**Title: Cost utility analysis of tamoxifen for the treatment of advanced breast cancer amongst pre- and peri-menopausal Ghanaian women**

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**Background**

The epidemiology of breast cancer amongst African women varies from those in developed countries. Notably, is the time of presentation to the hospital, the age of onset of disease and survival. Most African women present with advanced breast cancer and at 10-15 years earlier than their counterparts in developed countries who present with early breast cancer. Breast cancer survival rates are higher in developed countries compared to African countries due to reasons including access to the required treatment including hormonal therapy. This study therefore sought to assess the cost effectiveness of tamoxifen, an unpatented and affordable drug, for the hormonal treatment of advanced breast cancer amongst pre- and peri-menopausal women in Ghana compared to no tamoxifen, to inform funding decisions in Ghana and other African countries with similar characteristics.

**Methods**

A Markov model was developed to synthesis data on the effectiveness, costs and outcomes measures (Disability adjusted life years (DALYs) and Quality adjusted life years (QALYs)) of tamoxifen. Effectiveness of tamoxifen, rate of events and utility weights were derived from published literature. Resource utilization and costs were estimated from the Ghana national health insurance scheme tariffs and medicines list, standard treatment guideline and with inputs from a Ghanaian clinical expert. The analysis was conducted from the perspective of the payer.

**Results**

Patients on tamoxifen incurred additional costs, DALYs and QALYs compared to those who didn’t receive tamoxifen. The key driver of costs was the cost of tamoxifen. DALYs averted were less compared to QALYs gained. Consequently, the incremental cost effectiveness ratio (ICER) per DALY averted (GHC 5,582 (USD 1,161)) was higher compared to the ICER per QALY gained (GHC 4,480 (USD 932)). The probability that tamoxifen is cost effective is 51% compared to no tamoxifen at a willingness to pay threshold (WTP) of GHC 4,337 (USD 902). The results were sensitive to variations in the utility weights, the cost of tamoxifen and perspective of analysis. A societal perspective increased the base ICER by 47%, making tamoxifen unlikely to be cost effective. The ICER was driven by costs from productivity loss to patients and family.

**Conclusion**

Tamoxifen improves the survival rates and quality of life of women with advanced breast cancer, as well as avert years lived with disability, providing justification for funding by the government. The choice of an outcome measure has implications on the ICER and subsequently funding decisions made by policy makers considering their WTP.