PODIUM SESSION II: CANCER OUTCOMES RESEARCH STUDIES

CN1

MODELING THE IMPACT OF TECHNOLOGY DIFFUSION IN BREAST CANCER TREATMENT ON THE COST-EFFECTIVENESS OF MAMMOGRAPHY SCREENING

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OBJECTIVES: The association between treatment advances and dissemination and the cost-effectiveness of cancer screening is largely unknown. This study addressed the above association among breast cancer patients. **METHODS:** Using a Bayesian microsimulation model, we followed a hypothetical cohort of 1 million women born in 1960 throughout their lifetimes. We compared no screening strategy to eight mammography screening strategies that consisted of a combination of different initiation age (40 vs. 50), cessation age (74 vs. 79), and frequency (annual vs. biennial) of screening. Upon identifying the most cost-effective strategy, we then applied probabilistic sensitivity analyses (PSA) to explore the impact of different patterns of treatment dissemination on the cost-effectiveness of screening. **RESULTS:** At the societal willingness-to-pay (WTP) of $50,000 per life year (LY) gained and with the dissemination pattern prior to the availability of trastuzumab, the most cost-effective screening strategy was biennial screening for women aged 50–74. The probability that this strategy was more cost-effective than the no screening strategy was 0.43, followed by biennial screening 50–79 (prob = 0.41), biennial screening 40–79 (prob = 0.08), and biennial screening 40–74 (prob = 0.04). At a WTP of $100,000/LY, the probabilities increased to 0.89, 0.87, 0.76, and 0.72, respectively. Results from the PSA indicated that when adding trastuzumab to the base case dissemination pattern, the probability that the biennial screening 50–74 strategy was more cost-effective than the no screening strategy at a WTP of $100,000/LY decreased from 0.89 to 0.83, and the probability further reduced to 0.60 if the optimal dissemination pattern (e.g., all patients with HER2 overexpression received trastuzumab) was achieved. **CONCLUSIONS:** The finding that improvements in treatment dissemination may paradoxically lead to a reduction in the cost-effectiveness of screening suggests that identifying and designing cost-effective strategies to allocate health care resources across the continuum of cancer care is likely to yield higher gains.

CN2

USE OF LATENT VARIABLE AND SURVIVAL MODELING TO ESTIMATE THE ASSOCIATION OF PATIENT-REPORTED OUTCOMES AND PROGRESSION-FREE SURVIVAL IN MALIGNANT PLEURAL MESOTHELIOMA

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OBJECTIVES: The purpose of this study was to conduct joint modeling of latent growth curve models (LGCMs) for patient-reported outcomes (PROs) and survival models for progression-free survival (PFS) to estimate their association in previously-treated patients with advanced malignant pleural mesothelioma (MPM). **METHODS:** Post-hoc analyses were conducted on PRO and PFS data collected from 243 patients in a phase III randomized controlled trial of best supportive care (BSC) versus pemetrexed-plus-BSC. PFS was a secondary end point in the original study; PRO data were collected using the Lung Cancer Symptom Scale (LCSS). LGCMs were constructed for the nine LCSS items including a treatment covariate; PFS was then regressed onto the growth factors of each LCSS item. **RESULTS:** There were no statistically significant changes in PRO scores over time as determined by the slope coefficient of the LGCMs. Statistically significant associations were found between PFS and the latent growth factors (intercepts and slopes) of appetite loss, cough, dyspnea, symptom distress, and interference with activity level ($p < .05$). PFS was significantly associated with the intercept of pain ($p < .001$), and the slope of global quality of life ($p < .001$) from the LGCMs; no growth factors were associated with fatigue or treatment. The joint hemoptysis model did not converge therefore the association between PFS and hemoptysis cannot be assessed. **CONCLUSIONS:** Joint modeling with PFS accounted for censoring of LGCM observations and increased our ability to estimate latent growth factors. This provided further insight into the meaningfulness and significance of PFS by allowing more efficient estimation of patient symptom levels that were associated with the progression-free disease interval. Application of these methods can help MPM patients, caregivers, providers, and payers to make more informed health care decisions. Future research in other cancers is needed to determine if these findings are generalizable.

CN3

DIRECT MEDICAL COSTS OF TREATMENT OF METASTATIC BREAST CANCER AFTER ANTHRACYCLINES AND TAXANES FAILURE FROM THE MEXICAN PUBLIC HEALTH SYSTEM PERSPECTIVE

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OBJECTIVES: To define resources and procedures to set the direct medical costs of treatment of metastatic breast cancer (MBC) after anthracyclines and taxanes failure from the Mexican public health system perspective. **METHODS:** The unitary costs of chemotherapy, surgery, radiotherapy and hormonal therapy were obtained trough quantification the consumption of health care resource reported in 587 clinical files of patients with advanced breast cancer patients after failure to anthracyclines and taxanes with at least two years follow-up treated at three tertiary public hospitals in Mexico: Hospital de Oncología del Centro Médico Siglo XXI del Instituto Mexicano del Seguro Social (SigloXXI) (47%), Instituto Nacional de Cancerología (INCAN) (42%) and Centro Universitario contra el Cáncer (CUCC) (11%). All costs (drugs, services and procedures) were obtained from institutional sources and expressed in 2009 US$. **RESULTS:** The mean unitary cost of surgery at the SigloXXI (n = 26) is US$2177.31 ($1658.31-$2696.31), at the CUCC (n = 16) US$3060.14 ($2548.68-$3571.60), and at the INCan (n = 106) US$2288.36 ($1945.56-$2631.16). The radiotherapy (at least 5 sessions) at the SigloXXI (n = 133) is US$755.90 ($696.59-$815.20), CUCC (n = 31) US$910.28 ($728.20-$1092.36), INCan (n = 136) US$1128.13 ($1004.87-$1251.40). The hormonotherapy cost (at least 3 months) is SigloXXI (n = 107) US$1640.19 ($1154.73-$2125.64), CUCC (n = 30) US$932.40 ($528.49-$1336.31), INCan (n = 102) US$1887.09 ($1396.56-$2377.62). The mean chemotherapy cost (all regimens included for at least 3 cycles) at the SigloXXI (n = 213) US$9278.98 ($8097.55-$10,460.42), CUCC (n = 43) US$6174.23 ($1962.75-$10,385.71), INCan (n = 200) US$8212.42 ($6876.50-$9548.34). **CONCLUSIONS:** The treatment costs vary widely within every center, as result of the clinical practice variability, but seem consistent between centers included in this analysis with no significant statistical differences.

CN4

USING QALYS IN CANCER: WHAT ARE THE METHODOLOGICAL LIMITATIONS?

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OBJECTIVES: This presentation will examine how well the quality-adjusted life year (QALY) captures the health gains generated by cancer treatments, with particular focus on the methods for constructing QALYs preferred by the National Institute for Health and Clinical Excellence (NICE), the organisation responsible for providing advice on the cost-effective use of health care resources in England and Wales. **METHODS:** Comprehensive literature review; The published literature relating to QALYs and cancer will be reviewed, with data obtained using a keyword search of the MEDLINE database and a hand search of articles written by leading researchers in the subject area. **RESULTS:** Three key issues are identified and will be discussed. First, the EQ-5D, a widely used measure of health-related quality of life in adults, has been found to be relatively insensitive to changes in health status of cancer patients. Second, the time trade-off, a widely used technique for estimating the values of health states, involves making assumptions that are likely to be violated in end-of-life scenarios. Third, the practice of using valuations of members of the general population, as recommended both by NICE and the US Public Health Service Panel, is problematic because such individuals typically display a misunderstanding of what it is really like for patients to live with cancer. Thus, it is clear that because of the way in which it is constructed, the QALY shows important limitations in terms of its ability to accurately capture the value of the health gains deemed important by cancer patients. **CONCLUSIONS:** The presentation will conclude by proposing a research agenda for addressing these limitations.

PODIUM SESSION II: HEALTH CARE MANAGEMENT STUDIES

ME1

CLINICAL, ECONOMIC, AND HUMANISTIC BENEFITS OF A RHEUMATOID ARTHRITIS DISEASE THERAPY MANAGEMENT PROGRAM

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OBJECTIVES: To evaluate clinical, economic, and humanistic outcomes of a rheumatoid arthritis (RA) disease therapy management (DTM) program designed to improve self-management of injectable RA medication therapy. **METHODS:** Patient-reported outcomes among patients (N = 371) completing a 7-month RA DTM program were compared from Month 0 to Month 6 using the Short Form (SF)-12®, Work Productivity Activity Impairment (WPAI), and Health Assessment Questionnaire (HAQ)-Disability (DI)© tools. Propensity scoring was used to match these patients with two non-DTM cohorts who filled injectable RA medications at specialty or retail pharmacies (N = 244 in each cohort). Adherence to injectable RA medication was measured by calculating the medication possession ratio (MPR) over an 8-month post-period. Among the subgroup of patients with medical claims data in the DTM (N = 46), specialty (N = 55) and retail (N = 32) cohorts, changes in pharmacy, medical, and total health care costs per patient per month (PPPM) were compared from the pre- and post-periods. **RESULTS:** SF-12 physical component scores significantly increased by 1.1 points (p = 0.048), SF-12 mental component scores were not changed, WPAI work productivity decreased by 10.8% (p = 0.045), and HAQ-DI scores significantly improved by 0.08 points (p = 0.0003). DTM patients had significantly higher medication adherence compared with specialty or retail pharmacy patients (MPR 0.91, 0.83, and 0.61, respectively; p < 0.0001). Median pharmacy costs increased by $25.78, $20.39, and $7.27 PPPM, respectively (p = 0.001 for DTM vs. retail). Total health care costs were similar across comparison cohorts (median increases of $23.61, $22.48, and $27.22 PPPM, respectively). **CONCLUSIONS:** Patients completing the RA DTM program experienced increased medication adherence and improvements in SF-12 physical component and HAQ-DI scores, but did not have improved SF-12