Cost-effectiveness of zanubrutinib versus ibrutinib in adult patients with Waldenström macroglobulinemia in the United States

Background:

The efficacy of zanubrutinib and ibrutinib was examined in the randomized phase 3 trial ASPEN (NCT03053440) in adult patients with TN and R/R Waldenström macroglobulinemia (WM).

Objective:

To assess the cost-effectiveness of zanubrutinib versus ibrutinib in WM population from a US payer perspective.

Methods:

A partitioned survival model was used to estimate the life years (LYs), quality-adjusted life years (QALYs), and costs for each treatment over a 30-year lifetime horizon. Overall survival (OS), progression-free survival (PFS), and time-to-discontinuation (TTD) curves were fitted using parametric distributions to extrapolate long-term outcomes. Selection of the parametric models for each outcome and treatment was based on assessments of 1) the proportional hazard assumption, 2) goodness-of-fit, and 3) clinical plausibility of extrapolated mean OS and associated hazard patterns (based on literature and US clinical expert input) and the alignment between PFS and TTD. Background US mortality was accounted for in the model. Utilities were based on the ASPEN data and literature. Costs (2020 US$) included drug (wholesale acquisition cost from RED BOOK) and adverse event management (Healthcare Cost and Utilization Project) for zanubrutinib and ibrutinib, routine care, and terminal care. Sensitivity analyses were conducted to evaluate the impact of parameter uncertainty. All outcomes were discounted at 3% annually.

Results:

In the base case analyses for all outcomes over a 30-year time horizon, zanubrutinib led to 0.94 LY and 0.84 QALY gained with an additional total cost of $11,132. This additional cost was primarily driven by patients staying on zanubrutinib treatment longer as zanubrutinib has longer time to treatment failure. However, this is partially offset by zanubrutinib's lower monthly drug acquisition, reduced cost of routine care (–$2,935) and terminal care (–$2,964) compare to ibrutinib. The incremental cost-effectiveness ratio (ICER) of zanubrutinib was $13,205 per QALY gained. The deterministic sensitivity analyses showed that ICER was most sensitive to the monthly costs of routine care. The probabilistic sensitivity analyses showed that the mean probabilistic ICER was $16,804, and that the probability of zanubrutinib being cost-effective was 61% at a willingness-to-pay threshold of $100,000 per QALY gained. Varying the time horizon to 5, 10, or 15 years consistently led to zanubrutinib being dominant (greater QALYs but lower costs).

Conclusions:

Zanubrutinib appears to be cost-effective compared with ibrutinib for the treatment of patients with WM in the US.