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MO2

HOW IRELAND’S COLORECTAL SCREENING PROGRAMME COULD SAVE MORE LIVES, SAVE MONEY AND STAY WITHIN EXISTING COLONOSCOPY CAPACITY LIMITS: EVIDENCE FROM THE MISCAN MICROSIMULATION MODEL

OBJECTIVES: To demonstrate how microsimulation modelling of colorectal cancer screening indicates that there are likely gains to be made by reconfiguring BowelScreen, Ireland’s colorectal cancer screening programme. Using a previously published and validated model from Spain, the objective was to show how the omission of alternative screening strategies in a prior cost-effectiveness analysis of colon cancer screening in Ireland has likely led to an underestimation of lifetime costs, and that better outcomes at lower cost can be achieved by using a lower quantitative cut-off in the faecal immunochemical testing (FIT) employed. METHODS: We used the MISCAN microsimulation model of colorectal cancer screening to simulate the costs, effects and follow-up colonoscopy capacity requirements of 144 alternative screening strategies. These varied in their start and stop ages, screening intervals and FIT quantitative cut-off levels. Included in the simulations are Ireland’s current programme of biennial screening of 60-69-year-olds using a FIT cut-off of 225ng/ml of haemoglobin. We simulate strategies with FIT cut-offs as low as 50ng/ml. The resulting estimates are plotted in the cost-effectiveness plane, checked for dominance and incremental cost-effectiveness ratios are calculated. RESULTS: We find that a combination of a reduction in the FIT cut-off to 50ng/ml, and extending the screening interval of 3 years and a reduced screening start age of 55 saves 20% more QALYs, reduces costs by 7%, and yields a 17% reduction in colonoscopy requirements. In general, employing a lower FIT cut-off dominates strategies with higher cut-offs, such as those currently employed in BowelScreen. While extending the screening programme to a larger population would be possible and more cost-effective, it requires a lengthening of the screening interval from two to three years. CONCLUSIONS: Very simple changes to BowelScreen could save many lives and save costs. If the reduction in costs and the increase in lifetime screening can be achieved, this simulation evidence suggests that BowelScreen should be re-examined.

MO3

MODELING COVARIATE-ADJUSTED SURVIVAL FOR ECONOMIC EVALUATIONS IN ONCOLOGY INDICATIONS

OBJECTIVES: Surviv data from randomized controlled trials (RCT) is routinely extrapolated for economic evaluations in oncology. Imbalances in prognostic and/or predictive factors across treatment arms should be adjusted to generate unbiased estimates. To date no formal guidance has been developed regarding how such adjustments should be made. We compared various covariate-adjusted survival modeling approaches, based on parametric regression and propensity score matching, applied to the ENDORV RCT in multiple myeloma that assessed carfilzomib-dexamethasone (Cd) versus bortezomib-dexamethasone (Vd). METHODS: Overall survival (OS) data and baseline characteristics were used for a subgroup (bortezomib-naïve/one prior therapy) reflecting the population where Cd is recommended in England and Wales. The following adjusted survival modeling approaches were compared: multiple Weibull regression model including prognostic/predictive covariates jointly fitted to the two arms to predict survival i) using the mean value of each covariate and ii) using the average of patient-specific survival prediction, iii) applying an adjusted hazard ratio derived from a Cox proportional hazard model to the baseline risk estimated for Vd with a Weibull model, iv) propensity score matching followed by fitting a Weibull model to the two arms of the balanced data including the only covariate used on the RCT. RESULTS: Seventy-eight RCC and NSCLC patients were identified from a German claims dataset. In WinBUGS, parametric survival models were fitted on both RCTs, and two parametric models were fitted on the RWE data. The corresponding RWE parameters. Second, the quantitative relationship between PFS and OS was assessed using the Two Stage Least Square (2SLS) estimator. This approach was justified by relevant statistical tests in favor of the instrumental variable approach. RESULTS: 22 RCTs (42 treatment arms, 7,884 rrMM patients) were included. The average median PFS and median OS were 8.26 months (SD = 4.85), and 24.34 months (SD = 9.80), respectively. The correlation coefficient of median PFS and median OS was 0.71 (P < 0.0001). After adjustment for median age, sex and publication year, a 3-month increase in median OS is estimated for each additional month increase in median PFS. CONCLUSIONS: Based on newer evidence from RCTs, PFS is used to predict OS in rrMM and this analysis suggests that novel treatments may be providing additional months of OS gained for each month of PFS.

CNG

CAN BAYESIAN METHODOLOGY PREDICT LONG-TERM EFFECTIVENESS RATHER THAN EFFICACY? AN APPLICATION WITH OVERALL SURVIVAL IN TWO ONCOLOGY INDICATIONS

OBJECTIVES: We assessed the impact of combining real-world evidence (RWE) with randomized controlled trials (RCTs) data for overall survival (OS) extrapolations. METHODS: Two RCTs in non-small cell lung cancer (NSCLC) and renal cell cancer (RCC) were included. The only covariates used on the RCTs were age (OS) and RCC population were identified from a German claims dataset. In WinBUGS, parametric survival models were fitted on both RCTs, and two parametric models were fitted on the RWE data. The corresponding RWE parameters. Second, the quantitative relationship between PFS and OS was assessed using the Two Stage Least Square (2SLS) estimator. This approach was justified by relevant statistical tests in favor of the instrumental variable approach. RESULTS: 22 RCTs (42 treatment arms, 7,884 rrMM patients) were included. The average median PFS and median OS were 8.26 months (SD = 4.85), and 24.34 months (SD = 9.80), respectively. The correlation coefficient of median PFS and median OS was 0.71 (P < 0.0001). After adjustment for median age, sex and publication year, a 3-month increase in median OS is estimated for each additional month increase in median PFS. CONCLUSIONS: Based on newer evidence from RCTs, PFS is used to predict OS in rrMM and this analysis suggests that novel treatments may be providing additional months of OS gained for each month of PFS.

P13: METHODOLOGICAL STUDIES IN CANCER

ONCOLOGY INDICATIONS

MO3

DIFFERENT METHODS FOR MODELLING SEVERE HYPOGLYCAEMIC EVENTS: IMPLICATIONS FOR EFFECTIVENESS AND COST-EFFECTIVENESS ANALYSES

OBJECTIVES: Published clinical trials report severe hypoglycaemic events in different ways. Some report number of patients who suffered at least one event out of total number randomized and others report number of events for a given total exposure. The different data types can be modelled in different ways; therefore, three models have been used in published Bayesian Network Meta Analyses (NMA) of hypoglycaemic events; models with a binomial likelihood reporting odds ratios using a log-log link or hazard ratios, and with a Poisson likelihood reporting hazard ratios. The objective of this paper is to establish the impact of using different models on effectiveness estimates and the output of different models may be combined. We examined in this recent NMA conducted to inform NICE guideline recommendations regarding insulin choice for patients with type 1 diabetes using the three previously used models, plus a shared parameter model combining different types of data. RESULTS: The relative treatment effects are similar regardless of which model or scale is used. Important differences to other settings.

BREAKOUT SESSION XIII