



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 cumulative 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/ct2/show/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. 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 STUDIES ON AIRBORNE HAZARDS EXPOSURE

Associations with Deployment

- Respiratory symptoms post-deployment are common
 - 7 of 8 studies show a relationship between deployment and respiratory symptoms
- Asthma
 - 6 studies show a relationship between asthma and deployment
 - Half relied on self-report, including a study from the registry
 - 5 studies show no relationship between asthma and deployment
 - 3 of 5 studies relied on self report
 - 1 null study did report increasing prevalence across VA
- Chronic Obstructive Diseases:
 - 3 studies show a relationship between chronic obstructive diseases and deployment
 - One study relied on self report
 - 5 studies found no relationship
 - 3 of 5 studies relied on self report
 - 1 null study did, however, report increasing prevalence of COPD across VHA

Veterans' Health Administration (VHA) Health Visits

- From 2004 – 2007, a single VA medical center found an increase in asthma diagnoses that was greater in deployers than non-deployers
- From 2002 – 2011, there was an increase in the occurrence of asthma and COPD across VHA after accounting for differences in demographics, smoking status, and traumatic brain injury
- From 2001 – 2010, over 25,000 Iraq/Afghanistan Veterans sought care at a VA within one year post-deployment and had greater than two encounters for a respiratory diagnosis

Spirometry (a test that measures lung function) is largely within normal limits

- 75% normal in Veterans
- 64% normal in active duty personnel

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
- Air craft 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** (registry):

1. To be enrolled in the registry, Veterans and Service members must complete an online self-assessment health questionnaire. The registry questionnaire is available at: <https://veteran.mobilehealth.va.gov/AHBurnPitRegistry/#page/home>
For more information about the questionnaire, visit <https://www.publichealth.va.gov/exposures/burnpits/registry.asp>. Go to the Resources box to find the PDF on steps to completing the registry in English and Spanish.
2. After filling out the self-assessment questionnaire, individuals can request an in-person medical evaluation at VA at no cost.
 - Veterans, National Guard, or Reserves not on current orders can request a medical evaluation by contacting an Environmental Health Coordinator at their local VA health care facility. Find a coordinator at <https://www.publichealth.va.gov/exposures/coordinators.asp>
 - Active duty service members should go to their local Military Treatment Facility to request an exam

VA works to improve the registry questionnaire based on recommendations from the National Academies of Sciences, Engineering, and Medicine. Find a summary of self-reported data, updated every six months, on the bottom of web page <https://www.publichealth.va.gov/exposures/burnpits/registry.asp>





CLINICAL ASSESSMENT TOOL FOR AIRBORNE HAZARDS EXPOSURES

A registry initial clinical assessment template has been developed to provide a standardized framework for VA health care providers to **document the in-person clinical evaluation component of the registry**. Providers must use this template to obtain credit for completing the AHOBPR exam. A GENESIS template is being developed for this exam as facilities transition to using GENESIS for medical documentation.

The clinical template is a tool that helps a provider conduct an appropriately detailed medical evaluation and engage in conversation with Veterans about their symptoms and health concerns related to their deployment-related exposures. Use of the clinical template will also help to facilitate better understanding of the relationship between airborne hazards exposure and Veterans' health concerns.

- The registry clinical template resides in the VA's computerized patient record system (CPRS). It provides a link to each Veteran's registry Self-Assessment information. (The provider has the opportunity to review the Veteran's responses to the completed questionnaire in the CPRS template or through the VA's *Airborne Hazards and Open Burn Pit Provider Portal* described below.)
- The template allows the clinician to focus on capturing clinically-relevant information in a systematic, patient-friendly, and efficient manner during the initial in-person clinical assessment.
- Components of the initial evaluation in the template include: **Chief Complaint, History of Present Illness, Physical Examination, Diagnostic Work-up to date, and Assessment and Plan.**

Using the template in CPRS allows a provider to have ready access to relevant diagnostic test results already available in the patient's medical records which will guide the provider on the appropriate next steps in the Veteran's clinical management.

To access a Veteran's registry questionnaire responses through the VA's **Airborne Hazards and Open Burn Pit Provider Portal**, visit <https://staff.mobilehealth.va.gov/AHBurnPitRegistry/#page/home>. CPRS/VISTA log-in and password can be used to log in and search for a patient using their name and last four digits of their social security number. Responses to the questionnaire can be reviewed in advance to facilitate visit effectiveness and is recommended.

★ For important Updates, Reports, and information, visit: <http://www.publichealth.va.gov/exposures/burnpits/registry.asp>

★ What is an Appropriate Initial Diagnostic Evaluation?

Currently, there are no specific biomarkers of exposures or disease associated with military service in Iraq and Afghanistan. Diagnostic evaluations should be individualized and tailored to each Veteran's specific symptoms and health concerns.

For example, for a Veteran who presents with chronic respiratory symptoms, such as wheezing, chronic cough or dyspnea with exertion, a provider may consider obtaining the following:

- Complete blood count (to rule out anemia)
- Chest X-ray with posterior-anterior and lateral views (to rule out significant structural abnormalities)
- Pulse oximetry (to assess for hypoxia)
- Spirometry with and without bronchodilator (to assess pulmonary function and reversibility of bronchoconstriction).

Other symptoms attributed to airborne hazards exposures should be appropriately worked-up according to accepted clinical standards.



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 <http://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 focusing on a range of health concerns including respiratory concerns, unexplained shortness of breath (dyspnea), among other health outcomes.

★ 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 effects, specific medical diagnosis, and prognosis.

It is essential that the health care provider listens to and respects Veterans' perspective about their deployment-related 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 effects 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 differences 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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