# Airborne Hazards and Burn Pits: What you need to know.....

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## **PRESENTER**



#### Michelle Robertson, MD, MPH

Occupational and Environmental Physician, VA New Jersey Health Care System, War Related Illness & Injury Study Center

Michelle W. Robertson, MD, MPH is an Occupational and Environmental Medicine physician at the NJ WRIISC. Dr. Robertson provides in-person and telephonic consultations to Veterans and affiliated health care providers regarding medically unexplained symptoms and exposures of concern during military service. Dr. Robertson's other area of interest includes employing the biopsychosocial approach to health to improve quality of life and prevention of chronic disease.

Dr. Robertson is currently on Faculty at the Rutgers Robert Wood Johnson School of Medicine as a Clinical Assistant Professor in the Department of Environmental and Occupational Medicine and previously served as the Associate Director of the residency training program in Occupational and Environmental Medicine at the Rutgers-University of Medicine and Dentistry of New Jersey (UMDNJ). Dr. Robertson is board-certified by the American Board of Family Medicine in Family Practice and has completed additional training in Occupational and Environmental Medicine



# PRESENTER



Anays Sotolongo, MD

Co-Director of the Airborne Hazards and Burn Pits Center of Excellence

War Related Illness and Injury Study Center (NJ WRIISC)

As the Director of the newly acclaimed Airborne Hazards and Burn Pits Center of Excellence (AHBPCE) at the NJ WRIISC, Dr. Sotolongo provides in-person and telephonic consultations to Veterans and affiliated health care providers regarding medically unexplained respiratory symptoms of concern during military service. She's equally passionate about airway inflammation in inhalation injury.

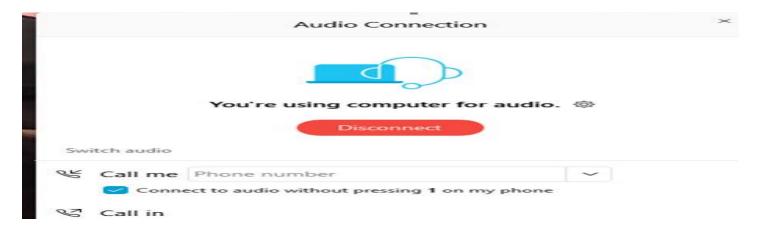
Before joining the WRIISC, Dr. Sotolongo was on Faculty at the Rutgers Robert Wood Johnson School of Medicine as an Assistant Professor in the Department of Medicine, Division of Pulmonary and Critical Care and served as the Medical Director of the Comprehensive Sleep Disorders Center at Robert Wood Johnson University Hospital in New Brunswick at the Rutgers-Robert Wood Johnson Medical School. Her professional experience also includes her work at the Environmental and Occupational Health Sciences Institute (EOHSI), as a pulmonary consultant, where she evaluated and treated first-responders in the World Trade Center Medical Monitoring and Treatment Program.

Dr. Sotolongo is board-certified by the American Board of Internal Medicine in Internal Medicine, Pulmonary, Critical Care and Sleep Medicine.



# BEFORE WE BEGIN

• Difficulty hearing??? Have WebEx directly call your telephone # as shown below.



- Questions during the presentation??? Questions will be answered during the Question & Answer Period.
  - Just jot them down in the Q&A box during the presentation; or
  - Ask them during the Q&A Period.
  - We cannot answer specific questions about your personal health concerns and information due to privacy concerns.





# PRIVACY AND SAFETY

- PLEASE DO:
- Remember that this class is for educational purposes only and not related to Compensation and Pension.
- Not share any personal health information. If you have a personal health question, please contact your healthcare provider.
- Call immediately either of the below if you are experiencing a Mental Health Issue:
- National Veterans Crisis Line 1-800-273-8255 option 1, or
- Confidential Crisis Chat @ http://www.veteranscrisisline.net,
- or Text: 838255
- or Medical emergency: call 911.





#### **VETERANS HEALTH MATTERS**

#### War Related Illness and Injury Study Center



My Health, My Care: 24/7 VAccess to VA

**BOBenefits** 

Veterans' Health Matters Podcast Series



Veterans' Health Matters is a new podcast series sponsored by the War Related Illness and Injury Study Center (WRIISC), a part of Post Deployment Health Services at the Veterans Health Administration. This series focuses on issues that are important to the healthcare community, Veterans, and their caregivers. This is your source on Veterans health because we know the importance of post-deployment health and that every Veterans' health matters!

Ongoing conflicts in the Middle East, as well as historic deployments in multiple eras, have resulted in Veterans with a range of post deployment health concerns and the need for providers to understand these concerns and utilize best practices in the identification, assessment, management, and communication of Veteran care. Veterans with complex medical conditions may benefit from a patient centered approach that is rooted in whole health and functional and integrative medicine.

Hear the WRIISC's subject matter experts provide up to date information ranging from effective communication, to information on nutrition, and much more, that can impact a Veteran's health. For providers, you'll get tips and information on improving care for our Nation's Veterans. For Veterans and their families, we hope you'll be inspired to work with your healthcare team and take charge of your own health.

Search for Veterans Health Matters and subscribe via Spreaker, Apple Podcast (iTunes), Spotify, Castbox, Deezer, Podcast Addict, Google Podcasts or another preferred streaming platform. Tune in for biweekly new episodes.\*

#### Click here for Spreaker Platform

- ▶ Episode 1 Difficult Patient/Provider Conversation (July 28, 2020)
- ▶ Episode 2 Improving Patient Provider Communication (August 11, 2020)
- ▶ Episode 3 Toxic Exposures and Gut Health (August 25, 2020)
- ▶ Episode 4 Tackling Chronic Inflammation (September 8, 2020)
- ► Episode 5 Gut Function and Health (September 22, 2020)
- ► Episode 6 Rebalancing for Wellness(October 6, 2020)
- ► Episode 7 Eliminating Unhealthy Foods (October 20, 2020)
- ► Episode 8 Detoxifying: A Nutritional Body Cleanse (November 3, 2020)
- ► Episode 9 Mighty Mitochondria (November 17, 2020)
- ► Episode 10 Essential Food Nutrients (December 1, 2020)
- ▶ Episode 11 Wearable Technology Trends (December 15, 2020)
- ▶ Episode 12 War Related Injury & Illness Study Center (December 29, 2020)

https://www.warrelatedillness.va.gov/WARRELAT EDILLNESS/education/v hmpodcast.asp

Twelve (12) episodes now available on your streaming platforms including iHeart, iTunes, and Spotify, or see Spreaker @

https://www.spreaker.com/show/veterans-health-matters





### CLASS HANDOUTS & POWERPOINT

## Class Survey (Please Complete)

• Link will be placed in the chat box during the Q & A Period towards the end of the class.

#### Class PowerPoint's Link

• Can be obtained by clicking on its "live" link at the bottom of the class survey before submitting the survey.

#### Class Handout

• Can be obtained by clicking on its "live" link at the bottom of the class survey before submitting the survey.

#### Additional Veteran Resources

• Visit: <a href="https://www.warrelatedillness.va.gov/WARRELATEDILLNESS/education/local-offerings/nj-wriisc.asp">https://www.warrelatedillness.va.gov/WARRELATEDILLNESS/education/local-offerings/nj-wriisc.asp</a>





# DISCLOSURES

- The views expressed in this presentation are those of the presenters and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.
- There are no financial conflicts of interest to disclose.



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Michelle W. Robertson, MD, MPH

Occupational and Environmental Medicine Physician





# **CLASS AGENDA**

- Defining Airborne Hazards
- Understanding Exposures to Burn Pits and Other Airborne Hazards
- Clinical Effects of Airborne Hazards
- Burn Pit Registry
- Tips to Manage Common Symptoms







# CLINICAL



# RESEARCH



# **EDUCATION**



NJ WRIISC 800-248-8005 www.WarRelatedIllness.va.gov





# THE FIFTH "W" WHY???







# 1 in 3 report "definite or probable exposure to environmental hazards"

# 1 in 4 report "persistent major health concerns due to deployment exposures"







# **GULF WAR CONFLICT ERAS**

#### Gulf War

- Operation Desert Shield: 08/1990 -01/1991
- Operation Desert Storm: 01/17/91- Present
- Operation Desert Sabre
- Operation Southern Watch (OSW)
  - 8/26/1992 3/19/2003 in Iraq
- Operation Enduring Freedom (OEF)
  - 10/7/2001 12/31/2014 in Afghanistan
- Iraq War
  - Operation Iraqi Freedom (OIF)
    - 03/ 2003 11/31/2010 in Iraq
  - Operation New Dawn (OND)
    - 9/1/2010 12/18/2011 in Iraq







#### Physical/Psychological

Heat/Cold Injuries, Incoming Fire, Explosions and Blasts, Musculoskeletal Injuries, Loud Noises, Psychological and Mental Stressors



#### **Chemical Hazards**

Petrochemical Solvents and Fuels, Depleted Uranium, CARC Paint, Pesticides, Chemical Weapons



#### **Prophylactic Measures**

Anthrax Vaccine, Smallpox Vaccine, Antimalarial Prophylaxis (Mefloquine, Doxycycline), Pyridostigmine Bromide Pills, DEET/Pesticides



#### **Biological**

Animal/Insect Bites, Infectious Agents, Blood/Bodily Fluids, Biological Weapons



#### Airborne Hazards/Respiratory irritants

 Oil Well Fires, Burn Pit Smoke, Sand/Dust Storms, Industrial Air Pollution

REF: WRIISC clinical reports, www.publichealth.va.gov





#### **BURN PIT SMOKE**

• 273 burn pits in Iraq & Afghanistan as of August 2010 Joint Base Balad ->15,000 personnel -~200 tons waste per day





#### **OIL WELL FIRES**







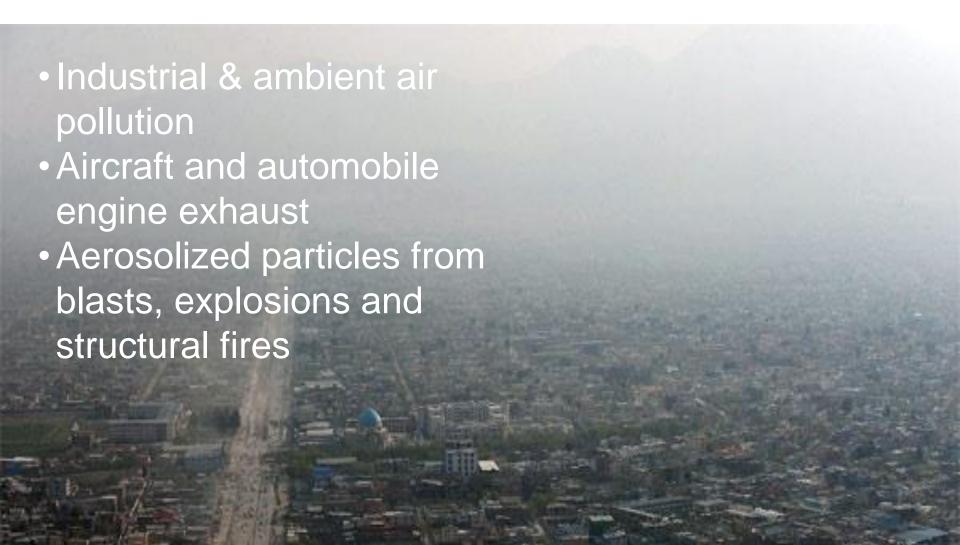
#### **SAND AND DUST STORMS**







#### **OTHER AIRBORNE HAZARDS**







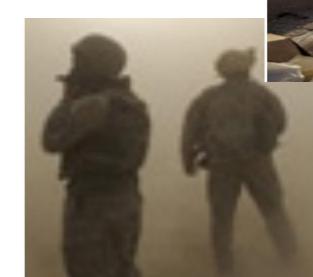
#### **EFFECTS OF AIRBORNE HAZARDS**

#### **ENVIRONMENTAL**

- ➤ What?
- ➤ When?
- > How much?
- ➤ How long?
- ➤ Military duties?

#### **INDIVIDUAL**

- Genetic makeup?
- ➤Other lifetime exposures?
- ➤ Civilian exposures?
- ➤ Habits?
- ➤ Other diagnoses?
- ➤ People Respond Differently







Strength of association
Consistency
Specificity
Temporality
Biological gradient
Plausibility
Coherence
Experimental evidence
Analogy

#### TOXICOLOGY

Animal studies

#### **OCCUPATIONAL MEDICINE**

Work accidents

#### **EPIDEMIOLOGICAL**

Communities

#### **GULF WAR STUDIES**

GW Veterans

# Hill's criteria of causation Association ≠ Causation





# How did we get here?



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## RESPIRATORY SYMPTOMS 101

# † respiratory symptoms

- during and post-deployment
- higher in deployed vs. non-deployed

# • ↑ respiratory illnesses, encounters

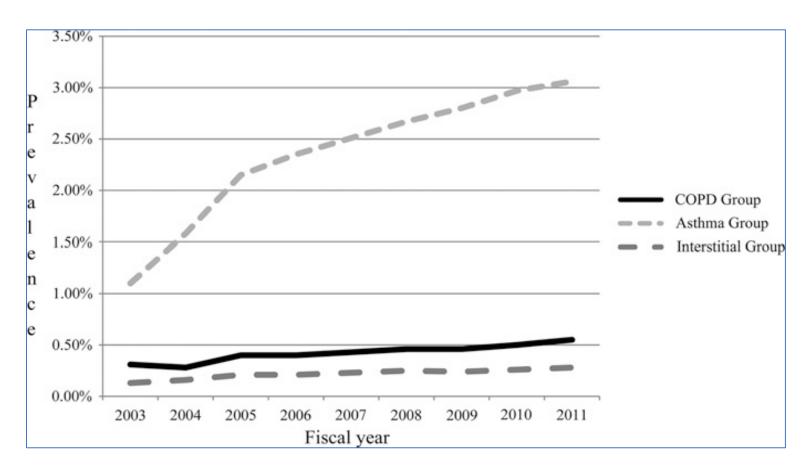
• 40-70% respiratory illness during deployment

See for Review: Kreft et al. *Curr Opin Pulm Med*, 2015 Falvo et al. *Epidemiol Reviews*, 2015





- ↑ prevalence of chronic lung disease VA wide
- (Pugh et al. 2016)



Pugh et al. Military Medicine 2016





### DEPLOYMENT RELATED RESPIRATORY DISEASES

- Allergic rhinitis
- Allergic rhinosinusitis
- Asthma
- COPD
- Emphysema

- Constrictive bronchiolitis
- Respiratory bronchiolitis
- Acute Eosinophilic

Pneumonia

- Granulomatous pneumonitis
- Idiopathic pulmonary fibrosis

Kreft et al. Curr Opin Pulm Med, 2015





## Large Study Looking at Burn Pit Exposure (only)

• No increased risk of symptoms or conditions if deployed within 3 miles of burn pit (Smith et al. 2012)





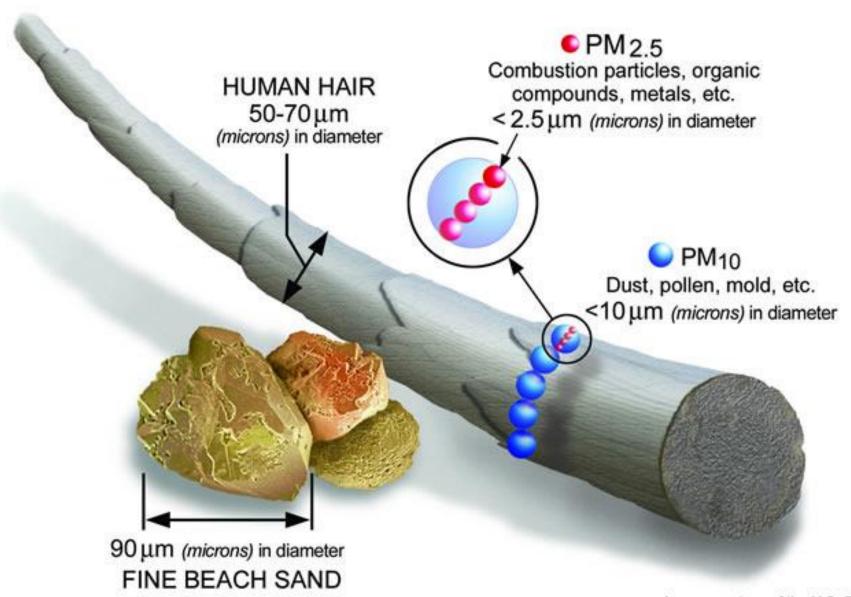
# Not Only Burn Pits BUT May be All Airborne Hazards

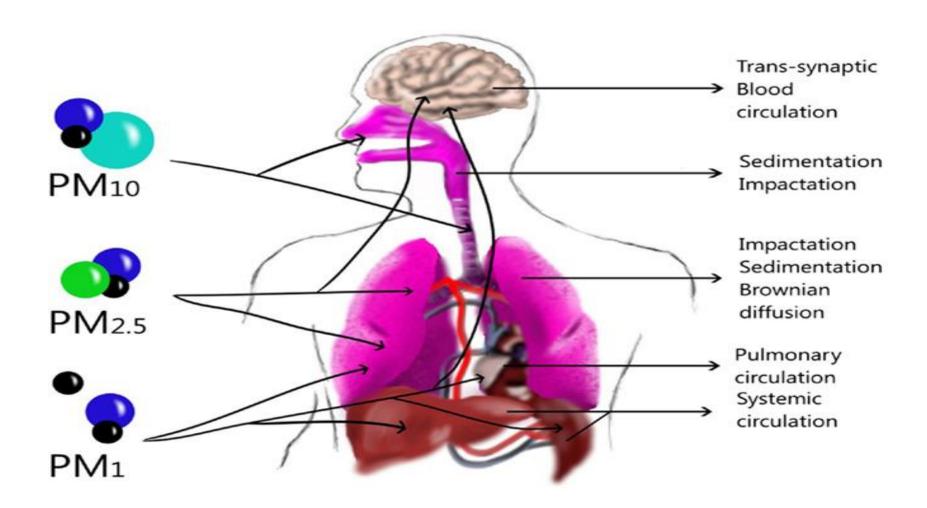
Or

Maybe some service members will be more susceptible to having long term effects of exposure to burn pits









Falcon-Rodriquez et al. 2016





# Fine Particulate Matter (PM<sub>2.5</sub>)

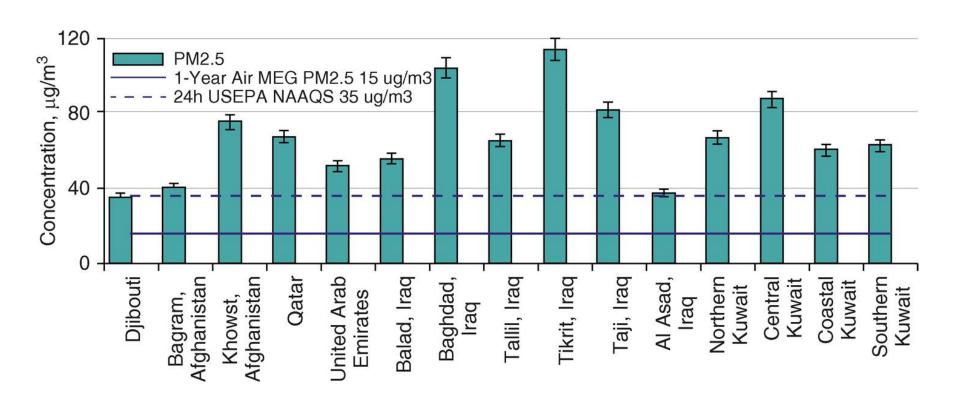


Figure from: Garshick et al., 2019 *Annals ATS* (adapted from DoD EPMSP)





# **CURRENT CONVERSATION...**

"...service in Iraq or Afghanistan –

– might be associated with
long-term health effects, in
highly exposed ..or susceptible
populations.."





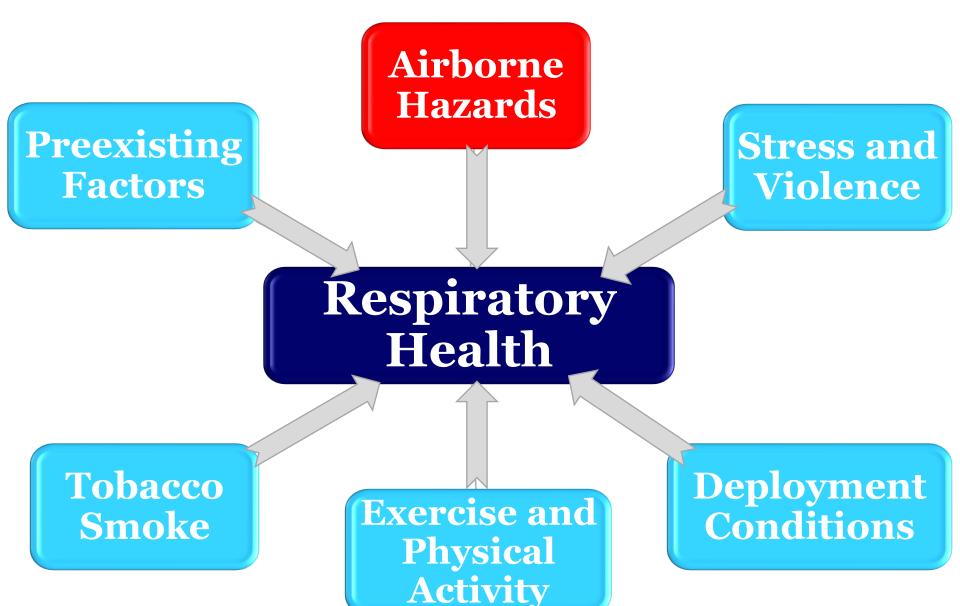
# **Uniquely Vulnerable, Susceptible?**



Falvo et al., 2015, Epidemiologic Rev







Falvo et al., Epidemiologic Rev, 2015





#### **STAMPEDE STUDIES I II III**

- Active-Duty military out of Brooks Army Medical Center 2005 -2014
- Most common diagnoses were asthma and upper airway abnormalities
- 31 42% had no diagnosis for their symptoms
- Related factors: PTSD, Sleep Apnea, GERD, Smoking, BMI

Morris et al. 2014 AJRCCM, Morris et al. 2019 Respir Care, Morris et al. 2020 Chest





#### **Risk of New-Onset Asthma**



- 1. Deployed with combat,
- 2. Deployed w/o combat,
- 3. Non-deployed
- New-onset asthma = No report of asthma at baseline, but on follow-up survey



**24-30%** ↑ risk

No ↑ risk

\*BMI ≥ 30 = greatest risk





# **Deployers** ↑ Risk of Sinusitis

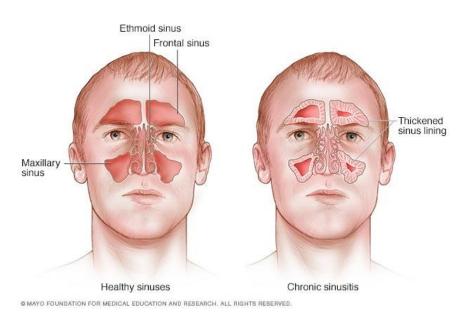


Figure from: https://www.mayoclinic.org/diseases-conditions/chronic-sinusitis/symptoms-causes/syc-20351661

- New Generation of U.S. Veterans Study (Barth et al. 2014)
- Deployers more likely to be diagnosed with sinusitis post-9/11
  - 30% increased risk
- No increased risk of asthma or bronchitis
- Self-reported diagnoses





#### **NASEM REPORT 2020**

 "inadequate or insufficient evidence to determine an association"

 "should not be interpreted as meaning that there is no association between respiratory health outcomes and deployment to SWA"

• "the available data are, on the whole, of insufficient quality to make scientific determination"





# PDHS/AHBPCE Supplement to NASEM Consensus Study Report:





### **CONSENSUS SUPPLEMENT REPORT**

- Reviewed report
- VA reviewed the wider literature
  - epidemiological literature on civilians,
  - mechanistic
  - toxicological studies.
- The result of that review showed an association between deployment and some respiratory symptoms

#### WHAT DO WE KNOW NOW?

- The majority of Veterans with AH exposures have had resolution of symptoms post deployment
- A significant proportion continue to have symptoms
- Unclear if cause is one or all exposures
- The most frequent diagnoses: asthma, sinusitis, rhinitis
- 8/2021 Presumption granted for above conditions





#### WHAT DO WE KNOW NOW?

- Rare diseases have been reported, but require additional consensus and review
- Southwest Asia associated lung disease remains undefined
- Shortness of breath is complex and testing beyond PFTs appears necessary
- Research continues using the Registry and collaboration with Subject Matter Experts









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#### **OUR LUNGS**



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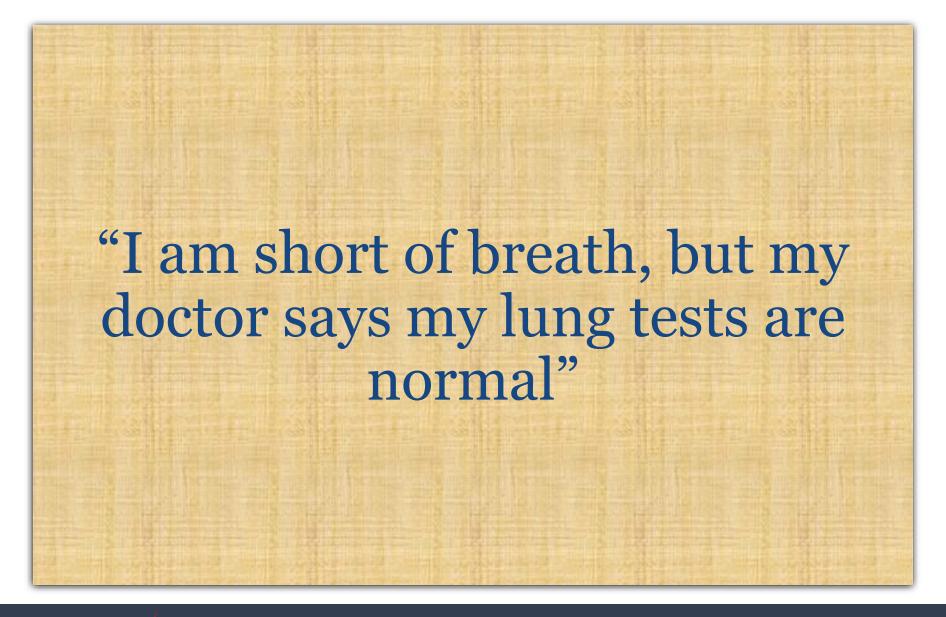
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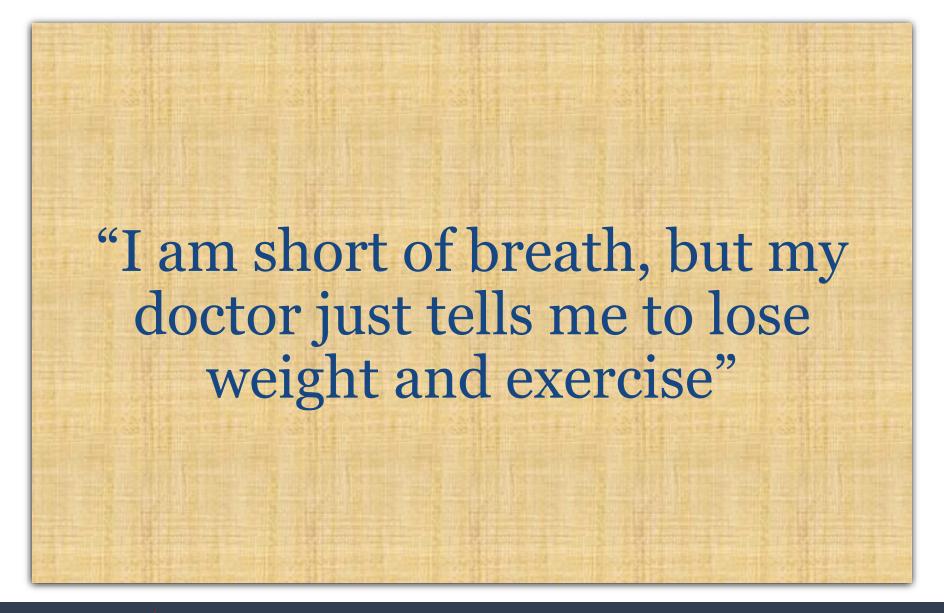




# NORMAL PFTs NORMAL LUNGS



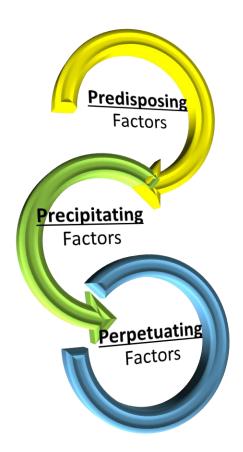








#### The 3 "P"s



**Predisposing**: Childhood illnesses

Family History

**Precipitating**: Military exposures

**Industrial Accidents** 

**Past Occupational** 

**Exposures** 

**Perpetuating**: Current Exposures

Occupational

Home

Hobbies

**Social Habits** 





## **AHBPCE @ NJ WRIISC**



- The Airborne Hazards Center of Excellence at the New Jersey War Related Illness and Injury Study Center (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 related to airborne hazards and burn pits focusing on a range of health concerns including respiratory concerns and unexplained shortness of breath (dyspnea), among other health outcomes.

https://www.warrelatedillness.va.gov/WARRELATEDILLNESS/AHBPCE/index.asp

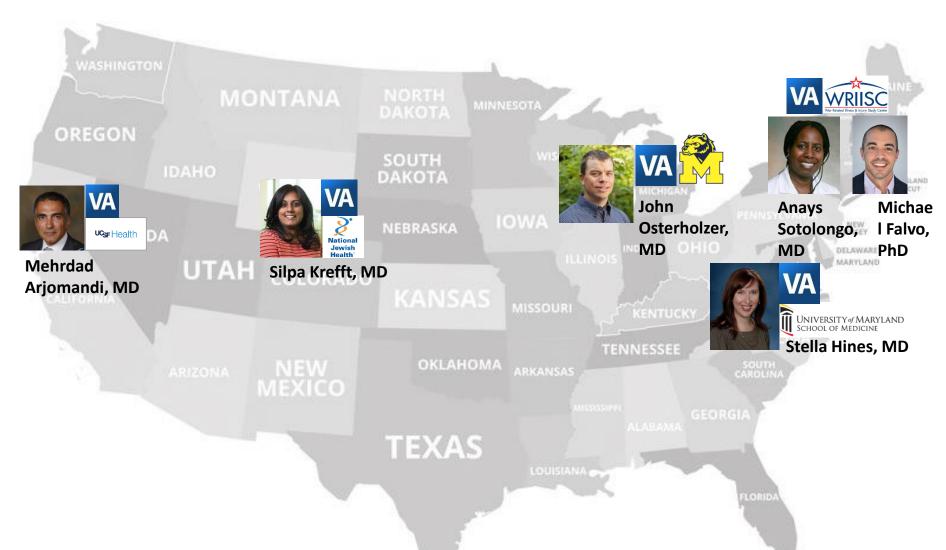












#### Post-Deployment Cardiopulmonary Evaluation Network (PDCEN)







Spirometry (Pre/Post BD)



Body Box DLCO



CPET w/ ABGs and 12-lead ECG



FOT (Pre/Post BD)



**FeNO** 





- Our goal is to create some standardization in the workup respiratory symptoms
  - Necessary testing and imaging
  - Standardization of biopsy interpretation
- Assess possibility of diagnosis without biopsy





# COVID-19

- Continually updating our website regarding COVID-19 and the vaccine
- Reviewing the AHOBPR for participants who have reported being COVID-19 positive
- Assessing whether AHOBPR participants are more susceptible to long term problems due to COVID-19



# Airborne Hazards & Open Burn Pit Registry

Public Law 112-260

Monitor and ascertain health effects from exposures

Monitor the health care of Veterans with concerns

Provide high quality health services

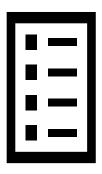




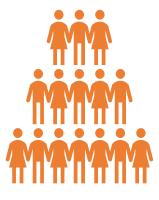
### **AHOBPR**



Self-Reported Exposures



Survey Questions



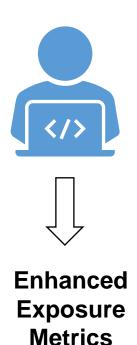
Participation Rate

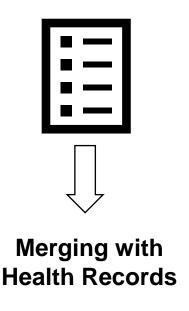
National Academies of Sciences, Engineering, and Medicine. 2017. *Assessment of the Department of Veterans Affairs Airborne Hazards and Open Burn Pit Registry*. Washington, DC: The National Academies Press. https://doi.org/10.17226/23677.

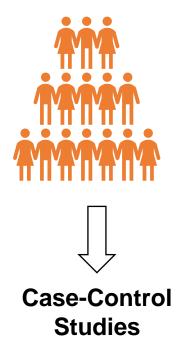




# **AHOBPR Clinical/Research Opportunities**











## Airborne Hazards & Open Burn Pit Registry

#### **ELIGIBILITY**

- Southwest Asia theater any time after August 2, 1990
  - 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
- Afghanistan or Djibouti on or after September 11, 2001
- Expanded to include Syria and Uzbekistan

#### Operations

- Desert Shield and Desert Storm (ODS/S)
- Iraqi Freedom (OIF)
- Enduring Freedom (OEF)
- New Dawn (OND)

### Presumptive conditions

- Asthma, Rhinitis, and Sinusitis
- within 10 years of your separation from active service









### PRESUMPTIONS AND WHY DO WE HAVE THEM?

Two-step presumption:

If you were there.... You were exposed



If you were exposed and develop one of the conditions....

Tt is related to the exposure

#### **AHOBPR: MODERN APPROACH**

On-line self-assessment questionnaire



Airborne Hazards and Open Burn Pit Registry

Home

About the Registry

Contact Us ▼

#### Airborne Hazards and Open Burn Pit Registry

#### Why sign up?

You can create a snapshot of your health to share with your provider.

- Create a snapshot from which to identify changes in your health.
- Print and use your completed questionnaire to discuss concerns with your provider.
- · Learn about follow-up care.

#### Is this for me?

The registry is a database of information about Veterans collected through a questionnaire.

OEF/OIF/OND or 1990–1991 Gulf War Veterans can use this questionnaire to report their exposure to burn pits and other airborne hazards.

Learn more »

#### Authentication allows deployment history to be retrieved from DoD

#### Sign up in 4 easy steps

- Use your Department of Defense Self-Service Logon (DS Logon) to access questionnaire.
- 2. Complete entire questionnaire.
- Print or save completed questionnaire for your records.
- 4. Submit questionnaire.

Need a DSLogon? »

DSLogon Sign in »

### **AHOBPR: Modern Approach**

- Voluntary for Veterans and Active Duty Servicemembers
- Eligibility determined by DoD: Dates and Locations (may request reconsideration)
- Registry 2-part components
  - Registry questionnaire: Self-assessment of health, lifestyle, and activity
    - Requires Internet access
- Option to request in-person evaluation
  - require Veterans to schedule appointments at VA health care facilities







# HOW DO I MAKE AN APPOINTMENT FOR A REGISTRY EXAM?

- Appointments
  - •In-person
  - Telehealth criteria
    - Have an established PCP
    - Last PE and labs (within past year)



- Local VA's Environmental Health Clinicians and Coordinators
  - <a href="https://www.publichealth.va.gov/exposures/coordinators.asp">https://www.publichealth.va.gov/exposures/coordinators.asp</a>





#### WHAT THE REGISTRY PROVIDES

- Enrollment in VA Health Care NOT necessary
- Registry evaluations can ONLY be performed by a VA medical provider
- One-time Comprehensive Health Exam
- Entry of Health Conditions in CPRS and Registry Database
- Free to eligible Veterans NO co-payment

### What Is NOT covered by registry:

- Only for the Veteran, NOT family members
- Does NOT take the place of primary care provider
- Does NOT provide prescriptions or treatment
- NOT a substitute for specialty advice
- NOT a disability exam
- NOT a compensation & pension exam
- NOT required for other VA benefits
- DOES NOT automatically start a claim







#### WHAT DOES THE REGISTRY EXAM CONSIST OF?

- History and Physical Examination
  - Review online registry questionnaire
  - Military history and document exposures
  - •PE: Pulse Ox, Upper and Lower Airway
- Diagnostic evaluation based on signs and symptoms
- Follow-up letter
- •Any identified health conditions must be followed up with your healthcare provider
  - For additional testing or referrals if abnormal results





#### **EXPOSURE MANAGEMENT**

- Can't undo past exposures
- Can prevent future exposures
  - Avoid household cleaners, air fresheners, fumes, second-hand smoke, perfumes, candles, etc.
  - Fire pits, indoor heaters
  - Ventilation and Air purifiers
  - Wear masks





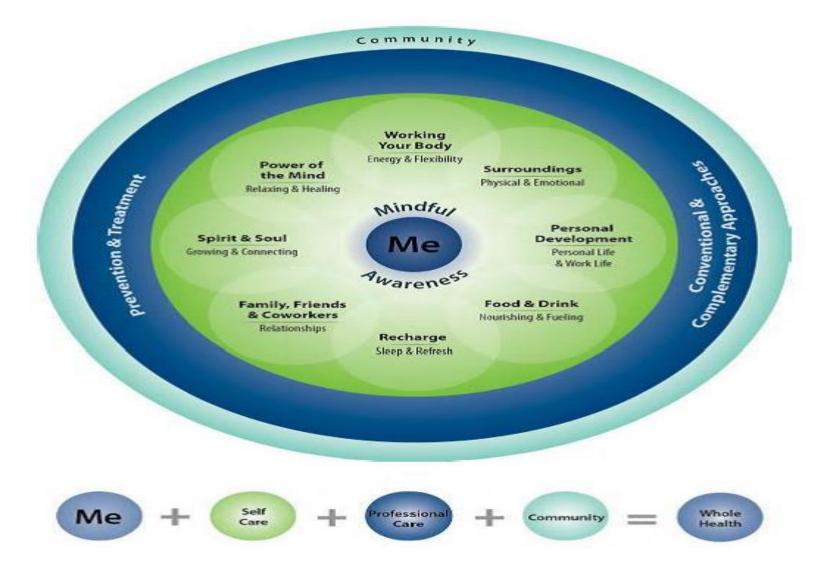
#### **SYMPTOMS: SCREENING AND TREATMENT**

- Most symptoms get better
- •Treatment is the SAME for ABH conditions as it is for regular conditions
- See your doctor regularly
- Annual Screening tests
  - United States Preventive Services Task Force
- Healthy Lifestyle
  - Diet & Exercise
  - Stress Management





#### COMPONENTS OF PROACTIVE HEALTH AND WELL-BEING "Circle of Health"







#### **COMPENSATION DISABILITY BENEFITS**

Available
Resources to
Assist with
Applications

- VA web site: (www.benefits.va.gov)
- File electronically @ www.ebenefits.va.gov
- Veterans Benefits Administration Counselors
  - 800-827-1000 www.vba.va.gov
- Veteran Service Organization Counselors
  - Vet Centers
- eBenefits: My Gateway to Benefit Information
  - www.ebenefits.va.gov







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- ✓ Visit our website for other Veteran educational and research opportunities @:
  - <a href="https://www.warrelatedillness.va.gov">https://www.warrelatedillness.va.gov</a>.







QUESTIONS?





# THANK YOU FOR YOUR SERVICE & SACRIFICE





