971 years for CVP, MCP and CHOP, respectively, compared to chemotherapy alone. The incremental cost per QALY gained was €10,190, €6,092 and €7,855, for CVP, MCP and CHOP, respectively. The incremental cost per life year gained was €10,168, €6,348 and €8,190, for CVP, MCP and CHOP, respectively. Sensitivity analyses indicated the results were robust, and most sensitive to the duration of treatment effect and time horizon. **CONCLUSIONS:** The addition of rituximab to any of the chemotherapy regimens evaluated, was estimated to increase quality-adjusted life expectancy, and be a highly cost-effective treatment option for patients with advanced follicular lymphoma.

PCN70

TREATMENT OF CHRONIC LYMPHOCYTIC LEUKAEMIA WITH THE RITUXIMAB, FLUDARABINE AND CYCLOPHOSPHAMIDE REGIMEN—AN ECONOMIC EVALUATION BASED ON OBSERVATIONAL DATA

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OBJECTIVES: To assess the cost-effectiveness of treating, in an observational setting, first-line Chronic Lymphocytic Leukaemia (CLL) patients in the USA with Rituximab, Fludarabine and Cyclophosphamide (R-FC) versus FC alone (Tam et al., 2008). **METHODS:** A 3-state semi-Markov model was developed with rates of disease progression obtained from the Progression Free Survival curves (R-FC n = 300; FC n = 108, 6 year median follow-up) using the best fit (Weibull) function, and rates of death in the PFS and progressed states based on background mortality and observed CLL mortalities respectively. Published utility values of 0.8 and 0.6 were applied to PFS and progressed health states and no treatment benefit was assumed beyond the observational period. Costs were estimated using Medicare reimbursed rates, MS-DRGs for CLL and published drug prices, and include the cost of administration and adverse events. Costs (in USD) and quality-adjusted life-years (QALYs) were estimated over a lifetime horizon (30 years) and discounted at 3% per annum. **RESULTS:** Average lifetime health service costs per patient were \$51,694, and \$29,192 for R-FC and FC respectively. Life expectancy was estimated as 9.9 years for R-FC and 7.7 years for FC. Average QALYs for R-FC and FC were 7.3 and 5.5 years respectively. The incremental cost-effectiveness ratio for R-FC compared to FC was \$10,291 per life year gained and \$12,382 per QALY gained. The modeled results were robust to sensitivity analyses assessing the uncertainty about costs and