Automated Adherence Reminders for High Risk Children With Asthma: A Research Protocol

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BACKGROUND: The use of inhaled corticosteroid (ICS) medications has been shown to improve asthma control and reduce asthma-related morbidity and mortality. Two recent randomized trials demonstrated dramatic improvements in ICS adherence by monitoring adherence with electronic sensors and providing automated reminders to participants to take their ICS medications. Given their lower levels of adherence and higher levels of asthma-related emergency department (ED) visits, hospitalizations, and death, urban minority populations could potentially benefit greatly from these types of interventions.

OBJECTIVE: The principal objective of this study will be to evaluate the feasibility, acceptability, and limited efficacy of a text message (short message service, SMS) reminder intervention to enhance ICS adherence in an urban minority population of children with asthma. We will also assess trajectories of ICS adherence in the 2 months following asthma hospitalization.

METHODS: Participants will include 40 children aged 2-13 years, who are currently admitted to the Children's Hospital of Philadelphia (CHOP) for asthma, and their parent or legal guardian. Participants will be assigned to intervention and control arms using a 1:1 randomization scheme. The intervention arm will receive daily text message reminders for a 30-day intervention phase following hospitalization. This will be followed by a 30-day follow-up phase, in which all participants may choose whether or not to receive the text messages. Feasibility will be assessed by measuring (1) retention of the participants through the study phases and (2) perceived usefulness, acceptability, and preferences regarding the intervention components. Limited efficacy outcomes will include percent adherence to prescribed ICS regimen measured using Propeller Health sensors and change in parent-reported asthma control. We will perform an exploratory analysis to assess for discrete trajectories of adherence using group-based trajectory modeling (GBTM).

RESULTS: Study enrollment began in December 2015 and the intervention and follow-up phases are ongoing. Results of the data analysis are expected to be available by December 2016.
Conclusions: This study will add to the literature by providing foundational feasibility data on which elements of a mobile health text-message reminder intervention may need to be modified to suit the needs and constraints of high-risk urban minority populations.

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