

ABSTRACT

# Cost-effectiveness analysis of Trastuzumab Deruxtecan as second-line treatment for HER2-positive advanced breast cancer

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**Objective:** To analyze the cost effectiveness of trastuzumab detrastuzumab (T-Dxd) or trastuzumab emtezumab (T-DM1) in patients with HER2-positive advanced breast cancer who were previously treated with trastuzumab and taxanes.

**Methods:** Based on the perspective of China's health system, a partitioned survival model is constructed to simulate the direct medical costs, life years and quality-adjusted life years of patients throughout their life cycle. The basic scenario set by the model is: based on the data of the Asian-Pacific population in the DESTINY-Breast03 (DB03) phase III clinical trial, the experimental group and the control group were given intravenous infusion of T-Dxd and T-DM1 at a frequency of every 3 weeks respectively until the patients' disease progressed. Clinical effect data and health utility values come from individual patient-level data of the Asia-Pacific population in the DB03 Phase III clinical trial. Direct medical costs include drug costs, follow-up treatment costs, adverse event treatment costs, medical service costs, examination and testing costs, and hospice care costs.

**Results:** In the basic scenario, T-Dxd can reduce the risk of disease progression in patients, and compared with T-DM1, patients' life years and quality-adjusted life years are improved. Calculated based on China's per capita GDP in 2022 (85,698 yuan), the incremental cost-effectiveness ratio (ICER) in the case of donated drugs is within the threshold of 2 times per capita GDP.

**Conclusion:** Trastuzumab Deruxtecan (T-Dxd) can extend the life years and improve the quality of life of patients with indications. Under the condition of drug donation, the use of T-Dxd has a comparative advantage of cost-effectiveness.

**Key words:** cost-effectiveness analysis, trastuzumab deruxtecan, breast cancer, antibody-drug conjugate, economy

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