to identify patients who are most likely to benefit. Doing so using clinical-trial data is expensive, thus a mathematical modeling approach is required. METHODS: We developed a framework for stratified cost-effectiveness analysis using individual-based discrete-event simulations, consisting of a natural history component that captures mutation distribution, correlations between mutation status and other covariates (e.g. family history and cancer history), and an outcome component, incorporating survival and mortality, and a health care process component that captures interactions between the patients and the health care system, through genetic testing, screening, diagnosis, and treatment, and their costs. The genetic screening strategy consists of 3 steps: a benefit-risk assessment step, in which patients are assessed for risk of carrying mutations and potential benefits from genetic testing, a genetic testing step, in which qualified patients within an optimal risk bracket are given the appropriate tests and an intervention step, in which patients are given care based on the results from the genetic tests. RESULTS: We use the following approach to explore and identify optimal strategies for 3 genetic screening applications, as demonstrated in response to the required resources in patients at least 25 years old and with a risk of at least 5% was cost effective. Furse et al. showed that single-nucleotide polymorphism (SNP) screening for breast cancer risk for recommending patients to MRI screening was most cost-effective in women aged 50-59 with a 5-year risk of 1.2-1.66%. CONCLUSIONS: As more genetic tests becomes available, this method can be used to identify screening strategies that maximize cost-effectiveness.

PMI124 DISCRETE EVENT SIMULATION FOR THE COST-EFFECTIVENESS EVALUATION OF FET-CT SCANS IN THE DIAGNOSIS OF CONN’S DISEASE IN HYPERTENSIVE PATIENTS

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OBJECTIVES: To develop a flexible and computationally efficient discrete event simulation model that could be extended to other screening applications, comparing the use of FET-CT scans versus current diagnostic procedures for Conn’s disease in hypertensive patients. METHODS: Visual Basic was used for the model simulation with Microsoft Excel constituting the front-end software. In order to ensure a lower level of heterogeneity, individual patients could be assigned risk of personal traits and the clinical, cost and utility inputs were easily adjustable. Individual diagnostic procedures were programmed in separate modules with the aim of simulating potential modifications to the diagnostic pathway. RESULTS: A DES was constructed to evaluate the cost-effectiveness of new treatments based on the experience of patients assigned to intervention and comparator arms. Patients were considered individually in each arm, using the same background morbidity and mortality, with event dependent risk equations enabled efficient model. Linking of endogenous heterogeneity of the population. Continuous time accounting allowed for the modelling of competing adverse events and provided a realistic representation of patients’ experience. Preliminary results indicate that the use of FET-CT scans for the screening of Conn’s syndrome could be cost-effective. CONCLUSIONS: The newly developed model is the formal attempt to evaluate the cost-effectiveness of this alternative screening technique for hypertensive patients who are suspected of suffering from Conn’s disease. The model will be further developed to include probabilistic sensitivity analysis and bootstrapping in order to evaluate the robustness of the potential results. Evolutionary algorithms will be a powerful tool used to find the most optimal treatment strategy of screening patients. As the model will utilise actual patient level data, it could be used by the decision maker to determine the most cost-effective diagnostic strategy.

PMI125 MODELLING LONG-TERM CHANGES IN OPIOID INJECTED CONSTITUTION (OIC) (Attention) A1, Lawson P1, King F1, Marsh K1
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OBJECTIVES: Patients’ experience of OIC may be unstable, with periods of stabilization and non-stabilization, an observation supported by physician reports. There is, however, a lack of quantitative evidence of this experience. Such evidence would be valuable to inform development of economic models for OIC treatments. The objective of this abstract is to fill this gap utilizing data from two pivotal Naloxegol studies, KODIAC 4 and 5, which demonstrated significant improvements in SF-36, in a cost effective manner. METHODS: 892 non-cancer pain patients with OIC were randomized to Naloxegol 25 mg or placebo in two pivotal studies. A 4-week rolling determination of OIC and non-OIC status was adopted. Study week 12 was used in the interest analysis. Patients who were considered to have OIC if they reported ≥3 SBMs for ≥2 out of the 4 weeks of non-drug if reported ≥3 SBMs for ≥3 out of 4 weeks. Those with no OIC status at week 4 were selected as the baseline and first observed OIC status was considered an event. The model was implemented with a Markov model (SGM), and diagnostic, incidence, progression, and mortality risks are modeled. RESULTS: A 16-year longitudinal follow-up (median 8 years) was used to model the change in OIC status over time. Patients who were considered OIC if they reported ≥3 SBMs for ≥2 out of the 4 weeks of non-drug if reported ≥3 SBMs for ≥3 out of 4 weeks. Those with no OIC status at week 4 were selected as the baseline and first observed OIC status was considered an event. The model was implemented with a Markov model (SGM), and diagnostic, incidence, progression, and mortality risks are modeled. RESULTS: Based on the parametric time to event analysis results, the Log-normal distribution was selected as the baseline distribution and provided a plausible long-term projections. Naloxegol had a noticeable separation for extending the time to first event compared to placebo over the projected long-term follow up. CONCLUSIONS: This research demonstrates that the natural fluctuation between OIC and non-OIC is substantial and might require an implementation into an economic model. Even in the absence of treatment, a substantial proportion of patients become non-OIC, and a significant proportion of these remain in non-OIC subsequently. Nevertheless, a treatment effect for Naloxegol was observed over and above this background placebo variation in the experience of OIC.