EE134

An Overview of Systematic Literature Review of Economic Evaluation of Treatment on Patients with Alzheimer's Disease and Related Dementia

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CONCLUSION

We recommend using Markov models to assess the cost-effectiveness of future treatments in ADRD due to their versatility in adopting different types of health states that patients can potentially experience

Background

- Alzheimer's disease and related dementias (ADRD) constitute a public health crisis affecting the US aging population and society
.
- An estimated 6.7 million Americans age 65 and older are living with Alzheimer's in 2023. Seventy-three percent are age 75 or older.[1]
- By 2050, the total estimated prevalence of AD is expected to be 12.7million.[1]

- The pharmacological managements of Alzheimer's disease include two symptomatic approaches: The inhibition of acetylcholinesterase and the inhibition of N-methyl-D-aspartate receptors.

- Acetylcholinesterase inhibitors (AChEIs) such as donepezil, galantamine, and rivastigmine are the recommended treatments for managing mild and moderate AD.[1,2,3]
- In 2023, Alzheimer's and other dementias will cost the nation $345 billion — not including the value of unpaid caregiving.[1]

- Medicare and Medicaid are expected to cover $222 billion.[1]

OBJECTIVE

- To evaluate the economic impact of pharmacological management of Alzheimer's Disease, such as acetylcholinesterase and N-methyl-D-aspartate receptor inhibition.
- To compared the model structures and input parameters.

Methodology

- Overview of systematic reviews according to PRISMA Was conducted using Cochrane Library, Embase, and PubMed from 2012-2022 for economics evaluations of pharmacological treatments for ADRD.
- **Inclusion criteria were** : Population should be AD or AD related Dementia, Intervention should be Pharmaceutical, study design should be SLR or MA on CEA or CUA, Outcome for the effect should be QALY or LYs, and The criteria score should be at least 5%.
- Studies were excluded if published in Non-English language
- Data were extracted from each study included in the analysis .
- We used extraction forms to collect and summarize the characteristics of reviews (e.g., authors, publication year, country, study objective, interventions compared, sample size, time horizon, journal impact factor, and conclusion)
- Data extracted at the second level include target population, type of economic evaluation, study design perspective, measure of effectiveness, discounting, sensitivity, and incremental analysis.
- Findings were further divided into two categories: single treatments and combination treatments.

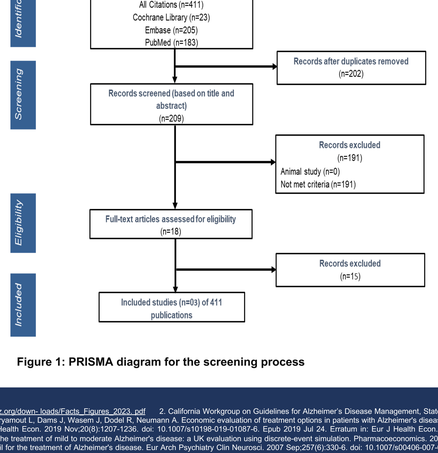

Figure 1: PRISMA diagram for the screening process

RESULTS

- After screening 411 publications from all the database, 18 publications were eligible for full text screen After linking, Three SLR studies were finally included.
- Within the SLR, we screened 39 studies eligible for Full text screen , 17 Economics studies were eligible for Data extraction and The quality checks were performed using Drummond and Philips checklists.
- The flow of publications through the entire SLR process is depicted in the PRISMA diagram (Fig 2)

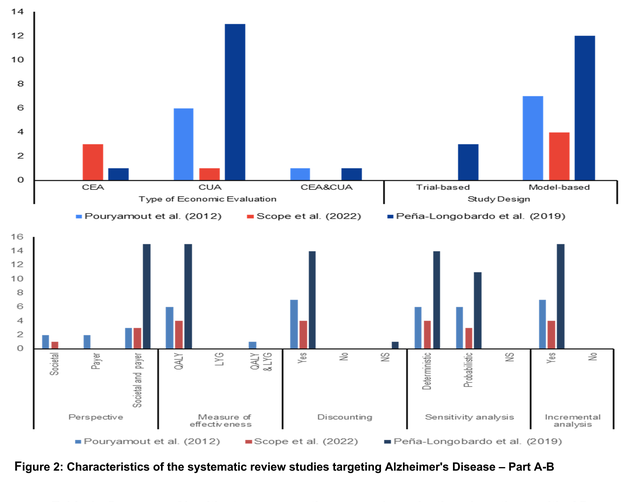

Figure 2: Characteristics of the systematic review studies targeting Alzheimer's Disease – Part A-B

Table 1: Summary of health states across the economic evaluations in patients with AD

Study Name	Health States
Fuh and Wang 2008	Mild, Moderate, Sever, Dead
Gagnon et al 2007	Moderate Independent Community or institution / Moderate dependent Community or institution/ Moderately Sever Independent Community or institution/ Moderately Sever dependent Community or institution , Sever Independent Community or institution/ Sever dependent Community or institution/ ,Death
Getsios et al.2010	DES
Lo´pez-Bastida et al 2009	Mild, Moderate, Sever, Dead
Suh 2009	Pro-FTC, FTC, Death
Teipel et al 2007	Mild, Mild-Moderate, Moderate, Sever, Dead
Weycker et al 2007	NA
Getsios et al 2012	DES
Hartz et al 2012	DES
Neumann et al 1999	Mild, Moderate Sever, Dead
Knapp et al. 2017	NA
Saint-Laurent et al 2015	DES
Touchon et al 2014	Non-Institutionalised , Institutionalised, Deceased
Pfeil et al.2012	Home, Nursing Home, Deceased
Rive et al. 2011	Pro-FTC, FTC, Death
Lachaine et al.2011	Non-Institutionalised , Institutionalised, Deceased
Nagy et al.2010	NA

Table 2: Findings of the individual cost effectiveness analysis including in Systematic Review for AD

Treatment		Individual pape	Intervention	Comparator	Perspective	Time Horizon	Outcome	Decision
Donepezil	ST*	Fuh and Wang,	Donepezil	No drug tx	Societal	5 Years	QALY	Dominant
					Payer	5 Years	QALY	CE
		Getsios et al, (20	Donepezil	No drug tx	Societal/ Healthca	10 Years	QALY	Donepezil Dominant
		Lo´pez-Bastida e	Donepezil	No drug tx	Societal	6 months	QALY	Donepezil is NCE
						12 months	QALY	Donepezil is CE
						18 months	QALY	Donepezil Dominant
						24 months	QALY	Donepezil Dominant
						30 months	QALY	Donepezil Dominant
					Societal/Healthca	6 months	QALY	Donepezil is NCE
						12 months	QALY	Donepezil is NCE
						18 months	QALY	Donepezil is NCE
						24 months	QALY	Donepezil is NCE
						30 months	QALY	Donepezil is NCE
					Healthcare Payer	6 months	QALY	Donepezil is NCE
						12 months	QALY	Donepezil is NCE
						18 months	QALY	Donepezil is CE
						24 months	QALY	Donepezil is CE
						30 months	QALY	Donepezil is CE
		Teipel et al, (200	Donepezil	Placebo	health insurance c	5-10 years	QALY	Donepezil not cost saving
							LYG	Donepezil not cost saving
		Neumann et al, (1	Donepezil	No drug tx	Societal	6 months	QALY	Donepezil is NCE
						12 months	QALY	Donepezil is CE
						18 months	QALY	Donepezil is CE
						24 months	QALY	Donepezil Dominant
						6 months	QALY	Donepezil is NCE
						12 months	QALY	Donepezil is NCE
						18 months	QALY	Donepezil is NCE
						24 months	QALY	Donepezil is CE
		Hartz et al (2012)	Donepezil 10 mg	No drug tx	Societal	10 Years	QALY	Donepezil Dominant
				No drug tx	Healthcare payer	10 Years	QALY	Donepezil Dominant
				Memantine 20 r	Societal	10 Years	QALY	Donepezil Dominant
				Memantine 20 r	Healthcare Payer	10 Years	QALY	Donepezil Dominant
	CT**	Getsios et al, (20	Donepezil + Early	without early as	Societal	10. Years	QALY	Donepezil + Early assessment Dominant
					Healthcare Payer		QALY	Donepezil + Early assessment Dominant
				without early as	Societal		QALY	Donepezil + Early assessment Dominant
					Healthcare Payer		QALY	Donepezil + Early assessment Dominant
Treatment		**Individual pape**	**Intervention**	**Comparator**	**Perspective**	**Time Horizon**	**Outcome**	**Decision**
Memantine	CT	Gagnon et al (20	Memantine to sta	Standard care	Societal	2 years	QALY	Memantine Dominant
		Weycker et al (2	Memantine add to	Donepezil alone	Societal	6 months	QALY	
						12 months	QALY	
						18 months	QALY	
						24 months	QALY	
						lifetime	QALY	
		Knapp et al. (20	Donepezil continu	Donepezil disco	Healthcare Payer	1 Year	QALY	Donepezil Dominant
			Memantine	Memantine placebo		1 Year	QALY	Memantine Dominant
			Donepezil and me	Donepezil alone		1 Year	QALY	19967
			Donepezil continu	Donepezil disco	Societal	1 Year	QALY	Donepezil Dominant
			Memantine	Memantine placebo		1 Year	QALY	Memantine Dominant
			Donepezil and me	Donepezil alone		1 Year	QALY	33100
		Saint-Laurent et	Memantine extenc	ChEI alone	Healthcare payer	3 Years	QALY	Memantine ER/AChEI Dominant
					Societal	3 years	QALY	Memantine ER/AChEI Dominant
		Touchon et al (2(	Memantine and C	ChEI alone	Healthcare Payer	7 Years	QALY	Memantine and ChEI Dominant
					Societal	7 Years	QALY	Memantine and ChEI Dominant
		Pfeil et al. (2012)	ChEI and meman	ChEI alone	Healthcare Payer	7 Years	QALY	ChEI and memantine Dominant
					Societal	7 Years	QALY	ChEI and memantine Dominant
		Lachaine et al. (2	Memantine and C	ChEI alone	Healthcare payer	7 Years	QALY	ChEI and memantine is a dominant
					Societal	7 Years	QALY	ChEI and memantine is a dominant
	ST	Rive et al. (2012	Memantine	Standar Care	Healthcare Payer	5 Years	QALY	Memantine is a cost effective
					Societal	5 Years	QALY	Memantine is a cost effective
Treatment		**Individual pape**	**Intervention**	**Comparator**	**Perspective**	**Time Horizon**	**Outcome**	**Decision**
Galantamine	ST	Suh et al (2007)	Galantamine	Usual care	Third-party payer	5 Years	QALY	galantamine cost-effective
Rivastigmine	ST	Nagy et al. (2011	Rivastigmine patc	best supportive	Societal and healt	5 Years	QALY	rivastigmine patchs are cost-effective
			Rivastigmine capsule / MMSE					rivastigmine capsules are cost-effective
			Rivastigmine patc	Rivastigmine capsule				Patch dominates
			Rivastigmine patc	best supportive	care (BSC)			rivastigmine patchs are cost-effective
			Rivastigmine capsule / MMSE-ADL					rivastigmine capsules are cost-effective
			Rivastigmine patc	Rivastigmine capsule				Patch dominates

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