

An update 25 years later: September 2001-September 2026



FDNY WORLD TRADE CENTER HEALTH PROGRAM

HEALTH IMPACTS ON FDNY RESCUE/RECOVERY WORKERS 25 Years: 2001 to 2026



FDNY
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Zohran Kwame Mamdani, Mayor
Lillian Bonsignore, Fire Commissioner
John M. Esposito, Chief of Department
David J. Prezant, Chief Medical Officer

**WORLD TRADE CENTER HEALTH PROGRAM
IMPACT ON FDNY RESCUE/RECOVERY WORKERS
25-Year update**

The purpose of this publication is to update our members on important information the Department has gathered concerning the physical and mental health effects of 9/11 on our membership.

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IN MICHAEL MICK KEITH
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SECTION 1: **LETTERS**



Message from the Mayor of the City of New York **Zohran Kwame Mamdani**



My fellow New Yorkers,

Twenty-five years ago, on September 11, 2001, our city came together in grief and fear as we mourned the thousands of New Yorkers whose lives were taken in the deadliest terrorist attack on our nation's soil.

In the hours that followed, and every day since, New Yorkers have shown that even in our darkest moments, we meet tragedy with an unshakable commitment to one another. There is no greater example of that spirit than the bravery and selflessness demonstrated by our first responders in the aftermath of this horrific attack. Day after day, they reported to Ground Zero, combing through dust, debris and rubble for survivors and providing aid to those in need.

As the years passed and more members of the FDNY began to fall ill, it became clear that our responsibility did not end when the recovery did.

That commitment has united New Yorkers across every walk of life. Survivors, first responders, advocates, elected officials and public servants have rallied together to secure the care and support that those affected by 9/11 deserve and to enshrine that promise in law.

As we prepare to mark the 25th anniversary of 9/11, this report provides the latest information on the lasting health impacts of that day and highlights the World Trade Center Health Program's critical work to support those exposed at the World Trade Center site. We owe it to the FDNY members, first responders and their families who have carried this burden for decades to continue investing and acting on what we know.

This year, New Yorkers across the five boroughs will join people around the globe in honoring the lives lost and the sacrifices made on September 11. I join them in paying tribute to the hundreds of FDNY members who answered the call that Tuesday morning and to all those who continue to live with the consequences of their service.

We will never forget their sacrifice. And we will never stop fighting to ensure they receive the care, dignity and support they have earned through a lifetime of service to our city.

Sincerely,

A stylized, handwritten signature in black ink. The signature is fluid and cursive, starting with a large 'Z' and ending with a long, sweeping horizontal stroke.

Message from the Fire Commissioner Lillian Bonsignore

On September 11, 2001, I was working at the EMS Academy, teaching basic EMT courses and refreshers. When we heard that a plane had struck the World Trade Center, we mobilized the entire academy of students, staff, and equipment to Lower Manhattan to help however we could. The FDNY's actions that day saved tens of thousands of lives. We continue to keep our promise to Never Forget the 343 members who died and the many lost to World Trade Center-related illnesses in the years since.

Everyone who responded that day remembers the endless dust and debris at the site. FDNY members tirelessly worked in rescue and recovery in the days, weeks, and months that followed. Exposure to dust, chemicals, and other hazards left many of our members with serious physical and mental health conditions and placed others at risk of developing them over time.

From the early days following September 11, the FDNY Bureau of Health Services and the FDNY WTC Health Program have stood with our members. The FDNY was the first to launch a comprehensive medical monitoring effort for every exposed member to identify conditions early and provide the best treatment available.

The data collected through this work and shared through FDNY medical and scientific publications helped demonstrate to Congress that our concerns were real and ongoing. That evidence has ensured that the WTC Health Program can continue to help FDNY members for the remainder of our lifetimes.

As we mark this milestone anniversary, the FDNY is releasing an updated WTC health report. Nearly 16,000 of our rescue and recovery workers have been part of the FDNY WTC Health Program and contributed to this report, making it the most comprehensive post-disaster health accounting ever conducted. I am extremely proud of Dr. David Prezant and all the staff who have worked to update this critical information.

Every eligible FDNY member should take advantage of this program. FDNY members' health and safety are crucial to keeping our department ready to serve the people of our city. The FDNY WTC Health Program is proof that we do not forget, and we will work to protect our members forever.

Lillian Bonsignore



Message from the Chief of Department John M. Esposito



It has been 25 years since we lost 343 FDNY members on one of the darkest days in our nation's history—and in the history of our Department. As the anniversary of September 11th approaches, many who were working that day or remember it clearly recall the painful memories of the aftermath that followed. The losses we experienced have forever altered the story of the FDNY.

As the Department began to rebuild in 2001, there were many questions about the long-term impact that exposure to the dust that blanketed Lower Manhattan would have on our responding members and those who volunteered to work at the World Trade Center site. In response, the FDNY WTC Health Program was established through a partnership between FDNY labor and management, the City of New York, academic medical centers, and the National Institute for Occupational Safety and Health (NIOSH).

Today, the program continues to provide annual monitoring exams and treatment for WTC-covered illnesses. Members diagnosed with WTC-related conditions receive state-of-the-art care at no cost. All WTC-exposed FDNY responders—firefighters, EMTs, paramedics, officers, civilian employees, and FDNY retirees—remain eligible to participate. Even now, nearly 16,000 FDNY rescue and recovery workers take part in the FDNY WTC Health Program.

A quarter of a century later, it remains critically important that the Department continue to report on the health of our members. The program's consistent metrics proved critical to the passage of the Zadroga Act in 2010 and were instrumental in the reauthorization of the Zadroga Act in 2015 and its refunding in 2026.

This year's updated report provides important information about the ongoing health effects of WTC exposure. I urge all exposed members to participate in the FDNY WTC Health Program's monitoring and treatment exams. We must do everything we can to protect our health. We owe that to our families, our colleagues, and the members of this Department—especially those who are no longer with us.

Thank you for your continued service to the FDNY and to the people of New York City.

A handwritten signature in black ink that reads "John M. Esposito". The signature is stylized, with the first letters of the first and last names being large and prominent.

Message from the World Trade Center Health Program
and National Institute for Occupational Safety and Health,
Centers for Disease Control and Prevention

We are pleased to see the important work of the FDNY compiled in this World Trade Center 25-year health impact report. The National Institute for Occupational Safety and Health (NIOSH) has provided funding to FDNY since 2002 for medical screening, monitoring, and treatment. Over the years, we have met with numerous 9/11 responders and survivors who have benefitted from the comprehensive medical monitoring and treatments available as part of the WTC Health Program.

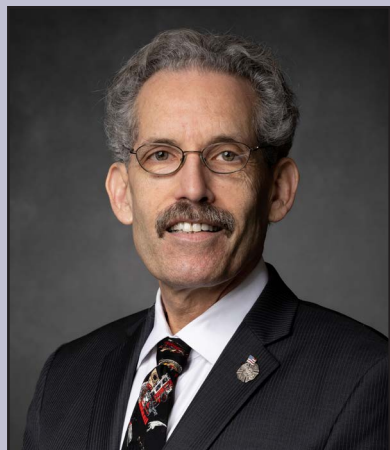
FDNY has been a leader not only in providing monitoring and treatment to its workers early on, but also in our efforts to identify and understand the health effects associated with WTC exposures. The FDNY WTC Health Program has been a model to others in its ability to serve the health needs of its membership, while simultaneously providing to others—through published, peer-reviewed scientific studies—the collective knowledge gained from its monitoring, treatment, and scientific efforts. This information was critical to the authorization of the Zadroga Act in 2010, its reauthorization in 2015 as a federal health program, and its refunding in 2026.

We continue to be impressed by the quality of the programs FDNY offers, in part reflected by the contents of this updated 25-year report to its membership. We look forward to our continued collaboration with FDNY to provide needed WTC-covered medical services along with answers to essential health questions that remain a concern to us all.

John Howard, M.D.
Administrator, WTC Health Program
Director, NIOSH



Dr. John Howard



Dr. David J. Prezant, M.D.



Dr. Jayson Park, M.D.

In the aftermath of 9/11, the health consequences to our WTC-exposed FDNY rescue/recovery workers (firefighters, EMTs, paramedics, officers, civilians, and retirees) were immediate, far-reaching, and—in all too many cases—devastating. Our members struggled to find lost coworkers and civilians while breathing air filled with dust, chemicals, and other noxious elements. FDNY, carrying out its rescue, recovery, emergency medical care, and fire suppression roles, maintained a continuous presence at the site until its closure in July 2002. As a group, FDNY rescue/recovery workers (active and retired) were the first in, the last out, and—for many—the most exposed.

From day one, FDNY's Bureau of Health Services understood the need to immediately evaluate and treat our members. We started treatment on day one, and we were the first to provide comprehensive medical monitoring to our members, beginning within four weeks of the attack. As other groups witnessed the same health effects, we partnered with labor, management, government, and numerous academic health centers to develop the FDNY WTC Health Program. Data from FDNY's WTC Health Program was instrumental in demonstrating to Congress that our health concerns were justified and led to Congress authorizing the Zadroga Act in 2010, its reauthorization in 2015, and its full funding in 2026, so that the WTC Health Program can continue for the remainder of our lifetimes.

Today, we continue our tradition of issuing an updated report every five to 10 years summarizing the health impacts of WTC-exposure on our members. The goal of this report remains the same—to address the question you always ask of us: “How are we doing?” This report is our answer and is based on information from many sources, including your comprehensive medical monitoring and treatment visits, diagnostic tests, treatment records, and tumor registries. We owe it to our members to share this de-identified, aggregate information with you—the same data we used to convince the federal government to add cancers to the WTC-covered condition list, and the same data we are currently using in our longstanding effort to do the same for cardiac and autoimmune rheumatologic diseases.

Message from FDNY's World Trade Center Health Program leadership

More than 600 of our members have died from WTC-related conditions. These statistics are not just numbers; they are coworkers, friends, and family. Early diagnosis is the best way to ensure successful treatment. We have found that members who continue to participate in our program do better with their health and live longer. For that reason, we urge all our members to continue participation in the FDNY WTC Health Program's monitoring/treatment exams. To make participation as convenient as possible, our program has seven locations: FDNY Headquarters in Brooklyn, Manhattan (CSU only), Staten Island, Fort Totten (Queens), Brentwood (Long Island, CSU only), Commack (Long Island), and Middletown (Orange County). Your participation and support are critical to your health and to the success of our program.

We have a clear mission. The priority and focus of this program is to serve you; we remain dedicated to your health and well-being. Every member's life and passing is precious. We will never forget.

Stay healthy, and stay safe.

David J. Prezant, M.D.
Chief Medical Officer, FDNY
Director, FDNY WTC Health Program

Jayson Park, M.D.
Deputy Chief Medical Officer, FDNY
Associate Director, FDNY WTC Health Program

Kerry Kelly, M.D.
Associate Director for Cancer Case Management

Vitaly Davidzon, R.N.
Associate Director for Nursing, FDNY WTCHP



Dr. Kerry Kelly, M.D.



Vitaly Davidzon, R.N.

Message from the Firefighter and Fire Officer Unions



Andrew Ansbro



James Brosi

Twenty-five years ago, on that fateful September day when we lost 343 of our members, those of us who took on the responsibility of bringing them home toiled selflessly and honorably in what many have described as an unimaginably toxic environment. The work that was performed on September 11 and in the months that followed has taken a horrible toll on our members. Over the past 25 years, so many of our members have passed, and thousands of us have become sick from exposure during the rescue and recovery effort.

Those of us who remain cannot change the WTC exposures that we experienced, but we can improve our health through medical monitoring, early diagnosis, and treatment. Many of us suffer daily with chronic sinusitis, asthma, acid reflux, sarcoidosis, cancers, and mental health ailments. We must be vigilant in monitoring our health by getting tested regularly, reacting promptly to personal health changes, and encouraging our brethren to do the same.

Within a month of the 9/11 attacks, Bureau of Health Services (BHS) initiated comprehensive medical monitoring for our members, and this testing is available annually. The unions worked with BHS to design the FDNY WTC Health Program for our members, and we continue to serve on the World Trade Center Health Program Steering Committee. FDNY's WTC Health Program provides valuable health monitoring, cancer screening, testing, treatment, and medications, all available free of charge for any WTC-related condition.

The FDNY WTC Health Program was the first to provide monitoring and treatment, the first to document that WTC Cough Syndrome existed, the first to show that lung function was permanently reduced, the first to show that cancers were increased, and the first to document that certain autoimmune diseases are increased. Union leadership used that information to advocate for passage of the Zadroga Act in 2010, its reauthorization in 2015, and its refunding in 2026 so that this federal health program at FDNY can continue throughout our lifetimes.

Now, 25 years later, the FDNY WTC Health Program has issued this updated health report. We urge all WTC-exposed members, active and retired, to participate in the FDNY WTC Health Program's monitoring and treatment exams. Your participation provides you with the best opportunity for early diagnosis, which is the key to successful treatment.

Sincerely,

Andrew Ansbro
President, UFA, IAFF Local 94

James Brosi
President, UFOA-IAFF, Local 854

Message from the EMT, Paramedic and EMS Officer Unions

Your heroic actions on 9/11 and your dedication in the months that followed will never be forgotten. We will also never forget our members who were murdered on that day when the towers collapsed, as well as those who died in the following years from WTC-related illnesses. We thank you for making us proud. From the onset, we worked together with FDNY BHS to design a medical examination specifically for our members.

Together with the City, FDNY, UEPI, UEMSO, SOA, AFSCME, AFL-CIO, and our fellow unions, we were able to secure funds from Congress to provide annual comprehensive medical monitoring and treatment through the World Trade Center Health Program at FDNY. We used the information provided in these reports to advocate for passage of the Zadroga Act in 2010, its reauthorization in 2015 as a federal health program, and its re-funding in 2026. Active members receive this comprehensive medical as part of their annual physical examination. Retirees have been and will continue to be contacted to participate in follow-up annual WTC medical monitoring. This program provides valuable health monitoring, cancer screening, testing, and medications, all available free of charge for any WTC covered condition.

Now, 25 years later, it is fitting that the FDNY WTC Health Program issue this updated health report so you can see exactly how we are all doing. We look forward to our continued collaborative efforts with the FDNY WTC Health Program. We thank them for the care and services they provide for us, and we thank our members for their participation.

We urge all members who were exposed at the World Trade Center site to continue to participate in the FDNY WTC Health Program. Most importantly, retirement is not an excuse to ignore your health. We all need to keep coming in for our annual WTC medical monitoring exams at the WTC Health Program and for treatment as indicated. Improving or maintaining our health through the FDNY WTC Health Program is one of the most important things we can do.

Sincerely,

Oren Barzilay
UEPI, Local 2507

Vincent A. Variale
UEMSO, Local 3621

Dinorah Claudio
President SOA



Oren Barzilay



Vincent A. Variale



Dinorah Claudio



SECTION 2: **INTRODUCTION**

Timeline

Background

FDNY WTC Health Program Utilization



TO OUR WTC-EXPOSED FDNY MEMBERS

This report was written with you, our WTC-exposed FDNY members, in mind to provide information about your health and the health of your coworkers. This report addresses the question you most often ask us: *"How are we doing now, 25 years later?"* To answer this question, we gathered and analyzed data from the comprehensive medical questionnaires and exams you take at your monitoring and treatment visits. A dedicated team of FDNY researchers uses this information to track your health and healthcare needs. They study both WTC-covered conditions and newly emerging conditions to help determine whether they may be WTC-related.

This team has published many studies in medical journals, not only to identify WTC-related conditions, but also to help other healthcare professionals better diagnose and treat WTC-related diseases. We have also used this information to petition our federal funding agency, NIOSH, to add conditions to the list of WTC-covered conditions. One result of this work was the addition of cancers to the WTC-covered conditions list. We are still awaiting decisions on our petition to add cardiovascular diseases, autoimmune rheumatologic diseases, and cognitive disorders.

This is the fourth edition of this report. We promised to keep you updated as new information became available, and this edition provides an update on the health impacts of WTC exposure on our WTC-exposed workforce 25 years after the disaster. We owe it to you and all of our members to share this information.

We hope the information is useful to you, your families and coworkers, non-FDNY responders, other WTC-exposed individuals, and anyone interested in the health consequences of WTC exposure. This FDNY report presents only aggregate, de-identified data and contains no information that could identify any individual member. Protecting the confidentiality of members' personal health records and information remains a top priority of the FDNY WTC Health Program in carrying out its monitoring and treatment responsibilities. In addition to this report, we look forward to our continual interactions with you as a WTC healthcare provider.

SECTION 2: INTRODUCTION

On the 25th anniversary of the World Trade Center (WTC) terrorist attack, much of the world has changed, but the strength and courage displayed in 2001 have not been forgotten. As time passes and our members continue to feel the health effects of their exposure during the rescue/recovery effort, the Fire Department of the City of New York (FDNY) WTC Clinical Center of Excellence (CCE) and Data Center (DC) remains as committed as ever to supporting our members and providing top-quality healthcare to both active and retired personnel. Following the tragic loss of 343 FDNY members on 9/11, more than 15,000 FDNY members—including firefighters, Emergency Medical Services (EMS) providers, and civilian personnel, both actives and retirees—were exposed to WTC dust, particulates, noxious gases, chemicals, and fibers while working tirelessly for more than 10 months in the rescue and recovery effort.

Many members were injured on 9/11 or became ill in the months that followed. FDNY Bureau of Health Services began treating injured members on the day of 9/11 and, just four weeks later in October 2001, set up the first WTC monitoring program in New York City and the nation to care for its members. Since then, thousands have fallen ill, and more than 600 have died of WTC-related illness. In combination with the long-term physical and psychological consequences of WTC exposure, our WTC-exposed members increasingly face challenges of everyday life, such as aging and retirement. More than 85% of WTC-exposed members are now retired from FDNY. For decades to come, our program aims to provide the highest quality healthcare possible to those (retired or active) who made extraordinary sacrifices for our department, our city, and our nation.

This 25-year report follows the physical and mental health of more than 15,000 WTC-exposed EMS provid-

ers and firefighters enrolled in our WTC Health Program. By January 2026, more than 10,000 members have completed their 18th follow-up WTC annual medical monitoring exam. More than 12,000 members have been diagnosed and certified with at least one WTC-covered physical or mental health condition. Conditions covered by the WTC Health Program include upper airway, lung, and digestive disorders such as rhinosinusitis, asthma, COPD, emphysema, sarcoidosis, pulmonary fibrosis, gastroesophageal reflux disease (GERD), and cancers, and mental health conditions such as major depressive disorder, post-traumatic stress disorder (PTSD), and substance use. Certain musculoskeletal disorders are also covered if the injury was documented soon after 9/11. Through our program, members with covered WTC-related health conditions receive free treatment, including prescription medications without deductibles or copays.

The WTC Health Program has made major advances in identifying WTC-related health conditions and providing treatment/recovery options for our members. Our research shows that the care provided by the program can reduce illness and improve outcomes over time. In 2001, more than 50% of our WTC-exposed members reported chronic cough. Since then, that number has declined and remains stable at around 9%. The prevalence of other lower respiratory symptoms, including wheezing and shortness of breath, has also decreased during the same time. In a study of sarcoidosis—an inflammatory disease that can result from WTC-exposure and affects multiple organs, particularly the lungs—we found that from diagnosis to follow-up, lung involvement *decreased*, while cardiac, rheumatologic, and neurologic involvement *increased*. These findings are explained in the “Health Assessment of WTC-Covered Conditions” section of this report, demonstrating the value of continued participation in FDNY’s WTC Health Program.

FDNY WTC Health Program Enrolled Population

	Firefighters	EMS Providers	Total
Total	12,158	1,920	14,078
% Male	99.8%	77.9%	96.8%
Avg. Age 9/11/2001	39.5	35.7	39
Avg. Current Age	63.8	59.98	63.3
% Retired	87.6%	82.1%	86.9%

Note: This population excludes those who are deceased, transferred, and otherwise unable to be enrolled through the Zadrogra Act (2011).

SECTION 2: INTRODUCTION

FDNY members also help us identify new and emerging health concerns. Through self-administered questionnaires completed at WTC medical monitoring exams, physician interactions, case management, and clinical outreach, members' voices are heard when there is an emerging WTC health concern. One goal for our program is to use these findings to advocate for expanding the number of conditions and treatment options covered by the federal government under the WTC Health Program. Our recent research has focused on issues brought to the program's attention by membership and leadership that are potentially related to WTC exposures, including cardiovascular diseases, autoimmune diseases, hearing problems, peripheral neuropathy, ALS, and cognitive function (memory loss). Petitioning the federal government to add a condition to their list of covered conditions is a difficult and lengthy process. Using evidence gathered through our research, Dr. Prezant submitted petitions in 2023 to the federal government's WTC Health Program Administrator requesting that systemic autoimmune rheumatologic diseases and cardiovascular diseases be added to the list of WTC-covered certifiable conditions. We are still awaiting decisions by the WTC Health Program Administrator. We were successful in adding lung diseases, cancer, and mental health conditions to the covered list, and we remain hopeful that with our continued pursuit, other conditions will be added in the future. We pledge to continue to be a credible, data-driven advocate for our members' healthcare coverage. More information on these conditions is detailed further in the "Newly Emerging Diseases" section of this report.

MISSION

The mission of the FDNY WTC Health Program is to evaluate and treat individual FDNY members—firefighters, EMS providers, and civilian personnel, active

and retired—who worked at the WTC sites. Central to this mission is ongoing health surveillance to identify illnesses that we believe to be WTC-related. The FDNY WTC Health Program uses data from its monitoring and treatment program to analyze patterns of illnesses, modify future health initiatives, and answer important questions about the health effects of WTC exposure. Monitoring and treatment are an outgrowth and expansion of what the FDNY Bureau of Health Services (BHS) does every day to improve members' health and wellness through annual medical evaluations, preventive therapies, injury/illness evaluations, and treatment.

CHALLENGES FACED OVER THE LAST 25 YEARS

Providing monitoring and treatment services is not without its challenges. With the signing of the James L. Zadroga 9/11 Health and Compensation Act (Zadroga Act), federal regulations that took effect in July 2011 required the WTC Health Program to document WTC exposure and certify each WTC-related disease separately before a member could receive treatment. To comply with these regulations, we implemented an improved electronic medical record, obtained each member's consent, and automatically provided the necessary documentation to the federal WTC Administrator at the National Institute for Occupational Safety and Health (NIOSH) so our members could be enrolled and certified under this program. Because of this work, no member's medical care was interrupted by this process, and no one had to complete countless forms before receiving needed WTC-related healthcare.

In 2011, we found an increase in cancer cases in WTC-exposed FDNY responders compared with the U.S. general population, but we could not treat our cancer patients under this program unless the federal

WTC Program Administrator agreed to add cancers to the WTC-related covered conditions list. Our published findings, in conjunction with additional studies among other WTC-exposed populations (WTC Health Registry and the WTC General Responder Cohort), provided evidence for the WTC Program Administrator to add cancers as a WTC-related covered condition in October 2012. Since that time, the FDNY WTC Health Program has been caring for our members with cancers. There is strength in numbers, and our best chance of adding additional diseases to the list of WTC-covered conditions is to participate in our annual medical monitoring exams, answer the questionnaires accurately, and help us advocate together with labor, management, and the other WTC centers.

While the Zadroga Act authorized existence of the WTC Health Program for the rest of our lives, it did not originally provide long-term funding. We have repeatedly been called upon to provide data-driven advocacy. We successfully worked to secure the reauthorization of the Zadroga Act in 2015 and its renewed full funding in 2026, which is now expected to last until 2090. Our successful efforts have provided the necessary resources for us and others to continue monitoring and treatment under the WTC Health Program and to support our members' WTC Victims Compensation Fund (VCF) claims. We have made certain that this funding is structured to provide continuation of services even during federal shutdowns. This was made possible by your support and the support of labor and management.

The COVID-19 pandemic required us to close our doors for several months in 2020. Even so, we continued providing care to our members. We transitioned to telehealth visits to provide needed authorizations and medications. We also moved our physical and

mental health monitoring questionnaires to a protected, secure, cloud-based server so retired members could complete them at home up to 30 days before a monitoring visit. Due to its popularity, we continue to provide the option of completing the questionnaires at home. For many members, this also shortens the length of in-person visits.

In 2025, the federal government cut most of NIOSH's staff. These job cuts resulted in delays in decisions on certifications and in the enrollment of new responders and survivors, many of whom have been diagnosed with cancer, as well as other funding cuts such as timely certification of firefighter SCBA respirators. We fought to have the WTC Health Program restore all staff personnel, and with full support from our members, labor, management, and elected officials, we were able to restore most of these positions.

COLLABORATIONS

To better serve our members, the WTC Health Program and FDNY have formed collaborations with numerous partners, such as the New York City Department of Health and Mental Hygiene WTC Registry, New York State Department of Health, Albert Einstein College of Medicine, New York University Langone Health, Memorial Sloan Kettering Cancer Center, Mount Sinai Medical Center, Stony Brook Medical Center, Bellevue Medical Center, Northwell, Robert Wood Johnson Medical Center, Albany Medical College, Hospital for Special Surgery, University of Miami, the Mayo Clinic, and the fire departments of San Francisco, Philadelphia, and Chicago. The focus of these collaborations is to help investigate and design additional treatment, monitoring, and research programs that address our members' specific needs and emerging issues.

SECTION 2: INTRODUCTION

For example, the WTC Combined Rescue/Recovery Cohort collaboration combines data collected from the three cohorts of WTC rescue/recovery workers (FDNY, WTC Health Registry, General Responder Cohort) to assess cancer incidence and risk associated with WTC exposure. This collaboration allowed researchers to estimate cancer risk in the largest post-disaster cohort ever studied.

FDNY researchers received funding from the Jimmy V Foundation for Cancer Research to participate in a collaborative study with the Albert Einstein College of Medicine and Memorial Sloan Kettering Cancer Center to find early blood markers for certain types of hematologic malignancies, such as multiple myeloma and leukemia. Through this partnership, we found that environmental exposure to the WTC disaster was associated with myeloma precursor disease and may be a risk factor for early multiple myeloma development.

Our Career Firefighter Health Study includes collaborations with the fire departments of San Francisco, Philadelphia, and Chicago. Comparing our department with those of three other cities allows us to distinguish between the impact of firefighting with and without WTC exposure to the health of our members, with emphasis on not only cancer, but also other physical and mental health conditions.

A collaboration with Stony Brook Medical Center has found significant cognitive impairment (particularly memory loss) in a sub-group of FDNY WTC-exposed retirees. Further studies are ongoing to better describe this critical quality-of-life indicator.

FUNDING

In October 2001, only four weeks after the attack, FDNY BHS began performing standardized medical screenings on FDNY WTC-exposed rescue/recovery workers with funding provided by the City and FDNY. Ours was the first comprehensive, post-WTC exposure medical performed by any medical institution.

In November 2001, the Centers for Disease Control and Prevention (CDC) granted \$4.8 million to FDNY to help fund this program from 2002 to 2004. This funding expanded upon the services originally started, using funding through the September 11th Recovery Grant from the American Red Cross (ARC) Liberty Disaster Relief Fund and funding for WTC-related mental health treatment that originally came from multiple sources, including the FDNY, International Association of Fire Fighters (IAFF), ARC, Federal Emergency Management Agency (FEMA)—Project Liberty, Substance Abuse and Mental Health Services Administration (SAMHSA), and various philanthropies. The CDC funding allowed the FDNY WTC Program to include exposed retirees, who previously would have been excluded from BHS monitoring and treatment, and to expand treatment services, including the provision of free medications, mental health counseling, medical specialty appointments, and surgery.

In 2010, with combined labor and management support, the James L. Zadroga 9/11 Health and Compensation Act (Zadroga Act) was passed, and on July 1, 2011, it was implemented to provide funding for the FDNY WTC Health Program through June 30, 2016. This funding paid for monitoring and treatment exams, staffing, scheduling, and follow-up services. With this funding, annual medical evaluations have

SECTION 2: INTRODUCTION

been improved and expanded to include high-quality pulmonary function tests and comprehensive medical and mental health questionnaires. The Zadroga Act also provided funding for specialized diagnostic testing for our active and retired members; free cancer screening tests such as chest CT scans, colonoscopies, and mammograms; and free medications. This funding also supports the FDNY Data Center to provide quality assurance, data analyses, and research studies so that the FDNY WTC Health Program can answer the most important questions (How am I doing, and how are my coworkers doing?); provide objective evidence that new conditions, such as cancer, are WTC-related; plan for future WTC-related health needs; and release findings to our members.

In December 2015, the Zadroga Act was reauthorized by Congress to provide healthcare services to WTC-exposed members until 2090. This successful advocacy effort was made possible through the combined efforts of all of the WTC Health Programs (FDNY, Mount Sinai, Stony Brook, Northwell/North Shore—now known as Northwell, New York University, Robert Wood Johnson, and Bellevue Medical Centers), the WTC Health Registry, the mayor, city council, the NY Congressional Delegation, FDNY labor and management, the IAFF, the American Federation of

Labor and Congress of Industrial Organizations (AFL-CIO), 911 Health Watch, and our many other supporters.

Since 2011, more than a dozen research grants have been funded to study the health impact of the WTC exposures in our FDNY members. The findings from these grants inform clinical care and our understanding of the health of WTC-exposed members. Much of this work has been done in collaboration with our partners, as mentioned previously.

In 2025, NIOSH was challenged with major cutbacks to the organizational structure. Many WTC Health Program staff members at NIOSH were laid off or furloughed for extended periods of time. FDNY was the key player in restoring these staff cuts.

In 2026, the WTC Health Program received congressional funding to keep the program running through 2090, its entire mandated lifespan. This was no small accomplishment and only occurred because the healthcare services offered by the WTC Health Program have been provided with the highest quality and professionalism, thereby earning the support of our members, labor, and management.

2001



Historical Information

9/11 WTC attacks

FDNY BHS treats members for WTC injuries at site.

FDNY CSU support groups begin with debriefing groups at site.

FDNY becomes Project Liberty mental health site.

WTC medical monitoring exams begin seven days a week, three shifts per day.

FDNY BHS identifies WTC Cough Syndrome.



Speaking Engagements

Dr. Kelly testifies before U.S. Congress on WTC health impact.

Dr. Prezant addresses IAFF Convention on WTC health impact.



FDNY

FDNY CSU sets up units in Staten Island and Fort Totten, Queens.



Funding

FEMA and Project Liberty funding arrive for FDNY-CSU mental health programs.

The September 11 Victim Compensation Fund is established.

FDNY is awarded \$4.8 million from CDC for medical screening for years 1 and 2.



Partnership

FDNY BHS and CDC collaborate to test for heavy metals, PCBs, and PAHs.

2002



Speaking Engagements

Dr. Prezant and Senator Hillary Clinton hold joint press conference to secure \$12 million.

Dr. Kelly addresses New York Congressional Delegation on 9/11 health effects.

Dr. Kelly addresses Congressional Committee on Environmental Conservation, Health, and Labor.

FDNY BHS gives testimony at New York Academy of Medicine Specialists WTC meeting.



Statistics

FDNY BHS completes more than 10,000 WTC medical monitoring exams on FDNY members.

More than 1,000 members are treated at FDNY BHS for WTC Cough Syndrome.

More than 3,000 members are seen at FDNY CSU.



FDNY Research

Publication:
“Cough and Bronchial Responsiveness in Firefighters at the World Trade Center Site”

SECTION 2: FDNY WTC Health Program Timeline—September 2001-September 2026

2002	2003	2004
 FDNY FDNY Free Tobacco Cessation Program begins, supported by Pfizer, IAFF, ACCP, and Chest Foundation.  Partnership Joint labor management initiative for WTC FDNY CD73 Exposure Reports	 Speaking Engagements IAFF Annual Health Convention—WTC Health Effects Dr. Weiden testifies before Congress on WTC health of first responders.  Statistics First anniversary of FDNY WTC Tobacco Cessation Program—more than 600 members treated with more than 30% success rate.	 FDNY James E. Olsen Foundation provides FDNY BHS with 10,000 colon cancer screening kits.  FDNY Research Publication: “Biomonitoring of Chemical Exposure among New York City Firefighters Responding to the World Trade Center Fire and Collapse” Publication: “Persistent Hyperreactivity and Reactive Airway Dysfunction in Firefighters at the World Trade Center”  Speaking Engagements 9/11 World Trade Center Health Effects Conference at NYU  Funding \$90 million federal grant is awarded to WTC Consortium; \$25 million is awarded to FDNY BHS for five years (2004–2009) to provide medical monitoring exams.  Partnership NIOSH WTC Medical Monitoring Steering Committee begins. Joint labor-management partnership with FDNY and Mount Sinai NY/NJ WTC Health Consortium, including Bellevue Hospital  FDNY Research Publication: “Symptoms, Respirator Use, and Pulmonary Function Changes Among New York City Firefighters Responding to the World Trade Center Disaster”

SECTION 2: FDNY WTC Health Program Timeline—September 2001-September 2026

2005	2006			2007
 FDNY FDNY BHS begins increasing staff size for enhanced medicals.	 Speaking Engagements Dr. Kelly and Dr. Prezant testify before Congress for WTC treatment funding. Commissioner Scoppetta testifies before Congress on WTC health effects.	 Funding FDNY Commissioner Nicholas Scoppetta and Dr. Prezant meet key congressional members for WTC medical funding. FDNY receives \$1.5 million from NIOSH to continue CSU treatment centers. FDNY receives \$20 million supplement from NIOSH to begin free medication program and expand treatment.	 Partnership U.S. Representative Carolyn Maloney and U.S. Senator Robert Menendez introduce the Zadroga Act. WTC DOHMH WTC Clinical Treatment Guidelines for Adults Exposed to WTC (FDNY and Mount Sinai coauthors) Mayor Bloomberg forms WTC Health Panel.	 Speaking Engagements Mayor Bloomberg testifies before U.S. Senate for WTC treatment programs. Senators Schumer and Clinton and Lt. Martin Fullam (FDNY) advocate for WTC Zadroga Act funding.
 Funding American Red Cross Liberty Disaster Relief September 11 Fund Recovery Grant: \$5.6 million for FDNY-BHS WTC medical treatment (7/05–7/07)	 FDNY Retiree WTC Medical Monitoring Program officially begins. BHS begins WTC treatment with free medications.			 FDNY Research Publication: “World Trade Center ‘Sarcoid-Like’ Granulomatous Pulmonary Disease in New York City Fire Department Rescue Workers”

SECTION 2: FDNY WTC Health Program Timeline—September 2001–September 2026

2008–2009	2010	2011	2012–2013	2014
 FDNY FDNY BHS adds additional satellite locations on Staten Island and in Fort Totten, Queens, for WTC Health Program medical monitoring and treatment. FDNY BHS adds satellite location in Long Island for WTC Health Program medical monitoring and treatment. FDNY BHS adds satellite location in Orange County.	 FDNY FDNY BHS creates temporary satellite office in Florida to offer medical monitoring exams to retired FDNY responders in Florida.  FDNY Research Publication: “Lung Function in Rescue Workers at the World Trade Center after 7 Years”	 Partnership President Barack Obama signs into law the James Zadroga 9/11 Health and Compensation Act. The September 11 Victim Compensation Fund is reestablished. WTC health programs collaborate to determine “common exposure variables.”  FDNY Research Publication: “Early assessment of cancer outcomes in New York City firefighters after the 9/11 attacks: an observational cohort study”	 Partnership The Zadroga Act expands to cover WTC-related cancers.  FDNY FDNY WTC Health Program expands to include a comprehensive cancer care program consisting of screening, diagnostic evaluations, treatment, case management, and expanded family support units. WTC Cancer Case Management Team is established to address the healthcare needs of members and improve delivery of healthcare services.	 Speaking Engagements The Zadroga Reauthorization Bill is introduced by Senator Gillibrand and Representatives Maloney, Nadler, and King.  FDNY FDNY WTC Health Program expands screening practices to include colonoscopy and mammography. FDNY WTC Health Program expands screening practices to include low-dose chest CT for lung cancer detection.

SECTION 2: FDNY WTC Health Program Timeline—September 2001-September 2026

2015	2016	2017	2018
 Partnership Jon Stewart, Dr. Prezant, and 9/11 workers visit Congress to advocate for reauthorization of the James Zadroga Act. Congress passes James Zadroga 9/11 Health and Compensation Reauthorization Act.	 FDNY Research Publication: “Blood Eosinophils and World Trade Center Exposure Predict Surgery in Chronic Rhinosinusitis: A 13.5-Year Longitudinal Study” Publication: “FDNY and 9/11: Clinical Services and Health Outcomes in World Trade Center-Exposed Firefighters and EMS Workers From 2001 to 2016”	 FDNY Research Publication: “The Effect of World Trade Center Exposure on the Timing of Diagnoses of Obstructive Airway Disease, Chronic Rhinosinusitis, and Gastroesophageal Reflux Disease” Publication: “Post-9/11 sarcoidosis in WTC-exposed firefighters and emergency medical service workers”	 Statistics Close to 11,000 FDNY WTC Health Program members have at least one federal NIOSH certification for a physical or mental health condition. Of these, more than 2,000 have been certified for cancer.
 FDNY Research Publication: “Nested Case-Control Study of Selected Systemic Autoimmune Diseases in World Trade Center Rescue/Recovery Workers”	 Partnership FDNY Assembles the Career Firefighter Health Study cohort in collaboration with NIOSH and the Chicago, Philadelphia, and San Francisco fire departments.	 FDNY Shared World Trade Center survivor stories to all FDNY members	 FDNY Research Publication: “Blood Leukocyte Concentrations, FEV₁ Decline, and Airflow Limitation. A 15-Year Longitudinal Study of World Trade Center-exposed Firefighters” Publication: “Multiple Myeloma and Its Precursor Disease Among Firefighters Exposed to the World Trade Center Disaster”

SECTION 2: FDNY WTC Health Program Timeline—September 2001-September 2026

2019		2020		2021
 Funding The September 11 Victim Compensation Fund is reauthorized through fiscal year 2090.	 FDNY Research Publication: “Hearing Loss Among World Trade Center Firefighters and Emergency Medical Service Workers” Publication: “Post-9/11 Peripheral Neuropathy Symptoms among World Trade Center-Exposed Firefighters and Emergency Medical Service Workers” Publication: “Abnormalities on Chest Computed Tomography and Lung Function Following an Intense Dust Exposure: A 17-Year Longitudinal Study” Publication: “Long-term Cardiovascular Disease Risk Among Firefighters After the World Trade Center Disaster”	 FDNY Telehealth visits begin in April. FDNY begins COVID-19 vaccinations to active members on December 23.	 Statistics The first COVID-19 case in New York State is diagnosed on March 1. The World Health Organization declares COVID-19 a pandemic on March 11. 5,592 physical health telehealth visits conducted by FDNY. 8,070 mental health telehealth visits conducted by FDNY.	 FDNY FDNY expands COVID-19 vaccinations to FDNY retirees and family members.
 Partnership 2019 World Trade Center Health Program Cognitive Aging and Impairment Scientific Workshop		 FDNY Research Publication: “Pre-COVID-19 Lung Function and Other Risk Factors for Severe COVID-19 in First Responders” Publication: “PTSD and Depressive Symptoms as Potential Mediators of the Association between World Trade Center Exposure and Subjective Cognitive Concerns in Rescue/Recovery Workers”		 Statistics More than 6,500 FDNY WTC Health Program members receive the COVID-19 vaccine through FDNY.
 Statistics Nearly 10,000 FDNY WTC Health Program members have come in for their 10th follow-up WTC medical monitoring exam.				 FDNY Research Publication: “Cancer survival among World Trade Center rescue and recovery workers: A collaborative cohort study”

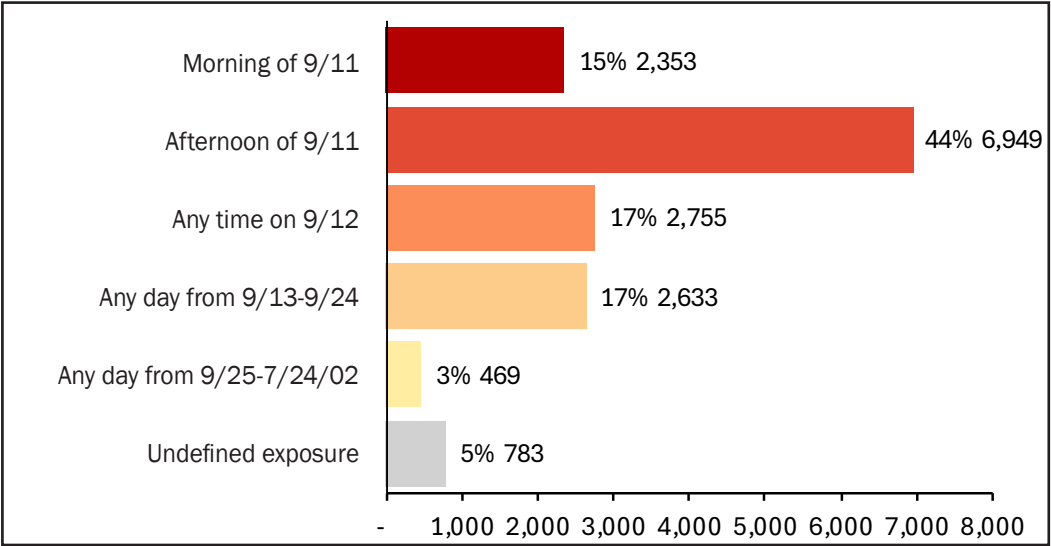
2022		2023		2024
 FDNY Research Publication: “High burden of clonal hematopoiesis in first responders exposed to the World Trade Center disaster” Publication: “Myeloma precursor disease (MGUS) among rescue and recovery workers exposed to the World Trade Center disaster”	 Statistics More than 11,000 FDNY WTC health program members came in for a monitoring visit, returning in-person participation back to pre-COVID 19 pandemic levels.	 Partnership Dr. Prezant petitions WTHCP to add autoimmune diseases and cardiovascular diseases to the list of WTC-covered certifiable conditions under the Zadroga Act .	 FDNY Research Publication: “All-cause and cause-specific mortality in a cohort of WTC-exposed and non-WTC exposed firefighters”— demonstrates that WTC Health Program members have improved five-year survival rates compared with NYS general population Publication: “Association of Lung Function Decline with All-Cause and Cancer-Cause Mortality after World Trade Center Dust Exposure”	 Speaking Engagements World Trade Center Health Program Research Meeting: Future Directions in Cardiovascular Disease Research at NYU
	 Funding \$1 billion is added to the federal omnibus spending bill for the WTHCP.	 Funding Uterine cancer, including endometrial cancer, is added to the list of WTC-related health conditions.		 Partnership The National 9/11 Memorial Museum displays new exhibit on the health effects of 9/11.

SECTION 2: FDNY WTC Health Program Timeline—September 2001-September 2026

2024	2025	2026
 Statistics This year, more than 85% of FDNY WTC Health Program members came in for a follow-up monitoring visit. FDNY WTC Health Program has conducted more than 200,000 monitoring exams. FDNY WTC Health Program has conducted more than 450,000 treatment exams.	 FDNY Research Publication: “Prevalence of Mild and Severe Cognitive Impairment in World Trade Center Exposed Fire Department of the City of New York (FDNY) and General Emergency Responders”  Funding After the federal government furloughed NIOSH staff, FDNY advocated and successfully restored many of the federal government employees whom we rely upon at the WTC Health Program.	 Statistics More than 4,200 members are currently certified for cancer, about 1,000 of whom have had more than one cancer. More than 12,000 FDNY WTC Health Program members came in for their 18th monitoring visit.  FDNY 25th anniversary of the September 11 attacks  Partnership WTC Health Program receives congressional funding to keep the program running through 2090, its entire mandated lifespan.  FDNY We remember 343 responders who died on 9/11. We remember 451 responders who were active on 9/11 and have since died of WTC-related illness. We remember 157 members who retired prior to 9/11, volunteered at the site, and have since died due to WTC-related illness. FDNY unveils a new memorial wall at Headquarters dedicated to these members who were retired on 9/11.

Shortly after the WTC disaster, we classified FDNY WTC-exposed rescue/recovery workers (fire-fighters and EMS providers) into groups based on their self-reported estimated time of first arrival at the WTC site. In just the first 24 hours, more than 9,000 FDNY members responded to Ground Zero. These arrival groups have been helpful in explaining health conditions that developed after 9/11 and persist even today.

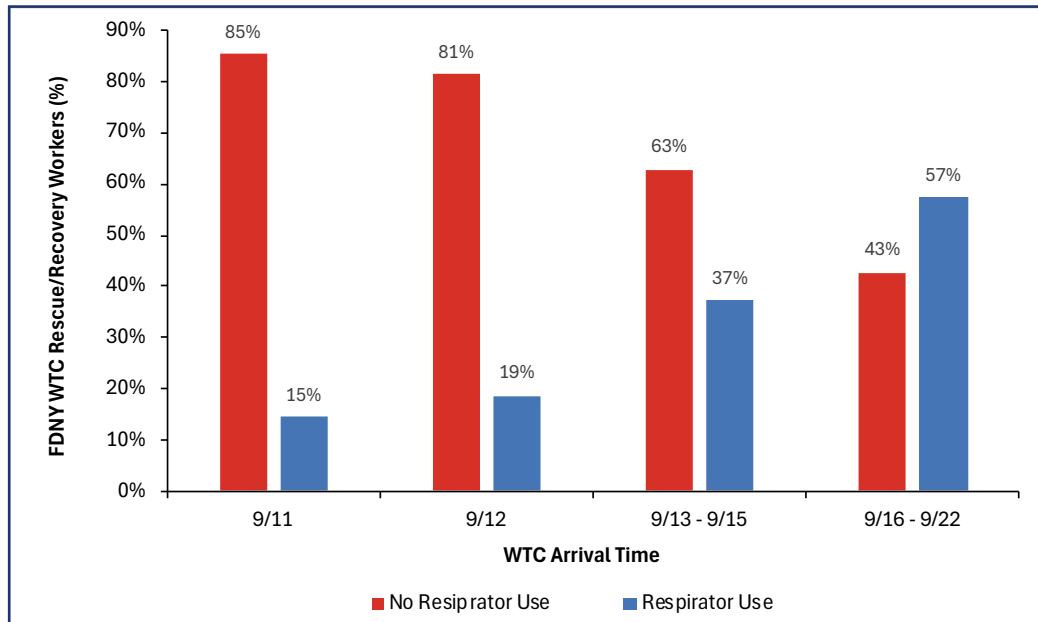
WTC Arrival Time at the Disaster Site



On 9/11 and in the days, weeks, and months that followed, nearly every active FDNY member responded to the WTC disaster. Within days, retired FDNY members also responded to the disaster site, volunteering to help in whatever way possible. In the trauma of that day, 343 of our members died during the collapse. Others were taken to local hospitals, most with orthopedic injuries and a few with respiratory injuries so severe they required intubation and mechanical ventilation. Members critically injured by falling debris required hospitalization, and some required surgery. In the first 24 hours, 240 FDNY members were treated in emergency departments and 28 of them were admitted to hospitals. Thankfully, all those who were hospitalized survived.

The chart above shows the self-reported time of FDNY members' first arrival to the WTC site, with the majority first arriving on 9/11 or 9/12. Following 9/11, members spent, on average, three to four months assisting in rescue/recovery operations at the WTC site. Some members were present for the full 10 months the site was open, concluding their efforts in July 2002. Many members developed respiratory difficulties (upper and lower airway problems) beginning on their first day at the site, and for others, symptoms surfaced in the days, weeks, months, and even years after 9/11. We found that members who reported arriving earliest at the WTC site had the highest rates of lower and upper respiratory symptoms, including respiratory disease diagnoses (chronic rhinosinusitis, asthma, chronic bronchitis, and obstructive sleep apnea), reduced lung function, and acid reflux (GERD). These conditions led to an unprecedented increase in disability retirements. Based on these data, we helped convince the federal government to extend WTC coverage to include rare pulmonary conditions, including sarcoidosis and interstitial lung diseases such as pulmonary fibrosis—and then, a few years later, to cancer.

Early Mask/Respirator Use



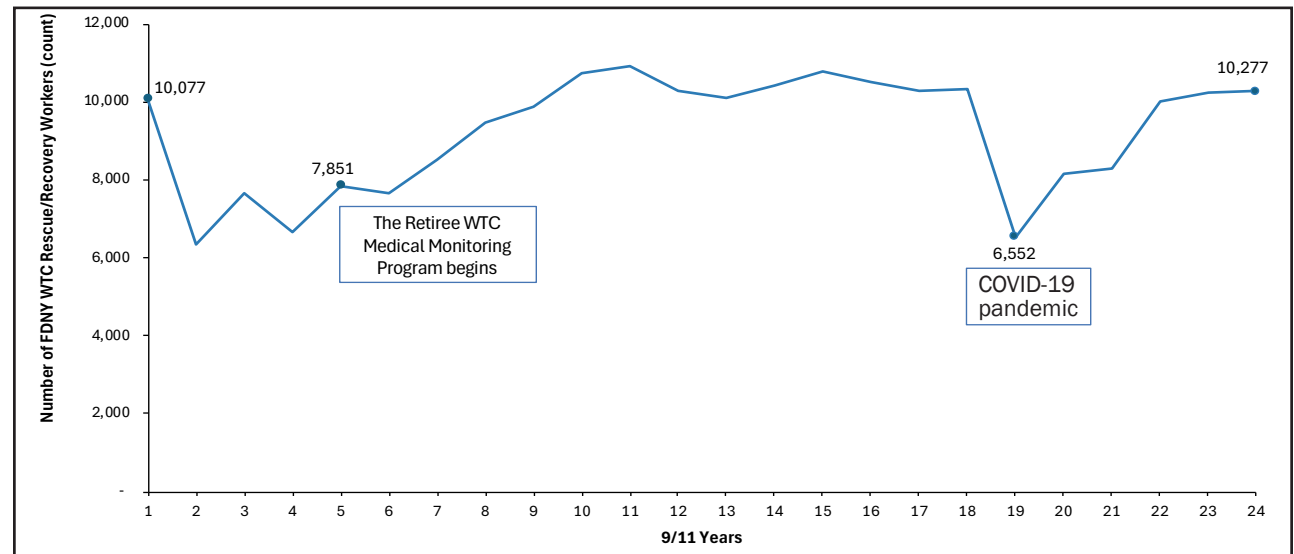
When the towers collapsed, an enormous dust cloud with a high concentration of particulate matter enveloped Lower Manhattan. FDNY responders inhaled this thick, polluted air—a situation made worse by the strenuous work that required increased respiratory effort and open-mouth breathing. On the first day, those with self-contained breathing apparatus (SCBA) had clean air for about 15 minutes. After SCBAs ran out of air and for those who responded without SCBAs, very few respirators were available. Some wore only dust masks, which provided little, if any, real protection against the particulate matter and chemical exposures present at the collapse/fire disaster site. The correct protection for this type of exposure, a half-face elastomeric or an N-95 respirator, was not widely available until after the first week. Even then, it was difficult to wear for long periods due to its poor comfort, bulk, and interference with voice communication in an already dangerous and demanding work environment. This intense environmental exposure is directly related to the symptoms and illnesses described in this report.

Dusk masks were commonly used through rescue and recovery efforts. Respirators, which provide the actual protection needed, were seldom used on 9/11 and in the early days; however, they increased in use through September.

SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

FDNY WTC Health Program retention rate: 86% of firefighters and 63% of EMS providers had a recent follow-up monitoring exam in 2023–2025.

Number of WTC-Exposed Rescue/Recovery Workers Who Had a Monitoring Visit by Year



Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

WTC medical monitoring exams are provided annually to every member who served at any WTC site during the rescue/recovery effort and is enrolled in our WTC Health Program. In the first year after 9/11 (9/11/01–9/10/02), nearly 10,000 members received a WTC Health Program monitoring exam at FDNY. Retired members were invited to receive WTC monitoring exams in 2006; before that, only active members were eligible for exams. As of January 2026, more than 15,900 FDNY WTC-exposed members have received multiple monitoring exams.

Continued participation is one measure of program success. Retention, or return for a follow-up monitoring exam, remains high at greater than 80% despite the brief shutdown of traditional in-person monitoring during the COVID-19 pandemic. Telehealth treatment visits were available throughout the pandemic. To better serve our members and shorten the length of the monitoring exam, retired members can now complete physical and mental health monitoring questionnaires at home on their personal computers up to 30 days before a monitoring visit.

FDNY strongly encourages participation in the monitoring program to track changes in our members' health, provide age-appropriate cancer and other screening tests, and deliver WTC-related medical treatment and medication, all at no cost. One reason for the success of our program is our ability to understand and meet the healthcare needs of our members.

SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

Monitoring Questionnaires

FDNY WTC Health Program health questionnaires were administered starting in October 2001, within weeks of 9/11. Within the first six months, more than 10,000 members completed these questionnaires. Obtaining this self-reported information proved critically important because it allowed us to quickly understand the scope of the health impact of 9/11 and design the necessary treatment and long-term monitoring programs needed by our members. It also proved useful in allowing our members to document their exposures and early health findings so that no one could question their future applications for the WTC Health Program, WTC Victim Compensation, Public Safety Officer Benefits (PSOB), and FDNY pension benefits.

After successful administration of our first post-9/11 questionnaires, the WTC Health Program continued to develop a series of self-administered, computerized questionnaires for use in conjunction with the monitoring exams of active members and retirees. This was important to assess the longer-term physical and psychological impact of 9/11 on FDNY rescue/recovery workers and their families. For the first time since any disaster, FDNY BHS provided the same extensive monitoring exam to firefighters and EMS providers regardless of whether they were active or retired. As time went on, questions were added in response to members' growing needs to assess chronic and newly emerging conditions.

The mental health portion of our first screening/monitoring questionnaire asked FDNY WTC-exposed rescue/recovery workers (firefighters and EMS providers) about their emotional well-being through questions aimed at identifying symptoms and behavioral patterns related to stress, especially PTSD and anxiety. It examined changes in respondents' ability to function in their personal and professional lives that could have resulted from the 9/11 disaster. Members largely reported issues with anger, irritability, and anxiety; memory and concentration; changes in eating, sleeping, and exercise patterns; and increases in alcohol and tobacco use. The questionnaire also collected data on how many people were using our counseling services and the types of counseling wanted and received.

Starting in 2006, a separate mental health questionnaire was introduced using validated screening tools to identify "probable" mental health conditions. Our findings show the lasting impact of the 9/11 tragedy, with the greatest effects reported by FDNY rescue/recovery workers who were at the WTC site during the morning of the collapses or who lost loved ones, including family, coworkers, and friends. We found substantial overlap in mental health conditions; for example, many members with PTSD also developed anxiety, depression, and physical health problems. Since we did not collect mental health information before 9/11, this report presents these data from 9/11 onward to show trends in mental health symptoms and conditions over the past 25 years.

WTC medical monitoring exams include:

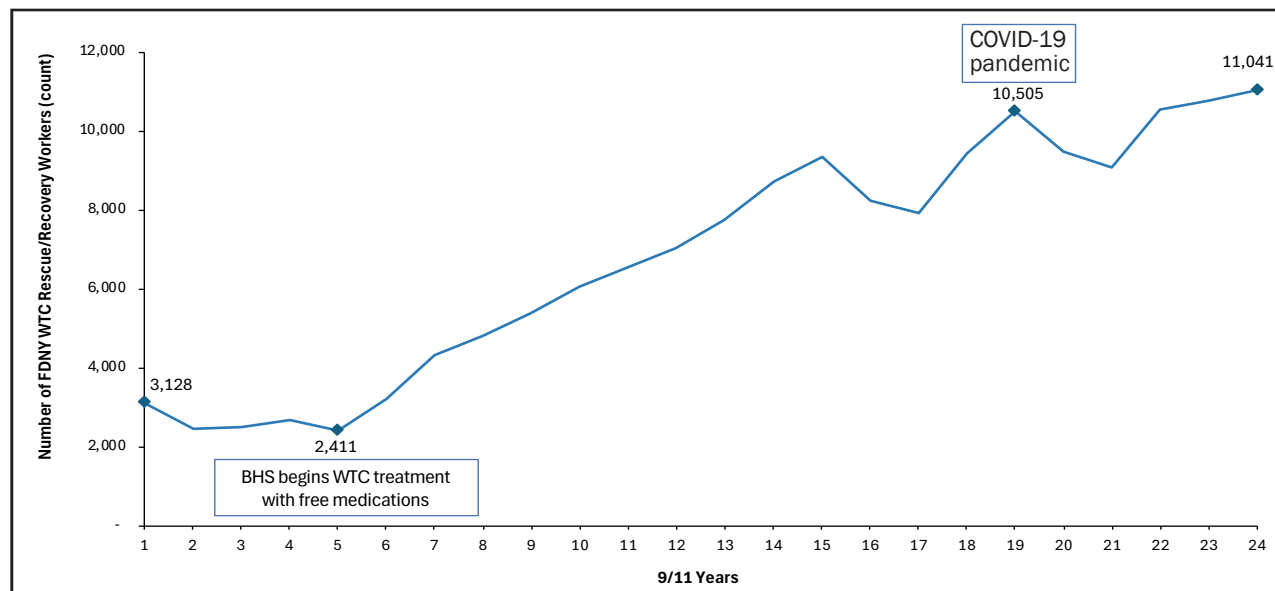
- Revised physical and mental health questionnaires
- Chest x-rays every two years
- Pulmonary function tests
- Blood pressure and weight measurements
- Blood and urine tests
- Cardiograms and stress tests (if needed)
- Physician evaluation
- Cancer screening authorizations
 - Blood tests for hematologic cancers such as leukemia
 - Low-dose chest CT scans for lung cancer
 - Upper GI endoscopies for gastro-esophageal cancer
 - Colonoscopies for colon cancer
 - Mammography for breast cancer
 - PSA for prostate cancer (provided by external funding)
 - Pap smears by external OB/GYN for cervical cancer

SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

In addition to monitoring exams, thousands of FDNY members visit the FDNY WTC Health Program for treatment of WTC-related physical health conditions each year.

If you are experiencing symptoms and have not yet done so, please call 718-999-1858 to schedule a treatment appointment at our WTC Health Program, where free treatment and medications are available for WTC-covered conditions.

Number of WTC-Exposed Rescue/Recovery Workers Who Had a Treatment Visit by Year



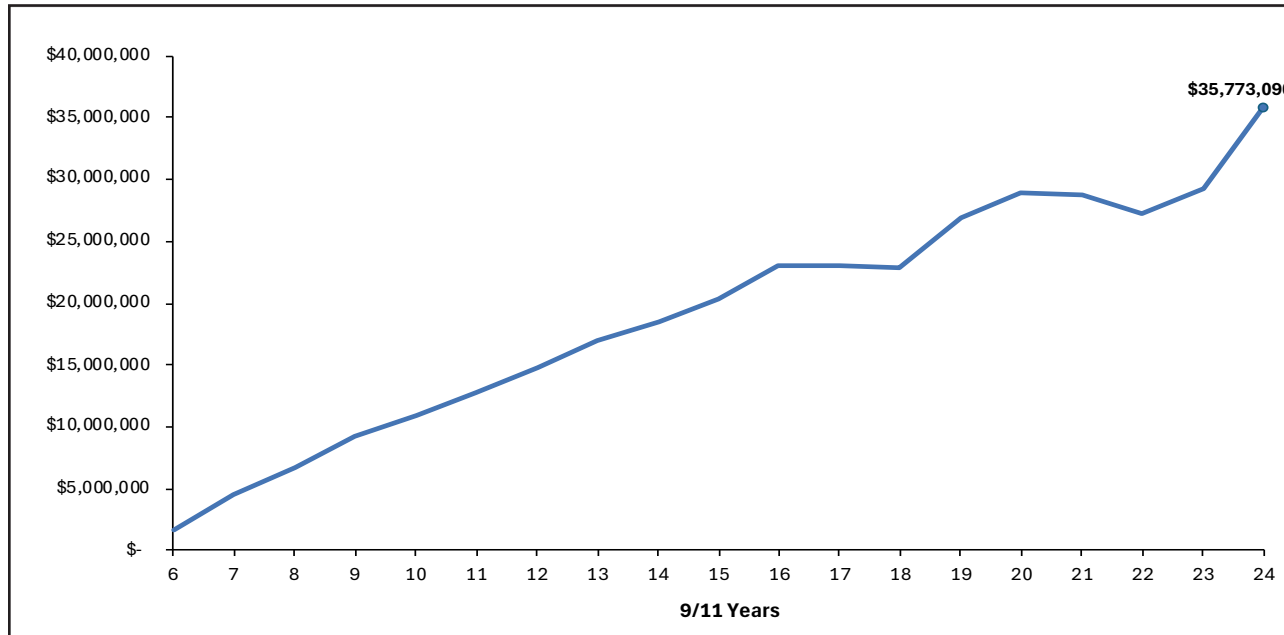
Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

Years before the Zadroga Act was enacted, FDNY BHS started a treatment program for WTC-related conditions. Based on information from these early BHS visits, we were the first to describe the WTC Cough Syndrome (cough, obstructive airways disease [asthma and chronic bronchitis], rhinosinusitis, and gastrointestinal reflux) and document that treatment was effective in a study published in the *New England Journal of Medicine* in 2002. In December 2006, FDNY BHS received funding to expand monitoring and treatment services for WTC-related physical and mental health conditions.

We hired dedicated, WTC-focused healthcare personnel who received specialized training to provide monitoring, treatment evaluations, and interventions. Referrals can be made to physician specialists in pulmonary medicine, ENT (ear, nose, and throat), GI (gastroenterology), and cancer care. FDNY also provides case management for all WTC-covered cancer care and other severe illnesses. When indicated, WTC-exposed rescue/recovery workers are offered advanced imaging (CT, MRI, and PET scans) and other specialized diagnostic tests. Recognizing that medications are effective but costly, the WTC Health Program continues to fund prescription medications for WTC-related conditions at no cost to members. Not including monitoring exams, about 15,300 of our FDNY WTC-enrolled members have received nearly 490,000 physical health treatment visits with FDNY physicians through our program.

SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

WTC Health Program Prescription Medication Annual Cost by Year



Our free medication program continues to grow, saving our members and their health insurance plans over 26 million dollars in 2024.

Since 2006, the FDNY WTC Health Program has provided **free** medications for WTC-related conditions. Overall, this benefit has been very popular, providing medications **without co-payments** or deductibles to FDNY WTC Health Program members for certified WTC-related physical and mental health conditions, including biologics for pulmonary conditions, chemo/immunotherapies for cancer, and anti-rejection medications for transplant recipients. The need for this benefit is shown in the figure above, with costs increasing annually and now exceeding \$35 million per year.

Because prescription drug costs have been rising, the FDNY WTC Health Program has worked closely with the NIOSH WTC Health Program Administrator to use generic medications when they compare favorably with brand-name medications. After a gradual rollout, the generic-first program is now in place for all medications covered by the WTC Health Program. Brand-name medications are available when there is no generic equivalent or when a member has a rare medical contraindication to the use of the generic. Our members have generally accepted this switch, knowing that brand names are available to those who require them and that the cost savings from this generic-first program can be used for other urgent clinical needs such as cancer treatment.

SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

Cancer Screening Program

At each monitoring exam, members are asked to participate in cancer screening and provided with other relevant health maintenance information. Eligibility for cancer screening is age-specific or requires specific health characteristics or history. The WTC Health Program cancer screening criteria are based on the U.S. Preventive Services Task Force (USPSTF) recommendations and other national guidelines. Early diagnosis leads to early treatment and is instrumental to favorable cancer outcomes.

- **Low-dose chest CT (LDCT)** is recommended for all members ages 50-80 who meet criteria based on self-reported smoking history (20 or more pack years), WTC arrival time (exposure), and lung function.
 - Since the low-dose chest CT screening program was established in 2015, more than 5,000 members have received a chest CT, and more than 2,000 have received more than one.
 - **55% of lung cancers have been identified by the WTC Health Program cancer screening.**
- **Screening colonoscopy** is recommended for all members age 45 and above, or earlier if advised by a physician based on family history.
 - Since the colonoscopy screening program was established in 2014, more than 13,000 colonoscopies have been performed on more than 8,000 members.
 - **51% of colon/rectal cancers have been identified by the WTC Health Program cancer screening.**
- **Mammography** is recommended for all female members age 40 and above, or earlier if advised by a physician based on family history.
 - Since the mammography screening program was established in 2015, more than 900 mammograms have been performed on more than 300 members.
 - **60% of breast cancers have been identified by the WTC Health Program cancer screening.**
- **Prostate-specific antigen (PSA)** screening is recommended for all male members age 40 and above, or earlier if advised by a physician based on family history.
 - **47% of prostate cancers in WTC members have been identified through PSA screening by the WTC Health Program.**
- **Cervical cytology** is recommended for all female members ages 30-65. The WTC Health Program encourages members to receive these exams through their own gynecologist. Authorizations can be provided if the member's gynecologist participates in the WTC program.

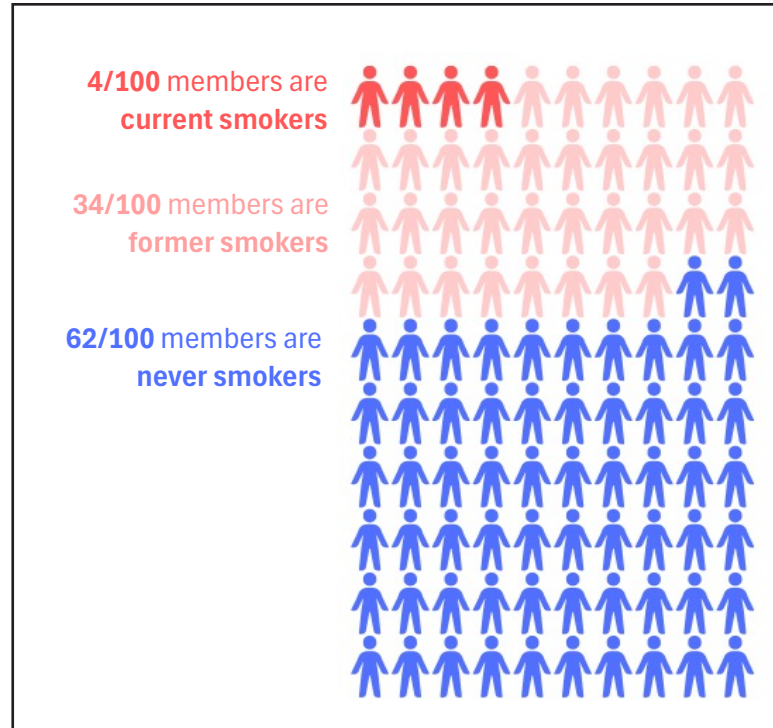
SECTION 2: FDNY WTC HEALTH PROGRAM UTILIZATION

Smoking Status of the FDNY WTC Health Program Members

Since respiratory health and cancer prevention are so important to our FDNY membership, we track smoking behaviors among our members and offer free tobacco cessation services. As shown in the chart, 62% of our members never smoked, and overall, only 4% of our members report current smoking—about one third of the current smoking rate in NYC. This is due in part to the free tobacco education and cessation treatments we have offered since 9/11. For many, 9/11 was a reachable, teachable moment for tobacco cessation. While we cannot undo the harmful WTC exposure, we can prevent future exposure to cigarette smoke, which is known to increase the risk of heart and lung disease and cancer.

To help members quit, we continue to offer a free, confidential tobacco cessation program that can include treatment with nicotine replacement products, bupropion, and/or Chantix. We want everyone to be “tobacco-free with FDNY.”

- To date, nearly 1,000 members have participated in FDNY’s WTC Tobacco Cessation Program.
- In a study we published in Chest (2006), 33% had stopped smoking at 12 months of follow-up.
- Of the 134 members we were able to reach to confirm smoking status, about 80% have remained tobacco-free more than 15 years later.
- We are proud to have such excellent tobacco cessation rates; in fact, our quit rates are among the best in the nation.



Call 1-800-45-SMOKE to make an appointment for smoking cessation.

About 4% of all FDNY WTC-exposed rescue/recovery workers currently smoke—a rate much lower than the rate in NYC overall.

We still have work to do, as EMS providers have a higher smoking rate than firefighters.

- EMS providers: 12% current smokers
- Firefighters: 3% current smokers



SECTION 3: **HEALTH ASSESSMENT OF** **WTC-COVERED CONDITIONS**

Physical Health Conditions

Cancer

Mental Health

Comorbidity and Health-Related Quality of Life

Mortality



SECTION 3: HEALTH ASSESSMENT OF WTC-COVERED CONDITIONS

Schedule monitoring and physical health treatment appointments through our WTC Health Program by calling 718-999-1858.

For mental health issues, the Counseling Services Unit (CSU) is available at 212-570-1693.

For both physical and mental health issues, free treatment and medications are available for WTC-covered conditions.

12,161

FDNY members ever certified for at least one WTC condition

10,562

FDNY members ever certified for a physical health condition

4,745

FDNY members ever certified for cancer

4,496

FDNY members ever certified for a mental health condition

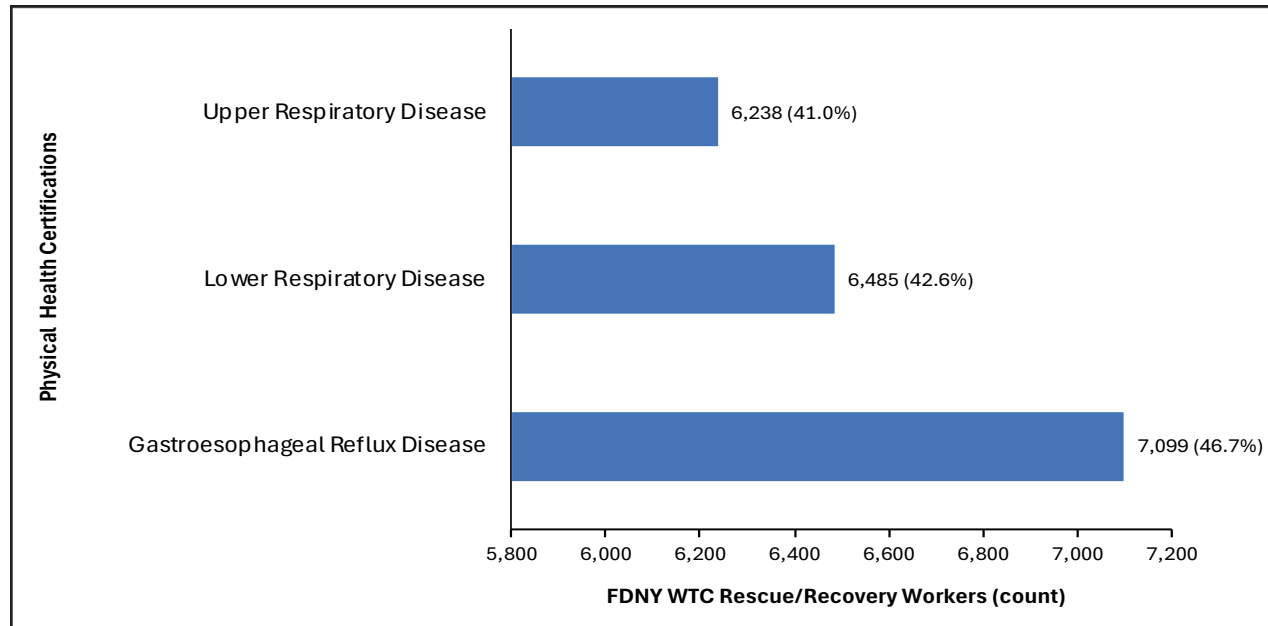
Note: Persons may be certified for more than one condition.

The James Zadroga 9/11 Health and Compensation Act of 2010, its reauthorization in 2015, and its full funding in 2026 ensure that the World Trade Center (WTC) Health Program will operate through 2090. The WTC Health Program provides no-cost medical monitoring for all enrolled members and no-cost treatment for those with certified WTC-related health conditions, as well as for medically associated conditions that result from the treatment or progression of a certified condition. A certified condition is an illness or health condition for which the federal government has agreed that exposure to 9/11-related airborne toxins, hazards, or other adverse conditions was a significant factor in aggravating, contributing to, or causing the illness or health condition.

Conditions covered by the WTC Health Program include upper and lower respiratory conditions (i.e., chronic rhinosinusitis, asthma, chronic obstructive pulmonary disease (COPD), emphysema, pulmonary fibrosis, sarcoidosis), gastroesophageal reflux disease (GERD), most cancers, and mental health conditions (i.e., post-traumatic stress disorder (PTSD), depression, anxiety, and substance abuse disorder). Certain musculoskeletal injuries are covered if serious and documented soon after 9/11. Once a certification is approved, the WTC Health Program can authorize relevant diagnostic and treatment services for the member **at no cost**.

Members can be certified for multiple conditions and therefore have access to services in multiple care suites. The list of WTC-related health conditions may be amended by the federal WTC Program Administrator to include other health conditions as more information is learned about the relationship between 9/11 exposures and those health conditions. In 2012, the administrator added certain cancers based on data provided by the FDNY WTC Health Program, which was later supported by findings from the WTC General Responder Program and the WTC Health Registry. Over time, nearly every type of cancer has been included as a WTC-covered condition. To date, the administrator has not issued decisions on our petitions to add cardiovascular diseases, autoimmune rheumatologic diseases, and cognitive (memory) disorders.

Physical Health Certifications in FDNY WTC-Exposed Rescue/Recovery Workers



The most common certified physical health conditions are lower respiratory diseases, upper respiratory diseases, and gastroesophageal reflux disease (GERD). In recent years, an average of 600 new physical health certifications have been approved by the federal government each year. In the last year, the highest number of newly requested physical health certifications have been for GERD, followed by obstructive sleep apnea and asthma.

Lower respiratory diseases are most often due to obstructive airways diseases such as asthma, chronic bronchitis, and, less commonly, chronic obstructive pulmonary diseases (COPD) and emphysema. Lower respiratory conditions were associated with WTC exposure, with earlier arrival time to the site linked to a greater chance of developing a condition, as well as lower levels of lung function. Previous studies found that the group of FDNY WTC-exposed rescue/recovery workers with asthma, bronchitis, and COPD/emphysema had the lowest lung function, indicating that post-WTC respiratory injury was associated with both obstructive airway disease and functional impairment. Lower respiratory disease also includes certifications for interstitial lung diseases (e.g., sarcoidosis and pulmonary fibrosis), which are less common but may have more serious consequences. Upper airway disease (rhinosinusitis, polyps, vocal cord abnormalities) was similarly associated with earlier WTC arrival time; however, it was not associated with reduced lung function.

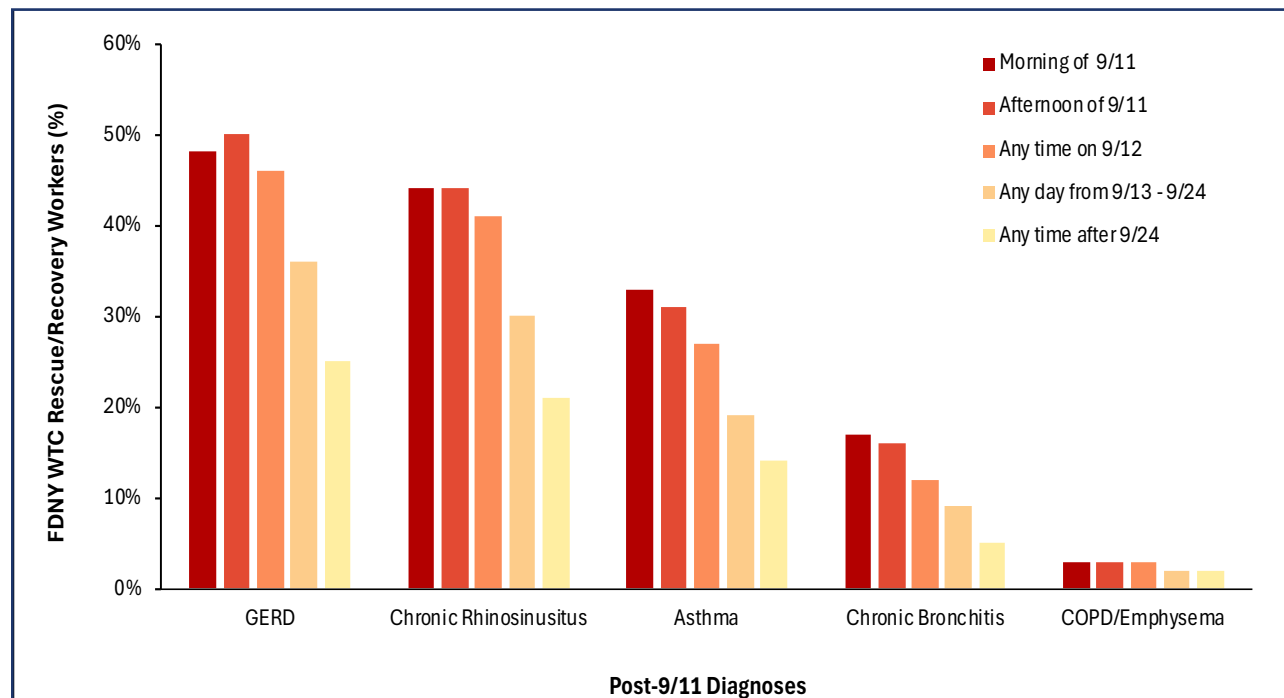
Currently, the most common certified physical health conditions are lower respiratory diseases, upper respiratory diseases, and GERD. Collectively, these are called aerodigestive disorders.

Approximately 70% of WTC-exposed members are certified for at least one of these physical health conditions.

SECTION 3: PHYSICAL HEALTH

Even 25 years after the WTC attack, aerodigestive disorders are most common in those with the greatest exposure (earliest WTC initial arrival time).

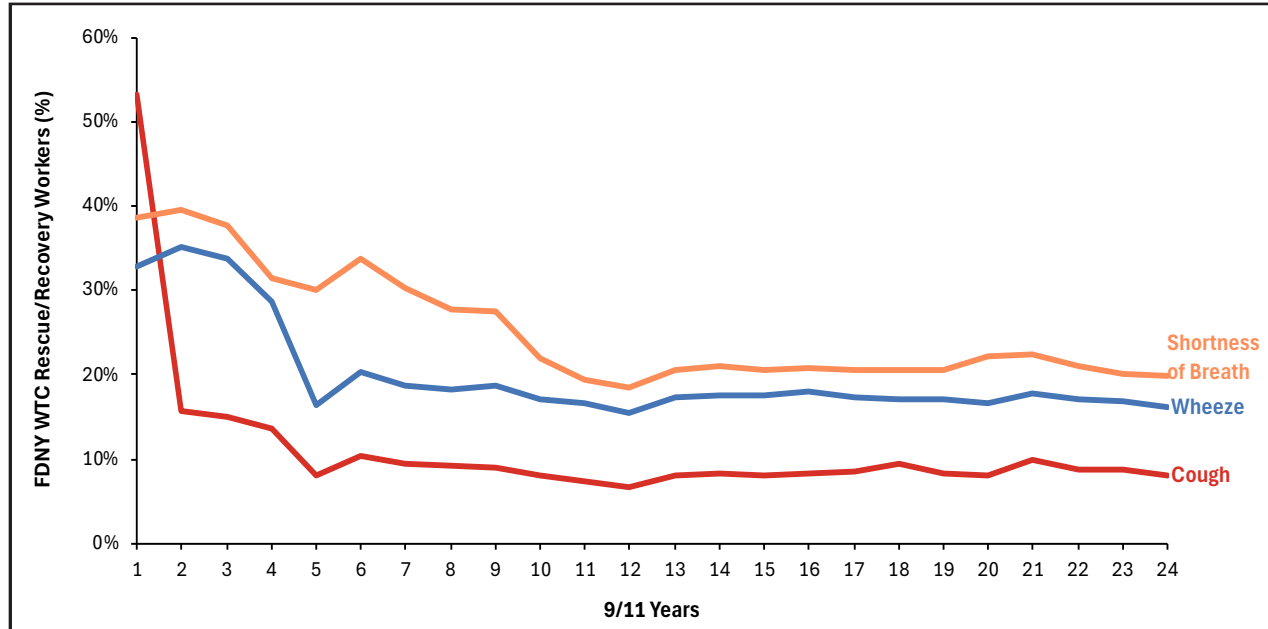
Aerodigestive Respiratory Diagnoses by WTC Arrival Time



Respiratory symptoms among FDNY WTC-exposed rescue/recovery workers have persisted over time, and associations between early arrival at the WTC site and physician-diagnosed respiratory conditions remain. As demonstrated in this figure, those arriving at or soon after the attacks consistently have the highest rates of WTC-related illness across multiple categories of respiratory disease. The entire WTC-exposed workforce (firefighters and EMS providers combined), regardless of arrival time or retirement status, had the following disease prevalences: 44% GERD, 40% chronic rhinosinusitis, 27% asthma, 14% chronic bronchitis, and 2% COPD or emphysema.

Many of our exposed members have more than one of the conditions described above (chronic rhinosinusitis, GERD, or obstructive airways disease). In fact, 45% have two or more of the conditions.

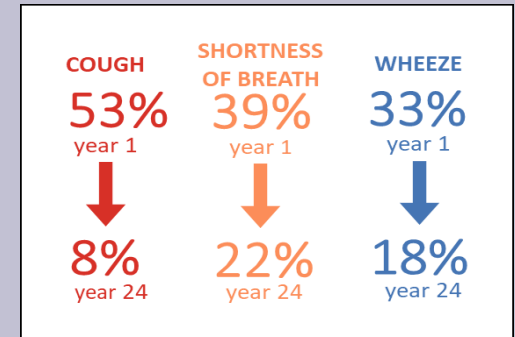
Lower Respiratory Symptoms Over Time



Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

Being exposed to the clouds of dust and debris on 9/11 resulted in frequent daily cough symptoms for almost all present at the WTC site. While cough was the first major respiratory symptom, it improved over time with treatment. More than half of our population had cough symptoms within the first year after 9/11; in 2025, only 9% reported persistent cough. Wheezing and shortness of breath also decreased from year one to the present, but not to the same degree. Currently, 18% of our members continue to report wheezing, and 22% reported shortness of breath.

Persistent lower respiratory symptoms are often associated with greater declines in lung function. Treatment for this is available and is one of several reasons why FDNY WTC-exposed rescue/recovery workers should continue participation in our WTC Health Program.



SECTION 3: PHYSICAL HEALTH

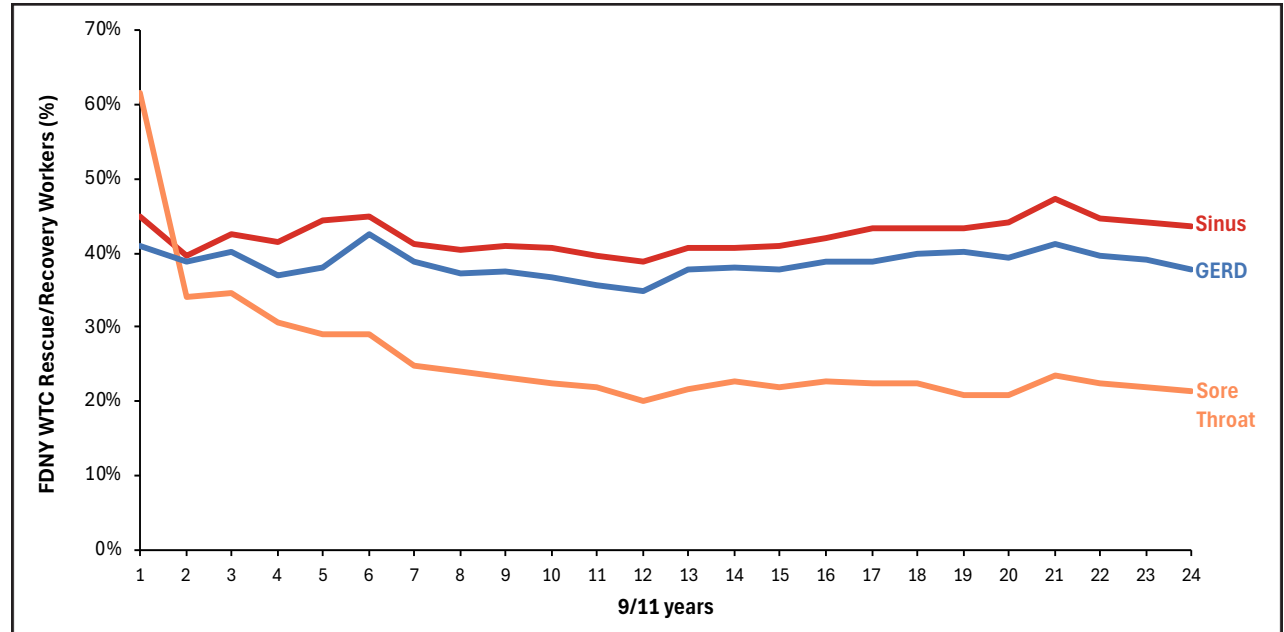
SORE THROAT

61%
year 1



21%
year 24

Upper Respiratory and Gastroesophageal Reflux Disease Symptoms Over Time

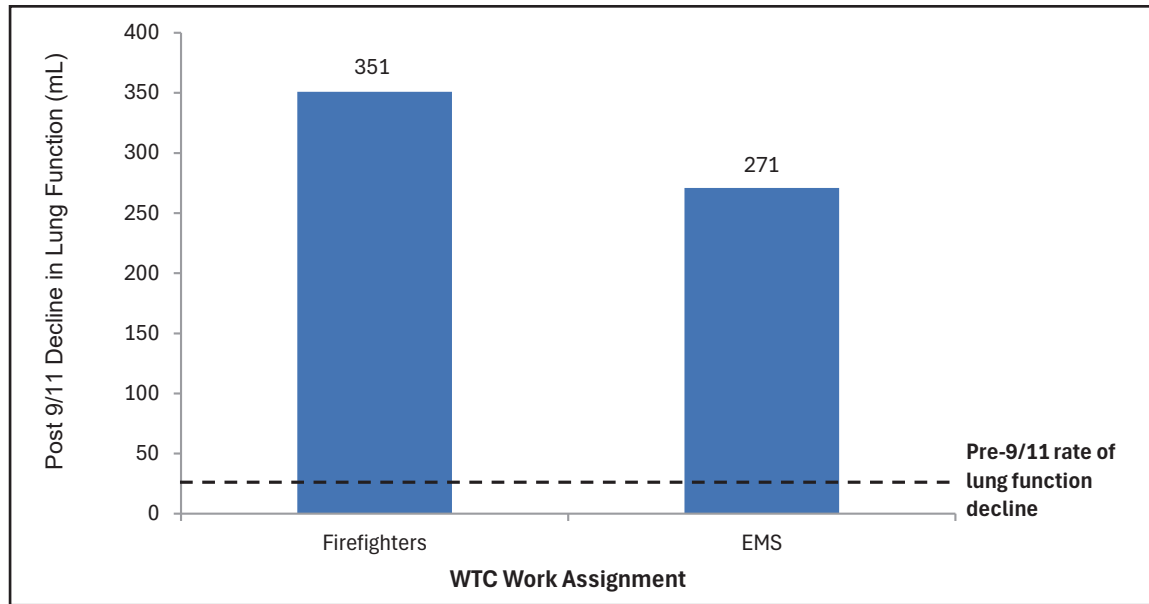


Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

FDNY first responders frequently report the following symptoms: upper respiratory (nasal/sinus congestion/drip, sinus headaches, and sore/hoarse throat) and gastroesophageal reflux disease/GERD (chest burning/tightness, belching, difficulty swallowing, cough, and sore/hoarse throat).

WTC Cough Syndrome is a term, first coined by FDNY BHS, used to describe the presence of lower respiratory symptoms, upper respiratory symptoms, and GERD in WTC-exposed rescue/recovery workers. Although sore throat has declined over time, from a high of 62% in the first post-9/11 year to 24% after 25 years, symptoms of chronic rhinosinusitis (sinus) and GERD have consistently been reported by about 40% of the WTC-exposed workforce, and at a higher prevalence than lower respiratory symptoms. Whether this is due to differences in the effect of WTC dust inhalation on upper and lower airways or differences in the effectiveness of medications used to treat them has been difficult to determine.

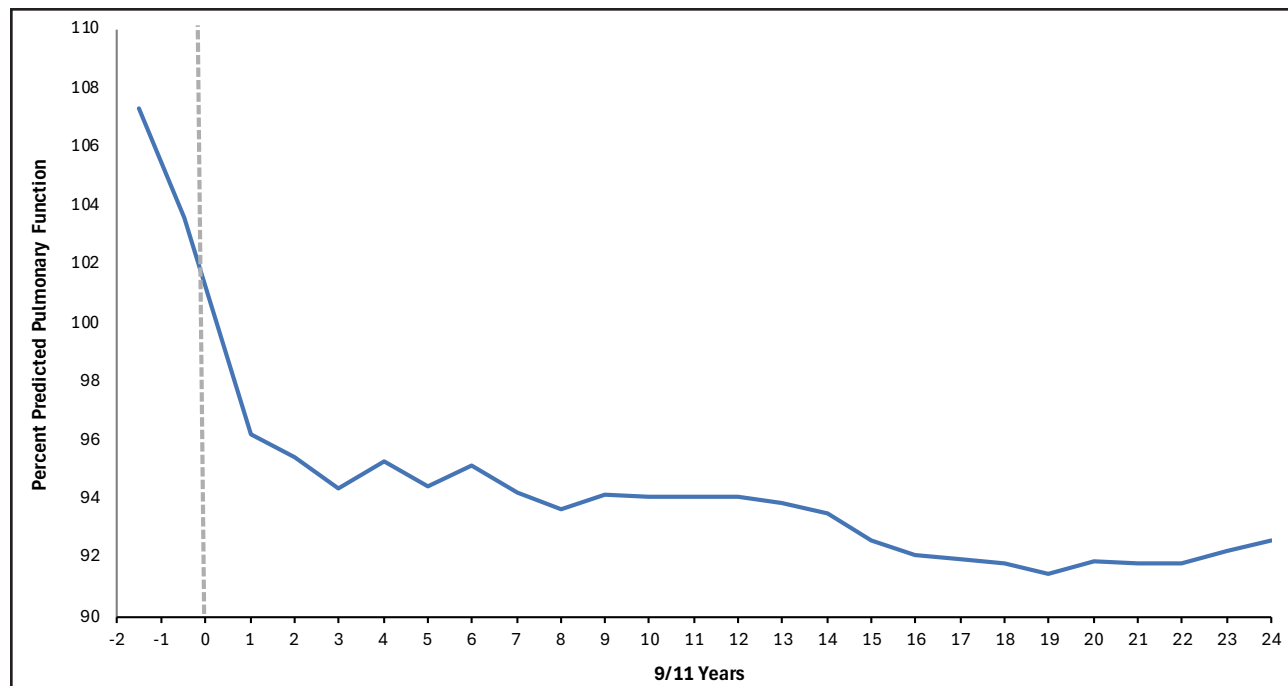
Early Pulmonary Function Loss Within the First Post-9/11 Year by Work Assignment



One important part of the FDNY routine medical evaluation is a pulmonary function test (PFT). The PFT measures forced vital capacity (FVC), which is the total amount of air exhaled (expiration), and the forced expiratory volume in the first second (FEV_1) of expiration in milliliter (mL) units. In the general U.S. population, both FVC and FEV_1 decline at an average rate of about 30 mL per year as part of normal aging. Prior to 9/11, FDNY firefighters' and EMS providers' age-related lung function declines were similar to the general population, demonstrating that self-contained breathing apparatus (SCBA) provides exceptional respiratory protection during usual firefighting and hazardous exposures.

During the first weeks after 9/11, respiratory protection was not readily available and, when available, was not well utilized. In the first year after 9/11, both firefighters and EMS providers had average PFT declines of 351 and 271, respectively—declines 10 to 12 times greater than normal, as displayed by the figure. Firefighters' greater decline of FEV_1 compared with EMS providers was likely due to their different tasks and exposures during the rescue/recovery effort. Job-related tasks and proximity to the Ground Zero site both impacted the loss of lung function. For those with symptoms or substantial declines in lung function, treatment has been mostly effective in preventing further reductions, maximizing lung health, and improving quality of life. For those not yet treated or with persistent lung function declines despite treatment, more advanced treatments are available through the WTC Health Program.

Pulmonary Function Over Time in Firefighters and EMS Providers

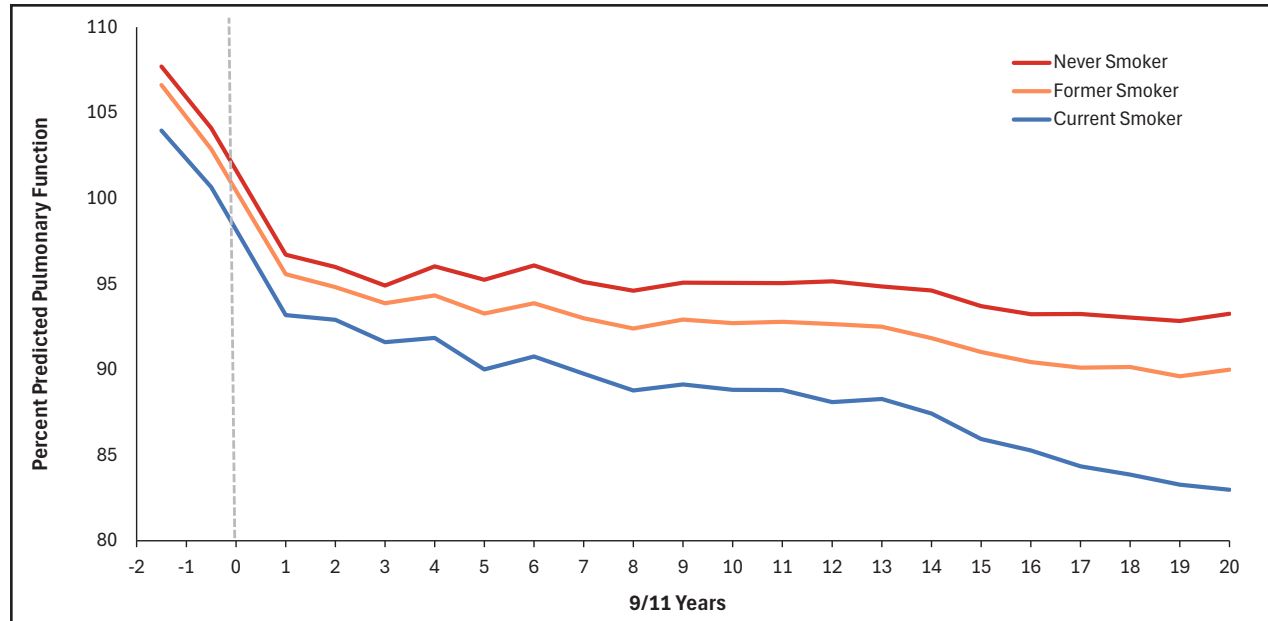


Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

After our first studies documenting substantial declines in lung function during the first 6 to 12 months after 9/11, considerable uncertainty remained about the persistence of this effect. The hope was that the drop was an acute, short-term reaction to the dust exposure that would resolve over time, eventually returning to normal lung function levels. Unfortunately, this was not the case. We found that, on average, recovery of lung function was not observed. Thankfully, for most, the accelerated decline did not continue, and lung function remained steady after adjusting for normal aging.

We found an association between early WTC exposure (initial arrival time) and loss of pulmonary function, with greater declines among members who arrived at the WTC the morning of 9/11 compared with those who arrived later. Those arriving latest, however, still experienced significant declines in lung function as compared to their rate of decline before 9/11.

Pulmonary Function Over Time in Firefighters: Impact of Cigarette Smoking

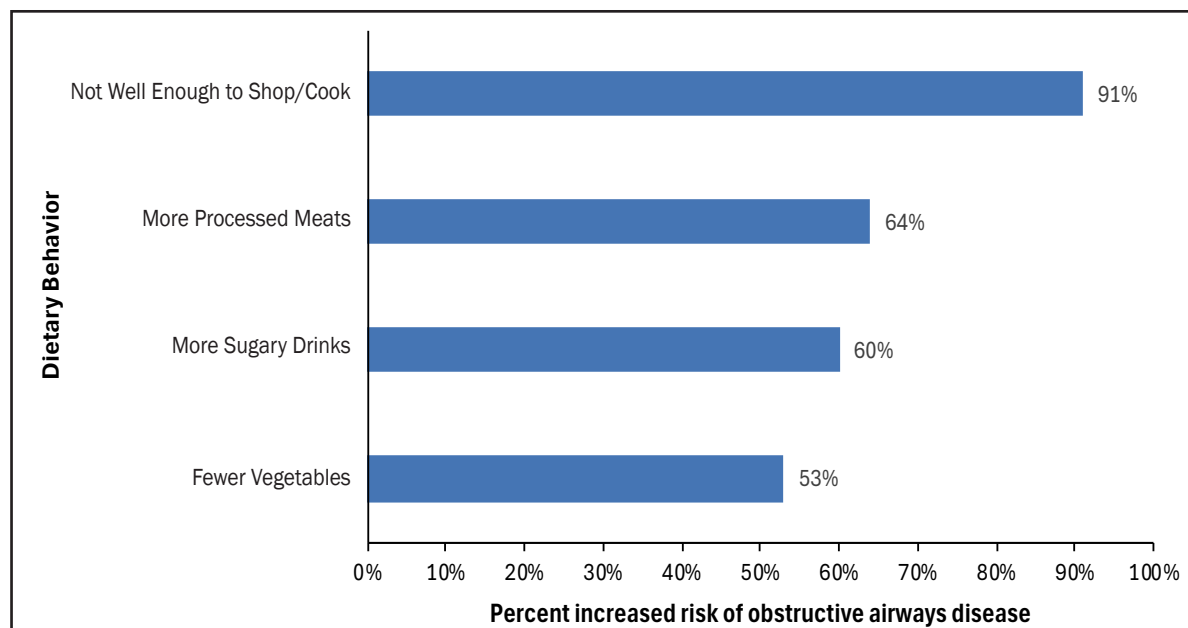


Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 20 covers the period of 9/11/2020–9/10/2021.

Cigarette smoking had an additional negative effect on lung function in the years after 9/11. Although the initial rate of decline in lung function following WTC exposure was not significantly influenced by smoking status, after 2005, those who never smoked had significantly better lung function than current smokers. Former smokers were more similar to never smokers than current smokers. Stopping smoking demonstrated a positive impact on lung function. These findings show the significant role tobacco smoke plays in worsening lung function, especially among those who worked at the WTC site. FDNY's WTC Health Program and BHS continue to offer free tobacco cessation counseling that has proven to be extremely effective.

It is never too late to quit smoking, and FDNY WTC Health Program can help. Call 1-800-45-SMOKE for more information about the free, highly successful, and completely confidential WTC Tobacco Cessation Program.

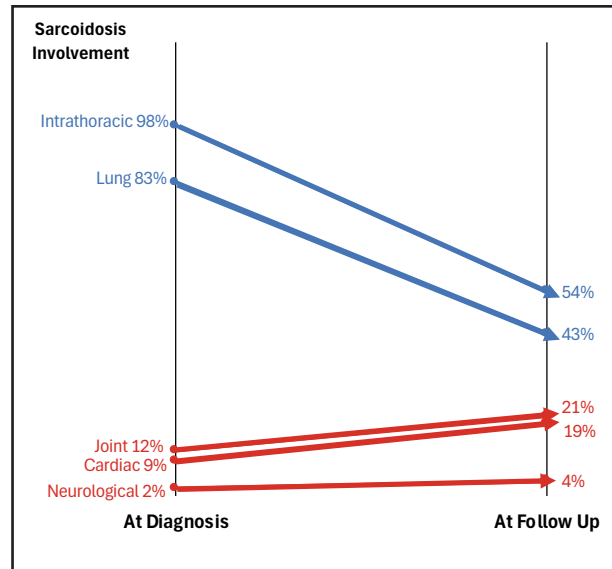
Impact of Diet on Obstructive Airways Disease



It is well known that diet has an impact on cardiovascular disease and aging. A question our research aims to answer is: Are healthy diets also associated with a lower risk of having WTC-related lung disease? In collaboration with New York University (NYU) researchers, we assessed the food choices/habits and physical activity of FDNY WTC Health Program members by adding a validated diet questionnaire, known as the Rapid Eating and Activity Assessment for Participants-Short Version (REAP-S), to our WTC annual monitoring questionnaire. We looked at compounds that are formed when protein and fat combine with sugar or when foods are exposed to high temperatures, also called glycated foods—which include foods like red meat, fried foods, and butter. Diet quality and glycated food content were assessed for their relationship with obstructive airways diseases, including asthma, chronic obstructive pulmonary disease (COPD), and asthma/COPD overlap.

Diets rich in glycated foods, processed meats, fried foods, and sugary drinks, and lacking healthy ingredients such as vegetables and whole grains, were significantly associated with obstructive airways disease even after adjusting for smoking history. We also found that reducing metabolic risk factors such as weight and lipids reduces the likelihood of developing lung disease. Based on these findings, we are now studying whether dietary interventions like the Mediterranean diet (low in glycated foods and rich in fish, nuts, vegetables, fruit, olive oil, and unprocessed grains) can improve lung function and quality of life in WTC-exposed members with obstructive airways disease.

Sarcoidosis Among FDNY Fire and EMS Pre- and Post-WTC

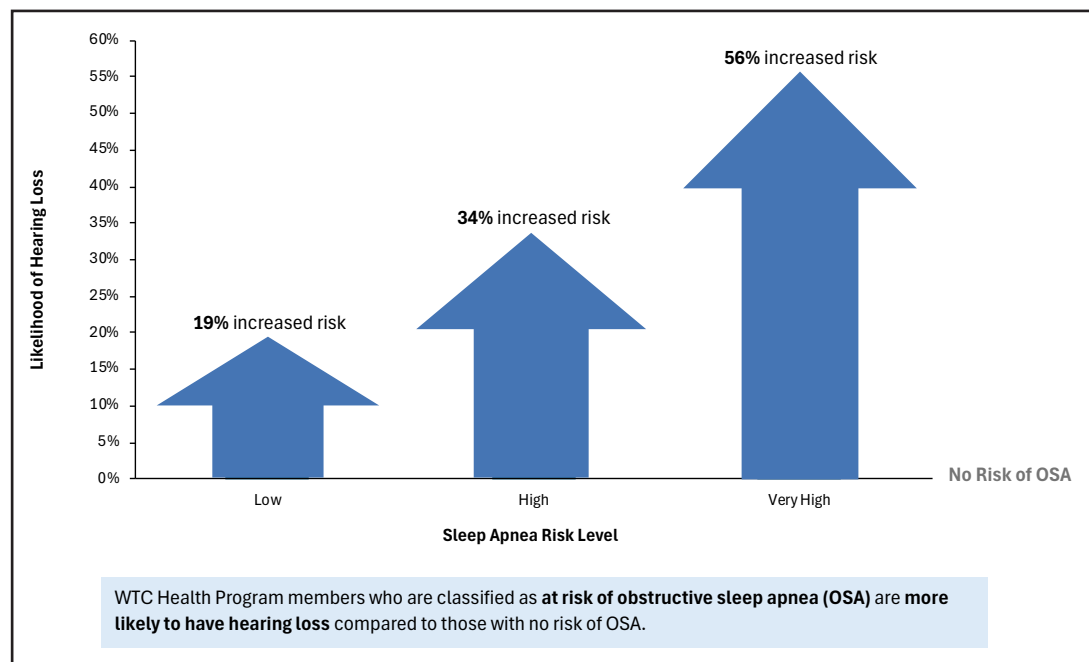


Sarcoidosis is an autoimmune, inflammatory disease that can produce “lumps” of inflammatory cells called granulomas in any organ, but mainly in the lungs, lymph nodes, and skin. These organs are thought to be entry points for occupational and environmental agents. While the cause of sarcoidosis is unclear, our research has demonstrated associations with both firefighting and with WTC exposure. The incidence of sarcoidosis in the FDNY WTC-exposed cohort was *twice* the expected number compared with a demographically similar, age-adjusted, unexposed cohort from the Rochester Epidemiology Project, a Mayo Clinic collaboration. Increased incidence rates for sarcoidosis have also been reported by the WTC General Responder Cohort and the WTC Health Registry.

We evaluated 136 FDNY WTC-exposed members with confirmed cases of sarcoidosis. Over time, many members had resolution of their condition, but 10% developed potentially life-threatening cardiac involvement, 2% developed neurological involvement, and 9% developed life-altering joint involvement.

Cardiac and joint involvement were more prevalent in WTC-related sarcoidosis than has been reported among sarcoidosis patients in the general population who did not have WTC exposure. These results support the need for advanced cardiac screening in asymptomatic sarcoid patients with strenuous, stressful public safety occupations given the potential fatality of a missed diagnosis. Treatment of extra-thoracic sarcoidosis is extremely expensive, but thankfully, all treatments are completely covered by our WTC Health Program.

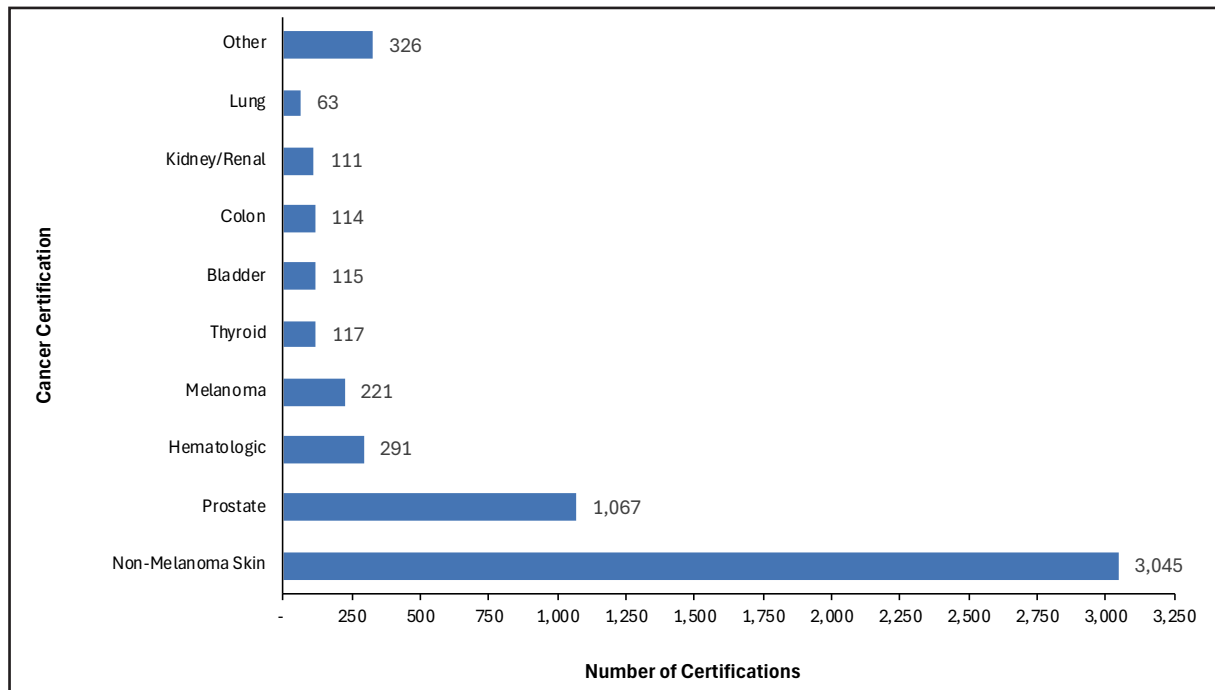
Association Between Obstructive Sleep Apnea and Hearing Loss



In 2024, we evaluated whether obstructive sleep apnea (OSA) was associated with hearing loss in WTC exposed firefighters and EMS. We found that those who had symptoms of OSA were more likely to have hearing loss. Using a sleep questionnaire that estimates OSA risk, members classified as high risk for OSA were 34% more likely to have hearing loss, and those at very high risk of OSA were 56% more likely compared with those at no risk of OSA.

Hearing loss is not reversible, but it is treatable. Our findings further demonstrate the importance of screening for hearing loss in our members with OSA. We now offer free hearing tests as part of FDNY's WTC Health Program.

NIOSH-Certified Cancers in FDNY WTC-Exposed Rescue/Recovery Workers



Note: Members can have more than one cancer certification. Hematologic cancer includes leukemia, multiple myeloma, Hodgkin lymphoma, non-Hodgkin lymphoma, and other hematopoietic.

In 2011 we were the first to demonstrate an increased incidence of cancers in WTC-exposed rescue/recovery workers as compared with non-exposed FDNY members and the general U.S. population. Studies in other WTC-exposed populations from the WTC Health Registry and the WTC General Responder Cohort reported similar overall findings when compared with the U.S. general population. These analyses were instrumental in convincing the federal government to include most cancers as WTC-related covered conditions under the WTC Health Program.

It takes time for cancer to develop. To avoid misclassifying cancers occurring shortly after 9/11 as WTC-related, the WTC Health Program Administrator determined that to qualify for a WTC-related cancer certification, hematologic cancers must have first occurred 1.5 years after WTC exposure; thyroid cancer must have first occurred 2.5 years after exposure; other solid tumors must have first occurred four years after exposure; and mesothelioma must have first occurred 11 years after exposure.

More than 4,000 members are certified for at least one type of cancer; as some were diagnosed with more than one cancer, there are more than 5,400 cancer certifications in total.

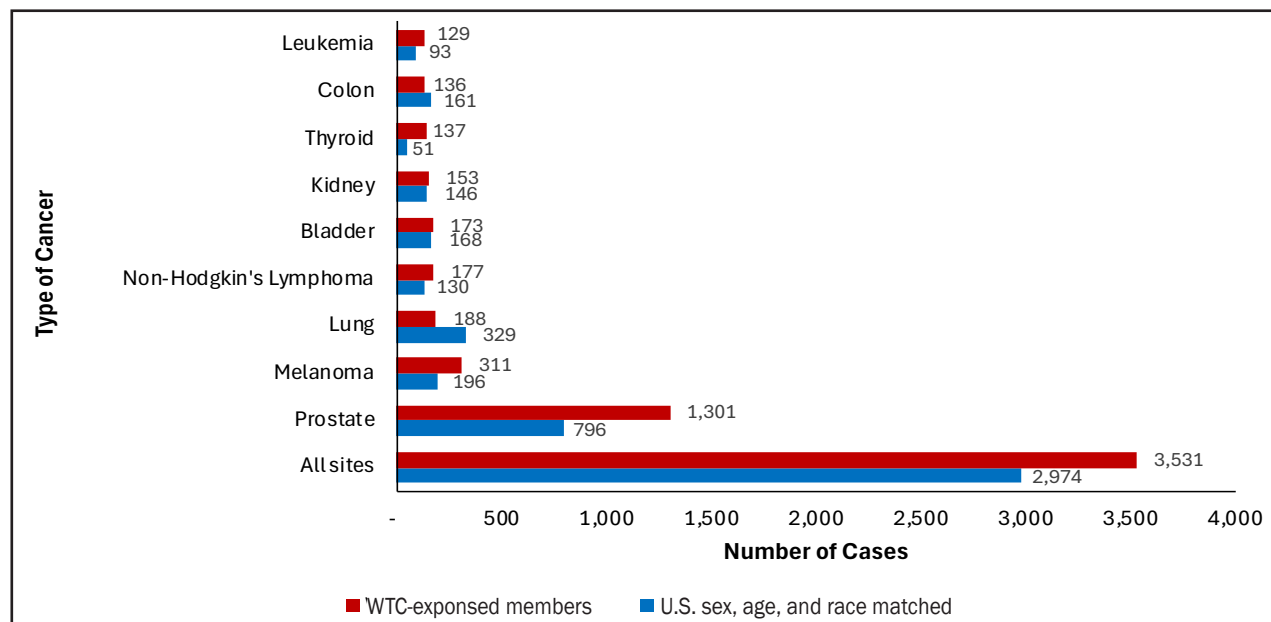
Top five cancer certifications: non-melanoma skin, prostate, hematologic, melanoma skin, and thyroid

SECTION 3: CANCER

Compared with a U.S. reference population, the FDNY WTC Health Program found higher rates of thyroid cancer, prostate cancer, and certain hematologic cancers.

Lung cancer rate was lower, presumably due to lower tobacco smoking rates.

Diagnosed Cancer in FDNY WTC-Exposed Members



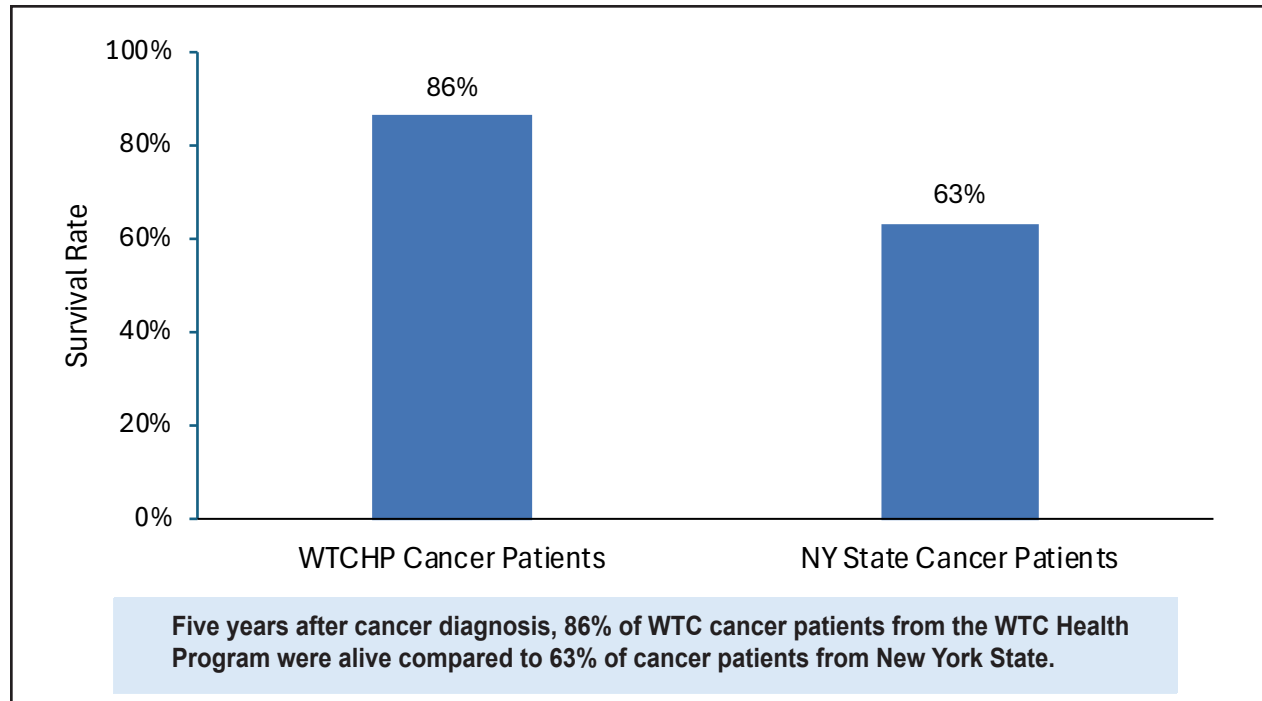
Notes: 1) Thirty cancer cases were excluded from "All sites" count due to missing demographics. Non-melanoma skin was also excluded from this analysis. 2) Not every diagnosed cancer can be certified due to time of diagnosis and degree of WTC exposure.

To determine whether cancer rates in our WTC-exposed members were elevated compared with the U.S. general population, we confirmed each cancer through matching with state cancer registries or appropriate medical record documentation. Rates in WTC-exposed FDNY members were compared to rates from demographically similar individuals in the U.S. general population, as reported from the National Cancer Institute Surveillance Epidemiology and End Results (SEER). Among the WTC-exposed firefighters, we demonstrated a 10% increase in overall cancer rates in the eight years following 9/11.

We extended follow-up of cancer incidence among FDNY WTC-exposed firefighters and used non-WTC-exposed firefighters from San Francisco, Chicago, and Philadelphia as a comparison group. Compared with these non-WTC-exposed firefighters, WTC-exposed firefighters demonstrated significantly elevated rates of thyroid cancers over the entire study period and elevated rates of prostate cancer during the second half of the study period.

Since the time from WTC exposure to development of certain cancers can be up to decades, further follow-up of this relationship is still needed. Current FDNY research focuses on specific cancer incidence rates, survival rates, sequelae (conditions that occur because of a previous disease), risk factors, and screening practices.

Improved Cancer Survival Among WTC Rescue/ Recovery Workers Who Participate in the WTC Health Program



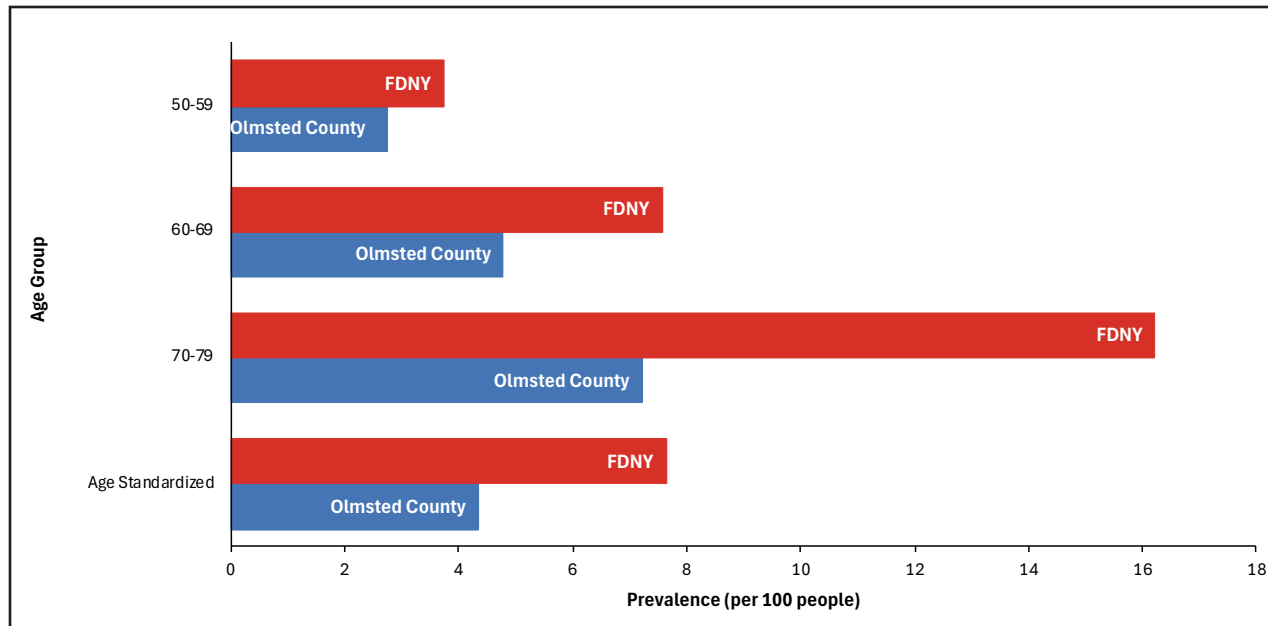
This study was the first analysis of survival among WTC responders who developed cancer. Responders with cancer enrolled in the WTC Health Program were more likely to survive compared with comparable New York State Cancer patients. In the figure, we show that 86% of those in the WTC Health Program were alive five years after diagnosis compared with 63% of cancer patients from New York State. Mortality specifically due to cancer was also found to be lower for WTC Health Program enrollees, especially those diagnosed with prostate cancer and with colon cancer, of which enrollees had nearly half the cancer-related death rate compared with the New York State population. This benefit may be due to early cancer detection, access to no-cost treatment options at some of the finest medical centers in the nation, comprehensive case management, and the social support patients receive from FDNY's Family Assistance Unit, their own family, and fellow responders.

Cancer Precursors

The WTC attacks created an unprecedented environmental exposure to known and suspected carcinogens (substances capable of causing cancer). To better understand the risks of developing future diseases including cancer, we, along with our research partners, have evaluated various blood biomarkers that could provide early warnings. The presence of a biomarker does not mean an individual will later develop disease; it is used with other factors as a measurement of potential increased risk. Between 2013 and 2015, we collected blood and serum samples during WTC monitoring exams from consenting individuals to create the FDNY biobank. To date, samples in this biobank were tested for the presence of biomarkers to help determine whether WTC-exposed members were more likely to have cancer precursors than non-WTC-exposed populations.

We tested samples from the FDNY biobank for the presence of clonal hematopoiesis mutations. Clonal hematopoiesis is a group of genetic mutations developed after birth and is associated with an increased risk of hematologic malignancies (e.g., leukemia) and inflammatory disorders (e.g., cardiovascular and pulmonary diseases). We found that WTC-exposed responders were **three times** more likely to have these mutations compared with non-FDNY/non-WTC-exposed firefighters. WTC-exposed responders with these mutations were nearly **six times** more likely to develop leukemia than those without them. The increased burden of clonal hematopoiesis in WTC-exposed responders provides a rationale for enhanced screening and preventative efforts in this population. Members with clonal hematopoiesis are offered, through our program, additional monitoring for early detection of leukemias.

Overall MGUS Prevalence in FDNY vs. Comparison Population in Olmsted County, MN



Multiple myeloma is a blood cancer found in bone marrow. The precursor to multiple myeloma is called monoclonal gammopathy of undetermined significance (MGUS), though not everyone with MGUS will develop cancer. Using blood samples from FDNY members, we found that the prevalence of MGUS was about two times higher than in a demographically similar Olmsted County, Minnesota, reference population. In addition, the prevalence of a subtype called light-chain MGUS was more than three times higher. These findings suggest that exposure to the WTC disaster is associated with myeloma precursor disease (MGUS and light-chain MGUS) and may be a risk factor for multiple myeloma. Members testing positive are now offered, through our program, additional monitoring for early detection of multiple myeloma.

WTC-exposed members were about twice as likely to have the precursor to multiple myeloma than the general population.

WTC-exposed members were three times more likely to have blood genetic biomarkers (developed after birth) compared with non-FDNY/non-WTC-exposed firefighters, and these mutations are associated with increased risk for developing leukemia.

Chest CT Lung Cancer Screening in WTC-Exposed Rescue/Recovery Workers

Lung cancer screening programs can detect lung cancers early, which is important since treatment is more successful the sooner it is initiated. Deciding who to recommend for lung cancer screening requires choosing criteria that identify which individuals in a population are at the highest risk. In the U.S., there are several different guidelines that can be used to make these decisions. Lung cancer screening guidelines and models pay special attention to age and smoking history. Therefore, using our extensive smoking, chest CT, and cancer data, we were able to determine which guideline would work best in our unique WTC-exposed rescue/recovery worker population.

We evaluated the performance of four main screening guidelines. By applying the unique characteristics of each guideline to our population, we determined how many people would be screened by each guideline and how many lung cancers would be identified. The results of our study showed that the guideline that recommends starting screening at age 50 for those who smoked, on average, at least one pack of cigarettes per day for 20 years performed the best; this guideline is known as the National Comprehensive Cancer Network (NCCN) guideline. Using the NCCN screening guideline, we were able to identify 50 lung cancers in our population since 2002. By comparison, the other guidelines and models would have captured around 30 lung cancers, 20 fewer cases than captured by the NCCN guideline. Recently, the U.S. Preventive Services Task Force has issued a similar recommendation for the entire country. As a result of these findings, the WTC Health Program has formally adopted the NCCN guideline for chest CT lung cancer screening. Early diagnosis allows us to provide potentially life-saving treatments to our members.

SECTION 3: MENTAL HEALTH

98%

of members lost
someone they
knew on 9/11

70%

of members lost
close FDNY friends

57%

of members lost
FDNY coworkers

8,854

WTC-enrolled
members have
visited CSU
since 9/11

**70% of FDNY members reported
close ties to someone lost at the
WTC site.**

An overwhelming 98% of FDNY WTC-exposed rescue/recovery responders (firefighters and EMS providers) knew at least one person who died at the WTC site; many were beloved friends. Not only were the deceased brave first responders, but they were also spouses, fiancés, significant others, parents, family, children, siblings, friends, and coworkers.

The close bonds formed between the survivors and those we lost help to explain, in part, the extent of our members' suffering in the aftermath of 9/11. Members whose firehouses/EMS stations suffered greater losses were more likely to have symptoms of PTSD. However, despite their grief, our members dedicated themselves to serving NYC and rebuilding the Department.

Many members who worked at the WTC site did not allow themselves time to grieve for those lost or to adjust to their new normal, so mental health problems tended to surface later, once the search slowed and they had time to process their emotions. For some, this process was delayed until after retirement. FDNY Counseling Service Unit (CSU)-trained peer counselors provide support and encouragement for members to seek professional counseling and treatment from trained mental health practitioners (social workers, psychologists, and psychiatrists) at CSU or, when needed, from outside mental healthcare providers or organizations. Referrals to private practitioners are offered through the WTC Health Program.

SECTION 3: MENTAL HEALTH

Since 9/11, there have been 221,461 visits by more than 8,800 enrolled members to our WTC Health Program for mental health counseling or treatment.

FDNY Counseling Service Unit (CSU)

The FDNY Counseling Service Unit (CSU) has been responding to the mental health needs of the FDNY community for more than 35 years. Prior to 9/11, CSU mostly provided counseling for family issues, personal stress, or bereavement. In response to the WTC attacks and the tragic loss of 343 members of our FDNY family, CSU quickly adapted and expanded their programs by tapping into counselors from two partner organizations: the International Association of Fire Fighters (IAFF) and the National Fallen Firefighters Foundation (NFFF). CSU staff visited every firehouse and EMS station and added satellite locations to provide mental health services to members and their families, including the families of deceased FDNY rescue/recovery workers. Because CSU had significant experience with our members, programs were developed to meet their specific needs. For example, post-9/11 trauma groups were available at several FDNY CSU locations, which were established in members' communities, and peer counselors were deployed throughout FDNY. Two weeks after 9/11, CSU facilities were expanded to include not only our Manhattan location but also new locations in Staten Island and Fort Totten (Queens), and later in Suffolk and Orange Counties. With their collective experience, along with use of de-identified aggregate analyses of the mental health questionnaire administered during FDNY WTC Health Program annual monitoring exams, CSU has helped identify mental health concerns and their relation to work done at the WTC disaster site. Immediately after 9/11, the most frequent conditions were PTSD and grief/bereavement, through which CSU was there to help our members deal with this "new normal."

Now, 25 years later, our dedicated CSU staff continues their mission of caring for the mental health of our members, both active and retired. In addition to any continuing issues, we now increasingly identify members with difficulty adjusting to life changes such as retirement and/or chronic illnesses. New programs introduced by CSU recognize the shifting and varying needs of our members. CSU now offers both in-person and telemedicine visits. We have expanded our focus from PTSD to also include depression, substance-abuse disorders, and wellness, which are all issues that can be compounded by retirement, aging, and comorbid physical health conditions. Knowledge gained from 9/11 has enabled CSU to help first responders after other disasters, such as Hurricane Sandy and the COVID-19 pandemic.

SECTION 3: MENTAL HEALTH

All firefighters and EMS providers with at least one mental health condition can receive mental health treatment, at no cost, through the WTC Health Program.

Call 212-570-1693 to make an appointment with the CSU.

If you have stress or mental health concerns, please call the WTC Health Program or CSU at any of the locations listed below. These calls and any services you receive under the WTC Health Program are confidential and not part of your BHS or FDNY records.

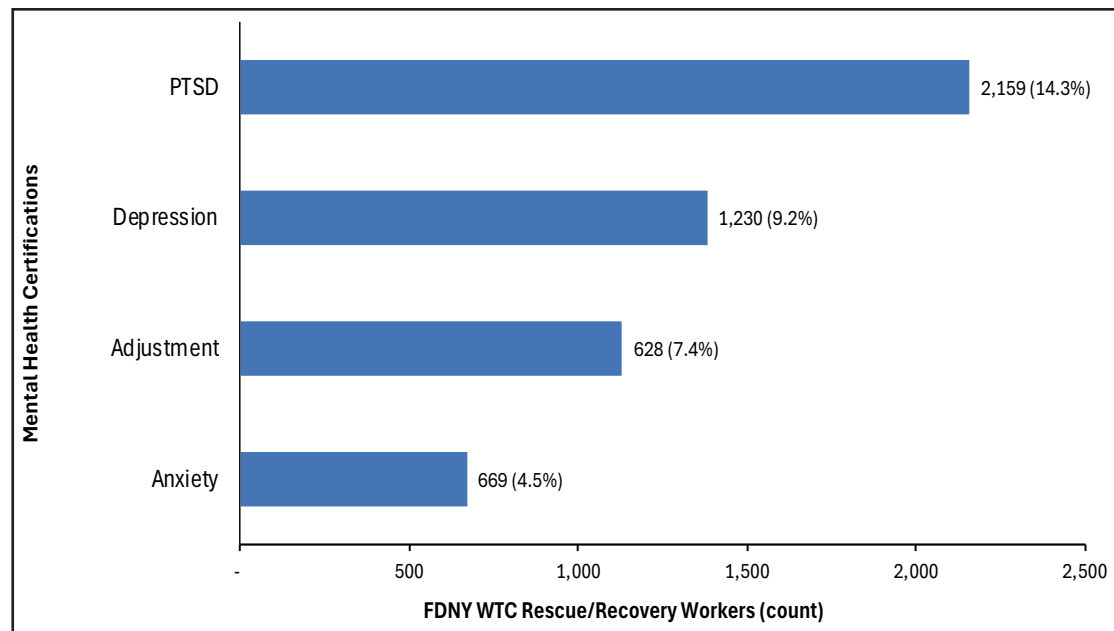
FDNY CSU Locations	
Manhattan Counseling Unit 251 Lafayette Street, 3 rd Fl New York, NY 10012	Staten Island Counseling Unit 1688 Victory Boulevard, Suite 101A Staten Island, NY 10314
Addiction Transition Program 251 Lafayette Street, 4 th Fl New York, NY 10012	Brentwood Counseling Unit Suffolk County Community College Crooked Hill Road Brentwood, NY 11717
Fort Totten Counseling Unit Fort Totten Building 413A Bayside, NY 11359	Middletown Counseling Unit 2279 Goshen Turnpike Middletown, NY 10941

SECTION 3: MENTAL HEALTH

Depression and post-traumatic stress disorder (PTSD) are the most common NIOSH-certified WTC-related mental health conditions.

81% of members still self-report 9/11 as a traumatic experience at the most recent monitoring exam.

NIOSH-Certified Mental Health Conditions



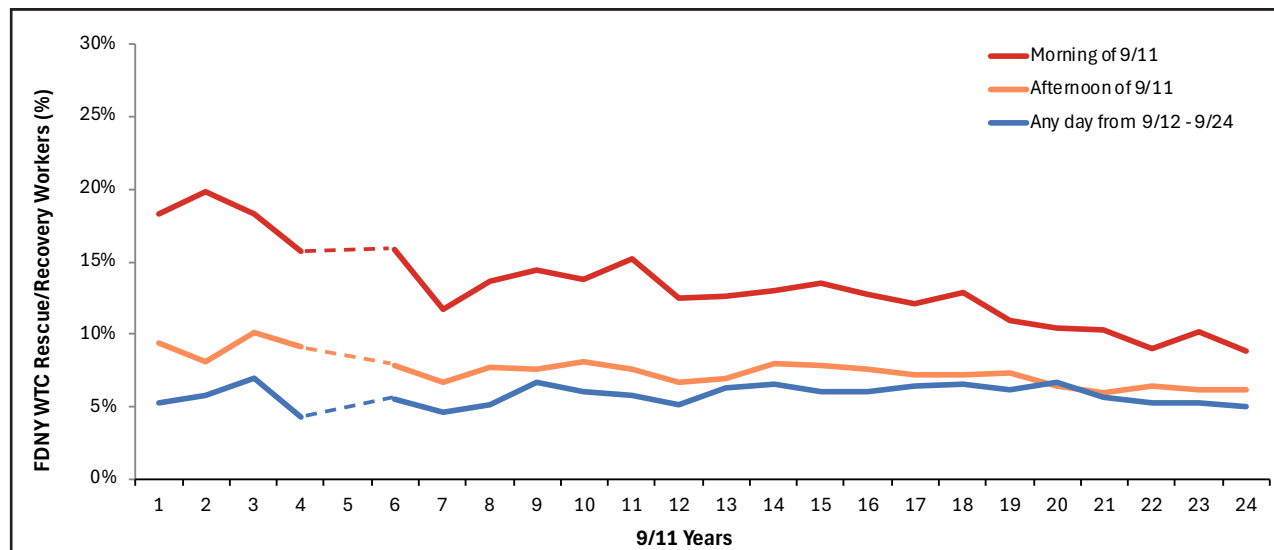
FDNY rescue/recovery workers with the highest amount of WTC exposure had the greatest risk for adverse physical health effects. The same relationship with WTC exposure has been found for mental health effects.

WTC-related mental health services are provided under the Zadroga Act as part of the FDNY WTC Health Program. As with WTC-related physical health conditions, certification by the NIOSH WTC Program Administrator is required for us to provide no-cost treatment to our members. The FDNY WTC Health Program can streamline this process by submitting certification requests for any member with symptoms and appropriate documentation.

Members can be certified for more than one mental health condition. These conditions are often made worse by stressful situations such as adjustment to retirement or the development of physical health problems such as cancers or serious respiratory illness. Members are continuously encouraged to take advantage of counseling services to address these and other mental health conditions when needed.

Mental health benefits for any family members of the 343 FDNY members lost on 9/11 are included in the Zadroga Act. These family members can be certified and obtain mental health services at CSU.

PTSD Over Time by WTC Arrival Time

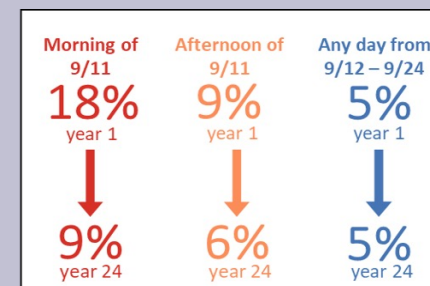


Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 1 is 9/11/2001–9/10/2002). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025

Nearly 25 years after the WTC attacks, 6% of the FDNY WTC-exposed rescue/recovery workers still meet symptom criteria for post-traumatic stress disorder (PTSD).

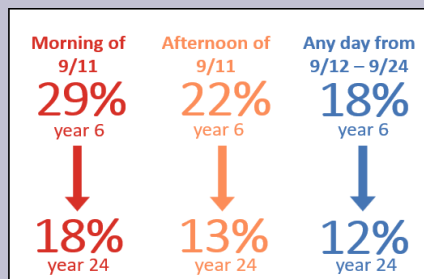
As seen in the graph, PTSD symptom rates generally improved over the first few years after 9/11 and have since remained steady. But even now, FDNY rates remain higher than the U.S. general population—5% to 9%, as compared to around 3%. Nearly 25 years after 9/11, the number of members who screened positive for PTSD continue to show an association with early arrival to the WTC site. FDNY WTC-exposed rescue/recovery workers who arrived at the WTC site the morning of 9/11 were the most likely to be symptomatic immediately after 9/11 and to have remained so over time. PTSD may persist, worsen, or resurface in association with physical injuries or illnesses sustained during or after 9/11 or with any new stressful experience following the disaster.

Early arrival at the WTC site remains a strong predictor of PTSD, even 24 years after 9/11.

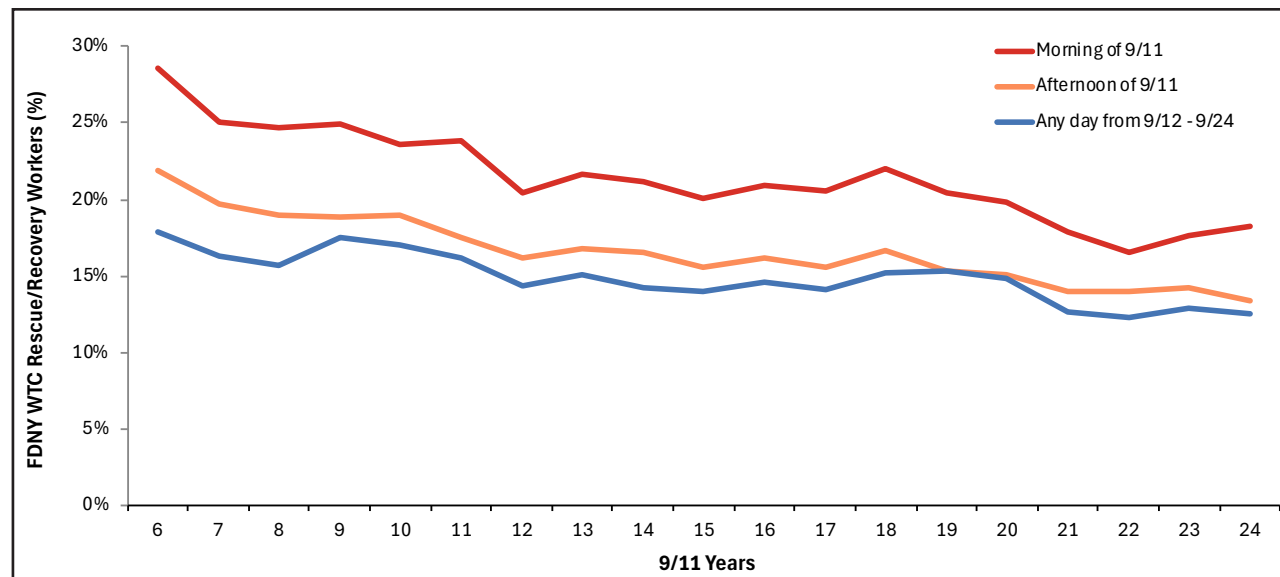


SECTION 3: MENTAL HEALTH

Time of arrival to WTC site remains associated with depression, even over 25 years after 9/11.



Depression Over Time by WTC Arrival Time



Note: 9/11 years are defined as each year period beginning on September 11 of that calendar year (e.g., 9/11 year 6 is 9/11/2006–9/10/2007). Data for 9/11 year 24 covers the period of 9/11/2024–9/10/2025.

Nearly 25 years post-9/11, 14% of the FDNY WTC-exposed rescue/recovery workers screened positive based on symptom criteria for depression.

High rates of depression remain associated with early arrival to the WTC site and were similar in firefighters and EMS providers. The rates of those who screened positive for depression, as shown in this graph, are higher than rates among similar U.S. general populations.

SECTION 3: COMORBIDITY AND HEALTH-RELATED QUALITY OF LIFE

77%

of members rated their health as good, very good, or excellent

53%

of members reported improvement in self-related health status

21%

of certified members have BOTH a physical health and mental health certification

10%

of certified members have a physical health, mental health, and cancer certification

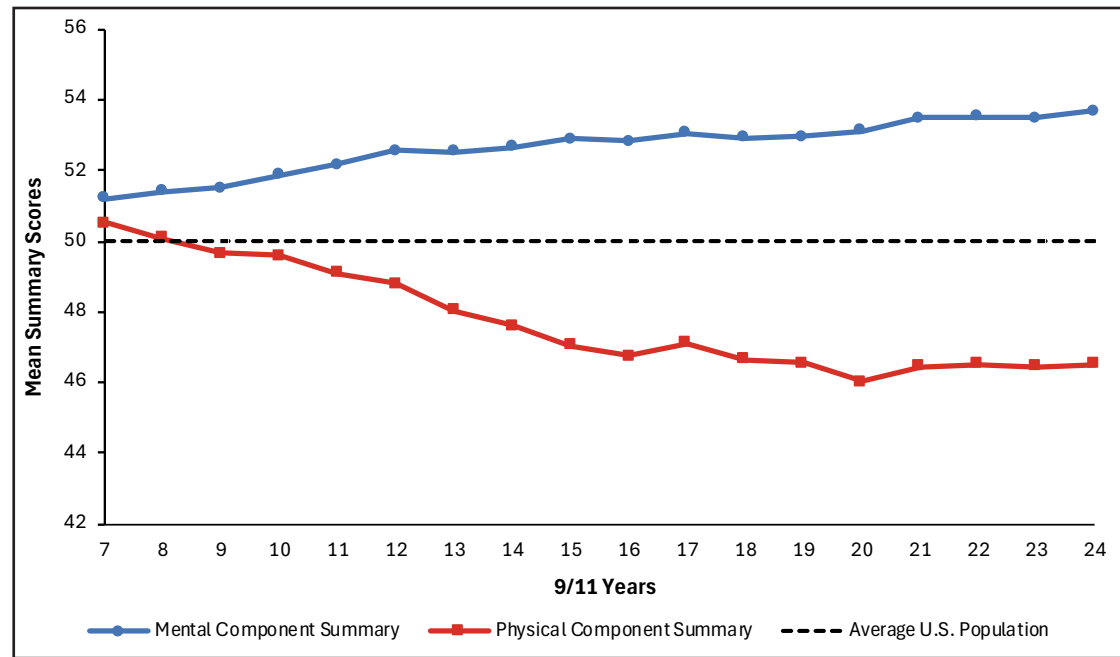
The health and quality of life for our FDNY WTC-exposed rescue/recovery workers are our highest priority. Increasingly, health care experts have recognized that health-related quality of life is an important outcome. The Centers for Disease Control and Prevention (CDC) has defined "health-related quality of life" as an individual's perceptions of their physical and mental health.

To track members' perceptions of their health status, we added a validated health-related quality of life questionnaire, the Short-Form Health Survey 12 (SF-12), to our monitoring exams in 2008 and introduced an updated version (SF-12, version 2) in 2015. The SF-12 provides two summary scores: physical component and mental health component. For both components, higher scores indicate better perceived health quality of life. A score of 50 corresponds to the average score for the U.S. general population. It is important to track quality of life as members age and have multiple certified health conditions that can affect their quality of life.

SECTION 3: COMORBIDITY AND HEALTH-RELATED QUALITY OF LIFE

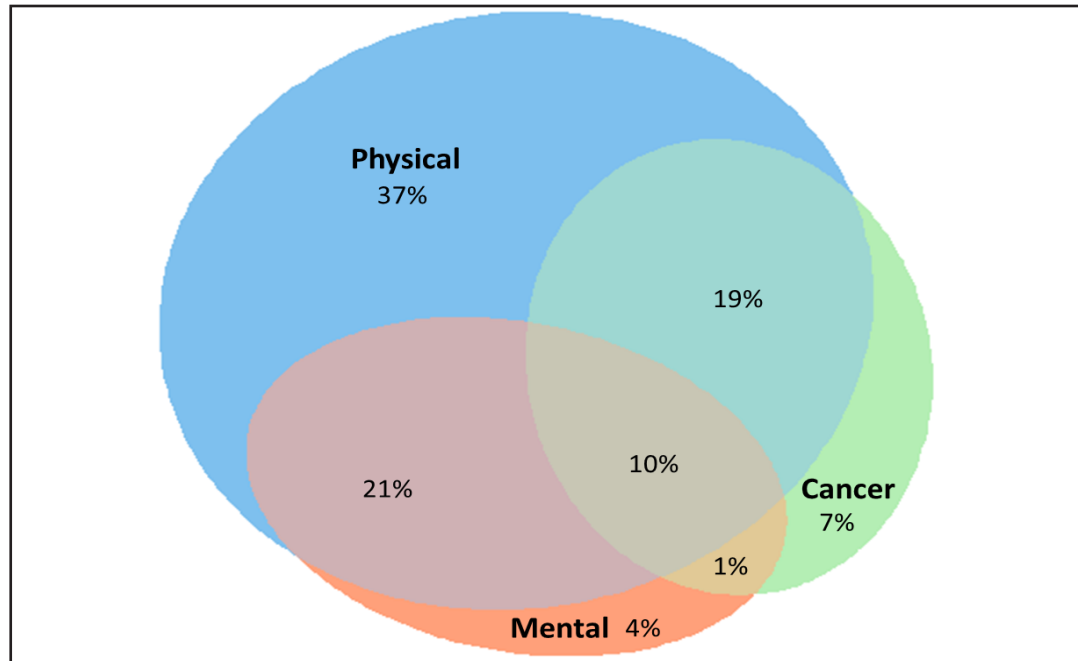
Over time, mental health-related quality of life improved, while physical health-related quality of life declined.

Health-Related Quality of Life Assessments Among FDNY WTC-Exposed Rescue/Recovery Workers



Compared with the U.S. general population, FDNY WTC-exposed rescue/recovery workers (firefighters and EMS providers) report a higher (“better”) overall mental health quality of life but a lower (“worse”) overall physical health quality of life.

Comorbidity of Certifications: Physical Health, Mental Health, and Cancer Certifications



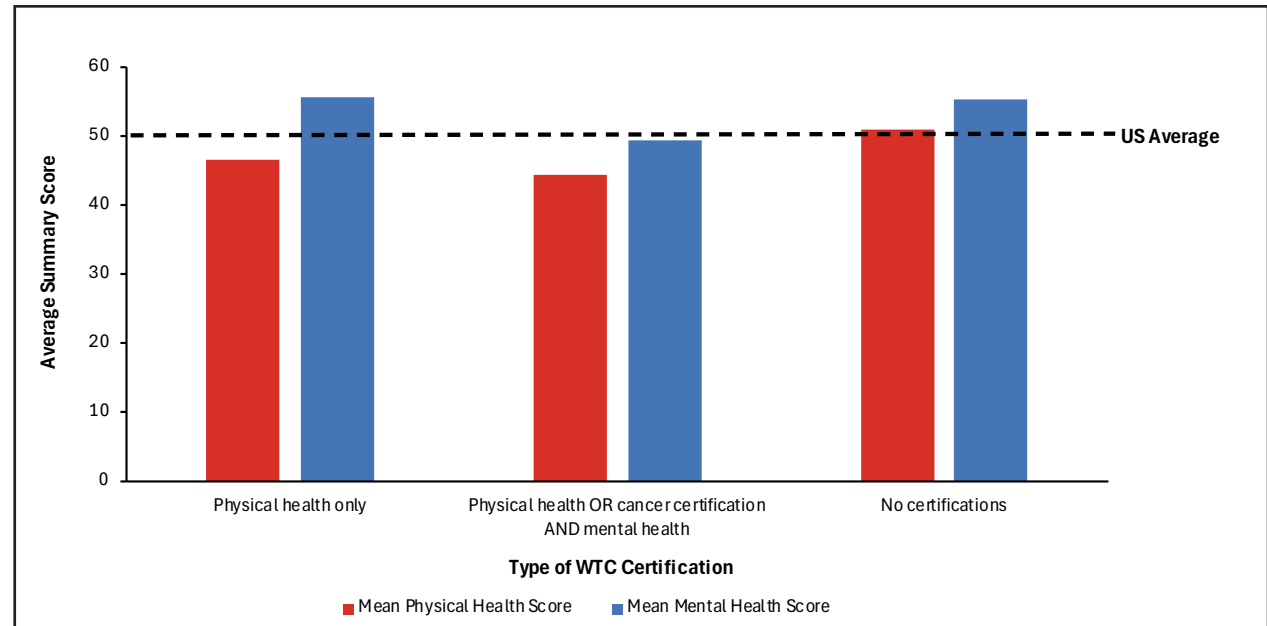
Those with mental health conditions often must deal with stress and suffering from physical health conditions as well. This figure shows the comorbidity, or occurrence, of certifications for the 11,321 members who currently have at least one certification for a physical health condition, a mental health condition, or cancer. To highlight these dimensions of health, the certifications are separated into domains. Showing the overlap, 21% of members are certified for both a physical and mental health condition, and 10% are certified for all three dimensions—physical health, mental health, and cancer.

SECTION 3: COMORBIDITY AND HEALTH-RELATED QUALITY OF LIFE

FDNY WTC-exposed rescue/recovery workers with certified WTC-related physical health conditions have lower (“worse”) physical health quality of life scores than the average general U.S. population.

FDNY WTC-exposed rescue/recovery workers with certified WTC-related physical health conditions or cancer on top of a mental health condition have lower (“worse”) mental health and physical health quality of life scores compared with the average general U.S. population.

Health-Related Quality of Life by WTC Certifications

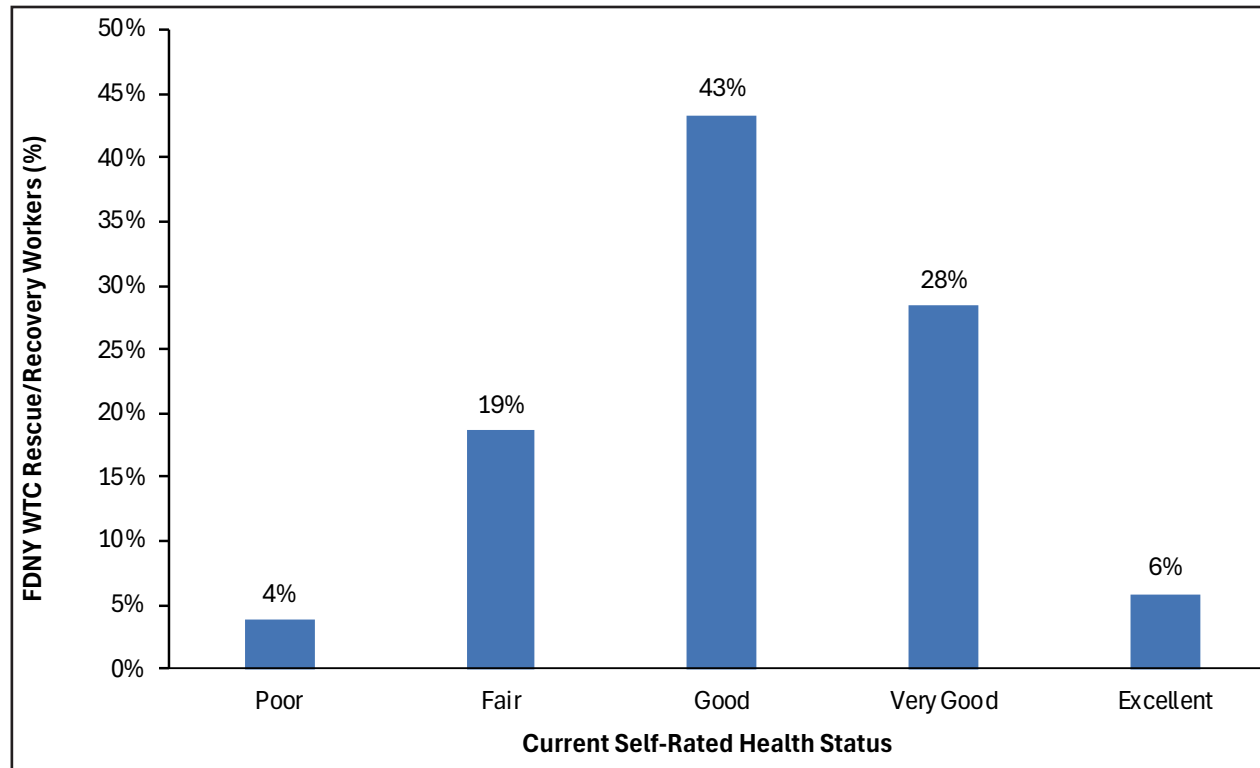


We examined health-related quality of life measurements for those who are certified with WTC-related conditions. Conditions covered by the WTC Health Program include physical health conditions such as airway and digestive disorders (asthma, rhinosinusitis, and gastroesophageal reflux disease), most cancers, and mental health conditions such as major depressive disorder, post-traumatic stress disorder (PTSD), and substance use disorder. The higher the quality of life measurement score, the better the member feels about their quality of life. WTC-exposed rescue/recovery workers with certified conditions scored lower than the average physical health score among the U.S. general population (score of 50). Those with no certified conditions scored above the U.S. general population in both physical and mental health scores.

WTC-exposed members diagnosed with either a physical health or cancer certification and a mental health certification have the lowest average health quality of life scores. This highlights the importance of offering our members treatment approaches that combine their physical condition's standard of care with mental health counseling services.

SECTION 3: COMORBIDITY AND HEALTH-RELATED QUALITY OF LIFE

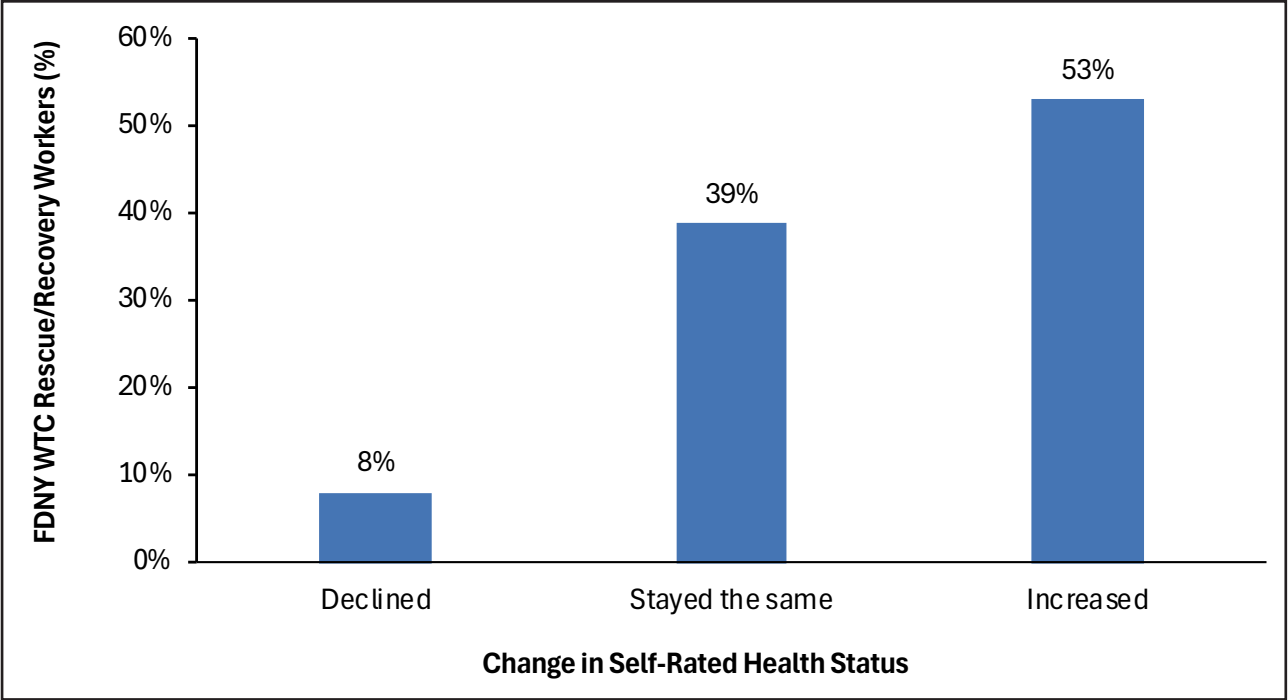
Current Self-Rated Health Status



Twenty-five years later, more than 77% of FDNY members rate their current health as good, very good, or excellent on their most recent questionnaire. Our members state that the FDNY WTC Health Program, with its regular monitoring evaluations and free medical treatment (including medications), has significantly contributed to their current positive perceptions of health status.

More than 77% of members rated their current health as good, very good, or excellent on their most recent health WTC medical monitoring questionnaires. This was true even for those who reported serious health concerns during or shortly after their rescue/recovery work at the WTC disaster site.

Current Health Status Among FDNY WTC-Exposed Rescue/ Recovery Workers Who Initially Reported Serious Health Concerns



In their first post-9/11 questionnaire, FDNY members were asked to report their health concerns arising from work at the WTC disaster site. Nearly 93% of respondents, or 8,430 individuals, believed that their WTC exposures caused or would cause future health problems or cause loved ones to be concerned about their health.

On the medical monitoring questionnaire, we also ask our members to rate their general health status as excellent, very good, good, fair, or poor. On their initial exam, about 2,400 respondents self-reported their overall health as either fair or poor. Among these same respondents, we examined their most recent survey, taken approximately 25 years after 9/11. As shown in the figure, 53% reported an improvement, and 39% remained the same. It is encouraging to see more than half of our members report an improvement in general health despite long-term effects of WTC exposure and aging.

SECTION 3: MORTALITY

1,334

WTC-exposed
members are
deceased

6%

Respiratory deaths

34%

Cancer deaths

22%

Heart disease
deaths

Mortality rates are found to be decreased in FDNY WTC-exposed members.

Many of our WTC-exposed members believe that early death from WTC-related illness, especially cancers, is inevitable. We have shown that although cancer diagnoses are increased, mortality rates in FDNY WTC-exposed rescue/recovery workers are thankfully not elevated when compared with the general population (U.S. and New York State) and non-WTC-exposed responders from other fire departments. In fact, mortality rates for all causes—cancers, respiratory diseases, and heart diseases—are decreased in FDNY WTC-exposed responders. Only digestive-cancer-related mortality was increased compared to non-exposed firefighters.

While we did not find an elevated risk of overall mortality in the FDNY WTC cohort, we identified certain risk factors for increased mortality within this population:

Lower lung function: Members with lower lung function early on had a greater risk of death over the 20 years following 9/11. This was associated with not only lung-disease-related mortality, but also cancer- and heart-disease-related mortality.

Liver fibrosis: Intermediate and high liver fibrosis scores, indicating poorer liver function, were associated with increased mortality risk when compared with low liver fibrosis scores. We are in the process of petitioning the federal WTC Health Program Administrator to include liver fibrosis detection tests for our members.

By identifying mortality risk factors, we can provide targeted care to our members to reduce premature mortality risk.



SECTION 4: **NEWLY EMERGING CONDITIONS**

Rheumatologic Autoimmune Disease

Cardiovascular Diseases

Amyotrophic Lateral Sclerosis

Cognitive Concerns



SECTION 4: NEWLY EMERGING CONDITIONS

1,594

Members with
cardiovascular
disease

177

Members with
rheumatologic
autoimmune disease

43%

of members reporting
at least one cognitive
concern

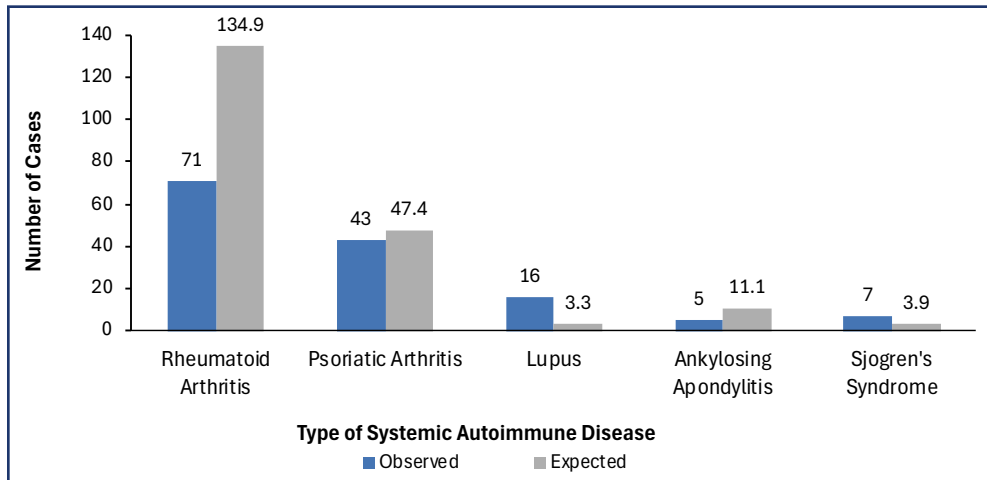
13%

of members with
peripheral neuropathy
symptoms

It's been more than two decades after the collapse of the World Trade Center (WTC) towers, new disease trends continue to emerge within WTC-exposed cohorts of rescue/recovery workers. Some conditions and diseases may take decades to develop, and because many are known to be associated with aging, it can be difficult to prove their association with WTC exposure. Emerging conditions that we and others are currently focusing on include autoimmune diseases, cardiovascular diseases, hearing issues, cognitive concerns such as memory loss and peripheral neuropathy. Peripheral neuropathy occurs when the nerves located outside of the brain and spinal cord are damaged. Common symptoms of neuropathy include prickling, pins and needles, burning, aching pain, or tenderness in legs, feet, arms or hands. When we discover a significant association with WTC exposure, either directly or as an associated condition, we work with the other WTC cohorts (General Responder Cohort, WTC Health Registry, and the Survivor Cohort) to petition the National Institute for Occupational Safety and Health (NIOSH) federal WTC Program Administrator for a decision on whether the illness can be added to the list of WTC-covered conditions. Petitions for all the above conditions have been submitted, and we await the Administrator's decisions.

The following research summaries recap some of the advancements made by the Fire Department of the City of New York (FDNY) and the WTC Health Program in identifying emerging concerns in the WTC-exposed cohort—a feat not possible without the patience, participation, and dedication of our WTC Health Program firefighters and EMS providers.

Most Common Rheumatologic Autoimmune Diseases in FDNY WTC-Exposed Rescue/Recovery Workers: 2001 to 2025



Note: Expected values based on non-WTC-exposed population. Only select autoimmune diseases were available for non-WTC-exposed population for analysis. Also, one WTC-exposed member had two autoimmune disease diagnoses and is represented twice in the graph.

We at FDNY were the first to publish analyses of post-9/11 rheumatologic autoimmune diseases in relation to WTC exposure in FDNY rescue/recovery workers. Typically, these diseases are rare in middle-age males. Rheumatoid arthritis was the most common autoimmune diagnosis in our population, followed by psoriatic arthritis, lupus, polymyositis/dermatomyositis, scleroderma, Sjögren's syndrome, antiphospholipid syndrome, ankylosing spondylitis, and Wegener's granulomatosis.

While the first study did not find a statistically significant association between these diseases and early WTC arrival time—an indicator of acute exposure—there was an association with chronic, long-term WTC exposure. The risk of having one of these autoimmune diseases increased by 13% for each month worked at the site. In a second study, FDNY rates were compared with expected rates in a non-WTC-exposed, non-firefighter male cohort. When examining the occurrence of these diseases according to level of WTC exposure, those in our group with the lowest WTC exposure had 10 fewer cases than expected, whereas those with the highest WTC exposure had 7.7 excess cases, meaning more cases than expected. Early detection can facilitate early treatment, which has been shown to minimize organ and joint damage and improve quality of life.

Just as we did for cancer, we have petitioned the federal government to add rheumatologic autoimmune diseases as WTC-covered health conditions. Initially, the federal WTC Health Program Administrator was waiting for results from the other WTC cohorts. These studies have been submitted, and we await a decision.

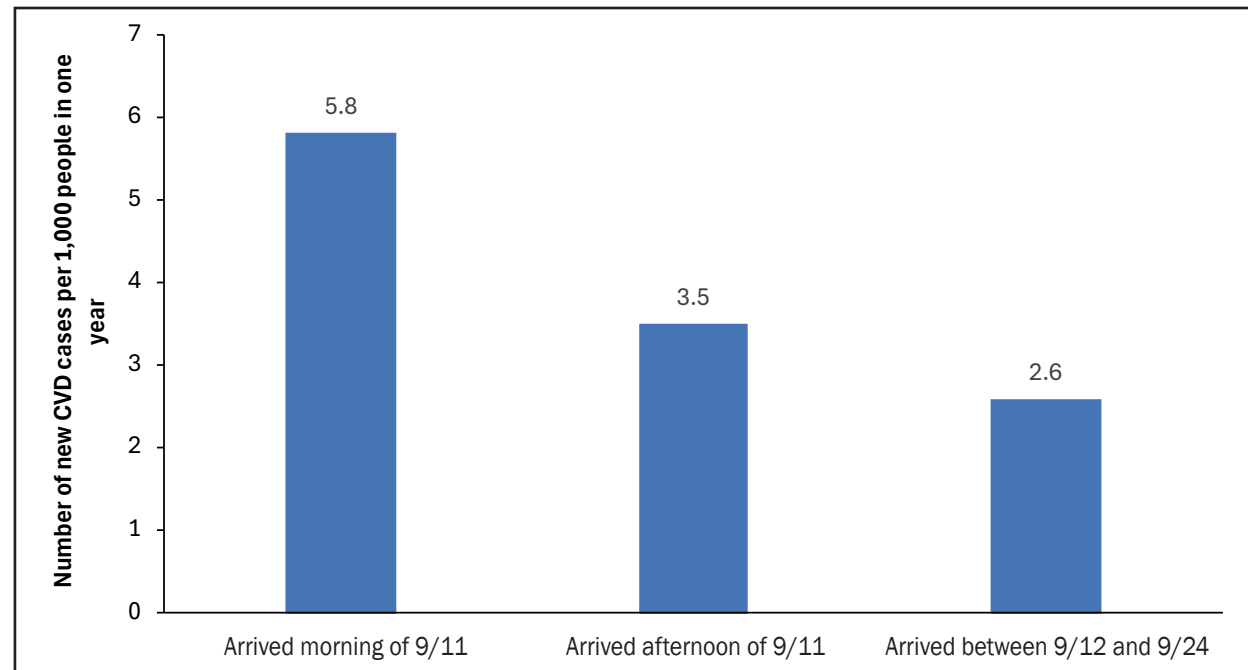
The FDNY WTC Health Program began to track the specific autoimmune diseases after 9/11. Twenty-five years later, 177 people have been diagnosed with a rheumatologic autoimmune disease.

Sixteen WTC-exposed male rescue/recovery workers have been diagnosed with lupus, which is much greater than we would expect based on the general population (see graph).

SECTION 4: CARDIOVASCULAR DISEASES

This study reminds us that chest pain in WTC-exposed members should not automatically be attributed to more commonly recognized WTC illnesses like asthma or gastroesophageal reflux disease (GERD). When chest pain is new or different, it is important to consider CVD.

Cardiovascular Diseases Among FDNY WTC-Exposed Rescue/Recovery Workers

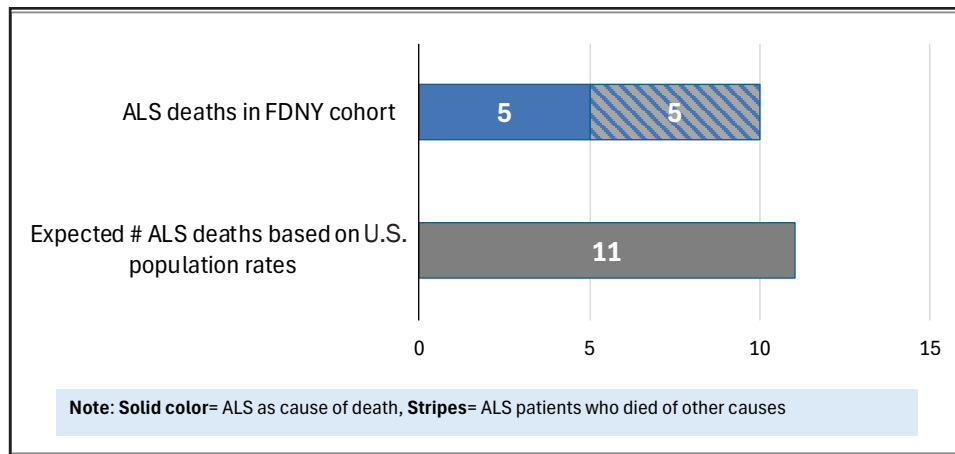


Note: Cardiovascular disease (CVD) cases included myocardial infarctions, cerebrovascular accidents, coronary artery bypass grafts, percutaneous coronary interventions, congestive heart failure, and CVD death.

Cardiovascular disease (CVD) is the leading cause of illness and death in the United States. Decades of research have identified the major modifiable risk factors, including hypertension, high cholesterol, and smoking. It is also well known that environmental exposures such as air pollution can increase the risk of developing CVD. We examined the association between WTC exposure and the risk of CVD after 9/11 in FDNY firefighters. Primary CVD outcomes included myocardial infarction, stroke, or cardiovascular disease-related death, among others.

In our study, there were 529 CVD events diagnosed within the first 16 years after 9/11. We found a significant association between WTC exposure and CVD risk. As shown in the figure, those who arrived at the WTC site on the morning of 9/11 had about a 38% greater risk of developing a primary CVD event compared with those who arrived later. Both acute exposure to WTC dust and repeated exposures over the months of the rescue/recovery effort were associated with elevated CVD risk.

Amyotrophic Lateral Sclerosis (ALS)-Related Mortality Among World Trade Center-Exposed and Non-World Trade Center-Exposed Rescue and Recovery Workers



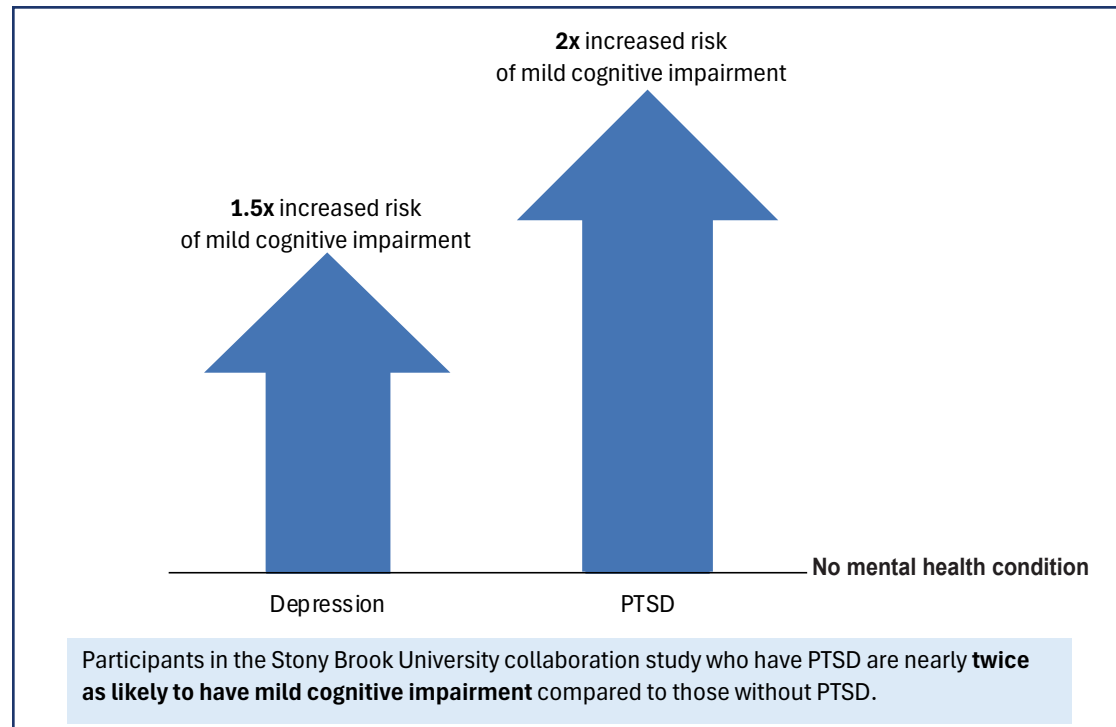
During the WTC rescue/recovery effort, workers were exposed to some pollutants that have been linked to amyotrophic lateral sclerosis (ALS), a fatal neurodegenerative disease that destroys motor neurons in the brain, brainstem, and spinal cord. ALS is also known as Lou Gehrig's disease. As of December 31, 2023, there were 10 known ALS-related deaths among FDNY WTC rescue/recovery workers, and four additional cohort members were living with ALS.

We sought to determine whether WTC site exposure increased workers' risk of ALS. To do this, we evaluated ALS mortality rates in WTC-exposed rescue/recovery workers compared with rates among similar non-WTC-exposed workers from other urban fire departments and among U.S. adults.

Neither WTC-exposed nor non-WTC-exposed rescue/recovery workers had elevated levels of ALS-related mortality compared with the U.S. population. ALS mortality rates in the WTC rescue/recovery worker cohort were lower than those in the non-WTC-exposed workers during the time period of 9/12/2001–12/31/2023, possibly due to differences between the two groups that could not be accounted for in this study.

Although we did not find that WTC- or firefighting-related exposures were associated with ALS mortality, additional follow-up is needed as our members continue to age, as ALS incidence is highest in older adults ages 60-75. FDNY WTC cohort members who have been diagnosed with ALS are encouraged to report their diagnosis to WTC Health Program staff so that if incidence rates increase, we will be able to petition the federal government to add this devastating disease to the list of WTC-covered conditions.

Cognitive Concerns in WTC-Exposed Rescue/Recovery Workers



As people age, the concern of cognitive impairment, especially memory loss, becomes a growing issue. We have previously found that a greater proportion of FDNY members with high WTC exposure reported cognitive concerns than those with moderate or low exposure, though this was highly related to whether a member also had PTSD. Self-reported cognitive concerns are often related to aging alone. Any petition to the federal government to include cognitive disorders as a WTC-covered condition would need actual medical documentation from healthcare providers.

In 2021, we received funding from NIOSH to determine whether self-reported cognitive concerns can be validated with objective neuropsychological testing. In a collaboration with Stony Brook University, which uses objective testing, we found that among about 350 FDNY study participants, those with PTSD were approximately twice as likely to have mild cognitive impairment.

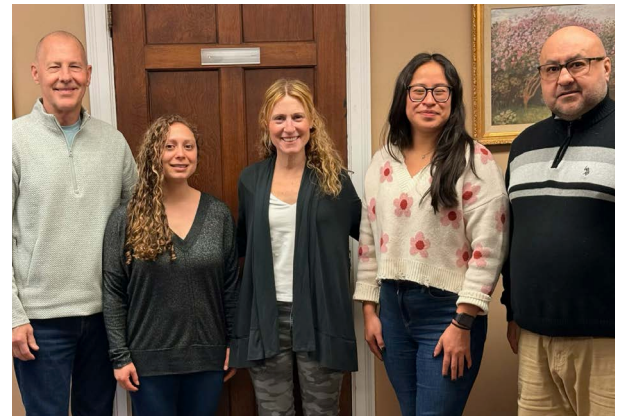
We are currently working to find an objective test that can be integrated into the medical monitoring questionnaire to better assess cognitive function for our entire membership.





FDNY WTC HEALTH PROGRAM STAFF





SECTION 5: **APPENDIX**



FDNY researchers have published more than 150 academic publications that were used as sources for this book. For more information and to see a complete list of publications, please scan the QR code.



806 • N Engl J Med, Vol. 347, No. 11 • September 12, 2002 • www.nejm.org

The New England Journal of Medicine

COUGH AND BRONCHIAL RESPONSIVENESS IN FIREFIGHTERS AT THE WORLD TRADE CENTER SITE www.thelancet.com Vol 378 September 3, 2011

DAVID J. PREZANT, M.D., MICHAEL WEIDEN, M.D., GISELA I. BANAUCH, M.D., GEORGEANN MCGUINNESS, M.D., WILLIAM N. ROM, M.D., M.P.H., THOMAS K. ALDRICH, M.D., AND KERRY J. KELLY, M.D.

[Original Research Diffuse Lung Disease]

CHEST

Clinical Course of Sarcoidosis in World Trade Center-Exposed Firefighters

Kerry M. Hena, MD; Jennifer Yip, MPH; Nadia Jabber, PA-C; David Goldfarb, MPH; Mayris P. Webber, DrPH; Charles B. Hall, PhD; Hillel W. Cohen, DrPH; Krystal Cleven, MD; William Moir, MPH; Rachel Zeig-Owens, DrPH; Mayris P. Webber, DrPH; Marc A. Judson, MD; Lisa Maier, MD; Andrew Krumerman, MD; Theresa Schwartz, MS; Laura Crowley, MD; Michael Crane, MD; Jessica Berman, MD; Thomas K. Aldrich, MD; David J. Prezant, MD; and the FDNY Sarcoidosis Clinical Research Group*

Early assessment of cancer outcomes in New York City firefighters after the 9/11 attacks: an observational cohort study

Rachel Zeig-Owens, Mayris P. Webber, Charles B. Hall, Theresa Schwartz, Nadia Jabber, Jessica Weakley, Thon Olgo Derman, Thomas K. Aldrich, Kerry Kelly, David J. Prezant

Summary

Background The attacks on the World Trade Center (WTC) on Sept 11, 2001 (9/11) occupational exposure to known and suspected carcinogens. We examined cancer association with exposure in the first 7 years after 9/11 in firefighters with health minimal loss to follow-up.

Methods We used a cohort study design to examine cancer outcomes in New York City firefighters exposed to the 9/11 attacks. We used a cohort study design to examine cancer outcomes in New York City firefighters exposed to the 9/11 attacks. We used a cohort study design to examine cancer outcomes in New York City firefighters exposed to the 9/11 attacks.

Results We found that firefighters exposed to the 9/11 attacks had a higher risk of developing cancer compared to those who were not exposed. This finding was consistent across different cancer types and exposure durations.

Conclusion Our study suggests that exposure to the 9/11 attacks may increase the risk of cancer in firefighters. Further research is needed to understand the underlying mechanisms and to develop strategies for cancer prevention and early detection in this population.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 8, 2010 VOL. 362 NO. 14

Lung Function in Rescue Workers at the World Trade Center after 7 Years

Charles B. Hall, PhD; Hillel W. Cohen, DrPH; Mayris P. Webber, DrPH; Rachel Zeig-Owens, M.P.H., Kaitlyn Cosenza, B.A., Vasilios Christodoulou, B.A., Lisa Maier, M.P.H., Fairouz Al-Othman, M.D., Michael D. Weiden, M.D., Kerry J. Kelly, M.D., and David J. Prezant, M.D.

ABSTRACT

Background The terrorist attacks on the World Trade Center on September 11, 2001, exposed thousands of Fire Department of New York City (FDNY) rescue workers to dust, leading to substantial declines in lung function in the first year. We sought to determine the longer-term effects of exposure.

Methods Using linear mixed models, we analyzed the forced expiratory volume in 1 second (FEV₁) of both active and retired FDNY rescue workers on the basis of spirometry routinely performed at intervals of 12 to 18 months from March 12, 2000, to September 11, 2008.

Results FEV₁ declined significantly over time in both active and retired workers, with the rate of decline being greater in those who remained active. The decline in FEV₁ was associated with exposure to dust and smoke at the World Trade Center on September 11, 2001.

Conclusion Our study suggests that exposure to the 9/11 attacks may lead to long-term declines in lung function in rescue workers. Further research is needed to understand the underlying mechanisms and to develop strategies for lung health monitoring and protection in this population.

JAMA Oncology | Original Investigation

Multiple Myeloma and Its Precursor Disease Among Firefighters Exposed to the World Trade Center Disaster

Ola Lundgren, MD, PhD; Rachel Zeig-Owens, DrPH; Onorata Garcia, PhD; David Goldfarb, MPH; Kacemouri Murata, PhD; Katie Thorne, PhD; Lakshmi Ramasathan, PhD; Mullen Hulicortz, MD, PhD; Ahmet Dogan, MD, PhD; George Nkomo, BS; Ulrich Stein, MD, PhD; Keith Pothman, PhD; Charles B. Hall, PhD; Hillel W. Cohen, DrPH; Nadia Jabber, PA-C; Theresa Schwartz, MS; Laura Crowley, MD; Michael Crane, MD; Shari Iy, NP; Mayris P. Webber, DrPH; Amit Verma, MD; David J. Prezant, MD

FDNY and 9/11: Clinical Services and Health Outcomes in World Trade Center-Exposed Firefighters and EMS Workers From 2001 to 2016

Jennifer Yip, MPH,^{1,2} Mayris P. Webber, DrPH, MPH,^{2,3} Rachel Zeig-Owens, DrPH, MPH,^{1,2} Madeline Vossbrinck, MS,^{1,2} Ankura Singh, MPH,^{1,2} Kerry Kelly, MD,² and David J. Prezant, MD^{1,4}

FDNY MEMBERS WHO BECAME ILL AND LOST THEIR LIVES AFTER PERFORMANCE OF DUTY IN THE WTC RESCUE/RECOVERY EFFORT AS OF AUGUST 18, 2026.

Firefighter Gary E. Celentani, Engine 233
 Firefighter Robert W. Dillon, Engine Co. 153
 Firefighter Vanclive A. Johnson, Ladder Co. 135
 Firefighter Russell C. Brinkworth, Ladder Co. 135
 Firefighter Edward V. Tietjen, Ladder Co. 48
 Firefighter Walter Voight, Ladder Co. 144
 Battalion Chief Kevin R. Byrnes, Battalion 7
 Firefighter Stephen M. Johnson, Ladder Co. 25
 Lieutenant Richard M. Burke, Engine Co. 97
 Firefighter Michael Sofia, Engine Co. 165
 Firefighter Joseph T. Callahan, Engine Co. 245
 Firefighter Joseph P. Costello, Battalion 58
 Firefighter William R. O'Connor, Ladder Co. 84
 Lieutenant Reinaldo Natal, Field Communications Unit
 Paramedic Deborah Reeve, EMS Station 20
 Lieutenant Cruz A. Fernandez, Ladder 111
 Fire Marshal William Wilson Jr., Manhattan Base
 Lieutenant Thomas J. Hodges, Engine Co. 313
 Firefighter Robert J. Wieber, Engine Co. 262
 Lieutenant Joseph P. Colleluori Jr., Engine Co. 324
 Firefighter Michael J. Shagi, Engine Co. 74
 Firefighter William R. St. George, Battalion Special Operations Command
 Firefighter Raymond W. Hauber, Engine Co. 284
 EMS Lieutenant Brian Ellicott, EMS Dispatch
 Firefighter William E. Moreau, Engine Co. 166
 Lieutenant John P. Murray, Engine Co. 165
 Firefighter Sean M. McCarthy, Engine Co. 280
 Firefighter Bruce M. Foss, Ladder Co. 108
 Firefighter Jacques W. Paultre, Engine Co. 50
 Firefighter Martin C. Simmons, Ladder Co. 111
 Firefighter Kevin M. Delano Sr., Ladder Co. 142
 Lieutenant Vincent J. Tancredi II, Ladder Co. 47
 Paramedic Clyde F. Sealey, Bureau of Health Services
 Firefighter Timothy G. Lockwood, Engine Co. 275
 Firefighter Anthony Alese, Engine 9
 Firefighter Edward F. Reilly Jr., Ladder Co. 160
 Firefighter John F. McNamara, Engine Co. 234
 Lieutenant Thomas G. Roberts, Ladder Co. 40
 Captain Kevin J. Cassidy, Engine Co. 320
 Firefighter Joan R. Daley, Engine Co. 63
 Firefighter Richard A. Manetta, Ladder Co. 156
 Lieutenant Peter J. Farrenkopf, Marine Co. 6
 Battalion Chief John J. Vaughan, Battalion 3
 Firefighter Robert A. Ford, Engine Co. 284

Paramedic Carene A. Brown, EMS Bureau of Training
 Firefighter James J. Ryan, Ladder Co. 167
 Lieutenant Robert M. Hess, Ladder Co. 76
 EMT Freddie Rosario, EMS Station 4
 Lieutenant Harry J. Wanamaker Jr., Marine Co. 1
 Supervisor Communications Electrician Philip J. Berger, Outside Plant Operations
 Firefighter Vincent J. Albanese, Ladder Co. 38
 Firefighter Robert J. Ventriglia, Engine 207
 Firefighter John P. Sullivan Jr., Ladder Co. 34
 Firefighter Roy W. Chelsen, Engine Co. 28
 Firefighter William H. Quick, Ladder Co. 134
 Lieutenant Andrew M. Borgese, Engine Co. 326
 Firefighter John F. O'Neill, Ladder Co. 52
 Firefighter Willie T. Franklin Jr., Engine Co. 65
 Lieutenant Randy J. Wiebicke, Ladder Co. 1
 Firefighter Brian C. Malloy, Ladder Co. 80
 Lieutenant John A. Garcia, Ladder Co. 5
 Firefighter Anthony J. Nuccio, Ladder Co. 175
 Fire Marshal Steven C. Mosiello, Chief of Department's Office
 Firefighter Carl Capobianco, Ladder Co. 87
 Captain Emilio R. Longo, Ladder Co. 110
 Firefighter Raymond Ragucci, Engine Co. 5
 Deputy Chief William J. Guido, Marine Division
 Captain Sheldon Barocas, Engine Co. 251
 Firefighter Virginia A. Spinelli, Engine Co. 329
 Deputy Assistant Chief EMS John S. McFarland, EMS Operations
 Lieutenant Robert J. Stegmeier, Ladder Co. 127
 Lieutenant Mark W. McKay, Ladder Co. 45
 Firefighter Owen T. Carlock, Ladder 122
 EMT Anthony J. Ficara, Station 43
 Lieutenant Patrick J. Sullivan, Ladder Co. 58
 Firefighter Michael F. Mongelli, Battalion 39
 Firefighter Lawrence J. Sullivan, Rescue 5
 Firefighter Michael G. Behette, Ladder Co. 172
 Battalion Chief Thomas R. Van Doran, Battalion 3
 Battalion Chief Richard E. McGuire, Battalion 51
 EMT Joseph V. Schiumo, Station 20
 Paramedic Ruben I. Berrios, Station 20
 Firefighter Walter Torres, Engine Co. 328
 Battalion Chief John K. Corcoran, Battalion 52
 Firefighter Andrew D. Dal Cortivo, Engine Co. 227
 Lieutenant Martin T. Fullam, Ladder Co. 87
 Firefighter Charles L. Jones III, Ladder Co. 165
 Battalion Chief Richard D. Arazosa, Battalion 19
 Supervising Fire Marshal Emil K. Harnischfeger, Bureau of Fire Investigation
 EMS Lieutenant Douglas Mulholland, Station 35
 Captain Peter J. Casey, Engine Co. 212
 Paramedic Rudolph T. Havelka, EMS Bureau of Training

EMT Francis A. Charles, EMS Station 58
 Paramedic John W. Wyatt Jr., EMS Station 22
 EMT Luis de Peña, EMS Station 13
 Firefighter Adolfo Otaño, Engine Co. 202
 EMS Lieutenant Michael F. Cavanagh, EMS Station 16
 Deputy Chief Inspector James W. Mandelkow, Bureau of Fire Prevention
 Lieutenant Thomas J. Greaney, Ladder Co. 175
 Firefighter Dennis J. Komar, Engine 151
 Firefighter Keith E. Atlas, Engine Co. 35
 Auto Mechanic Raffaele E. Scarpitti, Shops
 EMS Lieutenant Walter J. Nelson Jr., Station 31
 Lieutenant John J. Halpin, Ladder Co. 33
 Lieutenant Steven B. Reisman, Engine Co. 307
 EMS Captain William C. Olsen, EMS Station 23
 Firefighter Ronald R. Brenneisen, Ladder Co. 43
 Lieutenant John K. Gremse, Engine Co. 302
 Lieutenant Howard J. Bischoff, Ladder Co. 149
 Firefighter Daniel E. Heglund, Rescue 4
 Firefighter Robert E. Leaver, Division 3
 Firefighter Cornell L. Horne, Ladder Co. 176
 EMS Lieutenant Thomas Giammarino, EMS Station 31
 Firefighter Eugene J. McCarey, Ladder Co. 36
 Firefighter James J. Marshall, Ladder 78
 Firefighter Charles S. Szoke, Ladder Co. 21
 Firefighter Richard E. Nogan, Ladder Co. 113
 Battalion Chief John J. Cassidy, Battalion 40
 Captain John R. Graziano, Ladder 78
 Firefighter Gregory A. Chevalley, Ladder Co. 176
 Battalion Chief George D. Eysser, Battalion 35
 Firefighter James M. Hicks, Engine 7
 Captain John Gallagher, Engine Co. 251
 Lieutenant Keith M. Loughlin, Ladder Co. 109
 Captain Thomas J. Thompson, Engine Co. 306
 EMS Lieutenant Harold E. McNeil Sr., Station 31
 Lieutenant Gary J. Gates, Field Comm. Unit
 Firefighter Dennis J. Heedles Sr., Engine Co. 151
 Firefighter Nicholas J. DeMasi, Engine Co. 259
 Firefighter Thomas A. Lynn, Engine 5
 Battalion Chief James N. Costello, Battalion 4
 Firefighter Frank D. Fontaino, Engine 155
 Firefighter Michael P. Smith, Ladder Co. 58
 Firefighter Thomas J. Kelly, Ladder Co. 19
 EMT Norman Valle, Station 20
 Firefighter Joseph A. Morstatt, Ladder Co. 45
 Lieutenant Robert G. Alford, Engine 231
 Firefighter Thomas Farrell, Ladder 41
 Firefighter Robert W. Johnson, Engine 81
 Fire Marshal Gregorio Morales, Bronx Base
 Firefighter William E. Woodlon, Engine 21
 Lieutenant Ronald D. Biller, Engine 151
 Captain Vincent R. Ungaro, Engine 235
 Firefighter Paul F. Santoro, Engine 259

Firefighter Robert M. Gless, Engine 329
 Firefighter John A. Dunn, Engine 230
 Firefighter Harry L. Davis, Squad 18
 Lieutenant Raymond W. Alexander, Engine 70
 Firefighter Joseph P. O'Toole, Ladder 41
 Firefighter Kevin A. Rooney, Engine 42
 Firefighter Brian J. Masterson, Marine 9
 Firefighter Robert F. DiGiovanni, Ladder 144
 EMS Lieutenant Edith E. Torres, Bur. of Communications/EMD
 Firefighter Robert E. Newman, Ladder 18
 EMT Rose M. Scott, Bur. of Communications
 Lieutenant Steven Sorger, Engine 6
 EMS Lieutenant Mario Bastidas, Station 58
 Firefighter Roy E. Smith, Engine 156
 Firefighter James J. Lanza, Ladder 43
 Paramedic Mark A. Harris, Station 23
 Firefighter Raymond J. Pfeifer, Engine 40
 Lieutenant William J. Kelly, Ladder 116
 Firefighter William J. Gormley, Ladder 174
 Firefighter John B. O'Brien, Engine 329
 Firefighter Michael L. Duffy, Ladder 174
 Marine Engineer Robert W. Alexander, Marine 1
 Battalion Chief Joseph D. McKeon, Battalion 46
 Firefighter Michael R. O'Hanlon, Engine 68
 Doctor Michael G. Guttenberg, OMA
 Firefighter Robert M. Tilearcio, Engine 266
 Lieutenant Edward J. McDonagh, Engine 37
 Lieutenant Joseph R. Stach Jr., Ladder 6
 Firefighter Raymond R. Phillips Jr., Rescue 3
 Lieutenant Edward T. Meehan, Ladder 22
 Firefighter Ronald P. Svec, Ladder Company 82
 Captain Victor C. Valva, Engine 167
 Deputy Chief Joeddy Friszell, EMS Division 3
 Firefighter Paul R. Tokarski, Ladder 164
 Pilot Thomas P. Phelan, Marine 9
 Firefighter Keith R. Young, Ladder 158
 Marine Engineer John L. Buhler, Marine 6
 Firefighter George F. Froehlich, Ladder 87
 Firefighter Brent G. Crobak, Engine 251
 Firefighter James J. Hurson, Engine 318
 Firefighter Robert J. Lembo, Ladder 144
 Assistant Chief Ronald R. Spadafora, Bureau of Fire Prevention
 Firefighter Charles Williams, Ladder 111
 Battalion Chief Robert P. Miuccio, Battalion 22
 Firefighter Michael T. McDonald, Ladder 128
 Firefighter Jimmy Martinez, Engine 157
 Firefighter Dennis G. Heaney, Ladder 157
 Firefighter John R. Elges, Ladder 134
 EMT Felipe A. Torre, Bureau of Training
 Paramedic Martha Stewart, Station 8
 EMT Joseph A. Rodriguez, Station 58
 Firefighter Daniel C. Bove, Engine 251
 Captain John S. Moschella, Engine 26
 Firefighter Richard H. Meehan, Battalion 6

Firefighter Peter A. Quinn, Ladder 106
 Lieutenant Timothy P. O'Neill, Ladder 5
 Firefighter Kevin E. Lennon, Ladder 175
 Captain Robert E. Collis, Engine 304
 Lieutenant John T. Moran, Ladder 41
 Firefighter Joseph Walsh, Ladder 32
 Firefighter Lloyd W. Stuart, Engine 3
 Firefighter Kevin J. Nolan, Engine 79
 Firefighter Richard N. Driscoll, Engine 91
 Auto Mechanic James J. Sottile, Shops
 Firefighter Robert B. Fitzgibbon, Engine 47
 Firefighter Walter E. McKee, Battalion 39
 Firefighter John W. Boyle, Rescue 1
 Firefighter Joseph R. Losinno, Engine 302
 Firefighter Roger Espinal, Engine 320
 Firefighter Richard J. Tanagretta, Rescue 5
 Firefighter Andrew S. Gargiulo, Engine 160
 Lieutenant Richard G. Estreicher, Engine 248
 Firefighter Clifford R. DiMuro, Ladder 137
 Captain Dennis M. Gilhooly, Engine 67
 Firefighter Brian W. Casse, Engine 294
 Firefighter Michael L. Feldman, Ladder 161
 Lieutenant Paul W. Deo Jr., Engine 317
 Firefighter Richard B. Jones, Ladder 25
 Firefighter Joseph A. Hatzelman, Engine 218
 Firefighter Daniel R. Foley, Rescue 3
 Battalion Chief Dennis J. Moynihan, Battalion 18
 Lieutenant Donald Franz, Engine 329
 Firefighter Anthony R. Iraci, Engine 155
 Firefighter John H. Marr, Engine 34
 Lieutenant Kevin C. Dunn, Engine 251
 Firefighter Paul J. Greco, Squad 270
 Firefighter Anthony J. Catapano, Engine 202
 Firefighter Paul A. McManaman, Squad 252
 Assoc. Electrical Inspector Michael Kavolius, Bureau of Fire Prevention
 Firefighter John P. Fogarty, Ladder 3
 Firefighter Timothy J. Burke, Rescue 5
 EMT Rene Sanchez, Bureau of Investigations and Trials
 Firefighter James P. Wind, Ladder 3
 EMS Captain Faye Baughman, Station 58
 Lieutenant John P. Poulos, Engine 266
 Firefighter William Hodgens, Engine 160
 Fire Marshal Robert J. Kelly, ADMBFI
 Firefighter Thomas G. Manley, Ladder 113
 Firefighter Ronald P. Stortz, Ladder 107
 Lieutenant Gerard C. McGibbon, Engine 217
 EMS Lieutenant Paige A. Humphries, Station 16
 Firefighter Dennis J. Reilly, Engine 156
 Firefighter Dennis A. Farrell, Ladder 59
 Firefighter George H. Wilton Jr., Ladder 84
 Firefighter Joseph M. Boyle, Engine 38
 Lieutenant Martin K. Farrell, Engine 253
 Captain Frank A. Portelle, Division 6

Firefighter Joseph K. Daly, Engine 218
 Firefighter James D. Shaughnessy, Battalion 11
 Lieutenant James J. Winters, Engine 278
 Captain John J. Galvin, Division 8
 Firefighter Sean D. Kenny, Engine 155
 Firefighter Thomas G. Oelkers, Ladder 44
 Firefighter Anthony M. Malfi, Ladder 168
 Firefighter Wayne T. Goehring, Engine 311
 Paramedic Stephenson McCoy, Station 22
 Lieutenant Patrick J. Whalen, Ladder 83
 Firefighter Stephen J. Reilly, Engine 155
 Firefighter Dennis B. McClean, Ladder 137
 EMS Lieutenant Gloria Gordon, Station 50
 Firefighter James J. Cody Jr., Ladder 24
 EMT Mark A. Weiner, Station 43
 Firefighter Michael J. Toal, Ladder 20
 Firefighter Patrick J. Lauro, Ladder 47
 EMS Capt. Charles Harris, Station 31
 Battalion Chief Arthur S. Lakiotes, Battalion 32
 Battalion Chief Ronald H. Kemly, Safety Battalion
 Fire Marshal Michael J. Federowski, Citywide South
 Assistant Chief Alvin J. Surriel, EMS Operations
 Firefighter James T. Redmond, Ladder 143
 Firefighter Andrew J. Hornbuckle, Ladder 109
 EMS Lieutenant John P. Raftery, Station 49
 Lieutenant Baudon C. Malmbeck, Marine 9
 Firefighter Russell Feliciano, Ladder 111
 Firefighter Frank J. Gasparino, Engine 234
 Firefighter Christopher P. Viviano, Ladder 157
 EMS Captain Michael S. Earley, Division 4
 EMS Lieutenant Pablo Guzman, Human Resources
 Battalion Chief Edward J. Tierney, Battalion 11
 Firefighter Frederick H. Gallagher, Ladder 103
 EMS Deputy Chief Richard J. Chatterton, Division 7
 Firefighter Gregory J. LaManna, Engine 313
 Captain Michael J. Lyons, Division 15
 Firefighter James Walsh, Engine 295
 Lieutenant John A. Vigliotti, Engine 159
 Firefighter Alfred J. Artesona, Engine 71
 Supervising Fire Marshal John J. McCauley, Office of the Chief Fire Marshal
 Firefighter Robert R. Reynolds, Engine 96
 Firefighter Michael Verzi, Engine 97
 Deputy Chief Vincent J. Mandala, Division 11
 Doctor Sabina B. Ostolski, Bureau of Health Services
 EMT Steven Thorsen, Station 23
 Lieutenant Arthur J. Darby, Marine 9
 Firefighter Richard C. Toshack, Engine 307
 Lieutenant Michael J. Higgins, Ladder 19
 Supervising Fire Marshal James E. Devery, Manhattan Base
 Firefighter Edward V. Hronec, Engine 229

Continued on next page

Continued from previous page

Captain Paul W. Schmalzried,
Bureau of Training

Firefighter Ronald J. Kirchner, Ladder 154

Firefighter William M. Hughes, Ladder 123

Firefighter Gregg Lawrence, Engine 308

Battalion Chief Joseph A. McKie, Battalion 41

Lieutenant James F. McCauley Jr., Battalion 23

Battalion Chief Stephen J. Geraghty,
Rescue Battalion

Firefighter George J. Triptree, Ladder 173

Firefighter Peter A. Chiodo, Engine 226

Firefighter John F. McDonnell, Ladder 116

Battalion Chief Brian E. O'Flaherty, Battalion 9

Firefighter Michael J. Arriaga, Engine 301

Firefighter Thomas D. Healy, Ladder 25

EMT Patricia Scaduto, EMS Operations

Lieutenant Michael G. Hance, Engine 302

Lieutenant Donald J. Kelly, Ladder 161

Firefighter Thomas J. McDougall, Ladder 117

Marine Wiper Bruce Peat, Marine 1

Lieutenant Joseph Brosi, Engine 88

Battalion Chief James J. Hanley, Battalion 7

Firefighter Victor A. Cantelmo, Engine 236

Paramedic Peter L. Bushey, Station 40

Battalion Chief Vincent G. Lyons, Battalion 43

Paramedic Paul Daniels, Station 16

Captain Gary A. Nybro, Engine 166

Firefighter James C. Mager, Engine 293

Firefighter Douglas F. Harkins, Ladder 29

Lieutenant Richard Kobbe, Ladder 133

Fire Marshal Karl J. Sederholt, BFI Special
Operations Command

Lieutenant James J. Burns II, Engine 46

Firefighter Michael T. Costa, Engine 328

Captain Neil R. Ferro, Engine 227

Lieutenant James K. Donohue, Ladder 8

Firefighter Thomas W. Anderson Jr.,
Ladder 162

Firefighter Kevin R. Kelly, Engine 307

Firefighter Robert M. Hughes, Ladder 134

Firefighter Edward R. Pecoroni, Engine 70

Senior Supervisor Communication Electrician
John Fiorentino,
Bureau of Communications

Firefighter Robert E. Welsh III, Engine 207

Firefighter John Tiska Jr., Engine 229

Firefighter Albert A. Filosa, Ladder 146

Paramedic Andrew J. Enderes, Station 27

EMT Hilda L. Vannata, Station 14

Firefighter Robert V. Fulco, Engine 250

Firefighter Mark R. Sennio, Ladder 50

Battalion Chief Christopher D. Scalone,
Battalion 53

Chaplain Rev. Monsignor John E. Delendick,
Ladder 172

Firefighter Michael W. Daly, Ladder 87

Captain Luke M. Lynch, Engine 201

Firefighter Arill Nyquist, Engine 243

Firefighter Harold J. Johnston, Engine 36

Electrician Joseph Berardi, Buildings

Lieutenant Stephen A. Asaro, Battalion 4

Firefighter Stephen E. Russack, Ladder 107

Captain Steven Berube, Ladder 111

Firefighter William R. Bartholomew, Ladder 49

Firefighter Michael J. Cioffi, Engine 165

Firefighter Robert M. Kelly, Rescue 5

Firefighter Frank A. Caputo, Engine 68

Firefighter Jose L. Hickson, Engine 285

EMS Captain Robert R. DeLeon Jr., Station 3

Battalion Chief Kevin S. Blaine, Safety Battalion

Lieutenant Michael J. Shanley, Ladder 27

Firefighter Steven G. Radich, Engine 97/MSU

Firefighter Joseph J. Scaramuzzino,
Ladder 113

EMT Christopher Swierkowski, EMS Division 3

Lieutenant Charles J. Maniscalco, Engine 162

EMT Edward Cosenza,
Medical Supply Unit / Station 4

Firefighter Joseph F. Tumulty, Engine 294

Firefighter Michael A. Wallace, Engine 251

Firefighter Edward D. Thompson, Ladder 80

Firefighter James B. Johnsen, Division 14

Firefighter John Tyrre Jr., Engine 75

Captain Thomas S. LaBarbiera, Engine 93

EMS Lieutenant Anthony S. Cozzino, Station 43

Deputy Chief Nicholas J. Visconti,
Division 14/UFOA

Lieutenant James S. Cooney Sr., Engine 254

Lieutenant Patrick J. Ward, Engine 281

Firefighter Thomas E. Ryan, Ladder 33

Firefighter Christopher W. McCormack,
Engine 59

EMS Division Chief Mark E. Steffens,
EMS Division 2

Firefighter John F. Connolly, Ladder 80

Firefighter Anthony F. Mastrelli, Ladder 56

Firefighter Christopher J. Bach, Engine 329

Firefighter Lawrence T. Murphy, Ladder 157

Auto Mechanic Richard O. Sarnes, Jr.,
Fleet Services

Firefighter Thomas H. Gavitt, Ladder 147

Firefighter Neil G. Gimpel, Division 13

Firefighter Michael A. DeBenedetto, Ladder 167

Battalion Chief Dennis J. Collopy, Battalion 11

Firefighter Thomas L. Dunn, Engine 234

Carpenter Frank T. Leanza, Fleet Services

EMS Lieutenant Pamela Hehn, Station 16

Lieutenant James T. Sweeney, Ladder 151

Firefighter Brian T. Fitzgerald, Ladder 137

Firefighter Edwin J. Steffens, Engine 214

Battalion Chief Eugene T. Keltly Jr.,
Battalion 10

Firefighter Daniel J. McCauley, Ladder 45

Firefighter Christopher J. Revere, Engine 289

Fire Marshal Ronald A. Mitchell, BFI Special
Operations Command

Lieutenant Vincent C. McMahon Jr., Ladder 44

Firefighter Robert S. Okorn, Ladder 158

Captain Frederick S. Simms, Ladder 58

Firefighter Michael J. Reutter, Ladder 175

Captain Thomas P. Tracy, Marine 1

EMS Deputy Chief David Burke,
EMS Division 9

Fire Marshal Cliff C. Krug,
BFI Special Operations Command

Lieutenant James F. Hartnett, Ladder 19

EMT Michael W. Skody Jr., Station 40

Firefighter John G. McCann, Ladder 26

Firefighter Gerald W. Rooney, Engine 60

Firefighter Thomas del Pino, Ladder 85

Firefighter Timothy G. Westhall, Engine 251

Firefighter Steven J. Simineri, Battalion 33

Firefighter Robert V. West Jr., Squad 1

Lieutenant John J. Brown, Ladder 165

Firefighter Kevin T. Reilly, Rescue 5

Firefighter Michael A. Carter, Marine 9

Deputy Chief James J. Riches,
Bureau of Operations

Captain Kevin L. Roth, Division 15

Firefighter Pieter C. Grosbeck, Battalion 7

EMS Lieutenant James F. McGee IV,
Station 54

Firefighter Daniel G. Newman, Ladder 5

Firefighter William C. VanName, Engine 35

Firefighter Gerard R. Lennon, Ladder 41

Lieutenant James A. Daly, Engine 251

Firefighter Eugene P. Schramm Jr., Ladder 146

Supervising Fire Marshal Andrew F. Di Fusco,
ADMBFI - SOC

EMS Captain David J. Fenton, EMS- Division 2

EMS Captain Jeffrey A. Armstrong,
Office of Emergency Management

EMS Lieutenant Jeffrey L. Halpern, Station 39

Fire Alarm Dispatcher Brian J. O'Hara, CAD0

Firefighter George Heck, Engine 224

Captain Walter J. Werner III, Ladder 151

Firefighter Thomas G. Smith, Engine 224

Pilot Steven W. Lukawski, Marine 9

Chief of Staff Support Services David J. Harney,
Fort Totten Planning

Firefighter Angel Vasquez, Ladder 173

Firefighter Declan A. Grant, Ladder 48

Fire Marshal Richard A. Ruggiero,
BFI - Bronx Base

Paramedic Arturo Gonzalez, Station 8

Captain William J. McLaughlin, Engine 312

Battalion Chief William P. Blaich, Battalion 1

Lieutenant Andrew J. Graf, Engine 167

Firefighter Israel Hernandez, Engine 74

Firefighter Harold A. Yodice, Engine 323

Marine Engineer Timothy P. Goss, Marine 1

Firefighter Mark F. Keller, Ladder 164

Firefighter John A. Braunagel Jr., Ladder 38

Captain Frank J. Pellegrino, Engine 91

RETIRED FDNY MEMBERS WHO BECAME ILL AND LOST THEIR LIVES AFTER PERFORMING RESCUE/ RECOVERY AT THE WTC SITE AS OF AUGUST 18, 2026

Captain James J. Corrigan, Engine 320

Firefighter Philip Hayes, Engine 217

Firefighter William X. Wren, Ladder 166

Lieutenant Victor J. Navarra, Ladder 35

Lieutenant Joseph A. Cody III, Ladder 37

Firefighter William Hewitson, Rescue 2

Lieutenant Kenneth J. Finck, Engine 268

Deputy Chief Gaetano Borello, Division 6

Lieutenant Paul J. McLaughlin, Engine 84

Lieutenant Allen R. Del Gandio, Engine 236

Firefighter Steven J. Lancelot, Ladder 173

Firefighter Charles M. Benson, Engine 41

Lieutenant Leonard Vitale, Engine 34

Firefighter Joseph J. Riccardi, Engine 257

Captain Edward J. Smith, Division 12

Lieutenant Charles A. Noran, Engine 7

Captain Michael L. Quinn, Engine 228

Captain James P. Ellison,
Special Operations Command

Captain William E. Butler, Division 13

Firefighter Joseph A. Terry, Engine 331

Lieutenant Cornelius Lehan, Engine 268

Firefighter John P. Morrissey, Ladder 49

Captain James F. Noonan, Engine 89

Firefighter James H. Stines, Engine 35

Firefighter Daniel M. Monahan, Ladder 38

Firefighter Kenneth J. Holler, Ladder 116

Captain Joseph Maurer, Engine 202

Firefighter Dennis T. Grace, Ladder 87

Battalion Chief William G. Nagle, Battalion 52

Firefighter Patrick M. Finegan, Engine 69

Firefighter Gerard L. Walsh, Ladder 126

Lieutenant Robert J. O'Rourke, Ladder 162

Lieutenant Joseph W. Toto, Ladder 16

Lieutenant John F. Peterson, Engine 152

Battalion Chief Lawrence M. Byrnes, Battalion 1

Firefighter Michael P. Berry, Engine 80

Firefighter James J. Fleury, Ladder 29

Firefighter Robert Schell, Ladder 86

Lieutenant Kevin P. Nerney, Engine 207

Firefighter Richard A. Gueren, Ladder 168

Lieutenant Robert B. Mahon, Battalion 52

Deputy Chief Dennis P. Martin, Division 4

Firefighter Robert J. McCarthy, Engine 289

Fire Marshal Arthur B. Iannace, BFI, Brooklyn Base

Pilot Ronald M. Wolken, Marine Division

Lieutenant Vincent J. Massucci, Ladder 168

Captain Robert E. Watt, Ladder 173

Firefighter Robert L. Burns, Rescue 1

Firefighter John C. Passerini, Ladder 84

Firefighter Thomas W. Dowdle, Engine 238

Firefighter Joseph A. Tuohy, Engine 313

Firefighter William E. Switzer, Ladder 161

Firefighter Richard T. Kingsley, Ladder 20

Firefighter Michael J. Dannecker, Engine 164

Firefighter Robert K. McCain Jr., Ladder 87

Firefighter James T. Brennan, Engine 96

Firefighter Thomas K. Kontizas, Engine 312

Firefighter John Ciorciari, Engine 216

Captain John T. Vigiano, Ladder 176

Fire Marshal Alan Cataneo, BFI, Brooklyn Base

Firefighter Robert E. Fanning, Engine 297

Firefighter Rod Mendizza, Ladder 78

Firefighter Philip Quattrocchi Jr., Marine 9

Firefighter Anthony J. Palazzola, Engine 153

Lieutenant Eugene P. O'Byrne, Engine 159

Firefighter Paul Zydor, Rescue 2

Lieutenant Harold Hanson, Ladder 111

Captain Howard Venetsky, Division 11

Assistant Chief Harry C. Norum,
Bureau of Fire Operations

Lieutenant Frank J. Heller, Engine 227

Firefighter Victor G. Werny, Ladder 130

Fire Marshal Joseph C. Ricca, BFI, Brooklyn Base

Lieutenant James J. McGowan, Battalion 25

Firefighter Eugene V. Bucalo, Engine 331

Firefighter James Boyle, Engine 217

Firefighter Joseph C. Trancucci, Engine 155

Firefighter Robert J. Norman, Ladder 17

Firefighter William D. Walker, Squad 1

Firefighter Steven M. Brickman, Engine 58

Firefighter Bruce T. Garcia, Ladder 30

Firefighter James P. Beltrami, Engine 326

Firefighter William J. McCarthy, Rescue 4

Firefighter Blaise C. DelBianco, Ladder 122

Firefighter Carl Angelo, Engine 228

Battalion Chief Ronald J. Quartuccio, Battalion 39

Firefighter Paul L. Castaldo, Ladder 83

Lieutenant Henry J. Hinton, Battalion 1

Lieutenant George Vincent,
Bureau of Fire Prevention

Firefighter James A. Meadows, Engine 325

Firefighter Patrick J. Murphy, Marine 6

Fire Marshal Francis G. Fagan, BFI, Bronx Base

Firefighter Charles Tatar, Rescue 1

Firefighter Robert M. Kozlowski, Ladder 78

Firefighter Donald P. Van Holt, Ladder 108

Firefighter Thomas P. O'Dwyer, Ladder 106

Firefighter Philip J. Sabella, Engine 151

Firefighter Patrick J. Long, Ladder 21

Firefighter Navarro J. Bell, Ladder 109

Firefighter Joel E. Fox, Engine 153

Firefighter Michael F. Bishop, Battalion 23

Deputy Chief Frank E. Corcoran, Division 7

Captain John F. McCarthy, Engine 302

Firefighter George T. Archambault, Ladder 55

Firefighter Gerard E. Gallagher, Engine 166

Firefighter Richard A. Evers, Rescue 2

Fire Marshal Joseph R. Czajkowski,
Bureau of Fire Investigation

Firefighter Donald J. Bradley, Ladder 135

Battalion Chief Kevin T. Connolly, Battalion 27

Lieutenant Michael P. King, Engine 88

Firefighter Patrick A. Tarpey, Ladder 33

Battalion Chief Vincent M. Diorio, Battalion 23

Fire Marshal Barry A. Govern,
Bureau of Fire Investigation

Captain Charles F. Magrath, Ladder 157

Captain Larry A. Carroll, Engine 202

Firefighter Robert J. Winkworth, Engine 159

Firefighter William P. Libasci, Engine 67

Battalion Chief Brian T. Finn, Battalion 49

Firefighter Henry C. Schwartz Jr., Ladder 140

Firefighter Terence N. Quinn, Ladder 164

Lieutenant Anthony M. Iesu, Engine 165

Firefighter Thomas J. Fisher, Engine 294

Firefighter John F. Harty, Ladder 137

Firefighter Peter J. Cavagnaro, Engine 247

Firefighter Robert T. Beckwith, Ladder 164

Firefighter Albert M. Miskiewicz, Ladder 38

Fire Marshal James K. Reilly,
BFI, Manhattan Base

Captain William C. Ryan, Rescue 3

Firefighter Norman L. Newkirk, Rescue 1

Firefighter Michael J. Vitale, Ladder 153

Firefighter Charles Rojas, Ladder 147

Firefighter Gerald Feola, Engine 154

Firefighter Charles M. Messemer, Ladder 125

Firefighter Jon S. Gardiner, Engine 290

Fire Marshal Jeremiah M. Dorney,
BFI, Bronx Base

Firefighter Neil K. Kamerling, Ladder 127

Lieutenant Alfred H. Geloewski, Engine 167

Firefighter Michael E. McLaughlin, Ladder 42

Firefighter Daniel J. Noonan, Ladder 9

Firefighter James A. Coster, Engine 79

Firefighter Francis Sheehan, Ladder 87

Firefighter Kenneth V. Williams, Ladder 140

Fire Marshal Raymond Annicelli Jr.,
BFI, Queens Base

Captain William P. Spinelli, Ladder 59

Firefighter Bryant I. Stiles Jr., Rescue 3

Firefighter Thomas D. O'Connell, Engine 83

Lieutenant Michael P. Donohue, Battalion 40

Captain Thomas C. Henderson, Engine 89

Captain Bruce V. Buneo, Engine 156

Firefighter Bryan G. McPherson, Ladder 34

Firefighter Gerald E. Sanford, Battalion 21

Lieutenant Kevin J. Reidy, Ladder 34

Lieutenant Joseph F. Baal, Ladder 173

Fire Marshal John J. Smith, Bureau of Fire
Investigation

Firefighter Dennis J. Meenaghan, Ladder 164

Deputy Chief Eugene Docket, Division 11

Firefighter Arthur J. Tracy Jr., Ladder 142

Lieutenant Frank S. Santiago, Ladder 54

**NEW YORK CITY FIRE DEPARTMENT
MEMBERS WHO MADE THE
SUPREME SACRIFICE IN THE
PERFORMANCE OF DUTY AT THE
WORLD TRADE CENTER
SEPTEMBER 11, 2001
MANHATTAN BOX 5-5-8087**

First Deputy Commissioner William M. Feehan
Office of Fire Commissioner

Chief of Department Peter J. Ganci, Jr., COD

Assistant Chief Gerard A. Barbara, Operations

Assistant Chief Donald J. Burns, Operations

Deputy Chief Dennis A. Cross, Battalion 57

Deputy Chief Raymond M. Downey, SOC

Deputy Chief Edward F. Geraghty, Battalion 9

Department Chaplain Mychal F. Judge, OFM

Deputy Chief Charles L. Kasper, SOC

Deputy Chief Joseph R. Marchbanks, Jr., Battalion 12

Deputy Chief Orio J. Palmer, Battalion 7

Deputy Chief John M. Paolillo, SOC

Battalion Chief James M. Amato, Squad Co. 1

Battalion Chief Thomas P. DeAngelis, Battalion 8

Battalion Chief Dennis L. Devlin, Division 3

Battalion Chief John J. Fanning, Haz-Mat Operations

Battalion Chief Thomas J. Farino, Engine Co. 26

Battalion Chief Joseph D. Farrelly, Engine Co. 4

Battalion Chief Joseph Grzelak, Battalion 48

Battalion Chief Thomas T. Haskell, Jr., Ladder Co. 132

Battalion Chief Brian C. Hickey, Rescue Co. 4

Battalion Chief William J. McGovern, Battalion 2

Battalion Chief Louis J. Modafferi, Rescue Co. 5

Battalion Chief John M. Moran, SOC

Battalion Chief Richard A. Prunty, Battalion 2

Battalion Chief Matthew L. Ryan, Battalion 4

Battalion Chief Fred C. Scheffold, Battalion 12

Battalion Chief Lawrence T. Stack, Safety Battalion 1

Battalion Chief John P. Williamson, Battalion 6

Captain Daniel J. Brethel, Ladder Co. 24

Captain Patrick J. Brown, Ladder Co. 3

Captain Vincent E. Brunton, Ladder Co. 105

Captain William F. Burke, Jr., Engine Co. 21

Captain Frank J. Callahan, Ladder Co. 35

Captain Martin J. Egan, Jr., Ladder Co. 118

Captain Michael A. Esposito, Squad Co. 1

Captain John R. Fischer, Ladder Co. 20

Captain Vincent F. Giammona, Ladder Co. 5

Captain Terence S. Hatton, Rescue Co. 1

Captain Walter G. Hynes, Ladder Co. 13

Captain Frederick J. Ill, Jr., Ladder Co. 2

Captain William E. McGinn, Squad Co. 18

Captain Thomas C. Moody, Engine Co. 310

Captain Daniel O'Callaghan, Ladder Co. 4

Captain William S. O'Keefe, Engine Co. 154

Captain Vernon A. Richard, Ladder Co. 7

Captain Timothy M. Stackpole, Ladder Co. 103

Captain Patrick J. Waters, Haz-Mat Co. 1

Captain David T. Wooley, Ladder Co. 4

Lieutenant Joseph Agnello, Ladder Co. 118

Lieutenant Brian G. Ahearn, Engine Co. 230

Lieutenant Gregg Atlas, Engine Co. 10

Lieutenant Steven J. Bates, Engine Co. 235

Lieutenant Carl J. Bedigian, Engine Co. 214

Lieutenant John A. Crisci, Haz-Mat Co. 1

Lieutenant Edward A. D'Attri, Squad Co. 1

Lieutenant Manuel Del Valle, Jr., Engine Co. 5

Lieutenant Andrew J. Desperito, Engine Co. 1

Lieutenant Kevin W. Donnelly, Ladder Co. 3

Lieutenant Kevin C. Dowdell, Rescue Co. 4

Lieutenant Michael N. Fodor, Ladder Co. 21

Lieutenant David J. Fontana, Squad Co. 1

Lieutenant Andrew A. Fredericks, Squad Co. 18

Lieutenant Peter L. Freund, Engine Co. 55

Lieutenant Charles W. Garbarini, Ladder Co. 61

Lieutenant Ronnie E. Gies, Squad Co. 288

Lieutenant John F. Ginley, Engine Co. 40

Lieutenant Geoffrey E. Guja, Engine Co. 82

Lieutenant Joseph P. Gullickson, Ladder Co. 101

Lieutenant David Halderman, Squad Co. 18

Lieutenant Vincent G. Halloran, Ladder Co. 8

Lieutenant Harvey L. Harrell, Rescue Co. 5

Lieutenant Stephen G. Harrell, Ladder Co. 157

Lieutenant Michael K. Healey, Squad Co. 41

Lieutenant Timothy B. Higgins, Squad Co. 252

Lieutenant Anthony M. Jovic, Ladder Co. 34

Lieutenant Thomas R. Kelly, Ladder Co. 105

Lieutenant Ronald T. Kerwin, Squad Co. 288

Lieutenant Joseph G. Leavey, Ladder Co. 15

Lieutenant Michael F. Lynch, Ladder Co. 4

Lieutenant Patrick J. Lyons, Squad Co. 252

Lieutenant Charles J. Margiotta, Ladder Co. 85

Lieutenant Peter C. Martin, Rescue Co. 2

Lieutenant Paul R. Martini, Engine Co. 201

Lieutenant Paul T. Mitchell, Ladder Co. 110

Lieutenant Dennis Mojca, Rescue Co. 1

Lieutenant Raymond E. Murphy, Ladder Co. 16

Lieutenant Robert B. Nagel, Engine Co. 58

Lieutenant John P. Napolitano, Rescue Co. 2

Lieutenant Thomas G. O'Hagan, Engine Co. 52

Lieutenant Glenn C. Perry, Ladder Co. 34

Lieutenant Philip S. Petti, Ladder Co. 148

Lieutenant Kevin J. Pfeifer, Engine Co. 33

Lieutenant Kenneth J. Phelan, Engine Co. 217

Lieutenant Michael T. Quilty, Ladder Co. 11

Lieutenant Ricardo J. Quinn, EMS Battalion 57

Lieutenant Robert M. Regan, Ladder Co. 118

Lieutenant Michael T. Russo, Squad Co. 1

Lieutenant Christopher P. Sullivan, Ladder Co. 111

Lieutenant Robert F. Wallace, Engine Co. 205

Lieutenant Jeffrey P. Walz, Ladder Co. 9

Lieutenant Michael P. Warchola, Ladder Co. 5

Lieutenant Glenn E. Wilkinson, Engine Co. 238

Fire Marshal Ronald P. Bucca, Manhattan Base

Fire Marshal Andre G. Fletcher, Rescue Co. 5

Fire Marshal Vincent D. Kane, Engine Co. 22

Fire Marshal Kenneth B. Kumpel, Ladder Co. 25

Fire Marshal Paul J. Pansini, Engine Co. 10

Firefighter Eric T. Allen, Squad Co. 18

Firefighter Richard D. Allen, Ladder Co. 15

Firefighter Calixto Anaya, Jr., Engine Co. 4

Firefighter Joseph J. Angelini, Sr., Rescue Co. 1

Firefighter Joseph J. Angelini, Jr., Ladder Co. 4

Firefighter Faustino Apostol, Jr., Battalion 2

Firefighter David G. Arce, Engine Co. 33

Firefighter Louis Arena, Ladder Co. 5

Firefighter Carl F. Asaro, Battalion 9

Firefighter Gerald T. Atwood, Ladder Co. 21

Firefighter Gerard Baptiste, Ladder Co. 9

Firefighter Matthew E. Barnes, Ladder Co. 25

Firefighter Arthur T. Barry, Ladder Co. 15

Firefighter Stephen E. Belson, Ladder Co. 24

Firefighter John P. Bergin, Rescue Co. 5

Firefighter Paul M. Beyer, Engine Co. 6

Firefighter Peter A. Bielfeld, Ladder Co. 42

Firefighter Brian E. Bilcher, Engine Co. 33

Firefighter Carl V. Bini, Rescue Co. 5

Firefighter Christopher J. Blackwell, Rescue Co. 3

Firefighter Michael L. Bocchino, Battalion 48

Firefighter Frank J. Bonomo, Engine Co. 230

Firefighter Gary R. Box, Squad Co. 1

Firefighter Michael Boyle, Engine Co. 33

Firefighter Kevin H. Bracken, Engine Co. 40

Firefighter Michael E. Brennan, Ladder Co. 4

Firefighter Peter Brennan, Squad Co. 288

Firefighter Andrew C. Brunn, Ladder Co. 5

Firefighter Gregory J. Buck, Engine Co. 201

Firefighter John P. Bunside, Ladder Co. 20

Firefighter Thomas M. Butler, Squad Co. 1

Firefighter Patrick D. Byrne, Ladder Co. 101

Firefighter George C. Cain, Ladder Co. 7

Firefighter Salvatore B. Calabro, Ladder Co. 101

Firefighter Michael F. Cammarata, Ladder Co. 11

Firefighter Brian Cannizzaro, Ladder Co. 101

Firefighter Dennis M. Carey, Haz-Mat Co. 1

Firefighter Michael S. Carlo, Engine Co. 230

Firefighter Michael T. Carroll, Ladder Co. 3

Firefighter Peter J. Carroll, Squad Co. 1

Firefighter Thomas A. Casoria, Engine Co. 22

Firefighter Michael J. Cawley, Ladder Co. 136

Firefighter Vernon P. Cherry, Ladder Co. 118

Firefighter Nicholas P. Chiofalo, Engine Co. 235

Firefighter John G. Chipura, Engine Co. 219

Firefighter Michael J. Clarke, Ladder Co. 2

Firefighter Steven Coakley, Engine Co. 217

Firefighter Tarel Coleman, Squad Co. 252

Firefighter John M. Collins, Ladder Co. 25

Firefighter Robert J. Cordice, Engine Co. 152

Firefighter Ruben D. Correa, Engine Co. 74

Firefighter James R. Coyle, Ladder Co. 3

Firefighter Robert J. Crawford, Safety Battalion 1

Firefighter Thomas P. Cullen, III, Squad Co. 41

Firefighter Robert Curatolo, Ladder Co. 16

Firefighter Michael D. D'Auria, Engine Co. 40

Firefighter Scott M. Davidson, Ladder Co. 118

Firefighter Vincent D. Day, Ladder Co. 11

Firefighter Martin N. DeMeo, Haz-Mat Co. 1

Firefighter David P. DeRubio, Engine Co. 226

Firefighter Gerard P. Dewan, Ladder Co. 3

Firefighter George DiPasquale, Ladder Co. 2

Firefighter Gerard J. Duffy, Ladder Co. 21

Firefighter Michael J. Efferis, Engine Co. 22

Firefighter Francis Esposito, Engine Co. 235

Firefighter Robert E. Evans, Engine Co. 33

Firefighter Terrence P. Farrell, Rescue Co. 4

Firefighter Lee S. Fehling, Engine Co. 235

Firefighter Alan D. Feinberg, Battalion 9

Firefighter Michael C. Fiore, Rescue Co. 5

Firefighter John J. Florio, Engine Co. 214

Firefighter Thomas J. Foley, Rescue Co. 3

Firefighter Robert J. Foti, Ladder Co. 7

Firefighter Thomas Gambino, Jr., Rescue Co. 3

Firefighter Thomas A. Gardner, Haz-Mat Co. 1

Firefighter Matthew D. Garvey, Squad Co. 1

Firefighter Bruce H. Gary, Engine Co. 40

Firefighter Gary P. Geidel, Rescue Co. 1

Firefighter Denis P. Germain, Ladder Co. 2

Firefighter James A. Giberson, Ladder Co. 35

Firefighter Paul J. Gill, Engine Co. 54

Firefighter Jeffrey J. Giordano, Ladder Co. 3

Firefighter John J. Giordano, Engine Co. 37

Firefighter Keith A. Glascoe, Ladder Co. 21

Firefighter James M. Gray, Ladder Co. 20

Firefighter Jose A. Guadalupe, Engine Co. 54

Firefighter Robert W. Hamilton, Squad Co. 41

Firefighter Sean S. Hanley, Ladder Co. 20

Firefighter Thomas P. Hannafin, Ladder Co. 5

Firefighter Dana R. Hannon, Engine Co. 26

Firefighter Daniel E. Harlin, Ladder Co. 2

Firefighter Timothy S. Haskell, Squad Co. 18

Firefighter Michael H. Haub, Ladder Co. 4

Firefighter John F. Heffernan, Ladder Co. 11

Firefighter Ronnie L. Henderson, Engine Co. 279

Firefighter Joseph P. Henry, Ladder Co. 21

Firefighter William L. Henry, Rescue Co. 1

Firefighter Thomas J. Hetzel, Ladder Co. 13

Firefighter Jonathan R. Hohmann, Haz-Mat Co. 1

Firefighter Thomas P. Holohan, Engine Co. 6

Firefighter Joseph G. Hunter, Squad Co. 288

Firefighter Jonathan L. Ielpi, Squad Co. 288

Firefighter William R. Johnston, Engine Co. 6

Firefighter Andrew B. Jordan, Ladder Co. 132

Firefighter Karl H. Joseph, Engine Co. 207

Firefighter Angel L. Juarbe, Jr., Ladder Co. 12

Firefighter Paul H. Keating, Ladder Co. 5

Firefighter Richard J. Kelly, Jr., Ladder Co. 11

Firefighter Thomas W. Kelly, Ladder Co. 15

Firefighter Thomas J. Kennedy, Ladder Co. 101

Firefighter Michael V. Kiefer, Ladder Co. 132

Firefighter Robert C. King, Jr., Engine Co. 33

Firefighter Scott M. Kopytko, Ladder Co. 15

Firefighter William E. Krukowski, Ladder Co. 21

Firefighter Thomas J. Kuveiks, Squad Co. 252

Firefighter David J. LaForge, Ladder Co. 20

Firefighter William D. Lake, Rescue Co. 2

Firefighter Edward J. Day, Ladder Co. 55

Firefighter Peter J. Langone, Squad Co. 252

Firefighter Scott A. Larsen, Ladder Co. 15

Firefighter Neil J. Leavy, Engine Co. 217

Firefighter Daniel F. Libretti, Rescue Co. 2

Paramedic Carlos R. Lillo, EMS Battalion 49

Firefighter Robert T. Linnane, Ladder Co. 20

Firefighter Michael F. Lynch, Engine Co. 40

Firefighter Michael J. Lyons, Squad Co. 41

Firefighter Joseph Maffeo, Ladder Co. 101

Firefighter William J. Mahoney, Rescue Co. 4

Firefighter Joseph E. Maloney, Ladder Co. 3

Firefighter Kenneth J. Marino, Rescue Co. 1

Firefighter John D. Marshall, Engine Co. 23

Firefighter Joseph A. Mascali, Rescue Co. 5

Firefighter Keithroy M. Maynard, Engine Co. 33

Firefighter Brian G. McAleese, Engine Co. 226