



WTC Research: Extending Reach, Engagement and Impact-Methods and Metrics

STAC Meeting-NYC

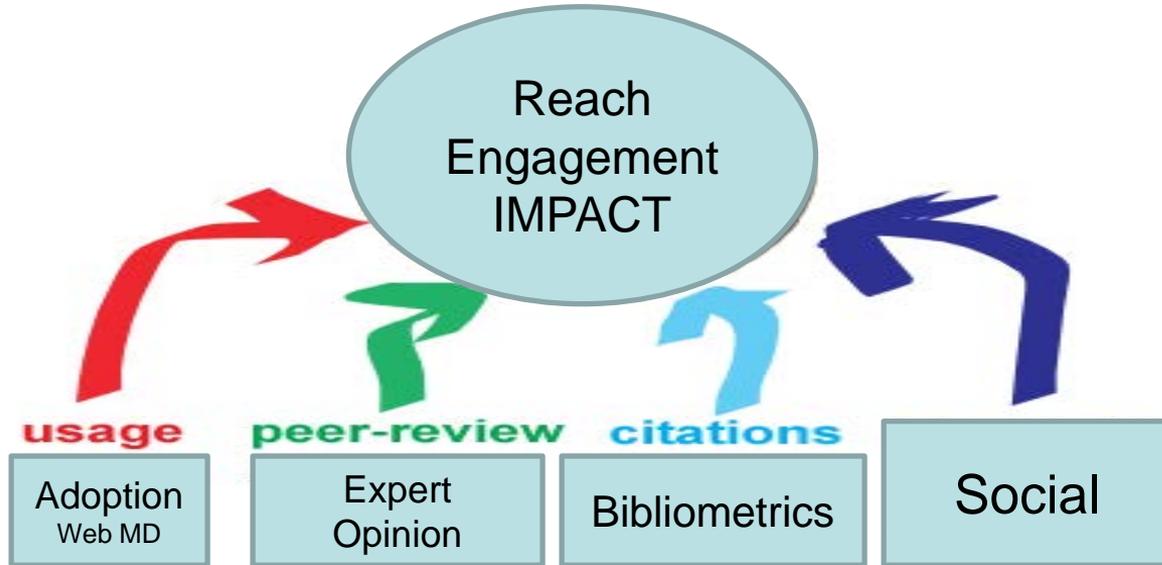
November 3, 2016

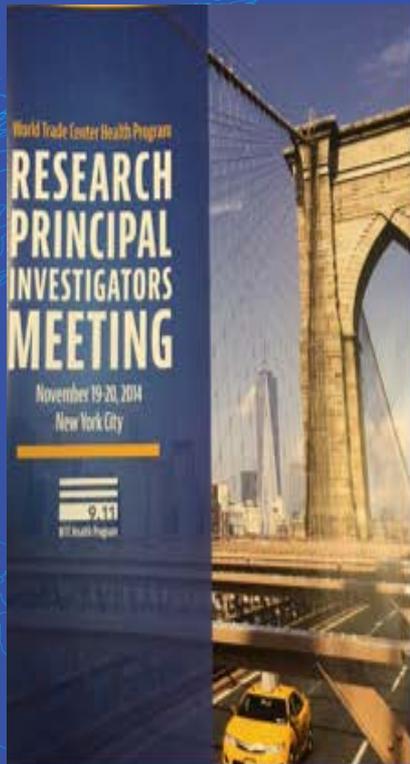
Max R. Lum Ed.D. MPA

e-Communication and Research Translation

Office of the Director, NIOSH

WTC “Research to Care” Research Translation Approach





Number of Research Projects by Year Funded (n= 57, \$91.3M)

2011— 8 x 3-year projects funded

2012— 5 x 4-year & 5 x 2-year projects funded

2013— 3 x 3-year & 3 x 2-year projects funded

2014— 10 x 2-year projects funded

2015— 7 x 1-year projects funded

2016—6 x 5-year; 3 x 4 year; 4 x 3 year; 3 x 2 year

Traditional Outreach

Principal Investigators meetings



Partner Outreach Activities

- Feel Good Foundation
- 911 EA
- Voices
- NYCOSH
- Community Boards
- Steering Committees

Research to Care “Availability” Conference

- September 16, 2017



Making Research More Social





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Editing Wikipedia

World Trade Center Health Program

From Wikipedia, the free encyclopedia

The **World Trade Center Health Program** (WTC Health Program) provides medical benefits to individuals affected by the September 11, 2001 terrorist attacks on the United States.^[a] The WTC Health Program was established by Title I of the James Zadroga 9/11 Health and Compensation Act of 2010 (Zadroga Act, P.L. 111-347), which amended the Public Health Service Act. The United States Congress passed the bill in December 2010 and United States President Barack Obama signed it into law on January 2, 2011.^[b] The Zadroga Act required the WTC Health Program to begin administering medical benefits on July 1, 2011. On December 18, 2016, the Zadroga Act was reauthorized to provide medical benefits to affected individuals until 2020.^[c] The National Institute for Occupational Safety and Health (NIOSH), within the Centers for Disease Control and Prevention, administers the program. The Centers for Disease Control and Prevention is a component of the United States Department of Health and Human Services (HHS).

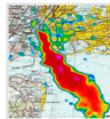
The collapse of the World Trade Center towers on September 11, 2001 (9/11) caused physical injuries as well as massive dust cloud, consisting of pulverized building materials, electronic equipment, and furniture to blanket the World Trade Center site and the surrounding area. Many 9/11 responders, local workers, and resident survivors have since developed respiratory diseases (or symptoms of, or other illnesses relating to the 9/11 terrorist attacks. The WTC Health Program provides medical benefits to responders and survivors who were present in the New York City area as well as responders at the Pentagon and in Shanksville, Pennsylvania.

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1.2	Pre-Zadroga Act health programs
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3.1	Respiratory and digestive disorders
3.2	Mental health conditions
3.3	Neurodegenerative disorders
3.4	Traumatic injuries
3.5	Genitals and prostate conditions
4	WTC Health Program clinics
5	WTC Health Program data centers
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History

9/11 attacks and aftermath

See also: health effects arising from the September 11 attacks



Smoke plume coming from the WTC site, seen on September 11, 2001



Aerial, September 11, 2001. A plume of dust and debris is seen rising from the World Trade Center site.

On September 11, 2001, 19 terrorists associated with the Islamist militant group al-Qaeda hijacked four passenger jets in a series of suicide attacks on the United States, killing 2,996 people and injuring more than 6,000 others. Hijackers flew planes into two main towers of the World Trade Center, resulting in the partial destruction of the western side of the building. The resulting dust cloud due to the collapse of the World Trade Center covered Manhattan for days and contained thousands of tons of toxic debris, including asbestos and other known carcinogens.^[d] Another hijacked plane crashed into a field in Shanksville, Pennsylvania following an attempt by the passengers to restrain control of the plane. No one in the airlines survived.

Approximately 10,000 people have sought medical treatment for illnesses related to dust from the World Trade Center site.^[e] A study of rescue workers released in April 2012 found that all these studies had impaired lung functions, and that 30–40% were reporting itchy or hoarse throat or impairment in persistent symptoms that started within the first year of the attack.^[f] In 2011 a major research study showed significant long term medical and psychological effects among first responders to the World Trade Center site. These effects include elevated levels of asthma, sinusitis, gastroesophageal reflux disease and posttraumatic stress disorder.^[g]

Residents, students, and office workers of Lower Manhattan and nearby Chinatown have also reported negative health effects.^[h] Several deaths have been linked to the toxic dust, and the victims' names will be included in the World Trade Center memorial.^[i] The New York State Department of Health has documented at least 224 deaths of rescue and recovery workers since September 11, 2001. 77 of these individuals died of illnesses, including 68 from lung and various other cancers. Kitty Geiberg, New York state Bureau of Occupational Health's chief epidemiologist said, "We're not saying they are all World Trade Center related; we're just saying this is what people are dying from." Many of the 68 respondents who died from cancer had cancer before September 11, 2001, but most of the cancer patients developed the disease afterward.^[j]

Pre-Zadroga Act health programs

In 2002, following the 9/11 terrorist attacks, both the National Institute for Occupational Safety and Health and the American Red Cross provided grants to launch the World Trade Center Medical Monitoring and Treatment Program (MMTP) in response to individuals developing health issues related to the disaster. The United States Congress passed appropriations to provide limited health screening and treatment services to World Trade Center responders. The MMTP has received approximately \$475 million from the federal government. Over 87,000 people met the program's initial eligibility requirements. On July 1, 2011, MMTP became a part of the World Trade Center Health Program.^[k]

The World Trade Center Environmental Health Center (EHC) was also established after the 9/11 terrorist attacks to treat WTC-related illnesses. This program consisted of three locations in and around New York City. On September 30, 2003, the Centers for Disease Control and Prevention (CDC) awarded the New York City Health and Hospitals Corporation (HHC) a grant to be administered by the National Institute for Occupational Safety and Health (NIOSH), to provide health services to non-responders populations in New York City affected by the World Trade Center terrorist attacks.^[l] Under the grant, HHC provided medical examinations, diagnostic testing, referral and treatment for residents, students, and others in the community that were directly affected by the dust and debris from the collapse of the World Trade Center buildings on September 11, 2001.^[m] Following the passage of the James Zadroga Act, the WTC EHC became part of the WTC Health Program.

In 2003 the Agency for Toxic Substances and Disease Registry and the National Institute launched the World Trade Center Health Registry in collaboration with the National Institute for Occupational Safety and Health. By tracking and investigating illnesses, the WTC Health Registry strives to monitor the health of people exposed to the September 11, 2001 terrorist attacks.^[n] The WTC Health Registry continues to release annual reports on new findings regarding the health effects resulting from the terrorist attacks.^[o]

On August 14, 2006, then-Governor of New York George Pataki signed legislation to expand death benefits to Ground Zero workers who die from cancer or respiratory diseases, presumably from exposures to hazardous materials and toxins during recovery efforts. At the bill-signing ceremony, held at the World Trade Center site, Pataki mentioned James Zadroga, a New York Police Department officer and 9/11 responder who had fallen ill following the terrorist attacks and died of lung disease in 2006.^[p] James Zadroga would become the namesake of the federal bill that created the WTC Health Program in 2011.

James L. Zadroga 9/11 Health and Compensation Act

See also: James Zadroga

Originally introduced in 2006 and eventually made law in 2011, the James L. Zadroga 9/11 Health and Compensation Act of 2010 funds and establishes a health program to provide medical treatment for responders and survivors who experienced or may experience health complications related to the 9/11 terrorist attacks. Senator Bob Menendez and Congressman Carolyn Maloney initially co-sponsored the bill, which failed to pass in 2006.^[q]

The U.S. House passed a new version of the act^[r] in September 2010. New York City Mayor Michael Bloomberg asked the Senate to do the same.^[s] In a Senate vote held on October 9, 2010, Democrats were unable to break a Republican filibuster against the bill.^[t] Opposed Republicans expressed concerns over the \$7.4 billion cost of the bill.^[u] According to Republicans, the provisions to cover the cost of the healthcare program via an excise tax increase on foreign-made goods would violate international tax treaties.^[v] They also raised concerns about creating an extensive new healthcare entitlement program and re-opening the 9/11 victims Compensation Fund.^[w] Many Republicans refused to vote and the filibuster until the Bush tax cuts were extended. Forty-two Senate Republicans had signed a pledge to filibuster all bills until the Bush tax cuts were renewed and the government was appropriately funded for the next several months.^[x] With only 87 votes to pass the Senate bill and an incoming influx of Republicans in the wake of the 2010 Congressional Elections, the bill's future looked increasingly doubtful towards the end of 2010.^[y]

On December 16, 2010 comedian Jon Stewart dedicated an entire episode of *The Daily Show* to the political battle over the Zadroga Act. Guests included four 9/11 first responders suffering from severe diseases and injuries related to their work near the WTC site.^[z] Stewart also interviewed Republican Mike Huckabee, who urged that "Every Republican should vote for this bill."^[aa] Stewart also lamented the lack of media coverage over the bill's political struggle in Congress.^[ab] Stewart's coverage of the Republican filibuster related media awareness of and public support for the bill, drawing praise from politicians and media outlets. White House Press Secretary Robert Gibbs acknowledged Jon Stewart's role in reinvigorating support for the Zadroga Act, and the New York Times compared Jon Stewart to Barack H. Obama, describing the coverage of the Zadroga debate as "historic journalism."^[ac] New York Mayor Michael Bloomberg described Stewart's coverage as "one of the biggest factors that led to the final agreement."^[ad]

On December 19, 2010, New York Senators Chuck Schumer and Kirsten Gillibrand introduced a \$6.2 billion version of the bill that cut the cost of the oil spill but in part by closing a corporate tax loophole and in part by a 2% excise tax on foreign goods that did not include countries with international procurement agreements with the U.S.^[ae] On December 22, 2010, Congress approved the final bill, which allocated \$4.2 billion towards the program,^[af] and President Barack Obama signed the Zadroga Act into law on January 2, 2011. This act created the World Trade Center Health Program, which replaced earlier Programs (Medical Monitoring and Treatment Program and the WTC Environmental Health Center program).^[ag] The World Trade Center Health Program provides treatment services and medical benefits for people who worked as responders and recovery operations as well as for survivors of the 9/11 terrorist attacks.^[ah]



International Space Station image taken on September 11, 2001 showing the smoke plume rising from Lower Manhattan and extending over Brooklyn (captioned 3 rows)



Survivors were covered in dust after the collapse of the towers



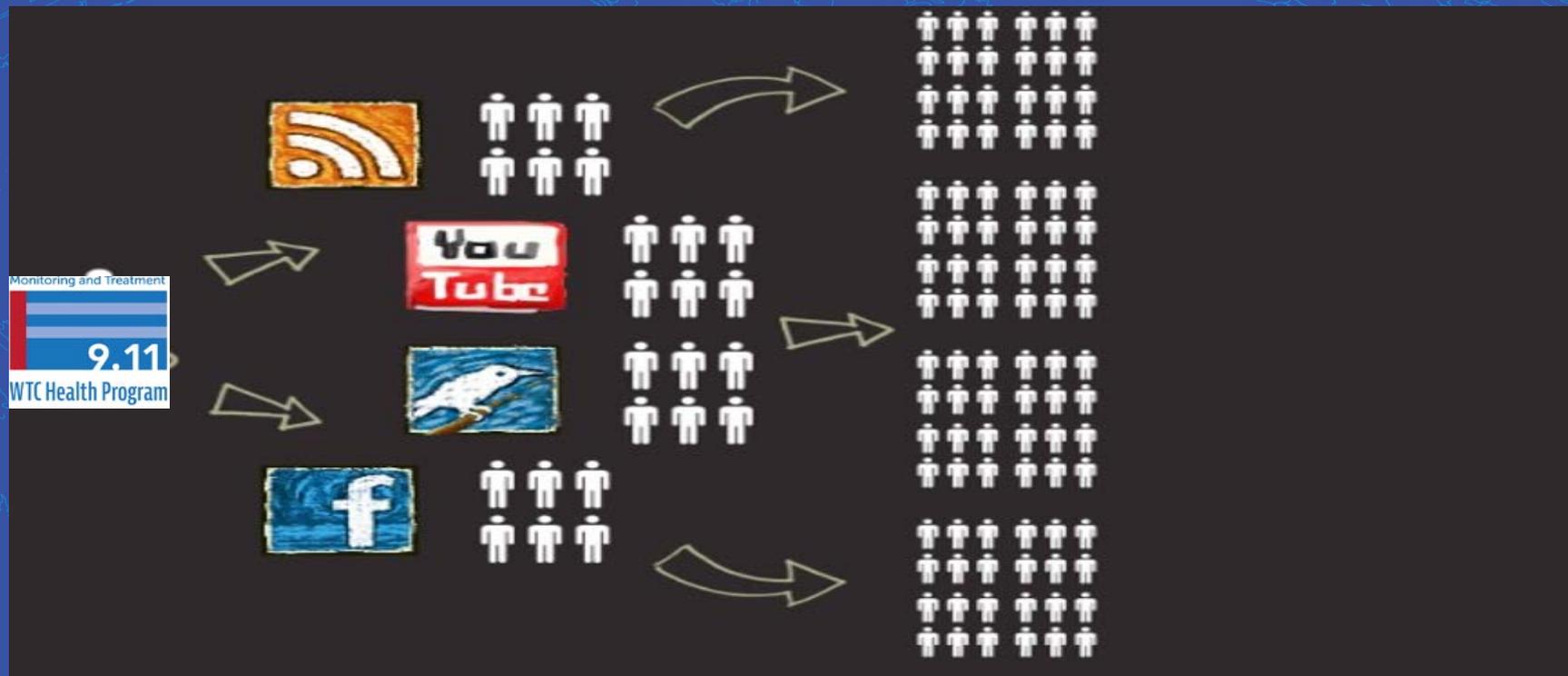
President Obama signing the James L. Zadroga 9/11 Health and Compensation Act of 2010 into law, January 2, 2011 at the Pentagon State in Hawaii

The Immediate Benefit

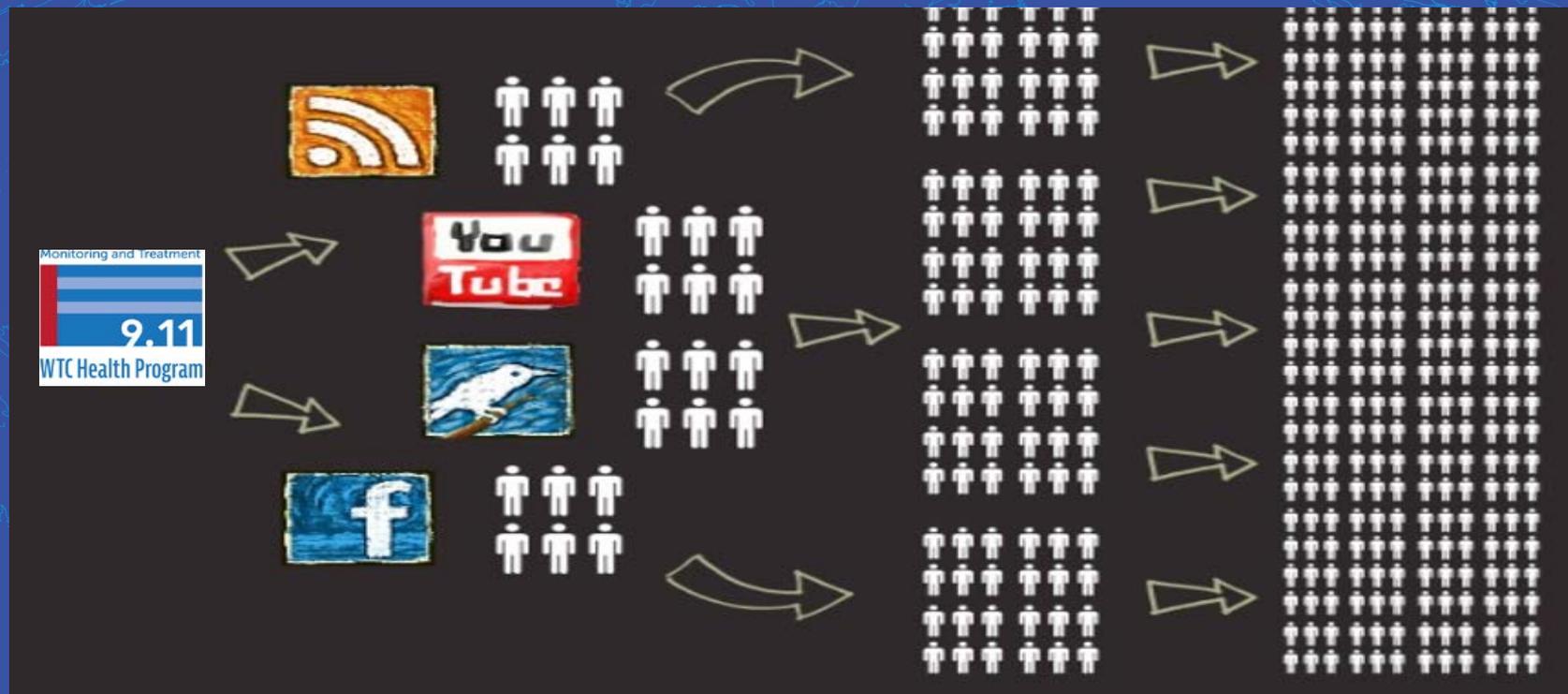


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The Added Benefit



The Long Term Benefit



WTC Research Gateway





World Trade Center Health Program

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NIOSH has funded research projects designed to help answer critical questions about the physical and mental health conditions related to the 9/11 terrorist attacks. This research plays a vital role in the health conditions currently covered by the WTC Health Program (see [WTC-Related List of Covered Health Conditions](#)) and the Program's ability to add health conditions to the list. The areas of interest are based on the Program's [Research Agenda](#) and include, but are not limited to:

- biomarkers of exposures or health outcomes;
- exposure-response relationships;
- improvements in diagnosis and treatment;
- patterns of illness (age, gender, etc.);
- risk factors for disease; and
- other research studies on WTC-related health conditions or emerging conditions.

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Research Projects

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Search Suggestions:

- Phrase: *World Trade Center*
- Principal Investigator: *Charles Hall*
- Project Number *1u01-oh010730-01*
- Fiscal Year Awarded: *2014*

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Title	Project Number	Principle Investigator	Fiscal Year Awarded
A Pilot Test of the Relaxation Response Resiliency Program (3RP) in Spanish Speaking World Trade Center Disaster Survivors with PTSD	1U01-OH010996-01	Lucia Ferri, PhD	2015
Childhood Exposures to Persistent Organic Pollutants in the World Trade Center Disaster and Cardiovascular Consequences	1U01-OH010714-01A1	Leonardo Trasande, MD MPP	2015
Clinical Characteristics and Outcomes of WTC-Associated Sarcoidosis	1U01-OH010993-01	Thomas Aldrich, MD	2015
Cognitive Function among World Trade Center Rescue and Recovery Workers - Direct Effect or Mediation through Comorbidity	1U01-OH010988-01	Cheryl Stein, PhD	2015

Research Projects

Search Research Projects



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Title	Project Number	Principle Investigator	Fiscal Year Awarded
Deciphering Biological Linkages between PTSD and Respiratory Disease in WTC Responders	1U01-OH010718-01	Bejamin Luft, MD	2014
Epigenetic Linkage between PTSD and Respiratory Disease in WTC Responders	1U01-OH010416-01	Bejamin Luft, MD	2012

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Research Projects

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1

Title	Project Number	Principle Investigator	Fiscal Year Awarded
Biorepository of Cancer Tissue Samples from WTC Responders	1U01-OH010512-01A1	Emanuela Taioli, PhD MD	2014
Post-9/11 Cancer Incidence in FDNY Firefighters	1U01-OH010728	Mayris Webber, DrPH	2014
Prostate Cancer Risk and Outcome in WTC Respondents	1U01-OH010396-01A1	Emanuela Taioli, PhD MD	2013
Cancer Among WTC Responders: Enhanced Surveillance, Exposure Assessment, and Cancer Specific Risks	200-2011-41815	Paolo Boffetta, MD	2011
Cohort Studies of Incident Cancers in the FDNY WTC Responder Population	200-2011-39489	David Prezant, MD	2011

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Research Projects

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Title	Project Number	Principle Investigator	Fiscal Year Awarded
Deciphering Biological Linkages between PTSD and Respiratory Disease in WTC Responders	1U01-OH010718-01	Bejamin Luft, MD	2014
Epigenetic Linkage between PTSD and Respiratory Disease in WTC Responders	1U01-OH010416-01	Bejamin Luft, MD	2012
Evaluation of Distal Airway Injury Following Exposure to World Trade Center Dust	200-2011-39413	Kenneth Berger, MD	2011



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1

Evaluation of Distal Airway Injury Following Exposure to World Trade Center Dust



Project Number	200-2011-39413
Institution	NYU School of Medicine
Fiscal Year Awarded	2011
Project Duration	3 years

Description

The goal of the present proposal is to enhance characterization of World Trade Center (WTC)-related lung disease using lung function measurements that can detect lung injury in addition to abnormalities identified in standard spirometry. The proposed studies are based on the concept that spirometry may identify airway injury as a reduction in lung volume or air flow, however, spirometry can often be normal even in symptomatic patients, particularly when injury is located in the distal airways.

Research Objectives

To enhance characterization of airway injury in subjects enrolled in the Bellevue Hospital WTC EHC by evaluating spirometry and assessment of distal airway function utilizing oscillometry.

To determine the relationship between development of distal airway dysfunction and simultaneous development of respiratory symptoms during induced bronchoconstriction in subjects enrolled in the Bellevue Hospital WTC EHC

To determine longitudinal lung function as assessed by spirometry and oscillometry in a diverse population exposed to WTC dust while undergoing standardized evaluation and therapy.

The goal of this study is to enhance characterization of World Trade Center (WTC) related lung disease using lung function measurements that can detect lung injury in addition to abnormalities identified in standard spirometry. The research direction is based on the concept that spirometry may identify airway injury as a reduction in lung volume or air flow, however, spirometry can remain normal even in symptomatic patients, particularly when injury is located in the small or distal airways. The studies build upon prior histologic and functional evidence for distal airway abnormalities as a manifestation of obstructive lung diseases. Data have demonstrated:



Impact

A "Small Airway Disease Syndrome" provides a mechanism for respiratory disease following WTC dust exposure even in subjects with normal screening spirometry. Addition of forced oscillation to routine assessment of spirometry in the clinical setting uncovered abnormalities in lung function in a persistently symptomatic population with normal spirometry. Studies confirmed a dose response relationship between small airway dysfunction to both magnitude of WTC dust exposure, severity of symptoms and reactivity in small airways. Longitudinal data demonstrated improvement of small airway function in subjects with acute response to bronchodilator at baseline. The presence of small airway abnormalities suggests a potential target for treatment, particularly for subjects who remain symptomatic despite usual medical care.

Contributors

WTC EHC: Joan Reibman, M.D., Professor of Medicine; Roberta M. Goldring, M.D., Professor of Medicine; Yongzhao Shao, Ph.D., Professor of Environmental Medicine; Mengling Liu, Ph.D., Associate Professor of Environmental Medicine; Michael Marmor, Ph.D. Professor of Population Health; Caralee Caplan-Shaw, M.D., Assistant Professor of Medicine; Meredith Turetz, M.D., Assistant Professor of Medicine; Deepak Pradhan, M.D., Instructor of Medicine; Angeliki Kazeros, M.D., Assistant Professor of Medicine; Beno W. Oppenheimer, M.D., Assistant Professor of Medicine; Denise Harrison, M.D., Assistant Professor of Medicine; Ioannis Vlahos, M.D., Assistant Professor of Radiology; Sam Parsia, M.D., Assistant Professor of Medicine; Meng Qian, Research Associate; Quinyi Chen, Research Associate; Samantha Kalish, Research Associate; Maria-Elena Fernandez-Beros, Database Manager

NYC DOHMH: Stephen Friedman, M.D.; Carrie Maslow, Dr.Ph.; Mark Farfel, Sc.D.

Publications

- [Elevated peripheral eosinophils are associated with new-onset and persistent wheeze and airflow obstruction in world trade center-exposed individuals](#)

The Journal of asthma : official journal of the Association for the Care of Asthma

Authors: Parsia, S., Kazeros, A., Caplan-Shaw, C., Patrawalla, P., Goldring, R., Maa, M. T., Berger, K. I., Turetz, M., Qian, M., Shao, Y., Reibman, J., Liu, M., Rogers, L.

Record Number:755

Pages: 25-32 **Volume:** 50 **Number:** 1 **Edition:** December 12, 2012

Abstract: BACKGROUND: Exposure to World Trade Center (WTC) dust and fumes is associated with the onset of asthma-like respiratory symptoms in rescue and recovery workers and exposed community members. Eosinophilic inflammation with increased lung and peripheral eosinophils has been described in subpopulations with asthma. We hypothesized that persistent asthma-like symptoms in WTC-exposed individuals would be associated with systemic inflammation characterized by peripheral eosinophils. METHODS: The WTC Environmental Health Center (WTC EHC) is a treatment program for local residents, local workers, and cleanup workers with presumed WTC-related symptoms. Patients undergo a standardized evaluation including questionnaires and complete blood count. Between September 2005 and March 2009, 2462 individuals enrolled in the program and were available for analysis. Individuals with preexisting respiratory symptoms or lung disease diagnoses prior to September 2001 and current or significant tobacco use were excluded, RESULTS: One thousand five hundred and seventeen individuals met the inclusion criteria. Patients had a mean age of 47 years, were mostly female (51%), and had a diverse race/ethnicity. Respiratory symptoms that developed after WTC dust/fume exposure and remained persistent included dyspnea on exertion (68%), cough (57%), chest tightness (47%), and wheeze (33%). A larger percentage of patients with wheeze had elevated peripheral eosinophils compared with those without wheeze (21% vs. 13%, $p < .0001$). Individuals with elevated peripheral eosinophils were more likely to have airflow obstruction on spirometry (16% vs. 7%, $p = .0003$). CONCLUSION: Peripheral eosinophils were associated with wheeze and airflow obstruction in a diverse WTC-exposed population. These data suggest that eosinophils may participate in lung inflammation in this population with symptoms consistent with WTC-related asthma.

Keywords: Adolescent, adult, Airway Obstruction, blood, Blood Cell Count, Eosinophils, etiology, Female, Humans, Leukocytes, Mononuclear, male, Middle Aged, New York City, pathology, Pneumonia, September 11 Terrorist Attacks, spirometry, Young Adult

Keywords: adult, adverse effects, etiology, Female, Humans, lung, Lung Diseases, Interstitial, male, Middle Aged, Oscillometry, Particulate Matter, Phenotype, physiopathology, radiography, Respiratory Function Tests, Respiratory Tract Diseases, Retrospective Studies, September 11 Terrorist Attacks, Tomography, X-Ray Computed, Total Lung Capacity

• **Longitudinal spirometry among patients in a treatment program for community members with World Trade Center-related illness**

Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine

Authors: Liu, M., Goldring, R. M., Parsia, S., Turetz, M., Kazeros, A., Qian, M., Caplan-Shaw, C., Cheng, Q., Elena Fernandez-Beros, M., Shao, Y., Reibman, J., Berger, K. I., Marmor, M.

Record Number:813

Pages: 1208-13 **Volume:** 54 **Number:** 10 **Edition:** September 22, 2012

Abstract: OBJECTIVE: The course of lung function in community members exposed to World Trade Center (WTC) dust and fumes remains undefined. We studied longitudinal spirometry among patients in the WTC Environmental Health Center (WTCEHC) treatment program. METHODS: Observational study of 946 WTCEHC patients with repeated spirometry measures analyzed on the population as a whole and stratified by smoking status, initial spirometry pattern, and WTC-related exposure category. RESULTS: Improvement in forced vital capacity (54.4 mL/yr; 95% confidence interval, 45.0 to 63.8) and forced expiratory volume in 1 second (36.8 mL/yr; 95% confidence interval, 29.3 to 44.3) was noted for the population as a whole. Heavy smokers did not improve. Spirometry changes differed depending on initial spirometry pattern and exposure category. CONCLUSION: These data demonstrate spirometry improvement in select populations suggesting reversibility in airway injury and reinforcing the importance of continued treatment.

Keywords: Acute Lung Injury, adult, adverse effects, chemically induced, drug therapy, dust, epidemiology, Female, Humans, Longitudinal Studies, male, methods, Middle Aged, Occupational Diseases, occupational exposure, physiopathology, Residence Characteristics, September 11 Terrorist Attacks, Smoking, spirometry, statistics & numerical data



Principal Investigator: Kenneth Berger, MD
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NIOSH has funded research projects designed to help answer critical questions about the physical and mental health conditions related to the 9/11 terrorist attacks. This research plays a vital role in the health conditions currently covered by the WTC Health Program (see [WTC-Related List of Covered Health Conditions](#)) and the Program's ability to add health conditions to the list. The areas of interest are based on the Program's [Research Agenda](#) and include, but are not limited to:

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Adriana Feder, MD

Adriana Feder, MD



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Research Projects

- Gene Expression Profiles as Markers of PTSD Risk and Resilience in WTC Responders
- Biomarkers of Psychological Risk and Resilience in World Trade Center Responders
- Trajectories of Psychological Risk and Resilience in World Trade Center Responders

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What About Metrics?

The tool:

While it may seem like a an incalculable thing, in real terms altmetrics are analytical tools designed to measure the social reaction to our outreach via traditional and digital social outreach. It's a strategy to measure reach, engagement and influence.

Evaluation of Distal Airway Injury Following Exposure to World Trade Center Dust



Project Number	200-2011-39413
Institution	NYU School of Medicine
Fiscal Year Awarded	2011
Project Duration	3 years

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What is the donut? What does it indicate?



- Tweeted by **293**
- Blogged by **4**
- On **200** Facebook pages
- Mentioned in **6** Google+ posts
- Picked up by **1** news outlets
- Mentioned in **1** LinkedIn forums
- Reddited by **2**
- On **1** videos
- 166** readers on Mendeley
- 1** reader on Connotea
- 3** readers on CiteULike

Mention type	Points
News	8
Blogs	5
Twitter	1
Facebook	0.25
Sina Weibo	1
Wikipedia	3
Policy Documents (per source)	3
Q&A	0.25
F1000/Publons/Pubpeer	1
YouTube	0.25
Reddit/Pinterest	0.25
LinkedIn	0.5



What's with the donuts? Colors as indicators...



Suicide in U.S. Workplaces, 2003–2010
Article in *American Journal of Preventive Medicine*, March 2015



Seat Belt Use Among Adult Workers —
21 States, 2013
Article in *MMWR: Morbidity & Mortality Weekly Report*, June 2016



NIOSH national survey of long-haul truck
drivers: Injury and safety.
Article in *Accident Analysis & Prevention*,
September 2015



Motor vehicle fatalities among oil and
gas extraction workers.
Article in *Accident Analysis & Prevention*,
December 2012



Obesity and other risk factors: The
National Survey of U.S. Long-Haul
Truck...
Article in *American Journal of Industrial
Medicine*, January 2014



Workplace Homicides Among U.S.
Women: The Role of Intimate Partner
Violence
Article in *Annals of Epidemiology*, January 2012



Interventions to prevent injuries in
construction workers.
Article in *Cochrane database of systematic
reviews*, January 2012



Compliance to two city convenience
store ordinance requirements
Article in *Injury Prevention*, September 2015



Research to improve extension ladder
angular positioning
Article in *Applied Ergonomics*, November 2012



Agricultural tractor overturn deaths:
Assessment of trends and risk factors
Article in *American Journal of Industrial
Medicine*, November 2009



Incidence and risk factors of workplace
violence on psychiatric staff.
Article in *Work*, May 2014



Cities with camera-equipped taxicabs
experience reduced taxicab driver...
Article in *Crime Science*, May 2014



Nonfatal construction industry-related
injuries treated in hospital emergency...
Article in *American Journal of Industrial
Medicine*, January 2010



Non-fatal contact injuries among
workers in the construction industry
treated...
Article in *Journal of Safety Research*, June 2010



Nonfatal tool- or equipment-related
injuries treated in US emergency...
Article in *American Journal of Industrial
Medicine*, June 2010

Research Paywall

Problem: Too much science is locked behind paywalls



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Questions for the STAC

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What's Missing?

What's Confusing?

Content Gaps?

What's Working?

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