STATEMENT OF

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before the

UNITED STATES SENATE COMMITTEE ON VETERANS' AFFAIRS,
HEARING ON DEPLOYMENT RESPIRATORY ILLNESS

"Disabling respiratory illnesses following deployment"
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Chairman Isakson, Ranking Member Tester, and members of the Committee, thank you for the opportunity to testify today. My comments today relate to a cohort of United States service members with permanent respiratory impairment following service in Iraq and Afghanistan. I am here to advocate for improved respiratory evaluations and disability benefits for those affected.

Background

I began seeing soldiers with unexplained shortness of breath in 2004 following their deployments in support of Operation Iraqi Freedom. All were physically fit at the time of deployment but were quite short of breath on return. They were incapable of completing their two-mile runs within regulation time which meant that they no longer met Army physical fitness standards. Ft. Campbell referred dozens of similarly affected soldiers to Vanderbilt University Medical Center and as a result we became leaders in evaluating and understanding this condition.

The soldiers referred underwent standard testing, including chest radiographs, pulmonary function testing and exercise studies, all of which were normal or near normal and therefore failed to explain their exercise limitation. This led us to perform surgical lung biopsies, which consistently exhibited characteristics of toxic inhalation. Most of the biopsies demonstrated a condition known as constrictive bronchiolitis affecting the small airways, but there were multiple other pathologic features consistent with toxic inhalation. You may wonder why the earlier studies failed to detect these changes. The answer is that diseases affecting the small airways are frequently missed with non-invasive tests and are diagnosed only with biopsy.

Performing surgical biopsies in patients with normal pre-operative testing was unconventional but the stories of these deployers were striking. All faced dismissal from the military with a label of "unexplained shortness of breath," which does not qualify as a diagnosis and therefore does not meet a standard for disability. The biopsies established a connection between the symptoms

of deployers and a shared history of exposures in Iraq and Afghanistan. The results of our initial eighty patients were published in the *New England Journal of Medicine* in August 2011[1].

Vanderbilt University Medical Center has now evaluated over 250 deployers with unexplained shortness of breath. Approximately 100 of them have had surgical lung biopsies, all of which were abnormal. Other major academic centers have reported similar biopsy results.[2] The DoD STAMPEDE study reported that standard clinical evaluations fail to explain respiratory complaints over 40% of the time.[3] The patients in this study were very similar to those studied at Vanderbilt, but none of them underwent biopsy.

Almost three million service members have been deployed to central and southwest Asia since 2001. Many of those deployed report frequent and complex hazardous inhalational exposures. The DoD surveyed multiple sites in Iraq and Afghanistan and consistently found airborne particulate matter levels ($PM_{2.5}$) well above safe standards as established by both DoD and EPA.[4] Elevated particulate matter is considered a standard for assessing air quality and is associated with increased risk for pulmonary and cardiovascular diseases[5]. The sources contributing to elevated particulate levels came from a combination of geologic dusts, and human sources such as burning waste, local industry, battle field smoke and vehicle exhaust. The National Academy of Sciences has emphasized the importance of considering the health effects associated with high particulate matter exposure in Iraq and Afghanistan.[6]

A large number of deployers report respiratory symptoms associated with deployment[7,8]. Some of them are easily assessed and meet criteria for straight forward diagnoses such as allergic rhinitis, sinusitis and asthma[10]. However, many of the patients referred to Vanderbilt had been dismissed by other clinicians who had limited experience with this presentation and misinterpreted initial normal testing results. The absence of a diagnosis was unsettling to those affected. They required sophisticated diagnostic evaluations by professionals with knowledge of their exposures and the spectrum of illnesses encountered with such exposures.

RECOMMENDATION

This brings us to the two issues that I would like to raise related to unexplained respiratory symptoms post deployment. The first is how to best medically evaluate those with this presentation. While surgical biopsies may explain symptoms, performing biopsies on a routine basis is not practical; they are invasive and expensive. They may, however, provide clarity for Veterans whose symptoms are unrelenting and severe enough to end their military service and whose symptoms may have been dismissed by previous providers.

The DoD and VA should consider designating Centers of Excellence to evaluate deployers with unexplained shortness of breath. These centers would establish standard protocols for evaluating disabling respiratory symptoms, determine who may need surgical lung biopsy and who may be eligible for a presumptive diagnosis of deployment related lung injury. Centers of Excellence would provide leadership in the area of research to identify and mitigate the causes of lung injury for this group of service members.

The second issue relates to disability benefits for deployers who have been diagnosed with a deployment related lung disease. As noted earlier, Vanderbilt has performed surgical lung biopsies in over 100 deployers. Those who were actively serving were medically boarded out of the military with inconsistent disability ratings (10% - 100%). Those who applied for VA disability benefits were usually denied a rating due to their normal pulmonary function tests. The current VA standard does not allow a disability rating for Veterans with biopsies showing inhalation related lung injury when pulmonary function tests are normal. This is inconsistent with the report from the US Defense Health Board, which states that pulmonary function testing usually fails to detect small airways disease[9].

I have seen several patients who received one rating from the DoD only to have it downgraded by the VA. I have seen patients who have received a rating for constrictive bronchiolitis only to have their rating reduced at a later date without explanation. This is despite that fact that this condition does not resolve spontaneously and has no known effective treatment. We need to re-define the disability criteria for our service members and Veterans with deployment related respiratory disease.

Patients with deployment related airways disease represent a unique group of Veterans. While this injury may not be as noticeable as loss of limb, respiratory disorders are associated with lifetime limitation. It has been 10 years since I first presented our preliminary data to this committee. I hope that it is evident that this issue is not a transient one for our Veterans and that too many of them with this disorder feel that they are not receiving proper health care and appropriate disability benefits.

Thank you for your attention and I would be glad to answer any questions.

REFERENCES:

1. King MS, Eisenberg R, Newman JH, Tolle JJ, Harrell FE Jr, Ninan M, Miller RF, et al. Constrictive bronchiolitis in soldiers returning from Iraq and Afghanistan. *N Engl J Med*. 2011;365:222–230.
2. Garshick E, Miller R, et al. Respiratory Health after Military Service in Southwest Asia and Afghanistan: An Official American Thoracic Society Workshop Report. *Ann Am Thoracic Soc.* 2019 16(8):937-946.
3. Morris MJ, Dodson DW, Lucero PF, Haislip GD, Gallup RA, Nicholson KL, et al. Study of Active Duty Military for Pulmonary Disease Related to Environmental Deployment Exposures (STAMPEDE). *Am J Respir Crit Care Med.* 2014;190:77–84.
4. National Research Council. Review of the Department of Defense enhanced particulate matter surveillance program report. Appendix D - Final report of the Department of Defense enhanced particulate matter surveillance program. Washington, DC: National Academies Press; 2010.
5. Brook RD, Rajagopalan S, Pope CA 3rd, et al. Particulate matter air pollution and cardiovascular disease: an update to the scientific statement from the American Heart Association. *Circulation.* 2010;121(21):2331-2378.

6. Institute of Medicine, Board on the Health of Select Populations, Committee on the Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan. Long-term health consequences of exposure to burn pits in Iraq and Afghanistan. Washington, DC: National Academies Press; 2011.
7. Rivera AC, Powell TM, Boyko EJ, Lee RU, Faix DJ, Luxton DD, et al.; Millennium Cohort Study Team. New-onset asthma and combat deployment: findings from the Millennium Cohort Study. *Am J Epidemiol*. 2018;187:2136–2144.
8. Falvo MJ, Osinubi OY, Sotolongo AM, Helmer DA. Airborne hazards exposure and respiratory health of Iraq and Afghanistan veterans. *Epid Rev.* 2015;37:116-130.
9. United States Defense Health Board Report: Deployment Pulmonary Health, Feb 11, 2015.
10. Krefft SD, Meehan R, Rose CS. Emerging spectrum of deployment-related respiratory diseases. *Curr Opin Pulm Med.* 2015;21(2):185-92.

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