TECHNICAL BRIEF

SB 950

Dementia

CHBRP

About the Technical Brief

This document provides further detail on the analytical foundation for CHBRP's analysis of SB 950. While the main report synthesizes key findings for immediate policy consideration, this document is designed to support a deeper understanding of the background of the topic of the legislation and CHBRP's methodology and research in conducting its analysis. It contains the data sources, methods, assumptions, and other bill-specific considerations necessary for legislative staff, fiscal analysts, and other stakeholders to fully understand the scope and impact of the proposed measure.

Table of Contents

Lists of Tables and Figures

Acronyms and Terminology

Acronyms

ACA – Affordable Care Act

ARIA – amyloid-related imaging abnormalities

CA – California

CalPERS – California Public Employees' Retirement System

CDC – Centers for Disease Control and Prevention

CDI – California Department of Insurance

CHBRP – California Health Benefits Review Program

COHS – County Organized Health System

DHCS – Department of Health Care Services

DMHC – Department of Managed Health Care

DMT – disease-modifying treatments

EHBs – essential health benefits

FDA – U.S. Food and Drug Administration

MCI – mild cognitive impairment

MHPAEA – Mental Health Parity and Addiction Equity Act

MRI – magnetic resonance imaging

PET – positron emission tomography

RCT – randomized controlled trial

SB – Senate Bill

Terminology

CHBRP uses the following terminology for this analysis:

Bill-Specific Terminology

Dementia is a condition in which a person loses the ability to think, remember, learn, make decisions, and solve problems. Symptoms may also include personality changes and emotional problems. Dementia usually gets worse over time.

Alzheimer's disease: a progressive, irreversible neurologic condition that damages and destroys neurons in the brain.

Early-onset Alzheimer's disease: a form of Alzheimer's dementia that develops before the age of 65 years and is associated with a faster cognitive decline

Cognitive impairment describes problems with a person's ability to think, learn, remember, use judgement, and make decisions. Signs of cognitive impairment include memory loss and trouble concentrating, completing tasks, understanding, remembering, following instructions, and solving problems. Other common signs may include changes in mood or behavior, loss of motivation, and being unaware of surroundings.

ARIA-E: edema or effusion MRI abnormality.

ARIA-H: hemorrhage (including microhemorrhages and superficial siderosis) MRI abnormality.

Utilization Management–Related Terminology

Utilization management: Utilization management techniques are used by health plans and insurers to control costs, ensure medication compatibility, and manage safety (Busch and Muller, 2023). Examples include benefit coverage requirements related to prior authorization, step therapy, quantity limits, and limits related to the age or sex of the enrollee (such as prescription-only infant formula or prostate cancer screening for men).

Prior authorization:[1] Also known as precertification, prior approval, or prospective review, prior authorization is a utilization management technique commonly used by health insurance carriers to ensure that a given medical intervention meets the insurance plan or policy's criteria for coverage (Newcomer et al., 2017). Prior authorization was developed as a tool for insurers to assess the appropriateness of treatment that would result in a hospital admission or a high-cost procedure (Resneck, 2020). The primary uses of prior authorization include:

- **Coverage evaluation:** Allows evaluation of whether a test, treatment, or service is medically necessary and otherwise covered.
- **Safety:** Acts as a safeguard to confirm that a patient's medications are compatible and provides an opportunity to check that proper diagnostic testing has been completed to ensure patient safety prior to use of a requested treatment. Prior authorization also reduces inappropriate patient care by stopping unsafe or low-value care that is inconsistent with the most recent clinical evidence.
- **Cost control:** Imposition of prior authorization for nonpreferred medications can encourage the use of preferred medications that can be procured at lower price.

Step therapy: Defined by Senate Bill (SB) 950 and current law[2] as "a process that specifies the sequence in which different prescription drugs for a given medical condition and medically appropriate for a particular patient are prescribed". Also known as "fail-first" protocols, step therapy may be applied to prescription medications by health plans and insurers to control costs, ensure medication compatibility, and manage safety. Health plans/insurers may use step therapy protocols to apply clinical guidelines established by professional societies and other recognized organizations to treatment plans. They require an enrollee to try and fail one or more medications prior to receiving coverage for the initially prescribed medication. Step therapy protocols usually recommend starting with a medication that is less expensive (generics) and/or has more "post-marketing safety experience" (PBMI, 2015).

[1] More information about prior authorization is available in CHBRP's 2023 analysis *Prior Authorization in California*.
[2] INS 10123.201.

Legislative Text Analyzed

CHBRP analyzed SB 950 Dementia, as introduced on February 2, 2026, per the request of the California Senate Committee on Health. The text analyzed is copied below.

SECTION 1.

Section 1373.15 is added to the Health and Safety Code, to read:

1373.15.

(a) A health care service plan contract that is issued, amended, or renewed on or after January 1, 2027, shall include coverage for all medically necessary treatments or medications, as determined by a health care provider, approved by the United States Food and Drug Administration (FDA) for the treatment of Alzheimer's disease or other related dementia. Medically necessary treatments or medications include, but are not limited to, those that reduce clinical decline.

(b) (1) On and after January 1, 2027, a health care service plan shall not impose step therapy protocols as a prerequisite to authorizing coverage of medically necessary treatments or medications approved by the FDA for the treatment of Alzheimer's disease, except as provided in paragraph (3). For purposes of this section, "step therapy protocol" means a process that specifies the sequence in which different prescription drugs for a given medical condition and medically appropriate for a particular patient are prescribed.

(2) For purposes of this subdivision, step therapy is prohibited for both self-administered drugs and physician-administered drugs, except as provided in paragraph (3).

(3) If the FDA has approved one or more types of treatment for Alzheimer's disease or other medical conditions affecting memory, this section does not require a health care service plan to cover all types of treatment for Alzheimer's disease or other medical conditions affecting memory without step therapy, if at least one anti-amyloid therapy is covered without step therapy.

(c) This section does not prohibit a health care service plan from applying utilization management, including prior authorization, to determine the medical necessity for treatment of Alzheimer's or other medical conditions affecting memory if appropriateness and medical necessity determinations are made in the same manner as those determinations are made for the treatment of any other illness, condition, or disorder covered by the plan contract.

(d) Coverage criteria for FDA-approved treatments described in this section shall not be more restrictive than the FDA-approved indications for those treatments.

(e) Notwithstanding paragraph (3) of subdivision (b), a health care service plan that, as a medical benefit, covers non–self-administered treatments approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory shall also include those non–self-administered treatments approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory as an outpatient prescription drug benefit.

(f) For purposes of this section, a health care service plan shall maintain an expeditious process by which prescribing providers may obtain authorization for a medically necessary treatment approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory, consistent with the requirements of this article.

(g) This section does not apply to the following:

(1) A specialized health care service plan contract that covers only dental or vision benefits or a Medicare supplement contract.

(2) A Medi-Cal managed care plan contract with the State Department of Health Care Services pursuant to Chapter 7 (commencing with Section 14000), Chapter 8 (commencing with Section 14200), or Chapter 8.75 (commencing with Section 14591) of Part 3 of Division 9 of the Welfare and Institutions Code.

SEC. 2.

Section 10123.175 is added to the Insurance Code, to read:

10123.175.

(a) A health insurance policy that is issued, amended, or renewed on or after January 1, 2027, shall include coverage for all medically necessary treatments or medications, as determined by a health care provider, approved by the United States Food and Drug Administration (FDA) for the treatment of Alzheimer's disease or other related dementia. Medically necessary treatments or medications include, but are not limited to, those that reduce clinical decline.

(b) (1) On and after January 1, 2027, a health insurer shall not impose step therapy protocols as a prerequisite to authorizing coverage of medically necessary treatments or medications approved by the FDA for the treatment of Alzheimer's disease, except as provided in paragraph (3). For purposes of this section, "step therapy protocol" means a process that specifies the sequence in which different prescription drugs for a given medical condition and medically appropriate for a particular patient are prescribed.

(2) For purposes of this subdivision, step therapy is prohibited for both self-administered drugs and physician-administered drugs, except as provided in paragraph (3).

(3) If the FDA has approved one or more types of treatment for Alzheimer's disease or other medical conditions affecting memory, this section does not require a health insurer to cover all types of treatment for Alzheimer's disease or other medical conditions affecting memory without step therapy, if at least one anti-amyloid therapy is covered without step therapy.

(c) This section does not prohibit a health insurer from applying utilization management, including prior authorization, to determine the medical necessity for treatment of Alzheimer's or other medical conditions affecting memory if appropriateness and medical necessity determinations are made in the same manner as those determinations are made for the treatment of any other illness, condition, or disorder covered by the plan contract.

(d) Coverage criteria for FDA-approved treatments described in this section shall not be more restrictive than the FDA-approved indications for those treatments.

(e) Notwithstanding paragraph (3) of subdivision (b), a health insurer that, as a medical benefit, covers non–self-administered treatments approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory shall also include those non–self- administered treatments approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory as an outpatient prescription drug benefit.

(f) For purposes of this section, a health insurer shall maintain an expeditious process by which prescribing providers may obtain authorization for a medically necessary treatment approved by the FDA for the treatment of Alzheimer's disease or other medical conditions affecting memory, consistent with the requirements of this article.

(g) This section does not apply to vision-only, dental-only, accident-only, specified disease, hospital indemnity, or Medicare supplement insurance policies.

SEC. 3.

No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

Additional Policy Context

This Technical Brief provides details on the analytical foundation for CHBRP's analysis of SB 950. While the main report synthesizes key findings for immediate policy consideration, this document is designed to support a deeper understanding of the background of the topic of the legislation and CHBRP's methodology and research in conducting its analysis. It contains the data sources, methods, assumptions, and other bill-specific considerations necessary for legislative staff, fiscal analysts, and other stakeholders to fully understand the scope and impact of the proposed measure. While this information is essential to the completeness of the analysis, it has been placed in this separate brief to maintain the flow of the main report. Readers are encouraged to consult this material for deeper insights into existing laws, comprehensive data sets, and technical details that informed the analysis and conclusions of the main report.

California Policy Landscape

Department of Motor Vehicles

California law requires physicians to report to local health officers, who report to the Department of Motor Vehicles, information about patients who the physician has diagnosed as having a disorder characterized by lapses in consciousness.[3] Relevant disorders include Alzheimer's disease and related disorders that are severe enough to be likely to impair a person's ability to operate a motor vehicle. The Department of Motor Vehicles must follow up by sending the reported patient to get a driver medical evaluation (DMV, 2026). If patients pass the relevant tests, reexaminations are scheduled within 6 to 12 months to reassess the progression of dementia. If the patient's faculties are significantly impaired, the Department may take action such as revoking the driver's license.

Other Relevant California Programs

The Alzheimer's Disease Program was established through California legislation in 1984. This program aims to build awareness of brain health and empower California communities to address Alzheimer's disease and related dementias by focusing on prevention, research, and clinical care (CDPH, 2026). In 2019, Governor Newsom formed the Task Force on Alzheimer's Disease Prevention, Preparedness, and the Path Forward. This Task Force developed ten recommendations to address Alzheimer's disease prevention in California (CDPH, 2026). Related to one of the recommendations in this report, California passed Senate Bill 412 in 2025 which requires a home care organization to ensure that a home care aide completes training related to the special care needs of clients with dementia.[4]

Federal Policy Landscape

Federal Mental Health Parity and Addiction Equity Act

The federal Mental Health Parity and Addiction Equity Act (MHPAEA) addresses parity for behavioral health benefits.[5] The MHPAEA requires that when mental health or substance use disorder services are covered, cost-sharing terms and treatment limits be no more restrictive than the predominant terms or limits applied to medical/surgical benefits. Furthermore, for any behavioral health benefits that are covered, coverage must be provided in all classification of benefits (e.g., inpatient in-network benefits, prescription drug benefits, emergency care benefits, etc.) in which comparative medical/surgical benefits are provided. The law protects enrollees from facing greater restrictions on access to behavioral health benefits as compared to medical/surgical benefits. The MHPAEA directly applies to large-group health insurance, but the Affordable Care Act (ACA) requires small-group and individual market plans and policies purchased through a state health insurance marketplace to comply with the MHPAEA. This federal requirement is similar

[3] HSC 103900.
[4] HSC 1796.44.
[5] Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA), as amended by the ACA.

to the California mental health parity law described previously,[6] although the state law applies to some plans and policies not captured in the MHPAEA.

Affordable Care Act

A number of Affordable Care Act (ACA) provisions have the potential to or do interact with state benefit mandates. Below is an analysis of how SB 950 may interact with requirements of the ACA as presently exist in federal law, including the requirement for certain health insurance to cover essential health benefits (EHBs).[7,8]

Essential health benefits

In California, nongrandfathered[9] individual and small-group health insurance is generally required to cover essential health benefits (EHBs).[10] In 2027, approximately 11.5% of all Californians will be enrolled in a plan or policy that must cover EHBs.[11]

States may require state-regulated health insurance to offer benefits that exceed EHBs.[12,13,14,15] Should California do so, the state could be required to defray the cost of additionally mandated benefits for enrollees in health plans or policies purchased through Covered California, the state's health insurance marketplace. However, state benefit mandates specifying provider types, cost sharing, or other details of existing benefit coverage would not meet the definition of state benefit mandates that could exceed EHBs.[16,17] It should be noted that federal guidance establishes the "State" as the entity that would identify when a state benefit mandate exceed EHBs;[18] thus, DMHC and CDI would determine whether the benefit would require defrayal of costs.

SB 950 would not exceed EHBs because treatments for Alzheimer's disease are included in California's benchmark plan and are required to be covered in accordance with state and federal mental health parity laws.

[6] HSC Section 1374.72; INS Section 10144.5 and 10123.15.
[7] The ACA requires nongrandfathered small-group and individual market health insurance — including but not limited to qualified health plans sold in Covered California — to cover 10 specified categories of EHBs. Policy and issue briefs on EHBs and other ACA impacts are available on the CHBRP website.
[8] Although many provisions of the ACA have been codified in California law, the ACA was established by the federal government, and therefore, CHBRP generally discusses the ACA as a federal law.
[9] A grandfathered health plan is "a group health plan that was created — or an individual health insurance policy that was purchased — on or before March 23, 2010. Plans or policies may lose their 'grandfathered' status if they make certain significant changes that reduce benefits or increase costs to consumers."
[10] For more detail, see CHBRP's issue brief, *Essential Health Benefits: An Overview of Benefits, Benchmark Plan Options, and EHBs in California*.
[11] See CHBRP's resource, *Sources of Health Insurance in California*.
[12] ACA Section 1311(d)(3).
[13] State benefit mandates enacted on or before December 31, 2011, may be included in a state's EHBs, according to the U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[14] However, as laid out in the Final Rule on EHBs U.S. Department of Health and Human Services (HHS) released in February 2013, state benefit mandates enacted on or before December 31, 2011, would be included in the state's EHBs, and there would be no requirement that the state defray the costs of those state-mandated benefits. For state benefit mandates enacted after December 31, 2011, that are identified as exceeding EHBs, the state would be required to defray the cost.
[15] In February 2026, HHS released a proposed rule that would alter what benefits would be determined to exceed EHBs. The conclusions in this analysis of SB 950 are subject to change based on the final language of the regulations. U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act, HHS Notice of Benefit and Payment Parameters for 2027; and Basic Health Program. Proposed Rule. Federal Register, Vol. 91, No. 28. February 11, 2026.
[16] Essential Health Benefits. Final Rule. A state's health insurance marketplace would be responsible for determining when a state benefit mandate exceeds EHBs, and qualified health plan issuers would be responsible for calculating the cost that must be defrayed. Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[17] As of 2024, Maine, Massachusetts, Minnesota, Montana, Utah, and Virginia mandate benefits that exceed EHBs (GAO, 2024). For more information about defrayal, refer to CHBRP's issue brief *Essential Health Benefits: Exceeding EHBs and the Defrayal Requirement*.
[18] Essential Health Benefits Final Rule. Federal Register, Vol. 87. No. 27. February 25, 2013.

Background on Alzheimer's Disease

This section provides context for potential impacts of SB 950, including an overview of Alzheimer's disease, diagnosis, prevalence, treatment options, disparities and differences as they relate to Alzheimer's disease, barriers to testing and treatment, and the overall impact of the disease on society.

Alzheimer's Disease

Alzheimer's disease is a progressive, irreversible neurologic condition that damages and destroys neurons in the brain. Symptoms of Alzheimer's disease include, but are not limited to: changes in memory and behavior, difficulty completing familiar tasks, confusion with time or place, trouble understanding visual images and spatial relationships, new problems with words in speaking or writing, misplacing things, losing the ability to retrace steps, decreased or poor judgment, and withdrawal from work or social activities (Alzheimer's Association, 2025).

As the disease progresses, memory language, and cognitive processing challenges are often the first symptoms to emerge (Alzheimer's Association, 2025). Eventually, the patient can lose the ability to perform standard self-care activities such as driving, cooking, toileting, feeding oneself, or speaking. Patients with Alzheimer's disease may live up to 10 years or longer after receiving a diagnosis, spending roughly 40% of that time in the more severe stages of disease, during which they need help for instrumental and then basic activities of daily living (such as cooking, dressing, bathing, toileting, eating) (Alzheimer's Association, 2025). See Table 1 for more descriptions on the stages of symptoms.

Alzheimer's disease is distinguished from other forms of dementia and cognitive impairment by two biomarkers that accumulate in the brain: an abnormal form of tau protein and beta-amyloid protein fragments (Alzheimer's Association, 2025). Brain inflammation, atrophy, and reduced glucose metabolism and uptake by the brain cells are also pathological features of the disease (Alzheimer's Association, 2025).

Alzheimer's disease was the sixth leading cause of death in the United States in 2023 and affects over 7 million people nationally over age 65 years (Alzheimer's Association, 2025; Murphy et al., 2024). Among these people with Alzheimer's disease, 74% are age 75 years or older (Alzheimer's Association, 2025). In 2022, an estimated 17,363 people died from Alzheimer's disease in California (Alzheimer's Association, 2025).

Early-onset Alzheimer's disease is a form of Alzheimer's dementia that develops before the age of 65 years and is often associated with a faster cognitive decline (Seath et al., 2024). It is estimated that about 10% of early-onset Alzheimer's patients have a known genetic mutation that causes Alzheimer's, such as mutations to *PSEN1*, *PSEN2*, or *APP* (Sirkis et al., 2022). Prevalence on this population is less well known, but is thought that 31.8 people out of 100,000 persons aged 35 to 64 years in the United States, or 40,326 persons total, have early-onset Alzheimer's disease (Alzheimer's Association, 2025; Hendriks et al., 2021; KFF, 2026).

Diagnosis

Alzheimer's disease is diagnosed clinically by a combination of memory testing (such as the Mini-Mental State Examination, or MMSE; see the *Medical Effectiveness* section), clinical interview and exam, and ruling out other causes of memory loss with blood tests and brain imaging (such as stroke, Parkinson's disease, Huntington's disease, hypothyroidism, vitamin B12 deficiency, HIV infection, substance use disorder, major depressive disorder, or schizophrenia) (American Psychiatric Association, 2022; Jack et al., 2024). Symptoms are often staged clinically (as per **Table X**), and this is when MCI and dementia are diagnosed. Alzheimer's disease as the cause of dementia is diagnosed clinically (as probable or possible AD, with 85% accuracy), with or without the presence of amyloid plaques. The staging structure used to describe the pathophysiological status of a patient with Alzheimer's disease is outlined in Table 1.

The presence of biomarkers, including amyloid-beta, detectable via amyloid positron emission tomography (PET) scan or cerebrospinal fluid obtained via lumbar puncture (spinal tap) in conjunction with evidence of neuronal injury (detectable via structural brain magnetic resonance imaging [MRI], PET scan, or tau protein in cerebrospinal fluid), would indicate a high likelihood of Alzheimer's disease (Atri et al., 2025). Although not used for routine diagnosis of Alzheimer's disease, these tests are used prior to starting therapy with anti-amyloid therapeutics. In 2025, the FDA approved a blood test for Alzheimer's disease biomarkers that can be used for symptomatic patients aged 55 years and over, and seeking specialized care (U.S. Food and Drug Administration, 2025).

Table 1. Clinical Staging for Alzheimer's Disease According to the Alzheimer's Association

Stage	Cognitive Symptoms	Additional Features
Stage 0 *Asymptomatic, deterministic gene*	Normal cognitive testing	No clinical symptoms and biomarkers are normal.
Stage 1 *Asymptomatic, biomarker evidence only*	Normal cognitive testing.	No clinical symptoms. Biomarkers positive.
Stage 2 *Transitional decline: mild detectable change, but minimal impact on daily function*	Normal cognitive testing, but lower than baseline.	Clinical decline in cognitive function and mood from individual baseline 1-3 years prior, and persistent for 6 months. Fully independent with no or minimal impact on ADL.
Stage 3 (a) *Cognitive impairment (b) with early functional impact*	Cognitive testing is in the abnormal/impaired range.	May include noticeable changes in ability to perform complex activities of daily living but can perform them independently (i.e., may take more time or be less efficient but still can complete—either self-reported or corroborated by an observer).
Stage 4 (a) *Dementia (c) with mild functional impairment*	Progressive cognitive decline.	Mild functional impairment; requires assistance for instrumental ADL (e.g., managing medications or preparing food), but independent for basic ADLs (e.g., bathing, dressing, toileting).
Stage 5 *Dementia with moderate functional impairment*	Progressive cognitive decline.	Moderate functional impairment; requires assistance for basic ADL (e.g., bathing, dressing, toileting).
Stage 6 *Dementia with severe functional impairment*	Progressive cognitive decline.	Severe functional impairment; completely dependent for basic ADL (e.g., bathing, dressing, toileting).

Source: California Health Benefits Review Program, 2026. Based on Jack et al., 2024.
Notes: (a) Stages 3 to 4 would qualify for anti-amyloid treatment.
(b) Cognitive impairment describes "problems with a person's ability to think, learn, remember, use judgement, and make decisions. Signs of cognitive impairment include memory loss and trouble concentrating, completing tasks, understanding, remembering, following instructions, and solving problems. Other common signs may include changes in mood or behavior, loss of motivation, and being unaware of surroundings." (National Cancer Institute, 2026).
(c) Dementia is a "condition in which a person loses the ability to think, remember, learn, make decisions, and solve problems. Symptoms may also include personality changes and emotional problems. Dementia usually gets worse over time (National Cancer Institute, 2026)."
Key: ADL = activities of daily living.

Alzheimer's Disease Prevalence in California

In 2020, California had an estimated 719,700 adults aged 65+ years living with Alzheimer's disease (Dhana et al., 2023). Of these people 547,629 are 75 years old or older (Ross et al., 2021).

For **early-onset Alzheimer's disease,** CHBRP calculates an estimated 4,800 adults aged 35 to 64 years lived with early-onset Alzheimer's disease in California in 2020, based on the population profile of California and the understood prevalence of early-onset Alzheimer's disease in the United States (Hendriks et al., 2021; State of California Department of Finance, 2026).

Disparities[19] and Differences in Alzheimer's Disease and Its Diagnosis

Disparities are noticeable and preventable or modifiable differences between groups of people. Health insurance benefit mandates or related legislation may impact disparities. Where intersections between health insurance benefit mandates and social determinants or systemic factors exist, CHBRP describes relevant literature.

CHBRP found literature identifying disparities in Alzheimer's disease prevalence by race, ethnicity, sex, age, and education.

Race or Ethnicity

- People who are African American (OR 2.37, 95% CI [2.37, 2.63]) or Latino/Hispanic (OR 1.73, 95% CI [1.40, 2.13]) have a higher risk of developing Alzheimer's disease (Dhana et al., 2023).
- People who are African American, Latino/Hispanic, or Asian are more likely to have a missed or delayed dementia diagnosis than non-Hispanic white people, and are more likely to experience poorer cognitive function and more functional limitations at the time of diagnosis (Lin PJ et al., 2021; Tsoy et al., 2021).

Table 2 describes the prevalence of Alzheimer's disease by race/ethnicity and age group.

Table 2. Prevalence of Alzheimer's Disease Among Those in California, Aged 65 and Older by Race, 2019

White/Caucasian	Latino/a/x American	Black/African American	Asian American/Pacific Islander	Native American	Multirace
391,374 (59.1%)	127,126 (19.2%)	32,081 (4.9%)	101,393 (15.3%)	2,824 (0.4%)	7,153 (1.1%)

Source: California Health Benefits Review Program, 2026 (based on Ross et al., 2021).

Sex or Gender[20]

- Women have a higher risk of developing Alzheimer's disease than men (OR 1.13, 95% CI [1.08, 1.18]) (Dhana et al., 2023).

Age

- Risk for developing Alzheimer's increases with age (Dhana et al., 2023).

[19] Several competing definitions of "health disparities" exist. CHBRP relies on the following definition: Health disparity is defined as the differences, whether unjust or not, in health status or outcomes within a population (Wyatt et al., 2016).

[20] CHBRP uses the National Academies of Sciences, Engineering, and Medicine distinction between "sex" and "gender": "'Sex' refers to biological differences between females and males, including chromosomes, sex organs, and endogenous hormonal profiles. 'Gender' refers to a multidimensional construct that links gender identity, a core element of a person's individual identity; gender expression, which is how a person communicates their gender to others; and social and cultural expectations about status, characteristics, and behavior that are associated with sex traits" (NASEM, 2022).

- Adults aged 70 to 74 years have a higher risk compared to those aged 65 to 69 years (OR 1.78, 95% CI [1.64, 1.93]) and is highest for adults aged 85+ years (OR 14.8, 95% CI [13.6, 16.0]) (Dhana et al., 2023).

Geography

- Access to a neurologist, specifically one that specializes in memory care and Alzheimer's, for diagnosis and treatment of Alzheimer's disease may be difficult for patients living in more rural regions of California (Lin PJ et al., 2021).

Education

- Higher levels of education were associated with lower odds of developing Alzheimer's disease (Dhana et al., 2023).

Treatment Options

Medications for cognitive impairment and dementia due to Alzheimer's are listed in Table 3. See the *Medical Effectiveness* section for more information about these medications.

There are two types of medications available currently. Medications that are designed to treat symptoms of Alzheimer's Disease are intended to reduce symptom burden but not alter the course of the disease. They include cholinesterase inhibitors, and NMDA-receptor agonists (or a combination of the two). Medications that are intended to slow the rate of progression to severe disease (disease-modifying medications) work by removing the buildup of beta-amyloid proteins in the brain. These medications include lecanemab and donanemab.

Table 3. FDA-Approved Therapies for Alzheimer's Disease

Drug Name	Indication	Route of Administration	Access and Initiation Considerations
Medications to treat symptoms			
Cholinesterase inhibitors			
Donepezil (Aricept)	Mild, moderate, or severe Alzheimer's dementia	Oral	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
Galantamine (Razadyne)	Mild-to-moderate Alzheimer's dementia	Oral	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
Benzgalantamine (Zunveyl)	Mild-to-moderate Alzheimer's dementia	Oral	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
Rivastigmine (Exelon)	Mild, moderate, or severe Alzheimer's dementia	Oral or patch	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
NMDA-receptor antagonists			

Drug Name	Indication	Route of Administration	Access and Initiation Considerations
Memantine (Namenda)	Moderate-to-severe Alzheimer's dementia	Oral	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
Cholinesterase inhibitor + NMDA-receptor antagonist			
Donepezil + memantine (Namzaric)	Moderate-to-severe Alzheimer's dementia	Oral	A primary care physician, neurologist, or geriatrician can prescribe. Prescribed once clinical diagnosis of Alzheimer's disease has been made.
Disease-modifying medications – amyloid beta–directed monoclonal antibodies (anti-amyloid)			
Lecanemab (Leqembi)	Mild cognitive impairment or mild dementia due to Alzheimer's disease	Intravenous, with subcutaneous injection option after 18 months of infusions	Requires confirmation of beta-amyloid pathology and specialized neurologist to prescribe. Requires baseline MRI, plus MRI monitoring at 3rd, 5th, 7th, and 14th infusions.
Donanemab (Kisunla)	Mild cognitive impairment or mild dementia due to Alzheimer's disease	Intravenous	Requires confirmation of beta-amyloid pathology and specialized neurologist to prescribe. Requires baseline MRI, plus MRI monitoring prior to 2nd, 3rd, 4th, and 7th infusions.

Source: California Health Benefits Review Program, 2026 (based on Press and Buss, 2025).
Key: FDA = U.S. Food and Drug Administration; MRI = magnetic resonance imaging.

Barriers to Accessing Diagnosis and Treatment of Alzheimer's Disease

Diagnosis

There are barriers to getting a diagnosis of Alzheimer's Disease. While a primary care physician or geriatrician might diagnosis Alzheimer's disease, patients often need to see a neurologist or other dementia specialist to confirm the diagnosis. Neurologist accessibility can be a challenge for those living in non-metropolitan areas (Silvestre et al., 2026). In California, more neurologists are available in the San Francisco Bay Area, Central Coast, and Southern California, with fewer being available in the San Joaquin Valley and regions north of Sacramento County (Lin CC et al., 2021).

Disease-Modifying Medications

Once diagnosed, there can be barriers to accessing certain treatments. For the two FDA-approved medications that specifically target amyloid proteins (disease-modifying medications), additional steps are required to obtain access:

Eligibility

At this time, anti-amyloid medications are only available for patients who meet certain clinical criteria (see above, Table 3). Those criteria include having mild cognitive impairment or mild dementia due to Alzheimer's disease (Table 1, Stages 3-4), and a confirmed presence of amyloid pathology (such as through amyloid PET scan, lumbar puncture, or blood test[21]) (U.S. Food and Drug Administration, 2023, 2024). Those without clinical symptoms (stages 0-2 in Table 1) or more

[21] Personal communication with CHBRP's content expert, February 27th, 2026.

advanced disease (stages 5 and 6 in Table 1) are not currently eligible for these treatments[22] (U.S. Food and Drug Administration, 2023, 2024).

Access to special testing

Patients must undergo a PET brain scan, lumbar puncture, or blood test to demonstrate the presence of amyloid proteins in the brain before starting the medication. Lumbar punctures require specialized training and access to a lab that can process the sampled cerebrospinal fluid, and can be performed by a physician, physician assistant, or nurse practitioner. Obtaining an amyloid PET scan can be a barrier for patients who wish to access anti-amyloid medications but cannot receive a lumbar puncture (perhaps due to contraindication or for anatomical reasons) and do not have access to the amyloid blood test (Hanson et al., 2025).

Due to the natural decay process, the radioactive amyloid tracer used for the amyloid PET scan must be packaged and delivered to the PET scan location within 3 hours (Hanson et al., 2025). Most of the facilities that can manufacture the amyloid tracer and are within driving distance of a PET scan facility are clustered within the San Francisco Bay Area and coastal Southern California (Hanson et al., 2025). Patients living in the desert or northernmost regions of the state may need to travel long distances to obtain an amyloid PET scan (Hanson et al., 2025).

After it is determined that a patient would be an eligible candidate for an anti-amyloid medication, an MRI is required prior to initiating treatment, and during treatment, with follow up MRIs occurring at specific timepoints to monitor for bleeding and treatment progress (see Table 3).

Access to treating clinicians and treatment centers

Anti-amyloid medications are typically prescribed by a neurologist or other dementia specialist, who can regularly monitor the patient's status throughout the treatment timeline. These medications are given via intravenous infusion, which requires that patients travel to an infusion site that can provide these medications multiple times. Because of the specialized training required to administer these drugs, as well as the intensity required to monitor patient progress, these medications are largely confined to academic health centers, and there is a limit to the number of patients a given clinician can treat. One academic center estimates it can administer anti-amyloid medications to and monitor the progress of roughly 150 patients per year.[23]

Societal Impact of Alzheimer's Disease in California

The presence of early-onset and traditional Alzheimer's disease in California has direct and indirect economic and societal costs. Some patients with mild dementia might be able to drive, however most must stop driving and are never able to restart. One study demonstrated that job loss in the first year following diagnosis of early-onset Alzheimer's was twice that of normal matched controls (Sakata and Okumura, 2017). Disability-adjusted life-years (DALYs) is one way to measure burden (calculated as the sum of years of life lost to premature mortality and the estimated number of years lived with disability) with each DALY representing one lost year of healthy life (Mokdad et al., 2024). Nationally, Alzheimer's disease was the 17th most burdensome disease in 2021, with a rate of 510 DALYs per 100,000 people (Mokdad et al., 2024). In California, Alzheimer's disease was the eighth most burdensome disease in 2021 (Mokdad et al., 2024).

In 2024, unpaid caregivers provided an estimated 19.2 billion hours of assistance for people with Alzheimer's disease nationally, which, if compensated at minimum wage rates, would have been valued at $413.5 billion (Alzheimer's Association, 2025). The people providing unpaid care for people with dementia includes mostly women (roughly 2/3 of caregivers) and are often providing assistance to either a parent or in-law with dementia (over half of caregivers) (Alzheimer's Association, 2025). Additionally, roughly one fourth of unpaid caregivers are also caring for at least one child (sandwich generation) (Alzheimer's Association, 2025).

[22] Personal communication with CHBRP's content expert, February 27th, 2026.
[23] Personal communication with CHBRP's content expert, February 27th, 2026.

Please note, the societal impact discussed here is relevant to a broader population than SB 950 impacts, which would affect the health insurance of a subset of Californians (see the *Overview* section of the *Analysis of SB 950 Dementia*). Additionally, see the *Benefit Coverage and Cost Impacts* section for estimates of direct cost impacts for the specific population targeted by SB 950.

Medical Effectiveness

The *Medical Effectiveness* section summarizes findings from evidence[24] on the effectiveness of FDA-approved treatments for Alzheimer's Disease. FDA-approved treatments include seven medications across three mechanisms of action, listed below. Donepezil and memantine can be combined for treatment (Namzaric).

Cholinesterase Inhibitors

- Donepezil (Aricept)
- Galantamine (Razadyne)
- Benzgalantamine (Zunveyl)
- Rivastigmine (Exelon)

NMDA-Receptor Antagonists

- Memantine (Namenda)

Amyloid Beta–Directed Monoclonal Antibodies

- Lecanemab (Leqembi)
- Donanemab (Kisunla)

This medical effectiveness section also summarizes findings on the effectiveness of amyloid plaque reduction on health outcomes.

Research Approach and Methods

The search was limited to studies published from 2016 to the present. CHBRP relied on three meta-analyses to identify individual studies that evaluated the safety and efficacy of FDA-approved medications that treat symptoms of Alzheimer's disease. CHBRP relied on seven individual trials that evaluated the safety and efficacy of FDA-approved disease-modifying treatments for Alzheimer's disease.

A total of 11 studies were included in the medical effectiveness review for this report. The other articles were eliminated because they did not focus on FDA-approved treatments or patients with early or mild-to-moderate Alzheimer's disease. A more thorough description of the methods used to conduct the medical effectiveness review and the process used to grade the evidence for each outcome measure is presented in CHBRP's Medical Effectiveness Analysis and Research Approach document.

Studies that examined other types of dementia (e.g., Parkinson's disease dementia, Lewy body dementia, frontotemporal dementia) were excluded because they are unrelated to dementia due to Alzheimer's disease. Additionally, studies that focused on FDA-approved treatments for non-cognitive symptoms of Alzheimer's disease (suvorexant [Belsomra]; brexpiprazole [Rexulti]) were excluded from this analysis.

The conclusions below are based on the best available evidence from peer-reviewed and grey literature.[25] Unpublished studies are not reviewed because the results of such studies, if they exist, cannot be obtained within the 60-day timeframe for CHBRP reports.

Key Questions

1. For adults with mild cognitive impairment or dementia due to Alzheimer's disease, what is the effectiveness of FDA-approved medications to treat symptoms (either alone or in combination) for the treatment of Alzheimer's disease as compared to placebo on health outcomes?
    a. What are the associated harms of FDA-approved medications to treat symptoms (either alone or in combination) for the treatment of Alzheimer's disease or other related dementia?

[24] Much of the discussion in this section is focused on reviews of available literature. However, as noted in the section on Implementing the Hierarchy of Evidence in the Medical Effectiveness Analysis and Research Approach document, in the absence of peer-reviewed literature on well-designed randomized controlled trials (RCTs) that is fully applicable to the analysis, CHBRP's hierarchy of evidence allows for the inclusion of other evidence.
[25] Grey literature consists of material that is not published commercially or indexed systematically in bibliographic databases. See CHBRP's website for more information.

2. For adults with mild cognitive impairment or dementia due to Alzheimer's disease, what is the effectiveness of FDA-approved disease-modifying medications for the treatment of Alzheimer's disease as compared to placebo on process of care, health outcomes, and utilization of other services?
    a. What are the associated harms of FDA-approved disease-modifying medications (either alone or in combination) for the treatment of Alzheimer's disease or other related dementia?

Methodological Considerations

For medications to treat symptoms of Alzheimer's disease (cholinesterase inhibitors and NMDA-antagonists), CHBRP relied on a meta-analysis (Fink et al., 2020) commissioned by the Agency for Healthcare Research and Quality (AHRQ) for evidence regarding the effects of these medications on cognitive function, functional ability (e.g., ability to perform activities of daily living), and global clinical assessment. CHBRP relied on this meta-analysis because the authors synthesized findings from randomized controlled trials (RCTs) in which patients were treated for at least 24 weeks and for which outcomes were assessed 24 to 30 weeks following treatment. Findings from such RCTs provide evidence of whether treatment with these medications over a 6-month period yield benefits that are sustained 6 to 7 months after treatment is completed. For evidence of effects of medications to treat symptoms on neuropsychiatric symptoms, CHBRP relied on two other meta-analyses (Kishi et al., 2017; Li et al., 2019) because the AHRQ meta-analysis did not assess the effects of these medications on neuropsychiatric symptoms.

Although several biomarkers are thought to be involved in the pathogenesis of Alzheimer's disease (e.g., amyloid, tau, p-tau), CHBRP focused on amyloid burden and clearance as the main biomarker outcomes, as the mechanism of action of current disease-modifying therapies is based on decreasing amyloid burden in the brain.

CHBRP's medical effectiveness literature review for disease-modifying medications (lecanemab and donanemab) focused on original clinical trials rather than systematic reviews or meta-analyses due to the limited number of available studies. Systematic reviews and meta-analyses were excluded because they largely synthesize the same small set of trials, and meta-analyses often report subgroup findings derived from a single underlying study.

Although the primary research questions centered on the safety and efficacy of FDA-approved treatments, CHBRP also identified one study examining the causal relationship between amyloid plaque and health outcomes. This study provides important context for understanding the link between amyloid-targeting therapies and observed changes in cognitive function and functional ability.

Outcomes Assessed

CHBRP assessed the impact of FDA-approved treatments for Alzheimer's disease on:

- Cognitive function
- Functional ability
- Cognitive function + functional ability (combined measures)
- Neuropsychiatric/behavioral symptoms
- Global assessment (combined measures)
- Biomarkers
- Harms

CHBRP also assessed the causal relationship between amyloid plaque reduction on cognitive function and functional ability.

Key Terminology

Health Outcome Measurement Instruments

The following measurement instruments were used to evaluate the impact of treatment on health outcomes in the studies included in this review:

Cognitive function

Alzheimer's Disease Assessment Scale – Cognitive Subscale (ADAS-Cog): the original cognitive subscale and one of the most widely used cognitive tests in Alzheimer's disease trials. It includes 11 items with the following domains: memory, language, praxis, and orientation. Scores range from 0 to 70, with **higher scores indicating worse cognition** (Skinner et al., 2012). Minimum clinically important differences for Alzheimer's disease trial endpoints include +2 to +3 points for MCI and +3 points for mild Alzheimer's disease (Muir et al., 2024).

Alzheimer's Disease Assessment Scale – Cognitive Subscale13/14 (ADAS-Cog13/14): These subscales build on the original by adding two to three tasks: number cancellation and delayed free recall (ADAS-Cog13) and a maze test (ADAS-Cog14). Scores for ADAS-Cog 13 range from 0 to 85, and scores for ADAS-Cog14 range from 0 to 90, with **higher scores indicating worse cognition** (Skinner et al., 2012; Wessels et al., 2018). CHBRP did not find data on minimum clinically important differences for the ADAS-Cog13/14 instruments.

Mini-Mental State Examination (MMSE): an 11-item cognitive screening test that assesses attention and orientation, memory, registration, recall, calculation, language, and the ability to draw a complex polygon. Scores range from 1 to 30 (conventional cutoff at 24), with **higher scores indicating better cognition** (Creavin et al., 2016). Minimum clinically important differences for Alzheimer's disease trial endpoints include −1 to −2 points for mild cognitive impairment (MCI) and −2 points for mild Alzheimer's disease (Muir et al., 2024).

Alzheimer's Disease Composite Score (ADCOMS): a 12-item composite measure that includes four items of the ADAS-Cog, two items from the MMSE, and all six items of the CDR-SB, that is designed to be more sensitive to change in early Alzheimer's disease. Scores range from 0 to 1.97, with **higher scores indicating worse cognition** (Wang et al., 2016). CHBRP did not find data on minimum clinically important differences for the ADCOMS instrument.

Functional ability

Alzheimer's Disease Cooperative Study – Activities of Daily Living (ADCS-ADL): a 23-item, caregiver-reported scale that assesses basic and instrumental activities of daily living (ADLs and iADLs) over the past 4 weeks. Scores range from 0 to 78, with **higher scores indicating better functioning** (Chandler et al., 2025). CHBRP did not find data on minimum clinically important differences for the ADCS-ADL instrument.

Alzheimer's Disease Cooperative Study – Activities of Daily Living Scale for Mild Cognitive Impairment (ADCS-ADL-MCI): derived from the ADCS-ADL, an 18- or 24-item, caregiver-reported scale to measure ADLs and iADLs for MCI patients. Scores range from 0 to 53, with **higher scores indicating better functioning** (Potashman et al., 2023). CHBRP did not find data on minimum clinically important differences for the ADCS-ADL-MCI instrument.

Alzheimer's Disease Cooperative Study – Instrumental Activities of Daily Living (ADCS–iADL): an iADL-specific subscale derived from the ADCS-ADL. Scores range from 0 to 56, with **higher scores indicating better functioning** (Wessels et al., 2015) CHBRP did not find data on minimum clinically important differences for the ADCS-iADL instrument.

Cognitive function + functional ability

Clinical Dementia Rating – Sum of Boxes (CDR-SB): an interview-based assessment that measures dementia severity across six domains, or "boxes": memory, orientation, judgement and problem solving, community affairs, home and hobbies, and personal care. Scores range from 0 to 18, with **higher scores indicating worse cognitive and functional status** (Wessels et al., 2018). Minimum clinically important differences for Alzheimer's disease trial endpoints include +1 points for MCI and +2 points for mild Alzheimer's disease (Muir et al., 2024).

Integrated Alzheimer's Disease Rating Scale (iADRS): an 18-item composite scale integrating items from the ADAS-Cog 13 and the ADCS-iADL. Scores range from 0 to 144, with **higher scores indicating better cognitive and functional status** (Chandler et al., 2025; Wessels et al., 2015). Minimum clinically important differences for Alzheimer's disease trial endpoints include −5 points for MCI and −9 points for mild Alzheimer's disease (Muir et al., 2024).

Neuropsychiatric/behavioral symptoms

Neuropsychiatric Inventory (NPI): originally, a 10-item instrument to assess neuropsychiatric syndromes common in Alzheimer's disease and other neurodegenerative disorders across ten domains: delusions, hallucinations, agitation, depression, anxiety, elation, apathy, disinhibition, irritability, and aberrant motor behavior. A later-developed, 12-item version of the instrument added items on sleep and appetite changes. Each domain is assigned two scores (Frequency, 1-4; Severity, 1-3), which are multiplied to yield the total domain score. All domain scores are added to create a total score. **Higher scores indicate a more severe psychiatric burden** (Cummings, 2020). CHBRP did not find data on minimum clinically important differences for the NPI instrument.

Global assessment

Clinician's Interview-based Assessment of Change–Plus (CIBIC+): a seven-point judgement-based rating scale that evaluates cognition, behavior, and function. The Likert scale ranges from very much worse to very much improved. Higher scores indicate better cognition, behavior, and function (Stanley et al., 2021). CHBRP did not find data on minimum clinically important differences for the CIBIC+ instrument.

Biomarkers

The following terminology is used in the biomarker subsections of the study findings:

Amyloid positron emission tomography (*PET):* Amyloid PET is a minimally invasive diagnostic imaging procedure used to detect levels of amyloid plaque in the human brain (CMS, 2024).

Centiloids (CL): a 100-point scale used to quantify amyloid PET (Rabinovici et al., 2025; Salvado et al., 2019).

Standard Uptake Value Ratio (SUVR): the most common way to quantify amyloid PET, defined as "the ratio of radiopharmaceutical uptake in a target region divided by uptake in a nonspecific reference region that is relatively spared of pathology, measured at a time after injection when these ratios were shown to be stable" (Rabinovici et al., 2025).

Harms

The following terminology is used in the harms subsections of the study findings:

Amyloid-related imaging abnormalities (ARIA): "MRI abnormalities that may be identified in Alzheimer's disease subjects treated with monoclonal antibodies targeting amyloid plaques" (Pasquini, 2024).

ARIA-E: edema or effusion MRI abnormality (Pasquini, 2024).

ARIA-H: hemorrhage (including microhemorrhages and superficial siderosis) MRI abnormality (Pasquini, 2024).

Study Findings for the Effectiveness of FDA-Approved Treatments for Alzheimer's Disease

The following section summarizes CHBRP's findings regarding the strength of evidence for the effectiveness of FDA-approved treatments for Alzheimer's Disease addressed by SB 950. Each section is accompanied by a corresponding figure. The title of the figure indicates the test, treatment, or service for which evidence is summarized. The statement in the box above the figure presents CHBRP's conclusion regarding the strength of evidence about the effect of a particular test, treatment, or service based on a specific relevant outcome and the number of studies on which CHBRP's conclusion is based. Definitions of CHBRP's grading scale terms are included in the box below.

The following terms are used to characterize the body of evidence regarding an outcome:

Very strong evidence (formerly called *clear and convincing evidence*) indicates that there are multiple studies of a treatment and the large majority of studies are of high quality and consistently find that the treatment is either effective or not effective. Conclusions are unlikely to be altered by additional evidence.

Strong evidence (formerly called *preponderance of evidence*) indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective. Conclusions could be altered with additional strong evidence.

Some evidence (formerly called *limited evidence*) indicates that a small number of studies have limited generalizability to the population of interest and/or the studies have a serious methodological concern in research design or implementation. Conclusions could be altered with additional evidence.

Conflicting evidence (formerly called *inconclusive evidence*) indicates that of the studies of equal quality, the number suggesting the treatment is effective is similar to the number of those suggesting the treatment is not effective.

Not enough research (formerly called *insufficient evidence*) indicates that (1) there are no studies of the treatment **or** (2) the available studies are not of high quality, meaning there is not enough evidence available to know whether or not a treatment is effective. *Not enough research* does not indicate that a treatment is not effective.

Medications to Treat Symptoms of Alzheimer's Disease

As discussed in the *Background* section, two classes of medications are prescribed to treat the symptoms of Alzheimer's disease: cholinesterase inhibitors and NMDA-receptor antagonists. Table 4 at the end of the combination therapy section provides a high-level summary of the findings across both classes of medications used to treat Alzheimer's disease symptoms.

Cholinesterase inhibitors

Cognitive Function

There is *strong evidence* that cholinesterase inhibitors are associated with a small improvement in cognitive function at 24 to 30 weeks following treatment. A meta-analysis commissioned by AHRQ (Fink et al., 2020) pooled findings from 21 RCTs that used the ADAS-Cog or the MMSE to assess the effect cholinesterase inhibitors on the cognitive function of persons with Alzheimer's Disease. The authors found that treatment with a cholinesterase inhibitor was associated with a small improvement in cognition relative to placebo (median standardized mean difference [SMD], 0.30 [range 0.24 to 0.52]) at 24 to 30 weeks post treatment. Based on findings from five RCTs, the authors concluded that treatment with a cholinesterase inhibitor was also associated with a four-point or greater increase in ADAS-Cog score, which indicates an increase above the minimum clinically important difference in ADAS-Cog scores (+3 points for mild AD). The median average risk difference was 16% (range, 8% to 19%).

Functional Ability

There is *strong evidence* that cholinesterase inhibitors do not affect functional ability at 24 to 30 weeks following treatment. A meta-analysis commissioned by AHRQ (Fink et al., 2020) pooled findings from 10 RCTs that used the ADCS-ADL, Disability Assessment for Dementia, or Minimum Data Set-Activities of Daily Living scale. The authors reported that there was no statistically significant difference in improvement in function between persons treated with a cholinesterase inhibitor and persons who received a placebo 24 to 30 weeks following treatment (median SMD, 0.19 [range, −0.10 to 0.22]).

Neuropsychiatric/Behavioral Symptoms

There is *conflicting evidence* regarding the effects of cholinesterase inhibitors on neuropsychiatric/behavioral symptoms as assessed by the Neuropsychiatric Inventory (NPI). A meta-analysis (Li et al., 2019) reported finding separately for specific cholinesterase inhibitors and for persons with mild-to-moderate Alzheimer's disease versus moderate-to-severe Alzheimer's disease versus severe Alzheimer's disease. Among persons with mild to moderate Alzheimer's disease, treatment with galantamine was associated with a small difference in NPI score that favored galantamine over placebo (SMD, −0.15 [range, −0.24, −0.6]), but there were no statistically significant differences in NPI scores between persons treated with donepezil or rivastigmine versus placebo. Among persons with moderate to severe Alzheimer's disease, one RCT reported that treatment with donepezil was associated with a small difference in NPI score that favored donepezil over placebo (SMD, −0.41 [range, −0.65, −0.18]). Among persons with severe Alzheimer's disease, one RCT found no statistically significant difference in NPI scores between donepezil and placebo.

Global Assessment

There is *some evidence* that cholinesterase inhibitors are associated with a small improvement in global clinical assessment of cognition, behavior and function at 24 to 30 weeks following treatment. The meta-analysis commissioned by AHRQ (Fink et al., 2020) pooled findings from 7 RCTs that used the CIBIC+ or the ADCS-Clinical Global Impression of Change to examine the effect of cholinesterase inhibitors on global functioning. The authors reported that persons treated with a cholinesterase inhibitor were more likely to have minimal or greater improvement in global clinical assessment at 24 to 30 weeks following treatment (median ARD, 10% [range, 8% to 13%]) but that moderate or greater improvement in global clinical assessment was not common (median ARD, 4% [range, 2% to 4%]).

Harms

One umbrella review (Fan et al., 2022), two network meta-analyses (Dou et al., 2018; Tsoi et al., 2019), and two meta-analyses (Chen et al., 2024; Li et al., 2019) of RCTs of cholinesterase inhibitors reported that participants in RCTs who received a cholinesterase inhibitor were more likely to experience an adverse event than those who received a placebo. These adverse events consisted primarily of unfavorable gastrointestinal events, such as nausea, vomiting, diarrhea, and anorexia (Chen et al., 2024). One meta-analysis (Nham et al., 2024) concluded that there was no statistically significant difference in major adverse cardiac events between persons who received donepezil and persons who received a placebo.

Fink et al. (2020) reported that treatment with a cholinesterase inhibitor was associated with a higher rate of withdrawal from an RCT due to adverse events than receipt of a placebo (23 RCTs). Pooled numeric findings were not reported. There were no statistically significant differences in the risk of severe adverse events (19 RCTs).

NMDA-receptor antagonist

Cognitive Function

There is *some evidence* that NMDA-receptor antagonists do not affect cognitive function at 24 to 30 weeks following treatment. The meta-analysis commissioned by AHRQ (Fink et al., 2020) identified one RCT that assessed the impact of memantine on cognitive function. That RCT found no statistically significant difference in cognitive function between participants who received memantine and participants who received a placebo at 24 to 30 weeks post treatment.

Functional Ability

There is *some evidence* that NMDA-receptor antagonists do not affect functional ability at 24 to 30 weeks following treatment. Fink et al. (2020) identified one RCT that assessed the impact of memantine on functional ability. That RCT found no statistically significant difference in functional ability between participants who received memantine and participants who received a placebo at 24 to 30 weeks following treatment.

Neuropsychiatric/Behavioral Symptoms

There is *some evidence* that NMDA-receptor antagonists are associated a less severe neuropsychiatric/behavioral symptoms for persons with moderate to severe Alzheimer's Disease. A meta-analysis by Li and colleagues (2019) synthesized findings from 9 RCTs that used the Neuropsychiatric Inventory (NPI) to assess the effect of memantine on neuropsychiatric symptoms, three of which enrolled persons with mild to moderate Alzheimer's Disease and six of which enrolled persons with moderate to severe Alzheimer's Disease. The authors found no statistically significant difference in NPI scores between memantine and placebo for persons with mild to moderate Alzheimer's disease but persons with moderate to severe Alzheimer's disease who received memantine had slightly better NPI scores than persons who received a placebo (SMD, -0.16 [range, -0.29 to -0.03]).

Global Assessment

There is *some evidence* that NMDA-receptor antagonists improve global clinical impression at 24 to 30 weeks post treatment. The meta-analysis commissioned by AHRQ (Fink et al., 2020) identified one RCT that examined the effect of memantine on global clinical assessment and found that treatment with memantine was associated with a larger change in global clinical impression than placebo at 24 to 30 weeks following treatment. Numeric findings were not reported.

Harms

Fink et al. (2020) reported that the one RCT that compared memantine to placebo found that persons treated with memantine were more likely to experience somnolence (risk ratio, 3.75 [range, 1.36 to 10.30]). The authors found no statistically significant difference in serious adverse events or withdrawals due to adverse events.

Cholinesterase inhibitors combined with NMDA-receptor antagonist (combination therapy)

Cognitive Function

There is *some evidence* that adding memantine to a cholinesterase inhibitor results in a small improvement in cognitive function among persons with moderate-to-severe Alzheimer's disease at 24 to 30 weeks following treatment. Fink et al. (2020) identified four RCTs that examined the effects of adding memantine to a cholinesterase inhibitor on cognitive function. Analysis of three RCTs that enrolled persons with moderate-to-severe Alzheimer's disease found that adding memantine was associated with greater improvement in cognitive function at 24 to 30 weeks following treatment (median SMD, 0.37, [range, 0.27 to 0.47]) but the difference was below the minimally clinically important difference in ADAS-Cog scores (+3 points for mild AD). One RCT that enrolled persons with mild to moderate Alzheimer's disease found no statistically significant difference in cognitive function between persons who received a cholinesterase inhibitor and memantine and persons who receive a cholinesterase inhibitor alone at 24 to 30 weeks following treatment.

Functional Ability

There is *some evidence* that adding memantine to a cholinesterase inhibitor does not improve functional ability at 24 to 30 weeks post treatment. Fink et al. (2020) identified four RCTs that examined the effects of adding memantine to a cholinesterase inhibitor on functional ability. The authors found no statistically significant difference in functional ability between persons who received a cholinesterase inhibitor and memantine and persons who receive a cholinesterase inhibitor alone at 24 to 30 weeks following treatment.

Neuropsychiatric/Behavioral Symptoms

There is *strong evidence* that adding memantine to a cholinesterase inhibitor is associated with a small reduction in neuropsychiatric symptoms. Kishi and colleagues (2017) synthesized findings from 10 RCTs that used the NPI or the Behavioral Pathology in Alzheimer's Disease Rating Scale to assess the impact of adding memantine to a cholinesterase inhibitor on neuropsychiatric symptoms. The authors found that adding memantine to a cholinesterase inhibitor was associated with a small reduction in neuropsychiatric symptoms relative to a cholinesterase inhibitor alone (SMD = −0.20, [range, −0.36 to −0.03]).

Global Assessment

There is *some evidence* that adding memantine to a cholinesterase inhibitor is associated with greater change in global clinical assessment among persons with moderate to severe Alzheimer's disease at 24 to 30 weeks following treatment. One RCT reported that persons with moderate to severe Alzheimer's disease who received a cholinesterase inhibitor plus memantine had a greater change in global clinical assessment than persons who received a cholinesterase inhibitor alone at 24 to 30 weeks post treatment. Numeric findings were not reported. Fink et al. (2020) identified one RCT that enrolled persons with mild to moderate Alzheimer's disease that assessed the impact of adding memantine on global clinical assessment. That RCT found no difference in global clinical assessment between persons treated with a cholinesterase inhibitor plus memantine and persons treated with a cholinesterase inhibitor alone at 24 to 30 weeks post treatment.

Harms

Fink et al. (2020) found no statistically significant differences in serious adverse events (two RCTs) and withdrawal due to adverse events (three RCTs) between persons treated with a cholinesterase inhibitor plus memantine and persons treated with a cholinesterase inhibitor alone.

Amyloid Biomarkers for Disease-Modifying Medications

Six studies reported findings on the impact of disease-modifying medications on amyloid biomarkers (McDade et al., 2022; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026). Table 4 summarizes these results. Across RCTs, both donanemab and lecanemab demonstrated substantial, statistically significant reductions in amyloid burden as measured by PET, with decreases ranging from approximately −59 to −87 centiloids compared with placebo. Long-term extension and open-label studies showed continued reductions or maintenance of low amyloid levels over time, including similar reductions among delayed-start participants after treatment initiation. Amyloid clearance was achieved in a high proportion of treated participants, ranging from approximately 67.8% to 76.4% in RCTs and similar or higher rates in extension studies. However, these findings were generally reported descriptively without formal statistical testing. Notably, definitions of amyloid clearance varied slightly across studies, with thresholds of <24.1 centiloids used in Mintun et al. (2021), Sims et al. (2023), and Zimmer et al. (2026), and <30 centiloids used in van Dyck et al. (2025).

Table 4. Summary of Findings for Disease-Modifying Medications' Impact on Amyloid Biomarkers

Study Authors	Study Design	Medication	Measure	Finding	Statistical Significance
Mintun et al. (2021)	RCT	Donanemab	Amyloid PET (centiloids)	−85.06 vs. placebo	95% CI: −92.68, −77.43 (statistically significant)
Sims et al. (2023)	RCT	Donanemab	Amyloid PET (centiloids)	−87.0 vs. placebo	95% CI: −88.90, −85.17 (statistically significant)
Zimmer et al. (2026)	LTE	Donanemab	Amyloid PET (centiloids)	*Early start* −86.96 vs. weighted ADNI cohort (a)	Not reported
				Delayed start −86.01 vs. weighted ADNI cohort (a)	Not reported
van Dyck et al. (2023)	RCT	Lecanemab	Amyloid PET (centiloids)	−59.12 vs. placebo	95% CI: −62.64, −55.60 (statistically significant)
McDade et al. (2022)	OLE	Lecanemab	Amyloid PET (centiloids)	Approx. −13 early vs. delayed start (b)	Not reported

Mintun et al. (2021)	RCT	Donanemab	Amyloid clearance	67.8% of treated participants	Not reported
Sims et al. (2023)	RCT	Donanemab	Amyloid clearance	76.4% of treated participants	Not reported
Zimmer et al. (2026)	LTE	Donanemab	Amyloid clearance	*Early start* 76.4% of treated participants *Delayed start* 76.5% of treated participants	Not reported Not reported
van Dyck et al. (2025)	OLE	Lecenemab	Amyloid clearance	Approx. 70% of treated participants	Not reported

Source: California Health Benefits Review Program, 2026.
Notes: (a) Comparison vs. external matched ADNI cohort; not a randomized placebo-controlled comparison.
(b) Open-label extension findings are descriptive. Approximate values were derived from figures only when clearly interpretable. Small-scale measures are reported descriptively to avoid false precision.
Key: ADNI = Alzheimer's Disease Neuroimaging Initiative; CI = confidence interval; LTE = long-term extension; OLE = open-label extension; PET = positron emission tomography; RCT = randomized controlled trial.

Summary of findings regarding the impact of disease-modifying medications for amyloid biomarkers: There is *strong* evidence that disease-modifying medications are effective at reducing or clearing amyloid based on six studies. All studies consistently demonstrated substantial reductions in amyloid burden among treated participants. Additionally, results showed that most treated participants achieved amyloid clearance. Most RCT findings on amyloid burden were statistically significant, whereas outcomes of clearance and extension studies were generally reported descriptively without formal statistical testing. Overall, disease-modifying medications demonstrate robust and consistent effects on amyloid biomarkers.

Figure 1. Evidence of Effectiveness of Disease-Modifying Medications for Amyloid Biomarkers

Clinical Outcomes for Disease-Modifying Medications

CHBRP identified seven studies that assessed the safety and efficacy of the two FDA-approved disease-modifying medications, donanemab and lecanemab. Three studies assessed donanemab; two were RCTs (Mintun et al., 2021; Sims et al., 2023), and one was a long-term extension of one RCT (Zimmer et al., 2026). Four studies assessed lecanemab; one was an RCT (van Dyck et al., 2023), and the other three were open-label extensions of the RCT (Honig et al., 2024; McDade et al., 2022; van Dyck et al., 2025). Across these studies, participants were adults with early-stage Alzheimer's disease and spanned a broad age range, including both early- and late-onset Alzheimer's disease. As a result, the available evidence reflects mixed populations, and CHBRP is unable to isolate or assess the effectiveness and safety of these medications specifically for individuals with early-onset Alzheimer's disease, the population whose coverage would be affected by SB 950. Table 5 provides additional information about each of the seven included studies.

In the Cognitive Function, Functional Ability, and Cognitive Function and Functional Ability subsections, CHBRP evaluated clinical meaningfulness using the established thresholds of minimum clinically important differences (MCIDs) for each scale as defined in the literature. It is important to note that these thresholds are primarily designed to assess within-person change and may not fully capture the clinical relevance of treatments that slow disease progression over time; perspectives on what constitutes meaningful benefit may differ among patients, caregivers, and clinicians (Angioni et al., 2024; Buracchio et al., 2025).

Table 5. Lecanemab and Donanemab Safety and Efficacy Study Details

Study Authors, Publication Year	Study Design	Medication	Treatment Dosage	Treatment Administration	Treatment Duration	AD Stage	Number of Randomized Patients, n	Patient Age (Years)
Mintun et al. (2021) [TRAILBLAZER-ALZ]	Phase 2, randomized, double-blind, placebo-controlled	Donanemab	700 mg x3 doses; 1400 mg thereafter	IV every 4 weeks	72 weeks (primary endpoint 76 weeks)	Early/prodromal AD, symptomatic (MMSE: 20-28)	Donanemab, n=131 Placebo, n=126	60–85
Sims et al. (2023) [TRAILBLAZER-ALZ 2]	Phase 3, randomized, double-blind, placebo-controlled	Donanemab	700 mg x3 doses; 1,400 mg thereafter	IV every 4 weeks	72 weeks (primary endpoint 76 weeks)	Early AD, symptomatic (MMSE: 20–28)	Donanemab, n=860 Placebo, n=876	60–85
Zimmer et al. (2026)	Long-term extension of Phase 3 randomized trial	Donanemab	700 mg x3 doses; 1,400 mg thereafter	IV every 4 weeks	Additional 78-week LTE following the 76-week placebo-controlled period (~3-year total follow-up)	Early AD, symptomatic (MMSE: 20–28)	Early start (a), n=550 Delayed start (b), n=657	60–85
van Dyck et al. (2023) [CLARITY AD]	Phase 3, multicenter, double-blind, placebo-controlled	Lecanemab	10 mg/kg	IV every 2 weeks	18 months	Mild AD; MCI due to AD (MMSE: 22-30)	Lecanemab, n=859 Placebo, n=875	50–90
van Dyck et al. (2025)	Open-label extension	Lecanemab	10 mg/kg	IV every 2 weeks	Up to 36 months	Mild AD; MCI due to AD (MMSE: 22-30)	Early start (a), n=859 Delayed start (b), n=875	50–90
McDade et al. (2022)	Open-label extension	Lecanemab	10 mg/kg	IV every 2 weeks	Up to 24 months	Early AD (CDR 0.5 or 1)	Early start (a), n=217 Delayed start (b), n=42	50–90
Honig et al. (2024)	Open-label extension	Lecanemab	10 mg/kg	IV every 2 weeks	Ongoing (≥ 3 years)	Early AD	Continuation cohort from prior trials	50–90

Source: California Health Benefits Review Program, 2026.
Notes: (a) Participants who were initially randomized to receive donanemab in the TRAILBLAZER-ALZ 2 study or lecanemab in the CLARITY AD study.
(b) Participants who were initially randomized to receive a placebo in the TRAILBLAZER-ALZ 2 study or lecanemab in the CLARITY AD study.
Key: AD = Alzheimer's disease; IV = intravenous' MCI = mild cognitive impairment; MMSE = Mini-Mental State Examination.

Cognitive function

Five studies reported findings on the impact of disease-modifying medications on cognitive function (McDade et al., 2022; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025). Table 6 summarizes the findings from these studies. Two studies assessed ADAS-Cog13, three assessed ADAS-Cog14, two assessed MMSE, and two assessed ADCOMS. Slowed cognitive decline is reflected by decreases in ADAS-Cog13/ADAS-Cog14 and ADCOMS scores, and an increase in MMSE scores. Across all studies, medications were consistently associated with reduced cognitive decline versus placebo or delayed treatment. All but one RCT reported statistically significant findings. Open-label extension studies suggested larger differences at later time points, though these findings lacked formal statistical significance testing.

Despite statistical significance in several outcomes, effect sizes were modest and generally below established minimum clinically important differences (MCIDs). Among RCTs, observed changes of approximately 1 to 2 points on ADAS-Cog13/14 fall below MCID thresholds for the original ADAS-Cog (2 to 3 points for MCI and ≥3 points for mild Alzheimer's disease), and two studies reporting on MMSE change were also below the MCID range (1 to 2 points). No MCID is established for ADCOMS.

Table 6. Summary of Findings for Disease-Modifying Medications' Impact on Cognitive Function

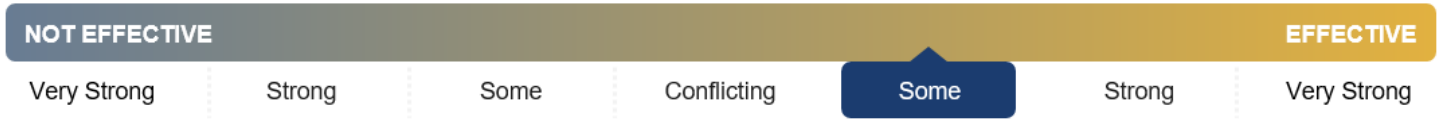
Study Authors	Study Design	Medication	Measure	Finding	Statistical Significance	Meets MCID
Mintun et al. (2021)	RCT	Donanemab	ADAS-Cog13	−1.86 points vs. placebo (slowed cognitive decline)	95% CI: −3.63, −0.09 (statistically significant)	Not applicable (but does not meet thresholds for original ADAS-Cog instrument)
Sims et al. (2023)	RCT	Donanemab	ADAS-Cog13	−1.33 points vs. placebo (slowed cognitive decline)	95% CI: −2.09, −0.57 (statistically significant)	Not applicable (but does not meet thresholds for original ADAS-Cog instrument)
van Dyck et al. (2023)	RCT	Lecanemab	ADAS-Cog14	−1.44 points vs. placebo (slowed cognitive decline)	95% CI: −2.27, −0.61 (statistically significant)	Not applicable (but does not meet thresholds for original ADAS-Cog instrument)
van Dyck et al. (2025)	OLE	Lecanemab	ADAS-Cog14	Approx. −1 point early vs. delayed start* (slowed cognitive decline)	Not reported	Not applicable (but does not meet thresholds for original ADAS-Cog instrument)

McDade et al. (2022)	OLE	Lecanemab	ADAS-Cog14	Approx. −7 points early vs. delayed start* (slowed cognitive decline)	Not reported	Not applicable (but does not meet thresholds for original ADAS-Cog instrument)
Mintun et al. (2021)	RCT	Donanemab	MMSE	+0.64 points vs. placebo (slowed cognitive decline)	95% CI: −0.40, 1.67 (not statistically significant)	No
Sims et al. (2023)	RCT	Donanemab	MMSE	+0.47 points vs. placebo (slowed cognitive decline)	95% CI: 0.10, 0.84 (statistically significant)	No
van Dyck et al. (2023)	RCT	Lecanemab	ADCOMS	−0.050 points vs. placebo (slowed cognitive decline)	95% CI: −0.074, −0.027 (statistically significant)	Not applicable
McDade et al. (2022)	OLE	Lecanemab	ADCOMS	Approx. -0.1 point early vs. delayed start* (slowed cognitive decline)	Not reported	Not applicable

Source: California Health Benefits Review Program, 2026.
Notes: * Open-label extension findings are descriptive. Reported values are approximate and were derived from visual interpretation of figures; they should be considered estimates rather than precise measurements.
Key: ADAS-Cog = Alzheimer's Disease Assessment Scale – Cognitive Subscale; ADCOMS = Alzheimer's Disease Composite Score; CI = confidence interval; MMSE = Mini-Mental State Examination; OLE = open-label extension; RCT = randomized controlled trial.

Summary of findings regarding the effectiveness of disease-modifying medications for cognitive function: There is *some* evidence that disease-modifying medications are effective at slowing cognitive decline by a small amount based on five studies. All studies consistently demonstrated reduced cognitive decline. Most RCTs reported statistically significant findings, whereas OLEs did not report statistical significance. However, while these findings suggest that disease-modifying medications may slow cognitive decline, these effects generally fell below minimum clinically important difference thresholds.

Figure 2. Evidence of Effectiveness of Disease-Modifying Medications for Cognitive Function



Functional ability

Four studies reported findings on the impact of disease-modifying medications on functional ability (Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025). Table 7 summarizes the findings from these studies. Two studies assessed ADCS-iADL, and two assessed ADCS-ADL-MCI. Slowed functional decline is reflected by increases in ADCS-ADL or ADCS-iADL scores. Across all RCTs, medications were consistently associated with statistically significant reductions in functional decline compared with placebo. Open-label extension data for lecanemab suggested continued separation between early- and delayed-treatment groups over time, though these findings were not accompanied by statistical significance testing. Despite consistent directional findings, the magnitude of functional benefit was modest, with differences generally in the range of 1 to 2 points. Interpretation of clinical meaningfulness is limited, as CHBRP did not identify MCIDs for ADCS-iADL or ADCS-ADL-MCI.

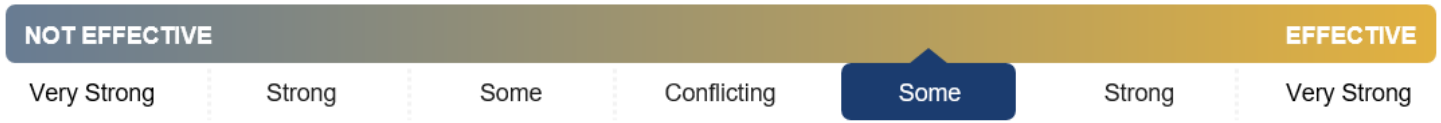
Table 7. Summary of Findings for Disease-Modifying Medications' Impact on Functional Ability

Study Authors	Study Design	Medication	Measure	Finding	Statistical Significance	Meets MCID
Mintun et al. (2021)	RCT	Donanemab	ADCS-iADL	+1.21 points vs. placebo (slowed functional decline)	95% CI: -0.77, 3.20 (not statistically significant)	Not applicable
Sims et al. (2023)	RCT	Donanemab	ADCS-iADL	+1.70 points vs. placebo (slowed functional decline)	95% CI: 0.84, 2.57 (statistically significant)	Not applicable
van Dyck et al. (2023)	RCT	Lecanemab	ADCS-ADL-MCI	+2.0 points vs. placebo (slowed functional decline)	95% CI: 1.2, 2.8 (statistically significant)	Not applicable
van Dyck et al. (2025)	OLE	Lecanemab	ADCS-ADL-MCI	Approx. +1.75 points early vs. delayed start* (slowed functional decline)	Not reported	Not applicable

Source: California Health Benefits Review Program, 2026.
Notes: * Open-label extension findings are descriptive. Reported values are approximate and were derived from visual interpretation of figures; they should be considered estimates rather than precise measurements.
Key: ADCS-iADL = Alzheimer's Disease Cooperative Study – Instrumental Activities of Daily Living; ADCS-ADL-MCI = Alzheimer's Disease Cooperative Study – Activities of Daily Living Scale for Mild Cognitive Impairment; CI = confidence interval; RCT = randomized controlled trial; OLE = open-label extension.

Summary of findings regarding the effectiveness of disease-modifying medications for functional ability: There is *some* evidence that disease-modifying medications are effective at slowing functional decline by a small amount based on four studies. All studies consistently demonstrated small-to-modest reductions in functional decline. All RCT findings were statistically significant, whereas the OLE did not report on statistical significance. However, because CHBRP did not identify MCIDs for ADCS-iADL or ADCS-ADL-MCI, the clinical significance of these effects remains uncertain.

Figure 3. Evidence of Effectiveness of Disease-Modifying Medications for Functional Ability



Cognitive function + functional Ability

Six studies reported findings on the impact of disease-modifying medications on both cognitive function and functional ability (McDade et al., 2022; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026). Table 8 summarizes the findings from these studies. Two studies assessed iADRS, and six assessed CDR-SB. Slowed cognitive and functional decline is reflected by increases in iADRS scores and decreases in CDR-SB scores. Across two RCTs, donanemab was associated with statistically significant slowing of clinical decline on iADRS. Across two RCTs, donanemab and lecanemab were associated with statistically significant slowing of clinical decline on CDR-SB. Another RCT showed that donanemab was associated with slowed decline on CDR-SB, but the finding was not statistically significant. Long-term extension and open-label extension studies showed consistent directional findings, including continued separation between early- and delayed-treatment groups (McDade et al., 2022; van Dyck et al., 2025). Zimmer et al. (2026) compared treatment groups with a matched external cohort from the Alzheimer's Disease Neuroimaging Initiative (ADNI) – an observational dataset used to approximate untreated disease progression – and found statistically significant slowing of decline for both early-start and delayed-start participants compared with this external control.

Despite consistent statistical significance across several outcomes, the effect sizes were modest. Observed changes in iADRS (approximately 3 points) fall below the proposed minimum clinically important differences (MCIDs) for Alzheimer's disease (−5 points for MCI and −9 points for mild Alzheimer's disease), suggesting uncertain clinical relevance. Similarly, most CDR-SB differences (approximately 0.4 to 1.2 points) fall at or below MCID thresholds (1 point for MCI and 2 points for mild Alzheimer's disease), with only the largest effects approaching clinical meaningfulness. Findings from extension and observational comparisons, including those using ADNI, should be interpreted cautiously given the absence of concurrent randomized controls.

Table 8. Summary of Findings for Disease-Modifying Medications' Impact on Cognitive Function and Functional Ability

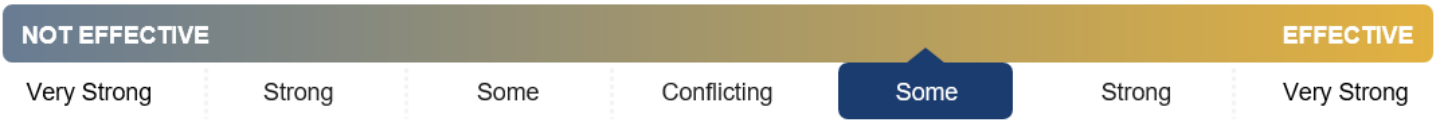
Study Authors	Study Design	Medication	Measure	Finding	Statistical Significance	Meets MCID
Mintun et al. (2021)	RCT	Donanemab	iADRS	+3.20 points vs. placebo (slowed cognitive and functional decline)	95% CI: 0.12, 6.27 (statistically significant)	No
Sims et al. (2023)	RCT	Donanemab	iADRS	+2.92 points vs. placebo (slowed cognitive and functional decline)	95% CI: 1.51, 4.33 (statistically significant)	No
Mintun et al. (2021)	RCT	Donanemab	CDR-SB	−0.36 points vs. placebo (slowed cognitive and functional decline)	95% CI: −0.83, 0.12 (not statistically significant)	No
Sims et al. (2023)	RCT	Donanemab	CDR-SB	−0.70 points vs. placebo (slowed cognitive and functional decline)	95% CI: −0.95, −0.45 (statistically significant)	No
Zimmer et al. (2026)	LTE	Donanemab	CDR-SB	*Early start* −1.2 points vs. weighted ADNI cohort (a) (slowed cognitive and functional decline) *Delayed start* −0.8 points vs. weighted ADNI control cohort (a) (slowed cognitive and functional decline)	95% CI: −1.7, −0.7 (statistically significant) 95% CI: −1.3, −0.3 (statistically significant)	*Early start* Yes (for mild cognitive impairment, but not Alzheimer's disease) *Delayed start* No
van Dyck et al. (2023)	RCT	Lecanemab	CDR-SB	−0.45 points vs. placebo (slowed cognitive and functional decline)	95% CI: −0.67, −0.23 (statistically significant)	No
van Dyck et al. (2025)	OLE	Lecanemab	CDR-SB	Approx. −0.4 points early vs. delayed start (b) (slowed cognitive and functional decline)	Not reported	No
McDade et al. (2022)	OLE	Lecanemab	CDR-SB	Approx. −0.7 points early vs. delayed start (b) (slowed cognitive and functional decline)	Not reported	No

Source: California Health Benefits Review Program, 2026.
Notes: (a) Comparison vs. external matched ADNI cohort; not a randomized placebo-controlled comparison.
(b) Open-label extension findings are descriptive. Reported values are approximate and were derived from visual interpretation of figures; they should be considered estimates rather than precise measurements.
Key: ADNI = Alzheimer's Disease Neuroimaging Initiative; iADRS = Integrated Alzheimer's Disease Rating Scale; CDR-SB = Clinical Dementia Rating – Sum of Boxes; CI = confidence interval; LTE = long-term extension; OLE = open-label extension; RCT = randomized controlled trial.

Summary of findings regarding the effectiveness of disease-modifying medications for cognitive function and functional ability: There is *some* evidence that disease-modifying medications are effective at slowing cognitive and functional decline by a small amount based on six studies. Most RCTs demonstrated statistically significant slowed cognitive and functional decline on iADRS and CDR-SB. Long-term and open-label extension studies also showed slowed

cognitive decline; most did not report statistical significance, and the one that did used the ADNI cohort as a comparator. However, most effect sizes were at or below MCID thresholds, with only the largest effects approaching clinical meaningfulness.

Figure 4. Evidence of Effectiveness of Disease-Modifying Medications for Cognitive Function and Functional Ability



Harms

Six studies reported findings on the impact of disease-modifying medications on harms (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026). The harms focused on in this section include ARIA-E, ARIA-H, and mortality.

Although serious adverse events were uncommon across studies, some events – particularly intracerebral hemorrhage – can have severe consequences, including significant disability or death. These risks, while rare, are clinically important and should be considered in evaluating the overall safety profile of disease-modifying therapies.

ARIA-E

Six studies reported findings on the impact of disease-modifying medications on ARIA-E (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026), which is swelling or fluid accumulation in the brain (edema/effusion). Table 9 summarizes the findings from these studies. Across trials, ARIA-E was consistently more common among treated participants, with incidence ranging from 12.6% to 26.7% in RCTs and somewhat narrower ranges observed in extension studies (13.6% to 14.7%). In the long-term extension of donanemab (Zimmer et al., 2026), ARIA-E incidence varied by treatment timing, occurring in 1.3% to 8.3% of early-start participants compared to 26.0% of delayed-start participants after treatment initiation, suggesting higher risk during initial treatment exposure. Only one study (Mintun et al., 2021) reported statistical significance ($p<0.001$), whereas all other studies presented descriptive safety data without formal hypothesis testing.

Across studies, most ARIA-E events were asymptomatic and detected on routine imaging rather than clinical presentation. For example, Mintun et al. (2021) found that 21.4% of participants experienced asymptomatic ARIA-E compared with 6.1% who were symptomatic. Similar patterns were observed in larger Phase III trials where most ARIA-E cases were asymptomatic (Sims et al., 2023; van Dyck et al., 2023). Symptomatic ARIA-E occurred less frequently than overall ARIA-E but remained clinically relevant, affecting approximately 2.8% of lecanemab-treated patients in van Dyck et al. (2023) and 6.1% of donanemab-treated patients in Sims et al. (2023), with symptoms including headache, confusion, and visual disturbance.

Adverse events, including ARIA-E, also led to treatment discontinuation in a subset of participants. Mintun et al. (2021) found that ARIA-E led to discontinuation in 5.3% of participants.

Extension studies further indicate that ARIA-E events occur primarily early in treatment and decline over time, with few new cases after the first 6 months (van Dyck et al., 2025).

Table 9. Summary of Findings for Disease-Modifying Medications' Impact on ARIA-E

Study Authors	Study Design	Medication	Measure	Finding*	Statistical Significance
Mintun et al. (2021)	RCT	Donanemab	ARIA-E (reported as adverse event)	26.7% (vs. 0.8% placebo)	p<0.001 (statistically significant)
Sims et al. (2023)	RCT	Donanemab	ARIA-E (reported as an adverse event)	24.0% (vs. 1.9% of placebo)	Not reported
Zimmer et al. (2026)	LTE	Donanemab	ARIA-E (MRI-detected)	*Early start* 1.3 to 8.3% of treated participants *Delayed start* 26.0% of treated participants	Not reported
van Dyck et al. (2023)	RCT	Lecanemab	ARIA-E (reported as an adverse event)	12.6% (vs. 1.7% placebo)	Not reported
van Dyck et al. (2025)	OLE	Lecanemab	ARIA-E (MRI-detected; reported as an adverse event)	14.7% of treated participants	Not reported
Honig et al. (2024)	OLE	Lecanemab	ARIA-E (MRI-detected; reported as an adverse event)	13.6% of treated participants	Not reported

Source: California Health Benefits Review Program, 2026.
Notes: * Placebo comparisons shown only for RCTs; extension studies do not include concurrent placebo groups.
Key: ARIA-E = amyloid-related imaging abnormalities-edema; LTE = long-term extension; OLE = open-label extension; RCT = randomized controlled trial.

ARIA-H

Six studies reported findings on the impact of disease-modifying medications on ARIA-H (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026), which is a hemorrhage in the brain. Table 10 summarizes the findings from these studies. Across trials, ARIA-H was more common among treated participants than placebo in RCTs, with incidence ranging from 8.4% to 19.7% for donanemab and approximately 14.0% for lecanemab, compared to lower rates in placebo groups. In the donanemab long-term extension (Zimmer et al., 2026), ARIA-H incidence varied by treatment timing, suggesting higher risk during initial exposure. Extension studies of lecanemab reported ARIA-H rates of 18.5% to 23.8% without placebo comparators. Statistical significance was reported in only one study, where differences were not statistically significant (Mintun et al., 2021).

ARIA-H events primarily reflected radiographic findings of cerebral microhemorrhage and superficial siderosis, the most frequently reported subtypes across trials. These events were frequently asymptomatic and identified through MRI monitoring rather than clinical symptoms. Intracerebral (macro)hemorrhage was rare, typically occurring in ≤1% of participants (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023; Zimmer et al., 2026).

Adverse events, including ARIA-H, contributed to treatment discontinuation across studies. Although discontinuation was not always attributable to ARIA-H specifically, imaging abnormalities were among the most common reasons for treatment interruption or cessation (Mintun et al., 2021; Sims et al., 2023).

Table 10. Summary of Findings for Disease-Modifying Medications' Impact on ARIA-H

Study Authors	Study Design	Medication	Measure	Finding*	Statistical Significance
Mintun et al. (2021)	RCT	Donanemab	ARIA-H (reported as an adverse event)	8.4% (vs. 3.2% placebo)	p=0.11 (not statistically significant)
Sims et al. (2023)	RCT	Donanemab	ARIA-H (reported as an adverse event)	19.7% (vs. 7.4% placebo)	Not reported
Zimmer et al. (2026)	LTE	Donanemab	ARIA-H (MRI-detected)	*Early start* 6.1 to 19.1% of treated participants *Delayed start* 24.5% of treated participants	Not reported
van Dyck et al. (2023)	RCT	Lecanemab	ARIA-H (reported as an adverse event)	14.0% (vs. 7.7% placebo)	Not reported
van Dyck et al. (2025)	OLE	Lecanemab	ARIA-H (MRI-detected; reported as an adverse event)	23.8% of treated participants	Not reported
Honig et al. (2024)	OLE	Lecanemab	ARIA-H (MRI-detected; reported as an adverse event)	18.5% of treated participants	Not reported

Source: California Health Benefits Review Program, 2026.
Notes: * Placebo comparisons shown only for RCTs; extension studies do not include concurrent placebo groups.
Key: ARIA-H = Amyloid-Related Imaging Abnormalities-Hemorrhage; LTE = long-term extension; OLE = open-label extension; RCT = randomized controlled trial.

Mortality

Six studies reported findings on the impact of disease-modifying medications on mortality (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al. 2023, 2025; Zimmer et al., 2026). Table 11 summarizes the findings from these studies. Across RCTs, mortality rates were low and generally similar between treatment and placebo groups, ranging from 0.7% to 1.9% in the treatment group compared with 0.5% to 1.6% in the placebo group. Only Mintun et al. (2021) reported statistical testing, demonstrating no significant difference between groups (p=0.62); all other studies presented descriptive safety data. Findings from long-term extension and open-label studies were largely consistent with those from RCTs. Zimmer et al. (2026) found that mortality varied slightly by treatment timing, but remained low overall, with lecanemab extension studies reporting similar rates. Across studies, deaths were infrequent and not consistently attributed to treatment, although rare cases occurred in the context of ARIA or intracerebral hemorrhage.

Table 11. Summary of Findings for Disease-Modifying Medications' Impact on Mortality

Study Authors	Study Design	Medication	Measure	Finding*	Statistical Significance
Mintun et al. (2021)	RCT	Donanemab	Mortality	0.8% (vs. 1.6% placebo)	p=0.62 (not statistically significant)

Sims et al. (2023)	RCT	Donanemab	Mortality	1.9% (vs. 1.1% placebo)	Not reported
Zimmer et al. (2026)	LTE	Donanemab	Mortality	*Early start* 1.3 to 2.0% of treated participants *Delayed start* 1.1% of treated participants	Not reported
van Dyck et al. (2023)	RCT	Lecanemab	Mortality	0.7% (vs. 0.5% placebo)	Not reported
van Dyck et al. (2025)	OLE	Lecanemab	Mortality	1.5% of treated participants	Not reported
Honig et al. (2024)	OLE	Lecanemab	Mortality	1.0% of treated participants	Not reported

Source: California Health Benefits Review Program, 2026.
Notes: * Placebo comparisons shown only for RCTs; extension studies do not include concurrent placebo groups.
Key: LTE = long-term extension; OLE = open-label extension; RCT = randomized controlled trial.

Other Harms

Across the included studies, several additional adverse events were consistently reported, most notably infusion-related reactions, which were among the most common treatment-emergent events across both donanemab and lecanemab trials. In van Dyck et al. (2023), infusion-related reactions occurred in 26.4% of lecanemab-treated participants, compared with 7.4% with placebo, and were typically mild to moderate, most common during the first infusion. Similar patterns were observed in extension studies, although rates generally decreased over time with continued treatment (Honig et al., 2024; van Dyck et al., 2025). Other frequently reported adverse events included headache, falls, dizziness, nausea, and arthralgia, which occurred at similar or slightly higher rates in treatment groups compared to placebo, but were not typically associated with serious outcomes (Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023). Serious adverse events overall were slightly more frequent among treated participants in some studies, but did not demonstrate a consistent pattern across trials and were often unrelated to treatment.

Adverse events led to treatment discontinuation in a notable proportion of participants across trials (Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023). Discontinuation due to adverse events ranged from approximately 6.9% to 30.5% in treatment groups, depending on the study and medication, and was consistently higher than in placebo groups when reported (6.9% vs. 2.9% in van Dyck et al., 2023; 13.1% vs. 4.3% in Sims et al., 2023; and 30.5% vs. 7.2% in Mintun et al., 2021). Infusion-related reactions and ARIA events were among the most common contributors to discontinuation. Two studies found that ARIA-E and ARIA-H, along with infusion-related reactions, were among the most frequently cited reasons for treatment discontinuation (Mintun et al., 2021; Sims et al., 2023).

Notably, cardiovascular and cerebrovascular events, including atrial fibrillation, syncope, and intracerebral hemorrhage, were reported but occurred infrequently and without clear causal attribution (Honig et al., 2024; van Dyck et al., 2023). Long-term extension data suggest that the overall safety profile remains stable over time, with no new safety signals emerging and adverse event rates generally plateauing or decreasing with continued exposure (van Dyck et al., 2025; Zimmer et al., 2026). Collectively, these findings indicate that, aside from ARIA, most adverse events associated with disease-modifying medications are common but manageable.

Summary of findings regarding the impact of disease-modifying medications for harms: There is *some* evidence that disease-modifying medications are associated with increased risk of harms based on six studies. Most findings were reported descriptively, with limited statistical testing across studies. All studies consistently demonstrated higher rates of ARIA-E and ARIA-H among treated participants, particularly during the initial treatment period. Most ARIA events were

asymptomatic and detected through imaging, although symptomatic cases occurred in a smaller proportion of participants. Mortality rates were low and similar between treatment and placebo groups, with no clear evidence of increased mortality risk. Other adverse events, including infusion-related reactions and mild systemic symptoms, were common but generally manageable. However, adverse events led to treatment discontinuation in a subset of participants and were more frequent than in placebo groups. Additionally, some events, such as intracerebral hemorrhage, have the potential to result in severe disability or death. Overall, disease-modifying medications are associated with increased risk of imaging abnormalities; while serious adverse events were infrequent, some may result in severe outcomes. The clinical significance of these harms remains uncertain.

Effectiveness of Amyloid Plaque Reduction on Health Outcomes

Two instrumental meta-analyses evaluated whether reductions in amyloid burden caused improvements in cognitive or functional outcomes in Alzheimer's Disease (Ackley et al., 2021; Pang et al., 2023). Although neither study focused solely on lecanemab and/or donanemab trials, CHBRP reports on their findings because few studies have examined the causal relationship between amyloid burden and health outcomes. CHBRP focuses on and summarizes findings from Pang et al. (2023) because it is a newer study that mostly draws on the same set of trials evaluated by Ackley et al. (2021).

Ackley et al. (2021) is an older study based on 14 RCTs, including one on lecanemab. All other trials included studied other disease-modifying medications, exclusive of donanemab. Pang et al. (2023) added two newer trials (16 RCTs total), one of which was the donanemab TRAILBLAZER-ALZ trial. Pang et al. (2023) did not provide subgroup results for lecanemab or donanemab alone, but they did provide results for antibody-only (disease-modifying medication only) data. To understand the findings of this study, it is important to note that the standardized uptake value ratio (SUVR) is a quantitative measure derived from positron emission tomography (PET) imaging that reflects the level of amyloid accumulation in the brain relative to a reference region; reductions in SUVR indicate reductions in amyloid burden. Among the disease-modifying medication data, Pang et al. (2023) found that:

- A 0.1 SUVR reduction in amyloid was associated with a 0.09-point decrease in CDR-SB scores[26]. This finding was statistically significant (95% CI: 0.03, 0.14) but does not meet published thresholds for clinical meaningfulness.

- A 0.1 SUVR reduction in amyloid was associated with a 0.4-point decrease in ADAS-Cog scores.[27] This finding was statistically significant (95% CI: 0.19, 0.6) but does not meet published thresholds for clinical meaningfulness (Pang et al., 2023).

- A 0.1 SUVR reduction in amyloid was associated with a 0.14-point increase in MMSE scores[28]. This finding was statistically significant (95% CI: 0.04, 0.24) but does not meet published thresholds for clinical meaningfulness (Pang et al., 2023).

According to the updated analysis conducted by Pang et al. (2023), amyloid reduction with monoclonal antibodies is associated with statistically significant slowed cognitive and functional decline. However, none of these findings meet the threshold for MCIDs, indicating they are not clinically meaningful.

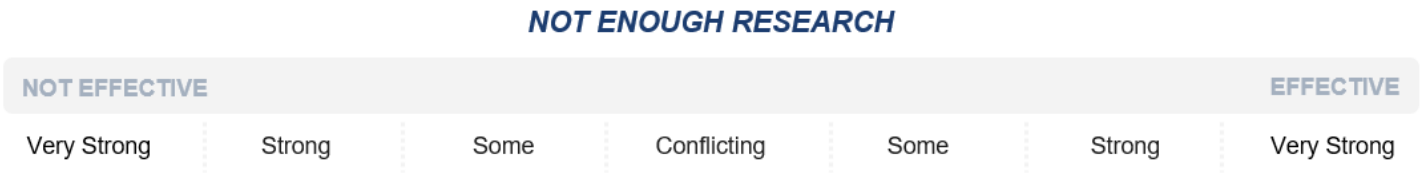
Additional post hoc analyses of individual trials for donanemab have reported correlations between greater amyloid reduction and improved clinical outcomes, though these findings are exploratory and do not establish causality (Lu et al., 2025; Shcherbinin et al., 2022). Because these analyses report correlations and model-based estimates of disease slowing rather than direct between-group differences in clinical outcome scores, they cannot be directly evaluated against established thresholds for clinical meaningfulness. Therefore, while these findings are consistent with a potential

[26] Higher CDR-SB scores indicate worse cognition.
[27] Higher ADAS-Cog scores indicate worse cognition.
[28] Higher MMSE scores indicate improved cognition.

relationship between amyloid reduction and clinical benefit, they do not provide evidence that the observed effects meet minimum clinically important difference thresholds.

Summary of findings regarding the impact of amyloid plaque reduction on health outcomes: There is *not enough research* to determine whether amyloid plaque reduction improves health outcomes based on one study. This study only provided subgroup results for all disease-modifying medications and did not limit its findings to donanemab and/or lecanemab. The authors found that amyloid plaque reduction was associated with small, but statistically significant, improvements in CDR-SB, ADAS-Cog, and MMSE scores. However, the small effect sizes did not meet the threshold for minimum clinically important differences.

Figure 5. Evidence of Effectiveness of Amyloid Plaque Reduction on Health Outcomes



Summary of Findings

Medications used to treat symptoms of Alzheimer's disease demonstrate generally small and inconsistent effects across medications, severity of disease, and outcomes (Table 12). There is strong evidence that cholinesterase inhibitors are associated with small improvements in cognitive function and global assessment relative to placebo but do not improve functional ability. Evidence for neuropsychiatric/behavioral symptoms is conflicting. NMDA-receptor antagonists show no meaningful effects on cognition or functional ability but are associated with small improvements in global assessment and neuropsychiatric symptoms in patients with moderate-to-severe disease relative to placebo. Compared with cholinesterase inhibitors alone, combination therapy was associated with small improvements in cognitive function, neuropsychiatric/behavioral symptoms, and global assessment, but not in functional ability. Rates of serious adverse events did not differ between cholinesterase inhibitors and placebo and between NMDA-receptor antagonists and placebo.

Table 12. Summary of Findings for Medications to Treat Symptoms

Outcome	Intervention	Key Finding	Strength of Evidence	Statistical Significance	Clinical Meaningfulness
Cognitive function	Cholinesterase inhibitors	Small improvement	Strong	Statistically significant	Clinically meaningful
Cognitive function	NMDA-receptor antagonist	No difference	Some	Not statistically significant	Not clinically meaningful
Cognitive function	Combination therapy*	Small improvement for moderate-to-severe Alzheimer's disease No difference for mild to moderate Alzheimer's disease	Some	Statistically significant for moderate-to-severe Alzheimer's disease Not statistically significant for mild-to-moderate Alzheimer's disease	Not clinically meaningful for either moderate to severe or mild to moderate Alzheimer's Disease
Functional ability	Cholinesterase inhibitors	No difference	Strong	Not statistically significant	Not clinically meaningful

Functional ability	NMDA-receptor antagonist	No difference	Some	Not statistically significant	Not clinically meaningful
Functional ability	Combination therapy*	No difference	Some	Not statistically significant	Not clinically meaningful
Neuropsychiatric/ behavioral symptoms	Cholinesterase inhibitors	Galantamine: small improvement in NPI score for mild-to-moderate Alzheimer's disease Donepezil: small improvement in NPI score for moderate-to-severe Alzheimer's disease No statistically significant differences for other comparisons	Conflicting	Statistically significant for galantamine and donepezil for moderate-to-severe Alzheimer's disease Not statistically significant for milder-to-moderate Alzheimer's disease or severe Alzheimer's disease	Not applicable
Neuropsychiatric/ behavioral symptoms	NMDA-receptor antagonist	Small improvement for moderate-to-severe Alzheimer's disease No difference for mild-to-moderate Alzheimer's disease	Some	Statistically significant for moderate-to-severe Alzheimer's disease Not statistically significant for mild-to-moderate Alzheimer's disease	Not applicable
Neuropsychiatric/ behavioral symptoms	Combination therapy*	Small reduction in symptoms	Strong	Statistically significant	Not applicable
Global assessment	Cholinesterase inhibitors	More likely to have small improvement but low likelihood of moderate improvement	Some	Statistically significant	Not applicable
Global assessment	NMDA-receptor antagonist	Small improvement	Some	Statistically significant	Not applicable
Global assessment	Combination therapy*	Small improvement for persons with moderate-to-severe Alzheimer's disease No difference for mild to moderate Alzheimer's disease	Some	Statistically significant for moderate-to-severe Alzheimer's disease Not statistically significant for mild-to-moderate Alzheimer's disease	Not applicable

Harms	Cholinesterase inhibitors	More likely to experience any adverse event but no difference in serious adverse events	Strong	Statistically significant for any adverse event Not statistically significant for severe adverse events	Not applicable
Harms	NMDA-receptor antagonist	More likely to experience somnolence No difference in serious adverse events	Some	Statistically significant for somnolence Not statistically significant for serious adverse events	Not applicable
Harms	Combination therapy*	No difference	Some	Not statistically significant	Not applicable

Source: California Health Benefits Review Program, 2026.
Notes: * Combination therapy findings reflect comparisons of Cholinesterase Inhibitor plus NMDA-Receptor Antagonist to Cholinesterase Inhibitor alone rather than placebo.

Disease-modifying medications (donanemab and lecanemab) demonstrate strong, consistent effects on amyloid biomarkers, with substantial reductions in amyloid burden and high rates of amyloid clearance across studies. There is some evidence that these therapies slow cognitive decline, functional decline, and combined measures of cognition and function, with statistically significant findings reported in most RCTs. However, effect sizes were generally modest, and most findings did not meet thresholds for clinical meaningfulness. Evidence from extension studies suggests that these effects may be maintained for up to three years, although statistical significance was often not reported. Disease-modifying medications were also associated with an increased risk of harms, particularly ARIA-E and ARIA-H, which are typically asymptomatic but can be serious in rare cases. Mortality rates were not increased compared to placebo. Although amyloid reduction was robust, evidence linking amyloid reduction to improved clinical outcomes was limited. Analyses across monoclonal antibody trials suggest small, statistically significant associations that do not meet thresholds for clinical meaningfulness, and post-hoc analyses of individual donanemab trials report correlations but do not establish causality. These findings are summarized in Table 13, below.

Table 13. Summary of Findings for Disease-Modifying Medications

Outcome	Intervention Type	Key Findings	Strength of Evidence	Statistical Significance	Clinical Meaningfulness
Amyloid biomarkers	Donanemab or lecanemab	Large reductions in amyloid; high clearance rates	Strong	Statistically significant in most RCTs; not reported in extension studies	Not applicable
Cognitive function	Donanemab or lecanemab	Slowed decline across ADAS-Cog13/14, MMSE, and ADCOMS	Some	Statistically significant in all RCTs; not reported in extension studies	Not applicable or not clinically meaningful
Functional ability	Donanemab or lecanemab	Slowed decline across ASCS-iADL and ASCS-ADL-MCI	Some	Statistically significant in most RCTs; not reported in one extension study	Not applicable
Combined cognitive + functional	Donanemab or lecanemab	Slowed decline across iADRS and CDR-SB	Some	Statistically significant in most RCTs and one extension study; not reported for other extension studies	Mostly not clinically meaningful; one clinically meaningful finding for MCI only*

Harms	Donanemab or lecanemab	Higher rates of ARIA-E and ARIA-H (mostly asymptomatic with some rare, severe cases); no increased mortality risk; some other mild adverse events (e.g., infusion reactions)	Some	Mostly not reported; some not statistically significant	Not applicable
Connection between amyloid plaque and clinical outcomes	Donanemab or lecanemab	Small improvements in CDR-SB, ADAS-Cog, and MMSE scores among all monoclonal antibody medications	Not enough research	Statistically significant	Not clinically meaningful

Source: California Health Benefits Review Program, 2026.
Notes: * Finding was compared to ADNI cohort rather than placebo.

Cost Impact Analysis: Data Sources, Caveats, and Assumptions

Additional Analytical Assumptions and Other Considerations for Policymakers

Analytical Assumptions

In addition to the assumptions described in the *Analytical Approach and Assumptions* section of CHBRP's Analysis of California Senate Bill 950, CHBRP made the following assumptions:

Pharmacy benefit coverage

CHBRP has assumed that plans and policies that do not have coverage for outpatient prescription drugs or brand-name outpatient prescription drugs would not be required to do so for the non–anti-amyloid medications that are typically covered under the pharmacy benefit, but also for the anti-amyloid medications that would be required to also be covered under the pharmacy benefit. Almost all (96.2%) commercial/CalPERS enrollees in plans and policies regulated by DMHC or CDI have an outpatient pharmacy benefit regulated by DMHC or CDI that covers both generic and brand-name outpatient prescription medications.[29] Of the remaining commercial/California Public Employees' Retirement System (CalPERS) enrollees, 1.2% do not have a pharmacy benefit and 2.6% have a pharmacy benefit that is not regulated by DMHC or CDI. In other words, CHBRP assumes SB 950 would have no impact for plans without a regulated pharmacy benefit except for CalPERS.

Other Considerations for Policymakers

In addition to the impacts a bill may have on benefit coverage, utilization, and cost, related considerations for policymakers are discussed below.

Postmandate administrative and other expenses

CHBRP estimates that the increase in administrative costs of DMHC-regulated plans and/or CDI-regulated policies will remain proportional to the increase in premiums. CHBRP assumes that if health care costs increase as a result of increased utilization or changes in unit costs, there is a corresponding proportional increase in administrative costs. CHBRP assumes that the administrative cost portion of premiums is unchanged. All health plans and insurers include a component for administration and profit in their premiums.

State health care spending target

In 2024, in an effort to slow healthcare spending growth and improve healthcare affordability for California families, California's Office of Health Care Affordability (OHCA) under the Department of Health Care Access and Information approved a statewide target for maximum annual growth in health care spending for certain health care entities. The targets apply to per capita spending to specific entities, including health plans and insurers, provider organizations with at least 25 physicians, and hospitals (HCAI, 2022). The state is implementing this target with a phased-in approach, with a spending target of 3.5% for 2026, lowered to 3.2% in 2027 and 2028, and will be at 3% for 2029 and beyond (HCAI, 2025). Since health insurance benefit mandates may increase healthcare spending, such as increases to insurance premiums, administrative costs, and out-of-pocket costs, OHCA spending targets may be relevant considerations in benefit mandate policy decisions.

Changes in public program enrollment

[29] For more detail, please see CHBRP's resource Pharmacy Benefit Coverage in State-Regulated Health Insurance.

CHBRP estimates that the mandate would produce no measurable impact on enrollment in publicly funded insurance programs due to the enactment of SB 950.

How lack of benefit coverage results in cost shifts to other payers

Because insurance coverage for treatments for Alzheimer's disease are broad at baseline, CHBRP assumes there is minimal shifting of costs to other payers. For enrollees without coverage for disease modifying treatments at baseline, some enrollees may switch into other sources of health insurance that have coverage, such as Medicare or Medi-Cal.

Cost Impact Analysis: Data Sources, Caveats, and Assumptions

With the assistance of CHBRP's contracted actuarial firm, Milliman, Inc., the cost analysis presented in this report was prepared by the faculty and researchers connected to CHBRP's Task Force with expertise in health economics.[30] Information on the generally used data sources and estimation methods, as well as caveats and assumptions generally applicable to CHBRP's cost impacts analyses, are available on CHBRP's website.[31]

This section describes analysis-specific data sources, estimation methods, caveats, and assumptions used in preparing this cost impact analysis.

Analysis-Specific Data Sources

With the assistance of CHBRP's contracted actuarial firm, Milliman, Inc., the cost analysis presented in this report was prepared by the faculty and researchers connected to CHBRP's Task Force with expertise in health economics[32]. Information on the generally used data sources and estimation methods, as well as caveats and assumptions generally applicable to CHBRP's cost impact analyses are available at CHBRP's website.[33]

Current coverage of dementia treatments for commercial enrollees was determined by a survey of the largest (by enrollment) providers of health insurance in California. Responses to this survey represented 72% of commercial enrollees with health insurance that can be subject to state benefit mandates. In addition, CalPERS and DHCS were queried regarding related benefit coverage.

For this analysis, CHBRP relied on CPT and NDC codes to identify services related to SB 950. CPT copyright 2026 American Medical Association. All rights reserved. Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein. CPT is a registered trademark of the American Medical Association.

Health Cost Guidelines

Milliman's Health Cost Guidelines (HCGs) are a health care pricing tool used by actuaries in many of the major health plans in the United States. The guidelines provide a flexible but consistent basis for estimating health care costs for a wide variety of commercial health insurance plans. It is likely that these organizations use the HCGs, among other tools, to determine the initial premium impact of any new mandate. Thus, in addition to producing accurate estimates of the costs of a mandate, we believe the HCG-based values are also good estimates of the premium impact as estimated by the HMOs and insurance companies.

[30] CHBRP's authorizing statute requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact.
[31] See CHBRP's Cost Impact Analysis landing page; in particular, see *Cost Impact Analyses: Data Sources, Caveats, and Assumptions*.
[32] CHBRP's authorizing statute, available at https://chbrp.org/about_chbrp/index.php, requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact.
[33] See method documents posted at https://www.chbrp.org/about/analysis-methodology/cost-impact-analysis.php; in particular, see Cost Analyses: Data Sources, Caveats, and Assumptions.

The highlights of the commercial HCGs include:

- Specific major medical, managed care, and prescription drug rating sections and guidance with step-by-step rating instructions.
- Other helpful analysis resources, such as inpatient length of stay distribution tables, Medicare Severity-Adjusted Diagnosis Related Group (MS-DRG) models, and supplementary sections addressing EHBs and mandated benefits, experience rating, and individual and small group rating considerations.
- Presentation of loosely and well-managed nationwide utilization and cost information by Milliman benefit-aligned service categories used throughout the Rating Structures – inpatient hospital services for both loosely and well-managed are also supported by DRG level utilization and cost benchmarks.
- Annual updates address emerging regulatory considerations such as health care reform and mental health parity requirements.
- Annually updated benefit descriptions used in the HCG service categories.
- Annually updated medical trend assumptions and considerations.
- Presentation of two sets of nationwide area factors to facilitate development of area-specific claim costs, including separate utilization and charge level factors by type of benefit, state and Metropolitan Statistical Area for first-dollar coverage, and composite factors by deductible amount.
- Claim Probability Distributions (CPDs) by type of coverage that contain distributions of claim severity patterns for unique combinations of benefits and member types (adult, child, composite member).
- The Prescription Drug Rating Model (RXRM), an automated rating tool that provides a detailed analysis of prescription drug costs and benefits.

Consolidated Health Cost Guidelines Sources Database

Milliman maintains benchmarking and analytic databases that include health care claims data for nearly 60 million commercial lives and over 3 million lives of Medicaid managed care data. This dataset, Milliman's Consolidated Health Cost Guidelines™ Sources Database (CHSD), is routinely used to evaluate program impacts on cost and other outcomes.

Detailed Cost Notes Regarding Analysis-Specific Caveats and Assumptions

The analytic approach and key assumptions are determined by the subject matter and language of the bill being analyzed by CHBRP. As a result, analytic approaches may differ between topically similar analyses, and therefore the approach and findings may not be directly comparable. The cost impact analysis of SB 950 was developed using projected cost and utilization levels for each dementia service.

Methodology and assumptions for baseline benefit coverage

- The population subject to the mandated offering includes individuals covered by DMHC-regulated commercial insurance plans, CDI-regulated policies, and CalPERS plans subject to the requirements of the Knox-Keene Health Care Service Plan Act.

- CHBRP surveyed the carriers to determine the percentage of the population with coverage for Alzheimer's disease treatments.

Methodology and assumptions for baseline utilization

Disease Modifying Treatments Under the Medical Benefit and the Prescription Drug Benefit

- CHBRP estimated the number of individuals under age 65 diagnosed with Alzheimer's disease per 100,000 commercially insured enrollees based upon data from Milliman's proprietary 2025 CHSD. Alzheimer's dementia was identified by International Classification of Diseases, Tenth Revision (ICD-10) codes of 'G300', 'G301', 'G308', and 'G309'.

- CHBRP estimated the number of individuals age 65 and older diagnosed with Alzheimer's disease per 100,000 commercially insured enrollees based upon data from Milliman's proprietary 2025 CHSD.
- CHBRP's content expert input on the use of disease modifying treatments for those diagnosed with Alzheimer's disease was the basis for CHBRP's assumption on the proportion of individuals that would receive disease modifying treatment.
- Baseline utilization, measured as the number of procedures per individual, for those receiving disease modifying treatment was estimated using Milliman's proprietary 2025 CHSD. CHBRP identified these services using the following Current Procedural Terminology (CPT)[34] / Healthcare Common Procedure Coding System (HCPCS) codes: J0174, J0175.
- The estimated proportion of disease modifying treatments delivered under the prescription drug benefit ("white bagging") in California was estimated from a representative cohort of similar infusions assumed by CHBRP. The drugs analyzed and their corresponding CPT[35] and National Drug Codes are included in Appendix A. The average proportion of these infusions was compared for those administered under the prescription drug benefit relative to those administered under the medical benefit as identified in Milliman's proprietary 2025 CHSD. The relativity for infusions provided under the prescription drug benefit was then compared to the disease modifying pharmaceutical treatment administered under the medical benefit.
- Subcutaneous use for disease modifying treatments was estimated based on the recent FDA approval and the requirement for 18 months of prior infusion therapy.
- Utilization for medications administered through the medical benefit was trended to 2027 at 0% based on trends from the 2025 Milliman Health Cost Guidelines and no anticipated changes in existing medical necessity criteria or utilization management programs.

Treatments Associated With Disease-Modifying Therapies

- Disease modifying treatments require regular monitoring of the patient that is comprised of diagnostic imaging of the brain from MRI and PET scans.
- Food and Drug Administration label requirements for monitoring criteria for those receiving disease modifying treatment were the basis for CHBRP's assumption on the number of MRI (5 per year) and PET (1 per year) services each individual receiving disease modifying treatment receives.
- CHBRP assumed the real world discontinuation rate of disease modifying therapies to be 23%. This rate was applied to the number of recommended MRI scans to estimate the total average number of brain scans per patient (Dodel et al., 2025; Zhou et al., 2025).

The frequency of complications related to disease modifying therapies was assumed to be 22%. This was applied to the utilization rate of each disease modifying treatment to estimate the frequency of complications per 1,000 individuals receiving disease modifying treatment. (Honig et al., 2024; Mintun et al., 2021; Sims et al., 2023; van Dyck et al., 2023, 2025; Zimmer et al., 2026).

Medications to Treat Symptoms

- Medications to treat symptoms were identified in the 2025 CHSD. For enrollees with an Alzheimer's disease diagnosis, the following prescription drugs are included: donepezil, galantamine, benzgalantamine, rivastigmine, memantine, and memantine + donepezil combinations.

[34] CPT copyright 2026 American Medical Association. All rights reserved.
[35] CPT copyright 2026 American Medical Association. All rights reserved.

- Baseline utilization, measured as the number of scripts, was estimated for those receiving treatment using Milliman's proprietary 2025 CHSD.
- Utilization for prescription drugs was trended to 2027 at 0% per year from the 2025 Milliman Health Cost Guidelines. Generic drugs comprise a vast majority of prescription drug utilization.

Methodology and assumptions for baseline cost

- CHBRP calculated the average cost per service using Milliman's proprietary 2025 CHSD.
    - The average costs per service for disease modifying treatment delivered under the medical benefit were developed separately for the average cost of the infusion treatment as well as the average cost of administering an infusion. The average cost of the treatment was then developed as the sum of the average cost of the pharmaceutical treatment and the infusion administration. CHBRP identified infusion administration services using the following Current Procedural Terminology (CPT)[36] / Healthcare Common Procedure Coding System (HCPCS) codes: 96365, 96366, 96413, 96414.
    - The average costs per service for disease modifying treatment delivered under the prescription drug benefit was estimated from a representative cohort of similar infusions assumed by CHBRP. These infusions are provided in Table 14. The average cost of these infusions was compared for those administered under the prescription drug benefit relative to those administered under the medical benefit as identified in Milliman's proprietary 2025 CHSD. The relativity for infusions provided under the prescription drug benefit was then applied to the average cost for the disease modifying pharmaceutical treatment administered under the medical benefit previously calculated. The average cost of administering an infusion was added to the estimated cost of the treatments under the prescription drug benefit.
    - The average cost per service for diagnostic imaging was estimated using the average per service of the facility and professional component of all MRIs and PET scans in California identified using Milliman's proprietary 2025 CHSD.
    - The average cost per script for medications to treat symptoms was identified across all NDCs per drug.
- The average cost per service of complications related to disease modifying treatment was assumed by CHBRP to be the same as that of an MRI. CHBRP assumed that complications result in one additional MRI scan.
- The average costs per medical service were trended from November 2024 to July 2027 using a 4% annual trend for medical services and a 9.8% trend for pharmacy services. These trends are based on trends from the 2025 Milliman Health Cost Guidelines.

Methodology and assumptions for baseline cost sharing

- CHBRP calculated the average cost sharing per Alzheimer's disease treatment and brain scan using Milliman's proprietary 2025 CHSD.
- CHBRP assumed the cost sharing for diagnostic services for enrollees with coverage is the same as major medical cost sharing because diagnostic services for covered individuals are covered under the medical plan. Enrollee cost share is equal to one minus the line of business paid-to-allowed ratio multiplied by the diagnostic services cost.
- The cost sharing for services for complications related to disease modifying treatments was assumed to be the same as the average cost sharing for an MRI scan.

[36] CPT copyright 2026 American Medical Association. All rights reserved.

Methodology and assumptions for postmandate utilization

- CHBRP assumed the utilization rate for enrollees with coverage postmandate is proportional to the utilization rate for enrollees with coverage at baseline. CHBRP did not assume any utilization adjustment for those with current benefit coverage as a result of the removal of step-therapy due to the limited impact on medical necessity requirements and utilization management programs. Postmandate utilization is expected to increase by the same extent that benefit coverage is increased.

Methodology and assumptions for postmandate cost

- CHBRP assumed the average cost per service for each therapy would not change as a result of SB 950. CHBRP assumed an increase in benefit coverage of disease modifying treatments and the additional associated services will cause a shift to more expensive treatments for those without benefit coverage previously, resulting in a higher average cost per utilizer. This is also true for medications to treat symptoms which are not fully covered at baseline.

Methodology and assumptions for postmandate cost sharing

- CHBRP assumed the average cost sharing per service would not change as a result of SB 950.

Table 14. Infusions Provided Under the Medical Benefit and Pharmacy Benefit

Drug Name	HCPCS List	NDC List
Abatacept	J0129	00003218713, 00003218851, 00003218811, 00003281411, 00003281811
Atezolizumab	J9022, J9024	50242091701, 50242091801, 50242093301
Denosumab	J0897, Q5136, Q5157, Q5158, Q5159	55513073001, 55513073021, 55513071001, 55513071021, 61314022894, 61314024063, 72606003801, 72606003701, 65219067001, 65219067201, 65219066801, 83457001210, 78206019501, 78206019301, 00143916601, 00143916501
Eptinezumab	J3032	67386013051
Infliximab	80230, J1745, J1748, Q5103, Q5104, Q5109, Q5121	57894003001, 57894016001, 00006430501, 00006430502, 78206016201, 78206016299, 55513067001, 00069080901, 72606002501, 72606002502, 72606002510
Ipilimumab	J9228	00003232822, 00003232711
Nivolumab	J9289, J9298, J9299	00003377412, 00003375614, 00003373413, 00003377211, 00003312001, 00003612001, 00003712511
Pembrolizumab	J9271	00006302601, 00006302602, 00006302604, 00006308301, 00006308399, 00006508301, 00006508399
Tocilizumab	J3262, M0237, M0238, M0249, M0250, Q0237, Q0249, Q5133, Q5135, Q5156	50242013601, 50242013701, 50242013501, 50242014301, 50242013801, 65219059210, 65219059420, 65219059004, 65219058401, 65219059601, 65219058604, 65219059810, 72606004301, 72606004401, 72606004201, 64406002201, 64406002301, 64406002401

Trastuzumab	J9316, J9354, J9355, J9356, J9358, Q5112, Q5113, Q5114, Q5116, Q5117, Q5146	50242008801, 50242008701, 65597040601, 50242013201, 50242013210, 50242007701, 55513014101, 55513014121, 55513013201, 55513013221, 55513016401, 67457099115, 83257000111, 67457084550, 67457084744, 83257000311, 83257000412, 00006503301, 00006503302, 78206014701, 78206014799, 00006503401, 00006503402, 78206014801, 78206014899, 63459030343, 63459030547, 63459030741, 00069030801, 00069030501, 00069030601, 69448001505, 69448001611

Determining Public Demand for the Proposed Mandate

CHBRP reviews public demand for benefits by comparing the benefits provided by self-insured health plans or policies (which are not regulated by the DMHC or CDI and therefore not subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

Among publicly funded, self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS have the largest number of enrollees. The CalPERS PPOs currently provide benefit coverage similar to what is available through group health insurance plans and policies that would be subject to the mandate.

To further investigate public demand, CHBRP used the bill-specific coverage survey to ask plans and insurers who act as third-party administrators for (non-CalPERS) self-insured group health insurance programs whether the relevant benefit coverage differed from what is offered in group market plans or policies that would be subject to the mandate. The responses indicated that there were no substantive differences.

References

Ackley SF, Zimmerman SC, Brenowitz WD, et al. Effect of reductions in amyloid levels on cognitive change in randomized trials: Instrumental variable meta-analysis. *BMJ.* 2021;372:n156.

Alzheimer's Association. 2025 Alzheimer's disease facts and figures. *Alzheimer's and Dementia.* 2025;21(4):1-148.

American Psychiatric Association, eds. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association Publishing; 2022.

Angioni D, Cummings J, Lansdall CJ, et al. Clinical meaningfulness in Alzheimer's disease clinical trials. a report from the EU-US CTAD Task Force. *Journal of Prevention of Alzheimer's Disease*. 2024;11(5):1219-1227.

Atri A, Dickerson BC, Clevenger C, et al. Alzheimer's Association clinical practice guideline for the Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders (DETeCD-ADRD): executive summary of recommendations for primary care. *Alzheimer's & Dementia.* 2025;21(6):e14333.

Buracchio T, Campbell M, Krudys K. Assessing Clinical Meaningfulness in Clinical Trials for Alzheimer's Disease: A U.S. Regulatory Perspective, Alzheimer's Association. June 2025. Available at: https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/trc2.70113. Accessed March 23, 2026.

Busch F, Muller S. Potential impacts on commercial costs and premiums related to the elimination of prior authorization requirements. Milliman. 2023. Available at https://www.milliman.com/en/insight/potential-impacts-elimination-of-prior-authorization-requests. Accessed March 4, 2026.

California Department of Health Care Access and Information (HCAI). Get the Facts About the Office of Health Care Affordability. 2022. Available at: https://hcai.ca.gov/get-the-facts-about-the-office-of-health-care-affordability/. Accessed November 3, 2025.

California Department of Health Care Access and Information (HCAI). Slow Spending Growth. 2025. Available at: https://hcai.ca.gov/affordability/ohca/slow-spending-growth/. Accessed November 3, 2025.

California Department of Motor Vehicles (DMV). Dementia. 2026. Available at: https://www.dmv.ca.gov/portal/driver-education-and-safety/medical-conditions-and-driving/dementia/. Accessed March 5, 2026.

California Department of Public Health (CDPH). Alzheimer's Disease Program. Updated February 5, 2026. Available at: https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CDCB/Pages/AlzheimersDiseaseProgram.aspx. Accessed February 26, 2026.

Centers for Medicare & Medicaid Services. (CMS). Amyloid PET. 2024. Available at: https://www.cms.gov/medicare/coverage/evidence/amyloid-pet. Accessed March 8, 2026.

Chandler JM, Lansdall CJ, Ye W, et al. The Alzheimer's Disease Cooperative Study - Activities of Daily Living dependence score: revision and validation of an algorithm evaluating patient dependence across the spectrum of AD severity. *Journal of Prevention of Alzheimer's Disease.* 2025;12(8):100261.

Chen Y, Lai M, Tao M. Evaluating the efficacy and safety of Alzheimer's disease drugs: a meta-analysis and systematic review. *Medicine (Baltimore).* 2024;103(16):e37799.

Creavin ST, Wisniewski S, Noel-Storr AH, et al. Mini-Mental State Examination (MMSE) for the detection of dementia in clinically unevaluated people aged 65 and over in community and primary care populations. *Cochrane Database of Systematic Reviews.* 2016;2016(1):CD011145.

Cummings J. The Neuropsychiatric Inventory: development and applications. *Journal of Geriatric Psychiatry and Neurology.* 2020;33(2):73-84.

Dhana K, Beck T, Desai P, Wilson RS, Evans DA, Rajan KB. Prevalence of Alzheimer's disease dementia in the 50 US states and 3142 counties: a population estimate using the 2020 bridged-race postcensal from the National Center for Health Statistics. *Alzheimer's & Dementia.* 2023;19(10):4388-4395.

Dodel R, Frölich L. Donanemab for Alzheimer's disease: from preclinical research to the clinical application. *Expert Review of Neurotherapeutics.* 2025;25(10):1151-1163. doi:10.1080/14737175.2025.2546868

Dou KX, Tan MS, Tan CC, et al. Comparative safety and effectiveness of cholinesterase inhibitors and memantine for Alzheimer's disease: a network meta-analysis of 41 randomized controlled trials. *Alzheimer's Research and Therapy.* 2018;10(1):126.

Fan F, Liu H, Shi X, Ai Y, Liu Q, Cheng Y. The efficacy and safety of Alzheimer's disease therapies: an updated umbrella review. *Journal of Alzheimer's Disease.* 2022;85(3):1195-1204.

Fink HA, Hemmy LS, Linskens EJ, et al. Diagnosis and Treatment of Clinical Alzheimer's-Type Dementia: A Systematic Review [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2020 Apr. (Comparative Effectiveness Review, No. 223.)

Hanson M, Liu Y, Ozawa T, Yin H, Mattke S. Potential barriers to timely Alzheimer's disease diagnosis and treatment: tracer delivery and patient travel to amyloid PET scanners in the United States. *Journal of Alzheimer's Disease.* 2025;108(3):1023-1028.

Hendriks S, Peetoom K, Bakker C, et al. Global prevalence of young-onset dementia: a systematic review and meta-analysis. *JAMA Neurology.* 2021;78(9):1080-1090.

Honig LS, Sabbagh MN, van Dyck CH, et al. Updated safety results from phase 3 lecanemab study in early Alzheimer's disease. *Alzheimer's Research and Therapy.* 2024;16(1):105.

Jack CR Jr, Andrews JS, Beach TG, et al. Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup. *Alzheimer's & Dementia.* 2024;20(8):5143-5169.

KFF. Population Distribution by Age. 2026. Available at: https://www.kff.org/state-health-policy-data/state-indicator/distribution-by-age/. Accessed February 18, 2026.

Kishi T, Matsunaga S, Iwata N. The effects of memantine on behavioral disturbances in patients with Alzheimer's Disease: a meta-analysis. *Neuropsychiatric Disease and Treatment*. 2017;13:1909-1928.

Li D-D, Zhang YH, Zhang W, Zhao P. Meta-Analysis of randomized controlled trials on the efficacy and safety of donepezil, galantamine, rivastigmine, and memantine for the treatment of Alzheimer's disease. *Frontiers in Neuroscience.* 2019;13:472.

Lin CC, Callaghan BC, Burke JF, et al. Geographic variation in neurologist density and neurologic care in the United States. *Neurology.* 2021;96(3):e309-e321.

Lin P-J, Daly AT, Olchanski N, et al. Dementia diagnosis disparities by race and ethnicity. *Medical Care.* 2021;59(8):679-686.

Lu M, Kim J, Collins EC, et al. Posttreatment amyloid levels and clinical outcomes following donanemab for early symptomatic Alzheimer disease: a secondary analysis of the TRAILBLAZER-ALZ 2 randomized clinical trial. *JAMA Neurology.* 2025;82;(12):1251-1256. doi:10.1001/jamaneurol.2025.3869

McDade E, Cummings JL, Dhadda S, et al. Lecanemab in patients with early Alzheimer's disease: detailed results on biomarker, cognitive, and clinical effects from the randomized and open-label extension of the phase 2 proof-of-concept study. *Alzheimer's Research and Therapy.* 2022;14(1):191.

Mintun MA, Lo AC, Duggan Evans C, et al. Donanemab in early Alzheimer's disease. *New England Journal of Medicine.* 2021;384(18):1691-1704.

Mokdad AH, Bisignano C, Hsu JM, et al. The burden of diseases, injuries, and risk factors by state in the USA, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* 2024;404(10469):2314-2340.

Muir RT, Hill MD, Black SE, Smith EE. Minimal clinically important difference in Alzheimer's disease: rapid review. *Alzheimer's and Dementia.* 2024;20(5):3352-3363.

Murphy SL, Kochanek KD, Xu J, Arias E. Mortality in the United States, 2023. NCHS Data Brief No. 521, December 2024. National Center for Health Statistics; 2024.

National Cancer Institute. NCI Dictionary of Cancer Terms. 2026. Available at: https://www.cancer.gov/publications/dictionaries/cancer-terms. Accessed March 6, 2026.

Newcomer LN, Weininger R, Carlson RW. Transforming prior authorization to decision support. *Journal of Oncology Practice.* 2017;13(1):e57-e61. doi:10.1200/JOP.2016.015198

Nham T, Garcia MC, Tsang KJ, et al. Proarrhythmic major adverse cardiac events with donepezil: a systematic review with meta-analysis. *Journal of the American Geriatrics Society.* 2024;72(8):2552-2565.

Pang M, Zhu L, Gabelle A, et al. Effect of reduction in brain amyloid levels on change in cognitive and functional decline in randomized clinical trials: an instrumental variable meta-analysis. *Alzheimer's & Dementia.* 2023;19(4):1292-1299.

Pasquini J. Alzheimer's Disease and Amyloid-Related Imaging Abnormalities. European Academy of Neurology; 2024. Available at: https://www.ean.org/research/resources/neurology-updates/detail/alzheimers-disease-and-amyloid-related-imaging-abnormalities. Accessed March 9, 2026.

Pharmacy Benefits Management Institute (PBMI). 2014-2015 Prescription Drug Benefit Cost and Plan Design Report. Plano, TX: PBMI; 2015.

Potashman M, Pang M, Tahir M, et al. Psychometric properties of the Alzheimer's Disease Cooperative Study - Activities of Daily Living for Mild Cognitive Impairment (ADCS-MCI-ADL) scale: a post hoc analysis of the ADCS ADC-008 trial. *BMC Geriatrics.* 2023;23(1):124.

Press D, Buss SS. Amyloid-Targeted Therapies for the Treatment of Alzheimer Disease. UpToDate; 2025. Available at: https://www.uptodate.com/contents/amyloid-targeted-therapies-for-the-treatment-of-alzheimer-disease. Accessed March 20, 2026.

Rabinovici GD, Knopman DS, Arbizu J, et al. Updated appropriate use criteria for amyloid and tau PET: a report from the Alzheimer's Association and Society for Nuclear Medicine and Molecular Imaging Workgroup. *Alzheimer's and Dementia.* 2025;21(1):e14338.

Resneck JS. Refocusing medication prior authorization on its intended purpose. *JAMA*. 2020;323(8):703-704.

Ross L, Beld M, Yeh J. *Alzheimer's Disease and Related Dementias Facts and Figures in California: Current Status and Future Projections.* Sacramento, CA: California Department of Public Health; 2021.

Sakata N, Okumura Y. Job loss after diagnosis of early-onset dementia: a matched cohort study. *Journal of Alzheimer's Disease.* 2017;60(4):1231–1235.

Salvado G, Molinuevo JL, Brugulat-Serrat A, et al. Centiloid cut-off values for optimal agreement between PET and CSF core AD biomarkers. *Alzheimer's Research and Therapy.* Mar 21 2019;11(1):27.

Shcherbinin S, Evans CD, Lu M, Andersen SW, Pontecorvo MJ, Willis BA, Gueorguieva I, Hauck PM, Brooks DA, Mintun MA, Sims JR. Association of Amyloid Reduction After Donanemab Treatment With Tau Pathology and Clinical Outcomes: The TRAILBLAZER-ALZ Randomized Clinical Trial. JAMA Neurol. 2022 Oct 1;79(10):1015-1024.

Seath P, Macedo-Orrego LE, Velayudhan L. Clinical characteristics of early-onset versus late-onset Alzheimer's disease: a systematic review and meta-analysis. *International Psychogeriatrics.* 2024;36(12):1093-1109.

Silvestre J, Ferdon RJ, Ravinsky RA, Reitman CA. Geographic disparities in the supply, demand, and adequacy of the United States neurologist workforce. *Journal of Clinical Neuroscience.* 2026;146:111855.

Sims JR, Zimmer JA, Evans CD, et al. Donanemab in early symptomatic Alzheimer disease: the TRAILBLAZER-ALZ 2 randomized clinical trial. *JAMA.* 2023;330(6):512-527.

Sirkis DW, Bonham LW, Johnson TP, La Joie R, Yokoyama JS. Dissecting the clinical heterogeneity of early-onset Alzheimer's disease. *Molecular Psychiatry.* 2022;27(6):2674-2688.

Skinner J, Carvalho JO, Potter GG, et al. The Alzheimer's Disease Assessment Scale-Cognitive-Plus (ADAS-Cog-Plus): an expansion of the ADAS-Cog to improve responsiveness in MCI. *Brain Imaging and Behavior.* 2012;6(4):489-501.

Stanley J, Howlett SE, Dunn T, Rockwood K. The Clinician's Interview-Based Impression of Change (Plus caregiver input) and goal attainment in two dementia drug trials: clinical meaningfulness and the initial treatment response. *Alzheimer's and Dementia.* 2021;17(5):856-865.

State of California Department of Finance. Projections. 2026. Available at: https://dof.ca.gov/forecasting/demographics/projections/. Accessed February 20, 2026.

Tsoi KK, Chan JY, Chan FC, Hirai HW, Kwok TC, Wong SY. Monotherapy is good enough for patients with mild-to-moderate Alzheimer's disease: a network meta-analysis of 76 randomized controlled trials. *Clinical Pharmacology and Therapeutics.* 2019;105(1):121-130.

Tsoy E, Kiekhofer RE, Guterman EL, et al. Assessment of racial/ethnic disparities in timeliness and comprehensiveness of dementia diagnosis in California. *JAMA Neurology.* 2021;78(6):657-665.

U.S. Food and Drug Administration. Prescribing Information: Leqembi (lecanemab-irmb). 2023. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/761375s000lbl.pdf. Accessed February 23, 2026.

U.S. Food and Drug Administration. Prescribing Information: Kisunla (donanemab-azbt). 2024. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/761248s004lbl.pdf. Accessed February 23, 2026.

U.S. Food and Drug Administration. FDA Clears First Blood Test Used in Diagnosing Alzheimer's Disease. 2025. Available at: https://www.fda.gov/news-events/press-announcements/fda-clears-first-blood-test-used-diagnosing-alzheimers-disease. Accessed February 20, 2026.

U.S. Government Accountability Office (GAO). Health Insurance Marketplaces: CMS Has Limited Assurance That Premium Tax Credits Exclude Certain State Benefit Costs. GAO-25-107220. Washington, DC: U.S. Government Accountability Office; November 2024.

van Dyck CH, Swanson CJ, Aisen P, et al. Lecanemab in early Alzheimer's disease. *New England Journal of Medicine.* 2023;388(1):9-21.

van Dyck CH, Sperling R, Johnson K, et al. Long-term safety and efficacy of lecanemab in early Alzheimer's disease: results from the clarity AD open-label extension study. *Alzheimer's & Dementia.* 2025;21(12):e70905.

Wang J, Logovinsky V, Hendrix SB, et al. ADCOMS: a composite clinical outcome for prodromal Alzheimer's disease trials. *Journal of Neurology, Neurosurgery, and Psychiatry.* 2016;87(9):993-999.

Wessels AM, Dowsett SA, Sims JR. Detecting treatment group differences in Alzheimer's disease clinical trials: a comparison of Alzheimer's Disease Assessment Scale - Cognitive Subscale (ADAS-Cog) and the Clinical Dementia Rating - Sum of Boxes (CDR-SB). *Journal of Prevention of Alzheimer's Disease.* 2018;5(1):15-20.

Wessels AM, Siemers ER, Yu P, et al. A combined measure of cognition and function for clinical trials: the Integrated Alzheimer's Disease Rating Scale (iADRS). *Journal of Prevention of Alzheimer's Disease.* 2015;2(4):227-241.

Wyatt R, Laderman M, Botwinick L, Mate K, Whittington J. *Achieving Health Equity: A Guide for Health Care Organizations*. IHI White Paper. Cambridge, MA: Institute for Healthcare Improvement; 2016.

Zhou FF, Essien UR, Souza JM, et al. Disparities in early lecanemab uptake among US Medicare beneficiaries. *JAMA Network Open.* 2025;8(5):e2511711. doi:10.1001/jamanetworkopen.2025.11711

Zimmer JA, Sims JR, Evans CD, et al. Donanemab in early symptomatic Alzheimer's disease: results from the TRAILBLAZER-ALZ 2 long-term extension. *Journal of Prevention of Alzheimer's Disease.* 2026;13(2):100446.

CHBRP Committees and Staff

CHBRP is an independent program administered and housed by the University of California, Berkeley, under the Office of the Vice Chancellor for Research. A group of faculty, researchers, and staff complete the analysis that informs CHBRP reports. The CHBRP **Faculty Task Force** comprises rotating senior faculty from University of California (UC) campuses. In addition to these representatives, there are other ongoing researchers and analysts who are **Task Force Contributors** to CHBRP from UC that conduct much of the analysis. The **CHBRP staff** works with Task Force members in preparing parts of the analysis, and manages external communications, including those with the California Legislature. As required by CHBRP's authorizing legislation, UC contracts with an independent actuarial firm, **Milliman, Inc.**, to assist in assessing the financial impact of each legislative proposal mandating or repealing a health insurance benefit. The **National Advisory Council** provides expert reviews of draft analyses and offers general guidance on the program to CHBRP staff and the Faculty Task Force. Information on CHBRP's analysis methodology, authorizing statute, as well as all CHBRP reports and other publications, are available at chbrp.org.

CHBRP Staff

Garen Corbett, MS, Director
Adara Citron, MPH, Associate Director
An-Chi Tsou, PhD, Principal Policy Analyst
Anna Pickrell, MPH Principal Policy Analyst
Karen Shore, PhD, Contractor*
Nisha Kurani, MPP, Contractor*
*Independent Contractor who supports CHBRP analyses and projects.

Task Force

Faculty Vice Chairs

Janet Coffman, MA, MPP, PhD, *Vice Chair for Medical Effectiveness,* University of California, San Francisco
Elizabeth Magnan, MD, PhD, *Vice Chair for Medical Effectiveness and Public Health*, University of California, Davis
Sara McMenamin, PhD, *Vice Chair for Medical Effectiveness and Public Health*, University of California, San Diego
Nadereh Pourat, PhD, *Vice Chair for Cost*, University of California, Los Angeles

Peer Faculty and Senior Cost Reviewers

Mark Bounthavong, PharmD, PhD, MPH, University of California, San Diego
Kimberly Buss, MD, MS, MPH, University of California, San Francisco
Todd Gilmer, PhD, University of California, San Diego
Sylvia Guendelman, PhD, LCSW, University of California, Berkeley
Grace Lin, MD, MAS, University of California, San Francisco
Jack Needleman, PhD, University of California, Los Angeles
Mark A. Peterson, PhD, University of California, Los Angeles
Alejandro Schuler, PhD, University of California, Berkeley
Marilyn Stebbins, PharmD, University of California, San Francisco
Jonathan Watanabe, PharmD, MS, PhD, University of California, San Francisco

Leads and Analysts

Khadijah Ameen, PhD, MPH, University of California, Berkeley
Bethney Bonilla-Herrera, MA, University of California, Davis
Paul Brown, PhD, University of California, Merced
Timothy T. Brown, PhD, University of California, Berkeley
Danielle Casteel, MA, University of California, San Diego
Margaret Fix, MPH, University of California, San Francisco
Brent Fulton, PhD, MBA, University of California, Berkeley
Carlos Gould, PhD, University of California, San Diego
Alein Haro-Ramos, PhD, MPH, University of California, Irvine
Julia Huerta, BSN, RN, MPH, University of California, Davis
Michelle Keller, PhD, MPH, University of California, Los Angeles, and University of Southern California
Thet Nwe Myo Khin, MPH, University of California, San Diego
Joy Melnikow, MD, MPH, University of California, Davis
Jacqueline Miller, University of California, San Francisco
Marykate Miller, MS, University of California, Davis
Aimee Moulin, MD, University of California, Davis
Katrine Padilla, MPP, University of California, Davis
Jonathan Palisoc, MPP, University of Michigan
Denise Payán, PhD, MPP, University of California, Irvine
Kyoko Peterson, MPH, University of California, San Francisco
Amy Quan, MPH, University of California, San Francisco
Dominique Ritley, MPH, University of California, Davis
Dylan Roby, PhD, University of California, Irvine
Neil Sehgal, PhD, MPH, University of Washington
Mienah Sharif, PhD, MPH, University of California, Berkeley
Riti Shimkhada, PhD, University of California, Los Angeles
Meghan Soulsby Weyrich, MPH, University of California, Davis
Steven Tally, PhD, University of California, San Diego
Dan Zeltzer, PhD, University of California, Berkeley

National Advisory Council

Lauren LeRoy, PhD, Strategic Advisor, L. LeRoy Strategies, *Chair*
Deborah Chollet, PhD, Senior Fellow, Mathematica Policy Research, Washington, DC
Allen D. Feezor, Former Deputy Secretary for Health Services, North Carolina Department of Health and Human Services, Raleigh, NC
Charles "Chip" Kahn, MPH, President and CEO, Federation of American Hospitals, Washington, DC
Jeffrey Lerner, PhD, President Emeritus, ECRI Institute Headquarters, Plymouth Meeting, PA; Adjunct Senior Fellow, Leonard Davis Institute of Health Economics, University of Pennsylvania
Donald E. Metz, Executive Editor, *Health Affairs,* Washington, DC
Dolores Mitchell, (Retired) Executive Director, Group Insurance Commission, Boston, MA
Marilyn Moon, PhD, (Retired) Senior Fellow, American Institutes for Research, Washington, DC
Rachel Nuzum, MPH, Senior Vice President for Federal and State Health Policy, The Commonwealth Fund, New York, NY
Carolyn Pare, (Retired) President and CEO, Minnesota Health Action Group, Bloomington, MN
Osula Evadne Rushing, MPH, Senior Vice President for Strategic Engagement, KFF, Washington, DC
Ruchika Talwar, MD, MMHC, Assistant Professor Department of Urology and Medical Director Episodes of Care, Population Health, Vanderbilt University Medical Center
Alan Weil, JD, MPP, Senior Vice President for Public Policy, AARP, Washington, DC

Acknowledgments

CHBRP gratefully acknowledges the efforts of the team contributing to this analysis:

Janet Coffman, MA, MPP, PhD, and Jacqueline Miller, of the University of California, San Francisco, prepared the medical effectiveness analysis. Eileen Chen, MLIS, of the University of California, San Francisco, conducted the literature search. Elizabeth Magnan, MD, PhD, and Marykate Miller, MS, of the University of California, Davis, prepared the public health impact analysis. Dylan Roby, PhD, of the University of California, Irvine, prepared the cost impact analysis. Erik Wheeler, FSA, MAAA, and Addison Luria Roberson of Milliman provided actuarial analysis. Lawren VandeVrede, MD, PhD, of the University of California, San Francisco, provided technical assistance with the literature search and expert input on the analytic approach. Adara Citron, MPH, of CHBRP staff prepared the Overview and Policy Context and synthesized the individual sections into a single report. Abby Choy, Project Assistant with CHBRP, prepared the infographic. A subcommittee of CHBRP's National Advisory Council (see previous page of this report) and members of the CHBRP Task Force, Grace Lin, PhD, MAS, of the University of California, San Francisco, and Todd Gilmer, PhD, of the University of California, San Diego, reviewed the analysis for its accuracy, completeness, clarity, and responsiveness to the Legislature's request.

CHBRP assumes full responsibility for the report and the accuracy of its contents. All CHBRP bill analyses and other publications are available at chbrp.org.

Garen Corbett, MS Director

Please direct any questions concerning this document to: California Health Benefits Review Program, MC 3116, Berkeley, CA 94720-3116; info@chbrp.org; or chbrp.org.

About CHBRP

The California Health Benefits Review Program (CHBRP) was established in 2002. CHBRP's mission is to inform and support policymaking in California through the creation of impartial, evidence-based resources. As per its authorizing statute, CHBRP provides the California Legislature with independent analysis of the medical, financial, and public health impacts of proposed health insurance benefit-related legislation. CHBRP is dedicated to providing academic rigor on a Legislature's timeline.

The state funds CHBRP through an annual assessment on health plans and insurers in California.

An analytic staff based at the University of California, Berkeley, supports a task force of faculty and research staff from multiple University of California campuses to complete each CHBRP analysis. A strict conflict-of-interest policy ensures that the analyses are undertaken without bias. An independent actuarial firm helps to estimate the financial impact. Content experts with comprehensive subject-matter expertise are consulted to provide essential background and input on the analytic approach for each report.

More detailed information on CHBRP's analysis methodology, authorizing statute, as well as all CHBRP reports and other publications, are available at chbrp.org.

Disclaimer

CHBRP analyzes bills in the current environment given current law and regulations at both the state and federal levels. Each analysis assumes that policy frameworks and stakeholder behaviors remain constant, unless otherwise noted. All estimates are based on current data and do not take into consideration any future or potential changes to factors that may influence the impacts of the legislation, unless otherwise specifically mentioned. Differences between CHBRP's estimated impacts and actual impacts of legislation will depend on alignment with the assumptions used in this analysis, the timeline of implementation, and the final language of the legislation, should it be signed into law. Since actual experience is unlikely to match assumptions perfectly, final impacts will differ from those projected in this analysis.

This analysis is based on existing literature and public sources identified through systematic search methods. This evidence informs the California Legislature about potential impacts of proposed health benefit legislation and does not constitute a policy recommendation from CHBRP.

Public health impacts are estimated using literature review data and fiscal projections.

For more information about CHBRP's methods and approach, please visit our website.

Suggested Citation

California Health Benefits Review Program (CHBRP). (2026). *Analysis of California Senate Bill 950 Dementia.* Berkeley, CA.