BREAKTHROUGH Patient Journey

Prolonged Time to Anti-HTN Treatment Escalation in US Patients

Key Findings

- Up to 51% of patients with an HTN diagnosis received a 2nd line of antihypertensive therapy 14.8 months after the 1st LoT
- Time between each subsequent LoT was prolonged and many patients waited at least 7 months to receive antihypertensive treatment escalation

Methods

- The BREAKTHROUGH Patient Journey study was an observational, retrospective analysis to characterize the first 4 antihypertensive LoT and quantify time intervals (treatment escalation) between successive LoTs

Data Sources

Analysis used de-identified administrative claims data from:

- 100% Medicare Fee-for-Service database
- Inovalon MORE^2 Registry® of closed claims
  - Medical and pharmacy claims from Managed Medicaid, Medicare Advantage, and commercially insured patients

Study Population and Outcomes

Inclusion Criteria

- Age ≥18 years old
- Primary diagnosis of HTN between January 2019 – March 2024
  - At least 1 inpatient visit or
  - At least 2 outpatient visits (>30 days apart)
- ≥12 months of continuous enrollment preceding and ≥30 days following the index data[a]

Study Outcomes

- LoT[b]
- Time to initiation of antihypertensive LoT (treatment escalation[c])
- Medication adherence
- Optimization of dose (≥50% of maximum dose)

[a]Index date was defined as date of earliest claim with HTN diagnosis; [b]LoT was defined as the first antihypertensive class(es) prescribed on or following the index date and continued until a new treatment was initiated or all medications were discontinued. LoT could be monotherapy or combination therapy of different classes, including fixed dose combination pill; [c]Treatment escalation was defined as progression to a subsequent LoT.

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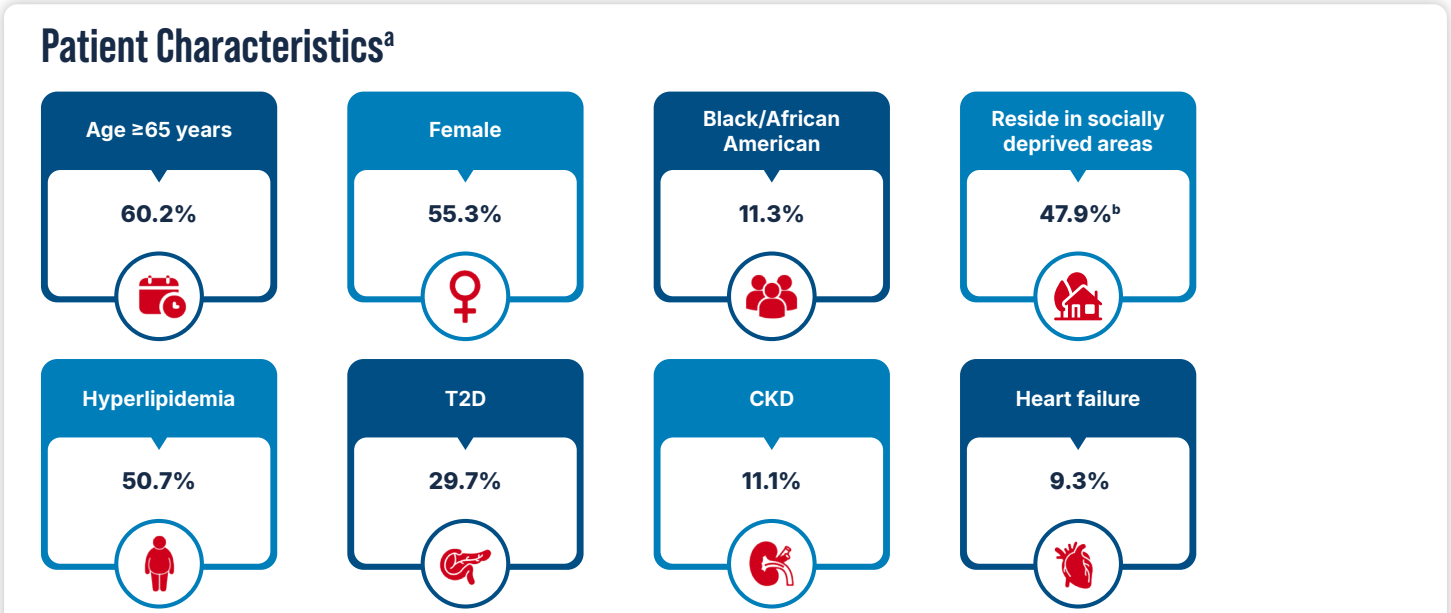
Results

Patient Characteristics

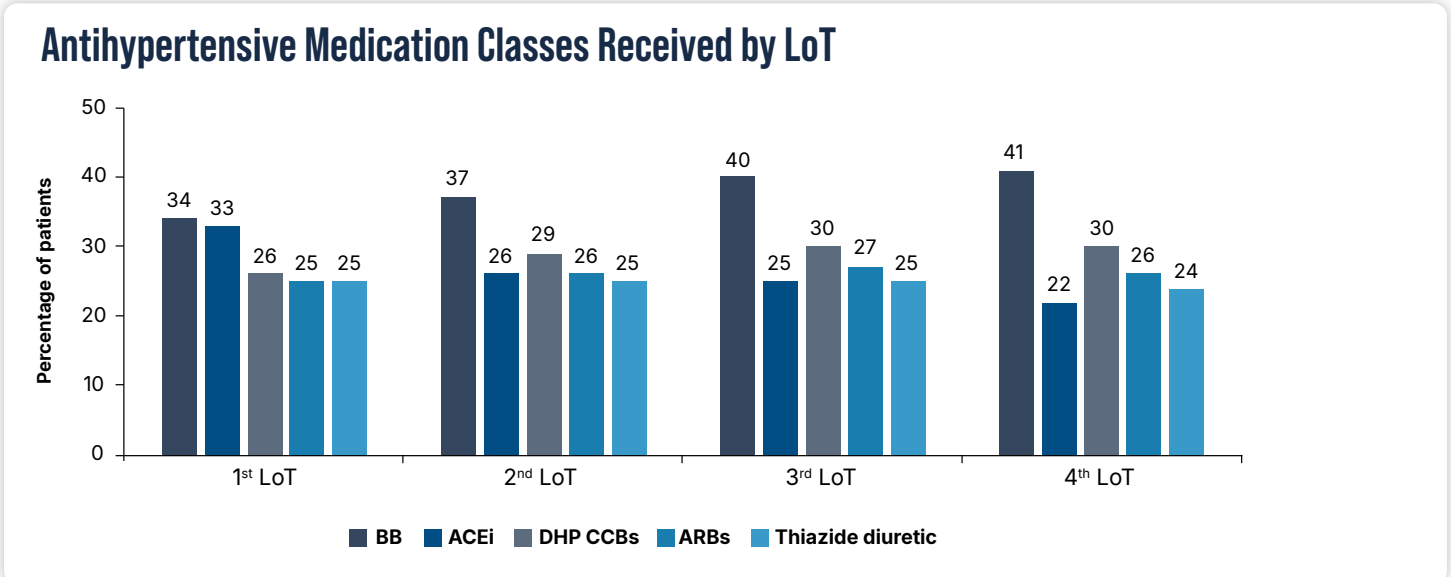
- A total of 19,060,253 patients were included, with a mean (SD) follow-up duration of 31.1 (17.2) months



[a]Age ≥65 years, n=11,473,220; Female, n=10,543,525; Black/African American, n=2,745,639; Reside in socially deprived areas, n=9,121,806; Hyperlipidemia, n=9,659,201; T2D, n=5,669,483; CKD, n=2,118,858; Heart failure, n=1,768,552; [b]Area Deprivation Index is created by a US government agency (Health Resources and Services Administration) to leverage zip code level information as a measure of social deprivation status of residents.

First 4 Antihypertensive LoTs

- BBs, ACEis, and DHP CCBs were the most common antihypertensive classes received
- MRAs were dispensed to 1.8%, 3.4%, 3.8%, and 4.4% of patients during the 1st, 2nd, 3rd, and 4th LoTs, respectively
- Combination therapy with ≥2 classes increased from 46.9% (1st LoT) to 57.2% (4th LoT)



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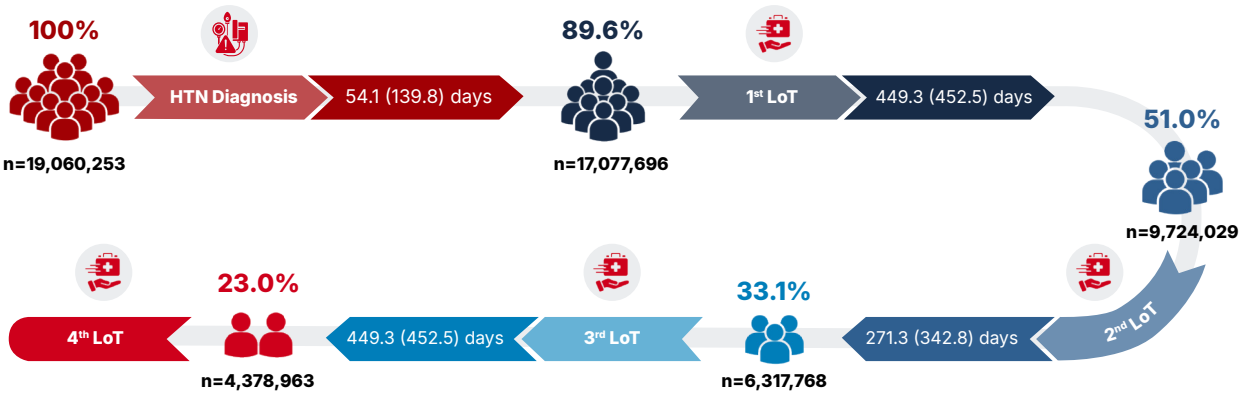
Results (continued)

Time Intervals Between LoTs

- Of the 19,060,253 patients, 89.6% received a 1st LoT after an average of 54.1 days (1.8 months) from HTN diagnosis
  - 51.0% of patients received a 2nd LoT 449.3 days (14.8 months) after the 1st LoT
  - 33.1% of patients received a 3rd LoT 271.3 days (8.9 months) after the 2nd LoT
  - 23.0% of patients received a 4th LoT 219.6 days (7.2 months) after the 3rd LoT

Mean Time Between Antihypertensive LoTs in Patients With HTN



Note: Data represent the percentage of patients with HTN receiving each antihypertensive LoT and mean (SD) time in days between each subsequent LoTs.

Optimization of Dose

Optimization of Dose[a] by Antihypertensive Regimen

Antihypertensive Regimen	Percentage of Patients
Monotherapy	50.0%-55.5%
2 class combinations	35.8%-36.2%
≥3 class combinations	34.5%-33.2%

[a]≥50% of maximum dose.

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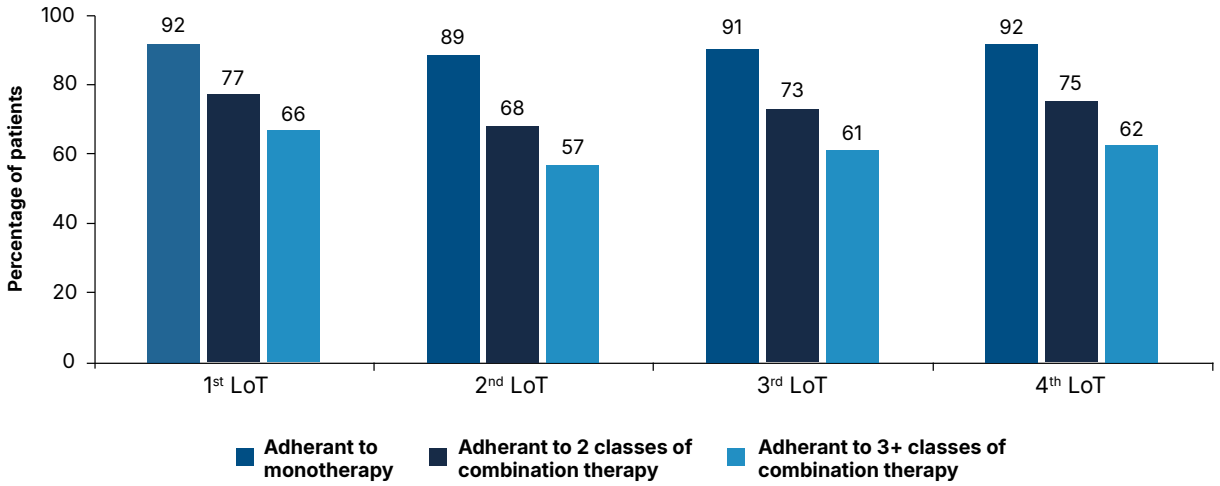
Results (continued)

Medication Adherence Rates

- Antihypertensive medication adherence rates were generally consistent across each LoT
- The proportion of adherent patients decreased with each additional class of combination therapy
  - 89%-92% patients adherent on monotherapy compared to 57%-66% on 3+ classes of combination therapy

Medication Adherence to Antihypertensive Classes by LoT



Note: Graph represented the percentage of patients adherent (proportion of days covered ≥80%) to antihypertensive medications by LoT. BP values were not available for assessment.

Abbreviations:
ACEi angiotensin-converting enzyme inhibitor
BB beta blocker
BP blood pressure
CKD chronic kidney disease
DHP CCB dihydropyridine calcium channel blocker
HTN hypertension
LoT line of therapy
MRA mineralocorticoid receptor antagonist
SD standard deviation
T2D type 2 diabetes
US United States

Reference:
Agiro A, Wilson K, Pennington E, et al. Prolonged time to anti-hypertension treatment escalation in US patients: insights from the BREAKTHROUGH patient journey retrospective real-world study [poster]. Presented at: 46th International Aldosterone Conference (IAC); July 10-11, 2025; San Francisco, CA.