Retrospective Analysis of Cardiovascular Risk Assessment Prior to BTK Inhibitor Treatment for Patients with CLL and B-cell Lymphomas

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INTRODUCTION

- BTK inhibitors (BTKi) are a cornerstone therapy for CLL and other B-cell malignancies.[1]
- Cardiovascular (CV) toxicity remains a key safety consideration that can limit BTKi use and affect patient outcomes.[2-4]
- Expert consensus guidelines recommend baseline CV assessment prior to BTKi initiation, but real-world practices vary widely[2].
- **Aims:**
  - Retrospectively analyze the CV risk assessment performed prior to BTKi initiation.
  - Identify clinician-reported knowledge and barriers to CV assessment prior to BTKi initiation as part of an institutional quality improvement initiative.

METHODS

- **Design:** IRB-approved, single-center retrospective cohort study.
- **Population:** Adults with CLL/SLL or B-cell lymphoma initiated on BTKi therapy between 2021–2026 at Loyola identified through pharmacy database.

Measures:

- **Baseline ECG:** Assessed for completion within 30 days prior to BTKi initiation.
- **TTE indication:** Defined as pre-existing cardiovascular disease, ≥2 cardiovascular risk factors, or an abnormal ECG.
- **Complete CV assessment:** Defined as an ECG within 30 days and, when indicated, a TTE within 6 months prior to BTKi initiation.
- Survey to physicians and APPs to identify knowledge and barriers to CV assessment.

RESULTS

Table 1: Patient Characteristics

Patients Treated with BTKi from 2021-2026 (N=98)	
Age	71.4 (41-96)
Male sex	62 (63%)
DISEASE	
CLL/SLL (Total)	64 (65%)
R/R - CLL/SLL	12 (12%)
WM/LPL (Total)	15 (15%)
R/R - WM/LPL	3 (3%)
MCL (Total)	12 (12%)
R/R – MCL	11 (11%)
Other	7 (7%)
BTK INHIBITOR	
Acalabrutinib	51 (52%)
Zanubrutinib	28 (29%)
Ibrutinib	18 (18%)
Pirtobrutinib	1 (1%)

R/R = relapsed/refractory, LPL = lymphoplasmacytic lymphoma, MCL = mantle cell lymphoma, WM = Waldenstrom macroglobulinemia

Figure 1: Patient Baseline CV Comorbidities

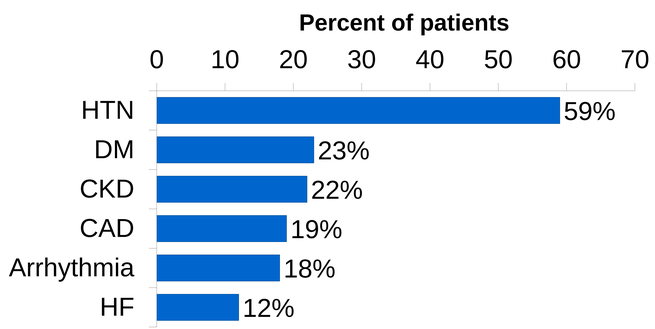


Figure 2: Baseline CV Assessment Prior to BTKi (n=98)

18%
Baseline ECG
18/98 within 30 days before BTKi

66%
TTE warranted
65/98 met risk-based criteria

22%
TTE completed
14/65 among patients warranting TTE

12%
Complete CV assessment
12/98 met the defined endpoint

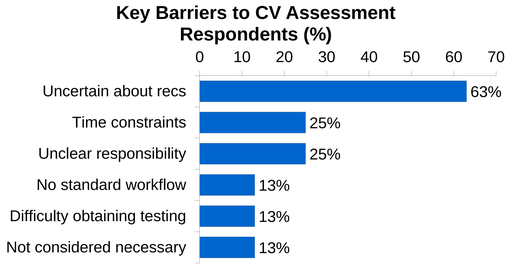
Figure 3: Preliminary Results of Survey (n=8)

50%
Not familiar with CV assessment recommendation

50%
Not confident identifying patients needing additional CV evaluation

63%
Cited uncertainty regarding recommendation as a leading barrier

63% vs 18%
Usually/ always report obtaining ECG vs documented ECG completion in the retrospective cohort



CONCLUSIONS

- **Limitations:** Single center; pharmacy database incomplete and more patients to be analyzed; different treating physicians during the study timeline and at the time of the survey.
- Despite consensus recommendations supporting baseline ECG and risk-based CV assessment prior to BTKi treatment, the real-world implementation is low and remains inadequate overall.
- This data is the basis of a quality improvement initiative aimed at standardizing the cardiovascular evaluation prior to BTKi initiation in patients with CLL and other B-cell lymphomas.

REFERENCES

1. National Comprehensive Cancer Network (NCCN) Guidelines for CLL/SLL and B-cell lymphomas. **2.** Awan FT et al. International consensus statement on cardiovascular risk management of BTK inhibitors. Blood Advances. 2022. **3.** Quartermaine C et al. Cardiovascular toxicities of BTK inhibitors. JACC CardioOncology. 2023. **4.** Fradley MG et al. Cardio-oncology in hematologic malignancies. Journal of the American College of Cardiology. 2021.

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