

Navigating an Ocean of Information: How Community Care of North Carolina Uses Data to Improve Care and Control Costs

Randy Barrington

Community Care of North Carolina's 14 networks use data analysis to provide relevant solutions that are responsive to unique regional environments. This article describes some of the ways that these networks use data to improve patient self-management, to meet providers' needs, to improve quality of care, and to control costs.

The sheer volume of information that is available from claims, electronic health records (EHRs), health information exchanges, and real-time hospital data feeds is staggering [1]. Many who wade into this sea of information either drown in the waves or quickly head back to the safety of dry land, but Community Care of North Carolina (CCNC) has learned to surf these waters and is offering a helping hand to others who are trying to navigate the currents.

CCNC uses data in a number of different ways. CCNC's data formula directs care managers to the right patient at the right time so they can provide life-changing support and education. The data formula also allows CCNC quality improvement (QI) staff to identify primary care practices in which QI efforts will have maximum impact, and this same information is offered through the CCNC provider portal so that practices can direct and measure their own QI efforts. Pharmacists in each of the 14 CCNC networks compile information from multiple sources into a concise form that providers can use to prevent drug interactions, duplicate scripts, or the prescription of contraindicated drugs. CCNC networks have also used EHR data from providers to create visual aids that make it easy to identify trends, to define subpopulations, and to refine work flows and processes in providers' practices.

Because CCNC is made up of 14 networks across North Carolina, solutions for data delivery and analysis need to be local, relevant, and responsive to each unique regional environment and its resources. Described below are some of the ways in which CCNC networks are enhancing patient self-management and helping providers to analyze data, discover trends, and improve quality of care. Through these efforts and others, CCNC saved nearly \$1 billion in the 4-year period 2007-2010 [2].

The CCNC Informatics Center

The CCNC Informatics Center is an electronic data exchange infrastructure that is connected to both statewide and local health care quality initiatives sponsored by the North Carolina Department of Health and Human Services Division of Medical Assistance, the Centers for Medicare & Medicaid Services (CMS), the North Carolina State Health Plan for teachers and state employees, Blue Cross and Blue Shield of North Carolina, and other group health plans of private employers. Currently, the Informatics Center contains health care claims data provided by Medicaid and other participating payers, including Blue Cross and Blue Shield of North Carolina and the North Carolina State Health Plan, as well as health information about program participants obtained directly from health care providers and care managers. Data sources include eligibility files and paid claims for the statewide Medicaid population; Medicare and commercial paid claims for beneficiaries in regional programs; laboratory data from LabCorp and Solstas Labs; real-time admission, discharge, and transfer data from 52 North Carolina hospitals (as of January 2014); pharmacy data from Surescripts and Express Scripts; abstracted data from primary care medical records; and structured data from patient or caregiver interviews as documented by CCNC care managers. This information is accessed by the CCNC networks to identify patients who may need care coordination; to facilitate disease management, population management, and pharmacy management initiatives; to communicate key health information across settings of care; to monitor cost and utilization outcomes; to monitor quality of care; and to provide performance feedback at the patient, practice, and network levels [3].

Electronically published May 5, 2014.

Address correspondence to Mr. Randy Barrington, 2300 Rexwoods Dr, Ste 100, Raleigh, NC 27607 (rbarrington@n3cn.org).

N C Med J. 2014;75(3):183-187. ©2014 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved.
0029-2559/2014/75305

Using Data to Direct Care Coordination and Patient Engagement Efforts

The savings potential of population management programs depends on intelligently targeting the subpopulation of patients who are most likely to benefit from care management support, “right sizing” the intervention, and identifying care opportunities in real time—in other words, engaging with the right patient at the right time in the right setting with the right care team. CCNC uses data to proactively identify the patients for whom care management interventions are most likely to yield savings, as well as to efficiently connect these patients with local resources that can address their specific needs across care disciplines and delivery settings.

Predictive modeling keeps efforts focused on the patients who are most likely to benefit from a care manager’s help (Figure 1). CCNC has made a conscientious effort to employ nurses, social workers, pharmacists, and physicians in positions where they can practice at the highest level commensurate with their license, which has led to the formation of teams that put actionable information in the care manager’s hands at the right time to maximize the impact of each interaction with the patient. Interacting with the patient at home, in the hospital, at the primary care provider’s office, and by telephone are all part of a formula for patient engagement

that allows patients and providers to avoid any treatments and medical expenses that do not contribute to improvements in the patient’s health [4].

Tara Robinson and Lori Banks, deputy directors of Community Care of Wake and Johnston Counties, explain that the data available in the Informatics Center allows their network care managers to apply a “boots on the ground” approach to population health management. The care manager team is able to effectively drive change at all levels of care by providing actionable information. At the hospital level, for example, care managers might target interventions to specific patients with high rates of emergency department (ED) utilization. Robinson notes that care managers can use Informatics Center data to inform advanced practice paramedics which patients are high ED users “so that they can divert [these] patients to a particular ED for consistency of treatment.” Banks adds that

the reports that are generated in the CCNC Informatics Center are created using algorithms that incorporate previous billing and diagnoses. This ... produce[s] reports that give the network the ability to target transitional care patients who are at the highest risk for readmission.

At the practice level, network team members can have conversations with providers about these patients, which in

turn allows providers to have conversations with patients about their ED use. At the patient level, a care manager can provide telephonic and in-person contact and care coordination for the individual [5].

Using Data to Direct Provider Engagement and QI Efforts

Data analytics are used in a similar way to identify variations in care at the provider, practice, and community levels in order to pinpoint opportunities for focused system-level improvements in care delivery. CCNC QI staff use data from the Informatics Center to direct their work with more than 1,600 participating practices statewide and to engage local partners in collaborative solutions.

Two CCNC regions—Community Care of the Lower Cape Fear and Southern Piedmont Community Care—recently developed a stratification tool that QI staff members can use to prioritize which practices and which projects are of highest importance, and this tool has since been made available to all 14 CCNC networks. When prioritizing which practices to work with intensively on QI projects, QI teams use CCNC’s risk-adjusted key performance indicators to identify practices whose patients have higher rates of hospitalization, higher rates of ED use, or greater-than-expected costs given their illness burden. The QI team further prioritizes

practices that have the most room for improvement and that serve the largest numbers of patients. Aimee Donaton, QI director for Community Care of the Lower Cape Fear, observes

We then also must weigh a practice’s capacity to work on quality improvement and to implement changes. Practices are made up of people, and the stages of change must be observed just as they are with patients. You cannot make a practice change if the individuals in that practice are not ready to embrace a change.

Deb Aldridge, QI director of Southern Piedmont Community Care, shared this sentiment, noting that it is easy for providers to get so absorbed in seeing individual patients that they lose sight of the practice’s patient population as a whole. The QI staff helps providers interpret data so that they can improve their metrics specifically for Medicaid patients, but the changes a practice makes in response to these data tend to have a positive effect on other subpopulations of patients as well.

Using tools from the Informatics Center, QI professionals in CCNC networks across North Carolina help providers interpret data, discover trends, and construct focused rapid-cycle projects that lead to improvements in the quality of care and reduced costs. The large quantity of information

that is available can be overwhelming for providers in primary care practices, but CCNC QI teams help providers to find a starting point and to create practical improvement projects based on interventions that have worked in other practices of similar size and composition.

Using EHR Data to Look at the Whole Practice

Historically CCNC's primary data source has been participating payers, but CCNC networks are increasingly responding to requests from practices that want to use their EHR data to analyze trends across patient populations. For example, Community Care of Western North Carolina recognized that practices want to incorporate EHR data when they consider how to improve processes, and the network responded by forming a team consisting of a QI specialist, an EHR applications specialist, and a clinical data specialist. This team created effective tools that practices can use to analyze trends in their EHR data; specifically, these tools use the clinical quality measure reports that many practices already generate to demonstrate their compliance with CMS's meaningful use requirements (Figure 2). Practices often do not have the time to extract and analyze EHR data; by helping practices determine where to make changes that result in improvements, CCNC networks are stepping up to meet emerging needs.

Data Convergence in the Comprehensive Medication Review

CCNC network pharmacists use multiple data sources to create patient summaries as part of CCNC's Pharmacy

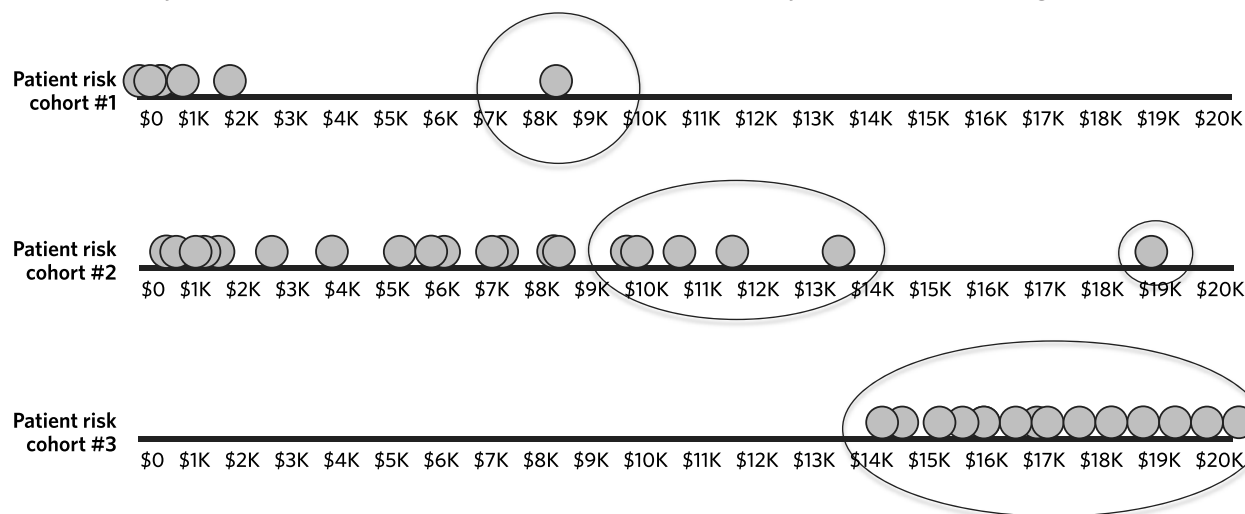
Home Project. Unlike medication lists, this comprehensive and detailed review includes information from pharmacies, including the patient's prescription refill history; information from health information exchanges; patient self-reports; real-time data from hospitals; and information from the patient's medication cabinet. This comprehensive medication review summarizes data for the primary care provider, so that providers have timely and accurate information to aid them in making the best clinical decisions for the patient (see Appendix 1; online version only). Megan Rose, director of pharmacy services for Community Care of the Lower Cape Fear in southeastern North Carolina, describes the comprehensive medication review as "a true picture of what the patient is actually doing" with his or her medication regimen, which is a more complete picture than the one gained from the patient's self-report or from a medication list.

This is an example of how CCNC networks compile information that is too fragmented in its raw form for providers to compile on their own. In the emerging Care Triage pilot project, which is a partnership between CCNC and GlaxoSmithKline, patients are being assessed for risk of future hospitalizations and adverse drug events based on current medication information and real-time hospital data. Care Triage will ultimately give providers population management tools based on predictive modeling.

On the Horizon

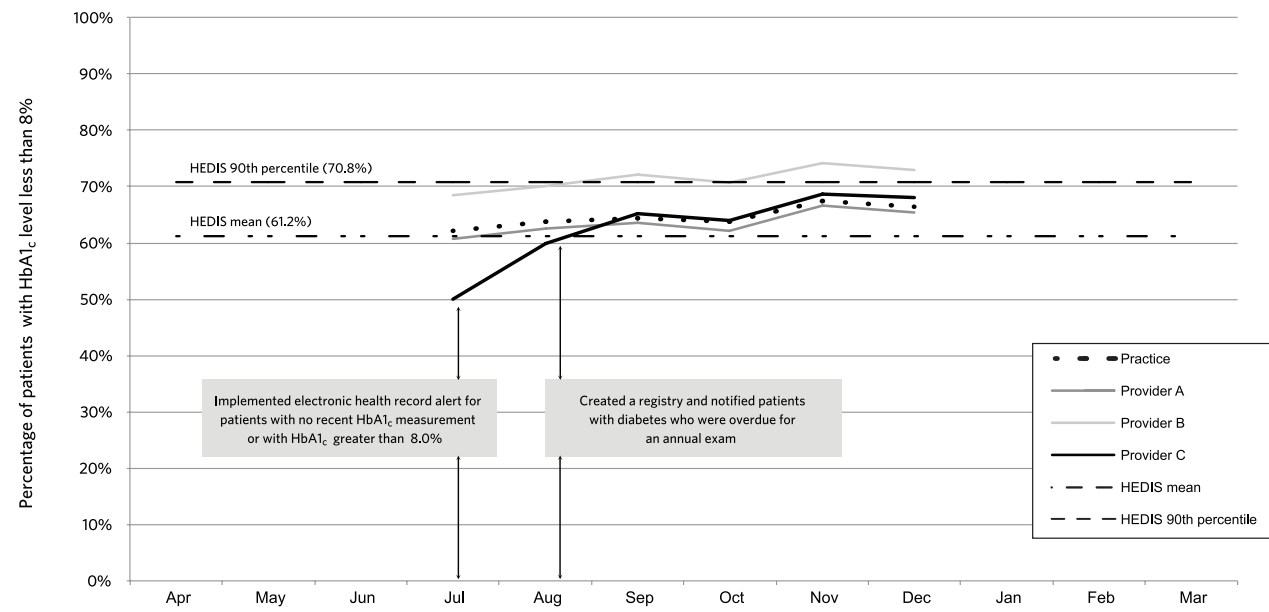
As the focus of care delivery shifts from volume to outcomes, provider organizations are increasingly taking on greater financial responsibility for maintaining the health of

FIGURE 1.
How Community Care of North Carolina Uses Health Care Cost Data to Identify Patients for Care Management Outreach



Note. Each dot represents the cost of each patient's potentially preventable health care, and placement of the dots indicates the cost of that individual's health care during the preceding 12 months. To determine which patients are most likely to benefit from care management outreach, every patient in the population is assigned to a clinical risk cohort according to a hierarchical model using standard claims data (including inpatient, outpatient, physician, and pharmacy data history). The highest-cost outliers in patient risk cohorts #1 and #2 would likely benefit from targeted care management that focuses on potentially preventable hospitalizations or emergency department visits, because their health care costs are greater than those of others in the same cohort; under conventional flagging methodology, these patients might have been missed. In contrast, care management would likely have minimal impact on most of the patients in patient risk cohort #3, although all of these people might have been flagged using conventional flagging methodology.

FIGURE 2. Percentage of Patients With Diabetes Aged 18-75 Years Whose Hemoglobin A_{1c} (HbA_{1c}) Level Is Lower Than 8%, 2013-2014



Source: Data are from Community Care of Western North Carolina.

the populations they serve. Adopting a value-based population management model requires organizations to develop new capabilities for understanding the needs of populations and for developing targeted care management and QI interventions. Annette DuBard, CCNC's senior vice president for informatics and evaluation, believes that the goal for the future should be "the triple aim of better outcomes, better patient experience, and lower costs ... [facilitated] through hosted analytical support for whole patient populations, using real-time data from multiple sources."

As more and more CCNC-participating practices access the North Carolina Health Information Exchange, they will have the immediate benefit of real-time data exchange and secure communications with other providers, connectivity to the state's immunization registry and to electronic lab reporting, and a mechanism for reporting clinical quality measures to meet CMS meaningful use requirements. CCNC will soon be able to provide practices with a more adaptable business intelligence dashboard interface to support population management efforts for their whole patient panels. These dashboards, which will be in a secure hosted environment, will include clinical disease registries and tools to track measures that are pertinent to patient-centered medical home recognition, meaningful use, the Physician Quality Reporting System, and uniform data system reporting. This resource will offload the challenging work of gleaning usable information from new technology, thus creating economies of scale for safety-net providers and independent practices.

As we navigate these exciting waters, we greet new opportunities to "lift all boats" in health care QI for the benefit of North Carolina as a whole. **NCMJ**

Randy Barrington, MBA quality improvement facilitator, Community Care of North Carolina, Raleigh, North Carolina; and lead quality improvement coordinator, Community Care of the Lower Cape Fear, Wilmington, North Carolina.

Acknowledgments

The author would like to thank Dan Davis and Carrie Pettler of Community Care of Western North Carolina for their contributions to this article.

Potential conflicts of interest. R.B. is an employee of Community Care of North Carolina.

References

1. Degaspari J. Managing the data explosion. *Healthc Inform.* 2013;30(7):15-18.
2. Cosway R, Girod C, Abbott B. Analysis of Community Care of North Carolina Cost Savings. Milliman Client Report. <http://www.communitycarenc.com/media/related-downloads/milliman-cost-savings-study.pdf>. December 15, 2011. Accessed April 10, 2014.
3. Community Care of North Carolina (CCNC). Informatics Center overview. CCNC Web site. <http://www.communitycarenc.com/informatics-center/informatics-center-explained/>. Accessed January 21, 2014.
4. Jackson CT, Trygstad TK, DeWalt DA, DuBard CA. Transitional care cut hospital readmissions for North Carolina Medicaid patients with complex chronic conditions. *Health Aff (Millwood)*. 2013;32(8):1407-1415.
5. Fillmore H, DuBard CA, Ritter GA, Jackson CT. Health care savings with the patient-centered medical home: Community Care of North Carolina's experience. *Popul Health Manag.* [published online ahead of print September 21, 2013]. doi: 10.1089/pop.2013.0055.