Zanubrutinib versus Ibrutinib to Treat Adults with Relapsed or Refractory Chronic Lymphocytic Leukemia / Small Lymphocytic Lymphoma (CLL/SLL): A Cost per Responder Model from a Payer Perspective in the United States

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OBJECTIVE: The phase 3 ALPINE trial (NCT03734016) compared the efficacy and safety of ibrutinib, a first-generation BTK inhibitor, with zanubrutinib, a novel highly selective BTK inhibitor, in patients with relapsed/refractory (R/R) CLL or SLL. This study aimed to estimate the cost per responder (CPR) for zanubrutinib versus ibrutinib in R/R CLL and SLL from a payer perspective in the United States (US).

METHODS: An Excel-based model was developed to estimate the CPR of zanubrutinib versus ibrutinib over a 1-year time horizon. Treatment duration, response rate, and adverse event probabilities were derived from the ALPINE trial. Clinical response in the model was based on the primary endpoint of investigator-assessed overall response rate (ORR). Probabilities of Grade ≥ 3 BTK-class related adverse events were included in the model. Costs (2021 USD) of drug acquisition and adverse events were obtained from the RED BOOK wholesale acquisition costs (WAC) and Healthcare Cost and Utilization Project (HCUP), respectively.

RESULTS: The total direct medical cost per patient treated with ibrutinib was $200,106. The modeled CPR for ibrutinib was $320,170. The total estimated direct medical cost per zanubrutinib patient was $176,248, yielding a CPR of $225,093. A breakeven analysis indicated that the 30-day WAC of ibrutinib would need to be reduced by 30% to achieve parity in the CPR across treatments. Sensitivity analysis indicated that the significant drivers of model outcomes were response rate, drug acquisition cost, and the cost associated with neutropenia.

CONCLUSIONS: The model suggests zanubrutinib is a cost-saving option to achieve clinical response in R/R CLL and SLL, with a lower cost per response compared to ibrutinib from a payer perspective in the US.