

Incident Institutionalization Rates Among Medicare Beneficiaries with Alzheimer’s Disease or Mild Cognitive Impairment

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OBJECTIVES

- To estimate age-specific annual incident institutionalization rates among Medicare beneficiaries diagnosed with Alzheimer’s disease (AD) or mild cognitive impairment (MCI) versus comparator cohorts
- To assess nursing facility and healthcare costs during institutionalization.

CONCLUSIONS

- AD is associated with both a higher risk of institutionalization and longer institutional stays, which together drive a substantial cost burden for payers, patients, and society.
- The average length of stay in the LTC setting was 12 months longer when AD was the reason for admission compared to non-AD related LTC admissions, driving 54% higher total spend per patient.
- These results underscore the need for care management programs and interventions that prolong independence among patients with AD.

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BACKGROUND

- Institutional care is a major and growing component of Medicare: ~1.2 million beneficiaries reside in long-term care (LTC) settings, representing an older population with higher medical costs than their community-dwelling peers.¹
- Dementia is a primary driver of institutionalization: ~40%–50% of LTC residents have AD or another form of dementia, and ~7.2 million Americans ages ≥65 years were living with AD dementia in 2025.²
- LTC represents a high-cost setting where median annual costs for care exceed \$110,000 per resident.³
- This study quantifies risk of institutionalization among Medicare beneficiaries with AD or MCI vs. non-AD/MCI populations across Traditional Medicare (TM) and Medicare Advantage (MA), as well as healthcare and facility costs among those institutionalized.

METHODS

- Claims data from 2016–2023 Medicare 100% Research Identifiable Files (RIF) were used for the analysis of institutional rates (TM and MA) and healthcare costs (TM).
- Incident institutionalization was defined as the first nursing facility evaluation and management procedure code, excluding concurrent skilled nursing facility (SNF) claims; rates reflect incident institutionalization during CY2023.
- Two diagnoses were required during the study period for AD or MCI classification; a diagnosis must have been observed prior to the index institutionalization date for inclusion in the incident rate calculation. Those with both were included as AD.
- Undiagnosed populations (“Control”) were matched to the AD and MCI diagnosed cohorts using demographics, coverage types, institutional status, and the Charlson Comorbidity Index (CCI).
- Medical (Part A/B) and pharmacy (Part D) costs were analyzed for TM beneficiaries using a Bang & Tsiatis (BT) estimator with inverse probability of censoring weighting (IPCW) to account for censoring.
- Milliman LTC Guidelines, a dataset with LTC insurance paid claims, was used to inform length of stay and costs; the 20% of LTC insurance plans with highest monthly maximum (to observe full cost of care in the data source) were used to estimate monthly facility costs.

Table 1: Demographics of Study Cohorts

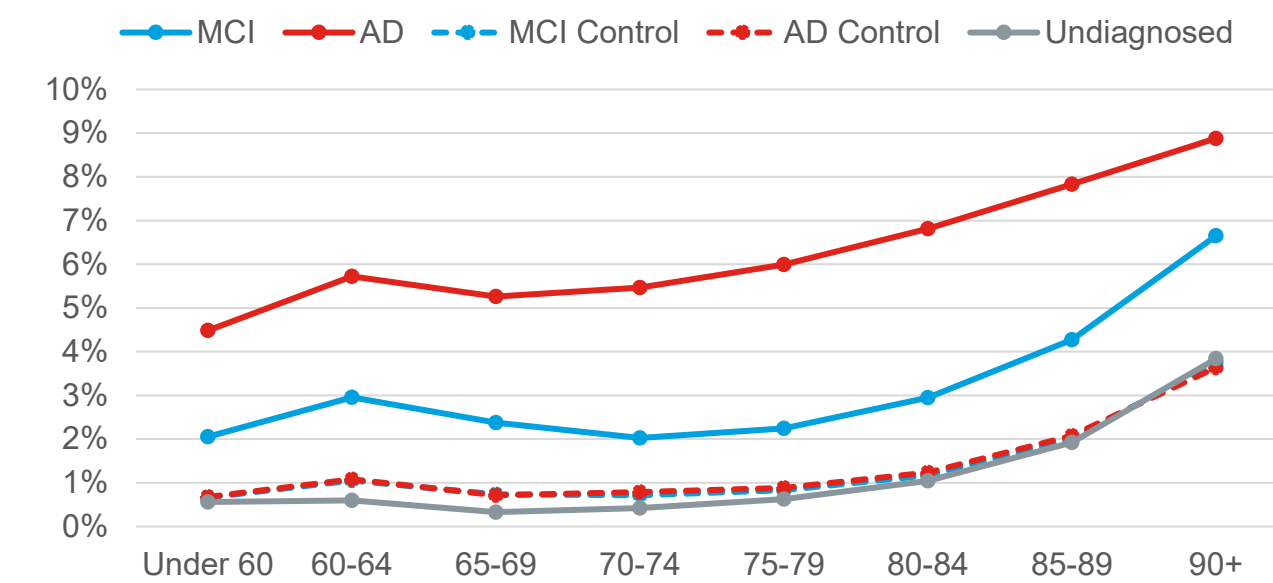
Category		AD Diagnosed*	MCI Diagnosed*	Undiagnosed Medicare	LTC Insured
Population	(n)	1,065,614 (AD) 1,058,600 (Control)	1,193,833 (MCI) 1,188,509 (Control)	49,856,462	66,248
Age Band	Under 60	1%	6%	9%	0%
	60-64	1%	4%	12%	0%
	65-69	5%	12%	26%	3%
	70-74	13%	19%	22%	9%
	75-79	21%	22%	15%	18%
	80-84	24%	19%	9%	29%
	85-89	20%	12%	5%	27%
Sex	90+	14%	7%	2%	14%
	Female	67%	61%	56%	n/a
Coverage	TM	36%	40%	38%	n/a
	MA	64%	60%	62%	n/a
Eligibility Status	Dual	27%	24%	22%	n/a
	Non-Dual	73%	76%	78%	n/a
Modified CCI**	Total Cohort	3.3	3.1	1.9	n/a
	Inst. Cohort	5.3 (AD) 5.2 (Control)	6.9 (MCI) 6.6 (Control)	n/a	n/a

*Diagnosed and control cohorts were matched on the characteristics presented in this table; thus, only one set of demographics is reflected for both cohorts because of the consistency between the matched cohorts.
**Modified CCI excluded the dementia category from contributing to the score, due to the inclusion of AD and other related codes. The Institutionalized (Inst.) Cohort has slightly different CCIs between diagnosed and controls due to smaller matched cohorts and removal of duplicate matches.

RESULTS

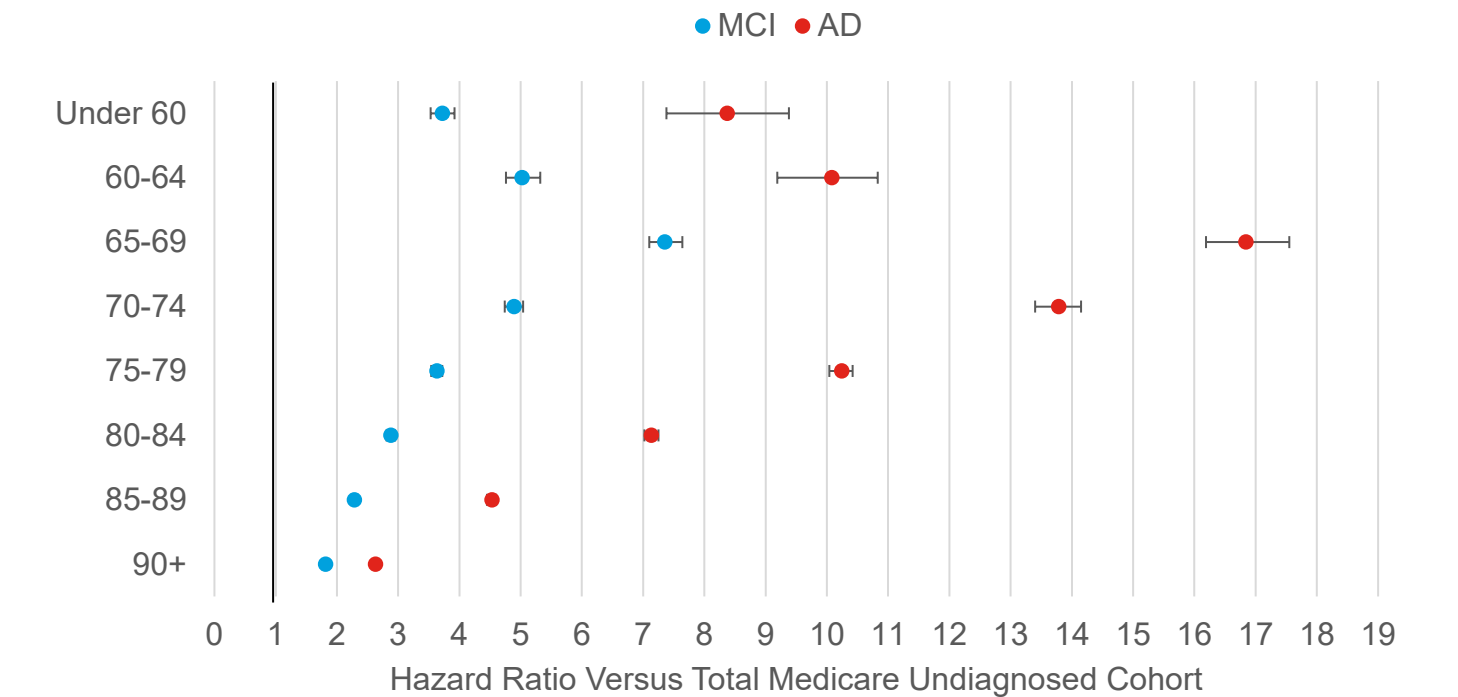
INSTITUTIONALIZATION RISK INCREASES WITH AGE, BUT THE LARGEST HAZARD RATIOS OCCURRED UNDER AGE 80

Figure 1: Incident Institutionalization Rate During CY2023 — Diagnosed, Matched Controls, and Undiagnosed Cohorts
Source: Medicare 100% RIF



- Average incident institutional rates in 2023 were **3.0%** (MCI), **7.1%** (AD), **1.3%** (MCI Control), **1.7%** (AD Control), and **0.7%** (Undiagnosed).
- Institutionalization rates were higher among patients with AD or MCI compared with both controls and the total undiagnosed Medicare cohort across all age groups.

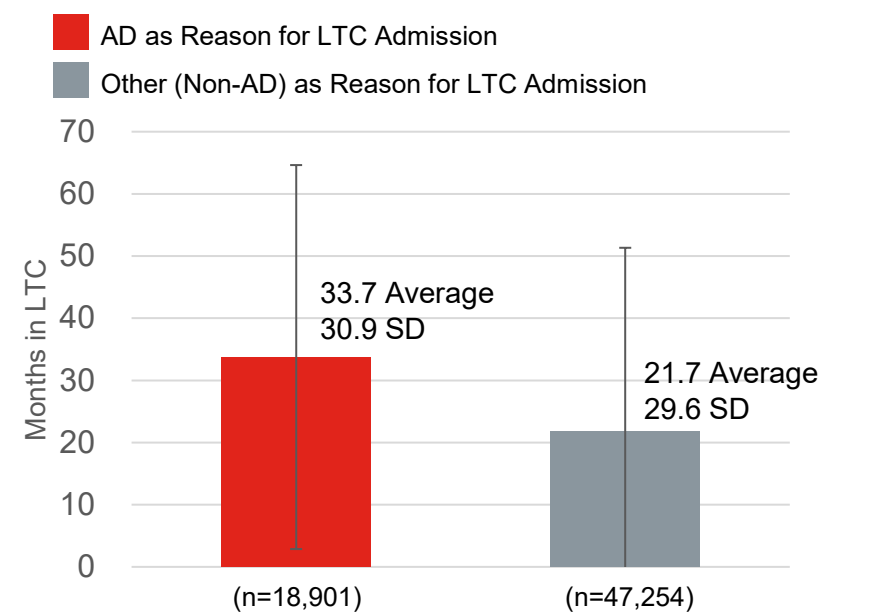
Figure 2: Hazard Ratios and 95% Confidence Intervals — Incident Institutionalization of MCI and AD Versus the Total Medicare Undiagnosed Cohort
Source: Medicare 100% RIF



- Hazard ratios versus the Medicare undiagnosed population were highest in those aged **65–69** for both MCI and AD cohorts and declined with age to 1.8 and 2.6, respectively, in the oldest age band group.

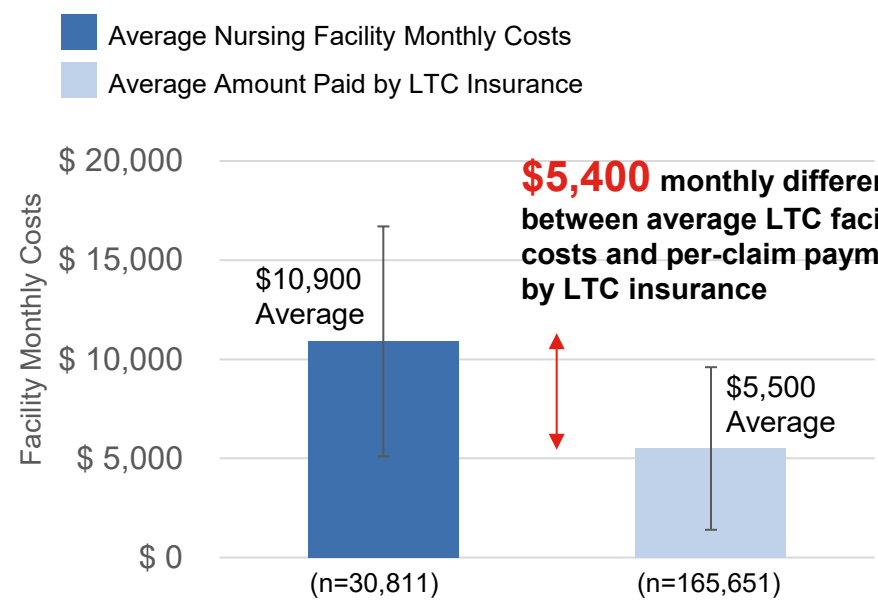
TOTAL COSTS DURING AD-RELATED INSTITUTIONALIZATIONS WERE NEARLY \$460,000 ON AVERAGE, EXCEEDING NON-AD CASES BY 54%

Figure 3: Average and Standard Deviation of Months Living in Nursing Facility Setting, by Reason for Admission (AD or Other)
Source: Milliman LTC Insurance Data



- Those institutionalized in a nursing facility due to AD spent an average of **12.0** months longer in LTC than those institutionalized for other reasons.
- AD is the largest contributor as a reason for admission (**32.8%**), followed by stroke (**7.2%**), injury (**6.1%**), and circulatory conditions (**5.7%**).

Figure 4: Average and Standard Deviation of Monthly Nursing Facility Costs and Amount Paid by LTC Insurance
Source: Milliman LTC Insurance Data



- In a cohort of patients with LTC insurance, average monthly LTC insurance claims (**\$5,500**) represented roughly half of average nursing facility costs (**\$10,900**).
- Most Medicare beneficiaries do not have LTC insurance⁴ and may be exposed to the full monthly costs unless dually eligible, where Medicaid may cover the cost of LTC facility charges.

Figure 5: Average Nursing Facility and Healthcare Costs While Institutionalized

	AD Cohort	Non-AD Cohort
Estimated Monthly Nursing Facility Costs†	\$10,900	\$10,900
(Plus) Monthly Medicare Healthcare Costs†	\$2,719	\$2,814
Monthly Subtotal	\$13,619	\$13,714
(Times) Average Months in LTC Facility	33.7	21.7
Total Costs During LTC Stay (Average)	\$459,631	\$297,869

- [†]Monthly facility costs were found to be <\$100 difference for AD versus other admissions and are not differentiated to maintain larger sample sizes.
[‡]Reflects AD diagnosed and matched control costs over 36 months using TM claims data.
- Monthly facility and healthcare costs were similar between cohorts; thus, total cost differentials were driven by the longer length of stay for the AD cohort.

LIMITATIONS

- AD and MCI were identified using a claims-based algorithm; therefore, these cohorts reflect diagnoses recorded in medical claims rather than confirmed underlying etiology.
- Institutionalization in the Medicare claims data was identified using nursing facility evaluation and management codes, with SNF stays excluded where possible; some SNF claims may remain due to coding variability.
- Average medical (Part A/B) and pharmacy (Part D) costs reflect TM beneficiaries only due to the absence of cost data for MA; healthcare cost results may not be generalizable to MA due to differences in reimbursement, service mix, management, and other factors.

Disclosures: This study was sponsored by Eli Lilly & Company. Authors who are employees of Eli Lilly & Company hold stock in the company.

References: 1. Medicare Payment Advisory Commission (MedPAC). Medicare beneficiaries in nursing homes. In: *Report to the Congress: Medicare and the Health Care Delivery System*. 2025:227-297. June 12, 2025. Accessed April 15, 2026. <https://www.medpac.gov/document/chapter-5-medicare-beneficiaries-in-nursing-homes-june-2025-report/> 2. Alzheimer’s Association. 2025 Alzheimer’s disease facts and figures. *Alzheimers Dement*. 2025;21(4):e70235. doi:10.1002/alz.70235 3. Genworth, CareScout. Cost of Care Survey 2024. 2025. Accessed April 15, 2026. <https://assets.carescout.com/cd5022ca64/131168.pdf> 4. AHIP. Long-term care insurance covers over 7 million people nationwide, new AHIP report finds. November 7, 2023. Accessed April 27, 2026. <https://www.ahip.org/news/press-releases/long-term-care-insurance-covers-over-7-million-people-nationwide-new-ahip-report-finds>