North Carolina State Case Study
Excerpt from: The Effectiveness of Interventions to Address Childhood Asthma

Program Overview

North Carolina launched the Asthma Disease Management Program in 1998 through its statewide provider-led primary care system, Community Care of North Carolina (CCNC). CCNC is composed of 14 regional networks that include various medical providers, health departments, social service agencies, and community partners. Each network serves the Medicaid and Children’s Health Insurance Program (CHIP) low-income populations in its area using the patient-centered medical home (PCMH) model of care. CCNC chose to implement the Asthma Disease Management Program as its first statewide quality improvement program in response to the growing prevalence of asthma among Medicaid beneficiaries, a high number of pediatric asthma-related hospital visits, and elevated Medicaid asthma expenses; North Carolina Medicaid spent over $23 million on asthma-related care in 1998 alone. The program serves Medicaid-eligible children and adults with asthma and prioritizes high-risk patients.

CCNC takes a comprehensive, evidence-based approach to addressing asthma through this program, which has four central goals:

- build capacity for routine asthma assessment
- reduce unintended variation in care and establish consistency of care
- build capacity to educate patients, families, and school personnel about asthma
- report outcomes and process measures to all providers and staff regularly

CCNC provides primary care medical practices with crucial resources and supports to achieve these goals. For example, all CCNC network providers can learn about best-practice guidelines through educational sessions, receive asthma symptom questionnaires to help gauge asthma control levels, and receive asthma management plans and education materials, available in English and Spanish, to distribute to patients. Quality improvement specialists help practices incorporate asthma management tools in their daily activities, use data to improve patient care, and connect to community resources.

CCNC Fast Facts

Implemented: 1998

Populations Served:
- 1.13 million Medicaid/CHIP-eligible children
- 54 percent ethnic minorities (37 percent African-American, 17 percent Hispanic)
- 122,000 (11 percent) have asthma

North Carolina Medical Child Eligibility Levels
- Ages birth to 5 years: 210 percent of the federal poverty level (FPL)
- Ages 6 to 18 years: 133 percent FPL

CCNC Medicaid Reimbursement:
- $3.72 per member per month (PMPM) payments for CCNC network practice support and management activities for the non-aged, blind, and disabled (ABD) population.
- $2.50 PMPM care management payments to medical providers for the non-ABD population

Intervention Type:
- Clinic-based and community-based
CCNC networks employ the following clinic-based and community-based interventions.

**Clinic-Based Interventions**

- Care managers, including nurses, social workers, and pharmacists, are available to work with high-risk patients in the practice or by phone on asthma education and self-management techniques. They can help children and families better understand their condition; educate them on asthma triggers and symptoms and proper medication and equipment use; and help them adhere to asthma management plans.

- Care managers help strengthen children and families’ relationships with health care providers by accompanying them to their visits with medical providers to gain a better understanding of medical needs and helping patients implement provider care plans.

**Community-Based Interventions**

- Care managers can also conduct home visits to help families understand the social and environmental obstacles to controlling asthma. During home visits, care managers can assess environmental triggers and provide guidance to families on how to alleviate such triggers. Care managers can also help families reorganize their homes to better manage asthma by ensuring medications and asthma management plans are visible and easily available.

- Care managers can identify barriers in access to care and connect families with social services such as transportation or make referrals to community organizations.

Though CCNC’s asthma program has been adopted across all networks, some have modified or enhanced the above components to best meet the needs of their communities. (See the “Spotlight” on Community Care of Wake and Johnston Counties, on page 99, for an example.)

**Financing and Measurement**

The North Carolina Division of Medical Assistance (Medicaid) provides physicians with a per-member per-month (PMPM) payment that supplements fee-for-service reimbursement and supports PCMH services such as care management and prevention for all conditions, including asthma. The state also provides CCNC networks with PMPM payments for additional management activities.

CCNC stresses the importance of measurement to accurately track disease burden; it collects medical chart review and claims data on asthma measures such as the percentage of patients who receive a written management plan, the rate of asthma-related emergency department (ED) visits, and the rate of asthma-related hospitalizations. Providers access patient- and practice-level data through a CCNC provider portal. In addition to tracking the care of individual patients, practices can use the data to implement population management strategies for patients with asthma by tracking who has asthma-related ED visits or frequent asthma medication refills, for example.

The asthma disease management program has yielded positive results from claims data analysis, including a 16.6 percent decrease in ED visits and a 40 percent decrease in inpatient admissions for CCNC patients with asthma from 2003 to 2006. Additionally, data from 2012 indicate that Medicaid
beneficiaries with asthma who were enrolled in the CCNC program had a 38 percent lower ED visit rate and a 65 percent lower inpatient admission rate than Medicaid beneficiaries who were not enrolled in the program. VIII Other quality metrics have also shown improvement. In 2011, 93.6 percent of CCNC patients with persistent asthma were prescribed a controller medication. This percentage increased to 97.2 percent in 2013. These percentages exceed the national 2012 Healthcare Effectiveness Data and Information Set (HEDIS) mean for Medicaid Managed Care Organizations of 83.9 percent and the HEDIS 90th percentile of 89.8 percent.

Lessons Learned and Next Steps
CCNC emphasizes the importance of quality improvement and is currently developing an asthma disease registry that will allow practices to better monitor patients with asthma by combining claims data with clinical data from electronic health records to form a comprehensive patient dashboard. CCNC also plans to use a grant from the Patient-Centered Outcomes Research Institute to disseminate an asthma shared decision-making tool kit that will guide providers as they educate patients about asthma and discuss treatment options.

**Spotlight on Community Care of Wake and Johnston Counties**

Since 2008, Community Care of Wake and Johnston Counties has leveraged CCNC’s Asthma Disease Management Program to provide enhanced services through a home-based environmental trigger assessment and mitigation initiative. The initiative operates through a partnership with Wake County Environmental Services and Wake County Human Services. In addition to providing educational home visits by a nurse care manager, the program includes visits from a Registered Environmental Health Specialist who assesses triggers in the home such as dust mites, chemical irritants, pests, second-hand smoke, mold, and warm-blooded pets. Families then receive tailored education and support to mitigate the effects of identified triggers. The program also provides medication reconciliation services by a network pharmacist; written reports to families, primary care providers, and landlords (if necessary); and resources for renters’ advocacy. Wake County Human Services provides funding to Wake County Environmental Services to cover the costs of 0.5 FTE of the Registered Environmental Health Specialist. CCNC covers remaining expenses.

All Wake County Medicaid and Healthchoice (CHIP)-covered patients with an asthma diagnosis are eligible for the program, which prioritizes people at high risk for poor asthma outcomes as determined by asthma literacy level, asthma control, medication compliance, ED visits, hospitalizations, and environmental triggers. Patients can be referred to the program by medical providers or identified based on real-time asthma-related hospital visit data or claims data analysis flagging high-risk patients.

The program has conducted over 600 environmental assessments, with the vast majority done for children. The program has demonstrated a cost savings of $703 per person, which is largely attributed to decreased hospital visits. Specifically, the program led to a network-wide decrease in asthma ED visits from 40 to 17 per 1,000 member-months from 2003 to 2012. Hospital admission rates decreased from 8.3 to 1.9 hospitalizations per member-months in the same time period.*

Author’s note: This case study is an excerpt from The Effectiveness of Interventions to Address Childhood Asthma, published in August 2016. The information in this case study reflects data verified as of July 2015.

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iSee the Community Care of North Carolina website (www.communitycarenc.com).


ivCCNC’s asthma initiative is based on the National Heart, Lung, and Blood Institute’s Guidelines for the Diagnosis and Management of Asthma (National Heart, Lung, and Blood Institute. 2007. “Guidelines for the Diagnosis and Management of Asthma (EPR-3).” Online document. Website: www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines).


viCCNC has made Point of Care Resources available in English and Spanish to assist providers educate their patients with asthma (Community Care of North Carolina. 2014. “Provider Tools: Point of Care Resources for Providers — Asthma/Allergy.” Online document. Website: www.communitycarenc.com/provider-tools/conditions/asthma-tools).
