Community Care of North Carolina’s Approach to Asthma Management

Elizabeth Cuervo Tilson

Community Care of North Carolina (CCNC) takes a comprehensive approach to asthma management. Support from CCNC helps providers follow evidence-based practice guidelines; data guide continuous quality improvement initiatives and inform the care of individual patients and populations; and care managers work with high-risk patients.

Asthma is one of the most common chronic diseases of childhood, second only to dental disease. Data from the Child Health Assessment and Monitoring Program (CHAMP) Survey show that prevalence rates of asthma are highest in children aged 5-17 years, and approximately 1 child in 10 was living with asthma in North Carolina in 2011 [1]. Prevalence rates for adults in North Carolina in 2011 were slightly lower, at 8.8% [2]. Prevalence rates of asthma in North Carolina vary with race or ethnicity and with insurance status. Racial or ethnic minority populations and children covered by public insurance have higher prevalence rates of asthma than do white, privately insured individuals [1].

Asthma has a significant economic and social impact. In the United States in 2010, asthma accounted for 439,000 hospital discharges, 1.2 million hospital outpatient visits, 2.1 million emergency department (ED) visits, 10.6 million physician office visits, and $56.0 billion in economic costs [2]. Asthma is the leading cause of missed days of school in North Carolina [3].

The etiology of asthma is multifactorial, and evidence of the importance of environmental exposures is accumulating [4]. Thus, it is important to have a comprehensive approach to asthma management.

A Comprehensive Approach to Asthma Management

Community Care of North Carolina (CCNC) is a statewide, provider-led primary care medical home and care coordination system that has been growing for the past 10 years. It is a private-public partnership with 14 networks covering all 100 counties in the state. It rests on the framework of Carolina ACCESS Medicaid, a managed care program in which Medicaid recipients are linked to a primary care medical home. CCNC activities are added to that framework to further increase access to high-quality, cost-effective, coordinated care. By helping providers care for patients, CCNC has shown that it can improve health, reduce rates of ED visits and hospitals admissions, and save money. Statewide, more than 5,000 providers and more than 1.2 million Medicaid patients are part of CCNC [5].

Asthma management is one of CCNC’s statewide disease management initiatives. As with all disease management initiatives, the asthma initiative is based on nationally recognized evidence-based or best-practice guidelines. Specifically, the National Heart, Lung, and Blood Institute Guidelines for the Diagnosis and Management of Asthma published in 2007 [4] inform the initiative. Metrics that align with the guidelines are developed and approved by the CCNC network clinical directors and CCNC clinical staff members; when possible, these metrics are also aligned with national metrics.

CCNC takes a comprehensive approach to asthma management. The measures developed for asthma include the percentage of patients with asthma who receive a continued care visit with assessment of symptoms; the percentage who undergo assessment of triggers; the percentage who receive a written management plan; the percentage of patients with persistent asthma for whom controller medicines are prescribed; the rate of asthma-related ED visits; and the rate of asthma-related hospitalizations.

Providers are given support and tools to foster high-quality asthma care. Educational sessions and resources on best-practice guidelines are available to practice staff members and providers. Asthma symptom questionnaires, which can be completed by the patient or a parent, are provided to facilitate assessment of asthma control. Asthma management plans and other education materials are made available to practices for use with patients.

Clinicians have access to robust patient information in the CCNC Provider Portal, including a dashboard view of patient data provided by the CCNC Informatics Center. Individual-level information helps guide care of a specific
patient. For example, the “medication fill” history can inform the conversation between provider and patient about medication compliance. Practice-level data can foster population management. For example, practices can download a list of patients with asthma-related care alerts, which are triggered by the detection of asthma-related ED visits, asthma-related hospitalizations, frequent refills of rescue medications, or failure to fill a prescription for a controller medication.

Quality improvement specialists and support are available to foster continuous quality improvement activities and workflow processes within practices. Processes that may be addressed include how to integrate asthma management tools into the practice workflow, how to facilitate recommended visit frequency, what must be documented in electronic health records (EHRs) to meet the meaningful use criteria of the Centers for Medicare & Medicaid Services (CMS), how to use data to inform the care of individual patients and populations, and how to use existing community resources (eg, care managers, child care health consultants, and school nurses) to help with patient care. Feedback is given to track progress and to identify areas for improvement or the need for additional resources. An example of
successful collaboration between the quality improvement support staff of one CCNC network (Northwest Community Care Network) and a network practice (Wake Forest Baptist Health’s Downtown Health Plaza) to address asthma care was described in a recent issue of the NCMJ [6]. Process measures aligning with best-practice recommendations showed marked improvement, and rates of ED visits and hospitalizations for asthma decreased.

Finally, multidisciplinary care managers—including nurses, social workers, and pharmacists—are available to work one-on-one with high-risk patients. Providers can make direct referrals to local care managers in their networks. Connections to hospitals via either the in-person presence of CCNC staff or via information technology (IT) system linkages can alert care managers when a patient is hospitalized or comes to the ED for an asthma-related illness. As part of the IT linkage, information about admissions, discharges, and transfers from 57 hospitals across the state allows for data on ED visits and hospitalizations to be fed into the Informatics Center twice daily. In addition, claims-based, risk-adjusted analytics can predict which patients are likely to experience potentially preventable costs related to their asthma. Care managers can use this report to proactively reach out to patients and offer care management services.

The main goals of care management are to promote self-management of chronic diseases and to strengthen the link between patients and providers, especially primary care providers. The local, on-the-ground, care manager staff-
ing allows for a wide range of care management activities designed to achieve these goals. Care managers can work with families over the phone or in person. They can accompany a patient to medical appointments, which can help the care manager understand the care plan recommended by the provider and can help the family operationalize that plan. Care managers can provide extra asthma education on topics such as the physiology of asthma, triggers, symptom recognition, how and when to use medicines and delivery devices (e.g., spacers), and how to follow an asthma management plan. Care managers can also make home visits that help them to understand the social and environmental context in which the family is trying to manage this chronic disease. Environmental triggers in the home can be identified, and advice on how to mitigate those triggers can be provided. The care manager can also address barriers to care—lack of transportation, for example. Finally, the care manager can help the family organize the home in a way that facilitates consistent chronic disease management—for instance, they can help the family decide where to store medicines and where to post the asthma management plan.

Local Initiatives and Collaborations

Local initiatives and collaborations further add to statewide activities. Strong evidence supports the effectiveness of home-based, multi-trigger, multicomponent interventions with an environmental focus, because such interventions can improve asthma symptoms, quality of life, and productivity for children and adolescents with asthma [7, 8]. For example, one CCNC network, Community Care of Wake and Johnston Counties, is working in partnership with Wake County Environmental Services and Wake County Human Services to deliver a multidisciplinary, home-based, environmental trigger assessment and mitigation initiative led by a registered sanitarian and a nurse care manager. This initiative shows an average of $700 in savings per patient, secondary to decreased rates of ED visits and hospitalizations for asthma. In addition, this initiative achieved substantial decreases in network-wide asthma ED rates (from 40 visits per 1,000 member-months in 2003 to 17 visits per 1,000 member-months in 2012) and asthma hospital admission rates (from 8.3 hospitalizations per 1,000 member-months...
in 2003 to 1.9 hospitalizations per 1,000 member-months in 2012). This collaboration received a 2013 Achievement Award in Health from the National Association of Counties. Other CCNC networks—including Northern Piedmont Community Care, Northwest Community Care Network, and Community Care of the Lower Cape Fear—are beginning similar activities to address environmental asthma triggers. The Healthy Homes training offered by the University of North Carolina’s Gillings School of Global Public Health is helping to spread these activities.

Quality Metrics

Chart review and claims-based measures are used to foster continuous quality improvement initiatives within practices, networks, and the statewide CCNC program. Improvements in all metrics have been achieved. Figure 1 shows chart-review measures, including the percentage of patients with documentation of at least 1 continued care visit with assessment of symptom control, trigger assessment, and provision of a written asthma management plan. An additional measure noting the percentage of patients with persistent asthma with documentation of a prescription for controller medicine was added in 2011. This measure is the only one with a comparable national HEDIS (Healthcare Effectiveness Data and Information Set) benchmark, and CCNC results show high rates of performance on this measure. In 2011, 93.6% of patients with persistent asthma were prescribed a controller medication. This percentage increased to 95.5% in 2012. These percentages exceed the 90th percentile for national 2011 HEDIS benchmarks for Medicaid Managed Care Organizations, which is 90.6%.

In early evaluations of CCNC’s asthma initiatives, 2 published studies [9, 10] found sizeable decreases in rates of hospitalization and ED use for asthma. An evaluation by the University of North Carolina’s Cecil G. Sheps Center for Health Services Research [9] showed substantially lower rates of ED visits and inpatient admissions during the period 2000–2002 for Carolina ACCESS Medicaid patients who were enrolled in CCNC than for those who were not. A subsequent study [10] showed a 16.6% decline in the rate of ED visits and a 40% decrease in the rate of inpatient admissions for CCNC-enrolled patients with a diagnosis of asthma.
between fiscal years (FYs) 2003 and 2006.

While ED utilization rates have continued to rise for Medicaid recipients with asthma who are not enrolled in CCNC, rates have remained consistently lower within the CCNC program. Additionally, while asthma-related inpatient admission rates have remained steady for Medicaid recipients who are not enrolled in CCNC, inpatient rates have continued to decline for CCNC-enrolled patients (Figure 2). In 2012 the ED visit rate was 38% lower and the inpatient admission rate was 65% lower for Medicaid recipients with asthma who were enrolled in the CCNC program compared with those who were not enrolled in CCNC (Figure 3).

**Future Directions and Emerging Initiatives**

To further facilitate population management, an asthma disease registry is under development as a resource for practices engaged in asthma quality improvement work. This registry will couple claims data (such as ED visit and medication fill data) with clinical data from EHRs—for example, data regarding asthma management plans and allergy and...
trigger management. Initially, the registry will be accessed through the CCNC Provider Portal, and claims information and clinical information will be provided by the North Carolina Health Information Exchange. A next step will be to integrate all of the information into a single view and to develop an interactive dashboard tool for the asthma registry that will enable real-time manipulation of data related to asthma and asthma care. Future capabilities will also include the integration of care alerts to prompt action for asthma management. The registry will also support asthma-related reporting requirements to help practices meet the meaningful use criteria established by CMS.

Another emerging initiative involves exploring effective ways to disseminate patient-centered tools for shared decision making (SDM) that have been shown to produce positive changes in asthma outcomes [11, 12]. The Asthma SDM Toolkit includes a tool to assess baseline asthma control; a guide for eliciting the patient’s goals for treatment priorities; educational materials about asthma; a tool to guide the negotiation process and to jointly develop a treatment regimen that accommodates the patient’s goals and preferences; and an asthma action plan that has been developed by a Carolinas Healthcare System team and has been shown to improve asthma outcomes [13]. Through a grant from the Patient-Centered Outcomes Research Institute and in partnership with Carolinas Healthcare System, CCNC will test a novel dissemination process to spread the Asthma SDM Toolkit to primary care practices. Facilitators will work with selected practices to individually tailor the toolkit to the practice’s unique circumstances. Patients receiving care at practices where the toolkit is being implemented will be compared with control patients at nonparticipating practices using quantitative outcomes data (from EDs, hospitals, outpatient clinics, and pharmacies) as well as qualitative data (regarding provider and patient satisfaction, for instance). The knowledge gained from this initiative and the partnerships formed between practice-based research networks and CCNC practices will facilitate the dissemination of effective SDM patient education materials to other CCNC practices statewide.

Elizabeth Cuervo Tilson, MD, MPH primary care pediatrician, Wake County Human Services, and medical director, Community Care of Wake and Johnston Counties, Raleigh, North Carolina.

Acknowledgments
Support for E.C.T.’s work as medical director of a CCNC network is funded largely by the state of North Carolina through North Carolina Medicaid.

Potential conflicts of interest. E.C.T. has no relevant conflicts of interest.

References


