PEDIATRIC ASTHMA CASE STUDY

The Herman & Walter Samuelson CHILDREN'S HOSPITAL AT SINAI
A LIFEBRIDGE HEALTH CENTER

Supporting Children with Asthma in West Baltimore through Video Directly Observed Therapy

emocha Health®

The Background

As one of the largest, most comprehensive and most highly respected providers of health services to the people of Maryland, LifeBridge Health advocates preventive services, wellness and fitness services, and educational programs. emocha partnered with LifeBridge Health to treat pediatric asthma patients with a prescribed inhaled corticosteroid and poorly controlled asthma. LifeBridge Health doctors recommended patients who they thought would be a good fit for the program, and patients were enrolled by an emocha specialist at the time of their visit. emocha's Digital Medication Adherence Program for asthma monitored participants' adherence for 60 days, and resulted in improved asthma controller medication technique and adherence.

The Problem

National Impact of Pediatric Asthma

In the United States, asthma is the most prevalent chronic condition in children.[1] Uncontrolled pediatric asthma is an immense burden for children and their families, leading to missed school days and expensive emergency department visits and hospitalizations.[2]

Both adherence and inhaler technique are crucial to controlling and managing asthma to improve overall outcomes,[3] but most patients with asthma take fewer than half of prescribed doses of controller medication.[4]

In patients with asthma, and other respiratory illnesses such as COPD, inhalation errors are associated with worse outcomes—including ER visits and hospitalization.[5] Across chronic diseases, poor adherence is the most significant modifiable factor limiting effective disease management.

Taking medication properly and consistently can be challenging. emocha helps patients build healthy adherence habits and learn proper inhaler technique.

$6 billion

health care expenditures each year for asthma in school-aged children[6]

94%

patients with asthma and COPD do not use their inhalers correctly[7]

~50%

patients with asthma take fewer than half of prescribed doses of medication

36%

of pediatric asthma patients who went to the emergency room had another ER visit within a year[8]

Pediatric Asthma in Baltimore City

20%

of children have a diagnosis of asthma, which is twice the national average[9]

88%

of pediatric asthma-related hospitalizations are of black children,[10] who are disproportionately affected by uncontrolled asthma

The
Solution

Providers at Greenspring Pediatric Associates at Sinai Hospital, an inner city residency continuity practice, recommended patients who they thought would be a good fit for the program. Eligible patients included children between the ages of 12 and 18 who were prescribed an inhaled corticosteroid (ICS) and had poorly controlled asthma, defined as children who had a recent hospitalization, a therapy escalation, demonstrated medication noncompliance or frequent rescue inhaler use, or an Asthma Control Test score below 20. If the patient and family agreed, an emocha specialist enrolled the patient at the time of their visit in the clinic.

1. Directly Observed Video Check-Ins

Patients used the emocha app to submit a video of each prescribed ICS dose.

+ Daily medication reminders
+ Recorded videos of dose-by-dose inhalation
+ Side effects and symptoms capture
+ Progress page to track adherence

2. Engagement and Support

Throughout the program, emocha nurses delivered human engagement and support to participants. Specific issues were escalated to the child's primary care provider as per protocol.

+ Daily video review by emocha nurses for adherence and inhaler technique
+ Follow up on all adherence barriers with clinical escalation as needed

3. Nurse Feedback

emocha nurses used the in-app chat function to correct inhaler technique, encourage adherence, and answer patient and caregiver messages.

Welcome Kit and Financial Incentive

Each participant received a welcome kit including a welcome postcard, adherence calendar, asthma educational materials, and a phone stand to record inhaler use.

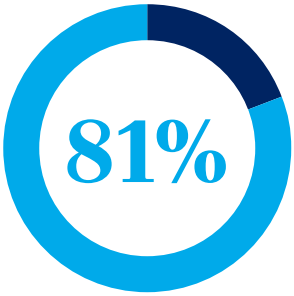
Patients also received $1 per day that they submitted a video taking their medication.

Promoting Adherence and Improving Technique through video DOT

Patients in the 60-day pilot study used emocha's mobile app to record a video each day of their prescribed inhaler dose. emocha's nurses evaluated video submissions to measure adherence and assess inhaler technique, escalated issues to a primary care provider as needed, and provided engagement and support throughout the treatment program. emocha's clinical adherence team looked for inhaler technique errors such as forgetting to shake the inhaler, inadequate holding of breath, and not using a spacer, and coached patients on how to improve their technique.

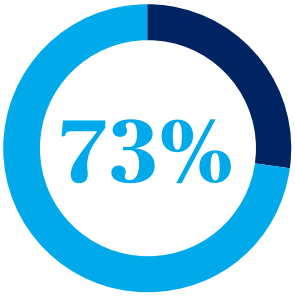
Daily video check-ins — coupled with support and human engagement — helped members form consistent medication habits, and provided insight into adherence challenges.

The Results[11]

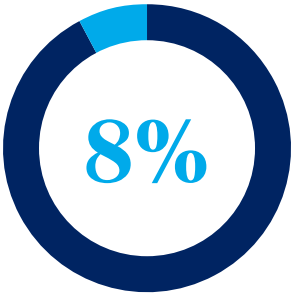


enrollment showing high initial program acceptance and engagement among eligible patients

average adherence reached for patients who participated in 5 weeks of the program



video submissions in the 1st week of the program with technique issues



video submissions in the 2nd week of the program with technique issues

issues detected and resolved per patient by emocha

days to resolve most inhaler technique errors; indicates that a shorter program may be just as effective

Positive Feedback

Participant and caregiver interviews cited increased patient confidence, knowledge, and skill in correctly using their inhaler, and improved independence as patients increasingly remembered to use their daily medications.

Patient and Caregiver Reflections

"Improper inhaler technique often leads to poor asthma control and frequent emergency department visits," says principal study investigator Scott Krugman, M.D., vice chair of pediatrics at the Herman & Walter Samuelson Children's Hospital at Sinai, part of the LifeBridge Health system. "Inhaled medications are the cornerstone of asthma management, so we're delighted that in this study we addressed more than 240 video-observed inhaler technique issues for pediatric asthma patients and efficiently improved medication adherence through direct interaction with care team members while utilizing video-enabled Directly Observed Therapy (DOT)."

The reminders and follow ups were really good because it was not just the caregiver reminding a child or teen and telling them what to do. There was professional back up as well. It made a difference.

The app is very easy to use. Kids were very eager to take the inhaler and submit videos.

Older children should use this because they may also forget and not know how to use the inhaler. Even young children could benefit and make habits earlier in life.

Paraphrased themes from program participant interviews

The Conclusion

Both the adoption rate of the program and near complete resolution of inhaler errors within two weeks illustrate that emocha's Digital Medication Adherence Program is a powerful tool for children with asthma who need help in using their inhalers correctly. The results of emocha and LifeBridge Health's partnered study indicate that video DOT has immense potential to improve asthma controller use through school-based health centers or payers' health management programs.

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Since 2014, emocha has been implemented with over 100 customers to support over 160,000 people with a range of conditions including asthma, diabetes, hypertension, HIV, hepatitis C, tuberculosis and COVID-19. We work with some of the world's most innovative health organizations and actively pursue new opportunities to collaborate with those working to implement adherence solutions at scale.

emocha Health®

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