Implementation Strategy: The Swedish model was chosen for implementation in Iceland, with the aim of avoiding to reinvent the wheel for the small and sparsely populated country. It is assumed that disease pattern is similar in the two countries, and that population pyramids are sufficiently similar for the purpose of applying Swedish cost-effectiveness data in Iceland. The best way to use the Swedish model would be to adapt the cost-effectiveness modeling to the situation in Iceland, i.e. to get ready reports/models from Sweden, with the possibility of recalculating the cost-effectiveness on the basis of Icelandic data.

Results: The focus group interviews showed that change management needs to be applied as regards the civil servants, as they show a reluctant attitude towards implementing this change. On the contrary the focus group interviews revealed that the drug industry has a more positive view of the change, probably influenced by the seemingly good cooperation between the drug industry and the Pharmaceutical Benefits Board in Sweden (LFN). Based on the results the health ministers of Iceland and Sweden signed in June 2008 letter of intent stating that the Government of Iceland and the Government of Sweden declare their intention to strengthen and broaden mutual co-operation in the field of pricing and reimbursement of pharmaceuticals. The Icelandic Medicine Pricing and Reimbursement Committee and the Pharmaceutical Benefits Board in Sweden (LFN) have started collaboration on possible dual application on price and reimbursements and revaluation of pharmaceutical groups for reimbursements.

Lessons Learned: Small markets in Europe are facing various issues regarding pricing and reimbursements of pharmaceuticals and evaluation from a cost-effectiveness perspective. For reimbursement authorities in smaller markets cooperation with larger organizations is important. The Icelandic Medicine Pricing and Reimbursement Committee and the Pharmaceutical Benefits Board in Sweden (LFN) will be starting a pilot project offering the industry a dual application for price and reimbursement in Iceland and Sweden. This pilot project will reveal the obstacles encountered in dual application and how cost effectiveness reports based on Swedish settings apply to Icelandic settings. If Icelandic authorities cannot use the reports accompanying applications in Sweden, an attempt could be made at finding a constant that could be used as a multiplier for all Swedish cost items, or results from Sweden could be used without evaluating to what extent they apply to Iceland, with all the imprecision inherent in that method.

PODIUM SESSION III: CANCER ECONOMIC EVALUATIONS I

PHARMACOECONOMIC APPLICATIONS IN FORMULARY MANAGEMENT: BUDGET IMPACT ANALYSIS OF PACLITAXEL PROTEIN-BOUND AT A MAJOR CANCER CENTER

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OBJECTIVES: Develop a budget impact analysis to present to the Pharmacy and Therapeutics (P&T) Committee for approval of paclitaxel protein-bound (paclitaxel-PB) to the institution’s Formulary for metastatic breast cancer (MBC). A post-approval study was performed to assess the accuracy and validity of our model.

METHODS: A pre-approval annual budget impact model for paclitaxel-PB was developed, and presented to P&T in 2006. Assumptions regarding paclitaxel-PB’s number of doses per cycle and median number of cycles per patient were estimated from published clinical trials and clinicians estimated use. In 2007, a post-approval economic analysis was conducted to assess the actual annual budget impact of paclitaxel-PB. All costs were adjusted to 2007 dollars. RESULTS: Paclitaxel-PB was FDA-approved for MBC in January 2005. In May 2006 a budget impact model was developed for an institutional population of 46 MBC patients; the $722,935 estimate was presented to the P&T. In September of 2007, we reviewed all use (excluding investigational) of paclitaxel-PB from June 2006 through May 2007. During this time period, we treated 131 patients; of these, 76 (58%) were for MBC, 47 (36%) for metastatic melanoma and 8 (6%) for other indications. We also reviewed charge and reimbursement data for paclitaxel-PB from June to December 2006. For the MBC population, we had a positive margin, and reimbursement to charge ratio was 59%. When all indications were included, the overall reimbursement to charge ratio for paclitaxel-PB was 56%. Actual budget impact was $757,502.

CONCLUSIONS: Differences were noted between the two studies. Our pre-approval model included only MBC, and fewer patients than were actually treated. Although we found more patients on paclitaxel-PB for both FDA-approved and non FDA-approved indications, the budget impact was essentially the same. The major factors driving the difference between pre and post-approval were actual cost per mg and average dose per patient.

CN2

ESTIMATING TARGET POPULATION SIZE FOR BUDGET IMPACT: AN EPIDEMIOLOGICAL MODEL OF BREAST CANCER AND PROGRESSION TO BONE METASTASIS IN THE UK.

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OBJECTIVES: As mentioned in the ISPOR guidelines for budget impact analysis, estimating the size of the target population and possible patient subgroups over time is critical for the determination of the budget impact. The goal of this study was to estimate the number of patients with bone metastases (BM) subsequent to breast cancer (BC) from 1992 to 2020 in the UK.

METHODS: A demographic model was developed to assess the size of the at-risk population. BC incidence rates were obtained from the Office for National Statistics. Each new incident cohort of BC was run through a Markov model reflecting the progression of the disease (silent disease, bone and visceral metastatic disease, death due to BC, other death). Transition probabilities for the first year of interest were obtained from a recent meta-analysis on the effect of chemotherapy. Treatments launched since 1992 were identified and corresponding risk reductions (obtained from the literature) applied to the baseline transition probabilities to reflect the improved prognosis of women with BC. National statistics were used to validate the model.

RESULTS: The use of constant, unadjusted transition probabilities resulted in an over-estimation of the number of BC deaths by 21% in 2005. After adjustment of the transition probabilities to include recent therapeutic advancements, the model predicted 12,575 BC deaths in 2005, while 12,509 had been observed (0.53% difference). Assuming that the treatment options remain unchanged and that BC incidence by age remains constant, the population of women suffering from BM is predicted to reach 50,000 in 2020.

CONCLUSIONS: Modelling the disease progression at the national level allows the validation of absolute numbers of patients over time using national statistics. Comparison of model predictions with historical data shows that the
benefit of new treatments for BC is directly measurable at the national level.

**CN3**

**COST OF INITIAL PROSTATE CANCER TREATMENT FOLLOWING DIAGNOSIS PER PATIENT BY STAGE: ESTIMATES FROM THE UK, FRANCE, GERMANY, ITALY AND SPAIN**

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**OBJECTIVES:** To calculate the total per patient cost of prostate cancer (PCa) treatment by stage in the 1st year following diagnosis in 5 European countries.

**METHODS:** IMS Oncology Analyzer (OA), a survey-based data collected from urologists, radiologists, and oncologists between 2002–2006 provided data on diagnostic interventions and initial treatment for 10,576 patients treated in hospitals for UK, Germany, France, Italy and Spain. A costing model combined the data with local expert opinion and published data on resource use and unit costs from published sources to calculate total per patient costs by stage. Diagnostic costs, first surgery, radio- and chemotherapy costs, if any, were included. Cost of 1st-line hormonal therapy, with possibly was also included. Relapse and mortality was factored into the model. Total direct medical costs of initial treatments following diagnosis per patient were calculated for all stages.

**RESULTS:** Majority of men across countries were diagnosed in Stage II. As initial treatment following diagnosis, across all stages, radiation therapy (EBT + brachytherapy) was used most frequently across countries, ranging from 42% (France) to 21.5% (Germany). Use of chemotherapy was low. Total per patient direct costs following diagnosis averaging all stages were €4057, €3256, €3171 (exchange rate conversion), €5226 and €5851 for Germany, Spain, UK, Italy and France, respectively. Surgeries were the largest cost component in all countries except for the UK and Germany. In Germany hormone therapy represents a similar cost to surgery; in the UK where radiation therapy had the highest cost proportion. CONCLUSIONS: In this first study quantifying the cost of PCa treatment in five European countries using similar methods and source across countries found similar total per patient cost estimates, although different treatment patterns and types of costs by country. Given the number of new cases diagnosed in Europe, these estimates suggest a large total spending on the disease.

**CN4**

**YEARS OF POTENTIAL LIFE LOST AND PRODUCTIVITY COSTS DUE TO CANCER MORTALITY AND FOR SPECIFIC CANCER SITES WHERE HPV MAY BE A RISK FACTOR FOR CARCINOGENESIS—UNITED STATES, 2003**

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**OBJECTIVES:** Although years of potential life lost (YPLL) and mortality-related productivity costs comprise a substantial portion of the burden of cancers where HPV may be a risk factor for carcinogenesis (henceforth called HPV-associated cancers), estimates of these costs are limited. We estimated the mortality-related burden (in terms of YPLL and productivity costs) of HPV-associated cancers and all malignant cancers in the United States in 2003.

**METHODS:** We used 2003 national mortality data and US life tables to estimate YPLL for HPV-associated cancers and all malignant cancers. YPLL was estimated by use of the life expectancy method. We used the human capital approach to estimate the value of the expected future lifetime productivity losses due to premature deaths from HPV-associated cancers and all malignant cancers. Indirect mortality costs were estimated as the product of the number of deaths and the expected value of individuals’ future earnings, including an imputed value of housekeeping services.

**RESULTS:** In 2003, HPV-associated cancers accounted for 181,026 in YPLL, which represent 2.4% of the estimated 7.5 million YPLL attributable to all malignant cancers in the United States. The average number of YPLL was 21.8 per HPV-associated cancer death and 16.3 per death to overall malignant cancers. Overall, HPV-associated cancers had the largest relative contribution to YPLL in 30–34 year-old females. The lifetime productivity cost due to mortality in 2003 was $3.7 billion for HPV-associated cancer mortality and $133.5 billion for overall malignant cancer mortality.

**CONCLUSIONS:** HPV-associated cancers impose a considerable burden in terms of premature deaths and productivity losses. Quantifying the burden of these HPV-associated cancers mortality in the population may provide useful information for understanding the full potential benefits of prevention efforts.

**PODium SESSION III: INFECTIOUS DISEASE ECONOMIC EVALUATIONS**

**IN1**

**COST EFFECTIVENESS ANALYSIS OF REYATAZ® VERSUS KALETRA® IN THE TREATMENT OF NAÏVE HIV PATIENTS IN ITALY**

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**OBJECTIVES:** To estimate the cost-effectiveness of Reyataz® versus Kaletra® in treatment-naïve HIV-1 patients in Italy.

**METHODS:** For this purpose a life time Markov model was developed with a cycle length of one year. The model included the following health states; 1st, 2nd and 3rd line treatment and within these treatment lines patients could suffer from an MI, stroke or angina. Treatment switch transition probabilities were derived from a 48 week randomized trial and event probabilities were derived from the Framingham risk equations and the 48 week trial. Diarrhea was included as a disutility. Variables that differed between the two treatment arms were pharmaceutical treatment costs, lipid profile, probability to switch 1st line treatment, mortality and incidence of diarrheea. The analysis was conducted from a third-party payer perspective. Direct costs inside the health care system were included. Outcomes were reported as cost per (quality adjusted) life year gained. To determine the robustness of the model and the impact of uncertainty, uni- and multivariate sensitivity analyses were carried out.

**RESULTS:** In the base case analysis Reyataz® saved 0.07 [−0.50, 0.83] life years, 0.12 [−0.31, 0.85] QALYs and −€508 [−€888, 264, €19, 424] costs. The resulting ICER and ICUR were dominant for Reyataz®, e.g. cost saving and more effective. Probabilistic sensitivity analyses showed that Reyataz® has 0.80%, 16.70%, 10.30% and a 72.20% probability to be cost-effective at a WTP of €20,000. The univariate sensitivity analysis showed that the results were especially sensitive to changes in the cost of second and third line treatment and switching treatment probabilities.

**CONCLUSIONS:** The present model suggests that Reyataz® has a favourable cost-effective ratio in the treatment of treatment naive HIV-1 patients. Sensitivity analysis showed that these results were stable.