

Characterizing the Patient Journey, Health Care Resource Utilization, and Economic Impact of Patients with PTLD: A U.S. Claims Analysis

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INTRODUCTION

- Post-transplant lymphoproliferative disorder (PTLD) is a rare but serious complication following solid organ (SOT) or hematopoietic cell transplantation (HCT)¹
- Despite its clinical severity, limited real-world data describe the PTLD patient journey across the continuum of care
- This study assessed HCRU and costs from initial presentation of disease requiring a transplant through transplant intervention and post-transplant development and treatment of PTLD

METHODS

- This retrospective observational study used the Veeva Compass all-payer claims database (APCD) from January 2017 to October 2025 to identify patients who developed PTLD (ICD-10-CM: D47.Z1) following SOT or HCT
- Patients' HCRU were assessed longitudinally for 12-months pre-transplant and 12-months post-PTLD, stratified by care setting and transplant type
- Patients required ≥12 months survival post-PTLD diagnosis
- HCRU-associated costs were estimated using claims-specific Medicare Payments
- For commercial and Medicaid patients, costs were adjusted using payer-specific ratios

Table 1. Baseline characteristics*

Demographic & Clinical Characteristics	Total N=1,044
Age at Transplant, Mean (SD)	55.6 (1.9)
Sex, n (%)	
Male	583 (56%)
Female	459 (44%)
Region, n (%)	
Northeast	198 (19%)
Midwest	186 (18%)
South	359 (34%)
West	299 (29%)
Primary Payor, n (%)	
Commercial	769 (74%)
Medicaid	79 (8%)
Medicare	196 (19%)
Index Transplant Type, n (%)	
Heart	88 (8%)
Kidney	593 (57%)
Large Intestine	3 (0%)
Liver	125 (12%)
Lung	66 (6%)
Multiple Organs	1 (0%)
Pancreas	7 (1%)
Small Intestine	1 (0%)
Spleen	0 (0%)
HCT	160 (15.3%)
Time to PTLD Dx (days), Mean (SD)	497 (531)

*All baseline characteristics were defined at date of index transplant

RESULTS

- A total of 1,044 transplant recipients with PTLD were identified (SOT, n=884; HCT, n=160), with a mean follow-up of 40.3 months (SD ±17.5)

Table 2. HCRU

HCRU	Total (N=1,044)
Pre-transplant	
Any Inpatient Visits, n (%)	841 (81%)
Observed inpatient days among patients with ≥1 visit	18.7 (27.3)
Any ER Visits, n (%)	724 (69%)
Mean # of visits among patients with ≥1 visit	5.0 (6.6)
Any Outpatient Visits, n (%)	1,044 (100%)
Mean # of visits among patients with ≥1 visit	125.2 (102.1)
Any Pharmacy prescription, n (%)	992 (95%)
Mean # of prescriptions among those with ≥1 fill	44.3 (36.9)
Transplant	
Inpatient Transplant Procedure, n (%)	1,027 (98%)
Outpatient Transplant Procedure, n (%)	17 (2%)
Post-transplant/Pre-PTLD	
Any Inpatient Visits, n (%)	1,013 (97%)
Observed inpatient days among patients with ≥1 visit	26.4 (34.8)
Any ER Visits, n (%)	744 (71%)
Mean # of visits among patients with ≥1 visit	6.7 (10.7)
Any Outpatient Visits, n (%)	990 (95%)
Mean # of visits among patients with ≥1 visit	90.3 (125.9)
Any Pharmacy prescription, n (%)	982 (94%)
Mean # of prescriptions among those with ≥1 fill	79.3 (120.4)
Post-PTLD-Dx	
Any Inpatient Visits, n (%)	823 (79%)
Observed inpatient days among patients with ≥1 visit	23.5 (34.5)
Any ER Visits, n (%)	722 (69%)
Mean # of visits among patients with ≥1 visit	5.2 (6.3)
Any Outpatient Visits, n (%)	1,043 (100%)
Mean # of visits among patients with ≥1 visit	61.5 (47.8)
Any Pharmacy prescription, n (%)	1,017 (97%)
Mean # of prescriptions among those with ≥1 fill	53.6 (38.5)

Patients had 12 months of continuous follow-up pre-transplant and post-PTLD and were required to survive ≥12 months following PTLD diagnosis; the transplant to PTLD-Dx interval was not standardized. Eligible patients had Medicare, Medicaid, or commercial insurance; inpatient days were defined as the count of unique dates with an inpatient claim for a given patient.

- Mean age was 55.6 years with majority of patients being male (56%) (Table 1)
- Majority of patients were insured on commercial plans (74%)
- Kidney transplants accounted for most (57%) SOT patients, followed by liver (12%) and heart (8%) transplants
- Mean time to PTLD diagnosis from transplantation was 497 days,

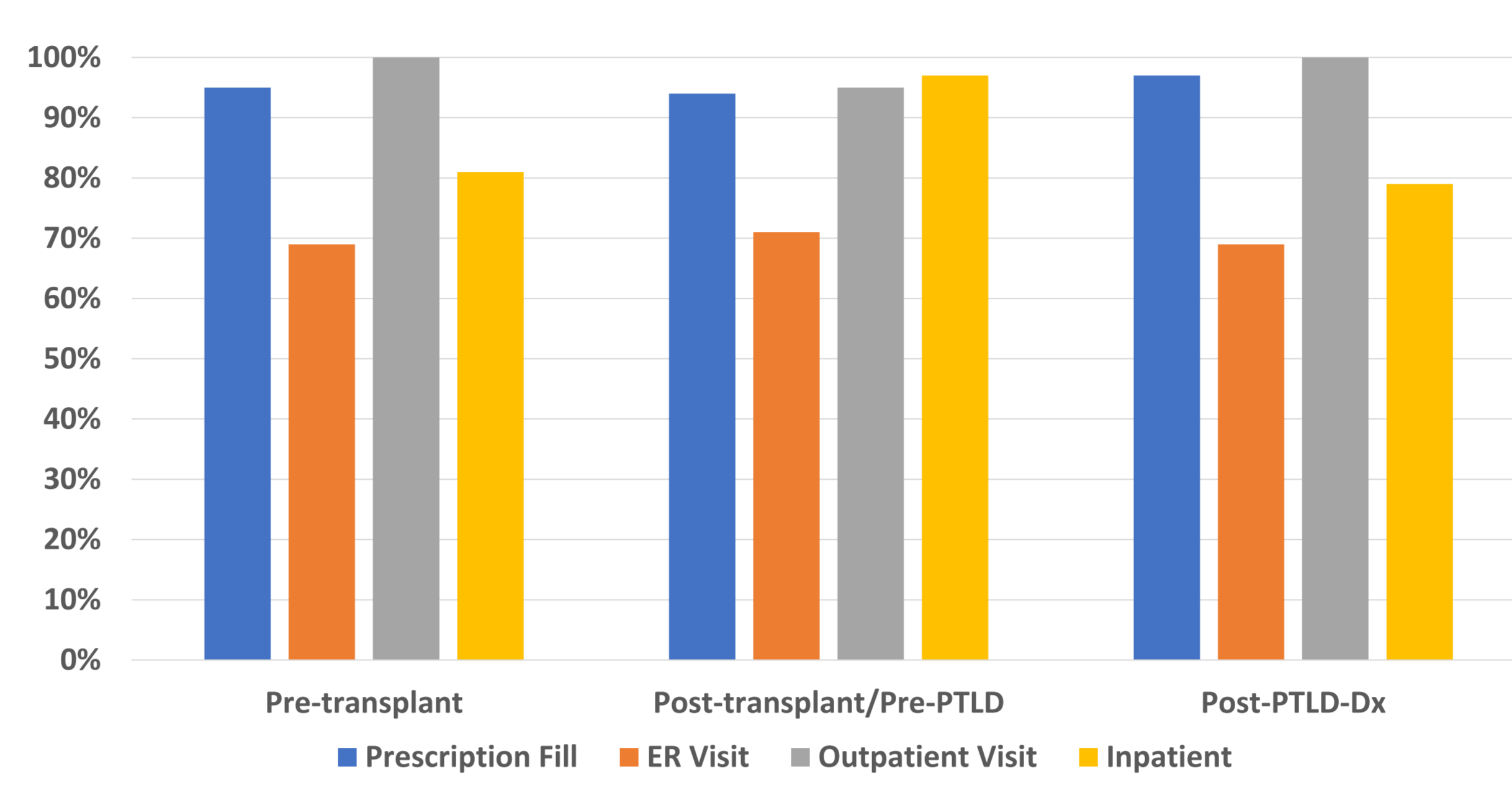
Healthcare Resource Use

- Hospitalizations were frequent pre-transplant (81%, 18.7 days), peaked post-transplant/pre-PTLD (97%, 26.4 days), and declined post-PTLD (79%, 23.5 days) (Table 2, Figures 1-2)
- In contrast, outpatient encounters began with high frequency of visits in pre-transplant period (125.2), and declined progressively in post-transplant/pre-PTLD (90.3) and post-PTLD diagnosis (61.5) periods
- Prescription fills followed a similar pattern to inpatient hospitalizations, with fills peaking in post-transplant/pre-PTLD period and lower in pre-transplant and post-PTLD diagnosis phases
- ER visits remained stable through each phase of patient journey with approximately 70% of patients having encounters

Economic Burden

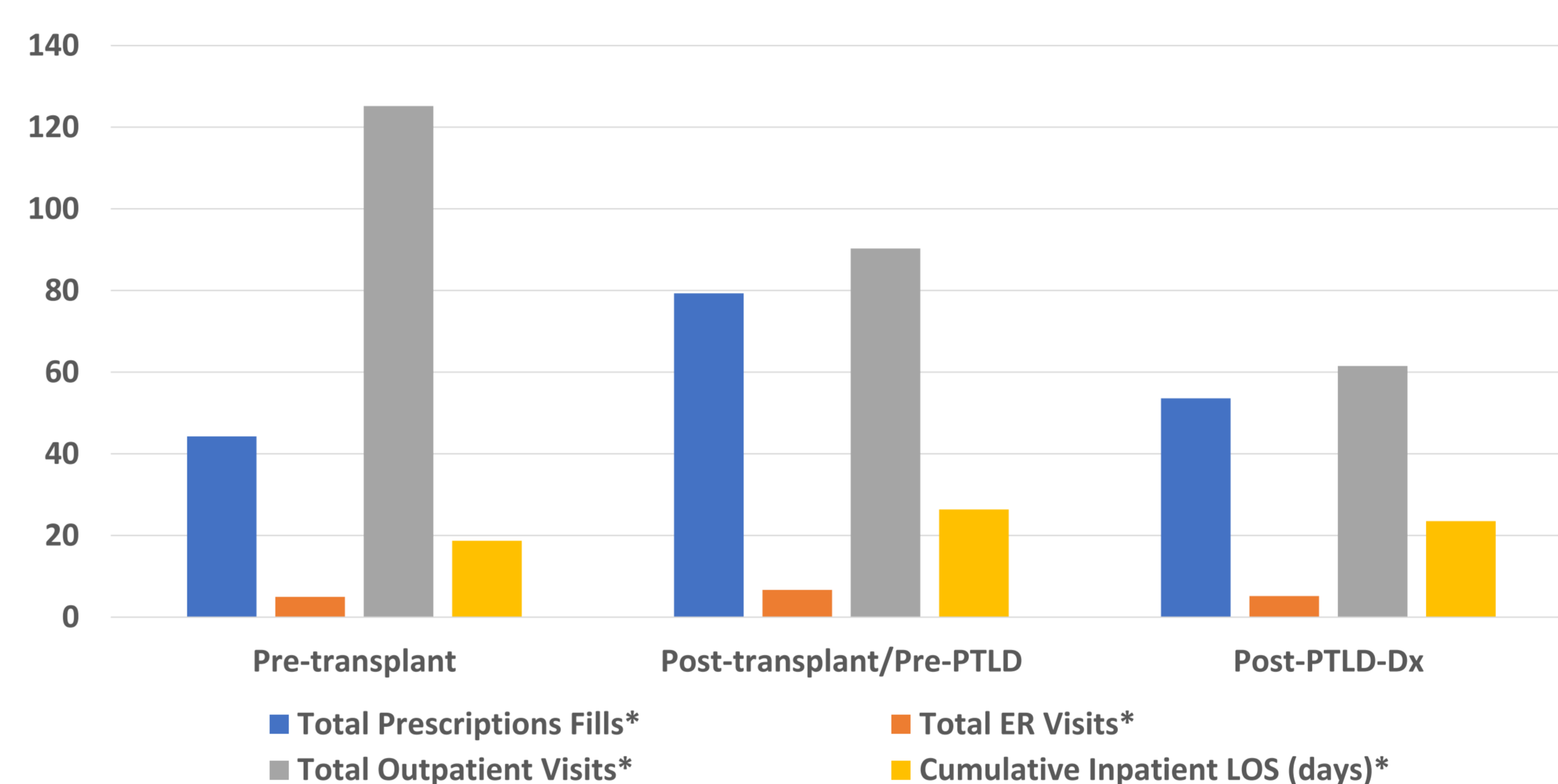
- Although outpatient encounters were frequent throughout all periods, inpatient hospitalizations were the largest contributor to overall costs (Figures 3 and 4)

Figure 1. Patient HCRU Utilization Rates



Phase duration: 12-months pre-transplant, time from transplant to PTLD not standardized, 12-months post-PTLD-Dx

Figure 2. HCRU Per Patient by Treatment Phase and Setting*



* Among patients with at least 1 visit or at least 1 prescription fill; Phase duration: 12-months pre-transplant, time from transplant to PTLD not standardized, 12-months post-PTLD-Dx

Table 3. Mean Total Costs by Treatment Phase

Treatment Phase	Total (N=1,044)	SOT (n=884)	HCT (n=160)
Pre-Transplant	\$941,845	\$738,038	\$2,067,879
Transplant	\$525,679	\$563,440	\$317,049
Post-Transplant/Pre-PTLD	\$1,732,048	\$1,716,589	\$1,817,455
Post-PTLD-Dx	\$824,599	\$859,945	\$629,313
Overall	\$4,024,170	\$3,878,012	\$4,831,696

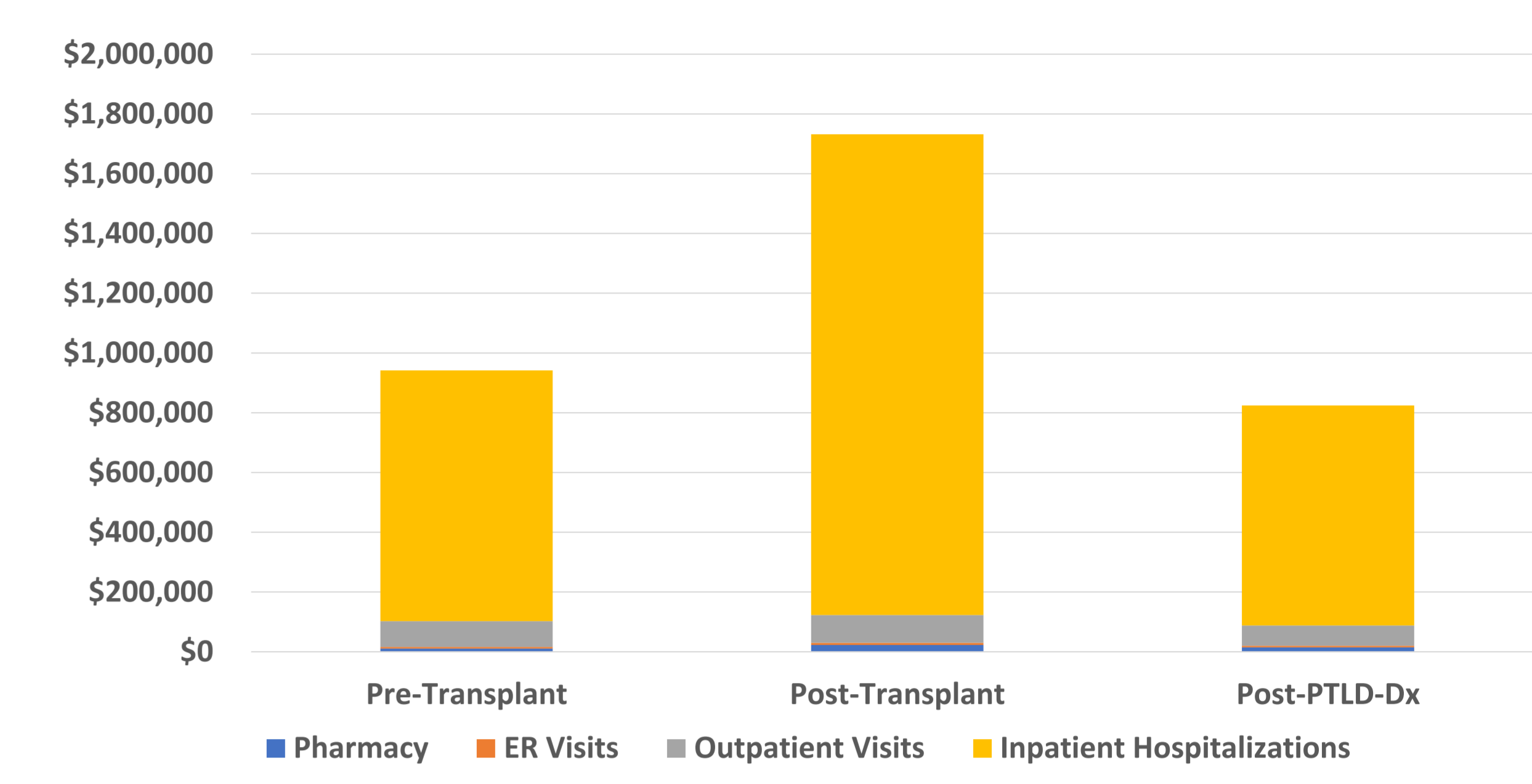
Phase duration: 12-months pre-transplant, time from transplant to PTLD not standardized, 12-months post-PTLD-Dx

- Pre-transplant costs were substantially higher for HCT patients compared to SOT patients (\$2.1M vs. \$738K), as were total costs (\$4.8M vs. \$3.8M) (Table 3)
- Inpatient hospitalizations varied markedly across phases, totaling \$3.7M per patient and representing 92% of total costs
- Total costs peaked in the post-transplant/pre-PTLD period (43% of total); however, the duration of this phase was longer than other periods

Limitations

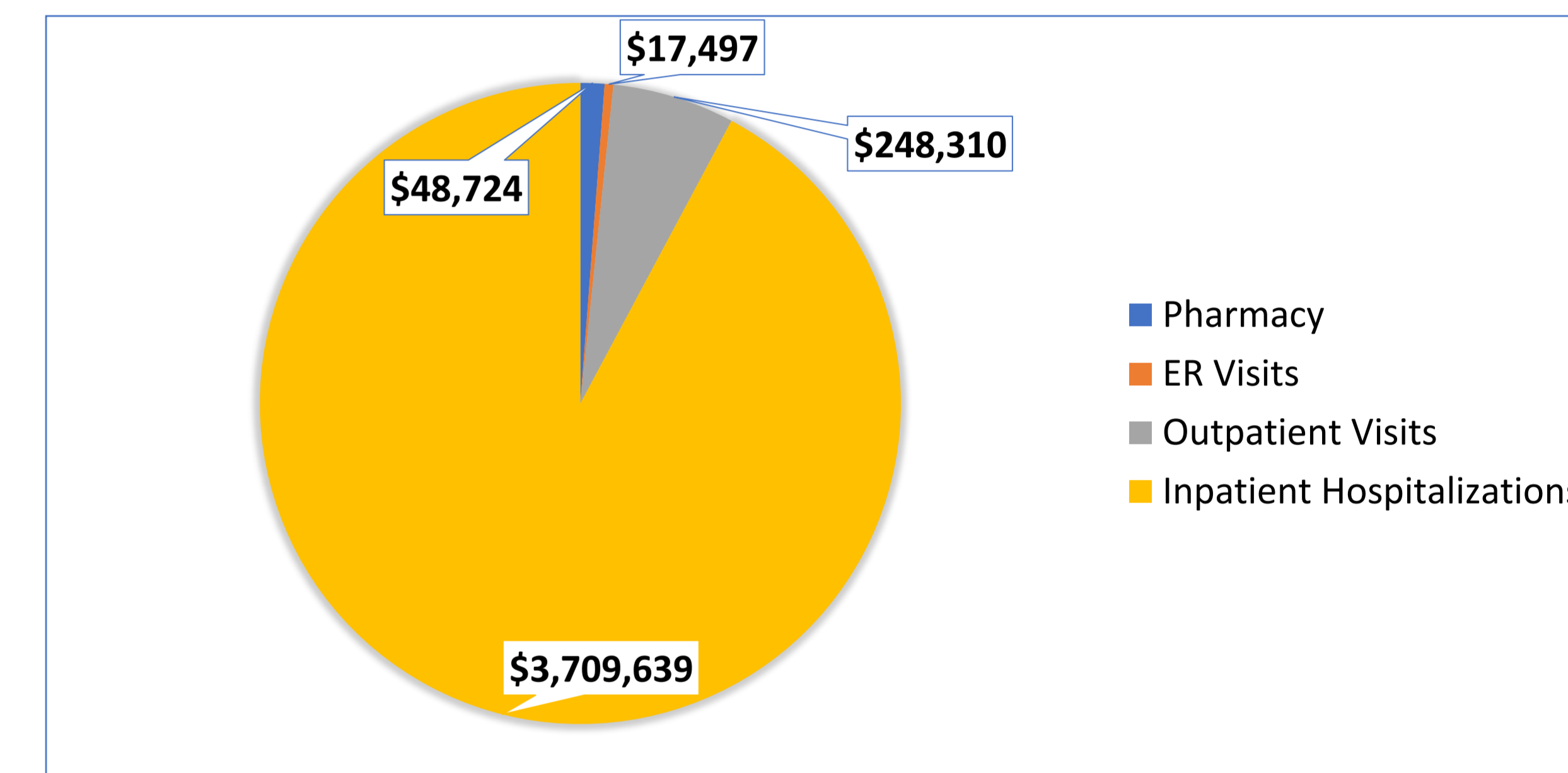
- Due to absence of mortality data, patients with <12 months of follow-up were excluded; this likely underestimates cost estimates, as decedents have been found to incur substantially higher costs^{2,3}
- As no non-PTLD comparator was included, incremental burden could not be assessed

Figure 3. Mean Costs Per Patient by Treatment Phase and Setting



Phase duration: 12-months pre-transplant, time from transplant to PTLD not standardized, 12-months post-PTLD-Dx

Figure 4. Total Mean Costs Per Patient by Setting*



* Total costs are for complete patient journey including 12-month pre-transplant, transplant to PTLD, and 12-months post-PTLD-Dx periods

CONCLUSIONS

- Outpatient encounters are more frequent, but inpatient hospitalizations remain the primary driver of costs throughout the PTLD patient journey
- Outpatient volume declines over time, yet hospitalizations peak in the post-transplant/pre-PTLD-diagnosis period
- HCRU and costs remain elevated following PTLD diagnosis, indicating sustained high-intensity care
- These findings underscore an urgent need for therapies that improve clinical outcomes while reducing overall healthcare burden in PTLD

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ABBREVIATIONS

CMS, centers for Medicare & Medicaid Systems; ER, emergency room; HCRU, healthcare resource use; HCT, hematopoietic cell transplant; IP, inpatient; OP, outpatient; PTLD, post-transplant lymphoproliferative disorders; RX, prescription; SOT, solid organ transplant.

DATA SOURCES

Veeva Compass Systems (2017-2025) and Medicare FFS (2024-2025)

ACKNOWLEDGEMENTS

This study was sponsored by Pierre Fabre Pharmaceuticals. We thank BluePath Solutions for analysis and poster development. Sheila Conroy and Lane Slabaugh contributed equally to this project