COST EFFECTIVENESS ANALYSIS OF RIBOCICLIB WITH ENDOCRINE THERAPY FOR THE TREATMENT IN PREMENOPAUSAL WOMEN WITH HR POSITIVE, HER2 NEGATIVE EARLY BREAST CANCER IN THE UK

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BACKGROUND

- Breast cancer is classified via hormone receptor status (HR) and human epidermal growth factor receptor 2 (HER2), and the HR+/HER2– disease is the most common subtype, representing 70% of all breast cancers. Currently, adjuvant endocrine therapy and ovarian function suppression are the National Institute for Health and Care Excellence's (NICE) recommended first-line treatment for patients with early breast cancer in the UK3. Unfortunately, a proportion of early breast cancer population relapse after initial treatment. Therefore, there is a need for a novel intervention that is effective in decreasing the rates of early breast cancer (eBC) disease recurrence in the HR+/HER2– patients population. This economic evaluation is a direct response to the lack of cost-effectiveness evaluation in the UK that assesses the cost-effectiveness of ribociclib with endocrine therapy (ET) compared to endocrine therapy in premenopausal women with hormone receptor-positive, HER2-negative eBC.

OBJECTIVES

- This cost-effectiveness evaluation uses a recent clinical trial (NATALEE) data to evaluate the cost-effectiveness of using ribociclib and endocrine therapy as a first line treatment in premenopausal women with HR+, HER2- Early Breast Cancer in the UK.

METHODS

- A Markov model with five stages was developed from the UK health systems perspective over a lifetime horizon (49 years). Clinical parameters are obtained from the NATALEE trial and survival curves are extrapolated beyond trial period. Costs are derived from previous NICE technology appraisals with similar patient group and UK based data sources, utilities are sourced from literature or previous appraisals with similar patient groups.
- One way sensitivity analysis and probabilistic analyses are conducted. Cost are inflated using the NHS cost inflation index, and a discount rate of 3.5% was applied to both costs and outcomes as per NICE reference case.

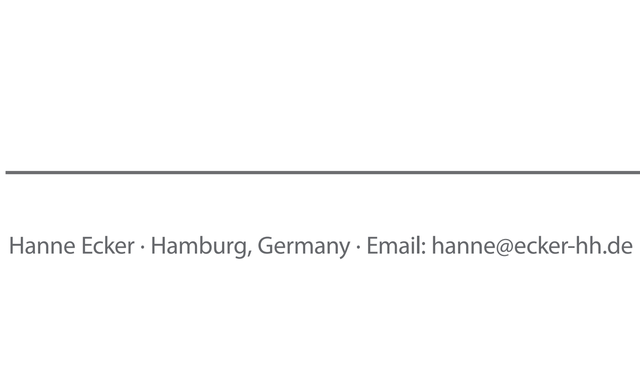
RESULTS

Baseline ICER
(as of Sep 1st, 2016)

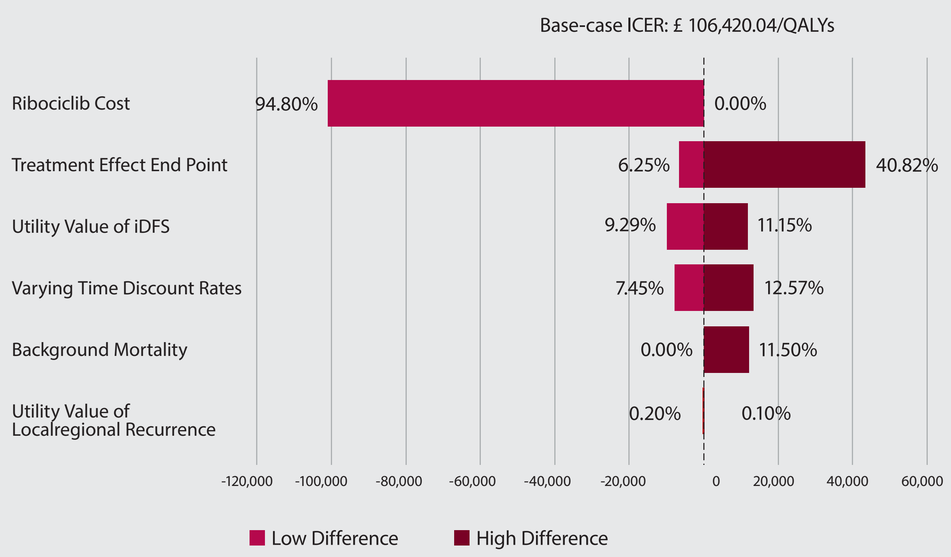
	Ribo + ET	ET	Difference
Costs	£137,408,088.13	£20,907,863.60	£116,500,224.53
QALYs	20,180.22	19,085.50	1,094.72
ICER (ΔCosts/ ΔQALY's)	-	-	£106,420.04

- Baseline ICER is 106,420 pounds per QALY, which is above the NICE cost-effectiveness threshold of 30,000/QALY.

Drug Cost Analysis

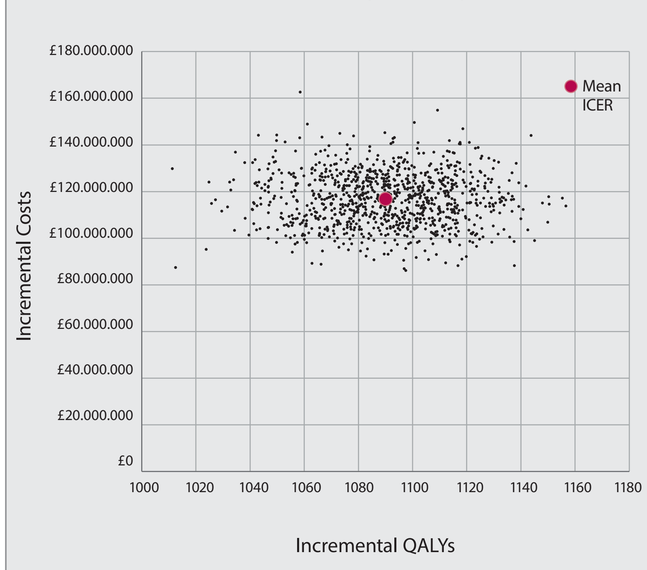


One way sensitivity analysis



- Results suggest that the model is robust against a variety of parameter changes. The variable that has the most significant effect on the ICER is the cost of ribociclib, followed by different treatment effect endpoints and different utility values of the IDFS stage. Background mortality rate calculated from UK life tables was used for locoregional-death and remission-death transition probabilities, which had little impact on overall ICER.
- All parameter changes except for a high ribociclib drug discount rate of 67.5% resulted in an ICER that is above the cost-effectiveness threshold of 30,000 for the UK.

Probabilistic Sensitivity Analysis



- The PSA results support the robustness of this Markov model as none of the simulations where cost-effective and the mean ICER is similar to the base-case ICER.
- It shows that at an ICER threshold of 30,000 pounds per QALY, ribociclib plus endocrine therapy has a 0% chance of being cost-effective compared to endocrine therapy in the UK.

CONCLUSIONS

- At its current list price, ribociclib and endocrine therapy is unlikely to be a cost-effective intervention compared to endocrine therapy in the UK.
- However, the study is subject to limitations and simplifying assumptions. A more sophisticated model, incorporating more comprehensive data, is needed to obtain a definitive conclusion.

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