Electronic Adherence Monitoring in a High-Utilizing Pediatric Asthma Cohort: A Feasibility Study

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BACKGROUND: Inner-city, minority children with asthma have the highest rates of morbidity and death from asthma and the lowest rates of asthma controller medication adherence. Some recent electronic medication monitoring interventions demonstrated dramatic improvements in adherence in lower-risk populations. The feasibility and acceptability of such an intervention in the highest-risk children with asthma has not been studied.

OBJECTIVE: Our objective was to assess the feasibility and acceptability of a community health worker-delivered electronic adherence monitoring intervention among the highest utilizers of acute asthma care in an inner-city practice.

METHODS: This was a prospective cohort pilot study targeting children with the highest frequency of asthma-related emergency department and hospital care within a local managed care Medicaid plan. The 3-month intervention included motivational interviewing, electronic monitoring of controller and rescue inhaler use, and outreach by a community health worker for predefined medication alerts. We measured acceptability by using a modified technology acceptability model and changes in asthma control using the Asthma Control Test (ACT). Given prominent feasibility issues, we describe qualitative patterns of medication use at baseline only.

RESULTS: We enrolled 14 non-Hispanic black children with a median age of 3.5 years. Participants averaged 7.8 emergency or hospital visits in the year preceding enrollment. We observed three distinct patterns of baseline controller use: 4 patients demonstrated sustained use, 5 patients had periodic use, and 5 patients lapsed within 2 weeks. All participants initiated use of the electronic devices; however, no modem signal was transmitted for 5 or the 14 participants after a mean of 45 days. Of the 9 (64% of total) caregivers who completed the final study visit, all viewed the electronic monitoring device favorably and would recommend it to friends, and 5 (56%) believed that the device helped to improve asthma control. ACT scores improved by a mean of 2.7 points (P=.05) over the 3-month intervention.

CONCLUSIONS: High-utilizer, minority families who completed a community health worker-delivered electronic adherence intervention found it generally acceptable. Prominent feasibility concerns, however, such as recruitment, data transmission failure, and lost devices, should be carefully considered when designing interventions in this setting.

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