Airborne Hazards

WHAT DO PROVIDERS NEED TO KNOW?

Many Veterans are concerned about their exposure to airborne hazards from deployments in general, and specifically to those of Southwest Asia, including Iraq and Afghanistan. Airborne hazards include particulate matter that may come from a variety of sources (see sidebar on next page). Particulate matter can consist of combustion particles, organic chemicals, metals, and soil and dust particles, some of which are known to have adverse health effects. Many Veterans have heard about the studies done on airborne hazard concerns so it is important that providers know what these studies say about the potential for short or longer term health effects. This fact sheet summarizes those studies and discusses how a provider can best address a Veterans health concerns.

WHAT IS KNOWN ABOUT AIRBORNE HAZARDS EXPOSURES?

Particulate matter levels in Iraq and Afghanistan are very high, often exceeding military and occupational guidelines, but an association between respiratory symptoms and/or disease remains to be established. It is now, however, increasingly recognized that deployment to Iraq or Afghanistan may be a risk factor for airway disease. In support, high rates of respiratory illness (up to 70%) have been reported during deployment, and increased respiratory system medical encounters have been reported after deployment. Additionally, military personnel deployed to Iraq or Afghanistan have a greater risk of subsequent respiratory conditions, including new- onset asthma, in comparison to non-deployers.

However, this increased risk of new-onset asthma among deployers appears to be present only in those who report combat experience, suggesting that non-deployment factors must also be considered. These non-deployment factors may explain why an association between respiratory symptoms and/or function and cummulative deployment length is observed in some studies, but not others.

Health effects related to specific airborne hazards exposures, such as smoke from open burn pits, have also been studied with mixed findings. In a large cohort study, investigators did not observe an increased risk for respiratory outcomes among military personnel deployed within three or five miles of documented burn pits. Conversely, self-reported burn pit exposure was associated with a higher incidence of cardiorespiratory conditions among participants of the Airborne Hazards and Open Burn Pit Registry (see the next page for details on the registry). Smoke from burn pits was also implicated in a case series of deployed soldiers with constrictive bronchiolitis who were evaluated for decreased exercise performance in the context of minimal objective pulmonary function or radiographic findings. These mixed findings may likely reflect different study designs, but also underscores the challenges of quantifying specific exposures, like burn pits, that have occurred in the past. However, significant efforts are currently underway to more objectively assess prior exposure during deployment. Supported through VA's Cooperative Studies Program (https://clinicaltrials.gov/study/NCT02825654), researchers are using NASA satellite data to reconstruct exposure to particulate matter during deployment to better understand this potential relationship. The exposure profile of deployed personnel, i.e. high particulate matter exposure over a moderate duration, is very unique and therefore lacks comparable literature.

Unfortunately, this means that the optimal diagnostic approach for post-deployment respiratory symptoms has not been established. Some studies have found that the overwhelming majority (60-80%) of military personnel and Veterans seeking care for respiratory symptoms post- deployment have normal findings on traditional lung function testing like spirometry. It is important to know that at this point, there is enough evidence to warrant heightened clinical attention to deployed military personnel who report significant cardiorespiratory symptoms, particularly rapidly progressing exertional dyspnea, even though they may have normal lung function tests and imaging studies. Efforts are underway to identify new approaches to evaluating dyspnea, including novel techniques to assess the small airways and radiological imaging. These efforts are warranted as VA medical data reports an increasing prevalence of asthma, COPD, and interstitial lung disease in Iraq and Afghanistan Veterans nationally.

CLINICAL RESEARCH ON AIRBORNE HAZARDS EXPOSURE

In 2020 a detailed report published by National Academy of Science, Engineering and Medicine (NASEM), entitled "Respiratory Health Effects of Airborne Hazards Exposures in the Southwest Asia Theater of Military Operations", reviewed literature related to respiratory health and deployment.

Based on the available literature, the NASEM committee did conclude that deployment to South West Asia is associated with respiratory symptoms. However, the committee was unable to conclude that deployment was associated with specific respiratory diagnoses due to limited available evidence in service members and Veterans.

The NASEM also concluded that due to the limitations of research conducted in studies of past years, there was insufficient evidence to support a connection between exposure and any respiratory conditions. The main limitations of studies included in this review were that there was no available objective information on exposure available (studies in progress are addressing this) and that many published studies on deployed individuals lack control groups for comparison.Importantly, the NASEM also concluded that future research will be critical in this area.

POTENTIAL SOURCES OF POTENTIAL AIRBORNE HAZARDS EXPOSURE

- Combustion of solid wastes
- Smoke from fires, explosions, and burning oil wells
- Dust and sand particles
- Industrial and ambient air pollution
- Aircraft and automobile engine exhaust.

AIRBORNE HAZARDS & OPEN BURN PIT REGISTRY

Public Law 112-260 from 2013 required the Department of Veterans Affairs (VA) to implement the Airborne Hazards and Open Burn Pit Registry. On August, 1 2024, the VA and U.S. Department of Defense (DoD) announced critical updates to the Registry. This redesigned version of the Registry incorporates extensive Veteran feedback, expands participation criteria, establishes auto enrollment, and simplifies participation requirements.

- Veterans and service members (living or deceased) who meet criteria based on DoD records are automatically enrolled in the registry. To learn more about the participation criteria visit: https://www.publichealth.va.gov/exposures/burnpits/registry.asp
- Veterans can check their status by contacting their local Environmental Health Coordinator. Visit https://www.publichealth.va.gov/exposures/coordinators.asp
- Veterans are encouraged to participate in the registry to enable VA to identify and research health challenges of Veterans and service members who were exposed to airborne hazards and burn pits during their military service; however, they may opt out of the registry by visiting https://vethome.va.gov/BurnPitRegistryOptOut/

Veteran and Service members' participation in the Registry is critical. Over time, the knowledge gained through this research will be used to fuel advancements in treatments, more precise predictive medicine, and targeted proactive care. To learn more about the Airborne Hazards and Open Burn Pit Registry visit https://www.publichealth.va.gov/exposures/burnpits/registry.asp

WHAT SPECIALTY CONSULTATIONS ARE WARRANTED?

The decision to have specialty evaluations should be based on each Veteran's symptoms, findings on initial evaluation, the clinical experience and expertise of the primary care team. Some specialty consultations that may be of relevance and available at a Veteran's local VA health care facility include: pulmonary, allergy/immunology, and ear, nose, and throat.

Specialty consultations may result in additional medical assessments, such as full pulmonary function tests with lung volumes and diffusion capacity tests (DLCO), Methacholine challenge test, high-resolution chest CT scan, assessment of vocal cord function, cardiopulmonary exercise tests, and in some selected cases, bronchoscopy or lung biopsy, even in the context of normal lung function tests and radiographic findings.

After a local evaluation is completed, some patients may still have complex, difficult-to-diagnose or medically unexplained health concerns related to airborne hazards or other deployment-related exposures. For these patients, consultation with the War Related Illness and Injury Study Center (WRIISC) might be appropriate. WRIISC information can be found at https://www.warrelatedillness.va.gov/

AIRBORNE HAZARDS AND BURN PITS CENTER OF EXCELLENCE

The Airborne Hazards Center of Excellence at the NJ WRIISC, established in 2013, was officially recognized by Congress and the President in Public Law 115-929 as a VA Center of Excellence. Designated as the Airborne Hazards and Burn Pits Center of Excellence (AHBPCE) in May 2019, the Center conducts clinical and translational research, and disseminates education products and best practices related to airborne hazards and burn pits.

Clinicians at the AHBPCE work in collaboration with the Post Deployment Cardiopulmonary Evaluation Network (PDCEN) to screen the Airborne Hazards and Open Burn Pit Registry to identify Veterans with specific reports of respiratory health concerns. Selected Veterans are then invited to participate in an in-person assessment at either the Center of Excellence or the nearest PDCEN site.

The Center of Excellence's role is to identify possible conditions resulting from a Veteran's evaluation and make management recommendations. These findings and recommendations are provided to the Veteran and their primary care provider for any follow-up management and care. For more information detailed on the AHBCE visit their website: https://www.warrelatedillness.va.gov/WARRELATEDILLNESS/AHBPCE/index.asp

Talking about Airborne Hazards Exposures and Health Concerns

Health risk communication is a paradigm of communication that emphasizes the importance of building trust through active listening and empathy, recognizing the relevance of perceptions of possible harm from exposures, and the uncertainty often inherent in determining the magnitude and extent of exposure, relationship between exposures and possible health efects, specific medical diagnosis, and prognosis.

It is essential that the health care provider listens to and respects Veterans' perspective about their deploymentrelated exposures and the health concerns. Evaluating the relationship between airborne hazards exposures and specific health outcomes is a complex process. The clinical and scientific data is evolving and there are still many uncertainties about the potential long-term health efects from these exposures.

By taking the time to listen to the Veteran's concerns and engaging in a clinically relevant discussion, a provider can review with the Veteran the current gaps in clinical knowledge and current diferences in scientific opinion, and in so doing create a rapport and gain the Veteran's trust. This will foster a positive therapeutic relationship between the Veteran and provider, enhance the shared decision making process about appropriate next steps in the clinical management of the Veteran's health, and likely improve the Veteran's overall experience and satisfaction with the clinical interaction.

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