Airborne Hazards and Open Burn Pit Registry
Information for Health Care Providers

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Overview

Burn pits were used in Operation Enduring Freedom and Operation Iraqi Freedom to dispose of all sorts of solid wastes. Material burned in some locations, especially early in the conflict, may have included human and medical waste, as well as substances known to generate carcinogens and other harmful substances through the combustion process. In addition, elevated levels of particulate matter (PM), including dust from the desert and from industrial activities and other man-made sources, contributed to poor air quality in many locations. Many deployed individuals wonder if these exposures have affected their long-term health.

In 2011, the Institute of Medicine (IOM) reviewed the scientific literature related to the possibility of adverse long-term health effects of open burn pits. The report, which can be found at http://www.nap.edu/catalog.php?record_id=13209, noted U.S. Department of Defense (DoD) air quality monitoring data measured levels of PM higher than generally considered safe by U.S. regulatory agencies. It also cited work linking high PM levels to cardiopulmonary effects, particularly in individuals at increased risk due to pre-existing conditions such as asthma and emphysema. The IOM concluded there is only limited evidence suggestive "of an association between exposure to combustion products and reduced pulmonary function in these populations."

Purpose of the Airborne Hazards and Open Burn Pit Registry:

- To monitor and determine potential health effects from exposure to airborne environmental hazards in Service members and Veterans and to generate hypotheses about health information.
- View Questionnaire

Eligibility:

- Service members and Veterans who deployed to contingency operations in the Southwest Asia theater of operations at any time on or after August 2, 1990, or Afghanistan or Djibouti on or after September 11, 2001. These regions include the following countries, bodies of water, and the airspace above these locations:
  Iraq, Afghanistan, Kuwait, Saudi Arabia, Bahrain, Djibouti, Gulf of Aden, Gulf of Oman, Oman, Qatar, United Arab Emirates, Waters of the Persian Gulf, Arabian Sea, and Red Sea, and the air space above these regions.

- Service members and Veterans must complete a web-based questionnaire developed for this registry.

Further medical evaluation is available free of charge at:

- DoD Medical Treatment Facilities for Active Duty Service members, mobilized Reserves and Guard, or
- Department of Veterans Affairs Medical Centers for Veterans, nonmobilized members of the Reserves and Guard.

General information

- VHA Information Letter: Guidance for Administration & Clinical Operation of Airborne Hazards & Open Burn Pit Registry; Clinical Identification/Evaluation of Respiratory Illnesses After Deployment to SW Asia, Djibouti, Afghanistan.
- An Airborne Hazards and Open Burn Pit Registry (AH&OBPR) Overview, 2014-0481 intended for physicians, nurse practitioners, and physicians assistants will soon be available on MHS Learn and is approved for 1 AMA PRA Category 1 credit™: <https://mhslearn.csd.disa.mil/ilearn/en/learner/mhs/portal/home.jsp>
- A Defense Connect Online Overview intended for physicians, nurse practitioners, and physicians assistants will soon be available and is approved for 1 AMA PRA Category 1 credit™. This course will cover the same information as the MHS Learn course above.
- Institute of Medicine Report: Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan - In 2011, the Institute of Medicine reviewed the scientific literature related to the possibility of adverse long-term health effects of open burn pits. The report noted U.S. Department of Defense air quality monitoring data measured levels of particulate matter (PM) higher than generally considered safe by U.S. regulatory agencies. It also cited work linking high PM levels to cardiopulmonary effects, particularly in individuals at increased risk due to pre-existing conditions such as asthma and emphysema. They concluded there is only limited evidence suggestive "of an association between exposure to combustion products and reduced pulmonary function in these populations."
- Federal Register: Initial Research on the Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan
- Department of Veterans Affairs: Studies on Possible Health Effects of Burn Pits – A list of studies on the health effects of burn pits.
- U.S. Army Public Health Command (USAPHC) Fact Sheet: Frequently Asked Questions about Burn Pit Exposures
- Department of Veterans Affairs (VA) Introduction to Airborne Hazards for Providers (Attachment 1)
- VA Pre-Participation Fact Sheet
- VA Fact Sheet for Servicemember Registry Participants (Attachment 2)
- VA Frequently Asked Questions
- VA's Action Plan: Burn Pits and Airborne Hazards
- Defense Health Agency (DHA) Fact Sheets - (Attachment 3)
- USAPHC Fact Sheet: Summary of evidence statement: Chronic Respiratory Conditions and Military Deployment
- USAPHC Health Information Products – Printed versions of a poster and a tip card will soon be available free of change.

Airborne hazards and particulate matter

Burn pits were used to dispose of all sorts of solid wastes: human and medical waste, substances known to generate carcinogens, and other harmful substances. In addition, elevated levels of particulate matter from industrial activities and other man-made and natural sources contributed to poor air quality in many locations.

- USAPHC Fact Sheet: Particulate Matter (PM) Air Pollution Exposures during Military Deployments
- Final Report: Department of Defense Enhanced Particulate Matter Surveillance Program
- USAPHC Fact Sheet: Health Implications of Deployment Exposures: Diesel and JP-8 Engine Exhaust
- USAPHC Fact Sheet: Documentation of Deployment Exposures and the Periodic Occupational Environmental Monitoring Summary (POEMS) Information for Preventive Medicine Personnel
- USAPHC Technical Information Paper: The Periodic Occupational and Environmental Monitoring Summary (POEMS)—History, Intent, and Relationship to Individual Exposures and Health Outcomes
- USAPHC Fact Sheet: Fecal Matter in the Air - What do we Know?
- USAPHC Fact Sheet: Solid Waste Burning Consolidated (new for 2014) - Available soon
- Abraham JH, Baird CP. A Case-Crossover Study of Ambient Particulate Matter and Cardiovascular and Respiratory Medical Encounters Among US Military Personnel Deployed to Southwest Asia. J Occup Environ Med 54:733-739, 2012 (abstract)
- EPA/600/R-08/139F, Integrated Science Assessment for Particulate Matter. National Center for Environmental Assessment – RTP Division, ORD, US EPA, December 2009.

Clinical concerns

There are published reports of higher rates of self-reported pulmonary symptoms, higher rates of asthma, and rare, unexpected conditions (e.g., eosinophilic pneumonia and constrictive bronchiolitis) among Service members deployed to Southwest Asia. However, there are also publications that report finding no elevation in disease or symptom-reporting. Given the different methods and conclusions of these studies, it is still unclear exactly what problems deployed individuals may develop or how widespread these problems are. However, current evidence does warrant heightened clinical attention to individuals reporting cardiopulmonary symptoms.

- Borden Algorithm: Clinical Considerations - Patients with normal spirometry (Attachment 4)
- Schematic of DoD Medical Follow-up Program for VA Airborne Hazards and Open Burn Pit Registry (Attachment 5)
- Hamilton JA, Morris MJ. Evaluation of deployment related respiratory symptoms. Federal Practitioner. 2014 Mar; 12S-17S
- USAPHC Fact Sheet: Chronic Respiratory Conditions and Military Deployment
- USAPHC Fact Sheet: Acute Eosinophilic Pneumonia (AEP) and New Onset Smoking
- VA Fact Sheet for Service members and their Families: Burn Pits (Trash and Human Waste Exposures)
- Smith B, Wong CA, Smith TC, Boyko EJ, Gackstetter GD, Ryan MAK. Newly Reported Respiratory Symptoms and Conditions Among Military Personnel Deployed to Iraq and Afghanistan: A Prospective Population-based Study. Am J of Epidemiol 170:1433-1442, 2009 (abstract)
- Szema AM, Peters MC, Weissinger KM, Gagliano CA, Chen JJ. New-onset Asthma among Soldiers Serving in Iraq and Afghanistan. Allergy Asthma Proceedings 31:e67-e71, 2010 (abstract)
- Shorr AF, Scoville SL, Cersovsky SB, Shanks GD, Ockenhouse CF, Smoak BL, Carr WW, Petruccelli BP. Acute eosinophilic pneumonia among US Military personnel deployed in or near Iraq. JAMA. 2004 Dec 22; 292 (24):2997-3005
- King MS, Eisenberg R, Newman JH, Tolle JJ, Harrell FE, et al. Constrictive Bronchiolitis in Soldiers Returning from Iraq and Afghanistan. N Engl J Med 365:222-230, 2011
- Kreiss K. Occupational causes of constrictive bronchiolitis. Curr Opin Allergy Clin Immunol. 2013 Apr; 13 (2):167-72 (abstract)
- Santos SL, Helmer D, Teichman R. Risk communication in deployment-related exposure concerns. J Occup Environ Med. 2012 Jun; 54 (6):752-9 (abstract)
- Rose C, Abraham J, Harkins D, Miller R, Morris M, et al. Overview and Recommendations for Medical Screening and Diagnostic Evaluation for Postdeployment Lung Disease in Returning US Warfighters. J Occup Environ Med 54:746-751, 2012 (abstract)
- Morris MJ, Lucero PF, Zanders TB, Zacher LL. Diagnosis and management of chronic lung disease in deployed military personnel. Ther Adv Respir Dis. 2013 Aug; 7 (4):235-45 (abstract)

Location-specific information

- USAPHC Fact Sheet: Joint Base Balad Burn Pit
- USAPHC Fact Sheet: Bagram Theater Internment Facility
- USAPHC Fact Sheet: Medical Assessment of Air Quality at Narhwan Brick Factory and FOB Hammer in Iraq (2008-9)
- Health Assessment of 2003 Al Mishraq Sulfur Fire Incident http://phc.amedd.army.mil/PHC%20Resource%20Library/SulfurFireAssessmentFS64-007-0612.pdf
- Health Assessment of 2003 Qarmat Ali Water Treatment Plant Sodium Dichromate Incident Status Update: May 2010 http://phc.amedd.army.mil/PHC%20Resource%20Library/QarmatAliWTPChromiumAssessmentMay2010.pdf

Attachment 1

Department of Veterans Affairs (VA) Introduction to Airborne Hazards for Providers

Airborne Hazards and Open Burn Pit Registry

What is the Airborne Hazards and Open Burn Pit Registry?

In January 2013, Public Law 112-260[1] was enacted requiring VA to establish a burn pit registry to monitor the health of Veterans who may have been exposed to airborne hazards (e.g., air pollution), inform Veterans about the registry, and periodically notify Veterans of significant developments related to the study and treatment of conditions associated with exposures. In response, VA Office of Public Health established a registry for individuals deployed to Southwest Asia on or after August 2, 1990, or Djibouti, Africa or Afghanistan after September 11, 2001. The registry consists of a web-based self-assessment to be completed by the eligible individual.[2] Participants may schedule an optional in-person clinical evaluation by a VA provider. Up to date information about the registry and related resources is available at the Office of Public Health.

What is the concern about Airborne Hazards and Open Burn Pits?

Burn pits were used in Operation Enduring Freedom and Operation Iraqi Freedom to dispose of all sorts of solid wastes. Material may have included human and medical waste, as well as substances known to generate carcinogens and other harmful substances through the combustion process. In addition, elevated levels of particulate matter (PM) from industrial activities and other man-made and natural sources contributed to poor air quality in many locations. Many deployed individuals wonder if these exposures affected their health.

In 2011, the Institute of Medicine (IOM) reviewed the scientific literature related to the possibility of adverse long-term health effects of open burn pits. The report noted U.S. Department of Defense air quality monitoring data measured levels of PM higher than generally considered safe by U.S. regulatory agencies.[3] It also cited work linking high PM levels to cardiopulmonary effects, particularly in individuals at increased risk due to pre-existing conditions such as asthma and emphysema. The IOM concluded there is only limited evidence suggestive "of an association between exposure to combustion products and reduced pulmonary function in these populations."[4]

What are the clinical concerns?

There are published reports of higher rates of self-reported pulmonary symptoms,[5] higher rates of asthma,[6] and rare, unexpected conditions (e.g., eosinophilic pneumonia and constrictive bronchiolitis)[7,8] among Servicemembers deployed to Southwest Asia. However, there are also publications that report finding no elevation in disease or symptom-reporting.[9] Given the different methods and conclusions of these studies, it is still unclear exactly what problems deployed individuals may develop or how widespread these problems are. However, current evidence does warrant heightened clinical attention to individuals reporting cardiopulmonary symptoms.[10]

Talking about health and exposure concerns

It is essential to listen to and respect the Veteran's concerns about the exposure and possible health effects. Airborne hazards exposure and possibly associated health risks are complex issues with many uncertainties. Other risk factors may be present, such as past or current cigarette smoking, civilian occupational exposures, or other inhalation exposures, which can complicate causal attribution. The complex interplay can result in disagreement about the relative contribution of various risk factors to the current health status of a patient. It is often impossible to definitively ascertain the contribution of a particular risk factor for an individual.

By taking the time to listen to the Veteran's concerns, a provider can establish trust and rapport and assess gaps in knowledge and differences of opinion. This information can be critical for making informed decisions about possible next steps or management of health concerns. Identifying areas of agreement and focusing on risk reduction and optimization of health and function may provide a constructive way forward.

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, and the uncertainties related to extent of exposure, relationship between exposures and possible health effects, diagnostic certainty, management options, and prognosis.[11]

What initial evaluation is appropriate?

The clinician should first assess the intensity and specific focus of concern of the individual using the health risk communication approach discussed above. Patients seeking medical attention may have a variety of symptoms and exposure concerns.

At this time, there are no biomarkers specific to the environmental exposure-related health concerns of U.S. Servicemembers deployed to Southwest Asia, Afghanistan, or Djibouti. Clinicians must rely on their own evidence-based knowledge, expertise, and skills to guide a patient-centered evaluation and management. For example, for an individual with chronic lower respiratory symptoms, such as wheezing, chronic cough, or dyspnea with exertion, the following might be appropriate initially:

- a complete blood count—to rule out anemia
- posteroanterior and lateral chest radiographs—to rule out significant structural abnormalities
- pulse oximetry—to assess for hypoxia
- spirometry with bronchodilator—to assess pulmonary function and reversibility of bronchoconstriction

Other symptoms should be evaluated according to best clinical practices, as well.

What specialty consultations are warranted?

The decision to conduct specialty evaluations should be made in the context of the individual patient's concerns and symptoms, findings on initial evaluation, and the comfort level of the primary care team. The indicated specialty evaluations are considered part of the exposure evaluation and should be made available to the individual by VHA at no cost to the Veteran. Some specialties of particular relevance include:

- pulmonary (PULM)
- ear, nose and throat (ENT)
- allergy/immunology (ALL/IMM)

Consultations might result in additional assessments, such as high-resolution chest computerized tomography (CT) scan, full pulmonary function tests, assessment of vocal cord function, cardiopulmonary exercise tests, or lung biopsy.[12,13]

The Veterans Health Administration maintains the Environmental Health Program with a designated Environmental Health Coordinator and Clinician at each VA medical center. Some of these clinicians may be able to provide additional information about exposure concerns or deployment-related health issues. See a listing of Environmental Health Coordinators by facility: **http://publichealth.va.gov/exposures/coordinators.asp**. This describes how a Veteran can apply and includes information about local benefits offices if he or she wishes to initiate the process in person.
After local evaluation is completed, some patients may still have complex, difficult-to-diagnose or medically unexplained health concerns related to airborne hazards concerns or other deployment-related exposures. For these patients, consultation with the War Related Illness and Injury Study Center (WRIISC) might be appropriate.

Service connected disability

In addition, Veterans may have questions about service-connected disability benefits. The clinician should acknowledge these and can refer the Veteran to the Veterans Benefits Administration for more information.

References

1. Public Law 112-260.
2. Department of Veterans Affairs Notice: Initial Research on the long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan, Federal Register, Vol 78. No 23, Monday February 4, 2013.
3. EPA/600/R-08/139F Integrated Science Assessment for Particulate Matter. National Center for Environmental Assessment – RTP Division, ORD, US EPA, December 2009.
4. IOM, "Long-term health consequences of exposure to burn pits in Iraq and Afghanistan" 2001, Washington, DC: The National Academies Press.
5. Smith B, Wong CA, Smith TC, Boyko EJ, Gackstetter GD, Ryan MAK. Newly Reported Respiratory Symptoms and Conditions Among Military Personnel Deployed to Iraq and Afghanistan: A Prospective Population-based Study. Am J of Epidemiol 170:1433-1442, 2009.
6. Szema AM, Peters MC, Weissinger KM, Gagliano CA, Chen JJ. New-onset Asthma Among Soldiers Serving in Iraq and Afghanistan. Allergy Asthma Proceedings 31:e67-e71, 2010.
7. Shorr AF, Scoville SL, Cersovsky SB, Shanks GD, Ockenhouse CF, Smoak BL, Carr WW, Petruccelli BP. Acute eosinophilic pneumonia among US Military personnel deployed in or near Iraq. JAMA. 2004 Dec 22; 292 (24):2997-3005.
8. King MS, Eisenberg R, Newman JH, Tolle JJ, Harrell FE, et al. Constrictive Bronchiolitis in Soldiers Returning from Iraq and Afghanistan. N Engl J Med 365:222-230, 2011.
9. Abraham JH, Baird CP. A Case-Crossover Study of Ambient Particulate Matter and Cardiovascular and Respiratory Medical Encounters Among US Military Personnel Deployed to Southwest Asia. J Occup Environ Med 54:733-739, 2012.
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11. Santos SL, Helmer D, Teichman R. Risk communication in deployment-related exposure concerns. J Occup Environ Med. 2012 Jun; 54 (6):752-9.
12. Rose C, Abraham J, Harkins D, Miller R, Morris M, et al. Overview and Recommendations for Medical Screening and Diagnostic Evaluation for Postdeployment Lung Disease in Returning US Warfighters. J Occup Environ Med 54:746-751, 2012.
13. Morris MJ, Lucero PF, Zanders TB, Zacher LL. Diagnosis and management of chronic lung disease in deployed military personnel. Ther Adv Respir Dis. 2013 Aug; 7 (4):235-45.

Attachment 2

VA Fact Sheet for Servicemember Registry Participants

Airborne Hazards and Open Burn Pit Registry

Research:

Servicemembers who were close to burn pit smoke or exposed for longer periods may be at greater risk for health problems. Individual health effects will vary and may depend on a number of other factors such as the kind of waste being burned and wind direction. There is not enough medical or scientific information to conclude that short- or long-term health effects have occured. The Department of Veterans Affairs (VA) continues to study the health of deployed Veterans. The high level of fine dust and pollution common in Iraq and Afghanistan may pose a greater danger for respiratory illnesses than exposure to burn pits, according to a 2011 Institute of Medicine report.

VA and the Department of Defense (DoD) have developed a joint action plan and are now working on initiatives that address clinical issues, the need for long-term studies, outreach, and clinician education of health effects related to airborne hazards. VA will update registry participants of future developments as information becomes available.

Registry Usage:

VA and DoD will use information from the registry along with information from other studies to ensure Veterans and Servicemembers participating in the registry receive outreach and health communication materials.

Additionally, the registry will help VA and DoD track the health of Veterans and information gathered in the registry may contribute to future research studies of the health of Veterans. The registry is not a means to apply for other VA benefits, such as disability compensation. The disability compensation process is separate from the registry.

The Southwest Asia theater of operations includes the following locations after August 2, 1990:

Iraq, Kuwait, Saudi Arabia, Bahrain, Gulf of Aden, Gulf of Oman, Oman, Qatar, United Arab Emirates, Waters of the Persian Gulf, Arabian Sea, Red Sea, and the airspace above these locations. Although not in the Southwest Asia theater of operations, Afghanistan and Djibouti are included within the scope of the registry for individuals who deployed there on or after September 11, 2001.

Medical Evaluations:

If you are experiencing any urgent symptoms, such as difficulty breathing or chest pains, you should go to the nearest emergency room, call 911, or contact your primary care manager for instructions.

Active Duty (Active Duty Servicemembers, including activated Reserve and Guard personnel):
If you have any health or exposure concerns, you may contact your local military hospital or clinic to schedule an appointment for a voluntary medical evaluation. You should state that you are calling for an appointment specifically to address "health concerns related to the Airborne Hazards and Open Burn Pit Registry exposures." DoD will provide you with a voluntary medical evaluation upon request. Please note a medical evaluation is **NOT** required to be in the registry.

Reserve Component members (Army and Air National Guard, and Reserve):
Whether discharged or still serving, these individuals will be managed by VA in the same manner as other Veterans. VA will provide a voluntary medical evaluation upon request.

If you are a Veteran or inactive/separated National Guard or Reservist, and you **are enrolled in the VA health care system**, and would like to schedule an initial no cost medical evaluation, please contact your primary care physician or Patient Aligned Care Team (PACT) to schedule an appointment for a medical evaluation.

If you are a Veteran or inactive/separated National Guard or Reservist, **are not enrolled in the VA health care system** and would like to schedule an initial no-cost medical evaluation, please contact a VA Environmental Health Coordinator (EHC) in your area by visiting this link: **http://www.publichealth.va.gov/exposures/coordinators.asp**

Resources:

Learn more: **www.publichealth.va.gov** *or call* **1-877-222-8387**

Share the registry with others: **https://veteran.mobilehealth.va.gov/AHBurnPitRegistry/**

2011 Institute of Medicine report: **http://www.iom.edu/Reports/2011/Long-Term-Health-Consequences-of-Exposure -to-Burn-Pits-in-Iraq-and-Afghanistan.aspx**

Army Public Health Command: **http://phc.amedd.army.mil**

Apply for disability compensation: **www.benefits.va.gov/compensation/**

For information on PTSD: **www.ptsd.va.gov**

Veterans Crisis Line: **1-800-273-8255**, *press 1 or text* **838255**

Attachment 3
Defense Health Agency Fact Sheet

Guide to the Airborne Hazards and Open Burn Pit Registry (AH&OBPR)
Information for Service members

About the Registry: The AH&OBPR was established by the Department of Veterans Affairs (VA) as part of the "Dignified Burial and Other Veterans' Benefits Improvement Act of 2012." The AH&OBPR is available to Veterans, Reservists, National Guard members, Coast Guard members, and Active Duty Service members who served in the Southwest Asia theater of operations on or after August 2, 1990, or in Afghanistan or Djibouti on or after September 11, 2001. The AH&OBPR will help the VA, the Department of Defense (DOD), and the U.S. Coast Guard (USCG) track the health of Veterans and Service members, and it may contribute to future research studies. By participating in the AH&OBPR, Veterans and Service members can receive formal acknowledgment from the VA, DOD and the USCG of their reported exposures and receive important health and wellness information.

What the AH&OBPR is: The registry is a way for eligible Veterans and Service members to self-report potential exposure to airborne hazards such as smoke and fumes from open burn pits; increased levels of particulate matter (PM) from exhaust, dust , and sand; and urban air pollution, by completing and submitting an on-line self-assessment questionnaire.

The VA/DoD/USCG will use information from the registry along with information from other sources and studies to ensure Veterans and Service members with exposures receive the following:

Standardized exposure questionnaire
Enhanced outreach and health communication materials
Optional initial in-person no-cost medical evaluations

What the AH&OBPR is not: The registry is not a means to apply for other benefits, such as disability compensation payments from VA. The disability compensation process is separate from the AH&OBPR. The registry is not an official medical record. Information entered in the website will not automatically be entered into your medical record.

What we know from independent scientific studies: The VA asked the Institute of Medicine (IOM) to determine the long-term health effects of exposure to burn pits in Iraq and Afghanistan. IOM published a report entitled, "Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan" in 2011. Looking at the available scientific literature for bum pits, incinerators, and other fires, the IOM concluded there was limited but suggestive evidence of an association between exposure to combustion products and reduced pulmonary function. They found insufficient evidence to associate any disease with these exposures. This report can be viewed and downloaded at no cost at http://www.nap.edu/catalog.php?record_id=13209. Information specific to Veteran's exposure is still expanding.

Department of Veterans Affairs (VA) and Department of Defense (DoD) partnership: The VA and DoD have developed an Airborne Hazards Joint Action Plan, and are now working on many initiatives involving long-term studies, clinical issues, and outreach and education associated with health issues related to airborne hazards. The VA will notify registry participants of significant future developments on these issues.

Attachment 4
Borden Algorithm: Clinical Considerations - Patients with Normal Spirometry

NORMAL SPIROMETRY	CONSIDERATIONS
Spirometry Post-BD	Review spirometry for reduction in FEV1; 12% increase Post-BD diagnostic of airway hyperactivity (AHR)
Spirometry w/symptoms	Intermittent nature of asthma may require repeat spirometry when patients are symptomatic
Chest radiograph	Will be normal in most patients; helpful to eliminate pulmonary infiltrates, effusions, or mediastinal disease
Complete blood count	Rule out anemia, especially in females
Inspiratory FVL	Review the inspiratory flow volume loop (FVL) on all spirometry exams for truncation or flattening
Exercise laryngoscopy	Presence of abnormal FVL or history of inspiratory wheezing or noisy breathing; diagnostic for vocal cord dysfunction
Bronchoprovocation testing	With normal spirometry, important to rule out underlying airway reactivity such as exercise-induced bronchospansm (EIB).
Methacholine	Most common test used for AHR with good negative predictive value; diagnostic for EIB with associated exercise symptoms
Mannitol	Newest modality with equivalence to methacholine; requires 15% decrease in FEV1
Eucapnic hyperventilation	Equivalent to methacholine for diagnosing AHR but requires 15% decrease in FEV1
Exercise spirometry	Poor predictability compared to other methods and may not reproduce symptoms in laboratory setting
Impulse oscillometry	Newer modality that measures airway resistance and may identify AHR based on reduction in post-bd values
High resolution CT	May identify subclinical lung disease, airway trapping or bronchiectasis; low diagnostic yield in this population
Cardiopulmonary exercise testing	Primarily used to assess patient's ability to exercise and measure VO2 max. Given limited reference values and low suspicion for cardiac disease, may not identify specific cause
Allergy evaluation	Consideration for allergy testing in patient with other atopic symptoms such as atopic dermatitis, allergic rhinitis
Cardiology evaluation	Very low likelihood of cardiac disease in a younger population. Referral should be based on physical exam findings
Electrocardiogram	Numerous nonspecific changes found in younger population and rarely diagnostic
Echocardiogram	Numerous nonspecific changes found in younger population and rarely diagnostic

Attachment 5

Schematic of DoD Medical Follow-up Program for VA Airborne Hazards and Open Burn Pit Registry

Registry Publicized to Active Duty Service Members (SM)*:

- VA advertisements in media, website;
- DoD communications including military websites, Facebook, Twitter;
- Military-oriented newspapers, websites;
- Communications from Services, including posters.

Service Member Accesses Website:
https://veteran.mobilehealth.va.gov/AHBurnPitRegistry

"Airborne Hazards and Open Burn Pit Registry"

- SM reviews website information;
- SM completes Self-Assessment Questionnaire;
- SM has option of printing completed questionnaire, Participation Letter, & Fact Sheet;
- Guidance in website recommends the SM schedule a medical assessment if the SM has health concerns.

If SM elects to request a medical assessment

SM calls for appointment specifically to address "health concerns related to Airborne Hazards and Open Burn Pit Registry exposures"

- Goes to medical follow-up appointment;
- Brings printout of Self-Assessment Questionnaire to appointment.

Health Care Provider:

- Determines patient's concern or chief complaint;
- Reviews questionnaire with the SM, documents pertinent positives in the medical record;
- Takes a medical history with emphasis on occupational/ environmental exposures, especially airborne hazards, and including smoking history.

If clinically indicated, Health Care Provider may:

- Perform physical exam, with focus & extent determined by symptoms &/or health concerns;
- Order diagnostics based on clinical signs/symptoms;
- Refer SM to specialist for further evaluation.

Health Care Provider should:

- Fully document encounter and any referrals;
- Record deployment-related code V70.5_6 and applicable diagnostic codes related to the visit.

*Retirees and Reserve Component personnel who are not activated will be managed by VA