• Best Practices in Treatment of the World Trade Center Health Clinic

MARCOEM Meeting

Baltimore, MD

- *Iris Udasin, MD*
- *World Trade Center Clinic Director &*
- *Professor of Environmental and Occupational Medicine*

- *October 27, 2024*

Disclosures and Disclaimers

- There are no conflicts of interest to disclose
- Presentation is based upon World Trade Center Best Practice series published in archives of Environmental and Occupational Health 2023

Attacks on World Trade Center

More than 400,000 men and women were exposed to dust, debris, pulverized building materials, and potentially toxic emissions


FDNY


CHIEF

Environmental Disaster of Unprecedented Scale for the NY Area

150 different toxins

- Asbestos
- Hydrochloric acid
- Polychlorinated biphenyls
- Silica
- Heavy metals
- Fires ☞polycyclic aromatic hydrocarbons (PAHs), dioxins

THE WORLD TRADE CENTER DISTRICT BEFORE AND AFTER THE 9/11 ATTACKS

Twin towers in 1999 (Business Insider)

When the first tower was hit at 8:45am. (Business Insider)

After the collapse of the World Trade Center (New York Times)

BACKGROUND INFORMATION

- The events of 9/11 exposed nearly half a million people to debris, dust, smoke, and

  other carcinogenic chemicals

- This led to adverse health effects resulting in:
  - psychological/physical stressors
  - increased risk of melanoma, prostate, thyroid and other cancers.
- Individual exposure mainly determined by duration and intensity & use of protective

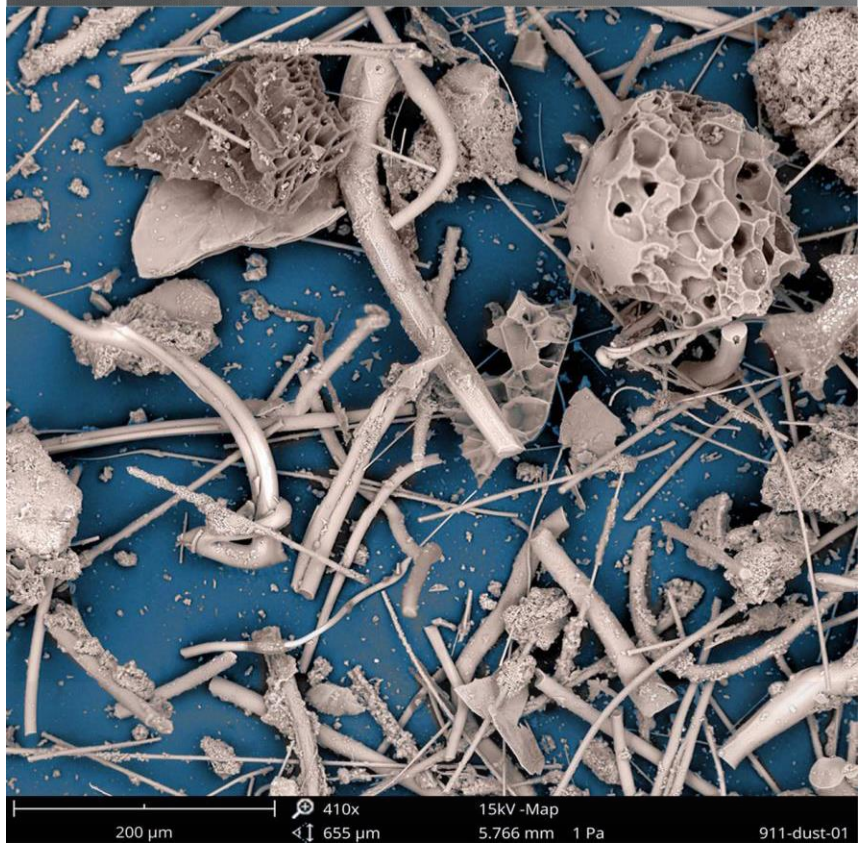
  equipment but limited availability of individual-level data on exposure after events
- The World Trade Center (WTC) Health Program was created to address the

  various illnesses arising from the 9/11 terrorist attacks

  - Is a limited benefits health plan that provides health care at no out-of-pocket cost for certified WTC- related health conditions for over 117,000 responders and survivors in NY and across the country.

WTC Dust

- Produced from pulverized concrete, glass, metal, and asbestos
  - High alkalinity of the dust impaired nasal clearance and alkalinity was greater on indoor surfaces than outdoor dust
  - >90% of particulate matter was > 10 μm in diameter
- Lung deposition of large particles in the small airways
  - Induced sputum testing collected 10 months after 9/11 in a sample of highly exposed NYC firefighters still contained WTC dust
  - On day 1, less than 20% of FDNY reported wearing a mask, of any type, most of the time
- 90% of FDNY rescue/recovery workers were found to have acute respiratory symptoms within 48 hours, including wheezing, chest tightness, nasal congestion, acute cough



Fireman EM, et.al. 2004, Induced sputum assessment in New York City firefighters exposed to World Trade Center Dust.
Prezant DJ, et al. 2002, Use of respiratory protection among responders at the World Trade Center Site—New York City, September 2001.

Risk Factors

- Dust and debris cloud exposure on the morning of 9/11
- Early arrival at the WTC site
- Cumulative exposure (particularly >90 days)
- Delay in mask and respirator use
- Workers' role
  - Firefighters had heavier dust exposures than other workers
  - Hours of strenuous work and hazardous working conditions
- Displacement of survivors from homes, jobs, and schools (mainly Manhattan and Brooklyn)

Wheeler K, McKelvey W, Thorpe L, et al.Asthma diagnosed after 11 September 2001 among rescue and recovery workers: findings from the World Trade Center Health Registry. *Environ Health Perspect*. 2007;115(11):1584-1590. doi:10.1289/ehp.10248

THE WORLD TRADE CENTER (WTC) HEALTH PROGRAM

- Health surveillance provided at 8 Clinical Center of Excellence (CCE) locations for NY residents
- The National Provider Network (NPN) provides care for members who live outside of the NY metropolitan area.
    - works as third party under contact with the WTC Health Program
- Both provide health care services from medical/mental health professionals with training and experience in various specialties (i.e. occupational and environmental studies)
- Cohorts are open to join at anytime if eligibility criteria is met

THE WORLD TRADE CENTER HEALTH PROGRAM

- Services include:
  - Comprehensive Initial evaluation & Annual monitoring/surveillance exams
  - Medical and mental health treatment for covered WTC-related health conditions
  - Cancer screening tests
  - Benefit counseling services
  - Research program

*All Treatment coverage dependent on approval from a WTC Program affiliated provider confirming likely exposure

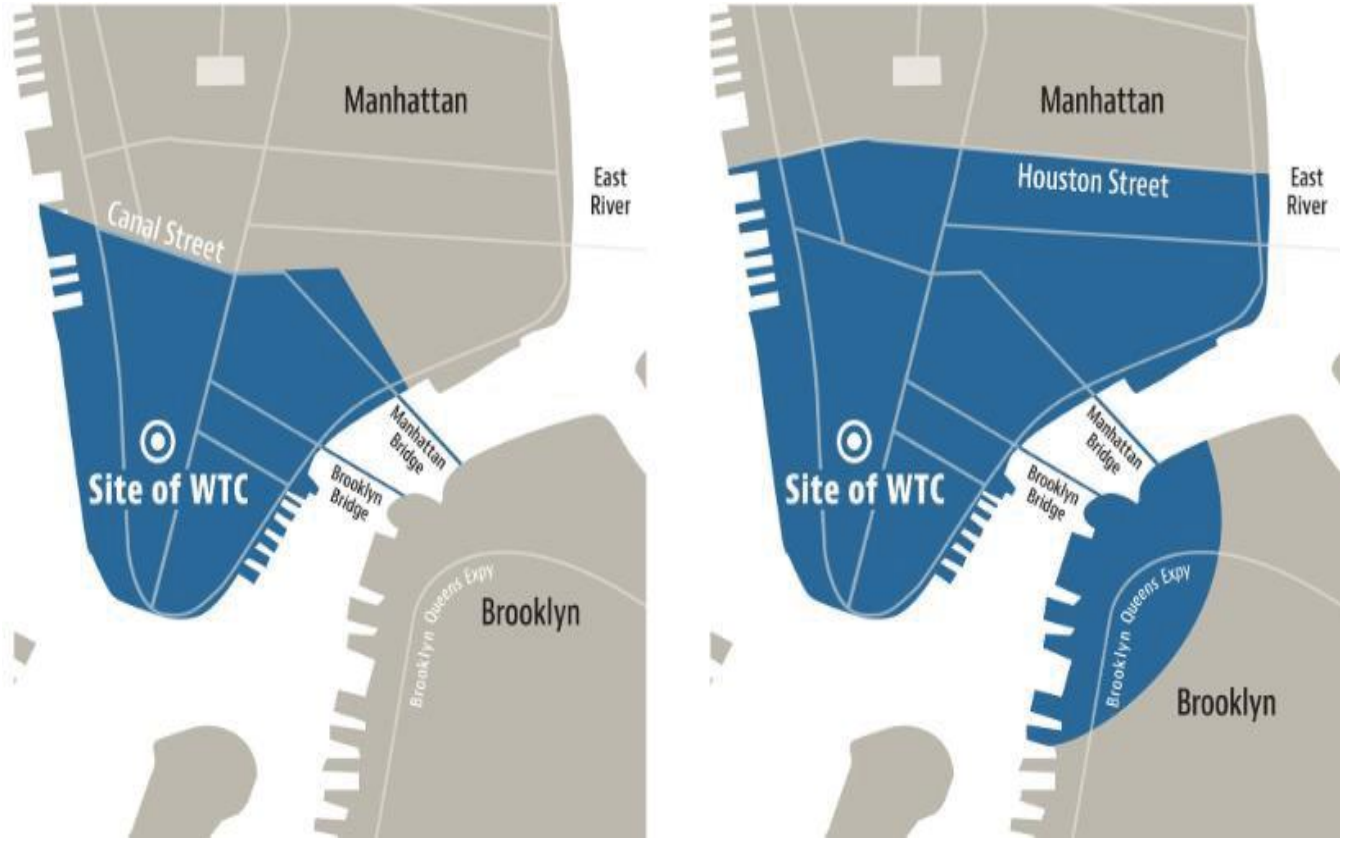
Covered Conditions

- Acute Traumatic Injury
- Aerodigestive Disorders
- Cancers
  - Blood and Lymphoid Tissue
  - Digestive System
  - Eye and Orbit
  - Female Breast and Reproductive
  - Head and Neck
  - Respiratory System
  - Skin (Melanoma and non-Melanoma)
  - Soft Tissue
  - Thyroid
  - Urinary System
- Mesothelioma
- Mental Health Conditions
- Musculoskeletal Disorders

For a full listing, visit
www.cdc.gov/wtc/conditions.html

Who is Eligible?

- FDNY responders
- General responders (Police, construction, laborers, volunteer, etc.)
- Survivors
- Community residents/students in disaster area
- Building occupants
- Pentagon/Shanksville Responders



The area to determine program enrollment eligibility for responders vs. survivors. (Right figure is NYC disaster area)

Azofeifa A, Martin GR, Santiago-Colon A, Reissman DB, Howard J. World Trade Center Health Program - United States, 2012-2020. *MMWR Surveill Summ*. 2021;70(4):1–21. doi:10.15585/mmwr.ss7004a1.15.

Calvert GM, Anderson K, Cochran J, et al. The World Trade Center Health Program: An introduction to best practices. *Arch Environ Occup Health.* 2022;19:1–7. doi:10.1080/19338244.2022.2156975

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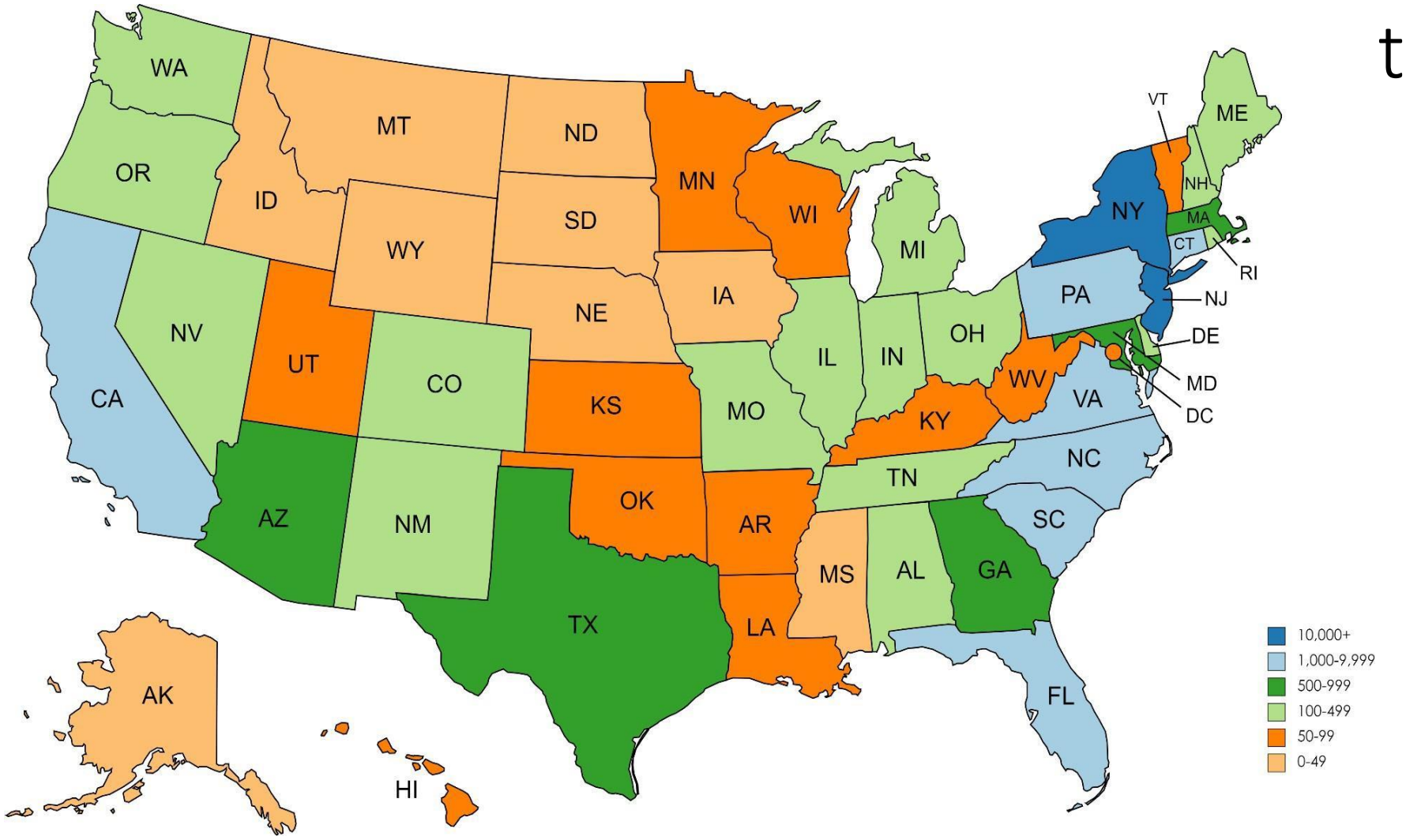
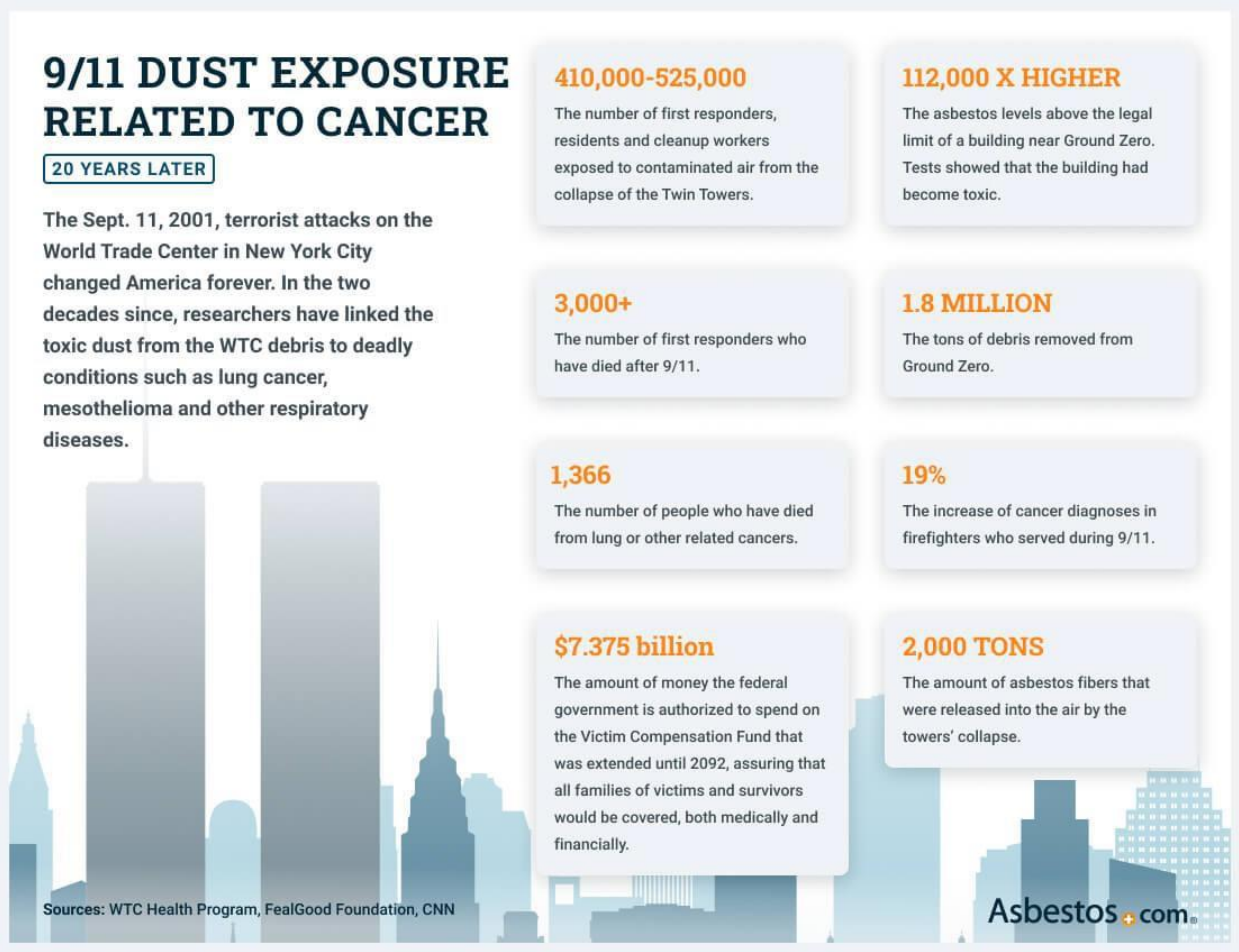


Note: Of the 123,022 living members enrolled in the Program, 31,788 living members are served through the Nationwide Provider Network.

Data current as of December 31st, 2023. For online access, visit www.cdc.gov/wtc/ataglance.html

Cancer and the WTC Health Program



https://www.asbestos.com/world-trade-center/

- Studies showed links between exposure and increased rates of melanoma, prostate, thyroid and other cancers in WTC exposed populations.
- In alignment with US Preventative Services Task Force (USPSTF) recommendations, screening is provided at four cancer sites.
- Provides coverage for cancer screening, diagnosis and treatment for all types of cancer
  - Assuming 9/11 exposure and minimum latency criteria are met (along with program-affiliated physician attestation)
  - Most common certified cancer is non-melanoma skin cancer

Table 1. Cancer screening tests recommended for asymptomatic persons by USPSTF (i.e., tests assigned an "A" or "B" grade recommendation).

Cancer Screening Test	Screening Eligibility Criteria	Frequency of screening
Breast Cancer		
Mammography	Women aged 50 to 74 years	Every 2 years
Cervical Cancer		
Cervical cytology	Women aged 21 to 65 years	Every 3 years
High-risk human papillomavirus (hrHPV) testing alone	Women aged 30 to 65 years	Every 5 years
hrHPV and Cervical cytology	Women aged 30 to 65 years	Every 5 years
Colorectal Cancer		
High-sensitivity guaiac fecal occult blood test	Adults aged 45 to 75 years	Annually
Fecal immunochemical test	Adults aged 45 to 75 years	Annually
Stool DNA test with fecal immunochemical test	Adults aged 45 to 75 years	Every 1 to 3 years*
Colonoscopy	Adults aged 45 to 75 years	Every 10 years
CT colonography	Adults aged 45 to 75 years	Every 5 years
Flexible sigmoidoscopy	Adults aged 45 to 75 years	Every 5 years
Flexible sigmoidoscopy with FIT	Adults aged 45 to 75 years	Flexible sigmoidoscopy every 10 y plus FIT every year
Lung Cancer		
Low dose Chest CT	Adults aged 50 to 80 years who have a $\geq$ 20 pack-year smoking history and currently smoke or have quit smoking within the past 15 years	Annually

Sources: Siu et al[11]; USPSTF et al[12]; USPSTF et al[13]; USPSTF et al.[14] USPSTF = US Preventive Services Task Force.
*As stated by the manufacturer.

Calvert GM, Lilly G, Cochran J. The World Trade Center Health Program: Cancer screening and cancer care best practices. Arch Environ Occup Health. 2023;78(4):222-228. doi: 10.1080/19338244.2023.2188152.

LATENCY

- Defined as:
  - **The minimum time that must have elapsed between the date of the individual's initial 9/11 exposure and the date of the of initial diagnosis of the individual's cancer.**

- The minimum latency must be met or exceeded to be certified by the WTC Health Program

Calvert GM, Lilly G, Cochran J. The World Trade Center Health Program: Cancer screening and cancer care best practices. Arch Environ Occup Health. 2023;78(4):222-228. doi: 10.1080/19338244.2023.2188152.

LATENCY CONTINUED

- Administrator of the World Trade Center selected the minimum latencies for the following types of cancer:
  1. Mesothelioma **- 11 years**
  2. All solid cancers (other than mesothelioma, lymphoproliferative, thyroid, and childhood cancers) – **4 years**
  3. Lymphoproliferative and hematopoietic cancers (including all types of leukemia and lymphoma) **- 0.4 years (equivalent to 146 days)**
  4. Thyroid cancer **- 2.5 years**
  5. Childhood cancers (other than lymphoproliferative and hematopoietic cancers) – **1 year**

- Intensity of exposure, preexisting medical conditions and rarity of cancer may decrease latency.

Calvert GM, Lilly G, Cochran J. The World Trade Center Health Program: Cancer screening and cancer care best practices. Arch Environ Occup Health. 2023;78(4):222-228. doi: 10.1080/19338244.2023.2188152.

As Of
02/29/2024

Top 10 Certified Cancers – Responder Count by Calendar Year

Condition Category	2012-2019	2020	2021	2022	2023	2024	Total
Non-melanoma Skin	4,006	787	985	927	1,054	143	**7,902**
Prostate	2,542	524	559	551	697	87	**4,960**
Lymphoma	548	83	86	86	92	15	**910**
Melanoma of Skin	515	61	75	75	124	17	**867**
Kidney	452	89	85	76	91	12	**805**
Thyroid	484	85	78	55	64	<10	**767-775**
Lung/Bronchus	418	70	84	85	96	12	**765**
Leukemia	375	62	62	59	76	<10	**635-643**
Bladder	337	74	69	70	74	10	**634**
Colon	360	61	43	60	62	<10	**587-595**
Total	**10,037**	**1,896**	**2,126**	**2,044**	**2,430**	**299-323**	**18,832-18,856**

Certified Rare Cancers - Responders

Type of Cancer	No. of Instances
Neuroendocrine	240
Pancreas	223
Leukemia	189
Brain	152
Testis	144
Connective Tissue	75
Breast - Male	44
Gallbladder/Biliary Tract	37
Nervous System	26
Thymus	24
Bone	15
Small intestine	12
Penis	11
Adrenal	<10
Endocrine	<10
Genital Organs	<10
Uterine	<10

The figures are based on the number of responders certified for a specific cancer condition. A member can be counted in multiple Condition Categories.

Certain types of leukemias are considered rare cancers, which is why the counts differ in the two charts.

As Of
02/29/2024

Top 10 Certified Cancers – Survivor Count by Calendar Year

Condition Category	2012-2019	2020	2021	2022	2023	2024	Total
Prostate	1,107	541	589	722	720	106	**3,785**
Non-melanoma Skin	666	324	456	644	827	122	**3,039**
Breast – Female	986	368	414	403	483	51	**2,705**
Lymphoma	437	159	142	165	178	28	**1,109**
Thyroid	446	154	151	149	135	18	**1,053**
Lung/Bronchus	381	140	123	139	172	21	**976**
Kidney	258	97	88	118	108	19	**688**
Leukemia	262	82	81	90	93	18	**626**
Colon	199	82	121	89	123	10	**624**
Bladder	145	73	80	90	121	10	**519**
Total	**4,887**	**2,020**	**2,245**	**2,609**	**2,960**	**403**	**15,124**

Certified Rare Cancers - Survivors

Type of Cancer	No. of Instances
Leukemia	205
Neuroendocrine	191
Pancreas	172
Testis	111
Brain	99
Breast - Male	51
Gallbladder/Biliary Tract	50
Thymus	26
Small intestine	25
Connective Tissue	18
Adrenal	<10
Bone	<10
Endocrine	<10
Genital Organs	<10
Nervous System	<10
Penis	<10
Uterine	<10

The figures are based on the number of survivors certified for a specific cancer condition. A member can be counted in multiple Condition Categories.

Certain types of leukemias are considered rare cancers, which is why the counts differ in the two charts.

Non-Malignant WTC Health Conditions

- WTC Program doesn't just cover screening and treatment for cancer alone.
- Other covered conditions include:
  - **Acute Traumatic Injuries** (Burns, fractures, etc.)
  - **Airway and Digestive Disorders** (Asthma, GERD, sleep apnea, chronic rhinosinusitis, etc.) [MOSTLY CHRONIC]
  - **Musculoskeletal Disorders**
    - For responders only
    - Include carpel tunnel syndrome, low back pain)
  - **Mental Health Conditions** (Anxiety, Depression, PTSD, etc.)

Chronic Rhinosinusitis (CRS) and WTC

- Prevalence of 12.5% of general US population and at least 30% WTC population with no excess of atopy in the WTC responders
- CRS defined as a continuum of inflammatory findings throughout nasal mucosa from the anterior nares to nasopharynx and including paranasal sinuses.
- Recent guidelines for diagnosis and treatment published by international consensus statement on allergy and Rhinology: Rhinosinusitis (ICARS-RS-2021)

Delahoz acch env health 2023

Rhinosinusitis Diagnosis

- Major Symptoms
  - Purulent rhinorrhea
  - Purulent PND
  - Nasal obstruction
  - Facial congestion
  - Facial pain/pressure
  - Hyposmia/anosmia
  - Fever(acute only)

- Minor Symptoms
  - Headache
  - Otalgia/ear pressure
  - Halitosis
  - Dental pain
  - **COUGH**
  - Fever (nonacute)
  - Fatigue

*A diagnosis of rhinosinusitis is probable if 2 or more major symptoms or 1 major symptom and 2 or more minor symptoms are present.

Rhinosinusitis Clinical Importance

- Functional impact ranges form mild to seriously debilitating effects on social, physical, and emotional functioning.
- May interfere with cognitive tasks
- May impair work performance
- May cause work absences
- Risk factor for development of asthma

Chronic Rhinosinusitis Symptoms

Assess symptoms, onset, frequency, severity, pattern, causes, occupational and environmental exposures triggers, comorbidities, and response to previous treatment, if any

- with alarm symptoms or signs of serious comorbidities and/or failure of adequate medical treatment

Yes

No

Saline nasal irrigation ± Nasal steroid trial

Symptom persistence, unclear triggqrs

Consider allergy testing (Skin test, RAsn

(-)

(+)

Consider additional treatment
- topical anticholinergic or antihistamine
- Short-term oral decongestant

Consider additional treatment
- leukotriene modifiers
- Antihistamines (topical or systemic)

Improved

Persistent, unimproved, severe

Improved

Continued treatment and follow-up

- Intensive anti-inflammatory ± antibiotic treatment
- Consider ENT evaluation ± sinus CT scan

Continued treatment and follow-up

- Consider allergen immunotherapy if indicated

No significant anatomic problems

Correctible anatomic problems

Consider surgical intervention

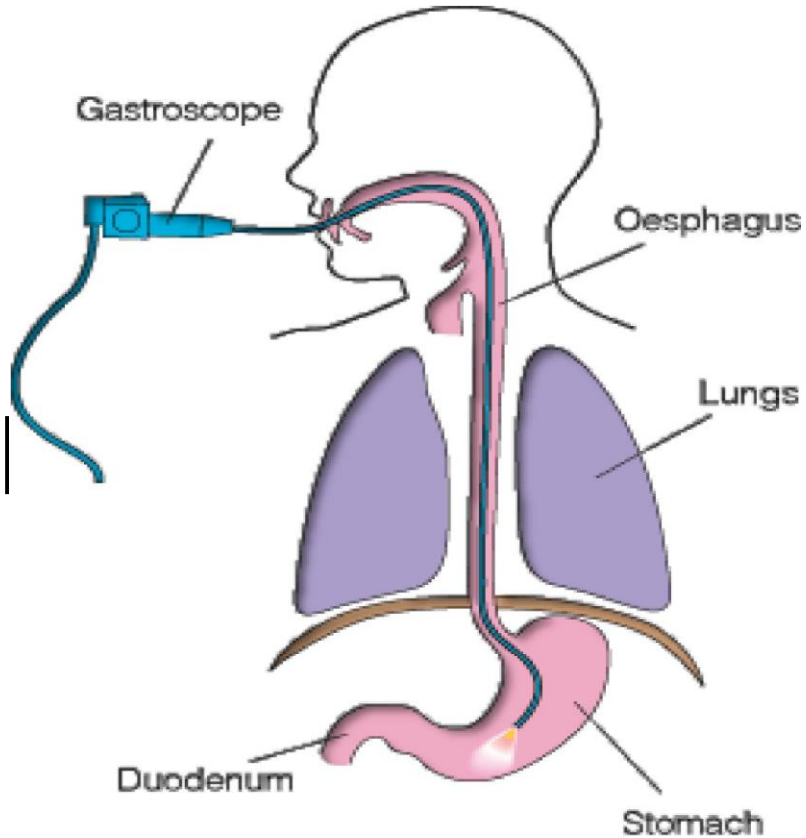
- Continue, combine, and/or intensify medical treatment(s)
- Consider allergen immunotherapy, or anti-IgE or other biological therapy

Treatment Considerations

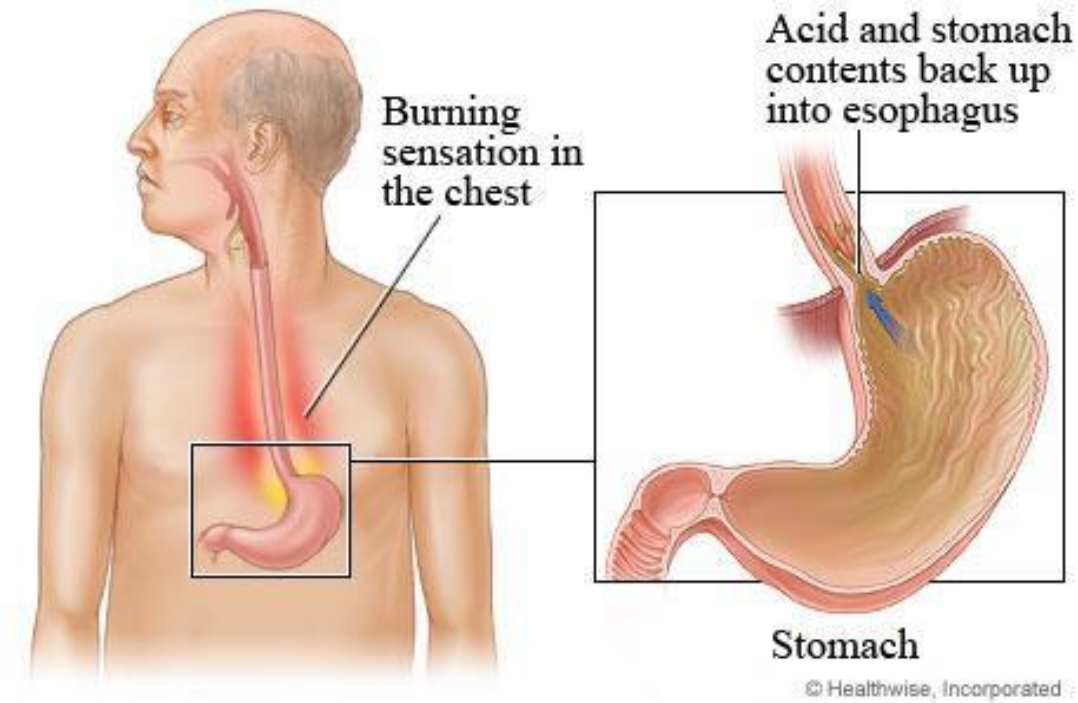
- Alarm sx such as bleeding, coincident ocular sx, severe facial pain, headaches or disequilibrium may imply complicated infection or neoplastic process
- May need early imaging or referral to neurologist
- Patients may have on-going exposures which could be reduced
- Patients may have co-morbid asthma and should be considered for biologics

Dela hoz 2023

Gastroeso



GASTROESOPHAGEAL REFLUX (GERD)



- ACID REFLUX ABOVE THE LOWER ESOPHAGEAL SPHINCTER
  - FROM THE PROTECTIVELY LINED STOMACH TO THE LESS PROTECTED ESOPHAGUS AND AIRWAY
  - Objectively defined by characteristic mucosal injury and/or abnormal acid exposure on reflux monitoring study

GERD SYMPTOMS

- HEARTBURN
- DYSPEPSIA (ABDOMINAL DISCOMFORT, FULLNESS OR NAUSEA AFTER EATING)
- THROAT SORENESS OR FULLNESS
- DIFFICULTY SWALLOWING
- COUGH
- CHEST PAIN
- LARYNGITIS, HOARSENESS
- Practice guidelines of American college of gastroenterology 2022 for diagnosis and treatment

Katz Amj Gi 2022

Risk Factors for 9/11 Related GERD

- 3rd Most common WTC certified condition
- Early arrival at WTC
- Exposure to dust
- Psychologic stress associated with terrorist attack
- PTSD
- Co Morbid asthma or lower respiratory disease

Lin Arch 2023

Diagnosis GERD

- 8 Week trial of PPI and assessment of SX
- Diagnostic EGD preferably 2-4 weeks after stopping PPI
- In patients where endoscopy is not clear, pH monitoring is indicated
- Objective testing by endoscopy or pH monitoring is recommended in patients with chest pain when cardiac cause is ruled out
- Barium swallow not recommended as treatment for GERD

Lin 2023

Treatment of GERD

Diet & Lifestyle – weight loss, ETOH cessation, avoid late night meals, avoid food triggers like chocolate, caffeine, acid foods

Pharmacologic - Antacids, H2 Receptor Antagonists, Proton Pump Inhibitors

SURGERY – *Fundoplication- Laparoscopic – early research shows benefit of TIF (Trans oral Incisionless Fundoplication)*

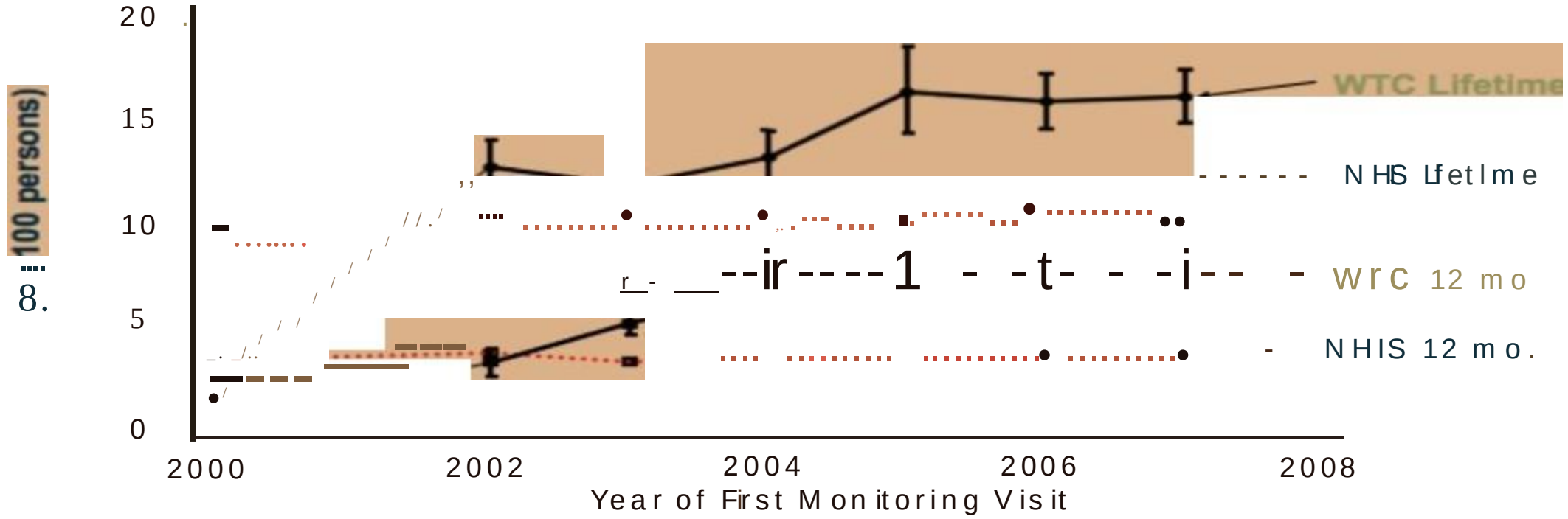
Lin 2023

Asthma Diagnosed After 9-11 Among Rescue and Recovery Workers Findings from WTC Health Registry

- Analyzed 2003-2004 interview data from WTC Health registry for workers with out history of asthma (n= 25,748)
- Newly dx asthma 926 workers (3.6%)
- Symptoms include shortness of breath, wheeze, COUGH, chest tightness
- Early arrival, longer duration of work, exposure to dust cloud, pile work risk factors
- Moderate protective effect using PPE

Wheeler – EHP August 2007

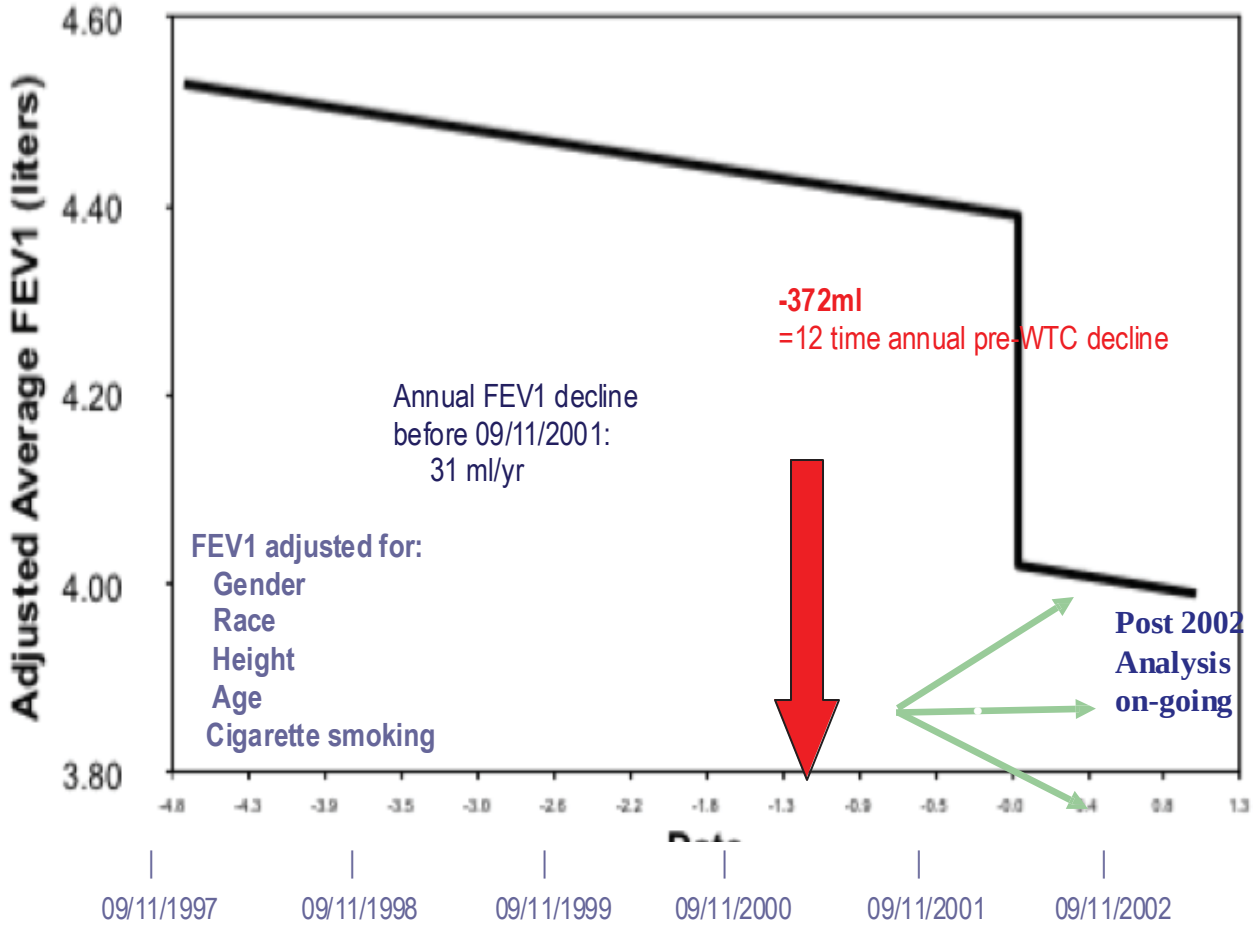
Crude lifetime asthma and 12-month asthma episodes: Prevalence between NHIS and WTC by visit year



L t m a t 2,918
- In 2007: 630/3,907
- In 2000 ( ): 611/20,843 9°
)

period : 1,314 (6.3%)
- In 200 : 303/3,907
- In 20 ( ): 37/20,843 .2%)

WTC-Related Longitudinal FEV1 Loss



Diagnosing Asthma in WTC Population

- ✓Heterogeneous presentation of respiratory SX (wheeze, SOB, chest tightness, cough) vary over time and intensity an variable airway obstruction
- ✓Many responders and survivors developed sx within days, months or years after acute or chronic exposure to WTC contaminants and most do not fit brooks definition of RADS
- ✓Heterogeneity of WTC related or aggravated asthma, may be due to other exposures including tabacco smoke, other occupational exposures, mold, genetic or social determinants

Harrison Arch Env Health 2023

Asthma Treatment Guidelines

- NIH expert panel 2007, updated 2020
- GINA (Global Initiative for Asthma)- Guidelines for management of asthma and GINA guidelines for diagnosis and treatment of difficult to treat and severe asthma
- Reduce modifiable risk factors like smoking and use non-pharmacologic means including weight loss, avoiding asthma triggers
- Pharmacologic approach: trial of short acting beta agonist, inhaled corticosteroids (ICS), step up to ICS/ LABA, anti-musarinics, biologic
- Treatment co-morbid CRS, GERD, Mental Health

Harrison Arch Env Health

Unique Features of Obstructive Sleep Apnea in World Trade Center Responders With Aerodigestive Disorders

Sunderram, Jag MD; Udasin, Iris MD; Kelly-McNeil, Kathie BA; Ko, Susan BA; Cepeda, Clarimel BPH; Marroccoli, Barbara MD; Perret, Carol MS; Ohman-Strickland, Pamela PhD; Scardella, Anthony MD; Kipen, Howard MD

- Aim:
  - Compare the characteristics of OSA in WTC responders with a population of non-WTC habitual snorers
  - WTC responders had aero-digestive disorders, snoring, daytime symptoms and complaints of sleep disturbance
  - Non-WTC snorers referred to rule out OSA due to symptoms
  - Gain insight into the pathogenesis of OSA in WTC responders.
- Hypothesis:
  - WTC responders with aero-digestive disorders and worsening of snoring after the WTC disaster will have unique features of OSA as a result of upper airway inflammation distinguishing them form a similar cohort with previous habitual snoring

Sunderram, J, et al. J Occup Environ Med, 2011

Unique Features of Obstructive Sleep Apnea in World Trade Center Responders With Aerodigestive Disorders



Methods:

Cross sectional comparative study of two populations referred to the Comprehensive Sleep Disorders Center from Jan07-Dec08

50 WTC responders with aero-digestive symptoms, sleep related problems and snoring

50 patients between the ages of 30 and 60 referred to the Comprehensive Sleep Disorders with a history of snoring to rule out sleep disordered breathing during the same period.

Results:

There was a strong correlation between body mass index (BMI), weight, and Apnea + Hypopnea Index ($r = 0.36$, $P = 0.001$; $r = 0.29$, $P = 0.044$) in the nonresponders,

No correlation between either BMI or weight and Apnea + Hypopnea Index was found in the responders.

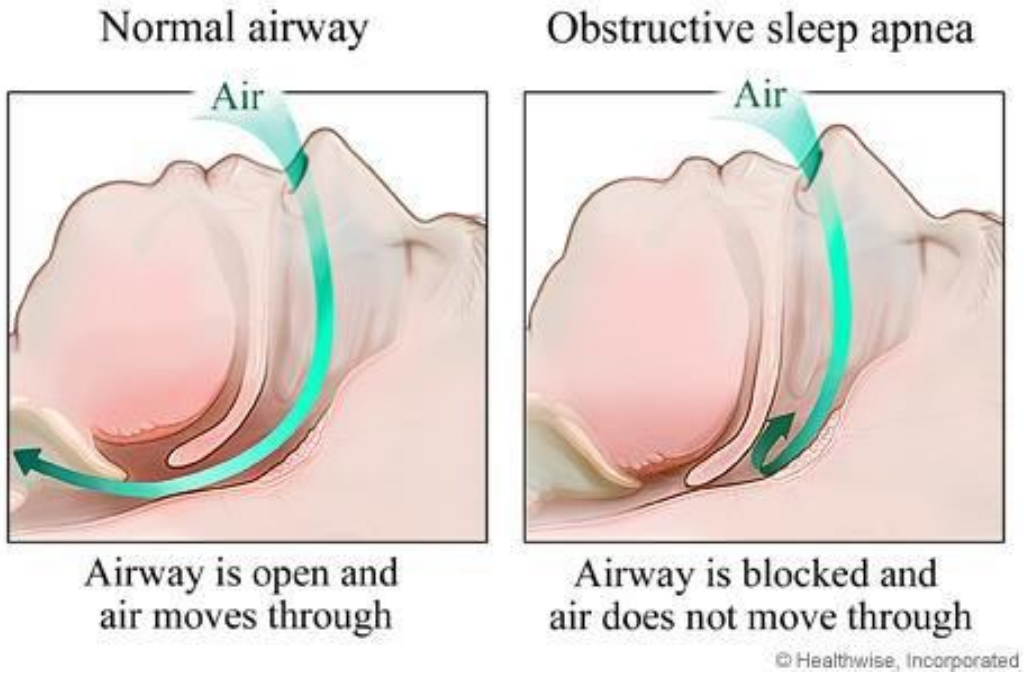
Responders with worsening of snoring after 9/11 had a significantly lower BMI than previous habitual snorers.

Conclusion:

Mechanisms other than obesity are important in the pathogenesis of OSA in WTC responders with aerodigestive disorders.

6XQGHUDP, -, HWDO- 2 FFXS (QYLURQ0HG, 2011

Obstructive Sleep Apnea



- Obstructive Sleep Apnea (OSA) is characterized by repeated closure of the upper airway during sleep.
- Anatomical, mechanical and sleep factors lead to airway obstruction in OSA.

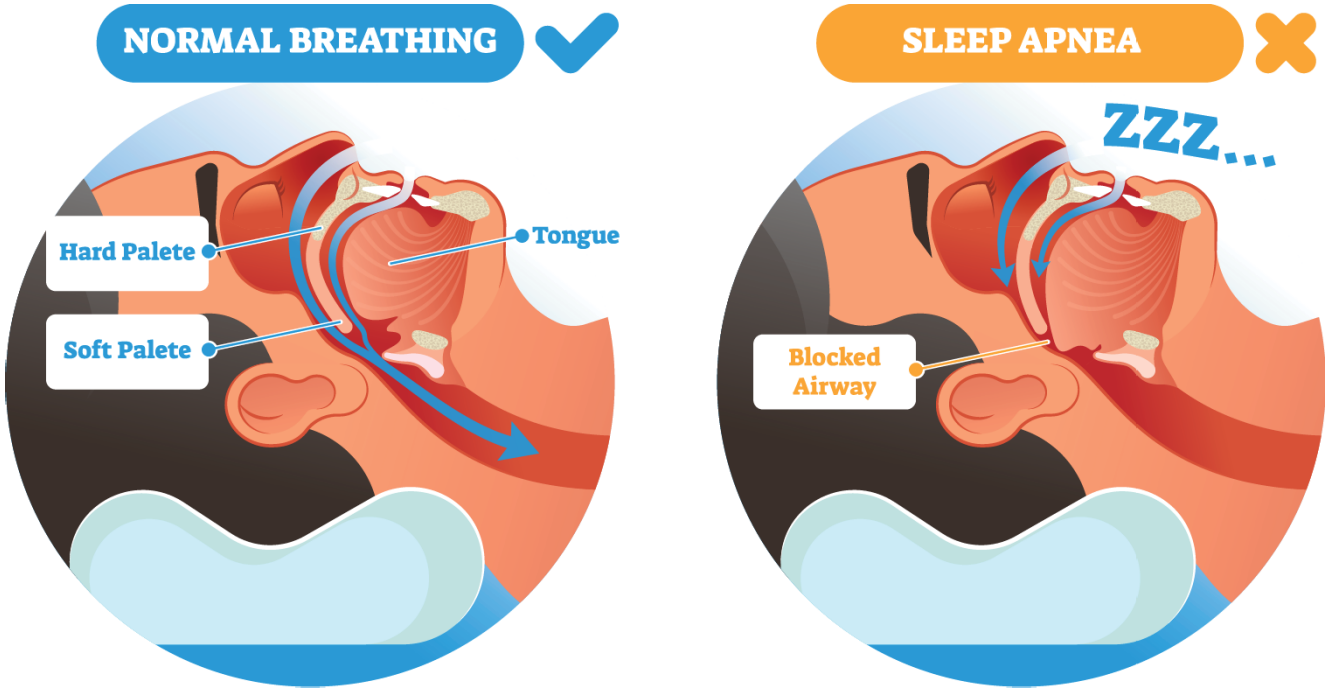
Definition of Terms

- Apnea: Cessation of air flow for a minimum of 10 sec.
- Usually associated with EEG arousal and a 2-4% drop in oxygen
- saturation.
- Hypopnea:
  - In 2001, the Clinical Practice Review Committee of the American Academy of Sleep Medicine (AASM) defined hypopnea as: 30% or greater reduction in airflow accompanied by a decrease in oxyhemoglobin desaturation of ≥ 4%. This definition was ultimately recognized by the Centers for Medicare and Medicaid Services (CMS) for reimbursement
  - In 2007, the AASM proposed a new "alternative" hypopnea scoring rule based on ≥ 50% drop
  - in flow associated with a ≥ 3% decrease in saturation *or* an arousal.
  - In 2012, an update to the scoring rules was published. The alternative rule was elevated to a recommended rule, and the previously recommended rule was retained for those patients that require CMS reimbursement.

- Sleep; 2001;244:469-470.
- AASM Manual for the Scoring of Sleep and Associated Events: American Academy of Sleep Medicine; 2007.
- J Clin Sleep Med; 2012;85:587-619

Diagnosis and Classification of Severity of OSA

- Diagnosis is based on number of Apnea+ Hypopnea
  - AHI (Apneas+ Hypopneas/total sleep time in hours)
- Severity classification
  - Mild: AHI of 5-14.9 events per hour of sleep
  - Moderate: AHI: 15-29.9 events per hour of sleep
  - Severe: AHI: >30 events per hour of sleep of sleep

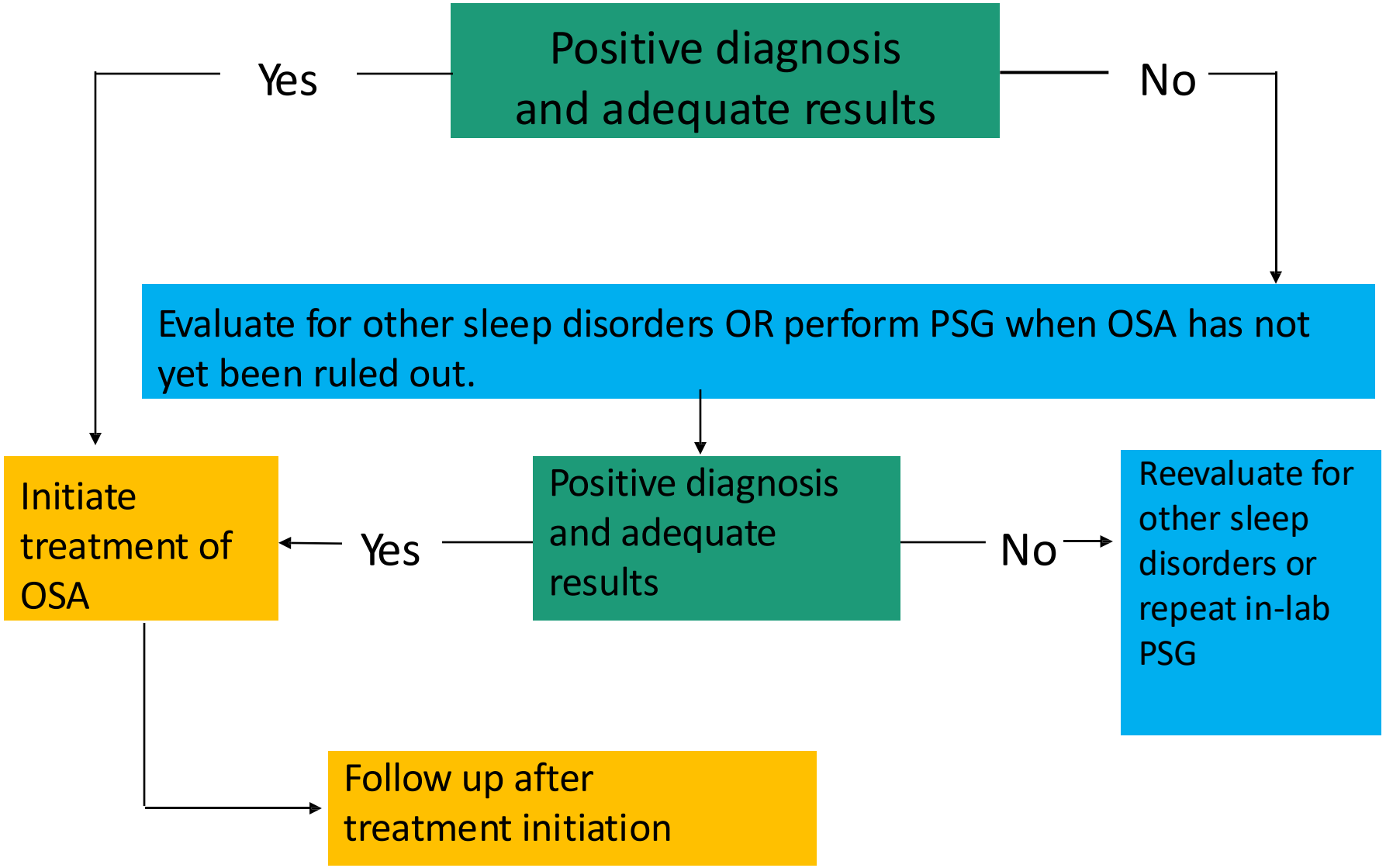


Cardiometabolic Consequences of Chronic Intermittent Hypoxia (CIH)

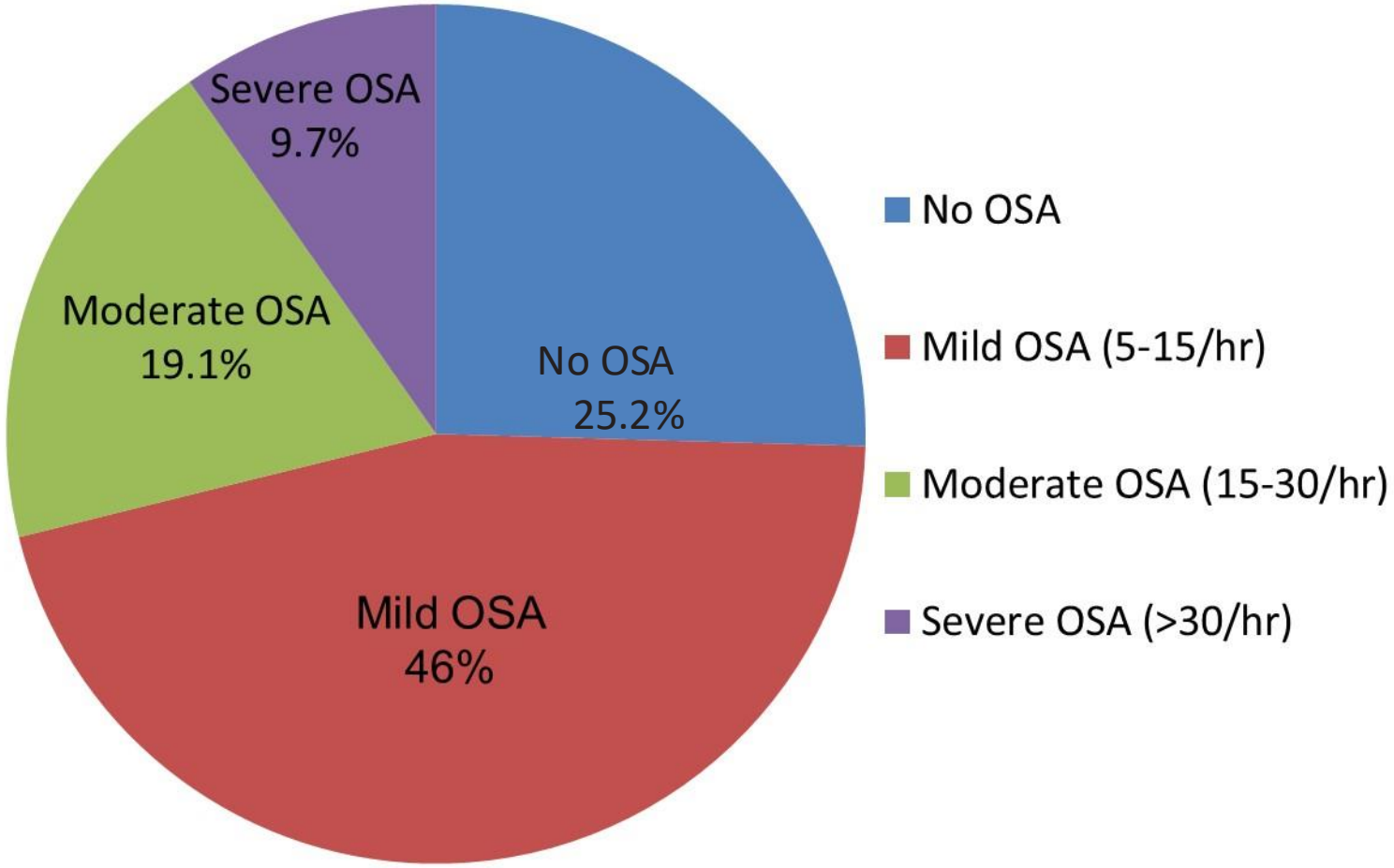
- Hypertension
- CAD
- CHF
- Atrial Fibrillation
- Stroke
- Diabetes
- Metabolic Syndrome

Neurocognitive Consequences of Sleep Fragmentation

- Excessive daytime sleepiness
- Reduced Attention
- Increased MVAs
- Depression
- Impaired quality of life
- Cognitive Impairment


Positive diagnosis and adequate results
Yes
No
Evaluate for other sleep disorders OR perform PSG when OSA has not yet been ruled out.
Positive diagnosis and adequate results
Yes
No
Initiate treatment of OSA
Reevaluate for other sleep disorders or repeat in-lab PSG
Follow up after treatment initiation

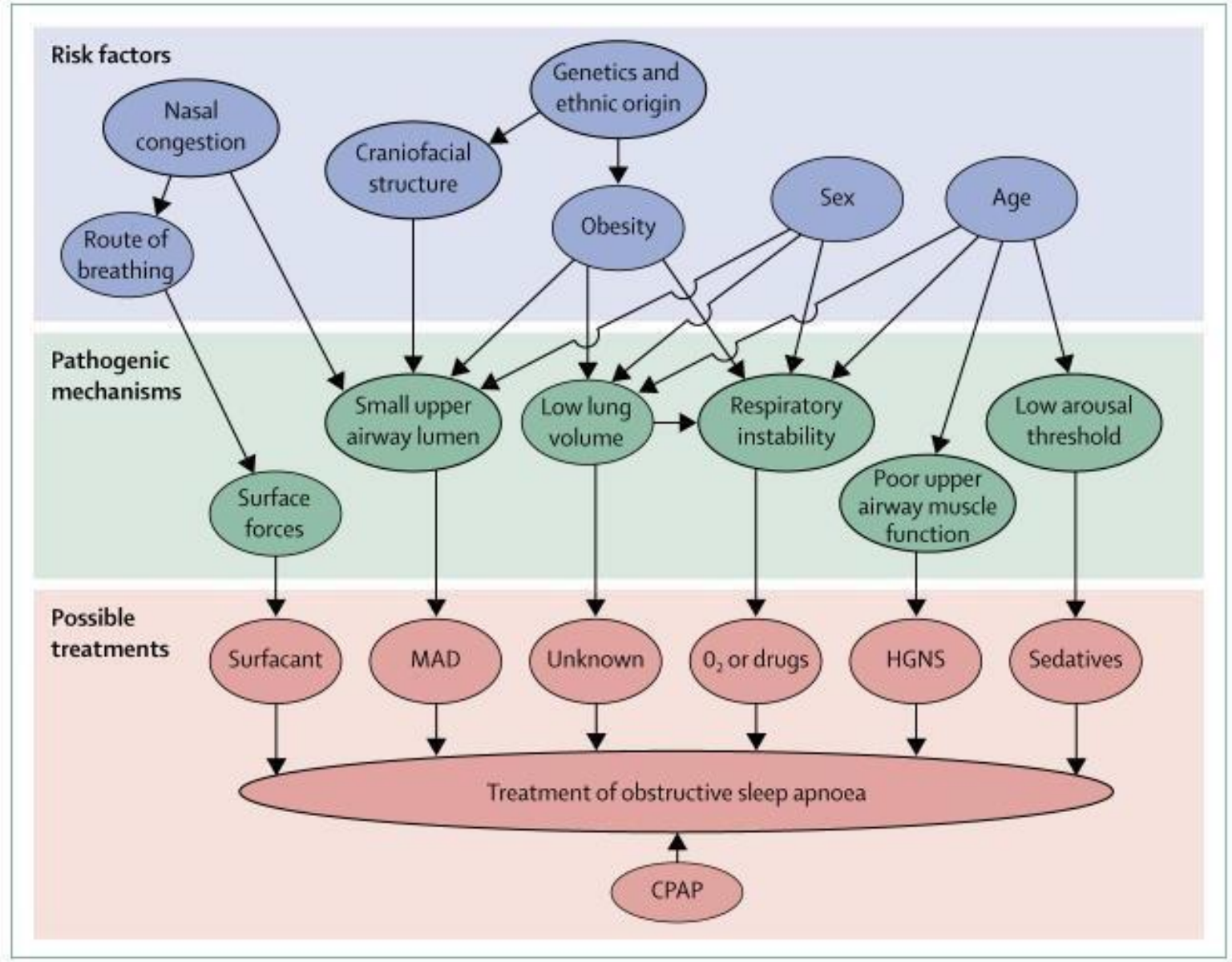
Prevalence of OSA in the WTC Responder population is 75%



Sunderram et al, 2019. Chest

Possible Treatments for OSA

The Lancet, 383 (9918):736-747, 2014



Oral Appliance Therapy: AASM recommendations

- For treatment of primary snoring in adults (STANDARD)
- For OSA, use a custom, titratable appliance over non-custom oral devices. (GUIDELINE)
- For OSA patients, intolerant of CPAP therapy or prefer alternate therapy. (STANDARD)
- Qualified dentists provide oversight of oral appliance therapy in patients with OSA, to survey for dental-related side effects or occlusal changes and reduce their incidence. (GUIDELINE)
- Follow up sleep testing to improve or confirm treatment efficacy, rather than conduct follow-up without sleep testing, for patients fitted with oral appliances. (GUIDELINE)
- Return for periodic office visits with a qualified dentist and a sleep physician. (GUIDELINE)

WTC AND COPD

- 3rd leading cause of death world wide in 2019
- Global Initiative for chronic obstructive lung disease (GOLD) a collaboration between NIH and Who has defined COPD as persistent airflow limitation
- Associated with indoor and outdoor pollution, occupational exposures, cigarette smoke
- 3 key SX include SOB, chronic cough, sputum production
- Spirometry FEV1/FVC <70% with no change after administration bronchodilator
- Only 3-4 % WTC responders fulfill this criteria perhaps due to low smoking and chronic bronchitis

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Treatment of COPD

- Reviewed in Gold guideline
- Smoking cessation, weight loss, decrease hazardous environmental and occupational exposures, vaccinations for contagious disease
- Pharmacologic management includes long and short acting inhaled bronchodilators and ICS, phosphodiesterase inhibitors
- Supplemental oxygen, non-invasive ventilation, pulmonary rehab

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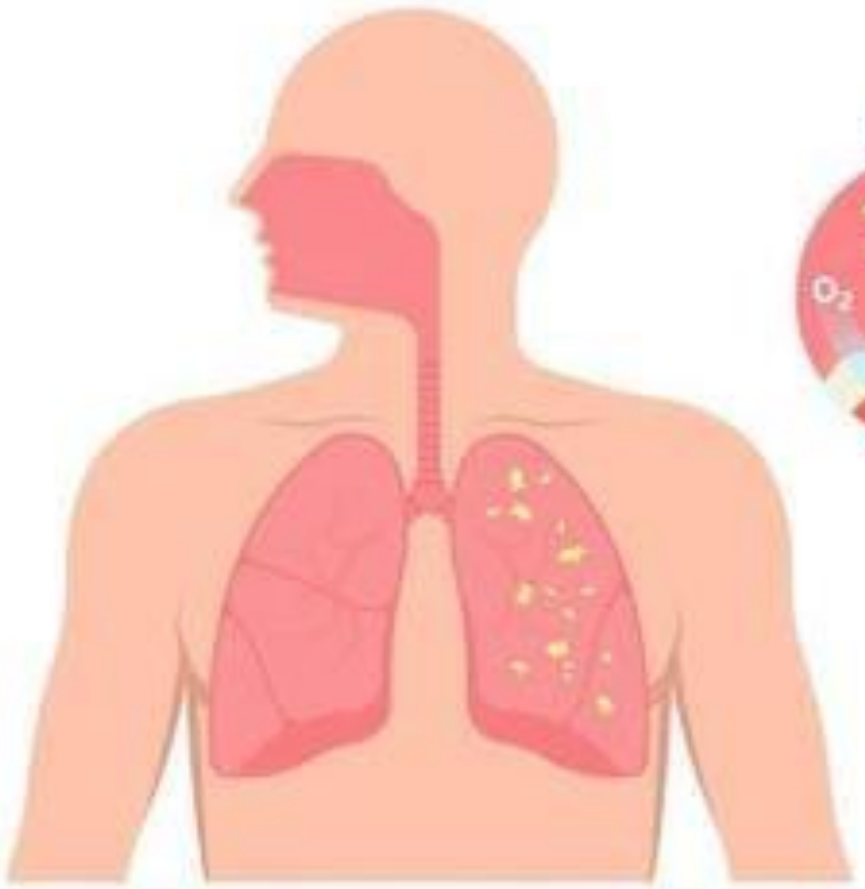

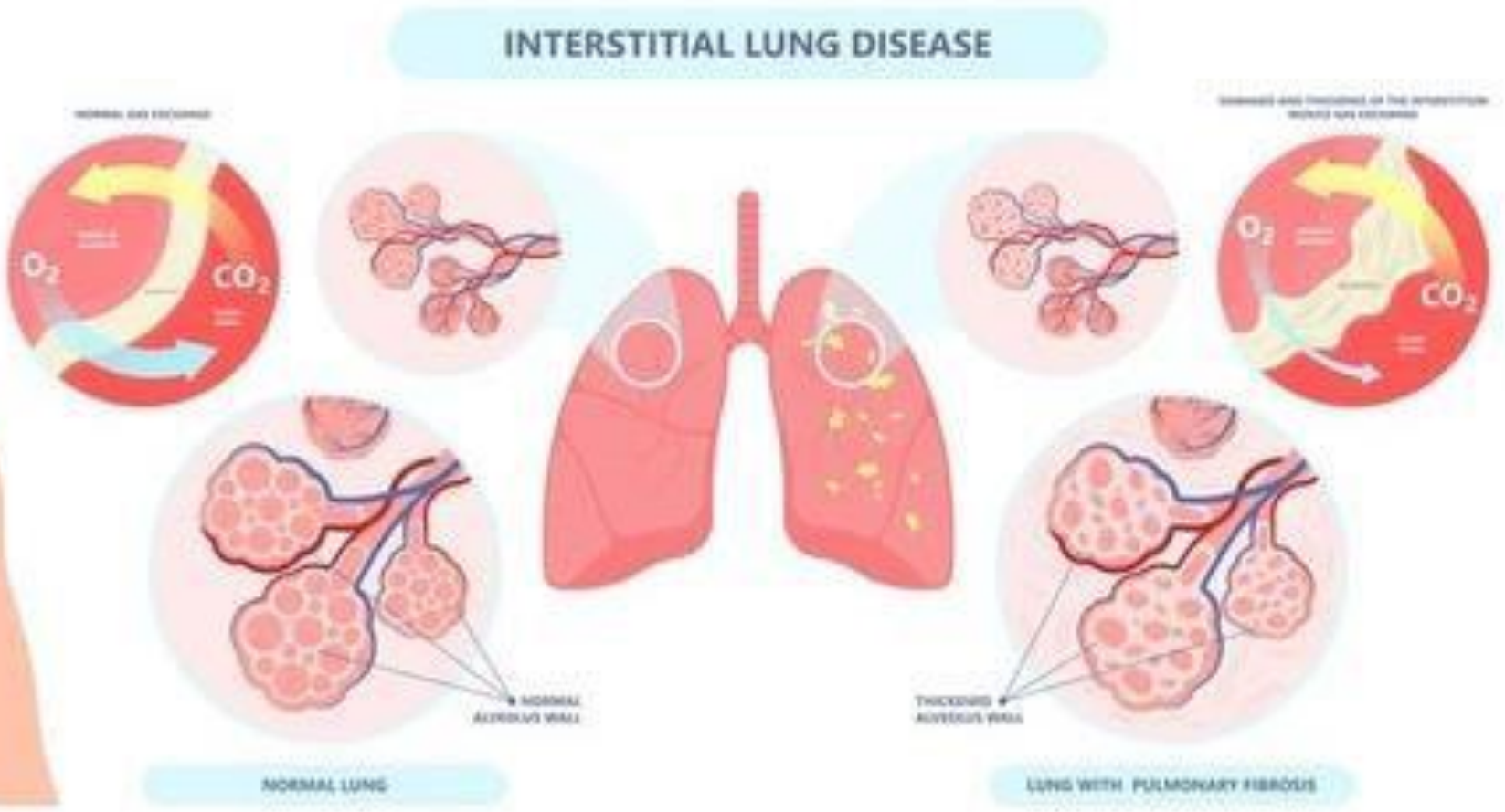

WTC

- ILD is umbrella term for large and heterogeneous group of illness that are inflammatory and / or fibrotic

ILD

- ILD observed in WTC patients
- Non-specific interstitial pneumonia (NSIP)
- Hypersensitivity pneumonitis (HP)
- Connective tissue associated ILD

WTC-Related Interstitial Lung Diseases FDNY Rescue Workers

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- &RP SOHWHO UHYHUVHG Z LWK WUHDWPHQW
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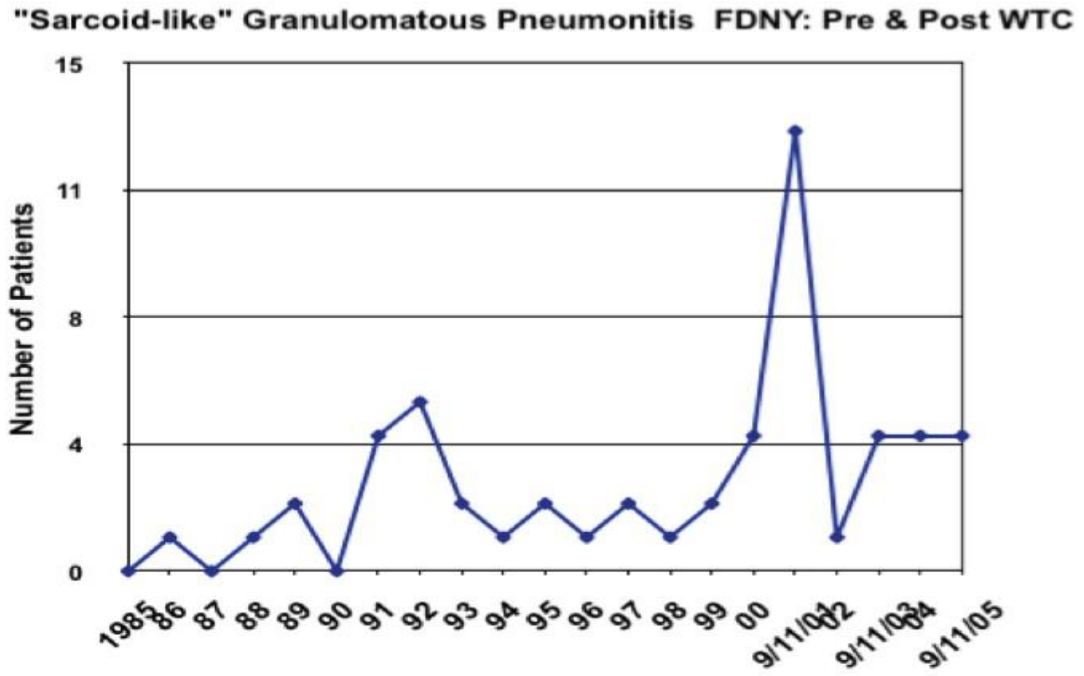
- 26 ZLWKQHZ RQVHW6DUFRLGRVLV (³: 7&-6 /* 3 '´)
- 13 LQILUVW12 P RQWKV SRVW: 7 &
- 13/100,000 -! 86/100,000 -! 22/100,000
- $V\P SWRPDWLF -! $VWKPD V\P SWRP V, HWF
- 1R IDWDOLWLHV

,]ELFNL %DQDXFK, .HOO\ 3UH]DQW HW DO &+(67 0D\ 2007

WTC – Related Sarcoid Like Granulomatous Pulmonary Disease: Interstitial Lung Disease in FDNY Rescue Workers



3UH-: 7 & 13 / 100,000 LQ) ' 1 < UHVFXH Z RUNHUV

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Sarcoidosis in World Trade Center Responders

Methods

- **All potential cases of sarcoidosis were identified through a systematic search and review of patient self-reports, physician reports and recorded ICD- 9 codes (135, 516.3)**

- **Each case was evaluated and scored by three pulmonologists using the ACCESS criteria. Only sarcoidosis cases classified as "definite" using the ACCESS criteria are reported**

ACCESS Criteria

All cases required:

- **a biopsy report revealing a non-caseating epithelial granuloma**

- **a positive Kveim test and diagnostic imaging consistent with sarcoidosis.**

Sarcoidosis in World Trade Center Responders

Results

- Thirty-eight patients examined between 7/16/2002–9/11/2007 were classified as “definite” cases of sarcoidosis

- The annual incidence among 9/11 responders was conservatively estimated to be 32/100,000, with a peak annual incidence of 54/100,000 occurring between 9/11/2002-9/11/2004

- Incidence of sarcoidosis in black responders (61/100,000) was nearly double that in white responders (34/100,000)

- Low FVC was the spirometric abnormality most commonly observed in our sarcoidosis population

Diagnosis of ILD

- History- Occupational and Environmental exposures, medications, co-morbidity and their treatment, ie cancer chemotherapy, family history
- Physical examination
- Pulmonary function testing
- Imaging - high resolution CT scan

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Treatment of ILD

Modifiable – smoking cessation, healthy diet/weight, vaccines, decrease exposure

Specialist referral

Help with workers comp

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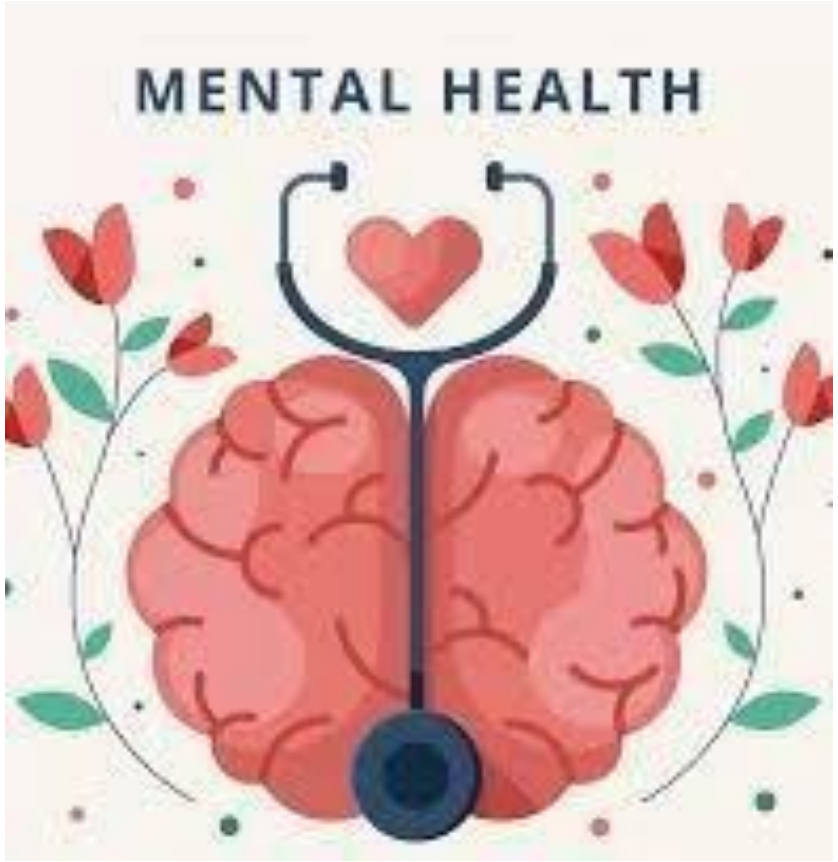
Unique Aspects of WTC and Mental Health

High rates of pulmonary symptomatology correlates with mental health abnormalities particularly anxiety

Working conditions at WTC treacherous, chaotic, fear of personal safety, close proximity to body parts

Same evidence that stressful conditions increase susceptibility to toxic insult



All Certified Conditions – Member Counts

As Of 11/30/2022

Condition	Responders	Survivors	Combined
Chronic Rhinosinusitis	29,014	7,265	36,279
Gastroesophageal Reflux Disease (GERD)	26,931	6,143	33,074
Cancers	17,498	13,271	30,769
Asthma	14,041	5,729	19,770
Sleep Apnea	16,002	1,710	17,712
Post-Traumatic Stress Disorder (PTSD)	9,655	4,220	13,875
Chronic Respiratory Disorder - Fumes / Vapors	7,972	1,305	9,277
WTC-Exacerbated Chronic Obstructive Pulmonary Disease (COPD)	3,477	1,093	4,570
Anxiety Disorder (not otherwise specified)	2,687	1,134	3,821
Major Depressive Disorder	2,656	959	3,615
Depression (not otherwise specified)	2,359	527	2,886
Adjustment Disorder	1,482	982	2,464
Interstitial Lung Disease	1,307	628	1,935
Chronic Laryngitis	1,653	66	1,719
Substance Abuse	1,319	304	1,623
Generalized Anxiety Disorder	1,120	329	1,449
Chronic Nasopharyngitis	754	98	852
Panic Disorder	512	144	656
Dysthymic Disorder	295	322	617
Other Musculoskeletal Disorder	553	43	596
Upper Airway Hyperreactivity	420	99	519
Carpal Tunnel Syndrome	52	N/A	52
Low Back Pain	21	<10	22-30

The figures are based on the number of members certified for each Zadroga Act condition. Given that there are sometimes multiple certifications for one member within the same Zadroga Act condition, the slide counts the member only once.

N/A stands for Not Applicable.

Lessons Learned from WTC Health Program
There are meaningful actions we can take to reduce morbidity and diminish suffering.

Prevalence and persistence of illness varies and is mediated by **exposure severity, comorbidity, lack of training, re-traumatization, psychosocial factors** and barriers to care.

- Invest in prevention
  - Educate, improve coping and resilience skills, reinforce social support systems, provide training for workers at risk for trauma exposure, minimize exposure when possible
- Provide training for frontline workers
- **Provide ongoing screening and health monitoring of affected populations**
- Monitor mental and physical symptoms in parallel
- Facilitate access to care/consider financial and other barriers
- Offer collaborative care- Multidisciplinary, integrated treatment and psychosocial services

Challenges

- Reducing risk factors when possible
- Encouraging screening when available
- Cancer gatekeeping
- Hospice when needed
- Encouraging people to use our mental health services

QUESTIONS

Iris G. Udasin, MD

Udasin@eohsi.Rutgers.edu

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THANK YOU!

- We dedicate this presentation to all of those affected by the World Trade Center disaster – the responders, the survivors, the health care workers, the community and their families
- Thank you to all of the participating Clinical Centers of Excellence
- Our funding agency, NIOSH

Provider Resources

1. Nationwide Provider Network (NPN) Contractor

- Managed Care Advisors/Sedgwick Government Solutions
- MCA is a fully owned subsidiary of Sedgwick Government Solutions headquartered in Bethesda, Maryland.
- MCA has been a leading provider of federal workers' compensation and specialty health plan products and services to the U.S. federal government since 2003, and direct experience with the WTC Health Program since 2015.

2. Provider Networks

- **First Health**
- **Prime**

3. If interested in joining the network or with general questions, contact

- **Provider Services Call Center at 800.416.2898, Option #2 or email at WTC_providerenrollment@sedgwickgovernment.com**

NPN Billing Overview - Methods of Claim Submission for In-Network Providers

Nationwide Provider Network

Electronic

Electronic Claim (e-bill)

Payer ID: **LV371** ★

Provider Portal

Submit Claim - Upload

Paper

Mail:

MCA-Sedgwick

PO Box 8021

Dublin, OH 43016

Fax:

866.728.7860 (Toll-Free)

614.408.2836 (Local)

★ = Preferred Method

Billing Overview – Call Center Assistance for In-Network Providers

Nationwide Provider Network

800.416.2898

wtcnpn-providerservices@sedgwickgovernment.com

For Provider use ONLY

• Provider Services OPTION # 2

- Billing Questions
- Authorization Questions
- Reimbursement Questions
- Claims Status
- Portal Assistance
- Confirming member eligibility for coverage
- Update/provide banking details

• Member Services OPTION # 1

- Scheduling Questions
- Appointment Questions
- General Member Questions

- Update/provide banking details
- Billing Questions
- Authorization Questions
- Reimbursement Questions
- Claims Status
- Portal Assistance
- Confirming member eligibility for coverage

For more information about the world trade center program, please go to:

https://www.cdc.gov/wtc/