Is BRCA Mutation Testing Cost Effective for Early Stage Breast Cancer Patients Compared to Routine Clinical Surveillance? The Case of an Upper Middle-Income Country in Asia

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Abstract

Objective Previous studies showed that offering BRCA mutation testing to population subgroups at high risk of harbouring the mutation may be cost effective, yet no evidence is available for low- or middle-income countries (LMIC) and in Asia. We estimated the cost effectiveness of BRCA mutation testing in early-stage breast cancer patients with high pre-test probability of harbouring the mutation in Malaysia, an LMIC in Asia.

Methods We developed a decision analytic model to estimate the lifetime costs and quality-adjusted life-years (QALYs) accrued through BRCA mutation testing or routine clinical surveillance (RCS) for a hypothetical cohort of 1000 early-stage breast cancer patients aged 40 years. In the model, patients would decide whether to accept testing and to undertake risk-reducing mastectomy, oophorectomy, tamoxifen, combinations or neither. We calculated the incremental cost-effectiveness ratio (ICER) from the health system perspective. A series of sensitivity analyses were performed.

Results In the base case, testing generated 11.2 QALYs over the lifetime and cost US$4815 per patient whereas RCS generated 11.1 QALYs and cost US$4574 per patient. The ICER of US$2725/QALY was below the cost-effective thresholds. The ICER was sensitive to the discounting of

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