

# EE458 Healthcare Expenditure Among Individuals Living with Alzheimer's Disease: A Japanese Public Healthcare Perspective



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**OBJECTIVE**  
To estimate direct healthcare costs for individuals with Alzheimer's disease (AD), stratified by disease severity, from the perspective of the Japanese public healthcare system.

- In Japan, cost-effectiveness analysis (CEA) guidelines recommend estimating healthcare costs by disease state using domestic claims database that reflect real-world clinical practice. However, for AD, healthcare costs stratified by disease severity have not been sufficiently reported using Japanese claims data [1-3].
- This study inferred the direct healthcare costs associated with AD by disease severity using Japanese healthcare claims data.

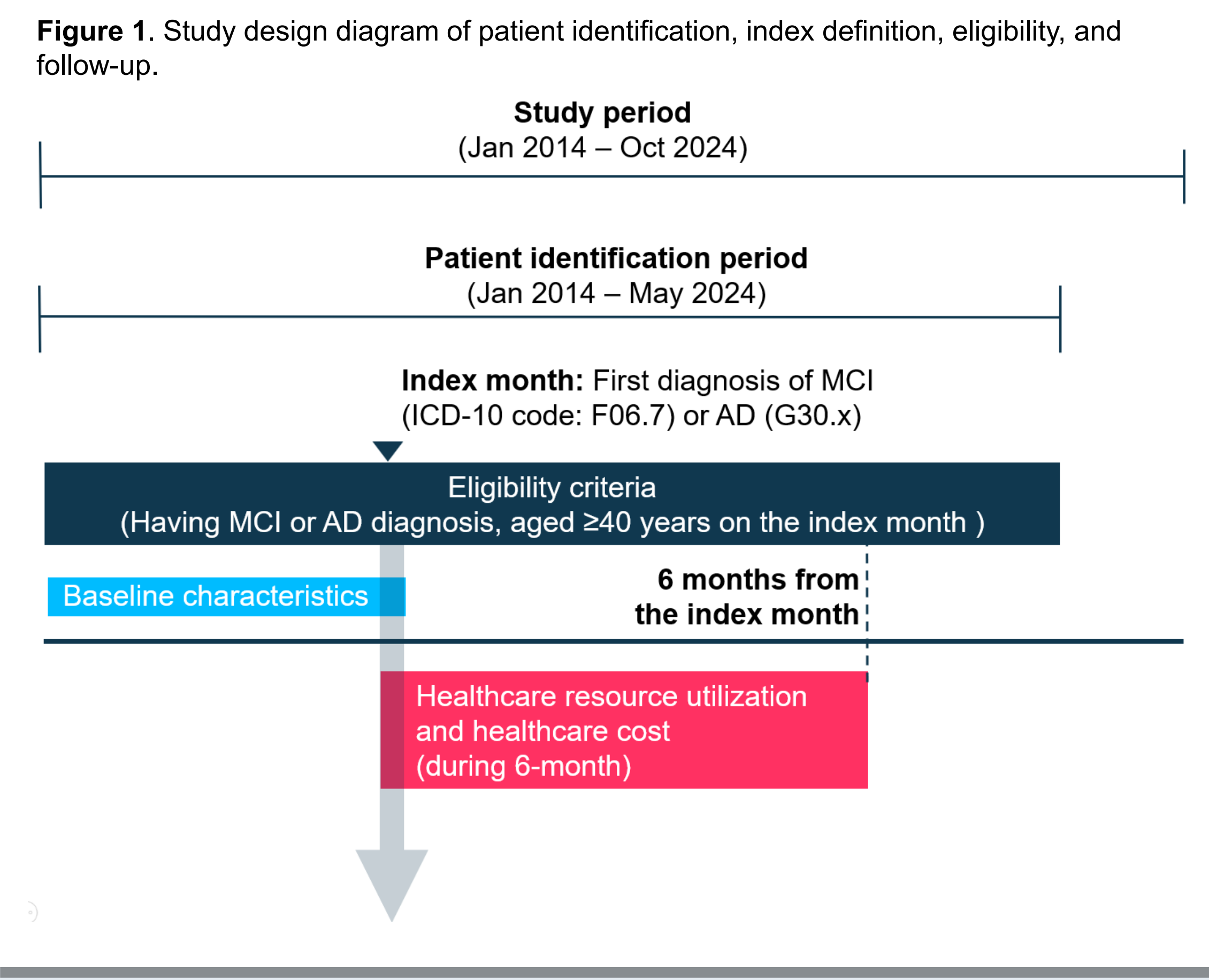
**CONCLUSIONS**

- Direct healthcare costs increased proportionally with AD severity, with the exception of mild cognitive impairment (MCI), which exhibited higher costs than mild AD dementia.
- The severity-specific direct healthcare cost estimates generated in this study are expected to serve as key input parameters for CEA of AD treatments in Japan.

## STUDY DESIGN

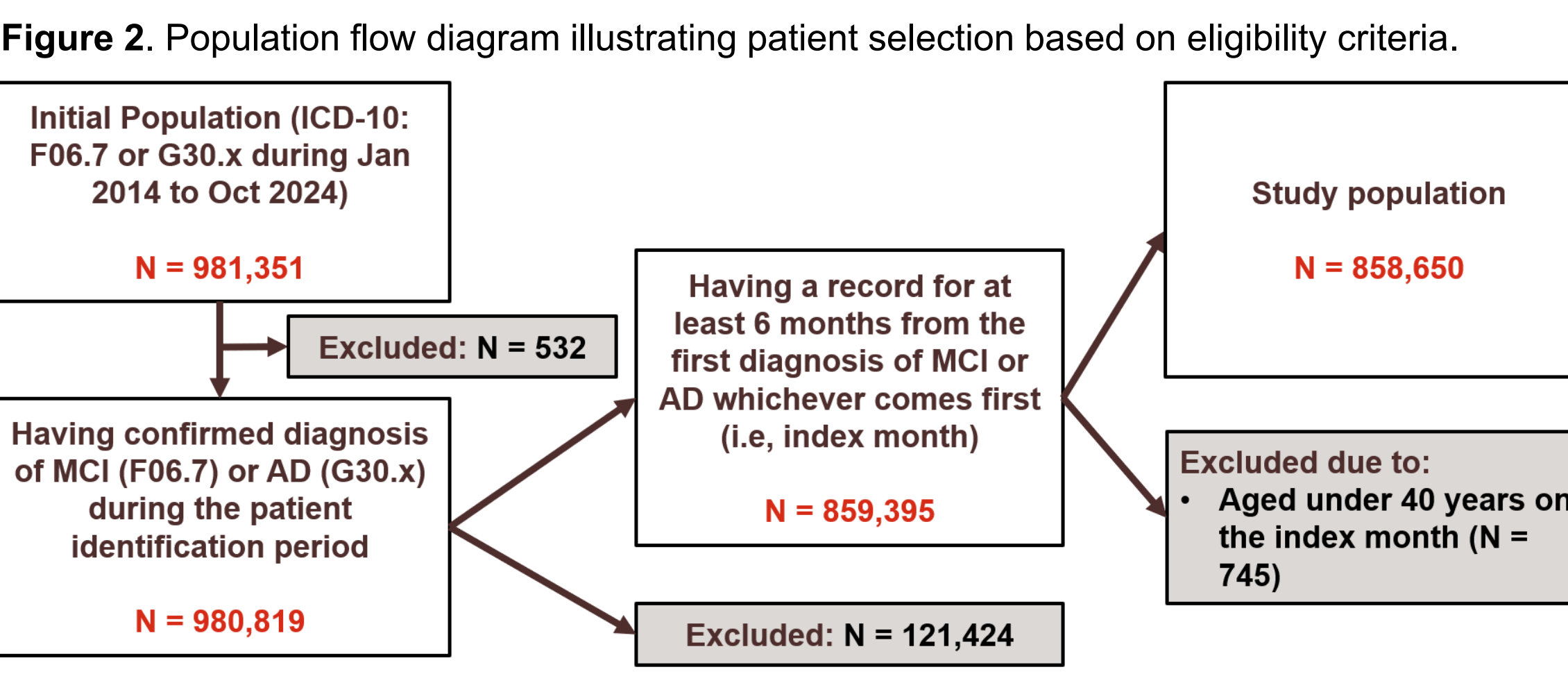
- Design:** Retrospective observational study utilizing healthcare claims data
- Data source:** Insurer-based healthcare claims database covering all age groups (IQVIA Claims Plus2 database)
- Target population:** Patients having confirmed diagnosis of either mild cognitive impairment (MCI) with AD –as inferred from administrative claims data– or AD dementia during January 2014 to May 2024, who had at least 6 months of observable data from the first recorded diagnosis of MCI or AD (i.e., index month). All patients were required to be aged 40 years or older at the index month.

### Study design diagram

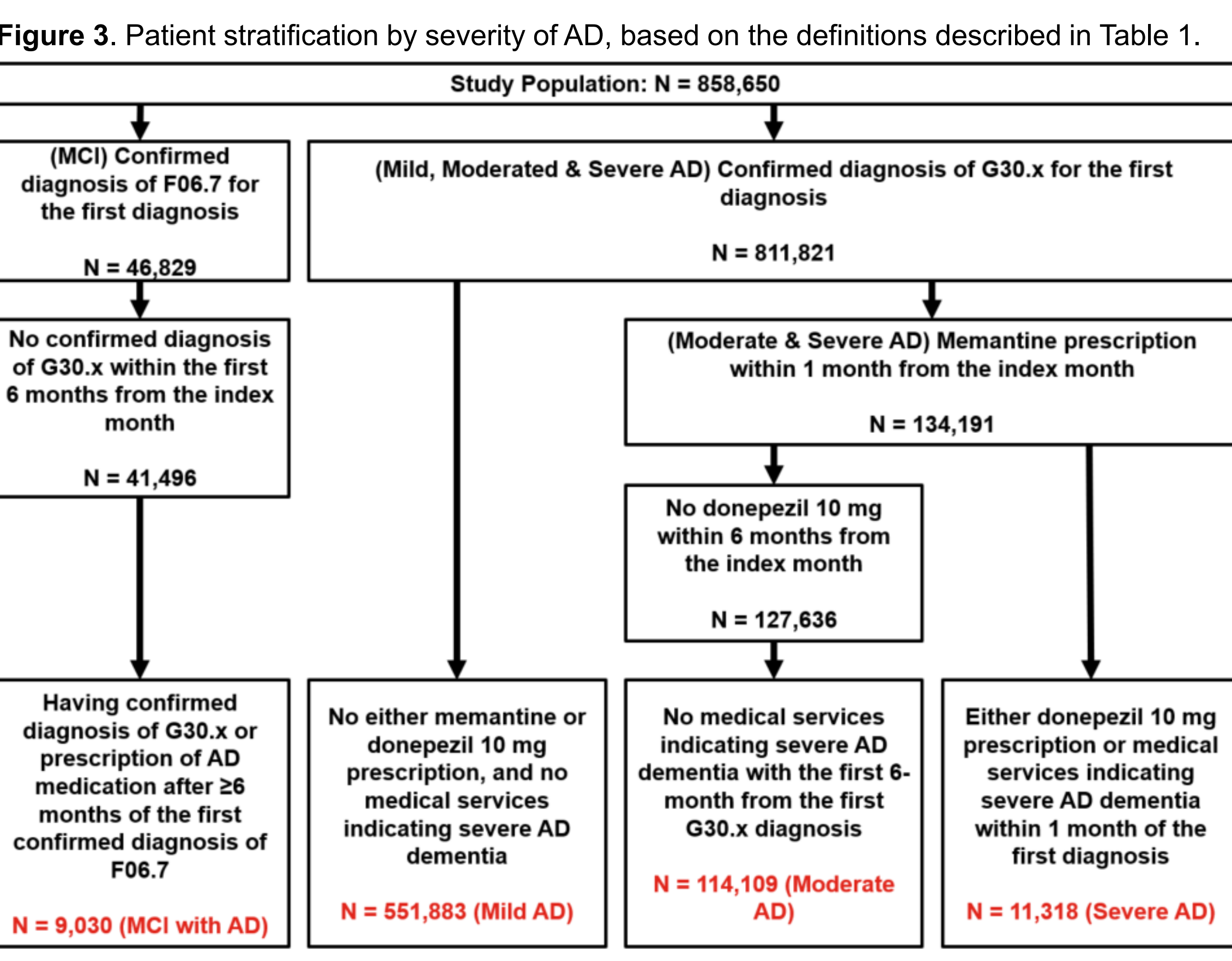


## RESULTS

### Population flow diagram



### Patient stratification by disease severity



## Stratification by disease severity

The target patients were stratified into 4 mutually exclusive subgroups.

**Table 1.** Definitions of MCI with AD and AD dementia by disease severity.

Severity	Definition
<b>MCI with AD</b>	<ul style="list-style-type: none"> <li>#1. The first diagnosis was MCI (ICD-10 code: F06.7) during the patient identification period, and</li> <li>#2. No confirmed diagnosis of G30.x within the first 6 months from the first confirmed diagnosis of F06.7 (=MCI population: costs were evaluated as scenario analysis [not shown]), and</li> <li>#3. Confirmed diagnosis of G30.x or prescription of AD medication* after ≥6 months of the first confirmed diagnosis of F06.7</li> </ul> <p><b>*AD medications:</b></p> <ul style="list-style-type: none"> <li>Donepezil hydrochloride (10 mg is indicated for severe AD only)</li> <li>Galantamine hydrobromide</li> <li>Rivastigmine</li> <li>Memantine hydrochloride (indicated for moderate-to-severe AD only)</li> <li>Lecanemab (genetical recombination) (listed in the NHI since December 2023)</li> </ul>
<b>Mild AD dementia</b>	<ul style="list-style-type: none"> <li>#1. The first diagnosis was AD (G30.x) during the patient identification period, and</li> <li>#2. No prescriptions for either memantine or donepezil 10 mg, and no medical services indicating severe AD dementia** within the first 6-month from the first G30.x diagnosis</li> </ul> <p><b>**Medical services indicating severe AD dementia:</b></p> <ul style="list-style-type: none"> <li>Dementia treatment ward hospitalization fee (kubun code: A314)</li> <li>Severe dementia patient daytime care fee (kubun code: I015)</li> <li>Dementia care additional fee (kubun code: A247)</li> </ul>
<b>Moderate AD dementia</b>	<ul style="list-style-type: none"> <li>#1. In the cohort after applying criteria #1 in "Mild AD dementia" cohort, memantine prescription within one month of the first G30.x diagnosis, and</li> <li>#2. No donepezil 10 mg prescription within 6 months from the first G30.x diagnosis, and</li> <li>#3. No medical services indicating severe AD within the first 6 months from the first G30.x diagnosis</li> </ul>
<b>Severe AD dementia</b>	<ul style="list-style-type: none"> <li>In the cohort after applying #1 in "Moderate AD dementia", either donepezil 10 mg prescription or medical services indicating severe AD dementia</li> </ul>

## KEY RESULTS

### Healthcare costs by disease severity

Healthcare costs associated with AD were calculated for each disease severity by summing reimbursed costs for prescriptions and medical procedures during the 6-month post-index period. Cost components were included if their utilization rates exceeded thresholds of 50%, 40%, 30%, 20%, 10%, and 0% (any), respectively, in addition to AD-specific medical services and prescriptions.

**Table 4.** Healthcare costs during the 6-month follow-up period, stratified by disease severity.

Healthcare costs <sup>1</sup> for 6-month	MCI with AD (N = 9,030)	AD dementia		
		Mild (N = 551,883)	Moderate (N = 114,109)	Severe (N = 11,318)
<b>For medical services and drugs that over 10% of patients used (adopted)<sup>2</sup></b>				
Mean ± SD	\$783.8 ± 1,239.6	\$714.3 ± 1,253.3	\$822.1 ± 1,161.1	\$3,354.7 ± 4,857.9
<b>For medical services and drugs that over 50% of patients used (scenario)<sup>2</sup></b>				
Mean ± SD	\$407.7 ± 659.6	\$280.9 ± 445.2	\$352.6 ± 314.9	\$1,255.6 ± 2,414.2
<b>For medical services and drugs that over 40% of patients used (scenario)<sup>2</sup></b>				
Mean ± SD	\$469.8 ± 704.0	\$417.4 ± 614.6	\$478.6 ± 463.8	\$1,531.1 ± 2,618.9
<b>For medical services and drugs that over 30% of patients used (scenario)<sup>2</sup></b>				
Mean ± SD	\$551.3 ± 737.7	\$451.3 ± 662.2	\$505.5 ± 489.6	\$2,007.3 ± 3,092.2
<b>For medical services and drugs that over 20% of patients used (scenario)<sup>2</sup></b>				
Mean ± SD	\$613.6 ± 776.5	\$533.5 ± 755.0	\$581.4 ± 600.8	\$2,294.8 ± 3,438.5
<b>For all medical services and drugs (scenario)</b>				
Mean ± SD	\$3,517.6 ± 16,344.6	\$3,957.1 ± 13,313.1	\$3,744.4 ± 10,634.3	\$13,060.8 ± 32,249.9

<sup>1</sup>: Transformed from JPY to USD based on an exchange rate of 1 USD = 160 JPY (as of March 2026).  
<sup>2</sup>: The utilization rate was defined as the proportion of patients within each disease severity group who used a given medical service during the 6-month post-index period.

### Baseline characteristics

**Table 2.** Baseline characteristics of the study population, stratified by disease severity.

Baseline characteristics	MCI with AD (N = 9,030)	AD dementia		
		Mild (N = 551,883)	Moderate (N = 114,109)	Severe (N = 11,318)
Age (years) (mean±SD)	80.2 ± 6.4	83.1 ± 7.5	83.3 ± 7.3	83.3 ± 7.2
40 – 64 years	173 ( 1.9%)	8,087 ( 1.5%)	1,392 ( 1.2%)	145 ( 1.3%)
65 – 74 years	1,099 (12.2%)	53,374 ( 9.7%)	10,600 ( 9.3%)	1,034 ( 9.1%)
75 – 84 years	5,550 (61.5%)	242,268 (43.9%)	48,732 (42.7%)	4,854 (42.9%)
≥85 years	2,208 (24.5%)	248,154 (45.0%)	53,385 (46.8%)	5,285 (46.7%)
Male sex (n, %)	3,331 (36.9%)	180,861 (32.8%)	39,674 (34.8%)	3,945 (34.9%)
Any malignancy (n, %)	2,406 (26.6%)	101,129 (18.3%)	17,244 (15.1%)	1,955 (17.3%)
CCI score* [4] (mean±SD)	2.6 ± 2.3	3.2 ± 2.2	3.0 ± 2.1	3.3 ± 2.3

\*Charlson Comorbidity Index Score used to predict mortality risk and overall prognosis by quantifying comorbidity burden. This study used the coding algorithm developed by Quan et al. [4].

### Healthcare resource utilization

**Table 3.** Healthcare resource utilization during the 6-month follow-up period.

Healthcare resource (for 6-month)	MCI with AD (N = 9,030)	AD dementia		
		Mild (N = 551,883)	Moderate (N = 114,109)	Severe (N = 11,318)
Number of outpatient visits (median [Q1 – Q3])	13 (8 – 20)	12 (7 – 19)	12 (7 – 19)	11 (6 – 18)
Hospitalization (n, %)	1,351 (15.0%)	97,368 (17.6%)	18,562 (16.3%)	5,897 (52.1%)

## DISCUSSION

- The substantial increase in hospitalization rates and costs at the severe AD stage suggests that interventions delaying disease progression, such as disease-modifying therapies, may yield meaningful medical cost savings — reinforcing the economic rationale for early treatment and providing severity-specific cost parameters for future CEA models.
- The seemingly paradoxical finding that MCI incurred higher costs than mild AD dementia reflects the resource-intensive diagnostic workup (blood tests, CT scans, cognitive assessments) at initial evaluation, highlighting the need to account for this front-loaded diagnostic cost when parameterizing the MCI state in economic models.
- Limitations**
  - Healthcare costs were limited to medical institutions and did not include public or private long-term care costs, which are known to exceed medical costs at more advanced stages of AD.
  - Claims-based disease severity definitions (e.g., derived from prescription patterns) have not been validated against clinical assessments (e.g., MMSE, CDR), potentially attenuating cost differences between adjacent severity states.
  - The IQVIA Claims Plus2 population may over-represent urban areas and differ from the general Japanese population in late-elderly coverage, possibly affecting generalizability of cost estimates.
  - Prescriptions under the bundled "Fee for Dementia Regional Coordinated Care Service" were masked in claims; however, the proportion of affected patients was small, limiting the overall impact.
  - Including patients aged ≥40 years may increase the likelihood of cognitive impairment not attributable to AD, particularly using the administrative data.

**References**

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