Real-World Patterns of Care and Financial Burden Among Patients With Follicular Lymphoma in the US

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BACKGROUND

- Follicular lymphoma (FL) is the most common indolent non-Hodgkin lymphoma and accounts for nearly a quarter of cases[1]
- As a heterogenous disease with an estimated 20% having progression of disease within 24 months of first FL therapy, FL often becomes relapsed or refractory (R/R) to current therapy[1]

OBJECTIVES

- Evaluate the real-world treatment patterns, time to next treatment (TTNT), and associated costs and healthcare resource utilization (HCRU) in patients with FL in the United States

METHODS

Data Source

- A retrospective observational study was conducted using an integrated real-world database including linked data from the Symphony Integrated Dataverse, electronic medical records, specialty pharmacy, and in-office dispensing datasets

Inclusion Criteria

- Patients were included in the study if they were ≥18 years old and initiated a first line (1L), second line (2L), third line (3L), or fourth line (4L) of therapy for FL between 1/1/2019 and 12/31/2022
- Patients were also required to have continuous pre-index enrollment of 365 days to record baseline comorbidities
- The index date is defined as the first date of receiving the study treatment in 1L, 2L, 3L, or 4L

Cohorts

- Patients were categorized by line of therapy into non-mutually exclusive cohorts based on the date of initiation of their treatment regimen
- Within each line of therapy, patients were categorized into seven mutually exclusive subgroups based on their treatment regimens: bendamustine + rituximab (BR), rituximab monotherapy (R-mono), cyclophosphamide, doxorubicin, prednisone, rituximab + vincristine (R-CHOP), bendamustine + obinutuzumab (BO), lenalidomide + rituximab (R2), obinutuzumab monotherapy (O-mono), and other treatments for all other regimens

Follow-Up

- Each line of therapy cohort was followed for a minimum of 90 days through loss to follow-up or end of the study period (3/31/2023)

Study Outcomes

- Demographics, clinical characteristics, and treatment regimens were examined for each line of therapy cohort
- Advancement to the next line of therapy, treatment regimen distribution, and switching for each cohort and subgroup were evaluated during the follow-up period
- Treatment duration, TTNT, HCRU, and pharmacy costs were measured for each cohort and treatment regimen during the follow-up period. HCRU included outpatient visits and hospital claims, reported as per patient per month (PPPM) over the time on each treatment regimen

RESULTS

Study Population

- The study population included 9579 patients initiating 1L, and then 3061, 952, and 263 patients who received 2L, 3L, and 4L, respectively
- The median follow-up was 719 days (1L), 652 days (2L), 578 days (3L), and 468 days (4L)
- Mean age at index was similar across treatment lines, ranging from 66.7 years (1L) to 67.9 years (4L). Males represented a little under half (47.3%) in the 1L cohort but increased slightly with subsequent lines (49.3%, 2L; 54.9%, 3L; 47.2%, 4L) (**Table 1**)

Table 1. Baseline Demographics and Clinical Characteristics

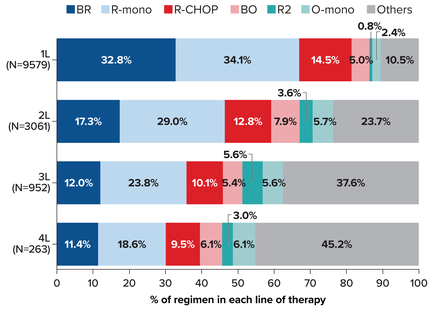
Characteristic	1L (n=9579)	2L (n=3061)	3L (n=952)	4L (n=263)
Sex, n (%)				
Male	4534 (47.3%)	1529 (49.9%)	475 (49.8%)	124 (47.2%)
Female	5045 (52.7%)	1532 (50.1%)	477 (50.2%)	139 (52.8%)
Age at index				
Mean (SD)	66.7 (10.3)	67.5 (10.0)	67.8 (9.5)	67.9 (9.8)
Median (IQR)	69 (9-76)	70 (62-76)	70 (62-76)	70 (62-76)
65+, n (%)	6061 (63.3%)	2048 (66.9%)	639 (67.1%)	179 (68.1%)
Payer type, n (%)				
Medicare	4147 (43.3%)	1365 (44.6%)	442 (46.4%)	123 (46.8%)
Commercial	3660 (38.2%)	1125 (36.8%)	334 (35.1%)	98 (37.3%)
Other/missing	1772 (18.5%)	571 (18.7%)	176 (18.5%)	42 (16.0%)
CCI				
Mean (SD)	6.9 (3.0)	7.2 (2.9)	7.2 (3.0)	7.2 (3.1)
Median (IQR)	7 (25-8)	7 (6-8)	8 (6-9)	8 (6-9)

1L, first line; 2L, second line; 3L, third line; 4L, fourth line; CCI, Charlson Comorbidity Index.

- The most common baseline comorbidities across treatment lines were hypertension (1L=35.2%; 2L=32.3%; 3L=29.8%; and 4L=28.1%) and gastrointestinal disease (1L=23.9%; 2L=22.2%; 3L=22.2%; and 4L=22.1%)

Real-World Treatment Pattern

Figure 1. Real-World Treatment Pattern of FL by Regimen and Line of Therapy



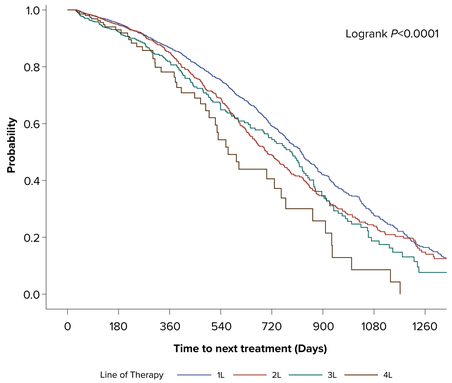
1L, first line; 2L, second line; 3L, third line; 4L, fourth line; BO, bendamustine + obinutuzumab; BR, bendamustine + rituximab; O-mono, obinutuzumab; R2, lenalidomide + rituximab; R-CHOP, cyclophosphamide, doxorubicin, prednisone, rituximab + vincristine; R-mono, rituximab monotherapy.

- Across all treatment lines, R-mono was the most common regimen (1L=34.1%; 2L=29.0%; 3L=23.8%; and 4L=18.6%) followed by BR (1L=32.8%; 2L=17.3%; 3L=12.0%; and 4L=11.4%), and R-CHOP (1L=14.5%; 2L=12.8%; 3L=10.1%; and 4L=9.5%) (**Figure 1**)
- O-mono was utilized in 2.4% of 1L, 5.7% of 2L, 5.6% of 3L, and 6.1% of 4L, while combination therapy (BO) was utilized around 5% across line of therapies

Time to Next Treatment

- Median TTNT across all regimens was 417 days (159, 691) in 1L, 444.5 days (225, 661) in 2L, 414 days (174, 784) in 3L, and 382.5 days (200.5, 599.5) in 4L (**Figure 2**)

Figure 2. Time to Next Treatment by Line of Therapy



	1L	2L	3L	4L
	Median (IQR)			
Bendamustine + Rituximab	518.5 (255-769)	575.5 (365-669)	414 (174-791)	272.5 (207-897.5)
Rituximab Monotherapy	392 (132-666)	381 (198.5-638.5)	538 (185.5-777)	542.5 (424.5-653)
R-CHOP	406 (161-637)	385 (225-602)	289.5 (60-435)	308.5 (304.5-398)
Bendamustine + Obinutuzumab	328.5 (154-624)	457 (136-663.5)	421.5 (82.5-760)	-
Lenalidomide + Rituximab	471 (141-709)	445 (132-653)	822.5 (361-1034)	-
Obinutuzumab Monotherapy	381 (85-720)	540 (333.5-682)	612.5 (187-1001)	132 (42-531)
Other Treatments	400.5 (147-673)	445.5 (191-701.5)	375.5 (162.5-725)	216 (107-469)

1L, first line; 2L, second line; 3L, third line; 4L, fourth line; R-CHOP, cyclophosphamide, doxorubicin, prednisone, rituximab + vincristine; IQR, interquartile range.

CONCLUSIONS

- Real-world treatment patterns for patients with FL were shown to be mostly consistent with clinical guidelines
- Time to next treatment decreased while hospitalizations and pharmacy costs increased as line of therapy progressed, suggesting high financial burden and an unmet need for better treatment options for patients with R/R FL

Healthcare Resource Utilization and Pharmacy Costs

- Healthcare resource utilization and pharmacy costs (plan paid and patient out-of-pocket) by line of therapy are shown in **Table 2**

Table 2. Mean HCRU & Pharmacy Costs by Line of Therapy

Characteristic, mean (SD)	1L (n=9579)	2L (n=3061)	3L (n=952)	4L (n=263)
Outpatient visits, PPPM				
All-cause	5.99 (4.86)	6.06 (5.42)	6.27 (6.04)	6.25 (5.95)
FL-related	4.59 (4.00)	4.49 (4.31)	4.57 (4.93)	4.42 (4.65)
Hospitalizations, PPPM				
All-cause	0.35 (1.72)	0.57 (2.61)	0.85 (3.48)	1.09 (4.71)
FL-related	0.13 (0.76)	0.18 (1.02)	0.36 (1.56)	0.45 (2.12)
Pharmacy costs (plan paid), PPPM				
All-cause	$1033 ($3964)	$2167 ($6001)	$2944 ($6413)	$3374 ($7361)
Pharmacy costs (OOP), PPPM				
All-cause	$56 ($263)	$101 ($542)	$120 ($518)	$101 ($484)

1L, first line; 2L, second line; 3L, third line; 4L, fourth line; FL, follicular lymphoma; HCRU, healthcare resource utilization; OOP, out-of-pocket; PPPM, per patient per month.

- Both mean all-cause and FL-specific outpatient visit were increased as line of therapy advanced
- Mean all-cause and FL-related hospitalizations also increased by line of therapy
- Average pharmacy costs PPPM increased from $1033 in 1L to $3374 in 4L

REFERENCES

1. Singh D, et al. *StatPearls*. https://www.ncbi.nlm.nih.gov/books/NBK589677.

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DISCLOSURES

KY: Employment: BeiGene, USA: current employment, equity holder in publicly-traded company. **BS:** Consulting: Adaptive Biotechnologies, BMS, Novartis, Pfizer, Amgen, Precision Biosciences, Kite, Jazz, Century Therapeutics, Deciphera, Autolus, Lily, Pepromene; Research funding: Incyte, Jazz, Kite, Servier; Travel, accommodations, and expenses: Celgene, Novartis, Pfizer, Janssen, Seagen, AstraZeneca, Stemline Therapeutics, Kite; Honoraria: Pharmacyclics/Janssen, Spectrum/Acrotech, BeiGene, Gilead Sciences. **MX:** Employment: BeiGene. **EKS:** Employment: BeiGene; Stock or other ownership: BeiGene, Roche. **WF:** Employment: Real Chemistry; Stock or other ownership: Real Chemistry. **P-YC:** Employment: Real Chemistry.

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