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Cost-Effectiveness Analysis of Trastuzumab Deruxtecan Versus Chemotherapy for Previously Treated HER2-Positive Gastric Cancer in Singapore

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INTRODUCTION & OBJECTIVE

- The phase II DESTINY-Gastric-01 trial demonstrated that trastuzumab deruxtecan (T-DXd) improved overall survival in Asian patients with human epidermal growth factor receptor 2 (HER2)-positive, advanced gastric or gastroesophageal junction adenocarcinoma that had progressed following two or more treatments, as compared with chemotherapy (irinotecan or paclitaxel monotherapy).
- The Agency for Care Effectiveness (ACE) is the national health technology assessment (HTA) agency in Singapore to guide health policy, drive appropriate use of treatments and inform technology funding decisions. Considering the high cost of T-DXd, we assessed its cost-effectiveness versus chemotherapy from the Singapore healthcare system's perspective.

METHODS

- A partitioned survival model with three health states (progression-free, progressed disease and death) was developed, with a five-year time horizon (Figure 1).
- All patients were assumed to enter the model in the progression-free health state and received either T-DXd or chemotherapy up to disease progression.

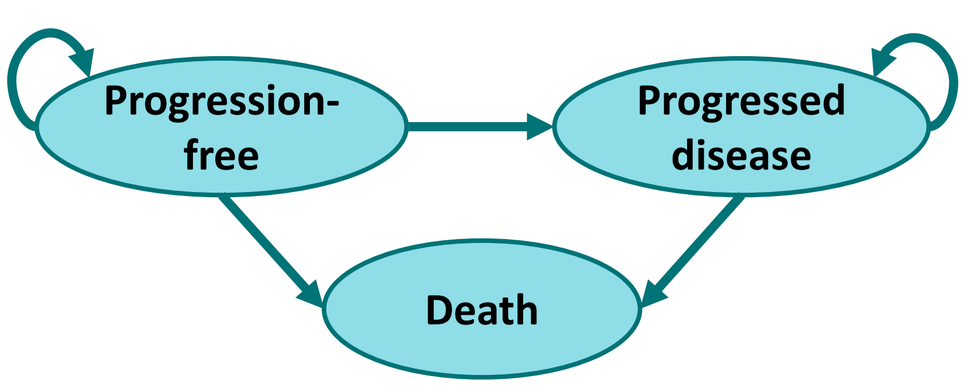

Figure 1. Partitioned survival model with three health states

- Survival curves from DESTINY-Gastric-01 were extrapolated beyond the trial period using standard parametric functions.
- Health state utilities were obtained from published literature and direct costs were sourced from public healthcare institutions in Singapore.
- Utility decrements for adverse events such as interstitial lung disease was incorporated to model the differences in safety profiles between T-DXd and chemotherapy.
- A discount rate of three percent was applied to both costs and outcomes.
- One-way deterministic sensitivity analyses (OWSA) and scenario analyses were conducted to assess parameter and model uncertainties.

RESULTS

- Treatment with T-DXd, compared with chemotherapy, had a high base case incremental cost-effectiveness ratio (ICER) of S$491,448 (US$356,320) per quality-adjusted life-year (QALY) gained.
- The ICER was most sensitive to the cost of T-DXd according to OWSA (Figure 2). Seventy-three percent of the total costs accrued in the T-DXd arm was due to the cost of the drug, compared to seven percent in the chemotherapy arm.
- The ICER was also sensitive to the assumptions around extrapolation of survival curves, but when tested across all scenario analyses, the ICER remained over S$350,000 (US$253,770) per QALY gained.

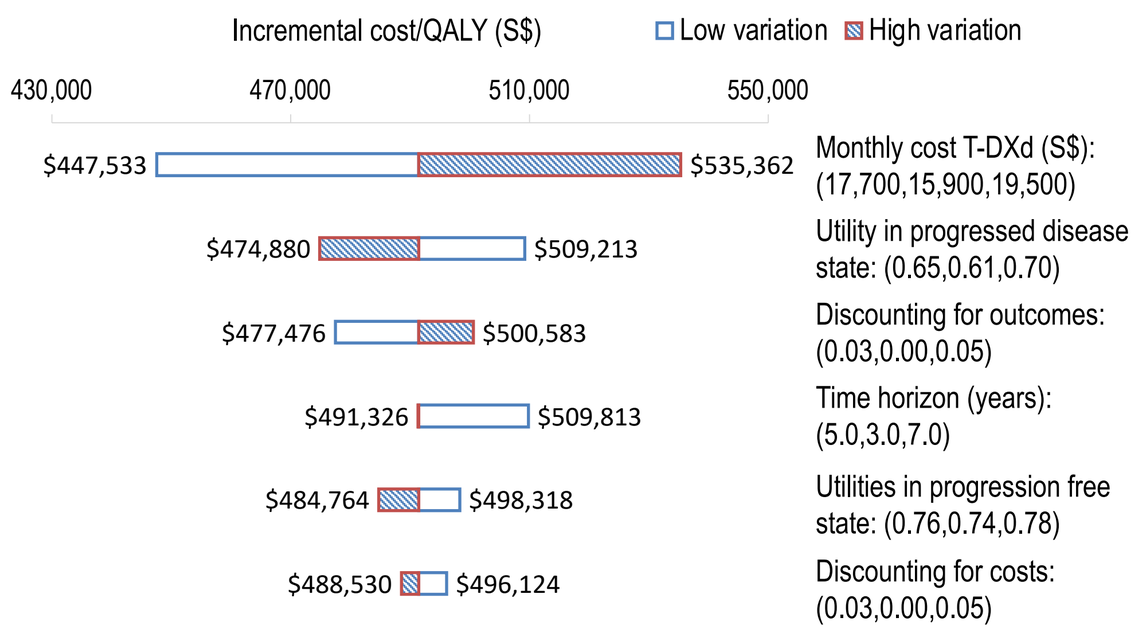

Figure 2. OWSA tornado diagram for T-DXd versus chemotherapy

CONCLUSION

- At the current cost, T-DXd does not represent good value compared with chemotherapy for previously treated HER2-positive gastric cancer in Singapore. The findings from our cost-effectiveness analysis, alongside other considerations, will be useful to inform policy makers on funding decisions.