dasatinib have different side effect profiles. The aim of this study was to investigate costs of adverse events (AEs) in patients receiving recommended doses of nilotinib or dasatinib for treatment of chronic and accelerated CML. METHODS: Incidence rates of grade 3/4 AEs in CML patients treated with nilotinib or dasatinib were obtained from clinical trial data. Direct medical costs for non-hematological AEs and for grade 4 anemia and thrombocytopenia, and febrile neutropenia were obtained from Ontario Case Costing Initiative (OCCI) inpatient databases and were specific to oncology patients. Costs for grade 3 anemia, thrombocytopenia, and non-febrile neutropenia were assumed to be outpatient costs and were based on literature and expert validation of treatment pathway and resource utilization in the Canadian context. Multivariant sensitivity analyses were conducted on costs of AEs and for an alternative dasatinib dosing (100 mg). RESULTS: Cost of treatment-related AEs for CML patients was highest for dasatinib. Total costs for AEs associated with the accelerated phase were higher than those associated with the chronic phase: $19,902 versus $7,653 for dasatinib and $8,645 versus $3,790 for nilotinib, respectively. Ranking observed among treatments for base case costs of AEs was maintained for both high and low cost estimates, and for 100 mg dasatinib dosing, indicating that the model was robust to variation in these parameters. CONCLUSION: For patients resistant or intolerant to imatinib, costs of dasatinib-related AEs were approximately twice the costs of nilotinib-related AEs in both chronic and accelerated phases, highlighting the importance of considering the cost of AEs in economic evaluation of tyrosine kinase inhibitors. Further research is needed to evaluate the impact of AEs on health care expenditures.

A PROBABILISTIC DECISION MODEL TO GUIDE OPTIMAL HEALTH POLICY DECISIONS FOR LUNG CANCER SCREENING

Fenwick E1, Kulin NA2, Marshall DA3, Long KH3, Earle C4

1University of Glasgow, Glasgow, UK, 2McMaster University, Hamilton, ON, Canada, 3Mayo Clinic College of Medicine, Rochester, MN, USA, 4Harvard University, Boston, MA, USA

OBJECTIVES: We developed a probabilistic decision model of cost-effectiveness for lung cancer (LC) screening with helical computed tomography (hCT) compared with chest x-ray (CXR) and no screening (NS) given uncertain efficacy and risks of screening in practice. METHODS: Markov model comparing NS to CXR and hCT screening in 60-year old current smokers screened annually until age 75 as base case using published literature, Surveillance Epidemiology and End Results database, and Mayo Clinic data. In the base case, we assumed stage shifts observed with screening translate into survival benefits. Sensitivity analyses evaluated cohort ages for starting and stopping screening, screening compliance, smoking status, positive nodule management and treatment costs. An expected value of perfect information analysis (EVPI) was estimated to determine the value of further research to reduce current uncertainty. RESULTS: In the base case, CXR cost $51,245/QALY vs. NS and hCT was dominated by CXR. The probability that CXR is cost-effective was 94.3% at a maximum acceptable ratio of $100,000/QALY (4.8% and 0.9% for NS and hCT, respectively). EVPI analysis suggested that at a maximum ICER of $100,000/QALY, further research would potentially be worth $55 million for the US population over ten years. When it was assumed that hCT screening did not result in any false positives necessitating invasive surgery, hCT cost $119,571/QALY vs. CXR. CXR cost $137,652 vs. NS for former smokers and was dominated by NS for never smokers; hCT was dominated in both these analyses. Results were sensitive to age at annual screening initiation and termination. CONCLUSIONS: Assuming stage shifts observed with LC screening translate into survival benefits, hCT was, as expected, most efficacious, but also had the highest false positive rate. The associated detrimental cost and quality of life effects resulted in hCT being dominated by CXR (less efficacious but more specific).

PROPHYLACTIC CERVICAL CANCER VACCINE IN A SETTING OF EXISTING SCREENING IN PORTUGAL—RESULTS FROM A MATHEMATICAL MODEL

Pereira JA1, Barbosa C1, Mateus C1, Standaert B2

1Universidade Nova de Lisboa, Lisboa, Portugal, 2GlaxoSmithKline Biologicals, Rixensart, Belgium

OBJECTIVE: To examine the cost-effectiveness of introducing an HPV-16/18 prophylactic cervical cancer (CC) vaccine in a setting of existing screening in Portugal. METHODS: A Markov cohort simulation model was used with an annual cycle length and which mimics the natural history of HPV infection to CC. The analysis was undertaken from the health care system perspective. Direct medical costs were estimated and discounted at a rate of 3%. Effect measures were: CC cases and deaths avoided, life years saved and QALYs, discounted at a rate of 3%. The incremental cost-effectiveness was estimated by comparison of the options to be implemented with the current strategy. The analytic horizon was lifetime where subjects enter the model at 10 years old and are followed for 95 cycles until death. One-way sensitivity analysis was conducted on the key variables. RESULTS: Our results predicted that an HPV-16/18 vaccine targeting 12-year-old girls would be cost-effective and could reduce lifetime CC cases and mortality by 92% compared with current screening. Vaccination was predicted to substantially reduce the number of oncogenic HPV infections and Cervical Intraepithelial Neoplasia cases (CIN1-3 cases). The additional cost of generating one QALY by implementing a vaccination strategy, where all 12-year-old girls are vaccinated with a vaccine showing 96.7% efficacy against HPV-16/18, was €13,810. The results were sensitive to alternative assumptions about the discount rate and age at which vaccination begins. The base-case strategy was robust to modifications in vaccination coverage and fairly robust to changes in both percentages of oncogenic HPV and of opportunistic screening rates. CONCLUSION: The analysis suggested that prophylactic cervical cancer vaccination could have a substantial public health benefit. A vaccine directed specifically at reducing the incidence of oncogenic HPV types 16 and 18, during the peak ages of infection, could be expected to be economically attractive.

COST UTILITY ANALYSIS OF VACCINATION AGAINST HPV IN ISRAEL

Ginsberg GM1, Fisher M2, Ben-Shahar I1, Bornstein J1

1Ministry of Health, Jerusalem, Israel, 2Clalit Health Services, Nahariyya, Israel, 3Hadassah Hospital, Jerusalem, Israel, 4Western Galilee Hospital, Nahariyya, Israel

OBJECTIVE: Determine appropriate scenarios for screening compliance for cervical cancer in Israel. METHODS: Generalised cost-effectiveness estimates of screening (PAP, HPV-DNA, VIA at various frequencies) and/or HPV vaccination interventions for cervical cancer in Israel were calculated using WHO-CHOICE standardised methodology, utilising a state transition population model (POPMOD) simulating Israeli population
within cost-effectiveness constraints. An annual PAP program would provide the most additional QAL Ys when the cost per dose falls below $97 per dose, become very cost-effective (ie: cost per QAL Y < 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 pentennial program would provide the most additional QAL Ys 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.

**RESULTS:**

A64 Abstracts

**PCN34**

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

Liu PH1, Hu FC2, Wang JD1

1National Taiwan University, Taipei, Taiwan, 2National Taiwan University Hospital, Taipei, Taiwan

**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-naive 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 chemotherapy (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.