

## Comparative study of the cost-effectiveness of trastuzumab in the treatment of breast cancer in different countries

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**Background and Aims:** Getting benefit from pharmacoeconomic evaluations are more critical in developing countries, such as Iran, in which economic burden of new and expensive therapies is considerably significant compared to those of developed countries. Since cost-effectiveness study of newly introduced medicines are too costly and time consuming, therefore, these drugs are often being used in daily practice before being truly documented as cost-effective drugs. Comparative studies are appropriate alternatives for these costly and/or prolonged investigations.

Trastuzumab (Herceptin®) is an almost new and expensive medicine that has been introduced in the Iranian pharmaceutical market since 2003, with an annual cost of 308,352,730,640 Rials (~\$US 30,000,000) in the year 2010.

**Method:** All published cost-effectiveness evaluations on using Herceptin® in adjuvant and metastatic phase of breast cancer, which were done during 2002 to 2010, were included in a systematic review. The relevant articles were analyzed and the Incremental Cost-effectiveness Ratios (ICERs) were compared with a criteria introduced by the World Health Organization (WHO).

**Results:** The reported ICERs were between \$90,118 per Quality Adjusted Life Year (QALY) to \$217,264/QALY and \$13,361/QALY to \$65,250/QALY in metastatic and adjuvant phase of breast cancer therapy, respectively. The metastatic ICERs were 8 to 20 times of Iranian Gross Domestic Product (IGDP) per capita whereas the adjuvant phase ICERs were 1.2 to 6 times of IGDP. Sensitivity analysis performed in the published resources shows that the results are more sensitive to discount rate, drug regimen cost, duration of effects of therapy, risk of relapse and metastasis.

**Conclusions:** According to our findings, using Herceptin® could be highly likely cost-effective in younger patients with poor prognosis and higher risk of relapse. It could also be concluded that application of Fluorescence In Situ Hybridization (FISH) test is more cost-effective than the immunohistochemistry (IHC) test in order to determine the HER2<sup>+</sup> patients.

**Key words:** Breast cancer; Trastuzumab; Herceptin; Pharmacoeconomics; Comparative study