bendamustine is a cost-effective strategy in the treatment of rituximab-refractory iNHL.

PCN79

THE COST-EFFECTIVENESS OF COMPANION DIAGNOSTICS IN CANCER THERAPY

Mathurin K, Beauchemin C, Lachaine J
University of Montreal, Montreal, QC, Canada

OBJECTIVES: The identification of potential biomarkers in oncology have led to the development of companion diagnostics to better select cancer treatment and consequently, to increase success rates and potentially reduce costs. The objective of this study was to explore the existing evidences regarding the cost-effectiveness of companion diagnostics in cancer therapy. **METHODS:** An exhaustive literature search previously performed using 4 electronic databases from January 1967 until December 2012 allowed retrieving 15,374 studies. Among them, 19 studies assessed the economic impact of a companion diagnostic to guide therapy or to predict treatment-related toxicity compared with the "no testing" strategy. Cost-effectiveness ratios and study parameters were extracted from these studies and costs were reported in US$2012. **RESULTS:** Breast cancer was the main indication of the companion diagnostics evaluated. Cost-utility analyses (cost per QALY) were performed in 79% of studies. Other studies reported results as a cost per case or a cost per life-year gained. Cost of companion diagnostic was comprised between $US57 and $US4,469. Cost-effectiveness ratios of companion diagnostics varied from dominant to approximately $US162,000 per QALY. Specifically, using a $50,000 per QALY threshold, 9 studies suggested that companion diagnostics are cost-effective or could be cost-effective in specific conditions. Furthermore, few companion diagnostics were dominated by the "no testing" strategy, depending on the method of testing used. In addition, two studies have established a maximum cost for the companion diagnostic to be cost-effective. **CONCLUSIONS:** Most of analyzed studies suggest that companion diagnostics are or could be cost-effective in specific conditions, despite a wide cost-effectiveness ratios range. Ratios obtained mainly depend on cancer type, method of testing and cost of companion diagnostic.

PCN80

ECONOMIC EVALUATIONS OF COMPANION DIAGNOSTICS IN CANCER THERAPY

Mathurin K, Beauchemin C, Lachaine J
University of Montreal, Montreal, QC, Canada

OBJECTIVES: The use of a companion diagnostic to identify subgroups of patients most likely to respond to a cancer therapy or to avoid treatment-related toxicities can increase success rates of oncology drugs and potentially reduce overall treatment costs. The objective of this study was to explore the existing evidences regarding economic evaluations of companion diagnostics in cancer therapy. **METHODS:** A structured exhaustive literature search was performed using electronic databases from January 1967 until December 2012 to identify economic evaluations of companion diagnostics in cancer therapy. Titles were initially screened for relevance. Then, abstracts of potentially relevant studies were reviewed. Finally, full-text articles were obtained for studies deemed relevant according to the abstract and were analyzed in details and relevant characteristics were extracted. **RESULTS:** The literature search allowed retrieving 15,374 studies. A quick screening of titles allowed excluding 14,014 studies. Among the 1,359 abstracts remaining, 235 were economic studies. While the large majority of these economic studies evaluated cancer treatment and screening cancer methods, 21 were using a companion diagnostic to predict treatment response or treatment-related toxicity. Breast cancer was the main indication of the companion diagnostics evaluated (57%). Other indications were colorectal, leukemia, lung and gastrointestinal tract cancers. Almost all of the companion diagnostics evaluated (86%) aimed guiding the choice of the treatment and predicting treatment response. A large majority of the economic evaluations was model-based studies, with an equal proportion of Markov model and decision tree. Cost-utility (cost per QALY) analyses accounted for 57% of studies. Approximately 52% adopted a lifetime horizon and 62% used a health care system perspective. **CONCLUSIONS:** Although several companion diagnostics have been recently developed, only few of them have been economically evaluated in limited cancer types. While choice of methodology slightly varies, a relative uniformity in study parameters has been observed among economic evaluations.

PCN81

AN EXPLORATORY ANALYSIS OF THE BENEFITS AND COSTS OF A NATIONAL CAMPAIGN TO PROMOTE COLORECTAL CANCER SCREENING – CDC'S SCREEN FOR LIFE: NATIONAL COLORECTAL CANCER ACTION CAMPAIGN

Ekwueme DU[1], Howard D[2], Gelb C[3], Rim SH[3], Cooper C[4]
[1]*Centers for Disease Control and Prevention, Atlanta, GA, USA,* [2]*Emory University, Atlanta, GA, USA,* [3]*CDC, Atlanta, GA, USA,* [4]*Soltera Center for Health Communication Research, Oro Valley, AZ, USA*

OBJECTIVES: The Centers for Disease Control and Prevention's *Screen for Life: National Colorectal Cancer Action Campaign (SFL)* is one of the longest-running national multimedia campaigns to promote colorectal cancer (CRC) screening for men and women aged ≥50 in the United States. Since inception in 1999, no study has quantified the benefits and costs of the SFL campaign. **METHODS:** We modeled the impact of the SFL campaign using a range of effect sizes obtained from prior studies on the impact of public health mass media campaigns. We assumed that the effect size (i.e. the proportion of persons exposed to the campaign who are screened as a result of the campaign) would range from 0.5% to 10% of unscreened population exposed to the campaign in the last 14 years (1999–2012). Using the assumed effect size and other data obtained from the literature, we estimated the benefits of the campaign defined as the incremental population screened from being exposed to campaign messages. Given the estimated benefits of the campaign and costs, we calculated cost per person screened (2012 US dollars). **RESULTS:** If 0.5% of the population exposed to campaign messages were screened as a result of the exposure, an additional 251,000 persons would have been screened from 1999-2012. The average annual cost per person screened was $2.44. If the effect size was 10%, an additional 5.01 million persons would have received screening during this time period as a result of the campaign. The average annual cost per person screened was $0.12. **CONCLUSIONS:** The results from this exploratory study indicate that the SFL campaign may have contributed to improving CRC screening rates at a minimal cost. Our methods provide a model for analyzing the benefits and costs of mass media health promotion campaigns when no outcome data are available.

PCN82

COST-EFFECTIVENESS OF EML4-ALK FUSION TESTING IN COMBINATION WITH CRIZOTINIB TREATMENT FOR PATIENTS WITH ADVANCED NON-SMALL CELL LUNG CANCER LIVING IN ONTARIO

Djalalov S[1], Hoch JS[2], Beca J[1], Krahn M[3], Tsao MS[4], Cutz JC[5], Leighl N[6]
[1]St. Michael's Hospital, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, *Canada,* [3]*Toronto Health Economics and Technology Assessment (THETA) Collaborative, Toronto, ON, Canada,* [4]*Ontario Cancer Institute, Toronto, ON, Canada,* [5]*McMaster University, Hamilton, ON, Canada,* [6]*Princess Margaret Hospital/University Health Network, Toronto, ON, Canada*

OBJECTIVES: Lung cancer remains the leading cause of cancer death in Canada and worldwide. Non-small cell lung cancer (NSCLC) accounts for 85% of all lung cancers. Conventional treatments of NSCLC have reached the upper bound of effectiveness in improving survival and treatment outcomes must still be considered disappointing. Recent achievements have been made in the understanding of the molecular biology of lung cancer targeted therapies and the discovery of new targets, such as the EML4–ALK fusion gene. Targeted therapy with ALK inhibitor crizotinib offers significant improvement in clinical outcome for treatment of EML4–ALK fusion positive patients. We estimated the cost-effectiveness of companion EML4-ALK genetic testing in combination with crizotinib for NSCLC in Ontario. **METHODS:** We performed a cost-effectiveness analysis using a Markov model from a Ministry of Health perspective and a lifetime horizon. Transition probabilities and mortality rates were calculated based on the data of 8,113 patients obtained from the Cancer Care Ontario New Drug Funding Program database for 2005-2009. Costs were obtained from OCCI database, public labs and Princess Margaret Hospital. **RESULTS:** Our preliminary results show that genetic testing and treatment combination strategy gained 0.11 QALYs when compared to no testing. The incremental cost was CAD $4,320 compared to standard care, and the incremental cost-effectiveness ratio for the base case was $385,438 per QALY. **CONCLUSIONS:** EML4–ALK genetic testing in combination with crizotinib treatment for all NSCLC patients eligible for chemotherapy is not economically attractive in the current setting. Lower drug costs would be required to make this strategy economically attractive at conventional cost effectiveness thresholds

PCN83

COST-EFFECTIVENESS OF GENETIC SCREENING FOR MULTIPLE ENDOCRINE NEOPLASIA TYPE 2B TO PREVENT CHILDHOOD MEDULLARY THYROID CANCER

Goodall S[1], Hou C[1], Church J[1], High H[2]
[1]*University of Technology Sydney, Sydney, Australia,* [2]*Sydney Cancer Genetics, Sydney, Australia*

OBJECTIVES: Multiple endocrine neoplasia type 2B (MEN2B) is a genetic disease that causes multiple tumors on the mouth, eyes, and endocrine glands. The prevalence of MEN2B is estimated to be 1 in 600,000 and leads to aggressive, usually incurable, medullary thyroid cancer usually during adolescents. MEN2B status can be identified by genetic screening and curative thyroidectomy surgery offered. Despite the clear benefits MEN2B testing is not part of routine clinical management in Australia. The aim of this study is to evaluate the cost-effectiveness of applying different MEN2B genetic screening strategies in Australia. **METHODS:** A decision analytical model was constructed to evaluate cost per quality-adjusted life-year, life-years gained and case detected by comparing three competing strategies: 1) no MEN2B testing, 2) screening every newborn baby and 3) screening only patients that attend Marfan's clinics (it is estimated that 85% of the MEN2B carriers express Marfanoid habitus, and consequently will be tested for Marfan syndrome). The impact of uncertainty was evaluated using probabilistic sensitivity analysis. **RESULTS:** Current practice (No MEN2B testing) is dominated by providing MEN2B testing at Marfan's clinics; this is because the cost of screening is more than offset by the cost of cancer treatment avoided. When comparing newborn screening (population based screening) to providing MEN2B testing at Marfan's clinics, the incremental cost-effectiveness ratio (ICER) is $8,669 per QALY gained. The cost per case detected is $36,235 when providing gene testing at Marfan's clinics and $407,200 in the newborn screening strategy. Prevalence of MEN2B and the cost of MEN2B testing in Newborn screening are important parameters. **CONCLUSIONS:** Genetic screening on an individual's risk of cancer is an appealing prospect. We demonstrated that performing MEN2B testing at Marfan's clinics is likely to be cost-saving, compared to current practice. Whilst screening all newborn babies may also be a cost-effective option.

PCN85

COST-EFFECTIVENESS OF VARIOUS COMBINATIONS OF HUMAN PAPILLOMAVIRUS (HPV)-BASED TESTING, INCLUDING GENOTYPING FOR HPV 16/18, FOR CERVICAL CANCER SCREENING