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**Real-world chronic lymphocytic leukemia (CLL)–specific biomarker testing patterns and frontline treatment patterns in community oncology patients with CLL/small lymphocytic lymphoma (SLL): an electronic health record study**

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**Background:** CLL/SLL is the most common adult leukemia in the United States. Guidelines recommend biomarker testing (del[17p], *TP53* mutation and IGHV status) prior to frontline (1L) therapy to guide use of targeted agents, such as second-generation BTK inhibitors, over chemoimmunotherapy (CIT) or the first-generation BTK inhibitor ibrutinib. However, real-world testing practices vary.

**Objective:** To assess biomarker testing frequency, associated factors, and 1L treatment (tx) patterns in routine care at Baylor Scott & White Health (BSWH), a large integrated health system in Texas.

**Methods:** This retrospective cohort chart review study included patients (pts) with CLL/SLL who initiated 1L tx at BSWH from 2020 to 2024. Pts in clinical trials or with Richter's transformation at 1L were excluded. Rates of biomarker testing (del[17p] by FISH and *TP53* and IGHV by sequencing) and mutation results were summarized. Associations of demographic, social (insurance coverage, social vulnerability index [SVI], rural-urban commuting area [RUCA]), clinical characteristics and del[17p] testing, were assessed. 1L tx was categorized by drug, class, and regimen levels. Regimens by del[17p] testing status were compared. Comparisons were assessed using  $\chi^2$ , Fisher's exact, t, or Wilcoxon tests.

**Results:** In 223 pts, 190 (85.2%) had del[17p] testing, 24 (10.8%) *TP53*, and 46 (20.6%) IGHV. Most testing occurred pre-1L tx (del[17p], 79.5%; *TP53*, 62.5%; IGHV, 71.7%). Among pts with mutation results, del[17p] loss was present in 13.2%, *TP53* mutations in 4.2% and IGHV was unmutated in 45.7%.

Pts without del[17p] testing (n=33) were older than those tested (median, 79 vs 72 years;  $P=.018$ ). Sex, payer, RUCA, and SVI were similar across groups.

Comparing pts with del[17p] testing vs those without del[17p] testing, frequency of second-generation BTK inhibitor-based regimens was 43.7% vs 39.4%, BCL2 inhibitor-based regimens 17.4% vs 9.1%, and anti-CD20 monotherapy 6.3% vs 15.2%. Differences in regimens were directional but not statistically significant ( $\chi^2=16.0$ ;  $P=.141$ ).

**Conclusions:** In this real-world CLL cohort, *TP53* and IGHV sequencing rates remained low, while del[17p] testing was common and usually pre-1L tx. Pts with del[17p] testing were more likely to receive guideline-concordant targeted therapies, including second-generation BTK inhibitors and BCL2-based regimens. Findings highlight opportunities to strengthen biomarker-driven decision-making and optimize 1L CLL care. Future studies should explore additional biomarkers in larger cohorts.