

# Findings and Recommendations

## Tobacco Use Among U.S. Service Members and Veterans



### Millennium Cohort Study Overview

The Millennium Cohort Study is a large-scale longitudinal cohort study of military personnel sponsored by the Department of Defense (DoD) and the Department of Veterans Affairs (VA). The overarching objective of this study is to evaluate the impact of military service, including deployments and other occupational exposures, on the long-term health of service members and veterans. Participants of the Millennium Cohort Study are enrolled during their military service and complete surveys every 3 to 5 years, both during and after their service. The first panel of service members was enrolled in 2001, with additional panels enrolled in 2004, 2007, 2011, and 2020.<sup>1</sup> There are currently over 260,000 participants in the study from all service branches and components, making it the largest and longest ongoing cohort study of U.S. military personnel in history. Over the last two decades, the Millennium Cohort Study team has engaged in impactful research covering a broad range of topic areas. Below is a description of recent research on tobacco use among service members and veterans.

### Summary of Tobacco Research

A series of studies published by the Millennium Cohort Study team provided crucial insights into smoking behaviors among military personnel and veterans. These investigations have provided information for potential intervention targets by identifying subgroups at risk for smoking and smokeless tobacco initiation and relapse to smoking.

An initial study investigating smoking initiation and relapse found that deployment, particularly when combined with combat experiences, was associated with both the initiation and relapse of smoking.<sup>2</sup> Prolonged deployments, multiple deployments, and combat experiences were identified as risk factors.<sup>2</sup> Two additional studies showed that deployment, combat experience, mental health, and greater stress were factors that were associated with tobacco initiation, relapse and persistence over time.<sup>3,4</sup> In a subsequent study focused on PTSD symptom clusters, individuals with PTSD who experienced symptoms such as irritability and feeling as though their future would be cut short were more likely to initiate smoking.<sup>5</sup>

Additional studies examined smoking in relation to separation from military service. One study showed a decline in smoking prevalence over time; those who separated for standard or judicial reasons had a 69% increase in smoking compared to those who separated for other reasons.<sup>6</sup> Service members in the process of transitioning out, those with high alcohol consumption, those who previously smoked, and those with mental health conditions had an elevated risk of smoking.<sup>7</sup>

### KEY POINTS

- Factors associated with smoking initiation and relapse were deployment, especially with combat experience,<sup>2</sup> mental health disorders,<sup>3,4</sup> and life stressors.<sup>3,4</sup>
- Deployment, combat exposure, smoking, and mental health symptoms were linked with smokeless tobacco use.<sup>3</sup>
- Symptoms of PTSD, such as irritability and feeling a shortened future, increased smoking initiation.<sup>5</sup>
- The prevalence of smoking was higher in veterans than in service members.<sup>6</sup>
- Service members transitioning out of service, high alcohol consumption and mental health conditions increased the risk for smoking.<sup>7</sup>

# Implications and Recommendations

Collectively, these findings offer a comprehensive understanding of smoking behaviors within the military and veteran populations and underscore the importance of tailored intervention strategies. Mental health conditions, high alcohol consumption, and life stressors are important factors associated with smoking among military service members. The transition period from military to veteran status is a critical time for interventions to address smoking cessation, as there is a higher risk of smoking during this period. Combat experience and deployment, particularly prolonged and multiple deployments, are significant risk factors for smoking initiation and relapse. Efforts to prevent smoking initiation and relapse should be emphasized during and after deployments to support the well-being of service members. Integrated approaches that address both mental health and smoking cessation could be developed to effectively support service members and veterans.



*A sailor breaks a cigarette to begin a new lifestyle.*

*Photo by Petty Officer 1st Class James Stenberg*

## References

1. Castañeda SF, Belding JN, Kolaja CA, LeardMann CA, Jacobson IG, Rivera AC, Carey FR, Boparai S, Walstrom JL, Sheppard BD, Boyko EJ, Ryan MAK, Rull RP; Millennium Cohort Study Team. Cohort Profile Update: The US Millennium Cohort Study-evaluating the impact of military experiences on service members and veteran health. *Int J Epidemiol*. 2023 Aug 2;52(4):e222-e231. doi: 10.1093/ije/dyad088. PMID: 37348866. <https://doi.org/10.1093/ije/dyad088>
2. Smith B, Ryan MA, Wingard DL, Patterson TL, Slymen DJ, Macera CA; Millennium Cohort Study Team. Cigarette smoking and military deployment: a prospective evaluation. *Am J Prev Med*. 2008 Dec;35(6):539-46. doi: 10.1016/j.amepre.2008.07.009. Epub 2008 Oct 8. PMID: 18842388. <https://doi.org/10.1016/j.amepre.2008.07.009>
3. Hermes ED, Wells TS, Smith B, Boyko EJ, Gackstetter GG, Miller SC, Smith TC; Millennium Cohort Study Team. Smokeless tobacco use related to military deployment, cigarettes and mental health symptoms in a large, prospective cohort study among US service members. *Addiction*. 2012 May;107(5):983-94. doi: 10.1111/j.1360-0443.2011.03737.x. Epub 2012 Jan 23. PMID: 22126651. <https://doi.org/10.1111/j.1360-0443.2011.03737.x>
4. Boyko EJ, Trone DW, Peterson AV, Jacobson IG, Littman AJ, Maynard C, Seelig AD, Crum-Cianflone NF, Bricker JB. Longitudinal Investigation of Smoking Initiation and Relapse Among Younger and Older US Military Personnel. *Am J Public Health*. 2015 Jun;105(6):1220-9. doi: 10.2105/AJPH.2014.302538. Epub 2015 Apr 16. PMID: 25880953; PMCID: PMC4431101. <https://doi.org/10.2105/AJPH.2014.302538>
5. Seelig AD, Bensley KM, Williams EC, Armenta RF, Rivera AC, Peterson AV, Jacobson IG, Littman AJ, Maynard C, Bricker JB, Rull RP, Boyko EJ; Millennium Cohort Study Team. Longitudinal Examination of the Influence of Individual Posttraumatic Stress Disorder Symptoms and Clusters of Symptoms on the Initiation of Cigarette Smoking. *J Addict Med*. 2018 Sep/Oct;12(5):363-372. doi: 10.1097/ADM.0000000000000421. PMID: 29864086; PMCID: PMC6167135. <https://doi.org/10.1097/ADM.0000000000000421>
6. Nieh C, Powell TM, Gackstetter GD, Hooper TI. Smoking Among U.S. Service Members Following Transition From Military to Veteran Status. *Health Promot Pract*. 2020 Jan;21(1\_suppl):165S-175S. doi: 10.1177/1524839919881478. PMID: 31908197. <https://doi.org/10.1177/1524839919881478>
7. Nieh C, Mancuso JD, Powell TM, Welsh MM, Gackstetter GD, Hooper TI. Cigarette smoking patterns among U.S. military service members before and after separation from the military. *PLoS One*. 2021 Oct 4;16(10):e0257539. doi: 10.1371/journal.pone.0257539. PMID: 34606513; PMCID: PMC8489722. <https://doi.org/10.1371/journal.pone.0257539>

## Disclaimer

I am a military service member or employee of the U.S. Government. This work was prepared as part of my official duties. Title 17, U.S.C. §105 provides that copyright protection under this title is not available for any work of the U.S. Government. Title 17, U.S.C. §101 defines a U.S. Government work as work prepared by a military service member or employee of the U.S. Government as part of that person's official duties. This report was supported by the Defense Health Program, Department of Veterans Affairs Office of Research and Development, and the Department of Veterans Affairs Office of Patient Care Services under work unit no. 60002. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government. The study protocol was approved by the Naval Health Research Center Institutional Review Board in compliance with all applicable Federal regulations governing the protection of human subjects. Research data were derived from an approved Naval Health Research Center Institutional Review Board protocol, number NHRC.2000.0007.



**Millennium Cohort Study**  
*Protecting Service Member and Veteran Health*



Naval Health Research Center • Deployment Health Research Department • 140 Sylvester Rd. • San Diego, CA 92106  
DSN: 619-553-7465 • Phone: 1-888-942-5222 • usn.nhrc-MilcohortInfo@health.mil • www.millenniumcohort.org