BACKGROUND

Acute myeloid leukemia (AML) is a medically challenging disease, it has the lowest survival rates among leukemias.

In Canada, over 1,200 people are diagnosed each year, and over 90% die from the disease. 

Patients with FLT3 mutations have a worse prognosis, with higher rates of relapse and lower rates of survival.

Therapy for AML consists of sequential induction systemic therapy (2-3 months) designed to obtain complete remission (CR), followed by post-remission consolidation therapy (4-6 months). 

Recurrent clonal hematopoiesis (reduction) is the ultimate goal of therapy and it usually decreases the risk of relapse.

Midostaurin (MIDO) is an oral, multi-targeted kinase inhibitor created for treatment of patients with newly diagnosed, FLT3 mutation-positive AML. MIDO is being investigated for treatment of aggressive systemic myelofibrosis and post-remission leukemia and has recently been granted breakthrough therapy designation by the FDA due to significantly improved overall survival rates from the Phase III RITF (R_MIDDLE) clinical trial.

OBJECTIVES

MIDO has been recently approved by the FDA, EMA, and Health Canada for treatment of newly diagnosed FLT3 mutation-positive AML based on positive results of the Phase III RITF trial.

Objectives of this study was to estimate the incremental cost-effectiveness ratio (ICER) of utilizing MIDO plus standard care (MIDO+SOC) followed by MIDO maintenance, compared to SOC for newly diagnosed AML patients.

METHODS

A population survival model was developed to estimate the expected outcomes and costs of MIDO+SOC vs SOC over a 15-year horizon in a Canadian setting.

The model included the following health states:aptation: induction, consolidation, maintenance, CR, relapses, SCT treatment, event, post-SCT treatment, event on CR, overall survival (OS), and adverse events (AEs) were obtained from the MIDO Phase III trial (RITF).

OS was extrapolated beyond the trial horizon using a "lens model" approach and data from the Statistics Canada Vital Statistics Database (2016).

Health state utilities from an AML-specific time trade-off survey were used. Routine care utilization data was obtained from Takeda.

Costs incorporated in the model included drugs/administration, AC treatment, and hospitalization, physician visits, and palliative medical costs.

Unit costs were derived from various sources including the Ontario Cost-Ceiling Initiative (2003/2004). Costs and benefits were discounted at 1.5%.

RESULTS

Figure 3: Long Term Extroproportion of Overall Survival

Figure 4: Cost Effectiveness Plane

Table 1: Summary of predicted resource use by category of cost

Figure 5: Cost Sensitive Threshold (% probability of being cost effective)

Table 3: Base case incremental cost-effectiveness ratios for MIDO vs. SOC

LIMITATIONS

Due to the unavailability of specific data, the durations of SCT and recovery were based on information provided in RITF interim, rather than existing validated data.

No utility data were collected in the RITF trial that this information was derived from previous published literature.

The model was designed so that patients in the SCT health state could change transition out to death or chronic remission, which obviously dictates that no relapse or subsequent therapy occur after SCT.

REFERENCES


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Contact: Anna_Forzyk@novartis.com - +1 646-478-8213

CONCLUSIONS

With a threshold of $100,000 per QALY for cost-effectiveness, MIDO is a cost-effective option for newly-diagnosed FLT3 mutation-positive AML. 

When compared to EMA induction plus standard care, MIDO represents a new cost-effectiveness option.