

Paradigm shift: How a risk-based program is changing health care use and outcomes for children with high-risk asthma

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Le Bonheur Children's Hospital's risk-based innovation program Changing High-Risk Asthma in Memphis through Partnership (CHAMP) has significantly decreased health care use related to asthma by targeting barriers to asthma care, according to research [published](#) in the *Annals of Allergy, Asthma & Immunology*.

After one year of enrollment in the [program](#), results analyzing 945 children included a 48% reduction in Emergency Department (ED) visits, 68% reduction in inpatient and observation visits, 42% reduction in urgent care visits and 53% reduction in [asthma exacerbations](#). Asthma exacerbations per patient significantly decreased from 2.97 to 1.4.

"Children in Shelby County, which includes the Memphis metro area, have disproportionally high asthma-related health care resource use compared with other regions in Tennessee," said Christie Michael, MD, the allergist/immunologist and medical director for the CHAMP program. "Our results show that taking down the walls of the clinic and going to where kids live, play and go to school has been a success."

The study analyzed data for children who had completed one full year of the program between January 2013 and Dec. 31, 2022. Of 1,348 children enrolled, 945 completed a full year of the program. The demographics of the participants were 63% male and 90% Black with a mean age of 6.8 years.

The CHAMP program was developed with a goal of improving [asthma care](#) and reducing risk of exacerbation for patients with high-risk asthma, who have significantly increased morbidity and mortality, and consequently, higher use and cost of health care. High-risk asthma can

be defined in a few ways, including asthma that causes higher health care use, is poorly controlled despite appropriate medical management or is controlled but requires the maximum medications available. The areas around Le Bonheur have the highest rate of ED visits and hospitalizations for asthma in the state, which is twice as high for kids with Medicaid compared to those with private insurance.

CHAMP seeks to change the paradigm for caring for these kids by addressing key factors that lead to high health care use and exacerbation of asthma. A dedicated medical care team works to provide the best outcomes for these children by working outside of the traditional paradigms of health care and working with kids and families inside their homes, at their schools, and at all hours of day and night.

Seeds of change

As a physician caring for this population of patients with high-risk asthma, Michael and her team spent years thinking, "Doesn't anyone know that we need a more complete picture of a patient in order to best care for them?"

"These high-risk asthma patients would come to see us in clinic, and it was evident that we care about them, but once they left, we might as well be on Mars," said Michael. "We were looking at people in snapshots rather than taking into account all risk factors they faced."

The CHAMP program evolved over time, getting a jumpstart from a Centers for Medicare & Medicaid Services (CMS) grant in 2012. Patients with high-risk asthma are eligible for the program if they are residents of Shelby County, aged 2-18 years and enrolled in Medicaid or TennCare. For the program, high-risk asthma means the patient has had one of the following: three or more asthma-related ED or urgent care visits in the previous year; two or more asthma-related hospitalizations in

the previous year; any admission to the intensive care unit (ICU).

Timing is crucial. Each day, CHAMP receives a report through the electronic medical record (EMR) of all pediatric patients admitted to Le Bonheur Children's affiliated Methodist Healthcare System or urgent care facility due to a breathing problem. This way, patients and families can be reached and engaged in the program quickly and successfully.

Keys to success

Key issues for this population that CHAMP needed to address in order to change outcomes were determined by literature review, expert opinion and the consensus of team members with extensive experience working with this population. These areas included access to care, fragmented care, insufficient asthma education and [social needs](#)/social determinants of health.

Children with high-risk asthma can have multiple issues accessing care whether consistent appointments with primary care providers and specialists or transportation for appointments and medication refills. The ED can become the default when options for acute outpatient or after-hours help are limited.

"If we want patients to do something other than go to the ED, we have to give them another option," adds Michael. "CHAMP has developed multiple initiatives to address these issues."

In addition to a dedicated medical team and access to [transportation services](#), one of the greatest keys to success has been the implementation of a 24/7 CHAMP call line. Caregivers can call at any time to receive guidance on what care might be needed and if escalation to urgent care or ED is needed. Results showed that from November 2013 to December 2022, 415 unique participants made 1,053 calls with 58% of

calls coming after hours. Immediate asthma-related breathing issues made up 67% of calls, and 52% of calls led to resolution without a visit to a medical facility.

Coordination of care among all providers is vital for improved outcomes and to eliminate confusion for caregivers. With CHAMP, care takes place through a dedicated medical team, which leads and ensures coordination. In addition to specialists visits, care includes home visits from community health educators (CHEs) as well as a respiratory therapist who communicates a child's asthma action plan with school nurses and PCPs. CHAMP also created the innovative asthma repository, so that CHAMP providers can download claims data for their patients from TennCare. This allows providers to see all medical encounters and if prescriptions are filled.

"The asthma data repository allows care coordination between medical and community teams for a child," said Michael. "With this information we have access to a more complete picture of a given patient's asthma care and outcomes, and the CHEs can contact caregivers to help resolve any prescription refill issues."

This dedicated care team through CHAMP also works together to emphasize proper asthma education so that caregivers are familiar with exacerbation triggers and a child's asthma symptoms. In addition to the asthma action plan created in clinic and shared with schools, CHEs reinforce asthma education and medication use during home visits by building relationships with each family.

Many families enrolled in the program are also impacted by social determinants of health. Almost all the children in the program live in one caregiver homes below the poverty line. Many of them live in rental housing with environmental hazards that exacerbate asthma. Through CHAMP, families can be connected with Le Bonheur's community

services and partners who can provide medical-legal services or help with addressing environmental triggers.

"Relationships are a huge part of what makes CHAMP successful, so that families know who we are and who they are dealing with," said Michael. "CHEs have relationships with families and can be an extra set of eyes to help us know about any needs—utility bill payments, food shortages or the need for asthma education reinforcement."

Future sustainability

The CHAMP program represents an innovative way to care for children with chronic disease that not only improves their outcomes but also could lower the cost of health care for each child. After a third-party evaluation of the CHAMP program following the original 3-year grant period with the CMS, health care costs were reduced by \$545 per child per quarter, totaling a reduction of \$2,180 per year.

Financial stability continues to be a challenge for the program that Michael says they are seeking to address in new and innovative ways.

"Our key to sustainability lies in both optimizing the number of patients we can serve and determining sustainable funding. We are actively working to establish relationships with insurance companies to show the positive outcomes and lowered costs of our program," said Michael.

For the future, Michael hopes that CHAMP could have the opportunity to expand to patients with private insurance or go out into the region to smaller counties outside of the Memphis area. Michael believes that the CHAMP model could even be used to address other chronic childhood illnesses, such as diabetes.

"The idea is to find the people who really need the program and scale

our program to achieve desired outcomes for the largest possible number of patients and families," said Michael.

More information: Susan Steppe et al, Changing high-risk asthma in Memphis through partnership, *Annals of Allergy, Asthma & Immunology* (2023). [DOI: 10.1016/j.anai.2023.12.002](https://doi.org/10.1016/j.anai.2023.12.002)

Provided by Le Bonheur Children's Hospital

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