Cost effectiveness of Lapatinib (Tyverb) for the treatment of women with previously treated advanced or metastatic HER2 positive breast cancer.

National Centre for Pharmacoeconomics **January 2008**

Summary

1. Lapatinib (Tyverb) is a 4-anilinoquinazoline, which inhibits the intracellular tyrosine kinase domains of both EGFR (ErbB1) and ErbB2 (HER2) receptors. Lapatinib, in combination with capecitabine, is indicated for the treatment of patients with advanced or metastatic breast cancer whose tumours overexpress ErbB2 (HER2). Patients should have progressive disease following prior therapy which must include anthracyclines and taxanes and therapy with trastuzumab in the metastatic setting.

2. In December 2007, GlaxoSmithKline Ireland submitted an economic evaluation on the cost effectiveness of lapatinib for the treatment of women with previously treated advanced or metastatic ErbB2 (HER2) positive breast cancer to support its application for reimbursement under the High Tech Drugs scheme. The cost effectiveness of lapatinib in the Irish healthcare system was reviewed using standard criteria.

3. The comparators chosen for the analysis were lapatinib plus capecitabine versus a weighted treatment group including trastuzumab (75% of patients). In the trastuzumab group it was assumed that the drug was combined with vinorelbine in 45% of patients and capecitabine in 30% of patients. It was assumed that the remaining 25% received monotherapy with capecitabine or vinorelbine. We felt the comparators were appropriate as it reflected current clinical practice in Ireland where the majority of patients continue to receive trastuzumab despite clinical progression.

4. There is no direct evidence for lapatinib plus capecitabine versus trastuzumab containing regimens in the treatment of women with HER2 positive metastatic breast cancer following progression on trastuzumab regimens. Consequently, the cost effectiveness of lapatinib was demonstrated using economic modelling incorporating a number of important assumptions. The time horizon for the model was 5 years.

5. Data was presented on the incremental cost effectiveness ratio (ICER) from the Health Service Executive (HSE) perspective. The ICER values were expressed as cost per life year gained (LYG) and cost per quality adjusted life year (QALY). The base case analysis indicated an ICER for lapatinib plus capecitabine versus the weighted basket of comparators to be € 12,230/QALY or € 8,707/LYG.

6. Sensitivity analysis demonstrated that the cost effectiveness of lapatinib was particularly influenced by the cost of lapatinib, drug wastage, extent of trastuzumab use post progression and the progression free hazard ratio for patients receiving trastuzumab. The ICER fell from the base case value of € 12,230/QALY to €3,953/QALY following a 6% reduction in the price of lapatinib.

7. Excluding drug wastage from the treatment groups resulted in an increase in the ICER to € 24,706/LYG and € 34,958/QALY. The model predicts an ICER exceeding the current threshold of € 45,000/QALY when trastuzumab is used in less than 50% of patients post progression. Therefore any change in the extent of trastuzumab use post progression would impact on the cost effectiveness of lapatinib combination therapy. The progression free hazard ratio for trastuzumab increased the ICER to € 17,573/LYG and € 24,248/QALY when trastuzumab efficacy was assumed to be identical to capecitabine monotherapy.

8. A budget impact analysis assumed lapatinib plus capecitabine replaced trastuzumab based regimens only. The submission estimated that 182 patients would be eligible to receive lapatinib plus capecitabine each year. A 50% uptake of the lapatinib combination therapy by year five resulted in estimated expenditure of € 2,075,391. As the combination therapy replaced the more expensive trastuzumab regimens cost savings of € 95,238 were predicted. If all patients eligible to receive the lapatinib combination therapy were treated expenditure would be in the region of € 5.85 million.

9. From the HSE perspective the current submission demonstrates an ICER of € 12,230/QALY which is below the current € 45,000/QALY threshold. However, there were a number of assumptions in the economic model that raise some uncertainty surrounding the ICER calculation. In view of this and the significant budget impact we recommend conditional reimbursement of lapatinib under the High Tech Drugs scheme. A follow up review of the value for money associated with this product is advised .