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Demographic, Cognitive, and Biomarker Patterns in MCI and Alzheimer's Disease Among Patients Initiating donanemab in the Real-World

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OBJECTIVE

- Characterize demographics, diagnoses, and baseline cognitive severity among real-world donanemab initiators.
- Assess pre-treatment biomarker testing, APOE genotype patterns, and time from diagnostic evaluation to donanemab initiation.

CONCLUSION

- In US real-world practice, donanemab initiators were assigned diagnostic codes for either (or both) MCI or Alzheimer's disease and demonstrated cognitive severity consistent with early-stage disease based on available MMSE assessments.
- Characteristics of patients treated with donanemab during the first year following US approval indicate patient selection aligned with appropriate use recommendations and early-stage treatment intent.
- Pre-treatment evaluation commonly included amyloid and P-tau biomarker testing, with APOE genotyping performed in a subset of patients, reflecting real-world diagnostic pathways.

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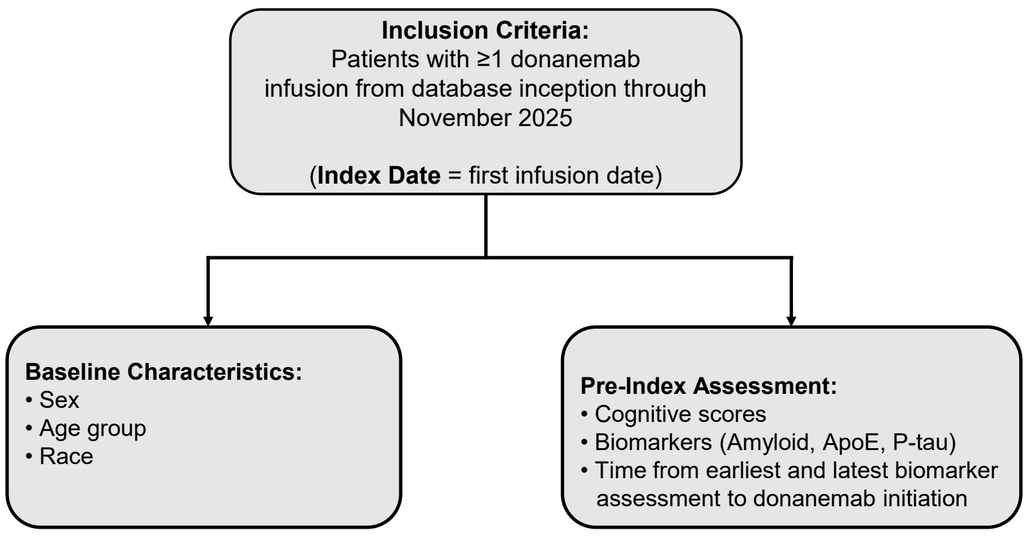
STUDY DESIGN



Methodology

- **Study Design:** Retrospective, real-world observational cohort study of patients treated with donanemab using longitudinal US healthcare data.
- **Study Population:** Patients with ≥1 donanemab infusion during the study period; the index date was defined as the first donanemab infusion.
- **Baseline Characterization:** Demographics, ICD-based disease classification (AD vs MCI), and cognitive status were assessed using the most recent pre-index data available, including MMSE scores where recorded.
- **Biomarker Assessment:** Availability and results of amyloid biomarkers, P-tau, and APOE genotyping prior to treatment initiation were evaluated descriptively.
- **Timing Analyses:** Time from first and most recent biomarker assessment to treatment initiation was calculated to characterize real-world diagnostic-to-treatment intervals.
- All analyses were descriptive. Continuous variables were summarized using means, and categorical variables using counts and percentages.

BACKGROUND

- Alzheimer's disease (AD) and mild cognitive impairment (MCI) due to AD impose a substantial clinical and economic burden, with increasing demands on US healthcare systems, payers, and caregivers.
- Unlike symptomatic therapies, amyloid-targeting treatments such as donanemab require biomarker confirmation and cognitive assessment prior to initiation, introducing diagnostic, operational, and access considerations in US real-world clinical practice.
- Payer coverage policies, availability of biomarker testing, and requirements for ongoing monitoring may contribute to variability in treatment initiation, timing, and healthcare resource utilization outside of clinical trials.
- Real-world evidence (RWE) using longitudinal US data from NeuroDiscovery AI is essential to complement clinical trial data by characterizing patient selection, diagnostic pathways, and treatment timelines, informing value assessment and reimbursement decision-making for diagnostics-dependent therapies.

KEY RESULTS

Cohort definition

Selection Criteria	N	%
Patients with ≥1 claim for donanemab from database inception through Nov 2025	794	100.0%

- Retrospective, real-world observational study of 794 patients initiating donanemab. The index date was defined as the first donanemab infusion.

Time to Treatment from Earliest and Latest Biomarker (in days)

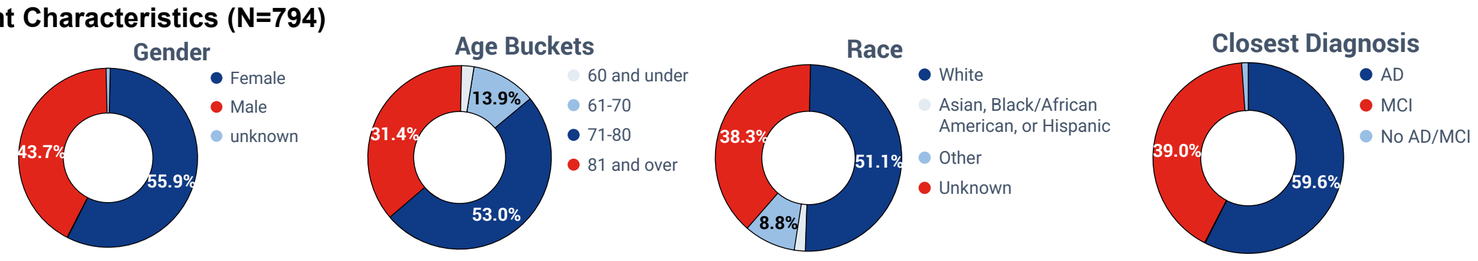
	N	Min	Mean	SD	Max
Time to Treatment from Earliest Biomarker	757	10.0	237.4	187.3	728.0
Time to Treatment from Latest Biomarker	757	1.0	51.2	55.3	432.0

Abbreviations: N - patient size; Min - minimum; Max - maximum; SD - standard deviation

- The mean time from the most recent biomarker assessment to treatment initiation was 51 days.
- The mean time from the first biomarker to treatment initiation was 237 days, reflecting real-world diagnostic and treatment workflows.

Baseline Demographic, Biomarker and Cognitive Results

Patient Characteristics (N=794)



Abbreviations: AD - Alzheimer's Disease, MCI - Mild Cognitive Impairment

- The cohort had a balanced gender distribution (55.9% female), was predominantly White, and 84.3% were aged ≥71 years.
- At treatment initiation, approximately two-thirds of patients were classified as Alzheimer's disease and one-third as MCI based on ICD codes.

APOE Status

APOE Patients	N	%
	581	73.2%
Non-ε4 Carrier	222	28.0%
ε4 Carrier (one ε4 allele)	214	27.0%
ε4 Homozygous	25	3.1%
Unknown	120	15.1%

Abbreviations: APOE - Apolipoprotein E

- APOE genotyping was available for approximately 73% of the initiators, with a higher proportion of non-ε4 carriers, followed by ε4 heterozygotes and a smaller group of ε4 homozygotes.

Diagnostic Characteristics

Biomarker Status

Biomarker Type	N	%
Amyloid	740	93.2%
Blood	74	9.3%
CSF	31	3.9%
PET	544	68.5%
Unknown	91	11.5%
P-tau	242	30.5%
Blood/Plasma	242	30.5%

Abbreviations: CSF - Cerebrospinal Fluid, PET - Positron Emission Tomography, P-tau - Phosphorylated Tau

- Amyloid and P-tau217 biomarker results were available for nearly all patients. Many patients have more than one biomarker test.

Cognitive Scores

MMSE Patients	N	%
	418	52.6%
MMSE > 27 (MCI)	211	50.5%
MMSE 24 - 26 (MCI / Mild AD)	98	23.4%
MMSE 20 - 23 (Mild AD)	88	21.1%
MMSE < 20 (Moderate AD)	21	5.0%

Abbreviations: MMSE - Mini-Mental State Examination, AD - Alzheimer's Disease, MCI - Mild Cognitive Impairment

- Out of 794 patients, MMSE data were available for 53% of patients, with scores consistent with MCI (MMSE > 27) in 50.5% and mild AD (MMSE 20–26) in 44.5%.

Charlson Comorbidity Index

CCI Category	N	%
0	259	32.6%
1	427	53.8%
2	66	8.3%
3	8	1.0%
4	2	0.3%

Abbreviations: CCI - Charlson Comorbidity Index

- Comorbidity burden was generally low, with 86.4% of patients having a Charlson Comorbidity Index (CCI) score of 0–1 (CCI 0: 32.6%; CCI 1: 53.8%), while only 9.6% had a CCI ≥2.

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Disclosures: The authors Ann Hartry and Drew Spargo are employees and shareholders of Eli Lilly and Company..