



Occupational and Environmental Lung Diseases

FOOD INTAKE RESTRICTION FOR HEALTH OUTCOME SUPPORT AND EDUCATION (FIREHOUSE) TRIAL: STUDY DESIGN

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PURPOSE: After the World Trade Center (WTC) disaster, Fire Department of New York (FDNY) rescuers suffered symptomatic loss of FEV₁ below the lower limit of normal (LLN). In prior work, we identified and validated serum biomarkers predictive of abnormal FEV₁, and showed that the metabolome differs in those developing WTC-Lung Injury (WTC-LI). We aim to modify these phenotypic profiles using a dietary intervention. *Hypothesis:* A Calorie-Restricted Mediterranean (LoCalMed) diet will alter metabolic biomarkers, improve lung function, and ultimately enhance quality of life (QOL) in firefighters with WTC-LI.

METHODS: The FIREHOUSE study is an un-blinded technology-supported dietary intervention randomized clinical trial (RCT). We aim to randomize 140 FDNY firefighters to either control or LoCalMed 6-month diets. The intervention group will engage in technology assisted behavioral/nutritional/exercise monitoring with feedback, and social cognitive theory (SCT)-based group counseling sessions. Inclusion criteria are male sex, WTC-exposure, FEV₁ < LLN post 9/11, BMI > 27 kg/m², and signed research consent.

RESULTS: Primary outcome measure is forced expiratory volume in 1 sec (FEV1). Secondary outcomes include BMI, lipidemia, targeted biomarkers (metabolome), QOL measures, FeNO, and pulse wave velocity (PWV). Pre/Post intervention blood sampling (clinical and targetable biomarkers); stool samples (microbiome); saliva (genomics); vital signs; body fat analysis; and electrocardiograms will be analyzed for significance.

CONCLUSIONS: Technology-supported educational and behavioral intervention targeting calorie restriction for weight loss using a Mediterranean-style diet may improve WTC-associated loss of lung function. (NYU IRB17-00127; www.clinicaltrials.gov, #NCT03581006).

CLINICAL IMPLICATIONS: Successful completion of this RCT will provide a clinically relevant dietary modification and may help identify pathways of interest in future mechanistic work.

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