Age-Stratified Survival Trends in Acute Myeloid Leukemia Before and After Venetoclax Adoption: A Comprehensive Population-Level and Real-World Analysis

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INTRODUCTION

- Outcomes in **older adults with acute myeloid leukemia (AML)** have historically been poor because many are ineligible for intensive chemotherapy.
- The 2018 approval of **venetoclax + hypomethylating agents (VEN+HMA)** substantially changed AML treatment.
- The population-level survival benefit of VEN+HMA across different age groups remains incompletely defined.

AIM

- To evaluate the **age-stratified impact of VEN+HMA adoption** on population-level overall survival (OS) and real-world outcomes in adults with AML.

OUTCOMES

- **3-year and median OS, 1-year all-cause mortality, and complete remission (CR)**.

METHOD

- Retrospective, age-stratified comparative effectiveness analysis using **SEER** and real-world electronic health record data.
- Included adults diagnosed with AML between **2000–2022**.
- Compared the **pre-venetoclax (2016–2018)** and **post-venetoclax (2019–2021)** eras.
- Age groups: **18–59 years** and **≥60 years**.
- Compared **VEN+HMA** with intensive chemotherapy (**7+3**) or HMA monotherapy.

CONCLUSIONS

- Venetoclax adoption was associated with **improved survival in older AML populations**.
- Survival disparities among non-Hispanic Black patients **narrowed in the post-venetoclax era**.
- Real-world survival with VEN+HMA remained **below clinical trial benchmarks**.
- Among **fit younger adults, intensive chemotherapy was associated with lower 1-year mortality than VEN+HMA.**
- Optimization of **VEN+HMA dosing and patient selection** remains necessary.

RESULTS

- **12,243 patients** were included in the SEER analysis.
- **3-year OS improved significantly** after venetoclax adoption: **31.6% → 34.7% (P < 0.01)**.
- In older adults, real-world median OS with VEN+HMA was **9.3–11.0 months**, compared with **14.7 months** in VIALE-A.
- In younger, curative-eligible adults, VEN+HMA was associated with higher 1-year mortality than 7+3: **20.6% vs 8.9%; HR 2.55**.

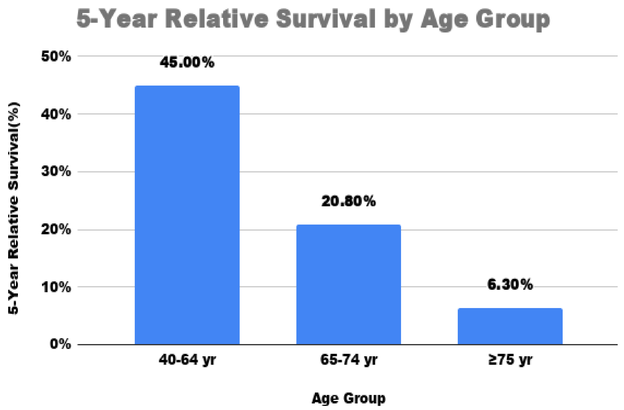

Figure 1. Five-year relative survival declined markedly with increasing age, from **45.0% among patients aged 40–64 years to 6.3% among those aged ≥75 years**.

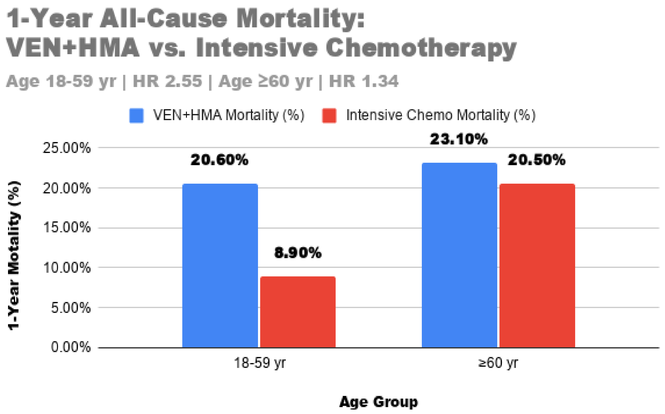

Figure 2. One-year mortality was higher with VEN+HMA in younger adults, with a smaller difference in adults aged ≥60 years.

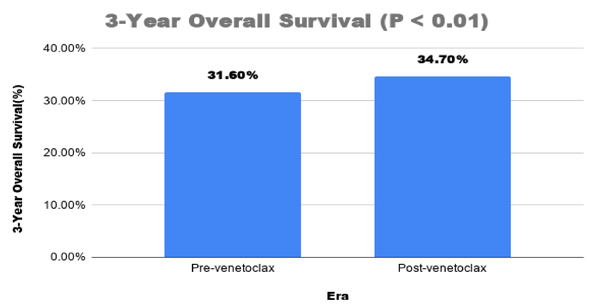

Figure 3A. Three-year overall survival improved from **31.6% in the pre-venetoclax era to 34.7% in the post-venetoclax era (P < 0.01)**.

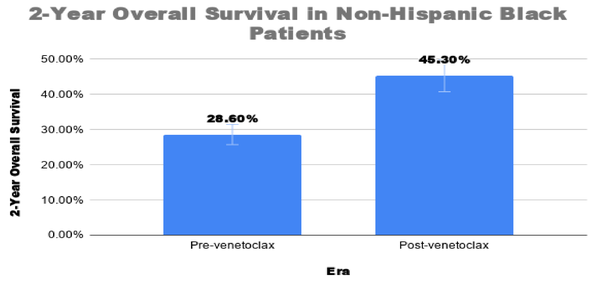

Figure 3B. Two-year overall survival among non-Hispanic Black patients increased from **28.6% to 45.3%** following venetoclax adoption, suggesting narrowing racial disparities in survival.

CONTACT INFORMATION

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