REAL WORLD COMPARATIVE 3- AND 5-YEAR OUTCOMES AMONG FIRST-LINE IMATINIB, DASATINIB, AND NILOTINIB IN CHRONIC MYELOID LEUKEMIA

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Introduction

First-line tyrosine kinase inhibitor (TKI) selection in chronic myeloid leukemia (CML) affects both molecular response and long-term safety and healthcare utilization.

Although imatinib, dasatinib, and nilotinib are all guideline-endorsed frontline agents, comparative real-world outcome data remain limited.

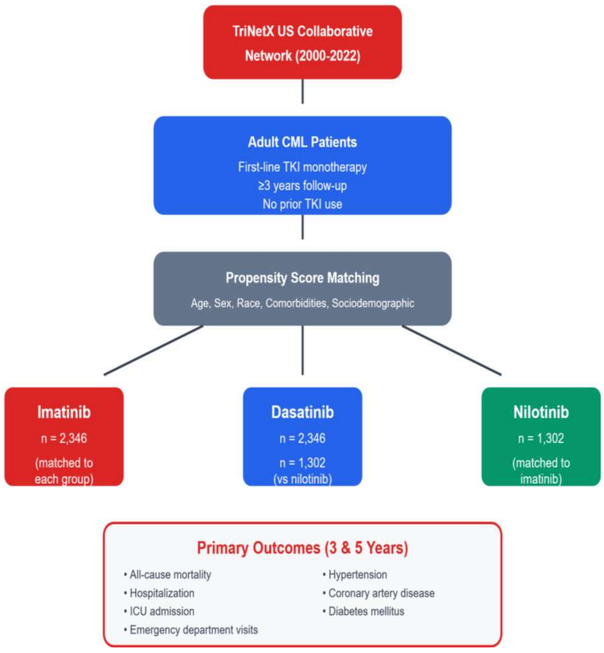
Aim

To evaluate the comparative effectiveness and safety of first-line tyrosine kinase inhibitors—imatinib, dasatinib, and nilotinib—in adults with chronic myeloid leukemia using multicenter real-world EHR data.

Objectives

To compare 3- and 5-year outcomes across propensity-matched cohorts initiating each TKI, including overall survival, hospitalization and ICU use, and key adverse events (e.g., infections, neuropathy, metabolic and cardiovascular complications).

Methods



Primary Outcomes (3 & 5 Years)

- All-cause mortality
- Hospitalization
- ICU admission
- Emergency department visits
- Hypertension
- Coronary artery disease
- Diabetes mellitus

Results

Survival:

Imatinib showed the lowest mortality at both 3 years (9.2% vs dasatinib 11.5%, RR≈1.25; vs nilotinib 10.0%, NS) and 5 years (11.2% vs dasatinib 13.8%, RR 1.23, p=0.008; vs nilotinib 12.5% vs 12.9%, NS).

Utilization:

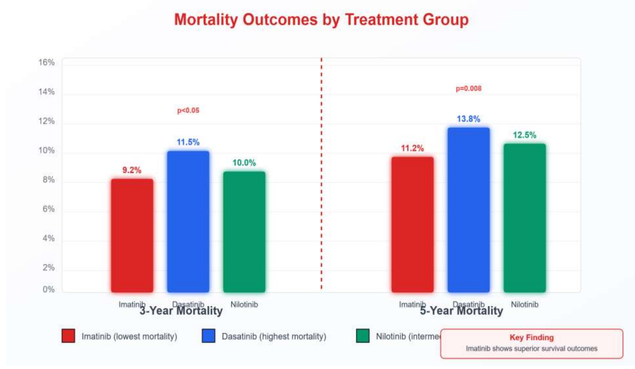
At 5 years, hospitalization was highest with imatinib (23.5%) and lowest with nilotinib (21.2%, NS); dasatinib had more ICU admissions than imatinib (9.4% vs 6.2%).

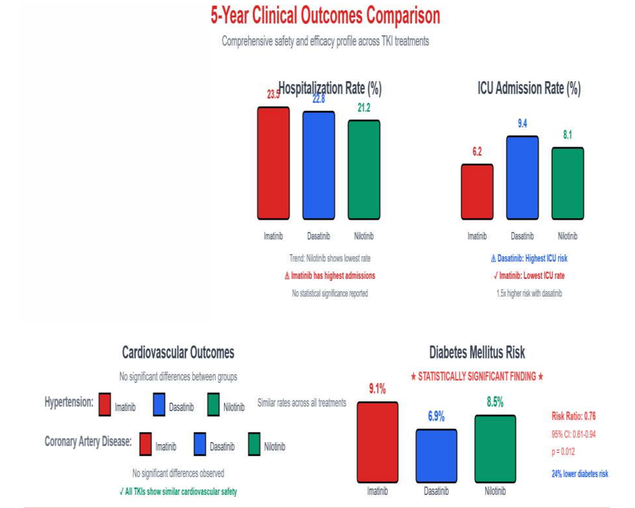
Safety profile:

Dasatinib carried a significantly lower diabetes risk than imatinib (6.9% vs 9.1%, RR 0.76, p=0.012), while hypertension and CAD rates were similar across TKIs.

Results







Discussion

Imatinib: Superior survival outcomes (lowest mortality)

Dasatinib: Higher mortality/ICU risk but significantly lower diabetes risk

Nilotinib: Balanced profile with trend toward reduced hospitalizations

