demographics. **RESULTS:** What single intervention should we currently use? HPV vaccine (three doses, costing $120 per dose at age 12) is not cost-effective as its cost per Quality-Adjusted-Life-Year (QALY) is more than three times the magnitude of the GNP per head. Adoption of a thrice a lifetime PAP screening strategy dominates (ie: costs less and adds more QALYs) the current strategy, which opportunistically gives PAP screens to 12.2% of females annually. However, because of the inevitable future fall in the HPV vaccine price, it is not recommended to abandon the current opportunistic PAP smear strategy for a more systematic thrice a lifetime strategy. When should the HPV vaccination be adopted? Assuming non-waning efficacy, HPV vaccinations become cost effective when cost falls below $97 per dose, become very cost-effective (ie: cost per QALY < per capita GNP) when cost falls below $50 per dose and become cost-saving (ie: gains in decreased treatment costs exceed increased screening, program and training costs) when cost per dose falls below the $27.20 threshold. After HPV vaccination is adopted, should we still have screening programs? Expansion of the PAP program to a penta-annual PAP program would provide the most additional QALYs within cost-effectiveness constraints. **CONCLUSION:** PAP compliancy should be increased to 20.0% per annum, both before and after the vaccination is introduced. An HPV vaccination program should be adopted when the vaccine price drops to a level that it becomes affordable to the Ministry of Health or falls below $20.44 per dose, providing a cost-saving incentive to the health insurance funds.

PCN34

COST-EFFECTIVENESS OF GEFITINIB FOR FIRST-LINE TREATMENT OF ADVANCED NON-SMALL CELL LUNG CANCER: A MARKOV MODEL-BASED ANALYSIS

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OBJECTIVE: Gefitinib, an epidermal growth factor receptor (*EGFR*) tyrosine kinase inhibitor, is a new treatment option for non-small cell lung cancer (NSCLC). Some studies have found better clinical outcomes for gefitinib treatment in women, never-smokers, certain mutation in the tumor *EGFR* gene, and patients with adenocarcinoma and in East Asian ethnicity. However, gefitinib is currently regarded as a salvage treatment rather than a first-line option. The objective of this study was to assess the cost-effectiveness of gefitinib for first-line treatment of the inoperable, chemo-naïve NSCLC patients in Taiwan. **METHODS:** We developed a Markov model of the cost, quality of life, survival, and incremental cost-effectiveness of the alternative option with gefitinib for first-line treatment, as compared with current practice of platinum-based chemotherapy regiments. Variables of clinical effectiveness were determined from corresponding trials. The economic analysis adopted the health care payer's perspective, and only direct medical costs were taken into account. **RESULTS:** Use of gefitinib for first-line treatment had a better mean survival than platinum-based chemotherapies (13.1 versus 11.6 months) while increasing lifetime cost. Given the base-case assumptions, we found that gefitinib increased life expectancy by 1.49 months, or 0.80 quality-adjusted months, at an estimated cost of $4,140 per treated patient, for an incremental cost-effectiveness ratio (ICER) of $62,100 per quality-adjusted life-year (QALY). The ICER would decrease to $48,600 per QALY gained when such analysis was applied to a subgroup of patients with molecular marker of *EGFR* exon 19 deletion or L858R mutations while they had a significantly longer mean survival of 20.8 months. Sensitivity analyses showed that this ICER remained below $100,000 per QALY for all model variables. **CONCLUSION:** Use of gefitinib for first-line treatment has a cost-effectiveness ratio below $50,000 per QALY gained in advanced NSCLC patients with preferred clinical characteristics in which a significant extension of overall survival has been demonstrated.

PCN35

COST-EFFECTIVENESS ANALYSIS OF DASATINIB FOR THE TREATMENT OF IMATINIB RESISTANT OR INTOLERANT CML PATIENTS IN BRAZIL

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OBJECTIVE: Currently imatinib resistant or intolerant CML patients have minimally effective therapies available. Dasatinib binds to the protein Bcr-Abl; it binds also to active and inactive forms of protein, while imatinib binds only to the inactive forms. Therefore, mutations that affect the active form can lead to resistance to imatinib. A Markov model was built to evaluate the long-term cost-effectiveness of dasatinib in the treatment of adult CML patients, after resistance or intolerance to imatinib. **METHODS:** The model consists of an initial within-trial period in which best response rates observed from the clinical trials are used. Response was defined as best response of complete hematologic response (CHR), minor cytogenetic response (CyR), minimal CyR, partial CyR, and complete CyR. The model simulates patients moving between health states using progression probabilities derived from the literature and BMS clinical trials. The time horizon was the lifetime of patients in the cohort, allowing evaluation of life expectancy and lifetime costs. Brazilian costs and health resource estimates were applied to the treatment of the different phases of CML. **RESULTS:** For CML patients in CP dasatinib provided 0.66 QALYs per patient and the ICER was R$80,000 with an additional life expectancy of 0.98 years. In the case of AP dasatinib provided an additional life expectancy of 3.48 years with a ICER of R$91,000. And in the BP dasatinib provided an additional life expectancy of 1.91 years with a ICER of R$123,000. **CONCLUSION:** The CE analysis showed that dasatinib is more cost-effective in the resistant or intolerant patients than imatinib in the three phases of CML with increased life expectancy with quality. Though there is an incremental cost associated to the treatment with dasatinib, the cost is related to longer life expectancy and therefore expenditure of more resources.

PCN36

COST-MINIMIZATION ANALYSIS OF CAPECITABINE FOR ADVANCED GASTRIC CANCER IN TAIWAN

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OBJECTIVE: Gastric cancer is the fifth most prevalent cancer and the fifth cause of cancer-related mortality in Taiwan. The objective of this study was to access the cost-effectiveness of capecitabine plus cisplatin (XP) vs. intravenous 5-fluorouracil plus cisplatin (FP) for the treatment of advanced and metastatic gastric cancer (AGC) in Taiwan, from a payer's (Bureau of National Health Insurance [BNHI]) perspective. **METHODS:** A cost-minimization analysis (CMA) was conducted by applying

clinical outcomes and medical resource utilization (MRU) derived from the phase III ML17032 study. Direct medical costs associated with trial-based MRU were based on Taiwan's National Health Insurance fee schedule for 2007. Costs associated with intravenous chemotherapy administration and adverse event (AE) management were estimated by an expert panel survey conducted among 12 oncologists. One-way sensitivity analyses were performed on key model parameters by varying the input values by ±20%. **RESULTS:** A trend toward superior progression-free survival was observed in the XP arm (median 5.6 months for XP vs. 5.0 for FP). Patients in the XP arm received 5.2 cycles of therapy vs. 4.6 cycles of FP. Compared to FP, administration of XP required fewer consults per patient (5.2 for XP vs. 22.8 for FP). Chemotherapy drug cost was higher (USD$1712) in the XP arm; however, these cost increments were offset by differences of chemotherapy administration costs (USD$4376) between two arms. AE profiles were similar and the cost associated with grade 3/4 AE management were slightly lower (USD $30) in the XP arm. Overall, XP was associated with a cost saving of USD$2691(NTD$87,351). XP remained cost-saving under one-way sensitivity analyses. **CONCLUSION:** From the Taiwan BNHI perspective, this CMA demonstrates that replacing FP by XP for the treatment of AGC would not only save direct medical costs but also improve health outcomes in Taiwan.

PCN37

PRELIMINARY COST-CONSEQUENCE ANALYSIS OF EPIRUBICIN/CISPLATIN/5FU (ECF) COMPARED TO EPIRUBICIN/CISPLATIN/CAPECITABINE (ECX) IN PATIENTS WITH ADVANCED OESOPHAGOGASTRIC CANCER

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OBJECTIVE: To undertake a cost-consequence analysis of direct medical costs in the treatment of advanced oesophagogastric cancer based on the REAL 2 randomized clinical trial, which demonstrated non-inferiority when oral capecitabine was substituted for infusional 5FU as part of the standard regimen, ECF. **METHODS:** Direct medical costs (2007 CDN$) from the perspective of the Canadian public health system were applied to resources (e.g., study treatment, toxicity management) obtained from REAL 2 trial data available in the public domain. Complete drug delivery was assumed. Mean overall costs per patient were estimated over six cycles, corresponding to treatment duration. **RESULTS:** The mean total cost per patient treated with ECF was $9065 and $9268 for ECX. The major driver of cost in the ECX arm is chemotherapy drug, $5472 for capecitabine versus $2400 for infusional 5FU (6 cycles). This is offset by the cost of chemotherapy administration, $1551 for ECF compared to $671 for ECX, and central venous access costs, $1230 for ECF. Additional line complication and hospitalization data were not available and therefore not included in these estimates. Limited data on toxicity management, (e.g. febrile neutropenia, anemia, thromboembolism), are available, and cost estimates are $2955 for ECF and $2433 for ECX-treated patients. **CONCLUSION:** ECX has similar efficacy to ECF in the REAL 2 trial, but has potential advantages in terms of patient preference and convenience of an oral therapy. In addition, oral therapy decreases hospital resource consumption. While drug costs for ECX are greater, costs for chemotherapy administration and line-related costs are substantially less, and underestimated in this analysis. Substituting capecitabine for infusional 5FU in the ECF regimen is an attractive and affordable alternative for patients with advanced oesophagogastic cancer.

PCN38

THE IMPACT OF BREAST CANCER CARE DEVELOPMENT ON MEDICAL AND ECONOMICAL OUTCOMES IN A TOTAL SOCIETAL COST CONTEXT

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OBJECTIVE: In Finland, the overall costs of breast cancer management have increased, primarily during the last years by the launch of expensive pharmaceutical therapies (trastuzumab in 2000). Economical reasons may therefore play a part in the prescribing of new drugs. We analyzed with comprehensive time series of all expenditures the effectiveness of pharmaceutical developments and other interventions from 1987 to 2005. **METHODS:** Finnish registry based data from 1987 to 2005 was combined to evaluate all costs related to the care of breast cancer. These included comprehensive health care costs, sick-leave compensations, disability pensions, and loss of productivity; all converted to 2004 euros. Several scenarios were thereafter constructed to identify the important changes in care processes and cost drivers during this period. **RESULTS:** During the observation period, the number of patients with breast cancer (5-year survival prevalence) increased by 100% up to 17,000 patients and the overall expenditure of care more than doubled from €70 to €160 million. The health care costs increased by 150% and the cumulative costs per patient increased from €4500 to €5500. The cost of medications has escalated with an overall increase of 660%, mostly during 2000's. However, during this period, the effectiveness of the treatment has increased as breast cancer related deaths, in-hospital days and loss of productivity due to premature deaths have decreased significantly. Altogether, our scenarios showed that new medications have had a beneficial financial impact of 16–35 million € for the society during the study period. **CONCLUSION:** Comprehensive assessment of large patient cohorts and long term economical outcomes is a useful method for evaluation of outcomes in chronic diseases. Identification of different cost drivers is needed as the cost of new interventions is increasing and their benefits should ideally be assessed in relation to their broader societal influence.

PCN39

DIFFERENCES IN COLORECTAL CANCER TREATMENT COSTS BY TREATMENT PHASE, CANCER SITE, AND STAGE AT DIAGNOSIS: EVIDENCE FROM LINKED SEER-MEDICARE DATA

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OBJECTIVE: This study provides updated, in-depth estimates of colorectal cancer (CRC) treatment costs. **METHODS:** This retrospective cohort study included patients aged ≥65 years, who were recently diagnosed with colon (CC) or rectal (RC) cancer in a SEER registry between 1996 and 2002 (n = 60,916) and 1:1 matched (by age, sex, geographic region) non-cancer comparison patients from a 5% Medicare sample. We assigned costs to phases as follows: 1) initial: costs in the period up to one year after diagnosis among patients with ≥13 months survival; 2) continuing: costs in the years between the initial and terminal years among patients with ≥36 months survival; and 3) terminal: costs in the final year of life. Terminal costs were assigned first (all costs considered terminal for patients who lived <13 months). Costs reflect all provider payments for cancer patients in excess of those for matched comparison patients (2006 US