



Pulmonology

Recent analyses of VA and military cohorts show that obstructive sleep apnea (OSA) signals both short-term morbidity and long-term neurodegenerative risk. Active-duty service members with newly diagnosed OSA had higher 12-month risks of physical and psychological conditions and greater healthcare use than matched peers, while VA data identified OSA as an independent midlife risk factor for incident Parkinson disease (PD).^{1,2} Early, sustained continuous positive airway pressure (CPAP) treatment substantially reduced PD risk, supporting OSA as a potential modifiable contributor.²

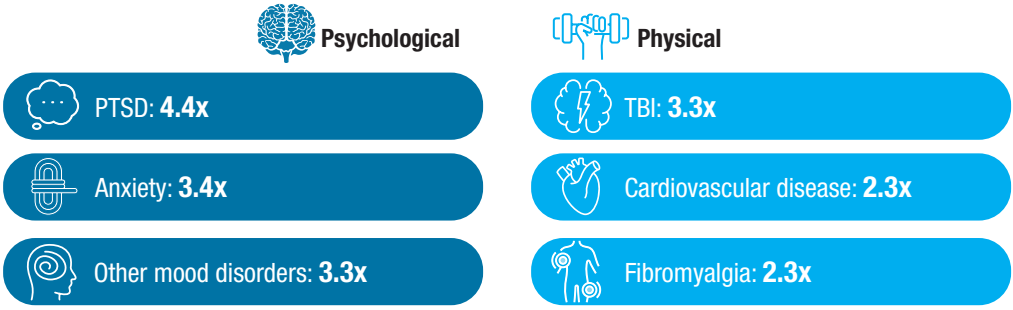
Complementary VA cohort studies similarly highlight the power of vaccines to prevent respiratory illness in older and medically vulnerable veterans. Influenza and respiratory syncytial virus (RSV) each increase the risk of secondary pneumococcal infection in hospitalized patients. Sequential pneumococcal vaccination—PCV13 followed by PPSV23—provides superior protection against invasive pneumococcal disease compared with single vaccine strategies.^{3,4}

Burden of OSA in Active-Duty Service Members¹

 **A retrospective analysis** of more than 59,000 active-duty service members newly diagnosed with OSA compared incident medical and psychiatric outcomes and 12-month healthcare to outcomes in a matched cohort without OSA.

Increased Risk of Comorbidities in Military Personnel With OSA

vs matched peers without OSA



Annual Healthcare Encounters for Non-OSA Issues

In newly diagnosed active-duty service members, compared with those without OSA

	Encounters per year	Rate ratio
 Outpatient	+170,511	1.8
 Inpatient	+66	1.1
 Emergency department	+1852	1.4



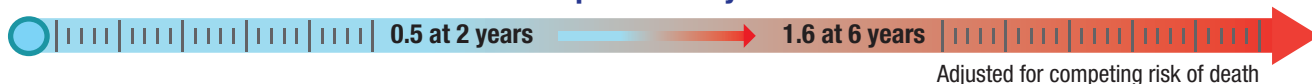
Newly diagnosed OSA in active-duty service members was associated with significantly increased risk for all examined physical and psychological health outcomes and markedly higher healthcare use over 12 months.

OSA as a Risk Factor for Parkinson Disease in Veterans²



An EHR-based cohort study of more than 11.3 million veterans (> 1.5 million with OSA) from 1999 through 2022 evaluated incident PD and risk modification with CPAP usage.

Extra PD cases per 1000: 6 year PD incidence



OSA-Related PD Risk



1.9-fold increase
in PD among veterans with
OSA vs no OSA

Hazard Ratios (HRs)

Women: 4.2

Men: 2.2

Mild OSA vs no OSA, HR

Mild: 3.2

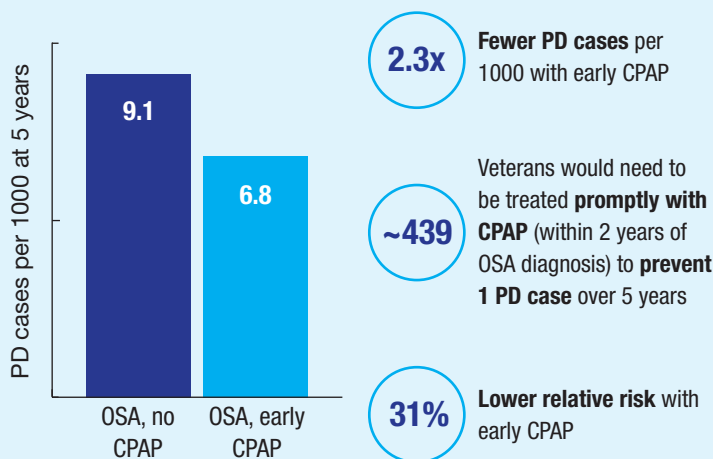
Severe OSA vs no OSA, HR

Severe: 3.4



Patients with severe OSA showed an earlier increase in PD risk (around year 1 after OSA diagnosis, vs around year 5 for mild OSA).

Early CPAP Treatment Lowers PD Risk



Sensitivity

- ✓ **Effects persisted** with additional adjustments (BMI, vascular and psychiatric comorbidities, sleep disorders, TBI, medications) and stricter CPAP adherence definition (HR ~ 0.65-0.70).
- ✓ A **significant benefit** was seen in men (HR 0.68), while estimates in women were imprecise.

Healthcare Utilization Differences

Veterans with OSA had many **more outpatient visits** before the OSA diagnosis/index date (mean 34.9 vs 2.6), raising concern for surveillance bias.

After adjusting for healthcare utilization:

- ↑ OSA remained associated with **higher PD risk (HR 2.3)**.
- ↓ CPAP remained protective (**HR 0.7**).
- ✗ Negative control outcomes (eg, tinnitus, biliary cancer) **did not** show similar patterns.

Early CPAP and Outcomes After PD Diagnosis



Early CPAP → **no difference** in motor/nonmotor PD symptoms.



Early CPAP → **lower rates of falls, fractures, and mortality** after PD diagnosis.

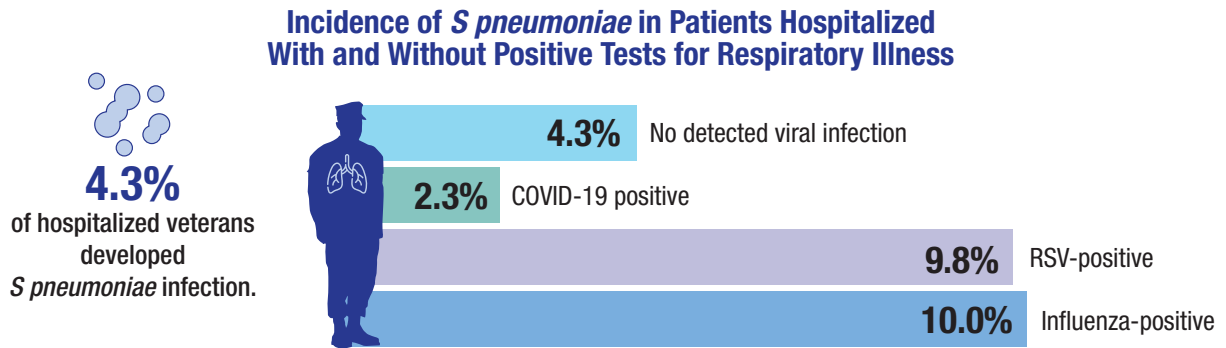


OSA is an independent PD risk factor; **early, sustained CPAP substantially reduces** this midlife risk.

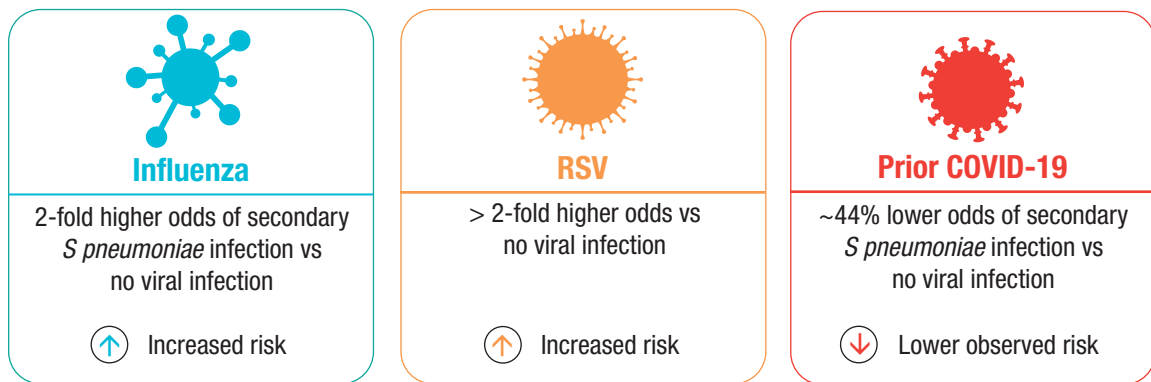
Secondary *S pneumoniae* Infection in Veterans³



A 2026 VA cohort study examined more than 188,000 hospitalized veterans over a 10-year period to assess how often pneumococcal infection occurred after infection with influenza, RSV, or COVID-19.



Risk of Secondary *S pneumoniae* Infection by Preceding Virus



Reference group: patients without documented viral infections

Outcomes in Veterans With vs Without *S pneumoniae*



30 day readmission:

Without *S pneumoniae*: 16.5% | With *S pneumoniae*: 13.1%



30 day mortality:

Without *S pneumoniae*: 16.8% | With *S pneumoniae*: 11.1%



1 year mortality:

Without *S pneumoniae*: 37.3% | With *S pneumoniae*: 27.7%

Key driver of mortality:



COVID-19 infection: **OR 1.8**



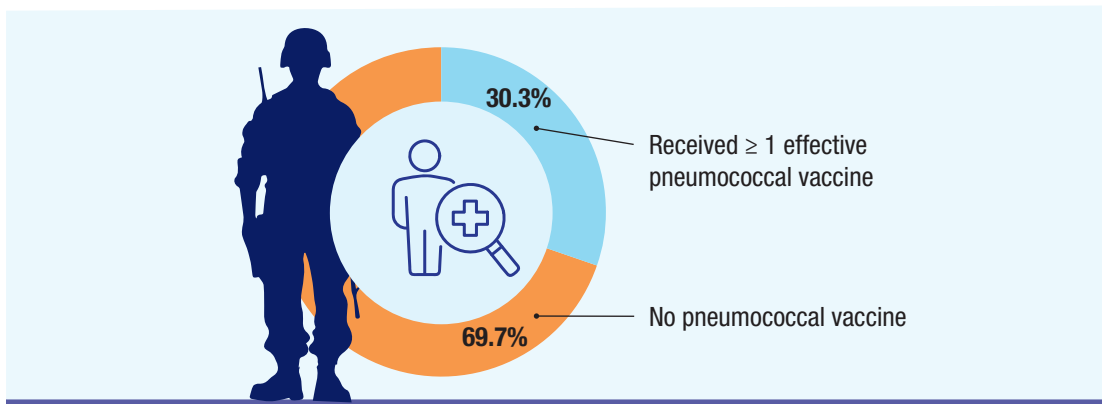
Metastatic cancer: **OR 2.1**

Pneumococcal Vaccine Strategies in Older Veterans⁴



A large retrospective cohort analysis of more than 3 million older veterans who received primary care at the VHA between 2005 and 2021 sought to compare effectiveness of pneumococcal vaccines (PCV13 and PPSV23) and their combinations.

Vaccination Overview

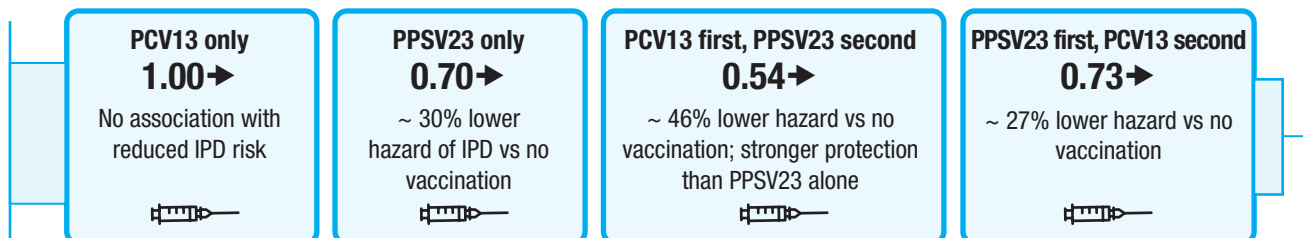


Exposure Definition

- Vaccination effect counted starting 28 days after each dose (to allow immune response)
- Time-to-first invasive pneumococcal disease (IPD); death treated as a competing risk in Cox models

IPD Outcomes

Adjusted HRs, compared with veterans who were not vaccinated

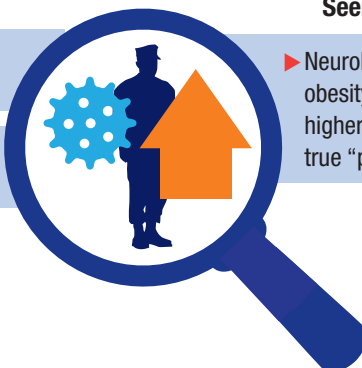


No evidence of waning effect over time on IPD was observed within the follow-up period.

Key High-Risk Groups

Increased IPD risk

- ▶ Immunocompromised conditions (eg, lymphoma, HIV infection)
- ▶ Chronic pulmonary diseases



Seemingly "Protective" Associations

- ▶ Neurologic disorders, hypothyroidism, and obesity appeared "protective," likely reflecting higher competing risk of death rather than true "protection" from IPD.