*Title: A randomized trial of perception of airflow limitation training to improve outcomes for older adults with asthma

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Asthma affects 7-9% of the United States population >60 years and causes considerable harm: older adults are 4 times more likely to die from asthma and have twice the risk of hospitalization. The burden of asthma is notably greater among minoritized older adults. Research suggests that perception of expiratory airflow limitation may be a major determinant of asthma outcomes in older adults, and that older adults are substantially less aware of airway obstruction than younger adults. These observations suggest that perception of airflow limitation is a potential target for improving outcomes of older patients with asthma; however, there has been very limited research in this area. We completed a pilot randomized controlled trial (RCT) of an intervention that trains older adults with asthma to better perceive expiratory airway obstruction through feedback via peak expiratory flow (PEF) prediction and couples this feedback with motivational interviewing (MI) to promote change in asthma self-management behaviors. Compared to an attention control, the intervention improved PEF, perception of airflow limitation and asthma control. In this project, we propose to conduct a fully powered RCT to test the intervention's efficacy in a large cohort of older adults with asthma and understand the mechanisms underlying improvements in asthma control and objective measures of expiratory airflow. The Specific Aims are to (1) Test the impact of the intervention on perception of expiratory airflow limitation in older adults with asthma, (2) Examine the efficacy of the intervention for improvements in lung function (forced expiratory volume in one second [FEV1] and PEF), self-reported asthma control (Asthma Control Questionnaire [ACQ] scores), quality of life (Asthma Quality of Life Questionnaire [AQLQ] scores), and emergency department and hospital use, (3) Test the intervention's impact on mean daily ICS dose used (daily maintenance and as needed) and illness beliefs. We will conduct a RCT of 300 older (≥60 years) patients with uncontrolled asthma who are on controller medications (daily maintenance or as needed) recruited from underserved inner-city practices and randomize them to an intervention consisting of PEF feedback training and MI (with or without a booster session at 6 months) or a time-matched attention control group. The intervention will be delivered for 3 sessions over 6 weeks. Control patients will receive supportive counseling related to their asthma and standardized, untailored asthma education during 3 individual sessions. Data will be collected at baseline, 1-month, 6-months (primary analyses of effectiveness) and 12-months postintervention. In secondary analyses, we will test the sustainability of treatment effects with vs. without the booster treatment session (active booster vs. attention control booster) delivered immediately after the 6 month assessment on outcomes at 12-months. The project addresses a significant public health problem in a vulnerable patient population. The innovative intervention addresses a significant public health problem among patients who are rarely the focus of interventions to improve asthma outcomes.