Real-World Treatment Patterns and Patient Characteristics of Venetoclax Combination Time-Limited Therapy for Chronic Lymphocytic Leukemia

Jing-Zhou Hou, MD, PhD[1], Rushir Choksi, MD[1], Gregory A. Maglinte, PhD, MPH[2], Xiaoliang Wang, PhD, MPH[2], Anna Rui, MPH[3], Beverly Chigarira, MS[3], Lindsay Aton, MHSA[3], Melissa Hagan, PhD, MPH[2], Lisa Morere, MSN, RN, ANP[3], Mike Gart, MBA[3], Rhys Williams, PhD[2], Daniel Ermann, MD[4]

[1]University of Pittsburgh Medical Center, Pittsburgh, PA, USA; [2]BeOne Medicines, Ltd, San Carlos, CA, USA; [3]IntegraConnect PrecisionQ, West Palm Beach, FL, USA; [4]University of Utah Huntsman Cancer Institute, Salt Lake City, UT, USA

CONCLUSIONS

- These results demonstrate that in US community oncology practices, there are clinical differences in V use for CLL treatment in 1L and 2L+ settings
- VO is commonly utilized in both 1L and 2L+, and many patients remain on 1L VO and 2L+ VR for an extended period beyond the recommended fixed treatment duration
- In 1L, only 4.8% of patients received 12-month fixed duration of V-based treatment, VO, in accordance with guidelines, 24.6% received less than the recommended time on treatment, and 70.6% were on treatment longer
- In 2L+, only 1.1% of patients received 24-month fixed duration of V-based treatment, VR, in accordance with guidelines, 50.8% received less than the recommended time on treatment, and 48.1% were on treatment longer
- Real-world V-based, time-limited treatment utilization in CLL appears longer than observed in clinical trials or indicated per label
- Future research may explore reasons patients are staying on fixed duration regimes longer than indicated

INTRODUCTION

- The use of targeted therapies, such as combinations of anti-CD20 monoclonal antibodies and BCL2 inhibitors, is rapidly evolving in the treatment of chronic lymphocytic leukemia (CLL)
- Venetoclax plus obinutuzumab (VO) is approved as a first-line (1L) therapy with a fixed 12-month duration, while venetoclax plus rituximab (VR) is approved for second-line and later (2L+) treatment over a 24-month period
- This study aims to evaluate real-world utilization and treatment patterns of venetoclax (V)-based combination regimens across distinct lines of therapy in patients with CLL

METHODS

- The IntegraConnect PrecisionQ Database, containing electronic health records from 2.2 million deidentified community oncology patients, was used to create a retrospective cohort of CLL patients who initiated V, stratified by 1L and 2L+ based on the US Food and Drug Administration approval date of each combination regimen and duration of the time-limited therapy
- Patients receiving 1L V-based therapies were identified from 15 May 2019 to 28 Feb 2024, and patients receiving 2L+ V-based therapies were identified from 08 Jun 2018 to 28 Feb 2023
- All patients were followed through 28 Feb 2025
- The index date was defined as the initiation of V; for patients with multiple lines of therapy containing V, the patient's first V line of therapy was selected for inclusion in the study population, and the V initiation date was the index date
- Descriptive analyses were used to identify treatment patterns (e.g., duration of treatment and frequency of use), and baseline characteristics were examined, including age, sex, race, Eastern Cooperative Oncology Group performances status (ECOG PS), and comorbidities

RESULTS

Baseline Demographics and Clinical Characteristics

- A total of 1590 and 1456 patients who were identified received V in the 1L and 2L+ settings, respectively
- Baseline patient demographics and clinical characteristics are shown in **Table 1**

Table 1. Baseline Patient Demographics and Clinical Characteristics

	Overall (N=3046)	1L (n=1590)	2L+ (n=1456)
Median age (IQR) at V initiation, yr	71 (64, 78)	70 (63, 77)	73 (66, 79)
Sex, n (%)			
Female	1036 (34.1)	545 (34.3)	491 (33.7)
Male	2008 (65.9)	1045 (65.7)	963 (66.1)
Race, n (%)			
White	2123 (69.7)	1151 (72.4)	972 (66.8)
African American	191 (6.3)	86 (5.4)	105 (7.2)
Not documented/unknown/other	732 (24.0)	353 (22.2)	379 (26.0)
Ethnicity, n (%)			
Hispanic	70 (2.3)	37 (2.3)	33 (2.3)
Not Hispanic	2417 (79.3)	1195 (75.2)	1222 (83.9)
Not documented	559 (18.4)	358 (22.5)	201 (13.8)
Payer, n (%)			
Commercial	626 (20.6)	343 (21.6)	283 (19.4)
Medicare/Medicaid	1168 (38.3)	623 (39.2)	545 (37.4)
Self-pay	50 (1.6)	28 (1.8)	22 (1.5)
Other/unknown	1202 (39.5)	596 (37.5)	606 (41.6)
BMI			
Patients with missing data, n (%)	679 (22.3)	317 (19.9)	362 (24.9)
Median (IQR)	29 (25, 41)	29 (25, 38)	30 (25, 47.5)
ECOG status at index, n (%)[a]			
Patients with missing data	758 (24.9)	374 (23.5)	384 (26.4)
ECOG 0	1047 (45.8)	607 (49.9)	440 (14.7)
ECOG 1	1012 (44.2)	513 (42.2)	499 (46.5)
ECOG 2+	229 (10.1)	96 (7.9)	133 (12.4)
CCI			
Mean (SD)	0.3 (0.8)	0.3 (0.9)	0.3 (0.7)
CCI >0, n (%)	530 (17.4)	284 (17.9)	246 (16.9)
Time from CLL/SLL diagnosis to V initiation			
Median (IQR), months	44 (11, 90)	16 (1, 53)	73 (41, 120)
Duration of follow-up			
Median (range), months	26.2 (0, 80.4)	23.8 (0, 68.6)	28.7 (0, 80.4)

[a]% calculations for ECOG 0, ECOG 1, and ECOG 2+ are relative to patients with available data as opposed to the overall n=3046 population.

Abbreviations: 1L, first-line; 2L+, second or later line; BMI, body mass index; CCI, Charlson Comorbidity Index; CLL, chronic lymphocytic leukemia; ECOG, Eastern Cooperative Oncology Group; IQR, interquartile range; SD, standard deviation; SLL, small lymphocytic leukemia; V, venetoclax; yr, year.

Treatment Patterns

- VO was the most common V-based regimen in 1L (61.4%; **Table 2**)
  - However, VO was used by more patients who were younger (age <70 vs 70+: 64.3% vs 58.7%) and male (male vs female: 63.0% vs 58.4%)
- VR and VO were the most common V-based combination regimens in 2L+ (**Table 2**)
- Additional differences were observed between 1L and 2L+
  - Use of VO and VR differed between White and African American patients in 1L (72.4% vs 66.8%) and 2L+ (5.4% vs 7.2%), respectively
  - ECOG PS was better in 1L than 2L+ (PS 0, 1, ≥2: 49.9%, 42.2%, 7.9% vs 41.0%, 46.5%, 12.4%)

Table 2. Venetoclax Treatment Patterns in the 1L and 2L+ Settings

Regimen, n (%)[a]	1L			2L+		
	Overall	Age		Overall	Age	
	(n=1590)	<70 years (n=767)	70+ years (n=823)	(n=1456)	<70 years (n=553)	70+ years (n=903)
V+O	**976 (61.4)**	**493 (64.3)**	**483 (58.7)**	**307 (21.1)**	**121 (21.9)**	**186 (20.6)**
V+O+BTKi	**72 (4.5)**	**42 (5.5)**	**30 (3.7)**	**34 (2.3)**	**14 (2.5)**	**20 (2.2)**
V+O+Z	12 (0.8)	10 (1.3)	2 (0.2)	4 (0.3)	1 (0.2)	3 (0.3)
V+O+A	23 (1.5)	11 (1.4)	12 (1.5)	15 (1.0)	6 (1.1)	9 (1.0)
V+O+I	37 (2.3)	21 (2.7)	16 (1.9)	15 (1.0)	7 (1.3)	8 (0.9)
V+BTKi	**69 (4.3)**	**31 (4.0)**	**38 (4.6)**	**87 (6.0)**	**42 (7.6)**	**45 (5.0)**
V+Z	9 (0.6)	3 (0.4)	6 (0.7)	6 (0.4)	3 (0.5)	3 (0.3)
V+A	19 (1.2)	12 (1.6)	7 (0.9)	22 (1.5)	12 (2.2)	10 (1.1)
V+I	39 (2.5)	15 (2.0)	24 (2.9)	59 (4.1)	27 (4.9)	32 (3.5)
V+P	2 (0.1)	1 (0.1)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)
V+R	**109 (6.9)**	**49 (6.4)**	**60 (7.3)**	**362 (24.9)**	**145 (26.2)**	**217 (24.0)**
V+R+BTKi	**0 (0.0)**	**0 (0.0)**	**0 (0.0)**	**43 (3.0)**	**15 (2.7)**	**28 (3.1)**
V monotherapy	**284 (17.9)**	**112 (14.6)**	**172 (20.9)**	**500 (34.3)**	**161 (29.1)**	**339 (37.5)**
V+other	**80 (5.0)**	**40 (5.2)**	**40 (4.9)**	**123 (8.5)**	**55 (10.0)**	**68 (7.5)**
V+O+other	52 (3.3)	26 (3.4)	26 (3.2)	57 (3.9)	26 (4.7)	31 (3.4)
V+R+other	19 (1.2)	9 (1.2)	10 (1.2)	52 (3.6)	24 (4.3)	28 (3.1)

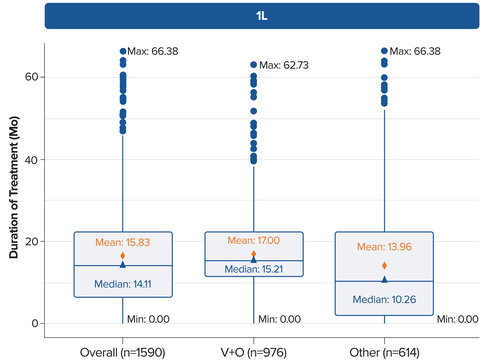
[a]A regimen line is defined as drug starts within 60 days of initiation; if a patient switched from V to BTKi within 60 days of starting V, the regimen would include V + BTKi.

Abbreviations: 1L, first-line; 2L+, second or later line; A, acalabrutinib; BTKi, Bruton tyrosine kinase inhibitor; I, ibrutinib; O, obinutuzumab, P, pirtobrutinib, R, rituximab; V, venetoclax; Z, zanubrutinib.

Treatment Duration

- In the 1L setting, the median treatment duration for VO was 15.21 months (**Figure 1**)
  - Among patients who had 1L VO treatment, 70.6% received therapy for longer than the recommended 12 months
  - Many patients remained on therapy for an additional year, as only 57.4% discontinued treatment by 24 months

Figure 1. Duration of Treatment in the 1L Setting by Regimen[a]

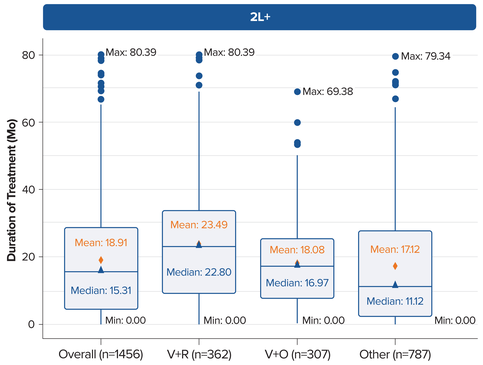


	Overall (n=1590)	V+O (n=976)	Other (n=614)
Median (IQR) DoT, mo	14.1 (6.4, 22.2)	15.2 (11.3, 22.3)	10.3 (1.8, 22.1)
DoT <12 mo, n (%)	562 (35.4)	240 (24.6)	322 (52.4)
DoT 12 mo, n (%)	65 (4.1)	47 (4.8)	18 (2.9)
DoT >12 mo, n (%)	963 (60.6)	689 (70.6)	274 (44.6)

[a]Figure includes all patients.
Abbreviations: 1L, first-line; DoT, duration of treatment; IQR, interquartile range; mo, months; O, obinutuzumab; V, venetoclax.

- In the 2L+ setting, median treatment duration was 22.80 months for VR and 16.97 months for VO (**Figure 2**)
  - 48.1% of patients who received 2L+ VR remained on therapy longer than the recommended 24 months
  - 52.3% discontinued treatment by 36 months

Figure 2. Duration of Treatment in the 2L+ Setting by Regimen[a]



	Overall (n=1456)	V+R (n=362)	V+O (n=307)	Other (n=787)
Median (IQR) DoT, mo	15.3 (4.1, 28.5)	22.8 (9.2, 33.8)	17.0 (7.3, 25.5)	11.1 (2.4, 27.6)
DoT <24 mo, n (%)	917 (63.0)	184 (50.8)	202 (65.8)	531 (67.5)
DoT 24 mo, n (%)	30 (2.1)	4 (1.1)	11 (3.6)	15 (1.9)
DoT >24 mo, n (%)	509 (35 .0)	174 (48.1)	94 (30.6)	241 (30.6)

[a]Figure includes all patients.
Abbreviations: 2L+, second or later line; DoT, duration of treatment; IQR, interquartile range; mo, months; O, obinutuzumab; R, rituximab; V, venetoclax.

LIMITATIONS

- The line of therapy regimens are based on drug starts within 60 days of initiation and may include patients who switched from one regimen to another (ie, from VO to BTKi or BTKi to VO)
- Additionally, the analysis is based on structured electronic medical records data and may include oral medications that were ordered but not taken by the patient
- This analysis is based on an interim analysis of structured electronic medical record in the limitations data, which is based on prescription refill and days' supply information. An additional study currently underway will evaluate a sample of patients selected for manual chart curation to confirm therapy start and end dates

ACKNOWLEDGMENTS

This study was funded by BeOne Medicines, Ltd.

CORRESPONDENCE: Jing-Zhou Hou, houj@upmc.edu

Presented at HOPA 2026; March 25-27, 2026, New Orleans, LA, USA.
Previously presented at ASH 2025; December 6-9, 2025, Orlando, FL, USA.