Cost-effectiveness analysis of momelotinib for the treatment of adult patients with myelofibrosis and anemia in Canada

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In Canada, momelotinib is cost-effective for treating patients with myelofibrosis and moderate to severe anemia compared with ruxolitinib/BAT, regardless of JAK inhibitor status

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Introduction

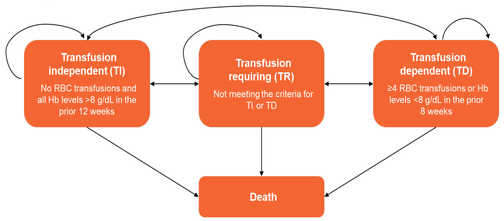
- Anemia is a prevalent feature of myelofibrosis associated with worse survival and quality of life and higher healthcare resource utilization (HCRU) and costs[1,2]
- The Janus kinase (JAK) inhibitors ruxolitinib, fedratinib, and pacritinib have shown clinical benefit in managing splenomegaly and constitutional symptoms in myelofibrosis; however, ruxolitinib and fedratinib do not address and may worsen anemia, while pacritinib is approved only in the US for patients with low platelet counts (<50 × 10^9/L)[3]
- Momelotinib, a JAK1/JAK2/activin A receptor type 1 inhibitor, was approved by Health Canada in November 2024 for the treatment of adults with myelofibrosis with moderate to severe anemia and has demonstrated spleen and symptom responses as well as anemia benefits in patients with and without JAK inhibitor experience[3-7]
- Minimal literature exists evaluating the cost-effectiveness of myelofibrosis treatments in Canada
  - Only 1 model has been published comparing ruxolitinib with best available therapy (BAT) in JAK inhibitor–naive patients, with an incremental cost-effectiveness ratio (ICER) of CAD $61,444 per quality-adjusted life-year (QALY); however, this model was published >10 years ago (2012) and prior to momelotinib approval[8]
- The current cost-effectiveness model estimated the costs and health outcomes associated with momelotinib vs ruxolitinib/BAT in treating patients with myelofibrosis with and without JAK inhibitor experience and who have moderate to severe anemia

Methods

Model Overview

- This Markov model compared costs (in 2024 CAD$) and health outcomes (life-years [LYs] and QALYs) among Canadian adults with intermediate- or high-risk myelofibrosis and moderate to severe anemia (hemoglobin [Hb] level <10 g/dL) treated with momelotinib, ruxolitinib (JAK inhibitor naive), or BAT (JAK inhibitor experienced), in alignment with the populations of the phase 3 SIMPLIFY-1 and -2 trials[6,7]
- The model structure consisted of 4 health states, including transfusion status, which was defined based on key secondary endpoints from SIMPLIFY-1 and -2 (**Figure 1**)
- The core comparison was momelotinib vs ruxolitinib/BAT; comparisons with pacritinib and fedratinib were not included due to lack of approval in Canada (pacritinib) and limited patient access (fedratinib)
- The probabilistic base case analysis was conducted in a pooled JAK inhibitor–naive (15%) and –experienced (85%) population from a Canadian public healthcare payer perspective, assuming a lifetime time horizon of 33 years and a 1.5% discount rate per annum for costs and outcomes

Figure 1: **Markov Model Structure With Health States**



Hb, hemoglobin; RBC, red blood cell; TD, transfusion dependent; TI, transfusion independent; TR, transfusion requiring.

Model Assumptions

- The patient populations in SIMPLIFY-1 and -2 were assumed to be representative of the patient population with myelofibrosis treated in Canadian clinical practice
- Patients who discontinued treatment were assumed to receive BAT; patients on BAT were assumed not to discontinue treatment
- Overall survival was assumed not to vary by treatment; patients who were transfusion independent (TI) were assumed to have lower mortality than patients who were transfusion requiring or transfusion dependent

Model Inputs

Clinical

- Health-state transition probabilities were estimated for momelotinib and ruxolitinib/BAT and assumed to be constant after the SIMPLIFY-1 and -2 trial period
- Health-state utility values were estimated from EQ-5D-5L questionnaire responses (Canadian tariff)
- Adverse event (AE) rates and time to discontinuation for momelotinib and ruxolitinib/BAT were based on SIMPLIFY-1 and -2
  - Grade 3/4 AEs with >5% incidence in any treatment arm were included

Economic

- Treatment-agnostic HCRU–related costs in each health state were derived from the schedule of benefits published by the Ontario Health Insurance Plan at a cost year of 2024
  - Health state costs included red blood cell transfusions, monitoring, and disease management
- Additional costs included drug acquisition and administration, subsequent treatment (assumed to be BAT), AEs, and terminal care; no indirect costs were included

Sensitivity Analyses

- Probabilistic sensitivity analyses (PSAs) were conducted to assess robustness of results to changes in model parameters
  - Outcomes included incremental costs for momelotinib vs ruxolitinib/BAT per incremental LY and QALY gained as well as total cost difference for momelotinib vs ruxolitinib/BAT across willingness-to-pay (WTP) thresholds of CAD $0 to $100,000 in $10,000 increments
- PSA simulations (5000) were used to generate mean total costs, QALYs, and ICERs vs ruxolitinib/BAT
- Scenario analyses, including subpopulations based on JAK inhibitor exposure, were also conducted
- Additional details on model assumptions and inputs can be found by scanning the **QR code**

Conclusions

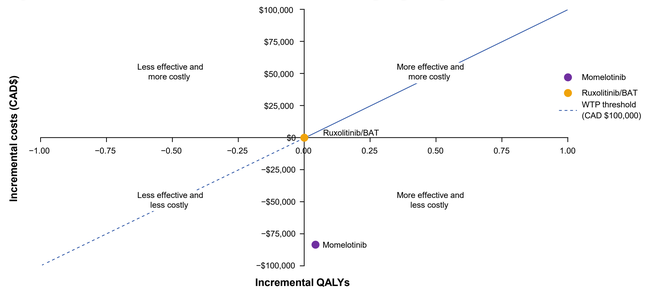
- This analysis suggests that momelotinib is cost-effective for treating JAK inhibitor–naive and –experienced Canadian patients with myelofibrosis and moderate to severe anemia compared with ruxolitinib/BAT
  - Momelotinib was associated with lower costs and increased LYs and QALYs
- Patients treated with momelotinib were transfusion independent for longer, which was associated with a mortality benefit and improved QALYs and may also provide cost savings from a Canadian healthcare payer perspective
- This analysis represents the first Canadian-based cost-effectiveness study focusing on momelotinib vs ruxolitinib/BAT in a JAK inhibitor–naive and –experienced population, complementing existing clinical trial results and supporting the use of momelotinib as a cost-effective option in these patients

Results

Cost-Effectiveness

- Incremental and total mean per-patient costs, LYs, and QALYs for the pooled JAK inhibitor–naive and –experienced population in the base case are summarized in **Figure 2** and **Table 1**
  - Momelotinib was preferred over ruxolitinib/BAT in terms of costs (CAD $82,551 total savings), LYs (0.058 incremental LYs), and QALYs (0.043 incremental QALYs)
  - Momelotinib was in the southeast quadrant of the cost-effectiveness plane, suggesting that it is both cost saving and effective

Figure 2: **Incremental Cost-Effectiveness Plane Highlighting Preference of Momelotinib**



The blue line indicates the WTP threshold (CAD $100,000). Quadrants below the horizontal line are cost saving; quadrants to the right of the vertical line are clinically beneficial. Thus, therapies in the lower right quadrant are more effective and have decreased costs.
BAT, best available therapy; QALY, quality-adjusted life-year; WTP, willingness to pay.

Table 1: **Base Case Results (JAK Inhibitor–Naive and –Experienced Pooled Population)**

Comparator	Total			Incremental			
	Costs[a]	LYs	QALYs	Costs[a]	LYs	QALYs	ICER
Ruxolitinib/BAT	$247,509	2.934	2.167	–	–	–	–
Momelotinib	$164,959	2.992	2.210	−CAD $82,551	0.058	0.043	Dominating

BAT, best available therapy; ICER, incremental cost-effectiveness ratio; JAK, Janus kinase; LY, life-year; QALY, quality-adjusted life-year.
[a] Costs were rounded to the nearest whole CAD$.

Clinical Outcomes

- As shown in **Table 2** and **Table 3**, patients treated with momelotinib vs ruxolitinib/BAT spent more time in the TI state
  - LYs in the TI state were 1.36 for momelotinib vs 1.16 for ruxolitinib/BAT; QALYs were 1.03 vs 0.88, respectively

Table 2: **Base Case Probabilistic LYs by Health State**

Health state	Momelotinib	Ruxolitinib/BAT	Momelotinib vs ruxolitinib/BAT
			Increment
TI	1.359	1.155	0.204
TR	0.620	0.657	−0.037
TD	1.014	1.123	−0.109
Total	**2.992**	**2.934**	**0.058**

BAT, best available therapy; LY, life-year; TD, transfusion dependent; TI, transfusion independent; TR, transfusion requiring.

Table 3: **Base Case Probabilistic QALYs by Health State**

Health state	Momelotinib	Ruxolitinib/BAT	Disutilities momelotinib[a]	Disutilities ruxolitinib/BAT[a]	Momelotinib vs ruxolitinib/BAT
					Increment
TI	1.030	0.878	0.006	0.003	0.152
TR	0.450	0.478	0.003	0.001	−0.029
TD	0.731	0.811	0.004	0.003	−0.081
Total	**2.210**	**2.167**	**0.013**	**0.007**	**0.043**

AE, adverse event; BAT, best available therapy; QALY, quality-adjusted life-year; TD, transfusion dependent; TI, transfusion independent; TR, transfusion requiring.
[a] Represents negative quality-of-life impact of grade 3/4 AEs with >5% incidence in any treatment arm in SIMPLIFY-1 and -2; anemia AEs were accounted for by transfusion status and not included.

Cost Outcomes

- Total mean per-patient costs by category for the probabilistic base case are summarized in **Table 4**
  - Momelotinib incurred lower additional costs than ruxolitinib/BAT except AE costs likely due to BAT including "no therapy" as an option

Table 4: **Base Case Probabilistic Cost by Category (2024 CAD$)**

Cost category	Momelotinib costs	Ruxolitinib/BAT costs	Momelotinib vs ruxolitinib/BAT
			Increment
Drug acquisition	$90,756	$164,879	−$74,123
Drug administration	$0	$227	−$227
Health state costs (RBC transfusion, monitoring, and disease management)	$26,566	$28,969	−$2,403
AE costs	$8,181	$4,314	$3,866
Subsequent treatment[a]	$16,465	$26,109	−$9,644
Terminal care	$22,990	$23,011	−$21
Total cost	**$164,959**	**$247,509**	**−$82,551**

AE, adverse event; BAT, best available therapy; RBC, red blood cell.
[a] Assumed to be BAT.

Sensitivity Analyses

- All scenario analyses were aligned in favor of momelotinib (**Table 5**)

Table 5: **Scenario Analysis Consistently Highlighting Preference for Momelotinib[a]**

Scenario	Base case parameter	Incremental			
		Costs (CAD$)	LYs	QALYs	ICER
Base case	–	−$82,551	0.058	0.043	Momelotinib dominant
1: Societal perspective	Ministry of Health	−$82,109	0.070	0.052	Momelotinib dominant
2: No half cycle correction	Yes	−$83,331	0.070	0.052	Momelotinib dominant
3: 0% discount for costs and outcomes	1.5% discount	−$86,813	0.073	0.054	Momelotinib dominant
4: 3% discount for costs and outcomes	1.5% discount	−$77,603	0.067	0.050	Momelotinib dominant
5: JAK inhibitor naive	Pooled	−$91,420	0.044	0.046	Momelotinib dominant
6: JAK inhibitor experienced	Pooled	−$80,286	0.075	0.053	Momelotinib dominant
7: Hb <12 g/dL	Hb <10 g/dL	−$141,337	0.144	0.109	Momelotinib dominant
8: LOCF – no improvement and pooled for cycles 5 and 6	Pooled for cycles 5 and 6	−$76,465	0.083	0.064	Momelotinib dominant
9: Pooled for last 3 cycles	Pooled for cycles 5 and 6	−$84,331	0.077	0.058	Momelotinib dominant
10: Overall cohort mortality	TI vs non-TI mortality	−$116,976	0.012	0.008	Momelotinib dominant
11: OS distribution – gamma	Log-logistic	−$90,486	0.066	0.049	Momelotinib dominant
12: BAT data source – clinical expert survey	SIMPLIFY-2	−$58,832	0.070	0.052	Momelotinib dominant
13: RBC transfusions data source – clinical expert survey	SIMPLIFY-1/-2	−$83,013	0.070	0.052	Momelotinib dominant
14: Include anemia costs and disutilities	Exclude	−$83,682	0.070	0.055	Momelotinib dominant
15: Exclude age-adjusted utilities	Include	−$81,973	0.070	0.052	Momelotinib dominant
16: Exclude AE disutilities	Include	−$81,973	0.070	0.059	Momelotinib dominant

AE, adverse event; BAT, best available therapy; Hb, hemoglobin; ICER, incremental cost-effectiveness ratio; JAK, Janus kinase; LOCF, last observation carried forward; LY, life-year; OS, overall survival; QALY, quality-adjusted life-year; RBC, red blood cell; TI, transfusion independent.
[a] Probabilistic results are presented with deterministic results for scenario analyses. Deterministic base case results for momelotinib yielded CAD −$81,973 incremental costs, 0.070 incremental LYs, and 0.052 QALYs.

- Based on congruence test results (**Figure 3**), PSA stability was achieved at approximately 500 iterations, with 5000 selected for sufficient stability without incurring significant runtime
- PSAs were similar to deterministic results, demonstrating cost-effectiveness probabilities of momelotinib across all WTP thresholds (**Figure 4**)
  - At all WTP thresholds up to CAD $100,000, momelotinib has a 100% probability of being cost-effective vs ruxolitinib/BAT

Figure 3: **PSA Congruence Test Demonstrating Convergence After 500 Iterations**

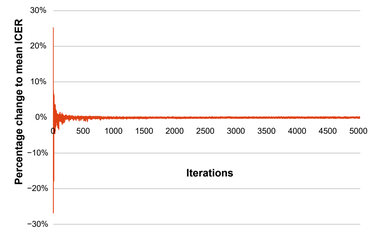
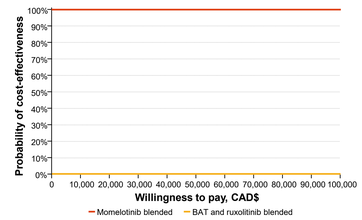


Figure 4: **Acceptability Curves Showing Sustained 100% Probability of Momelotinib Cost-Effectiveness Across WTP Thresholds**

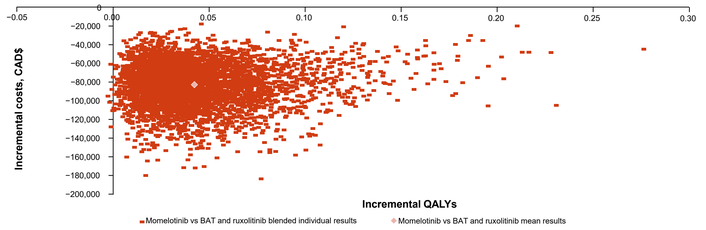


ICER, incremental cost-effectiveness ratio; PSA, probabilistic sensitivity analysis.

BAT, best available therapy; WTP, willingness to pay.

- ICERs for momelotinib vs ruxolitinib/BAT from PSA simulations are shown in **Figure 5** (each point represents 1 simulation), illustrating the impact of varying model parameters to account for uncertainty on the results
  - Momelotinib remained in the southeast quadrant in 99.7% of simulations

Figure 5: **Cost-Effectiveness Scatterplot Showing Consistent Preference for Momelotinib vs Ruxolitinib/BAT**



BAT, best available therapy; QALY, quality-adjusted life-year.

Discussion

- These results are specific to the treatment of myelofibrosis in adult patients with moderate to severe anemia who are JAK inhibitor naive or experienced and residing in Canada
- Momelotinib approval in both JAK inhibitor–naive and –experienced patients with moderate to severe anemia warranted the pooled analysis; however, results were consistent for analyses by JAK inhibitor exposure as momelotinib remained dominant
- The value of momelotinib is represented through transfusion status and not other endpoints (Total Symptom Score, splenic response rate); this approach is assumed appropriate given the impact of transfusion burden on quality of life in myelofibrosis[1]
- Potential sources of bias include sourcing for model inputs as these were limited to available clinical trial data, resulting in assumptions that may be modified as more data become available

Abbreviations

AE, adverse event; BAT, best available therapy; Hb, hemoglobin; HCRU, healthcare resource utilization; ICER, incremental cost-effectiveness ratio; JAK, Janus kinase; LOCF, last observation carried forward; LY, life-year; OS, overall survival; PSA, probabilistic sensitivity analysis; QALY, quality-adjusted life-year; RBC, red blood cell; TD, transfusion dependent; TI, transfusion independent; TR, transfusion requiring; WTP, willingness to pay.

References

1. Naymagon L, Mascarenhas J. *Hemasphere*. 2017;1(1):e1.
2. Gerds AT, et al. ASH 2022. Poster 1729.
3. Thaw K, et al. *Curr Hematol Malig Rep*. 2024;19(6):264-275.
4. GSK. Accessed February 28, 2025.https://ca.gsk.com/en-ca/media/press-releases/ojjaara-momelotinib-approved-in-canada-for-the-treatment-of-myelofibrosis-in-adults-who-have-moderate-to-severe-anemia/
5. Verstovsek S, et al. *Lancet*. 2023;401(10373):269-280.
6. Mesa RA, et al. *J Clin Oncol*. 2017;35(34):3844-3850.
7. Harrison CN, et al. *Lancet Haematol*. 2018;5(2):e73-e81.
8. Ouagari KE. *Blood*. 2012;120(21):4255.

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