

## Increasing asthma medication adherence among low-income adolescents

### The Challenge

As with many health conditions, disparities between high- and low-income patients with asthma begin at a very young age. Children from minority, low-income families in inner-city areas encounter barriers to healthcare that exacerbate asthma and drive high rates of healthcare utilization.

At Cincinnati Children's Hospital in Cincinnati, Ohio, Dr. Theresa Guilbert and her team were interested in studying how a digital health platform, combined with regular medical visits, could help economically disadvantaged students take control of their asthma.

### The Program

In 2016 and 2017, Cincinnati Children's Hospital enrolled 21 adolescents onto a first-of-its-kind study, which combined telehealth, in-person visits and access to Propeller's digital health platform. Students received Propeller sensors, which attach to their existing inhalers to track medication use, and used the Propeller smartphone app to manage their medication regimen.

The hospital partnered with the Cincinnati Health Department school-based clinics to enroll and monitor the adolescents at school. This allowed the hospital to overcome barriers related to appointment no-shows, which were high in the economically disadvantaged population, and provide a convenient setting for students to participate.

Over the course of six months, the participants completed seven scheduled medical visits with an asthma specialist and five self-management visits with an adherence psychologist at school, as well as tracking their daily medication use on the Propeller platform. During appointments, the care professionals used insights from the Propeller data to inform adjustments to the patients' treatment plans.



### The Outcomes

- After six months, controller medication adherence was up to 46%, with no emergency department visits or hospitalizations, a significant improvement over baseline
- The students also showed improvement in daytime symptoms, nighttime symptoms and exacerbations
- Retention in the study was 100%, and the researchers concluded that a multi-component interventional program in a school-based setting can significantly improve asthma outcomes and care in a challenging population



The Propeller platform allowed objective measurement of rescue and controller medication use, which allowed the health psychologist to conduct personalized self-management skill training.”

– Theresa Guilbert, MD,  
Cincinnati Children's Hospital