



RESEARCH ARTICLE

# The Cost of Alzheimer Drug Treatment

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## ABSTRACT

**Introduction:** The anti-amyloid drug donanemab is approved in the United States and Europe for treatment of early symptomatic Alzheimer's disease (mild dementia) in adults with confirmed amyloid pathology. Evolocumab was also reported to lower the risks of heart attacks and Alzheimer. In view of longevity and continued early Alzheimer recognition, we planned to compare costs of donanemab and evolocumab with other drug classes.

**Methods:** Drug costs were obtained from Google search and yearly cost calculated.

**Results:** Yearly costs of evolocumab were \$6,840. Donanemab was more expensive at \$32,000. Pembrolizumab was \$160,00, durvalumab \$115,000, Osimertinib \$100,000, semaglutide \$12,000, proposed 9-month ivonescimab \$188,000.

**Conclusions:** Donanemab \$32,000 yearly cost was higher than evolocumab at \$6,840. Both drugs were reasonably priced as compared with other classes. Considering longevity, the overall worldwide Alzheimer future management would be too costly to be affordable.

## Introduction

According to the World Health Organization, dementia is one of the biggest diseases of our time. Ten million are diagnosed every year. More than 55 million people (about twice the population of Texas) worldwide live with a form of dementia. It is the seventh leading cause of death among all diseases. As population ages, the number of cases of dementia rises. While the deterioration of cognitive functioning is not caused by age itself, it does primarily affect the older generation. As a result, many elderly people suffer from disability and loss of independence. Psychological, social and economic implications result for them and their families, carers and society more broadly. We planned to report on costs of approved dementia drugs in comparison with classes of other diseases.

## Methods

Drug costs and some other information were obtained

from Google search. Drug yearly costs were calculated.

## Results

Costs of various drug classes in the United States (US) were compared with the 2 anti-plaque drugs for Alzheimer treatment (Table). The 2-anti-plaque drug yearly costs were evolocumab \$6,840 and donanemab \$32,000.

One-year cost of the programmed death-ligand 1 (PD-L1) Pembrolizumab (Pembro) (1-3)) was \$160,000 and Durvalumab \$115,000 (4-7). Osimertinib (8,9), widely used in non-small-cell lung cancer, targets the epidermal growth factor receptors (EGFR) at a yearly \$100,000 cost.

Ivonescimab (10-12), not yet approved, represents the bispecific class (3-5) at a proposed 9-month \$188,000 cost.

**Table**

Drug	Class	Disease	1-yr Cost	2-yr Cost
Pembrolizumab * (Pembro) 1-3	Programmed death-ligand 1 (PD-L1)	Multiple	\$160,000	\$320,000
Durvalumab 4-7	"	"	\$115,000	\$228,000
Osimertinib 8,9	Target Therapy	"	\$100,000	\$200,000
Ivonescimab 10-12	Bispecific	Lung cancer	Proposed 9-months \$188,000	
Evolocumab 140 mg sc, q-2 weeks, Lowers risks of LDL, heart attacks and Alzheimer	Anti-Plaque	Alzheimer	\$6,840	\$13,680
Donanemab 1400 mg iv q4week	Anti-plaque	Alzheimer	\$32,000	\$64,000
Semaglutidepo 3.5-14mg Injectable, 0.5 -2 mg subcutaneous q-week	Glucagon like peptide-(GLP-1) **	Diabetes 2, Obesity, Addiction	\$12,000 \$1,618	\$24,000 \$3,236
Tirzepatide, 5-15 mg subcutaneous q-week	GLP-1**	Diabetes Obesity Addiction	\$6,000	\$12,000

Pembro\*and Durvalumab are PD-L1 \* immune checkpoint inhibitors (ICI).

GLP-1\*\* is a naturally occurring hormone that plays a role in regulating

## Discussion

It is important to emphasize that drug costs vary widely, in contrast to the stability of value<sup>13,14</sup>. Costs depend on the purchasing agent and the amount purchased. The most important factor in cost determination is the number of potential consumers.<sup>15</sup>

According to US 2023 data, life expectancy is 81.1 years, higher for females compared to males at 75.8. It is estimated that ten million people with dementia are diagnosed worldwide every year. With continued longevity and early recognition of Alzheimer, disease, drug treatment costs are bound to multiply.

Alzheimer treatment validation approaches including radiation, radiology and drugs is a rational valid necessity, regardless of costs. Considering the present

and future number of Alzheimer patients, treatment would be universally too expensive to afford.

The number of (glucagon like peptide-(GLP-1) drugs for diabetes mellitus and obesity is increasing and was therefore included for comparison.

The yearly cost of evolocumab was \$6,840 and \$32,000. There is no direct value or efficacy comparison between the 2 drugs and unlikely to see one in the future. Hence, it would be indeed wise to choose the cheaper one, namely evolocumab.

In summary, the number of Alzheimer patients is rapidly multiplying. The overall treatment costs of drugs, radiology and radiation modalities have also increased, sending a warning of unsustainable worldwide heavy economic burden. More efforts, finances, new drugs and

plaque-focused radiation need to be devoted to speed up the pace of progress against Alzheimer.

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