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Cost-Effectiveness of Momelotinib for Treatment of Myelofibrosis in Taiwan

Digital poster
Supplementary data

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Aims

This study aims to determine the cost-effectiveness of momelotinib for myelofibrosis (MF) from the perspective of Taiwan's National Health Insurance Authority (NHIA).

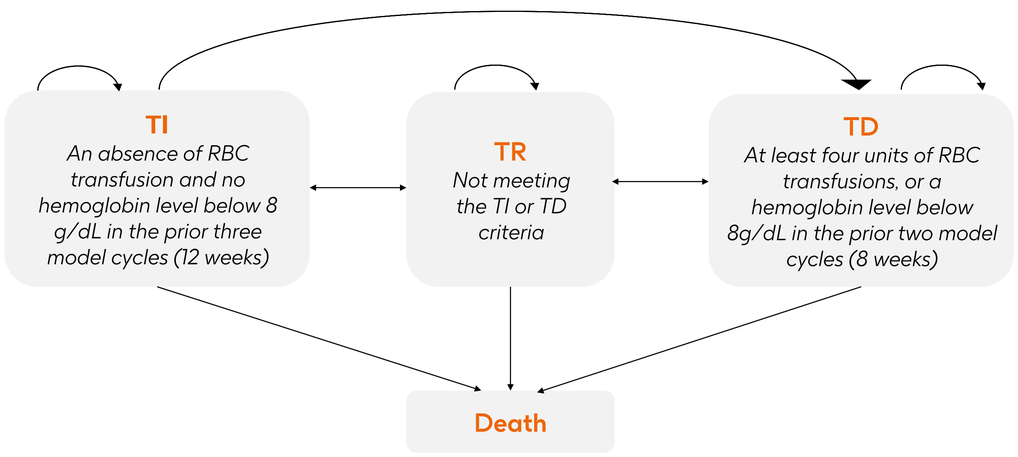
Target population

Target study population comprised adult patients with PMF, PPV-MF, or PET-MF who have or have not been treated with a JAKi (i.e., blended population)

The core model comparators were ruxolitinib (RUX) and best available therapy (BAT) in JAKi-naïve patients and JAKi-experienced patients, respectively (i.e., blended comparator).

Study design

Figure 1: **Markov model structure diagram**



- A Markov model was adopted to estimate health care costs (in 2023 US$) and quality-adjusted life years (QALYs) of momelotinib versus relevant treatments among MF patients, in a 4-week cycle length over a lifetime simulation.
- Modelled health states included transfusion independent (TI), transfusion requiring (TR), transfusion dependent (TD) and death. (Figure 1)
- The base-case discount rate is 3% annually for both costs and outcomes, in line with Taiwan's health economic evaluation guideline[6].

Model assumptions

- The distribution of patients within the JAKi-naïve and JAKi-experienced populations is assumed as 8:92 per local expert opinion. In JAKi-naïve model, they were assumed to receive BAT as subsequent treatment. In the JAKi-experienced model, patients on BAT were assumed not to discontinue treatment while 88.5% MMB patients were assumed to continue to receive MMB after treatment discontinuation.
- Overall survival (OS) was assumed not to vary by treatment.

Model inputs (Additional information provided in supplemental table 1-3.)

- Health-state transition probabilities and health state utility values (HSUVs) were derived from the SIMPLIFY-1[7] and SIMPLIFY-2[8] trials for JAKi-naïve and JAKi-experienced patients, respectively.
- Only grade 3/4 adverse events (AEs) with greater than 5% incidence in any treatment arm in SIMPLIFY-1[7] or SIMPLIFY-2[8] are included in the model.
- Data from the SIMPLIFY-1 and SIMPLIFY-2 trials were used to estimate OS and time to treatment discontinuation (TTD) for each health state in JAKi-naïve and JAKi-experienced patients, respectively.
- Only direct costs were included in this study, which comprise of drug acquisition, subsequent treatment, transfusion, AEs, monitoring, and terminal care.
- All costs were identified from Taiwan-specific sources including NHIA Medical Service online[9] and NHI Annual Medical Expenses Reports[10].

Sensitivity analyses

- In one-way sensitivity analyses (OSWAs), outcome was incremental net monetary benefit (iNMB) of momelotinib vs blended comparator, at the willingness-to-pay (WTP) thresholds of $96,981 per QALY gained.
- Probabilistic sensitivity analyses (PSA) assigned distributions to all model parameters and ran 10,000 simulations to further explore parameter uncertainty.

Results

- Total costs per patient, life years (LYs), and QALYs in the base case are summarized in **Table 1**. MMB is a cost-effective strategy, as it generates 0.255 incremental QALYs and $24,577 incremental costs over a lifetime compared with the blended comparator (RUX and BAT).

Table 1: **Base case results**

Intervention	Total Costs ($)	Total LYs	Total QALYs	Inc. costs ($)	Inc. LYs	Inc. QALYs	ICER ($/QALY)
Blended comparator	170,342	3.750	2.345	-	-	-	-
MMB	194,919	3.918	2.601	24,577	0.169	0.255	**96,193**

- In OWSAs, iNMB were most sensitive to to the overall proportion of RUX in BAT and utility value of TD health state in JAKi experienced patients. (**Figure 2**)
- In PSA, MMB has a 45.4% probability of being cost-effective when compared with blended comparator (RUX and BAT) at the WTP threshold of $96,981 per QALY gained (i.e., three times Taiwan's gross domestic product per capita). (**Figure 3**)

Figure 2. **iNMB tornado diagram**

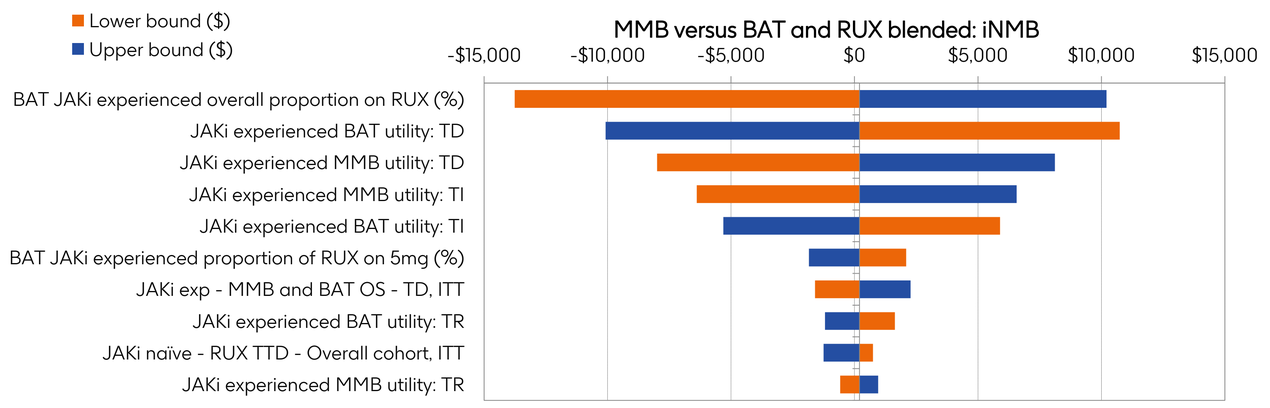
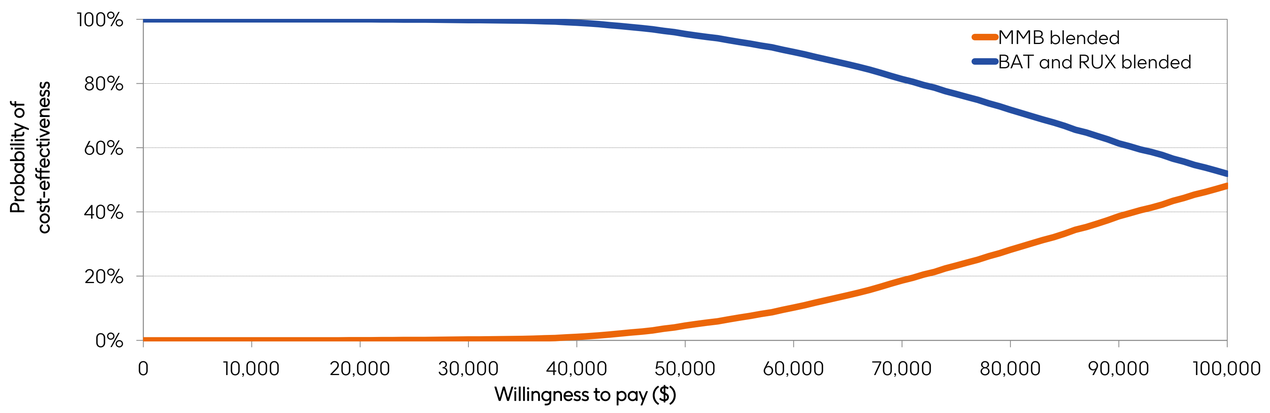


Figure 3. **Cost-effectiveness acceptability curve**



Background

Anemia is one of the serious complications related to myelofibrosis (MF), which reduces patients' quality of life[1], increases mortality[2] and economic burden[3] for affected patients. Approximately 40% of MF patients have hemoglobin levels < 10 g/dL and 25% are transfusion dependent at the diagnosis[4].

Momelotinib (MMB), a JAK1/JAK2/ACVR1 inhibitor with efficacy on MF symptoms, spleen volume while improving related anemia, has been approved for the treatment of myelofibrosis patients with anemia by FDA[5].

Conclusions

Use of momelotinib versus relevant comparator (i.e., RUX and BAT) is cost-effective for MF patients who have or have not been treated with a JAKi.

Momelotinib could be an economically rational alternative over existing treatments for Taiwan MF patients.

Abbreviations

ACVR1, activin A receptor type I; BAT, best available therapy; HSUVs, health state utility values; ICER, incremental cost-effectiveness ratio; Inc, incremental; iNMB, incremental net monetary benefit; JAK, Janus kinase; JAK, Janus kinase inhibitor; LYs, life years; MF, myelofibrosis; MMB, momelotinib; NHIA, National Health Insurance Agency; OS, overall survival; PET-MF, post-essential thrombocythemia myelofibrosis; PMF, primary myelofibrosis; PPV-MF, post-polycythaemia vera myelofibrosis; QALYs, quality-adjusted life years; RBC, red blood cell; RUX, ruxolitinib; TD, transfusion dependent; TI, transfusion independent; TR, transfusion requiring; TTD, time to treatment discontinuation; WTP, willingness-to-pay.

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Disclosures

1. This study is funded by GSK (study no. 222785).
2. TTD Nguyen, ZY Peng, HT Ou and SS Li are funded by GSK to implement this study.
3. YW Chang and YC Wen are GSK employee but didn't hold GSK stocks.

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Additional information for:
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Supplemental Table 1. The composition of the best available therapy as comparator in JAKi-experienced

Medication	Proportion
Ruxolitinib*	88.5%
Hydroxyurea	23.1%
Prednisolone	11.5%
Anagrelide	1..9%
Aspirin	1.9%
No therapy	3.8%

*In the model it was assumed that 15% of patients are on the dose of 5mg BID and 85% are on the dose of 10 or 15 or 20 mg BID as consulted with local clinical experts.

Supplemental Table 2. Dosing and acquisition cost for each therapy in the JAKi-experienced BAT arm

BAT therapy	Unit size	Dose per admin	Admin per cycle	Cost per unit ($)
RUX – 5mg BID	5mg	5mg	56	31.28
RUX – 10mg BID	5mg	10mg	56	31.28
RUX – 15mg BID	15mg	15mg	56	62.56
RUX – 20mg BID	20mg	20mg	56	62.56
Hydroxyurea	500mg	1,000mg	28	0.48
Prednisone/prednisolone	5mg	15mg	28	0.05
Anagrelide	0.5mg	1mg	28	4.81
Aspirin	75mg	75mg	28	0.02
No therapy	0	0	0	0.00

Supplemental Table 3. Health state resource and adverse event costs

Health state resource costs		
Blood test monitoring (per test)	6.25 USD	Taiwan NHI reimbursement price[1]
Follow-up haematology appointment (per visit)	9.56 USD	Taiwan NHI reimbursement price[1]
Red blood cell transfusion (per unit)	57.81 USD	Taiwan NHI reimbursement price[1]
Iron chelation (Deferasirox 360 mg) (per tablet)	18.13 USD	Taiwan NHI reimbursement price[1]
Adverse event costs		
Thrombocytopenia	431.4 USD	Taiwan NHI Annual Medical Expense Report[2]
Neutropenia	431.4 USD	Taiwan NHI Annual Medical Expense Report[2]
Asthenia	32.7 USD	Taiwan NHI Annual Medical Expense Report[2]

[1] Taiwan NHI reimbursement price. Accessed 2024 May 27th. https://www.nhi.gov.tw/ch/np-2462-1.html
[2] Taiwan NHI Annual Medical Expense Report. Accessed 2024 May 27th. https://www.mohw.gov.tw/lp-130-2.html

Abbreviations: BAT, best available therapy; JAKi, Janus kinase inhibitor, NHI, National Health Insurance

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