

Cost-effectiveness of anti-β-amyloid monoclonal antibodies in early Alzheimer’s Disease: A systematic review



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P 9790

BACKGROUND:

Disease-modifying therapies targeting β-amyloid have reshaped the therapeutic landscape of early Alzheimer’s disease (AD). However, their high acquisition costs and modest clinical benefits raise concerns regarding economic value across healthcare systems. This systematic review aimed to synthesize the available evidence on the cost-effectiveness of anti-β-amyloid monoclonal antibodies in patients with early AD.

METHODS:

A systematic review was conducted in accordance with PRISMA 2020 guidelines. PubMed, Embase, Web of Science, and LILACS were searched for economic modeling studies evaluating cost-effectiveness up to 2026. Eligible studies evaluated anti-β-amyloid monoclonal antibodies versus standard of care (SOC), in patients with early AD, and reported incremental cost-effectiveness ratios (ICER). Data were extracted on country, economic perspective, modeling approach, time horizon, treatment, willingness-to-pay (WTP) thresholds, and cost-effectiveness conclusions. A qualitative synthesis was performed by comparing study-specific ICERs against country-specific WTP thresholds, in order to classify interventions as cost-effective or not. Finally, an overall assessment was performed to summarize the positioning of each therapy across different healthcare settings.

RESULTS:

Of the 223 records identified, 10 met the inclusion criteria. Studies were conducted across America, Europe, and Asia, predominantly employing Markov state-transition models, with horizons ranging from 5 years to lifetime (Table1). Economic perspectives included societal, limited societal, and payer. Lecanemab was the most frequently evaluated intervention (n=7), followed by Aducanumab (n=4) and Donanemab (n=2). Qualitative synthesis indicated that, overall, anti-β-amyloid monoclonal antibody therapies were not cost-effective for early AD, compared with SOC, as ICERs exceeded country-specific WTP thresholds in 9 out of the 11 evaluated settings, despite modest gains in quality-adjusted life years (QALY). Lecanemab was considered cost-effective in only two settings (Switzerland and Canada), whereas Aducanumab and Donanemab consistently exceeded thresholds across all evaluated settings (Table2).

CONCLUSION:

Across diverse healthcare systems, anti-β-amyloid monoclonal antibodies for early AD generally fail to meet conventional cost-effectiveness thresholds at current prices. Substantial cross-country variability reflects differences in drug pricing, WTP thresholds, and economic perspectives. These findings highlight the need for better pricing strategies, targeted patient selection, and transparent economic assumptions to support value-based decision-making in early AD.

Table 1: Descriptive overview of included cost-effectiveness studies

STUDY	COUNTRY	PERSPECTIVE	HORIZON	MODEL	TREATMENT
Igarashi, 2025	Japan	Societal	NA	Markov	Lecanemab + SOC
Strässle, 2025	Switzerland	Societal	Lifetime	Markov	Lecanemab + SOC
Paiva, 2025	USA	Societal	Lifetime	Markov	Lecanemab + SOC
Shin, 2025	South Korea	Limited societal	Lifetime	Markov	Lecanemab + SOC
Price, 2025	Brazil	Societal	20 years	Decision analytic model	Lecanemab
Chung, 2025	USA	Societal	10 years	Markov	Donanemab, Lecanemab, Aducanumab
Burn, 2025	Canada	Societal	NA	Markov	Lecanemab
Yigit, 2023	Turkey	Payer	5 years	Markov	Aducanumab
Rons, 2022	USA	Societal	Lifetime	Decision analytic model	Aducanumab, Donanemab
Whittington, 2022	USA	Societal	Lifetime	Markov	Aducanumab + SOC

Observation: SOC = Standard of care.

Table 2: Cost-effectiveness results of anti-β-amyloid monoclonal antibodies in early Alzheimer’s disease

STUDY	COUNTRY	MEASURED ICER	WTP THRESHOLD	COST-EFFECTIVE
LECANEMAB + SOC				
Igarashi, 2025 ^a	Japan	6.8 million JPY/QALY	5 million JPY/QALY	No
Strässle, 2025 ^a	Switzerland	20,108 CHF/QALY	100,000 CHF/QALY	Yes
Paiva, 2025 ^a	USA	195,585 US\$/QALY	150,000 US\$/QALY	No
Shin, 2025 ^b	South Korea	181,185,820 KRW/QALY	30,000,000 KRW/QALY	No
LECANEMAB				
Price, 2025 ^a	Brazil	1,580,807 US\$/QALY	15,094 US\$/QALY	No
Chung, 2025 ^a	USA	258,000 US\$/QALY	150,000 US\$/QALY	No
Burn, 2025 ^a	Canada	62,751 CAD/QALY	100,000 CAD/QALY	Yes
ADUCANUMAB				
Chung, 2025 ^a	USA	304,000 US\$/QALY	150,000 US\$/QALY	No
Yigit, 2023 ^c	Turkey	119,400 US\$/QALY	50,000 US\$/QALY*	No
Ross, 2022 ^a	USA	964,000 US\$/QALY	150,000 US\$/QALY	No
ADUCANUMAB + SOC				
Whittington, 2022 ^a	USA	1,324,675 US\$/QALY	150,000 US\$/QALY	No
DONANEMAB				
Chung, 2025 ^a	USA	368,000 US\$/QALY	150,000 US\$/QALY	No
Ross, 2022 ^a	USA	176,000 US\$/QALY	150,000 US\$/QALY	No

Observations: Perspective classification: (a) societal; (b) limited societal; (c) payer. Abbreviations: ICER = Incremental Cost-Effectiveness Ratio; WTP = Willingness-to-pay; SOC = Standard of care; QALY = quality-adjusted life year. *ICER threshold for Turkey was not formally defined and was therefore assumed by the authors, based on a conservative value approximating three times the national GDP per capita.