

Your participation in the Research Program at the World Trade Center Health Program plays a vital role in the treatment of your condition and improves care for all members.

## Lower Respiratory Symptoms (LRS) in the WTC Survivor Program

**Potential Impact:** The study focused on identifying areas in the lungs which may cause respiratory symptoms. Understanding how to identify these areas will help with early detection of disease, diagnoses and future treatment. The study may help reduce lower respiratory symptoms and improve lung function of the WTC population. It may also reduce other health problems that occur with lower respiratory symptoms.

**Research:** Many World Trade Center Health Program members have lower respiratory symptoms despite treatment. We have previously used studies to measure abnormalities in the small airway that participate in these symptoms. We are now also studying patients who received strong medical therapy for persistent

lower respiratory symptoms to understand why their symptoms persist. We examine lung function using multiple techniques, vocal cord and airway hyperresponsiveness, and markers of inflammation and presence of additional illnesses.

**Population:** Patients in the WTC Environmental Health Center who have had tests to measure how well their lungs worked at their initial exam and later monitoring visits. These lung tests are called spirometry and impulse oscillometry (IOS) tests.

**Findings:** Most people in the study with post 9/11 LRS have had some improvement in symptoms. Many have had improvement in spirometry. However, one-third of the people in the study have continued to have respiratory symptoms even

though their spirometry tests were normal during their follow up exams. Many of the patients with normal spirometry tests had abnormal IOS test results suggesting that the small airways of the lung may be affected. Many patients also continue to show airway hyperresponsiveness (twitchy lungs), or hyperresponsiveness of their vocal cords. We also found that PTSD was associated with lower respiratory symptoms. These findings are associated with some markers of inflammation. Our findings suggest that there may be multiple causes of persistent respiratory symptoms, some of which occur together. Treatment needs to be targeted to these multiple causes.

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