

## Alzheimer's Disease Patients With and Without COVID-19 Infection

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### Background

- Dementia is an independent risk factor for increased severity of COVID-19 infection.
- Donepezil, a cholinesterase inhibitor approved for Alzheimer's disease (AD), has anti-inflammatory properties.
- Previous studies have found that donepezil reduced all-cause mortality for people living with AD.
- The anti-inflammatory effects of donepezil have not been studied in patients with COVID-19 and AD.

### Objective

- To assess the influence of donepezil on the mortality of COVID-19 infections among people with AD.

### Methods

- Using administrative data from the Veterans Healthcare Administration (VHA), we conducted a national retrospective cohort study of Veterans with AD who were tested for SARS-CoV-2 between March 1, 2020 and December 31, 2021 in the VHA.
- Among these patients, we assessed all-cause 30-day mortality stratified by COVID-19 infection and donepezil use and also considered the interaction of these factors.
- For Veterans with a positive test, the date of the first positive test was used to assess mortality; for Veterans without a COVID-19 diagnosis or positive test, the date of the first negative test was used.

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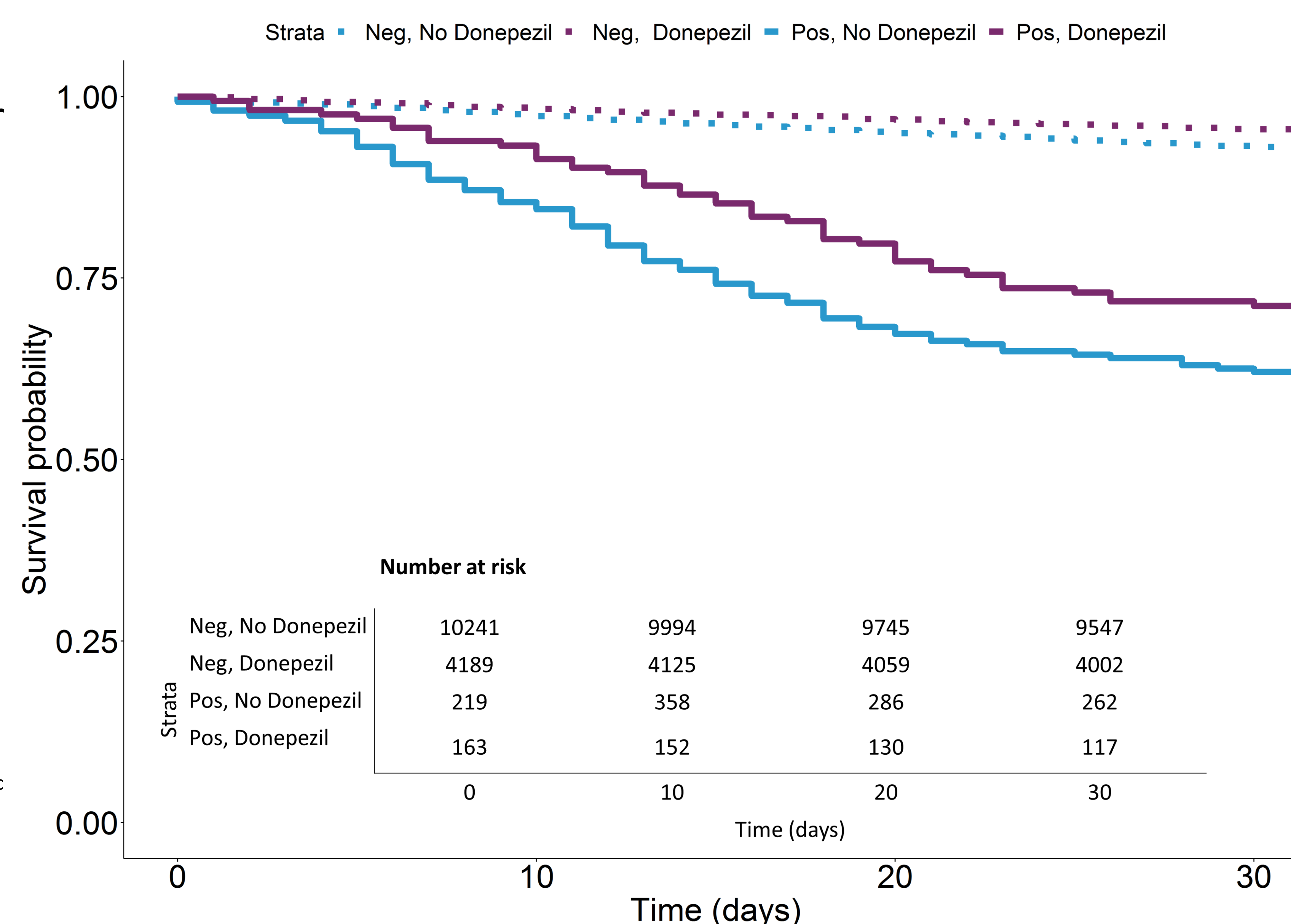
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### Patient Demographics & Comorbidities

Characteristics	SARS-CoV-2 Positive			SARS-CoV-2 Negative		
	All (N = 582)	Donepezil (n = 163)	No Donepezil (n = 419)	All (N = 14430)	Donepezil (n = 4189)	No Donepezil (n = 10241)
Age (± SD) <sup>a</sup>	81.0 ± 9.2	80.3 ± 7.6	81.3 ± 9.7	80.0 ± 9.4	79.9 ± 8.2	80.0 ± 9.8
Male	559 (96%)	156 (96%)	403 (96%)	13975 (97%)	4071 (97%)	9904 (97%)
Race						
White	407 (70%)	111 (68%)	296 (71%)	10553 (73%)	3193 (76%)	7360 (72%)
Black	129 (22%)	40 (25%)	89 (21%)	2843 (20%)	738 (18%)	2105 (21%)
Charlson Comorbidity Index	3.15 ± 2.3	3.31 ± 2.0	3.09 ± 2.4	3.66 ± 2.6	3.75 ± 2.5	3.63 ± 2.7
Completed initial COVID-19 vaccine series prior to test	81 (14%)	33 (20%)	48 (11%)	2989 (21%)	948 (23%)	2041 (20%)
Received ≥1 booster prior to test	11 (2%)	3 (2%)	8 (2%)	286 (2%)	92 (2%)	194 (2%)
Community Living Center resident <sup>b</sup>	40 (7%)	11 (7%)	29 (7%)	2650 (18%)	632 (15%)	2018 (20%)

<sup>a</sup>SD, standard deviation; <sup>b</sup>Community Living Centers are Veterans Affairs post-acute and long-term care facilities

### All-cause Mortality Among Veterans with Alzheimer's Disease Tested for SARS-CoV-2



### Summary & Conclusions

- Among people with AD and COVID-19, all-cause 30-day mortality was 29% (47/163) for people taking donepezil compared to 38% (159/419) for those who were not.
- Among people with AD without COVID-19, all-cause 30-day mortality was 5% (189/4189) for people taking donepezil compared to 7% (712/10241) for those who were not.
- In a multivariable logistic regression, the decrease in mortality associated with donepezil did not differ between people with and without COVID-19 (OR (95% CI) = 0.71 (0.47, 1.07) vs. OR (95% CI) = 0.68 (0.57, 0.80), interaction P = 0.818).
- **While all-cause mortality was lower for patients taking donepezil compared to those not taking donepezil, the protective effect of donepezil was not increased in AD patients with COVID-19 over those without COVID-19.**