ABSTRACTS

ISPOR 17TH ANNUAL EUROPEAN CONGRESS RESEARCH ABSTRACTS

RESEARCH PODIUM PRESENTATIONS – SESSION I

CANCER OUTCOMES RESEARCH STUDIES

CN1
LONG-TERM IMPACT OF THE DUTCH COLORECTAL CANCER SCREENING PROGRAMME ON CANCER INCIDENCE: EXPLORATION OF THE SERRATED PATHWAY

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OBJECTIVES: The Netherlands has recently started with the stepwise implementation of biannual faecal immunochemical testing for colorectal cancer (CRC). We evaluated the impact of the transition to, and the fully implemented screening programme on the long-term CRC incidence and colorectal cancer demand. METHODS: The previously reported and calibrated ASCCA model was set up to simulate the Dutch CRC screening programme between 2014 and 2044. We adopted an open-model approach by simulating modelled birth cohorts and combining the results while accounting for the ageing of the population. Besides a no screening scenario, we evaluated the impact of screening under three sets of natural history assumptions which differed in the contribution of the serrated pathway to the CRC incidence and probabilities of adverse events are main effect drivers and initial treatment was always cost-effective.

RESULTS: The predicted CRC incidence in 2014 was between 105/100,000 (assuming all CRCs originate from adenomas) and 109/100,000 (assuming that 30% of CRCs arise from serrated lesions) due to the detection of asymptomatic, prevalent tumours. After this peak, the predicted incidence gradually decreased until in 2039 a new equilibrium was reached, ranging between 65/100,000 and 71/100,000 assuming that 100% versus 70% of CRCs originate from adenomas, respectively. Due to the stepwise implementation, the predicted number of colonoscopies required for the screening programme increased gradually over time from 38,000 (752,199 invitees) in 2014 to 117,000 (2,154,875 invitees) in 2044. CONCLUSIONS: The Dutch screening programme will markedly decrease CRC incidence in the next 25 years. The conclusions about the impact of screening were robust to key natural history assumptions. With the results of this study, decision-makers can anticipate the expected change in CRC-related health care use and colorectal cancer demand.

CN2
PRIMARY TREATMENTS FOR INTERMEDIATE-RISK PROSTATE CANCER: A COST-EFFECTIVENESS AND VALUE-OF-INFORMATION ANALYSIS

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OBJECTIVES: Intermediate-risk prostate cancer patients are recommended primary treatment with either radical prostatectomy (RP), external beam radiotherapy (EBRT), brachytherapy (BT), or EBRT plus high-dose rate BT boost (EBRT + HDR-BT); or expectant management with active surveillance (AS). The costs of these treatments differ considerably, whilst the amount and quality of evidence for their comparative effectiveness in terms of disease progression, adverse events and health-related quality of life is unbalanced and inconsistent. Therefore, we undertook a cost-effectiveness analysis of RP, EBRT, BT, EBRT + HDR-BT and AS, and performed a value-of-information analysis to direct future research.

METHODS: We developed a probabilistic Markov model estimating the expected incremental costs/Quality Adjusted Life Years from a UK NHS perspective, with a time horizon of 10 years. Input data were obtained from the best available literature. We explored the uncertainty around the model outcomes by identifying the most influential parameters and estimating the expected value of perfect (parameter) information. RESULTS: AS is most likely to be cost-effective at a cost/QALY threshold of £3,000/QALY, BT for £3,000 to £12,000/QALY and RP for >£12,000/QALY. One-way sensitivity analysis shows that utilities and probabilities of adverse events are main effect drivers and initial treatment costs are main cost drivers. Large decision uncertainty exists around λ £11,000 with a population EVPPI of nearly £100 million. The EVPPI suggests that eliminating uncertainty around costs and utilities is most worthwhile.

CONCLUSIONS: With current information AS and BT are cost-effective treatments for intermediate-risk prostate cancer at relatively low cost/QALY thresholds, and RP is expected to be the most cost-effective of available treatments at the prevailing range of cost/QALY thresholds (i.e. £20,000–£30,000). However, large decision uncertainty exists and acquiring further information is likely cost-effective. Future research on costs and utilities associated with treatment outcome and adverse events is expected to be most valuable.

CN3
EARLY STAGE COST-EFFECTIVENESS ANALYSIS OF A BRC1A-LIKE TEST TO DETECT TRIPLE NEGATIVE BREAST CANCERS RESPONSIVE TO HIGH DOSE ALKYLATING CHEMOTHERAPY

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OBJECTIVES: Triple negative breast cancers (TNBC) with a BRCA1-like profile may benefit from high dose alkylating chemotherapy (HDAC). This study examines whether treating TNBC with personalized HDAC based on BRC1A-like testing can be more cost-effective than current clinical practice. We performed an one-way sensitivity analysis (SA) of all model parameters, and two-way SA of prevalence and PPV. Data were obtained from a current trial (NCT01057068), published literature and expert opinions where necessary.

RESULTS: Based on our base-case analysis with 68% BRC1A-like prevalence, 100% PPV, and costs of €164/t test, treating TNBC according to BRC1A-like testing would be cost-effective (£16.192/QALY). One-way SA on the prevalence and PPV demonstrated that only the PPV drives the ICER changes. In two-way SA, the lower bound for the two parameters was: prevalence 39.6% and PPV 46.4%. Regardless of prevalence, at PPVs > 46.4% BRC1A-like testing was always cost-effective.

CONCLUSIONS: Treating TNBC with personalized HDAC based on BRC1A-like testing is expected to be cost-effective at a minimum PPV of 46%. This information can help test developers in decisions on further research and development.

CN4
THE APPLICATION OF DRUG PRICES IN ECONOMIC MODELS DUE TO DIFFERING PATIENT WEIGHTS

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OBJECTIVES: Drug costs are generally a key driver of the results of economic models. We tested the impact on drug cost estimates for the following common approaches: using mean patient weight, individual patient weights or fitting a distribution to the observed patient weights.

METHODS: For the analysis, we utilised patient weight and height data from trial CA184-024 (517 patients) in metastatic melanoma. Based on this dataset, costs of a single administration of drug therapy were calculated using UK list prices. Costs were calculated for four recently licensed treatments with different posologies: ipilimumab (mg/kg, with 2 vial sizes), cabazitaxel (mg/m²), ustekinumab (doubled dosage over 100kg patient weight) and romiplostim (µg/kg, with a large, single vial size).

RESULTS: The use of only mean patient weight consistently underestimated costs compared to methods that incorporated the distribution of weight data; sampling from the patient weights. The results increased by 4.9%, 2.3%, 10.3% and 36.6% when fitting a distribution to the patient weights. The use of only mean patient weight weight consistently underestimated costs compared to methods that incorporated the distribution of weight data.

CONCLUSIONS: Accurate estimation of drug costs requires an under- standing of the distribution of patient weights. Failing to take this into account can result in cost estimates that are substantially lower than will be seen in practice, which could (in turn) impact treatment (implementation) decisions. These errors would be further compounded should drug wastage not be adequately captured. Modellers should be mindful of these issues when costing therapies or conducting health technology assessment submissions.