

# Real-world Treatment Patterns and Economic Burden of Patients with Marginal Zone Lymphoma

Keri Yang<sup>1</sup>, Tom Liu<sup>1</sup>, Boxiong Tang<sup>1</sup>, Bijal D. Shah<sup>2</sup>

<sup>1</sup>BeiGene USA, Inc. San Mateo, CA; <sup>2</sup>H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL

Correspondence  
Keri.yang@beigene.com

## BACKGROUND

- Marginal zone lymphoma (MZL) is an indolent non-Hodgkin lymphoma that is treatable, yet incurable with remitting and relapsing course
- Given its disease rarity and underlying heterogeneity, MZL remains understudied with limited real-world evidence on how current treatment patterns conform to clinical guidelines, and the economic outcomes associated with current treatments

## OBJECTIVE

- This study aimed to assess real-world treatment patterns, costs, and healthcare resource utilization in MZL patients in the United States (US)

## METHODS

- **Study Design:** Retrospective, observational study
- **Data Source:** IBM MarketScan® commercial and Medicare supplemental claims dataset, de-identified claims dataset containing the inpatient, outpatient, and prescription files (2017-2020)
- **Study Population:**
  - Adults who were newly diagnosed with MZL
  - Index date: the first MZL diagnosis date
  - Aged ≥18 years at index date
  - Continuous enrollment of 6 months pre- and 3 months post-index date
- **Treatment Regimen:**
  - Classified according to NCCN guidelines and identified using HCPCS and NDC codes
  - Treatment regimens for a given line of therapy were categorized based on the combination of all agents used within the first 60 days of MZL treatment initiation
  - 5 mutually exclusive categories of MZL treatment regimen:
    - Rituximab monotherapy (R-mono)
    - Bendamustine + rituximab (BR)
    - CHOP/R-CHOP (cyclophosphamide, doxorubicin hydrochloride, vincristine sulfate, and prednisone/rituximab-CHOP)
    - Ibrutinib
    - Other regimens
- **Treatment Patterns:**
  - by frequency and duration of treatment regimens
  - by first-line (1L), second-line (2L), or third-line (3L) of therapies
- **Economic Outcomes:**
  - **Healthcare resource utilization:** Frequency and duration of inpatient hospital admissions, outpatient visits, and pharmacy visits
  - **Total costs:** Calculated as the sum of inpatient, outpatient, and pharmacy costs per-patient-per-month (PPPM)

## METHODS

- **Statistical analysis:**
  - Descriptive analyses: assess patient characteristics and treatment utilization patterns (frequency, duration, discontinuation)
  - Multivariable logistic regression: examine predictors of healthcare resource utilization and costs

## RESULTS

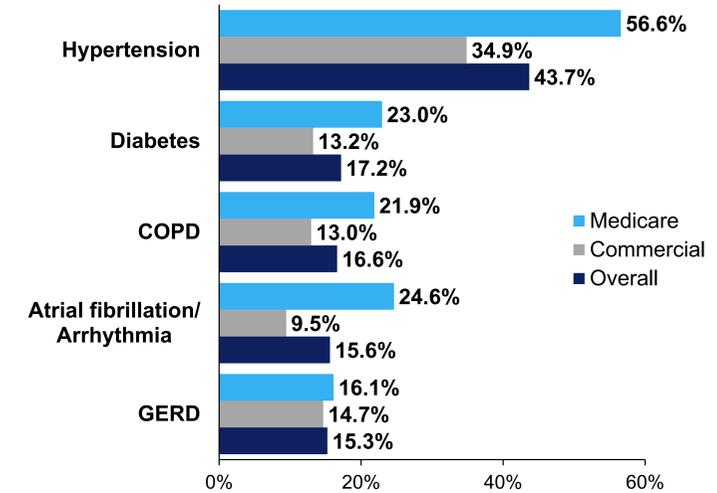
- **Demographic Characteristics of MZL Patient Population**
  - Among the 2491 newly-diagnosed MZL patients (median age = 63 years), 59% were commercially insured (median age = 57 years) and 41% in Medicare (median age = 76 years) (Table 1)
- **Clinical Characteristics of MZL Patient Population**
  - The most common comorbidities were hypertension (43.7%), followed by diabetes (17.2%), chronic obstructive pulmonary disease (COPD; 16.6%), atrial fibrillation/arrhythmia (15.6%), and gastroesophageal reflux disease (GERD; 15.3%) (Figure 1)

Table 1. Demographic Characteristics of MZL Patient Population

	Overall (N=2,491)	Commercial (N=1,480)	Medicare (N=1,011)
<b>Age at index, years</b>			
Mean (SD)	63.4 (13.3)	54.8 (8.9)	76.1 (7.2)
Median	63.0	57.0	76.0
<b>Male, %</b>	47.9%	48.2%	47.4%
<b>Geographic Region, %</b>			
Northeast	22.7%	21.9%	23.9%
North Central	26.6%	23.1%	31.4%
South	34.2%	38.4%	28.3%
West and unknown	16.5%	16.6%	16.4%
<b>Length of follow-up (Days)</b>			
Mean (SD)	942.8 (741.5)	939.9 (758.5)	946.9 (716.3)
Median	707.0	684.0	731.0

## RESULTS

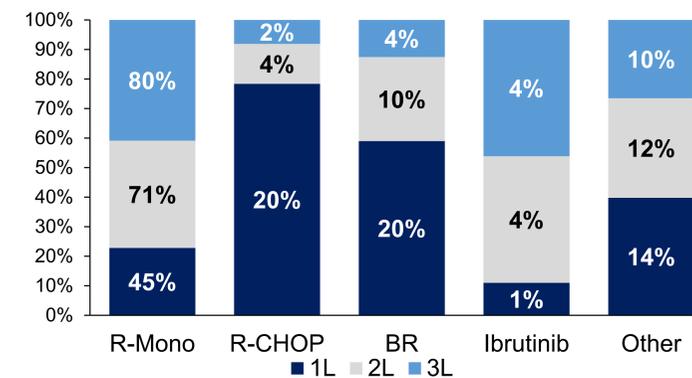
Figure 1. Top 5 Baseline Comorbidities of MZL Patient Population



Abbreviations: COPD, chronic obstructive pulmonary disease; GERD, gastroesophageal reflux disease

- **Treatment Pattern**
  - Average time from diagnosis to treatment initiation was 223 days
  - A total of 1,781 (72%) patients received 1L therapy, 518 (29%) patients received 2L therapy, and 239 (13%) patients received 3L therapy
  - R-mono was the most common regimen across both commercial and Medicare patients and all treatment lines (Figure 2)
  - R-CHOP and BR were the second most used regimen in 1L therapy, with decreased use in 2L and 3L therapies
  - Ibrutinib was used more in 2L+ setting but had the lowest 1L PPPM cost (median \$2958.9) than other regimens

Figure 2. MZL Regimen by Line of Therapy



Abbreviations: MZL, marginal zone lymphoma; R-Mono, rituximab monotherapy; BR, bendamustine + rituximab; CHOP/R-CHOP, cyclophosphamide, doxorubicin hydrochloride, vincristine sulfate, and prednisone/rituximab-CHOP

## RESULTS

- **Healthcare Resource Utilization**
  - 17.3% of MZL patients had at least 1 hospitalization, and 17.6% of MZL patients had at least 1 ER visit after the MZL treatment initiation
  - Overall, MZL patients had PPPM 4.6 outpatient visits and mean length of stay of 2.6 days (Table 2)
- **Total Costs**
  - MZL total PPPM healthcare cost was \$19,896
  - Majority of the cost came from the outpatient visit (\$16,985)

Table 2. Healthcare Resource Utilization in MZL Patients

Frequency*	Overall (N=2,491)	1L (n=1,781)	2L (n=518)	3L (n=239)
<b>Outpatient visits</b> (Mean ± SD)	4.61 ± 2.86	5.11 ± 2.75	4.75 ± 2.45	4.68 ± 2.32
<b>ER visits</b> (Mean ± SD)	0.09 ± 0.26	0.09 ± 0.28	0.08 ± 0.22	0.08 ± 0.20
<b>Inpatient admissions</b> (Mean ± SD)	0.09 ± 0.24	0.09 ± 0.25	0.07 ± 0.26	0.06 ± 0.22
<b>Length of stay, days</b> (Mean ± SD)	2.64 ± 2.88	2.70 ± 2.82	2.75 ± 3.58	2.43 ± 3.52

\*Per-Patient Per-Month

- Multivariable regression showed that baseline comorbidities (atrial fibrillation, renal disease, neutropenia) and treatment discontinuation were significant predictors of higher costs and healthcare resource utilization

## DISCUSSIONS

- This study evaluated the real-world utilization of treatment regimens by line of therapy in newly diagnosed MZL patients in the US
- Study limitations were inherent to the use of claims databases in an observational study design
- Future studies are needed to evaluate long-term outcomes and the impact of heterogeneous MZL subtypes

## CONCLUSIONS

- This real-world data suggested that US MZL real-world treatment patterns across lines of therapy follow the regimen recommendations by the National Comprehensive Cancer Network clinical practice guidelines, and that MZL patients incur high economic burden