

## AAN 77<sup>th</sup> ANNUAL MEETING ABSTRACT

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**Abstract Title:** Obstructive Sleep Apnea is a Risk Factor for Parkinson's Disease and CPAP Mitigates Risk of PD: An EHR-based Cohort Study in Military Veterans

**Press Release Title:** Sleep apnea linked to increased risk of Parkinson's, but CPAP may reverse risk  
*Risk reversed if treatment started within two years of diagnosis*

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**Objective:** To measure the risk of Parkinson's Disease (PD) in those with obstructive sleep apnea (OSA) and evaluate the impact of early versus late Continuous Positive Airway Pressure (CPAP) treatment.

**Background:** Previous studies have shown an association between OSA and various synucleinopathies, but a causal link between OSA and PD is unknown. This study evaluated OSA as a potential risk factor for PD by leveraging the VA Corporate Data Warehouse (CDW) spanning 20+ years and 20+ million Veterans.

**Design/Methods:** OSA was defined by ICD-10 code G47.33 (OSA+). Outcomes included PD and death from any cause. We validated PD diagnosis previously using 2 case definitions (PPV 76% and 90%; PMID 37309872). CPAP use was determined using HealthFactor field, a semi-structured field containing data from medical interviews. Only 9.9% of Veterans had mentions of CPAP in this field (CPAP+); therefore, individuals missing HealthFactor data were excluded from the secondary CPAP analysis. "CPAP+ Early" was defined as mentions of CPAP within 2 years of OSA diagnosis; "CPAP+ Late" indicated >2 years since OSA diagnosis.

**Results:** 1,552,505 OSA+ and 9,759,246 OSA- Veterans were identified. After Inverted Probability Treatment Weighting analysis, balancing of birthyear/age, sex, smoking status, race, ethnicity, pseudo-randomization by covariates, and adjustment for competing risk of death, OSA+ was associated with a significantly increased incidence of PD with 1.8 [1.4, 2.3] 95% confidence intervals,  $p < 0.001$ ) extra cases of PD per 1000 people at 5 years after OSA onset. "CPAP+ Late" had a similar incidence of PD to CPAP-. In contrast, "CPAP+ Early" had significantly lower incidence of PD, with a reduction of 2.3 cases of PD ( $p < 0.001$ ) 5 years after OSA.

**Conclusions:** Results indicate that OSA may be an important, modifiable risk factor for the development of PD and potentially other synucleinopathies.

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