

The Burden of Illness and the Incremental Burden of Transfusion Dependence in Myelofibrosis in the United States

Poster 1729

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Introduction

Anemia is a key hallmark of myelofibrosis that increases in frequency and severity with disease progression¹

Approximately one-quarter of all patients with myelofibrosis are transfusion dependent at the time of diagnosis,¹ and nearly all develop transfusion dependence (TD) over time, which is associated with poor prognosis²⁻⁴

The burden of illness, incremental resource utilization, and costs for myelofibrosis-associated anemia, and TD remain poorly understood

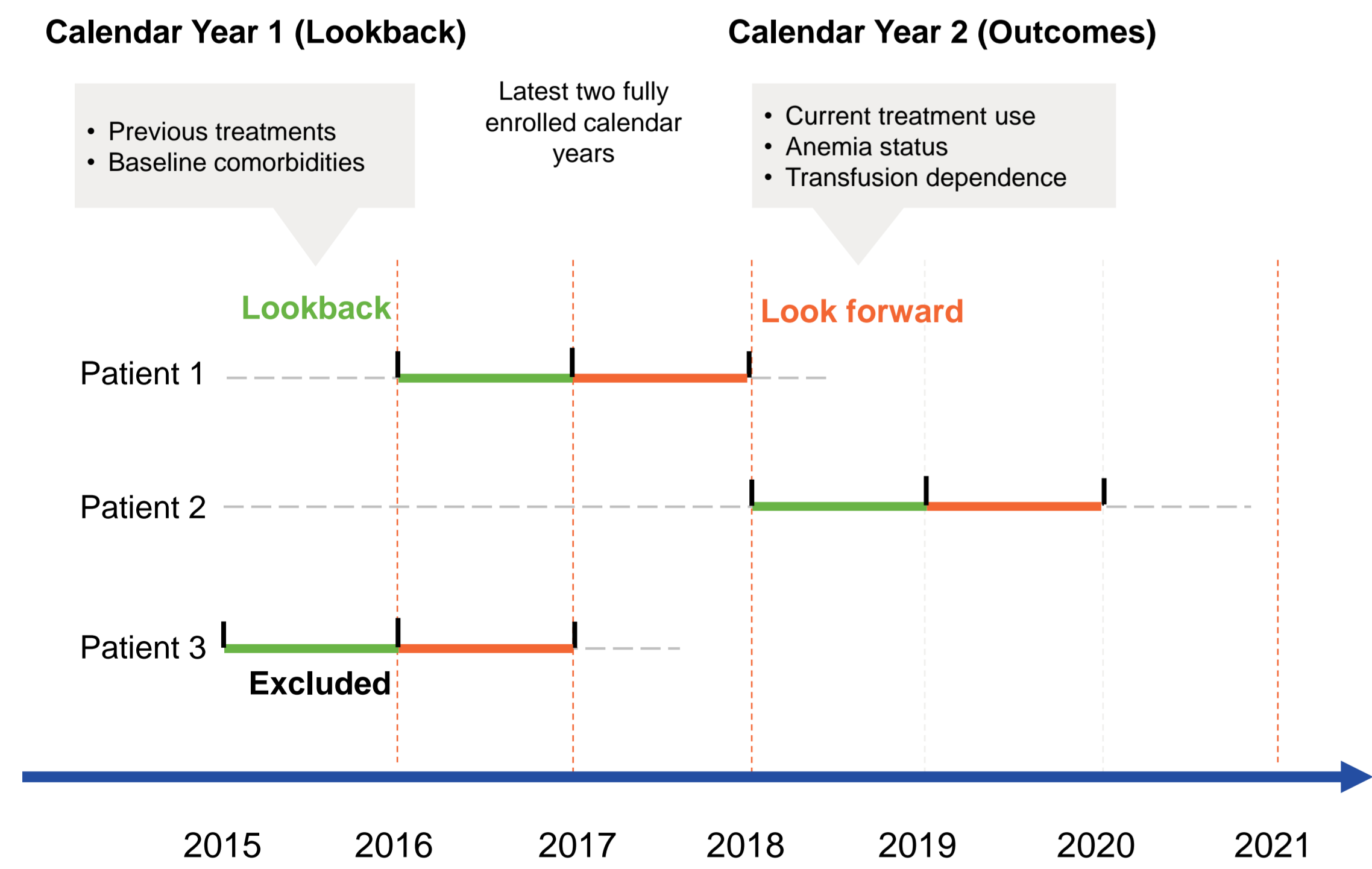
Objective

To quantify the incremental health care resource utilization and costs associated with TD in patients with myelofibrosis

Methods

- This retrospective study included patients with ≥2 claims with International Classification of Disease, Tenth Revision (ICD)-10 diagnosis codes for myelofibrosis in the IBM® MarketScan® Commercial Claims and Encounters Database, which encompasses over 215 million patients covered by employer-sponsored private health insurance in the United States (US)
- Patients were required to have at least two calendar years of continuous enrollment in the database between 2016 and 2021
- The most recent two calendar years of continuous enrollment for each patient were examined as the study period; a one-year lookback provided baseline data, including prior treatment and comorbidities
- Outcomes were assessed in the calendar year beginning January 1 of the second year of the study period (ie, index date)
- Definition of patient with myelofibrosis: ≥2 claims (all time) for either D75.81 myelofibrosis or D47.4 osteomyelofibrosis

Figure 1. Study Period Includes Two Calendar Years With Continuous Enrollment Between 2016 and 2021 for Each Patient



Results

Table 1. Transfusion-Dependent Patients Are Generally Older and Have a Higher Comorbidity Burden in Unmatched Cohorts

	TI (n=1242 [74%])	TR (n=296, [18%])	TD (n=139 [8%])
Age, y			
Mean (SD)	59.0 (14.5)	62.3 (14.9)	65.8 (13.7)
Median	60.0	62.0	65.0
CCI			
Mean (SD)	1.7 (2.0)	3.0 (2.4)	3.2 (2.7)
Median	2.0	3.0	2.0
Transfusion episodes (per calendar year)			
Mean (SD)	0 (0)	6.3 (8.7)	30.8 (38.6)
Median	0	3.0	18.0
Patients using JAKi, %	17	33	50
Patients using myelofibrosis or anemia treatment, %	39	58	75

CCI, Charlson Comorbidity Index; JAKi, Janus kinase inhibitor; TD, transfusion dependence (patients with ≥2 transfusions in any single month); TI, transfusion independence (patients without any transfusion during the study period); TR, transfusion-requiring (patients with <2 transfusions in any single month, but do not meet the definition of no transfusion [TI]).

- While patients with myelofibrosis were segmented according to their transfusion activity, underlying characteristics may drive utilization differences
- Only ~5% of all patients required more than 20 transfusions; 50% of all TD patients required ≥20 transfusions

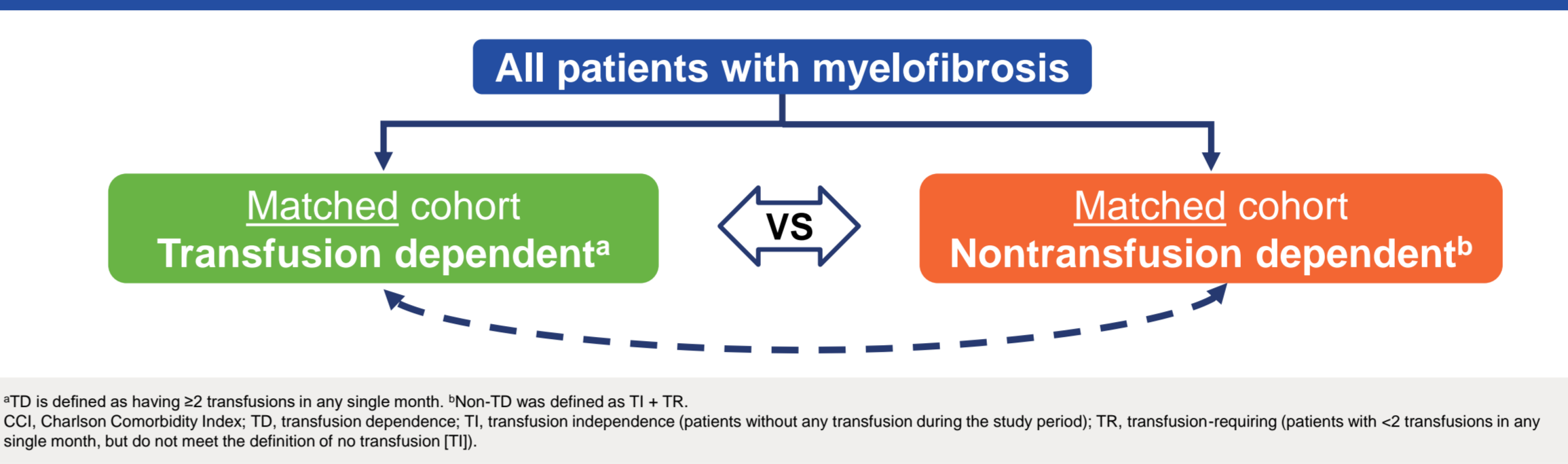
Table 2. Transfusion Burden in Patients With Myelofibrosis Is Correlated With Increases in Health Care Resource Utilization and Cost Metrics in Unmatched Cohorts

	TI (n=1242)	TR (n=296)	TD (n=139)
Hospitalizations			
Mean (SD)	0.2 (1.1)	0.6 (1.1)	2.0 (2.2)
Median	0	0	1.0
OP visits			
Mean (SD)	6.7 (12.9)	17.4 (18.3)	48.4 (34.3)
Median	4.0	12.0	41.0
ER visits			
Mean (SD)	0.5 (1.2)	0.9 (1.7)	2.2 (2.6)
Median	0	0	1.0
Other site visits			
Mean (SD)	20.4 (15)	28.2 (28.8)	43.2 (31.3)
Median	26.1	20.0	38.0
Total medical cost			
Mean (SD)	\$28,300 (97,800)	\$71,300 (129,000)	\$256,700 (312,400)
Median ^a	\$6200	\$19,100	\$128,500
Total pharmacy cost			
Mean (SD)	\$33,700 (56,800)	\$55,700 (71,700)	\$60,600 (56,800)
Median ^a	\$2400	\$13,700	\$25,400

^aAll costs were rounded to the nearest \$100. ER, emergency room; OP, outpatient; TD, transfusion dependence (patients with ≥2 transfusions in any single month); TI, transfusion independence (patients without any transfusion during the study period); TR, transfusion-requiring (patients with <2 transfusions in any single month, but do not meet the definition of no transfusion [TI]).

- There was a significant difference in hospitalization rates and total medical costs between the three cohorts, but analysis of potential confounders (eg, age or health status) is needed to better understand the impact of TD

Figure 2. TD and Non-TD Patients Were Exact Matched Based on Age, Sex, and CCI Score



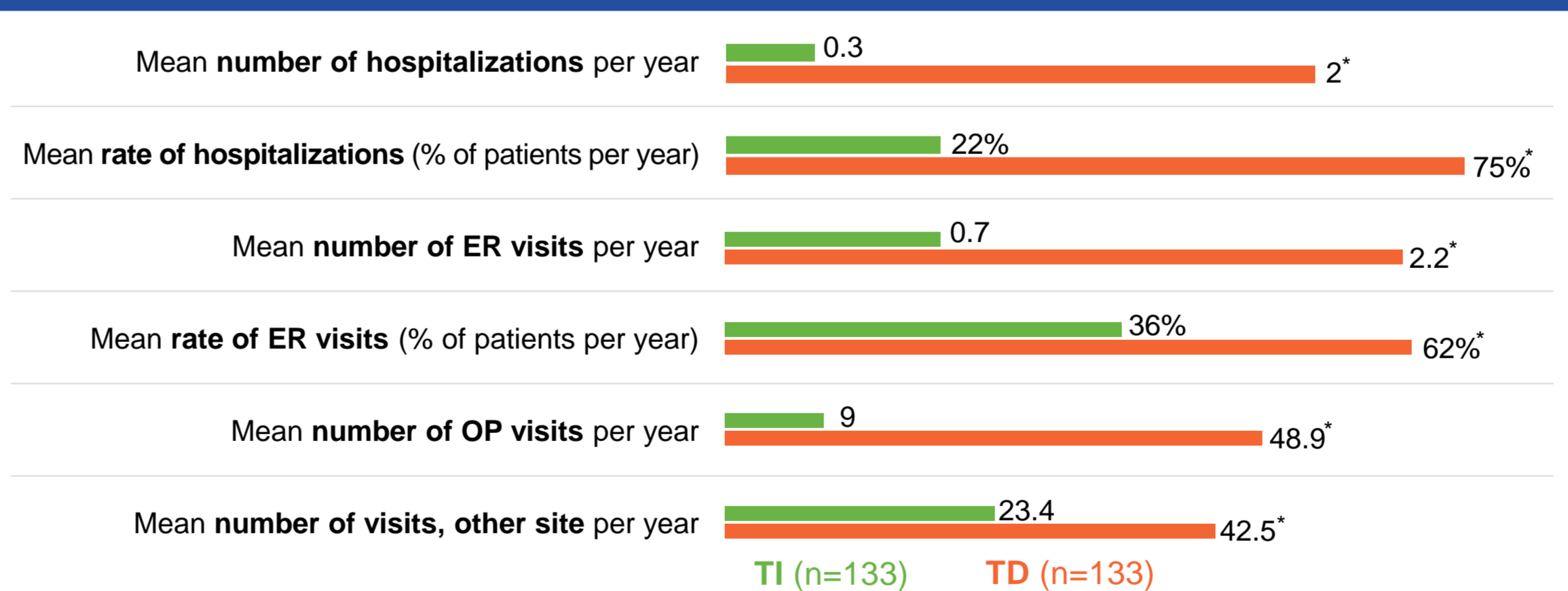
- Anemia was defined by diagnosis codes or anemia-related treatments
- Outcomes included adverse events (AE, ICD-10 codes), health care resource utilization, and costs (US dollars)
- Chi-squared tests were used for proportional metrics; t-tests were used for continuous metrics

Table 3. Transfusion-Dependent Patients Showed Statistically Significant Increases in Health Care Resource Utilization in Matched TD Versus Non-TD Cohorts

Health care resource utilization measures	Non-TD (n=133)	TD (n=133)	TD – non-TD delta [95% CI]	Significance at α=5%
Hospitalizations				
Mean (SD)	0.3 (0.9)	2.0 (2.2)	1.6	Yes
Median	0	1.0	[1.2-2.0]	
OP visits				
Mean (SD)	9.0 (13.7)	48.9 (34.3)	39.9	Yes
Median	5.0	42.0	[33.6-46.2]	
ER visits				
Mean (SD)	0.7 (1.5)	2.2 (2.6)	1.5	Yes
Median	0	1.0	[1.0-2.0]	
Other site visits				
Mean (SD)	24.3 (36.1)	42.5 (31.8)	18.2	Yes
Median	16.0	35.0	[10.0-26.4]	
Patients with hospitalizations, n (%)	29 (21.8)	100 (75.0)	[4.51-26.20]	Yes
Patients with ER visits, n (%)	48 (36.1)	83 (62.4)	2.94	Yes
			[1.28-6.75]	

ER, emergency room; OP, outpatient; TD, transfusion dependence (patients with ≥2 transfusions in any single month).

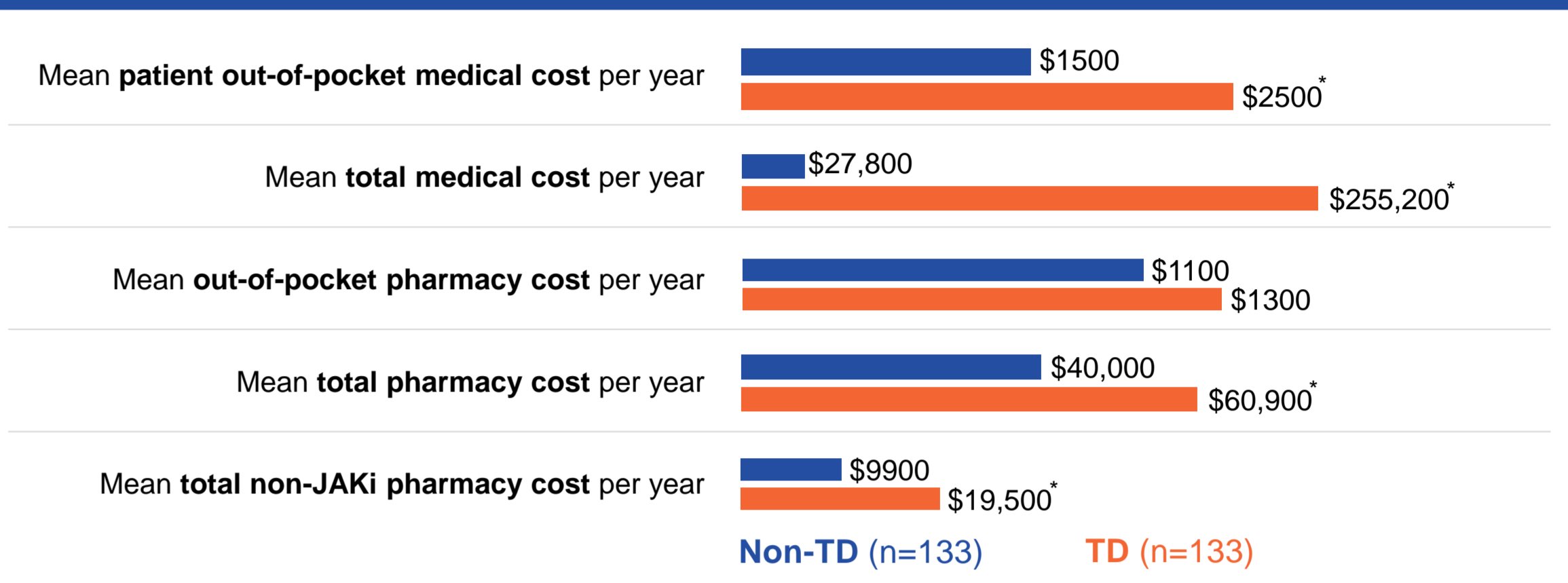
Figure 3. Transfusion-Dependent Patients Have Significantly Higher Health Care Resource Utilization Compared With Transfusion-Independent Patients in Matched Cohorts



^aSignificantly different at α=5%. ER, emergency room; OP, outpatient; TD, transfusion dependence (patients with ≥2 transfusions in any single month); TI, transfusion independence (patients without any transfusion during the study period).

- Higher hospitalizations and emergency room utilization are present in TD patients even after controlling for comorbidity burden
- The mean values are higher than the medians, suggesting a small amount of high utilization or sicker patients

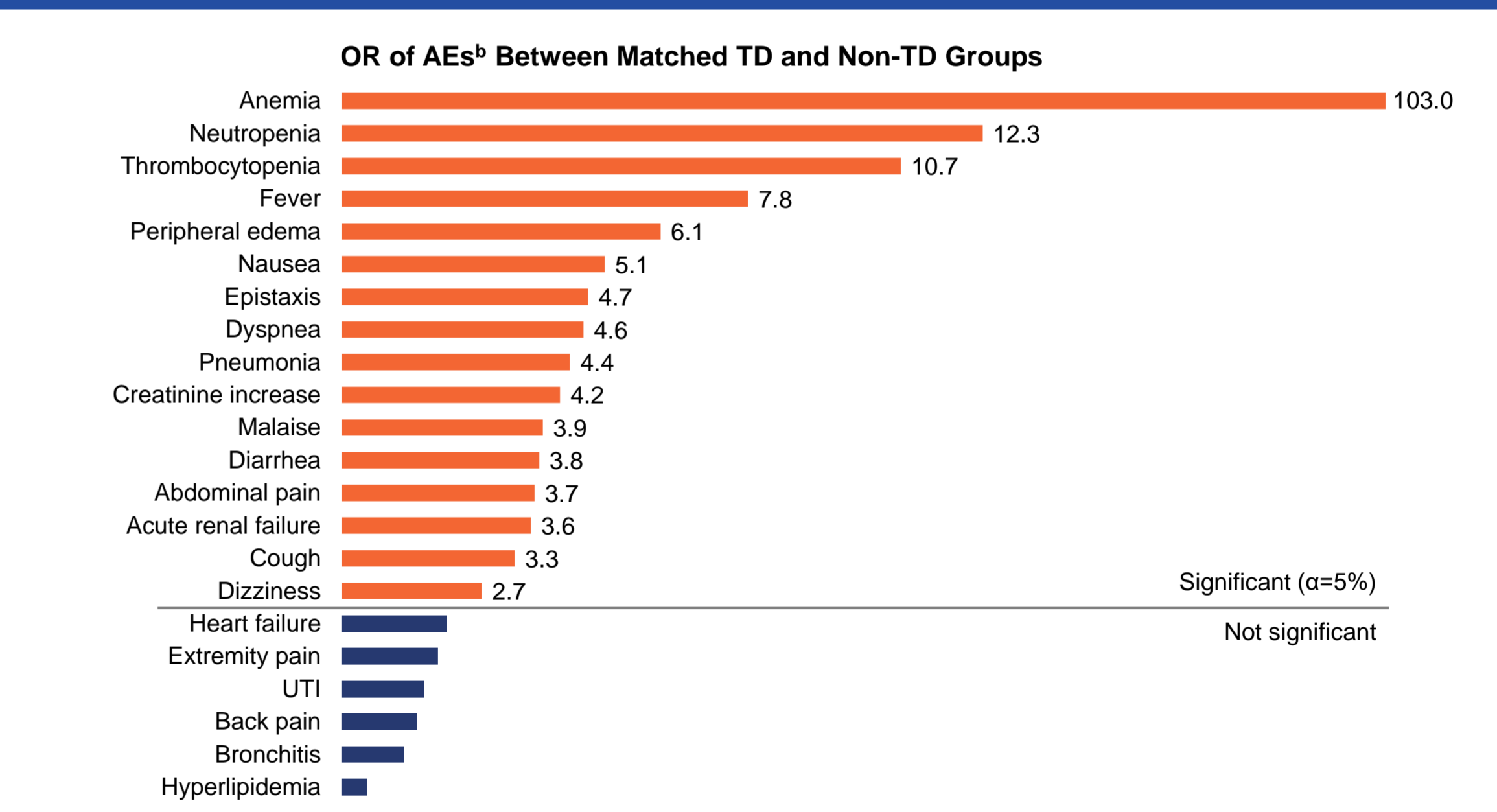
Figure 4. Overall Medical and Pharmacy Costs^a Are Significantly Higher in TD Compared With Non-TD Patients in Matched Cohorts



^aAll costs were rounded to the nearest \$100. ^{*}Significantly different at α=5%. JAKi, Janus kinase inhibitor; TD, transfusion dependence (patients with ≥2 transfusions in any single month).

- Higher total medical costs in the TD compared with the non-TD cohort are likely driven by increased health system encounters and hospitalizations as well as by transfusions themselves
- Beyond anemia-related treatments, the lower general health status of TD patients is likely to further drive high medical and pharmacy costs

Figure 5. Transfusion-Dependent Patients Are Much Sicker and Have Significantly Higher Rates of Nearly All AEs^a



^aConditions occurring in <10% of TD or non-TD patient cohorts were excluded; none showed a statistically significant difference. Excluded conditions: ALT-AST increase, nasopharyngitis, pruritis, cardiac arrest, asthenia, muscle spasm, weight gain, dysuria, and arthralgia. ^aAEs were captured during the 12-month study period. AE, adverse event; ALT, alanine aminotransferase; AST, aspartate aminotransferase; OR, odds ratio; TD, transfusion dependence (patients with ≥2 transfusions in any single month); UTI, urinary tract infection.

Conclusions

- TD in patients with myelofibrosis led to significantly higher rates of health care resource utilization and costs compared with non-TD patients, even after controlling for differences in age, gender, and baseline comorbidity
- The higher economic and clinical burden of TD is driven only in part by the higher number of transfusions
- Only a small proportion of patients with myelofibrosis diagnoses across all risk and disease durations within the IBM MarketScan Commercial Claims and Encounters Database are transfusion dependent. These results warrant the ongoing investigation in older populations
- This study highlights the need for additional therapeutic options to limit progression to TD and offset costs for patients with myelofibrosis

Acknowledgments

This study was funded by Sierra Oncology, Inc., a GSK company. The authors acknowledge Shefali Shah Consulting and Trinity Life Sciences for their contributions in data collection, analysis, editing, and project management. Writing support was provided by Ekaterina Taneva, PhD, and Timothy Zumwalt, PhD, of The Lockwood Group (Stamford, CT, USA), and was supported by funding from Sierra Oncology, Inc. (San Mateo, CA, USA), a GSK company.

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Further analyses of momelotinib can be accessed in poster presentations **1733** (transition to momelotinib from ruxolitinib), **4348** (momelotinib long-term safety), and **4351** (impact of momelotinib on patient-reported quality of life).

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