



Testimony

of

**Carolyn Greene, MD
Deputy Commissioner for Epidemiology
New York City Department of Health and Mental Hygiene**

before the

**New York City Council
Committee on Civil Service and Labor,
Committee on Lower Manhattan Redevelopment and
Committee on Mental Health, Mental Retardation, Alcoholism, Drug Abuse and
Disability Services**

regarding

**Oversight: Examining the NYC World Trade Center Medical Working Group 2011
Annual Report on 9/11 Health**

January 30, 2012

250 Broadway
Committee Room, 14th Floor
New York, NY

Good morning. I want to thank Chairs Sanders, Chin, and Koppell, as well as the other distinguished members of the Council for convening this hearing examining the NYC World Trade Center (WTC) Medical Working Group's 2011 Annual Report on 9/11 Health.

My name is Dr. Carolyn Greene. I joined the NYC Department of Health and Mental Hygiene (DOHMH) in January 2008 and was appointed Deputy Commissioner nearly two years ago. I oversee the work of the WTC Health Registry and represent the Department on the WTC Medical Working Group, which is co-chaired by Deputy Mayor Linda Gibbs and Health Commissioner Thomas Farley.

When I testified last year before the Council, the *James Zadroga 9/11 Health and Compensation Act* had recently become law. This was due to the extraordinary efforts of the New York Congressional delegation, New York City officials, including you and other Council members, and labor and community advocates who worked tirelessly here and in the nation's capital to ensure that thousands of World Trade Center responders and survivors would have access to integrated physical and mental health services through at least 2015. As you are well aware, prior to enactment of the Zadroga Act, New York City's three clinical WTC Centers of Excellence and the patients they treated did not know from one year to the next whether or not the federal government would provide the funding necessary to ensure their continued care.

A critical component of the City's strategy in pushing for passage of the Zadroga Act was the appointment of the WTC Medical Working Group by Mayor Bloomberg in 2007. Mayor Bloomberg charged the WTC Medical Working Group with reviewing the peer-reviewed literature and publishing an annual report synthesizing key findings so that policymakers, the media and the public would better understand what science can tell us to date about the health impacts of 9/11.

I am pleased to serve with 15 other members of the WTC Medical Working Group who, in addition to Deputy Mayor Gibbs and Commissioner Farley, include representatives of NYC's three WTC Centers of Excellence, as well as scientists and 9/11 health experts from inside and outside of City government. Our 2011 report coincided with the publication of new research published around the time of the 10th year commemoration of September 11 terrorist attacks. This gave us an opportunity to summarize an entire decade's worth of research findings and the important lessons that we have learned.

The findings have been remarkably consistent across the 300 studies that we reviewed through September 2011, which also saw the publication of the first cancer and mortality analyses in WTC-exposed cohorts. These analyses are ongoing, and will yield greater insights about the long term health impacts of WTC exposure as more time passes.

Mental Health Conditions

Results from large epidemiologic studies, including one based on WTC Health Registry research and published by the *Journal of the American Medical Association*, show that probable post-traumatic stress disorder or PTSD is the most common WTC-related health effect among exposed adults, and that it often co-occurs with respiratory illness. Several studies have suggested that the severity of symptoms may vary over time and that factors not related to 9/11, such as prior or subsequent trauma, job loss and lack of social support may influence symptom severity. The research also teaches us several important lessons about how to decrease trauma risk for first responders in future disasters, including limiting the number of hours they can work at a disaster site to the extent possible, and making sure that both first responders and volunteers receive adequate training for their assigned tasks.

Depression, anxiety and substance use disorders have not been as well studied as PTSD among WTC-exposed people. However, the limited research to date indicates that a substantial number of people with WTC-related PTSD also are experiencing these other mental health conditions.

Physical Health Conditions

Dozens of studies demonstrate that respiratory symptoms, sinus problems, asthma, and loss of lung function were diagnosed in or reported by many who were exposed to WTC dust, including nearly 60,000 rescue and recovery workers, residents and office workers who have enrolled in 9/11 health programs. For many, these conditions have persisted for nearly a decade.

In September the *Lancet*, a leading British medical journal, published an important longitudinal study of more than 27,000 rescue and recovery workers who sought treatment at the New York/New Jersey WTC Clinical Consortium, based at the Mount Sinai School of Medicine. Researchers conducted detailed physical exams of each worker and analyzed self-reports of physician diagnoses from 2002 to 2010. Among those workers still in treatment, nearly 2,000 had active asthma; and more than 2,000 had sinusitis. Workers who reported greater levels of exposure at the WTC site were at higher risk for these conditions.

In my testimony last year, I mentioned that a Fire Department of New York study published in the *New England Journal of Medicine* showed that the steep declines in pulmonary function among firefighters and emergency medical service workers within a year of 9/11 have largely persisted even among non-smokers. More recent studies also have identified persistent abnormal pulmonary function in other WTC rescue and recovery workers, including police, and in Lower Manhattan residents and area workers. A new study from the WTC Health Registry that analyzed the health impacts of the World Trade Disaster on volunteers also shows that lay or unaffiliated volunteers, who were more likely to have been present in Lower Manhattan and experienced the dust

cloud on 9/11, were at higher risk for post 9/11 diagnoses of asthma or reactive airways dysfunction syndrome.

The persistence of respiratory illness among rescue and recovery workers and volunteers emphasizes the importance of making sure they are trained in the use of respiratory protection prior to future environmental disasters, and that when these disasters occur they are provided with adequate protection and are required to wear it. A 2011 study of nearly 10,000 rescue and recovery workers and volunteers enrolled in the WTC Health Registry found that fewer than 20% of workers reported using a standard respirator on 9/11. Nearly 5,000 workers and volunteers didn't use any kind of face covering at all that day. Workers and volunteers without respiratory protection were more likely to report recurrent respiratory symptoms and some respiratory disease than workers who used respirators.

However, use of adequate respiratory protection isn't the only lesson that we have learned from the experiences of WTC rescue and recovery workers. Several studies also have suggested that shift rotation, to the extent possible, can help prevent respiratory illness **and** posttraumatic stress disorder among rescue and recovery workers by limiting the duration of their exposure to horrific events and environmental contaminants.

Co-morbidity

In fact, new clinical research from the Fire Department and the NY/NJ WTC Clinical Consortium published last year shows that a substantial number of WTC rescue workers continue to suffer from **both** mental and physical health effects related to their exposure. A study of nearly 11,000 firefighters 7 to 9 years after 9/11 found that 42% of those reporting symptoms of probable PTSD, also reported a physician diagnosis of asthma, bronchitis or COPD/emphysema. Researchers at the NY/NJ WTC Clinical Consortium identified similar comorbidity in their *Lancet* study: nearly half of 1,500 workers with asthma and a third of 2,000 workers with sinusitis also reported at least one mental health condition, including PTSD, depression or panic disorder.

Two recent studies from the NY/NJ WTC Clinical Consortium and the WTC Health Registry suggest an association between WTC exposure and sarcoidosis, an inflammatory disease that can affect any organ, but typically affects the lungs. This association was first noted in firefighters; the new research found the association in other rescue and recovery workers, and that the risk for sarcoidosis increased significantly for those who worked on the debris pile at the WTC site.

Cancer & Mortality

The scientific literature summarized by the WTC Medical Working Group extensively addresses the short- and mid-term health effects of 9/11. However, only now, a full decade after the attacks, has enough time elapsed for research to begin emerging about the potential long-term health effects, including cancer and premature mortality.

The special 9/11 edition of the *Lancet* included the first WTC cancer risk study to be published. Fire Department researchers looked at nearly 9,000 male firefighters who responded to the WTC disaster. They found 263 new cases of cancer from 9/11 through 2008, 25 more than would have been expected among men of similar age, race and ethnicity in the general population. When FDNY researchers compared WTC-exposed firefighters to non-exposed firefighters, they found a 19% increase in cancer overall after accounting for potential biases that might have contributed to the increase.

The same issue of the *Lancet* also included the first study of mortality among people exposed to the WTC disaster. WTC Health Registry researchers identified 790 deaths from 2003 through 2009 among nearly 42,000 adults who resided in New York City when they enrolled in the Registry. The death rate from all causes among Registry enrollees was 43% lower than among New York City residents. The large number of workers and volunteers who were likely healthier than the general population when they enrolled in the Registry may help explain this finding.

However, this mortality study also showed that among Lower Manhattan residents, area workers and passersby in the Registry, those with higher levels of WTC exposure may be at greater risk for death from all causes and cardiac related death in particular compared to those with intermediate or lower levels of WTC exposure.

The WTC Medical Working Group noted that additional studies are needed to determine if the early findings from these initial cancer and mortality analyses are replicated in different populations with different exposure levels and if they change over time.

These cancer and mortality studies highlight one of the most significant challenges that WTC researchers have faced: the difficulty in measuring, with any precision, how much and what type of exposure different people had to the traumatic or environmental impacts of 9/11. More precise exposure measurements would have helped researchers establish whether or not a dose/response relationship exists between WTC exposure and any kind of illness. Another challenge to understanding the relationship between WTC exposure and illness is the variability in the broad exposure measurements that do exist depending on the population being studied.

This variability in available exposure measurements became even more apparent in the past year when members of the WTC Medical Working Group representing the Health Department, the Fire Department, the NY/NJ WTC Clinical Consortium and the WTC Environmental Health Center completed an extensive analysis of exposure variables for rescue, recovery and clean-up workers based on the different surveys each of us has used in our research. We were able to identify only three common exposure variables: dust exposure on the day of 9/11; work periods at the WTC site; and work activities at the WTC site. This effort has taught us the importance of establishing cross-study collaborations at the outset for future disasters, something that may be difficult to do in the immediacy of a disaster.

Progress on WTC Medical Working Group Recommendations

The 2011 WTC Medical Working Group annual report also reviews the progress that has been made in implementing the group's recommendations. By passing the Zadroga Act, Congress implemented our 2008 recommendation to secure long-term funding for World Trade Center-related health services and research.

In addition, members of the WTC Medical Working Group have made enormous progress in increasing awareness of WTC-related symptoms and the availability of clinical resources for people who were exposed to the disaster. This fulfilled a key recommendation to improve outreach efforts among anyone who might have been exposed to the disaster. These efforts include a subway advertising campaign that has significantly increased the number of WTC survivors seeking treatment and the publication of clinical guidelines for primary care providers to improve the diagnosis and treatment of WTC-related illnesses among adults, children and adolescents exposed to the WTC disaster. Our report cites many other examples of this progress in educational initiatives.

Much of the research recommended by the WTC Medical Working Group in our 2008 and 2009 reports is now published in the scientific literature, including the preliminary cancer and mortality findings that I have already mentioned; research estimating the burden of WTC-related illness; research about the persistence of both mental and physical health conditions; and research about the impact of tobacco use on WTC-exposed populations.

Despite the enormous progress researchers have made in understanding the health effects of the 9/11 attacks during the past decade, the WTC Medical Working Group also identified a number of areas that need to be more fully addressed. These include:

- assessing the mental and physical health of WTC-exposed children, and the children of WTC-exposed first responders, most of whom have now aged into young adulthood
- evaluating the effectiveness of treatment for patients with WTC-related conditions
- obtaining a better understanding of co-morbid mental and physical conditions and how this co-morbidity may influence disease progression, functioning and recovery

The good news is that the Zadroga Act also expanded funding for research. In addition to the federally funded, periodic health surveys that the WTC Health Registry has conducted among people directly exposed to the WTC disaster, the WTC Centers of Excellence and other scientific researchers can apply for grants to conduct clinical investigations and treatment outcome evaluations. Both FDNY and Mount Sinai already have received grants to continue their ongoing cancer analyses.

WTC Health Registry

In conclusion, I also would like to update you on the recent progress of the WTC Health Registry, one of most valuable epidemiologic tools available to WTC researchers and whose staff now has contributed nearly 25 articles to the scientific literature. This research, in turn, has informed our understanding of key WTC health effects, and has supported the continued availability of services at the WTC Centers of Excellence. It has also led to the development of the policy recommendations to protect the health of workers and volunteers that I mentioned earlier.

By September 11 of last year, we sent all 68,000 of the Registry's adult enrollees our 3rd major health survey which takes just 20-30 minutes to complete. We designed this survey in collaboration with numerous health care experts, including the entire membership of the WTC Medical Working Group, as well as labor and community advisers. In November, the Registry began surveying more than 1,200 adolescents and their parents for the 3rd time as well.

I am very pleased to report that nearly 39,000 adults—more than 56%— have returned their surveys to date. The response rate among adult enrollees who also responded to both of our previous surveys has been even stronger at nearly 73%. From an epidemiologic perspective, this very high response rate among those who responded to the 1st two surveys is critical because it means that we will have comprehensive health data at 3 points in time for large numbers of rescue and recovery workers (including volunteers), Lower Manhattan residents, area workers, students and passersby who comprise the Registry's cohort.

Increasing the response rate before the survey ends in March, especially among adolescents and Lower Manhattan residents, is currently the Registry's highest priority. In addition to calling enrollees who still haven't completed their surveys, we actually will be knocking on some of their doors during the next two months. We want to make sure that as many of our enrollees as possible provide us with the latest information about the current state of their mental and physical health, their functional status and the quality of their lives a decade after the 2001 terrorist attack on the nation.

Our enrollees will help us better understand the persistence or resolution of posttraumatic stress disorder and respiratory illness, the two most common health effects associated with WTC exposure. And by helping us answer new questions about asthma control, sleep apnea, other respiratory diseases, cardiovascular diseases, autoimmune disorders and other potential late-emerging conditions, the findings from our 3rd survey will help inform future screening, diagnosis and treatment for the more than 60,000 patients currently enrolled in the WTC Health Program.

Thank you again for giving me this opportunity to speak on behalf of the WTC Medical Working Group.

