



Shanksville



New York City



Pentagon

## Research Activity Update

### World Trade Center (WTC) Health Program Meeting of the Scientific/Technical Advisory Committee (STAC) February 2023

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Pentagon photo courtesy of FEMA, Shanksville photo courtesy of FEMA, Shanksville photo by vladton, courtesy of Flickr

## Presentation Objectives

### *Summary of Program Initiatives 2021 - 2023*

#### Research Dissemination and Planning Resources

- Health Effects of 9/11: CDC Online Exhibition
- Electronic Publication Health Effects Library
- Project Funding Information
- Webinars and Science Blogs

#### Research Solicitations

- Survivor-Only Request for Proposals (RFP)
- Lifestyle Medicine (RFP)

#### Potential WTC Researchers

- Developing Networks with Major Research Universities

## Research Input

- RAND Program Reviews
- STAC Recommendations
- Researcher Recommendations
- Stakeholder Input

## Program Initiatives

- Improved Research Dissemination
  - Revised Research Landing Page
  - Research webinars
  - Research Science Blog Postings
- Continuous Reviews of Program Research
- Survivor “Only” Research Solicitation
- Stakeholder Input on Research Solicitations
- Guidance Notices to Researchers Detailing Stakeholder Areas of Interest

## WTC Health Program Research Landing Page Program Research (<https://www.cdc.gov/wtc/research.html>)



Since 2001 the WTC Health Program has funded research of the 9/11-exposed population. This research fortifies our understanding of 9/11 health effects. Research also provides a pathway to improved healthcare for people afflicted from 9/11 exposure. To read more about the history of WTC Health Program research, visit the [Research section](#) of our online museum exhibition.

- About Research
- Blogs
- Publications
- Compendium Archive
- Webinars
- Dashboards (coming soon)

- ### Updates
- SEP 15 Hispanic Heritage Month: NIOSH Science Blog article (available in Spanish and English), summarizes outreach and research in the WTC Health Program. [↗](#)
  - AUG 15 "9/11 Health Research and Care: Part II." Read the second of this two-part article series on the NIOSH website. [↗](#)
  - AUG 9 "9/11 Health Research and Care." Read the first of this two-part article series on the NIOSH website. [↗](#)

Show More

# Health Effects of 9/11: An Online Exhibition

More than 20 years after 9/11, thousands continue to be diagnosed with physical and mental health conditions as a result of their exposure to dust, smoke, debris, and the traumatic events. Tragically, experts predict that these adverse health effects will continue for many decades to come.

This online exhibition, developed by the World Trade Center (WTC) Health Program in partnership with the David J. Sencer CDC Museum, examines the ongoing health effects linked to 9/11 exposures and the emergence of WTC-related health conditions. It also explores the events and advocacy that established the WTC Health Program and research achievements that have led to improvements in medical treatment and knowledge.

Explore the exhibition or select a specific section within the exhibition.

[Explore the Exhibition](#)



<https://www.cdc.gov/wtc/exhibition/>

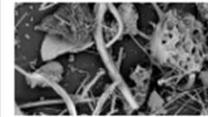
## Sensitive Content Warning:

*The content and images in this exhibition may be sensitive in nature to some audiences, especially responders and survivors of 9/11. Discretion is advised.*

### Health Effects of 9/11



### Toxins and Health Impacts



### Growing Health Concerns and Activism



### World Trade Center Health Program



### Treatment of WTC-Related Health Conditions



### Research on 9/11 Health Impacts



### Inside the Clinic



### Credits and Special Thanks



## WTC Health Effects Library

- Peer-reviewed WTC research publications
- Frequent, broadly defined searches to identify WTC research publications
  - 1,272 WTC research publications (currently)
  - Multiple Search Options
    - Focus Area, Date, Population, Outcomes
- Timely, objective, and continuous reviews of the Program's research portfolio
- Resource for research and community stakeholders

- Research Home
- About Research
- Publications**
- Webinars
- Blogs
- Compendium Archive
- Research Agenda

## Research Publications

The following publication list serves as a bibliography of 9/11 health research and is updated regularly. The list contains publications related to 9/11 but may or may not have been funded under the WTC Health Program. Study findings are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC). Mention of any company or product does not constitute endorsement by NIOSH/CDC.

### Search Publications

Use the sort, filter and search options to customize the list below. Some articles are not publicly available in full. Altmetric scores are shown where available.



#### What is an Altmetric Score?

An altmetric score shows the online attention and activity a publication has received. Click the icon next to each publication to learn more on the Altmetric site.

#### Filters:

Reset Filters

- Topic
  - Cancer
  - CVD
  - Emerging Conditions
  - Respiratory Disease
  - WTC Youth
  - Other
- Year
- Funding Category

#### Additional Filters

- NIEHS Translational Model
- Study Population
- WTC Cohort
- Covered Physical Conditions
- Non-Covered Physical Conditions
- Covered Neuropsychiatric Conditions
- Non-Covered Neuropsychiatric Conditions
- Other Outcomes

Search

Sort By:

Results: 1272

- 
**Multiple myeloma and its precursor disease among firefighters exposed to the World Trade Center disaster** [↗](#)  
 Landgren O, Zeig-Owens R, Giricz O, et al  
 2018
- 
**Early assessment of cancer outcomes in New York City firefighters after the 9/11 attacks: An observational cohort study** [↗](#)  
 Zeig-Owens R, Webber MP, Hall CB, et al  
 2011
- 
**Estimation of future cancer burden among rescue and recovery workers exposed to the World Trade Center disaster** [↗](#)  
 Singh A, Zeig-Owens R, Moir W, et al  
 2018
- 
**Cognitive impairment among World Trade Center responders: Long-term implications of re-experiencing the 9/11 terrorist attacks** [↗](#)  
 Clouston SA, Kotov R, Pietrzak RH, et al

# Research Publications



Find out more about WTC Health Program research publications: [www.cdc.gov/wtc/researchpublications.html](http://www.cdc.gov/wtc/researchpublications.html)

## WTC Health Program Funded Research Dashboard

<https://www.cdc.gov/wtc/fundingdashboard.html>

- Grants Funded 2011 – 2022
  - Grant Abstracts
  - Grant Publications
- Multiple Search Options
  - Research Institution
  - Research Investigator
  - Research Focus
  - Funding

## Research Grant Dashboard

Funded Research  
2011 - 2022

The project tab displays information from WTC Health Program extramural research projects awarded between 2011–2022.

<b>Topic</b>	<b>Year Awarded</b>	<b>Cohort</b>
All <input type="text"/>	All <input type="text"/>	All <input type="text"/>
<b>Institution</b>	<b>Principal Investigator</b>	<b>Project Title</b>
All <input type="text"/>	All <input type="text"/>	All <input type="text"/>
<a href="#">Click Arrow to Reset</a> 		

### Total Awarded Budget

148.2M

The National Institute on Aging (NIA) awarded and funded four WTC research projects in 2021. They are included in this project count, but are not included in the Budget Total in this report.

This total awarded budget amount **does not** include obligated out-year estimates.

### Currently Active Projects

50

### Number of Projects Selected

115

## Research Grant Dashboard

Funded Research  
2011 - 2022

### Institutions



#### Institution Name

Queens)  
COLUMBIA UNIVERSITY HEALTH SCIENCES  
FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH  
FORDHAM UNIVERSITY  
HENRY M. JACKSON FDN FOR THE ADV MIL/MED  
ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI  
NEW YORK STATE PSYCHIATRIC INSTITUTE  
NEW YORK UNIVERSITY SCHOOL OF MEDICINE  
OHIO STATE UNIVERSITY  
QUEENS COLLEGE  
ROBERT WOOD JOHNSON MEDICAL SCHOOL

### Principal Investigators (PIs)

#### PI Last Name

WISNIVESKY  
VANGERWIN  
THANIK  
TEITELBAUM  
TAIOLI  
STEIN/LUCCHINI  
SIGEL  
SENAY  
ORNSTEIN  
McLAUGHLIN  
LUCCHINI

### Project Titles & Numbers (linked NIH Grant Databaset)

#### Project Title

#### Project Number

<a href="#">An Innovative Approach to Improving Asthma Control for World Trade Center Rescue and Recovery Workers through Telehealth Enriched Asthma Management (WTC-TEAM)</a>	12253
<a href="#">Assessing Inflammatory and Behavioral Pathways Linking PTSD to Increased Asthma Morbidity in WTC Workers</a>	11312
<a href="#">Biomarkers of Psychological Risk and Resilience in World Trade Center Responders</a>	10407
<a href="#">Biorepository of Cancer Tissue Samples from WTC Responders</a>	10512
<a href="#">Cancer Among WTC Responders: Enhanced Surveillance, Exposure Assessment, and Cancer Specific Risks</a>	41815

**Research Grant Dashboard**

**Funded Research Abstracts 2011 - 2022**

← ↻ 🏠 🔒 <https://reporter.nih.gov/project-details/9948520>

## Project Details

- Description** > **Assessing Inflammatory and Behavioral Pathways Linking PTSD to Increased Asthma Morbidity in WTC Workers**
- Details
- Sub-Projects
- Publications
- Patents
- Outcomes
- Clinical Studies
- News and More
- History
- Similar Projects

Project Number 5U01OH011312-05	Contact PI/Project Leader WISNIVESKY, JUAN P	Awardee Organization ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI
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### Description

**Abstract Text**

PROJECT SUMMARY/ABSTRACT Asthma and post-traumatic stress disorder (PTSD) are the most common conditions in World Trade Center (WTC) rescue and recovery workers. A large number of WTC workers continue to report poor asthma control and impaired quality of life. Thus, asthma is a major cause of morbidity in this population. Several studies show a strong relationship between PTSD and increased asthma morbidity. PTSD is associated with systemic inflammation (increased levels of interleukin [IL]-1α, IL-2, IL-6, and tumor necrosis factor-α [TNF-α]). Some of these pro-inflammatory cytokines have been linked to more severe asthma phenotypes, potentially explaining the relationship between PTSD and worse asthma outcomes. However, biological pathways are likely only part of the drivers of asthma morbidity. Several observations suggest that PTSD has a stronger association with subjective (asthma symptoms, use of rescue medication, and quality of life) than objective (pulmonary function) markers of asthma morbidity, suggesting over-perception of symptoms. Additionally, theory and empirical evidence suggest that inaccurate perception of asthma symptoms and maladaptive illness and medication beliefs in patients with PTSD may lead to lower adherence to asthma self-management behaviors (SMB), a key determinant of asthma outcomes. With adherence to controller medications being low among asthma patients in general, behavioral mechanisms may also contribute to the association between PTSD and increased asthma morbidity in WTC workers. Our goal is to examine the interaction of biology and behavior in WTC workers with asthma and PTSD and use this information to design and pilot test an intervention to improve their care. The Specific Aims are to: 1. assess the relationship of PTSD with systemic and airway inflammatory patterns in WTC workers with asthma and evaluate the association with asthma control; 2. examine the longitudinal association between PTSD and symptom perception in WTC workers with asthma; 3. assess the relationship between PTSD and adherence to asthma SMB (medication adherence, trigger avoidance, and inhaler technique) in WTC workers and identify the pathways linking them; and 4. develop and pilot test an integrated intervention for asthma and PTSD by adapting the Relaxation Response Resiliency Program, a mind-body program, with counseling to promote asthma SMB, and education to correct over-perception of asthma symptoms. In order to accomplish these Aims, we will recruit 400 WTC workers with a physician diagnosis of asthma from the WTC Health Program. Study subjects will undergo a comprehensive baseline evaluation and will be followed at 6 and 12 months to diagnose PTSD using a structured psychiatric interview, assess systemic and airway inflammatory markers, symptom perception in naturalistic settings, objective measures of medication adherence, and information about asthma outcomes. Using these data, we will evaluate the interplay of biological and behavioral pathways underlying the relationship of PTSD with increase asthma morbidity and adapt and pilot test a novel intervention to improve outcomes of WTC workers.

**Public Health Relevance Statement**

PROJECT NARRATIVE Asthma and post-traumatic stress disorder (PTSD) are the most common conditions in World Trade Center (WTC) rescue and recovery workers. In this study, we will evaluate the interplay of biological and behavioral mechanisms explaining the relationship of PTSD with increase asthma morbidity and adapt and pilot test a novel intervention to improve outcomes of WTC workers.



## Research Solicitation and Funding

- Research is awarded under a competitive process following the framework of the National Institutes of Health.
- Research proposals are rigorously reviewed by an independent panel of experts.
- The research portfolio is the product of the quantity and quality of the proposed research.
- Research solicitations include all members of the 9/11-exposed population.

### 2022 Survivor Only Solicitation (new)

- 3/8 (38%) applications funded
- Score range 25 – 37 (high impact)
- \$1.7M total FY 2022 cost
- 3- to 4-year performance period range
- Institutions: NYU, Columbia, Henry Jackson Foundation
- Primary Outcomes: Emerging Conditions\* and WTC Youth

\*e.g., Health Related Quality of Life and Cognitive Decline

### 2022 Responder & Survivor Solicitation

- 5/27 (19%) applications funded
- Score range 14 – 33 (high impact)
- \$3.0M total FY 2022 cost
- 4-year performance period
- Institutions: NYU, Mount Sinai (2x), Stony Brook, and Queens College
- Primary Outcomes: Respiratory, Mental Health, CVD, and Emerging Conditions\*

\*e.g., Aging (frailty trajectories and intervention strategies)

## 2023 Research Solicitation: Lifestyle Medicine

- Exploratory/Developmental grant FOA (R21) focusing on modifiable risk factors for people with chronic disease (certified health conditions).
- Focus areas include nutrition and diet, sleep hygiene, stress management, physical activity, and avoidance of substance misuse.

**Guidance to Researchers** **Update for RFA-OH-22-004 "World Trade Center Health Research related to WTC Survivors (U01-No Applications with Responders Accepted)"****Purpose**

The updated requirements, guidance, instructions, and other information for RFA-OH-22-004 are effective with the publication date of this notice.

Among many health conditions that may be explored, there are several conditions that have come to light as a result of concerns expressed by the affected population. These health conditions include, but are not limited to, endocrine-related disorders, including metabolic syndrome; reproductive health outcomes, such as polycystic ovary syndrome (PCOS), endometriosis, and infertility; autoimmune and neurodegenerative diseases; and cancer among individuals exposed to the WTC disaster at younger ages (18 years of age or younger).

## External Collaborations

- Increase Participation in WTC Health Program Research
  - Increase the Number of New Researchers Outside the NYC Area
  - Broaden Range of Relevant Research Topic Areas
- University of Michigan—Institute for Social Research (ISR)
  - Intersections between social and environmental context and their impacts on population health and health inequities.
- Harvard University T.H. Chan School of Public Health
  - Work-related interventions to support WTC non-responders' mental health and related lifestyle behaviors.
- University of Kentucky School of Public Health
  - Community-engaged environmental health research

WORLD TRADE CENTER

# HEALTH PROGRAM

**Thank You**