INVITED COMMENTARY

Dissemination and Adoption of Guidelines:
The Experience of Community Care of North Carolina

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Dissemination and adoption of practice guidelines has the potential to improve the health of a population. However, these processes are complex and take place in the context of a myriad of factors that impact patient and provider behaviors. Therefore, successful strategies—like the ones utilized by Community Care of North Carolina—need to be multifaceted.

Clinical guidelines are systematically developed statements that aim to inform and guide providers and patients in the management of clinical circumstances. Successful implementation should improve the quality and effectiveness of care and decrease unnecessary variation. However, adoption of and adherence to clinical practice guidelines can often be slow and incomplete due to a variety of barriers [1, 2].

Barriers can include factors relating to the actual guideline, such as ambiguity in or lack of clear evidence for the management recommendations. Barriers can also include factors relating to the individual provider. A lack of provider knowledge or awareness of the guideline, attitudinal barriers including disagreement with guidelines, lack of self-efficacy, lack of outcome expectancy, inertia of previous practice, and cognitive biases can limit the adoption of new management recommendations. Barriers can be related to patient preferences or acceptance of management recommendations. External barriers can include the need to acquire new resources or facilities, lack of materials, or insufficient staff [1, 2]. Time limitations are also an important concern; following all of the acute care, chronic care, and preventive care guidelines would take 22 hours per day for an average patient panel [3]. Lack of decision support aids, reminder systems, and quality improvement tools can further impede systematic adoption of management guidelines [2]. Financial factors can also play a role. Lack of funding for dissemination, poor reimbursement, increased practice costs, and increased liability can limit adoption of recommendations [1, 2].

Additionally, clinical recommendations may not reach providers in a usable format. Guidelines are typically well researched, comprehensive, and thorough and therefore may be long. As such, they may be inaccessible to the frontline provider at the point of patient care. For example, the National Heart, Lung, and Blood Institute (NHLBI) 2007 Guidelines for the Diagnosis and Management of Asthma full report is 440 pages, and the Summary Report alone is 74 pages [4]. The Focused Update of the 2009 American College of Cardiology Foundation/American Heart Association Guidelines for the Diagnosis and Management of Heart Failure in Adults is 89 pages [5].

In the context of this panoply of barriers, many strategies have been attempted to disseminate guidelines and influence clinical practice. The distribution of materials and didactic educational meetings are important in order to increase awareness and knowledge of guidelines, but these strategies appear to have little effect on adoption of new clinical recommendations if used as the sole method of dissemination [1, 2]. Interventions with variable effectiveness include audit and feedback, engagement of local opinion leaders, a local consensus process, patient-mediated interventions, and patient decision aids. Consistently effective interventions include academic detailing/educational outreach visits to practices, interactive educational meetings, clinical decision support tools, reminders, and registries. Team-based care is also an important strategy to promote adoption of best-practice guidelines [3]. In addition, multifaceted interventions, including different combinations of the aforementioned strategies, have been shown to be consistently effective [1, 2, 6].

Further, user-friendly formats that highlight salient pieces of a recommendation—including pocket cards, mobile applications, concise summaries, checklists, and implementation guides—can deliver information to a provider in a more accessible way and can aid in adoption [1]. For example, when the American Academy of Pediatrics released their 31-page 2007 Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity, the National Initiative for Children's Healthcare Quality released the accompanying 5-page condensed implementation guide to aid in dissemination [7].

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Community Care of North Carolina's Experience

Informed by the literature on effective dissemination strategies and by our experience over the past 15 years, Community Care of North Carolina (CCNC) takes a multifaceted approach to clinical guideline dissemination and adoption. CCNC is a statewide, provider-led, primary care medical home and care coordination population health framework. It is a private-public partnership that is operationalized through 14 networks covering all 100 North Carolina counties and includes more than 5,000 primary care providers. While CCNC works with several different populations, Medicaid is the primary population under care management by CCNC. Core elements of CCNC's work are fostering the adoption of best-practice guidelines and supporting quality improvement activities within the Medicaid population and their providers. CCNC often works with many other North Carolina health partners to achieve these goals.

Nationally recognized guidelines are adopted as the basis for quality improvement initiatives. Evidence-based guidelines are used preferentially when available. Best-practice consensus guidelines are used if evidence-based guidelines are not available. For example, the American Diabetes Association's Standards of Medical Care in Diabetes are used as the foundation for our work with diabetes management [8]. If there is ambiguity around management recommendations—for example, the optimal age for routine breast cancer screening [9] or how to manage cholesterol to reduce cardiovascular risk [10]—then CCNC emphasizes the portion of the recommendation around which there is the strongest evidence.

As part of the CCNC Quality Measure and Feedback (QMAF) process, key elements of management recommendations, typically those with the strongest evidence, are identified for the development of feedback measures. Whenever possible, intentional alignment with established national metrics is preferred. Local opinion leaders and local consensus are sought during the process. The medical directors from the 14 CCNC networks are involved in this process and approve the adoption of management guidelines and the related measures. Input from specialists, primary care physicians, context experts, local opinion leaders, and local providers is also actively sought during the QMAF process.

To promote awareness and knowledge of management guidelines, dissemination of recommendations is a multimodal effort. Presentations are given and interactive educational activities are conducted at statewide professional meetings and at local meetings, including hospital-based grand rounds, CCNC network medical management meetings, and continuing medical education events. Academic detailing, in the form of practice-based "lunch and learns," is conducted by the local network medical directors and clinical staff.

Guidelines are summarized and key recommendations are presented in a user-friendly format. For example, in collaboration with other North Carolina health partners, the recommendations for management of pediatric obesity were further condensed to a 2-page Quick Clinician's Guide in order to foster implementation [11]. Tools are also provided with the recommendations to support providers' adoption of best-practice guidelines. Blood pressure nomograms and body mass index charts are made available to accompany the Quick Clinician's Guide. Asthma control tests and asthma management plans are provided to practices to facilitate adoption of the NHLBI Guidelines for the Diagnosis and Management of Asthma. In addition, billing and coding guidance is given, when possible, to lessen the financial barriers of adopting new recommendations. For example, as part of the Fostering Health North Carolina Initiative, recommendations for providers not only concisely summarize the American Academy of Pediatrics Standards of Care for children in foster care, but also give guidance on billing and coding issues to make it more financially feasible for practices to follow best practices when providing care for this vulnerable population [12].

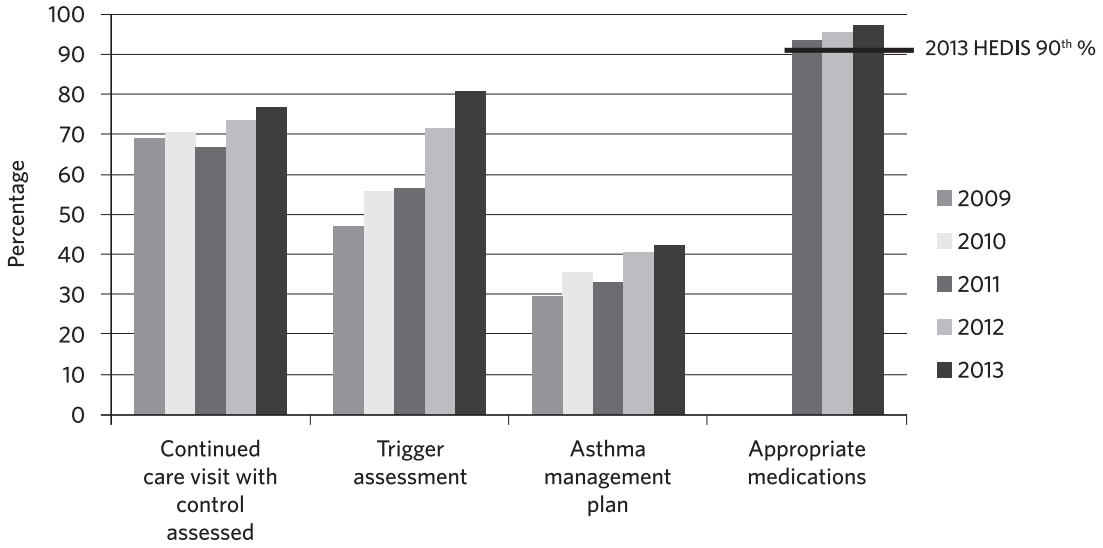
Quality improvement specialists and tools are available to foster continual quality improvement activities within practices and to promote systematic adoption of best-practice guidelines. Using the Model for Improvement [13] as a framework, practice support is given to facilitate workflow processes, documentation in electronic health records, adoption of reminder systems, and the utilization of existing community resources and team-based care to help with time limitations. As part of this support, QMAF data are given to track progress and identify areas for improvement or the need for additional resources.

Clinical informatics and emerging applications complement and inform the quality improvement work. The CCNC Informatics Center and Provider Portal allows access to robust patient information. Individual-level information helps guide care of a specific patient. Practice-level data can foster population management. For practices that have adopted electronic health records and established connectivity to the CCNC Informatics Center, we are able to track real-time performance on a wide array of standard clinical quality measures to support rapid-cycle clinical quality improvement initiatives and coordinated, proactive approaches to assure that patients with chronic conditions receive recommended services. Reporting dashboards and patient registries will support state-of-the-art approaches for the management of diabetes, hypertension, asthma, heart failure, and pediatric preventive care. Several measure sets will be combined to help providers look across multiple guidelines for one patient.

Some Results

Improvements in quality metrics in chronic disease management, as an indicator of guideline adoption, have been achieved statewide. Figure 1 shows statewide chart review measures for asthma management among Medicaid

FIGURE 1.
Statewide Results for the Quality of Asthma Care for Patients Enrolled in Community Care of North Carolina, 2009–2013



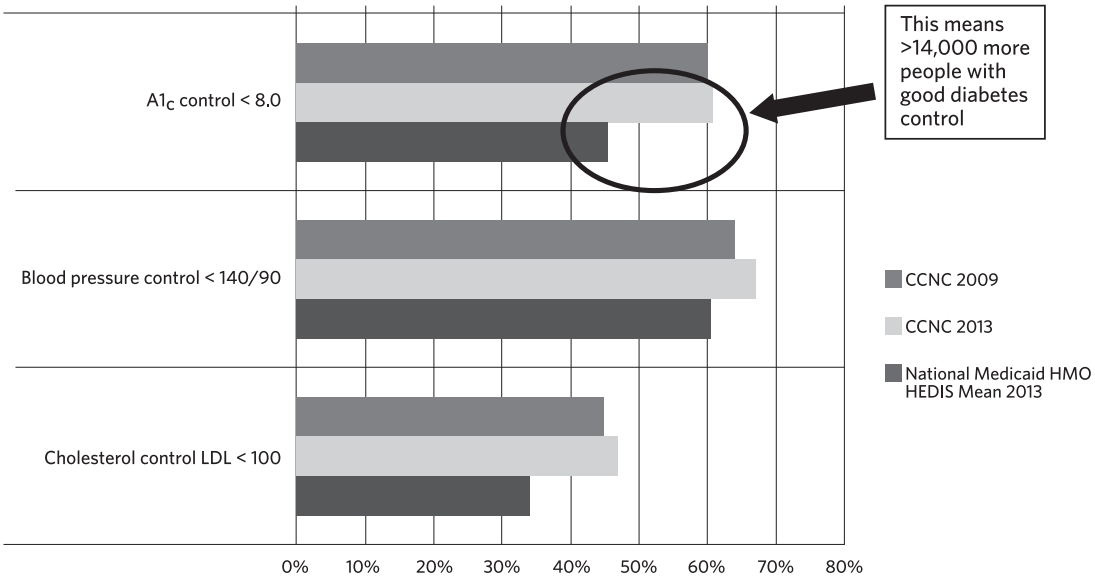
patients, including the percentage of patients with documentation of at least 1 continued care visit with assessment of symptom control, trigger assessment, provision of a written asthma management plan, and documentation of a prescription of a controller medicine (for those with persistent asthma). The latter measure is the only one with a comparable national HEDIS benchmark, and CCNC results show high rates of performance; specifically, this measure surpasses the 90th percentile for national 2013 HEDIS benchmarks for Medicaid managed care organizations. Figure 2 shows 2013 statewide outcome measures for diabetes management. These data also show CCNC's improvement, with CCNC performance surpassing the national 2013 HEDIS mean for Medicaid managed care organizations on all measures. Because of CCNC's statewide scale, this performance difference represents a sizeable impact on the health of the population.

Most Recent Efforts

To enhance the primary care infrastructure, CCNC received funding in 2012 from the Centers for Medicare and Medicaid Innovations to develop the Child Health Accountable Care Collaborative (CHACC). As part of this initiative, collaborations of subspecialists and primary care providers from the major medical centers and community-based settings across North Carolina developed consensus management guidelines for common pediatric medical problems that are often referred to subspecialists. The goals of these guidelines are to increase the capacity for the primary care providers to manage more simple problems, provide guidance for comanagement, and define referral criteria for specialty care, if needed. The intention is to increase capacity for specialists to care for children with more complex health care needs. Initial work with gastroenterologists and primary care providers resulted in management and referral guidelines for pediatric constipation, reflux, and functional abdominal pain. [Editor's note: For more information about CCNC's pediatric guidelines, see the sidebar by Charles F. Willson on page 231.] Subsequent work with neurologists and primary care providers led to the development of guidelines for headache management. There have been many opportunities for input from local providers during the development process. Simple flow diagrams, management guidance, red flags, and referral criteria have been summarized in brief user-friendly documents. Associated parent and patient education were also provided to help with their understanding and acceptance of management recommendations [14].

Concurrent with ongoing CHACC activities, a statewide sickle cell task force was formed (including members of the CHACC leadership) with the goal of improving the care of patients with sickle cell disease. The task force adopted the CHACC guideline development methodology to make newly released recommendations more user-friendly for primary care providers; these recommendations were published in full in the NHLBI 2014 Evidence-Based Management of Sickle Cell Disease: Expert Panel Report. The work group included representatives from CCNC; the North Carolina Division of Public Health; the comprehensive sickle cell centers at Carolinas HealthCare System, Duke University, East Carolina University, University of North Carolina at Chapel Hill, Mission Health, and Wake Forest University; and primary care physicians from across North Carolina. The consensus work product from this group included 1-page reference guides to assist clinicians in adult and pediatric sickle cell health maintenance and the management of fever,

FIGURE 2.
Statewide Outcome Measures for Diabetes Management for Patients Enrolled in Community Care of North Carolina, 2009–2013



respiratory symptoms, anemia, neurological symptoms, and pain. A Power Point slide deck was also developed to accompany the tools and help with dissemination.

These tools are posted on the CCNC website [15] and the Duke Emergency Department website [16]. The newly endorsed sickle cell reference guides are being disseminated to and by the Division of Public Health, the 14 local CCNC networks, CHACC staff, the residency directors at all 5 academic medical centers in North Carolina, the comprehensive sickle cell centers, the North Carolina Pediatric Society, the North Carolina Academy of Family Physicians, school nurses, and child care health consultants. Patient and family tools are also being developed to promote the adoption and acceptance of new management guidelines including, for example, the expanded recommendations for hydroxyurea use. The NHLBI task force is looking at ways to disseminate the new guidelines nationally and is drawing on the work done in North Carolina.

In addition, as a result of this work and collaboration, Duke faculty in the schools of nursing and medicine have submitted a proposal to the Agency for Healthcare Research and Quality entitled "Disseminating NIH Evidence-Based Sickle Cell Recommendations in North Carolina." If funded, this project will evaluate patient and system outcomes associated with the dissemination of the decision support tools. Measures will include the awareness, usability, and acceptability of the reference guides amongst providers; hydroxyurea prescription fill rates; and rates of hospitalizations, rehospitalizations, emergency department visits, and outpatient visits related to sickle cell disease. Findings from this evaluation will inform future dissemination work.

Conclusion

Dissemination and adoption of guidelines are not simple processes. Strategies for dissemination all happen in the context of a multitude of environmental, policy, technological, financial, and system design factors that impact patient and provider behaviors and influence whether patients receive guideline-recommended care. Upfront investments are needed to enable system changes and team-based delivery of comprehensive care. Value-based payment reform may be a catalyst to foster more rapid dissemination and adoption of best practices. NCMJ

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