Community Care of North Carolina initiated efforts to improve care transitions for North Carolina Medicaid recipients in 2008. The transitions program is now statewide, serving more than 4,000 patients every month, virtually every North Carolina hospital, and more than 1,400 primary care practices. This commentary describes program components, early outcomes, and future challenges.

On Labor Day weekend 2011, a 62-year-old man with a developmental disability was discharged from a North Carolina hospital. Multiple unstable medical conditions and a complicated, nonhealing wound had resulted in a 2-month hospitalization. During that time, several team meetings were held to coordinate discharge plans, and he was set up to receive a number of postdischarge services, including home health, palliative care, durable medical equipment supplies, follow-up appointments with multiple specialists, and additional Medicaid-funded in-home personal care support (as an alternative to nursing home placement). When a nurse care manager from the Community Care of North Carolina (CCNC) Transitions Program visited him 2 days after discharge, however, she found a patient who was on the brink of needing hospital readmission: the home health agency had not yet initiated the twice-daily dressing changes, he had no wound care supplies, in-home personal care services had not yet begun, and the pain medication that had been prescribed in the hospital had been denied at the pharmacy, leaving him without pain control. Despite the best efforts of the hospital team, and despite Medicaid coverage for needed postdischarge services, his transition from the hospital would have failed without the timely attention of someone with the primary responsibility of coordinating all the distinct aspects of care and assuring a safe return home.

CCNC is a statewide, community-based, physician-led program committed to establishing access to a primary care medical home for vulnerable populations and to equipping those medical homes with the multidisciplinary support needed to assure comprehensive, coordinated, high-quality care. Fourteen regional CCNC networks, with 1,568 participating primary care practices statewide, manage the care of 1.2 million Medicaid and North Carolina Health Choice enrollees in a nationally acclaimed model that has demonstrated substantial cost savings through community collaboration and quality improvement [1-3].

In North Carolina, 190,000 Medicaid recipients are admitted to the hospital every year, and 31,000 have multiple hospital admissions. Nearly 1 in 10 admissions represents a readmission within 30 days of a previous discharge. An additional complicating factor is the frequency of cross-hospital traffic: 23% of readmissions within 30 days of discharge occur in a different facility. Cross-region traffic is also common for Medicaid recipients in North Carolina. In large referral centers such as Duke and the University of North Carolina-Chapel Hill, as many as half of all patients come from communities outside of the locally affiliated CCNC network of primary care medical homes.

CCNC began tackling transitional care in earnest in October 2008, when it was charged by the legislature to improve quality of care and control excess spending for the elderly and the disabled Medicaid populations. This subset of Medicaid enrollees is characterized by a high prevalence of multiple chronic physical and behavioral health conditions, polypharmacy, low health literacy, socioeconomic stress, and the involvement of multiple physicians in their care. While elderly and disabled enrollees represent only a quarter of all North Carolina Medicaid recipients, they contribute disproportionately to health care spending, incurring more than 40% of all inpatient admissions, two-thirds of all potentially preventable readmissions, and 80% of total Medicaid costs. CCNC recognized that ensuring coordination and continuity of care for these highest-risk Medicaid recipients at times of transition would be key to achieving better outcomes and lower costs of care.

When CCNC began its transitional care program, a handful of studies had previously demonstrated that providing additional support to patients with complex health care needs at the time of hospital discharge can successfully reduce...
A Series of Well-Coordinated Dismouts
Troy Trygstad

In November of 2010, Dr. Darren DeWalt [1] wrote an editorial in the *Journal of the American Medical Association* likening a dismount in a gymnastics routine to completing patient encounters by ensuring that patients can self manage their medications. Without a proper dismount, the routine’s effectiveness is lost. The underlying premise of the piece was that even if the health care system perfects patient evaluation and treatment within its own setting/s, the encounter frequently ends in failure without a well-developed medication use plan in which the patient is willing and able to engage. It was an apt analogy that has broad application across many of our systems of care. In this edition of the *North Carolina Medical Journal*, Dubard and colleagues [2] describe Community Care of North Carolina’s (CCNC) Transitions of Care Program, which emphasizes the need to extend patient support activities outside of the hospital and into the community. In this model, transitional care encompasses a series of well-coordinated dismounts involving numerous providers, extenders, and surrogates that reach far beyond the walls of the hospital.

The conventional implementation of Medication Reconciliation (Med Rec) at hospital discharge involves a cursory review of drug regimens (medication lists) for duplications and discrepancies. This occurs either within a single medication list or against another reference list, sometimes with an assessment of need for individual medications based on known diagnoses. Rare is the implementation of more comprehensive and patient-centered activities that involve educating patients at discharge and supporting medication use following discharge in a manner coordinated with the rest of the care team. Beginning in late 2009, CCNC began implementing a Med Rec Plus program for high-risk Medicaid recipients having a hospitalization. The “Plus” denotes an additional set of activities that are added to the conventional deployment of Med Rec.

The majority of CCNC Med Rec Plus deployments involve multiple types of professionals and paraprofessionals (social workers, nurses, pharmacists, pharmacist assistants, and others) gathering information about both actual and intended medication use from multiple settings following discharge. It is common for a hospital-embedded CCNC care manager to meet and interview a patient about his or her medication use at the bedside, then hand off care to a pharmacist who reconciles the discharge medication list against the prescription fill history from the pharmacy. At that point, the pharmacist may hand off care to a yet another care manager doing a home visit to observe actual use of medications in the home, and then receive back the findings and compare those findings against the active medication list in outpatient provider’s records prior to the first scheduled encounter post-discharge. This process involves a series of encounters that puts the patient at the center of the effort to harmonize and execute his or her individual medication use plan.

The Plus version of Medication Reconciliation has yielded some instructive findings. A convenience sample of 6,927 patient discharges subjected to the Med Rec Plus process reveals 2 general themes across 19,022 identified drug therapy problems/discrepancies. About one-third of identified problems/discrepancies were of the types that are typically associated with Med Rec (discrepancies in medication dose/frequency/duration (20.7%);

rehospitalization rates. Such interventions had typically been tested in small cohorts in a single health system setting, often emphasizing the role of the hospital to implement better discharge planning processes. CCNC’s challenge was to rapidly adapt promising models and to “take to scale” best transitional care practices for the statewide Medicaid population, which would mean the creation of a transitional care system that could effectively connect more than 120 hospitals, more than 1,500 primary care medical homes, and countless specialist and ancillary service providers across the state.

Core Components of the CCNC Transitions Program

The CCNC approach to transitional care incorporates elements from the work of Eric Coleman, Mary Naylor, Guided Care, Project RED, Project BOOST, and others [4–8], while adding greater emphasis on closing the loop with the primary care medical home. Local processes are tailored to local circumstances, but each network’s approach includes the following core components.

**Face-to-face patient encounters.** All CCNC networks have embedded care managers in large-volume hospitals to interact with the hospital team (including hospitalists, nursing and discharge planning staff, pharmacy, and palliative care teams), to begin planning for discharge as early as possible during the hospital stay. Care managers visit patients at the bedside when possible, to begin engagement with the patient and the family and to ensure that discharge instructions and medications are available. Patients at high risk for a failed transition because of medical complexity, frailty, or social circumstances receive a home visit within 3 days of discharge. Additional visits with the patient and the family—in the home, in the community, or in conjunction with a primary care visit—are often needed to facilitate optimal care management.

**Timely outpatient follow-up.** Care managers ensure that patients have a follow-up appointment with the primary care provider (PCP) medical home and/or specialist quickly after discharge, they assess for potential barriers to the patient’s ability to attend the appointment, and they assist with
to occur after the first month following hospitalization. Certainly, urgent problems and discrepancies such as mistranslated insulin doses or grossly duplicative anticoagulants need immediate resolution upon discharge, but non-urgent problems and discrepancies such as failure of hospital staff to continue a statin, patient non-adherence to a beta-blocker, or lack of a well-instructed and coordinated titration of an anti-depressant are also key barriers to improved patient outcomes that go beyond the 30 day period following discharge. The latter problems are best addressed by a system of transitional care that places emphasis on longitudinal patient outcomes and involves multi-provider, multi-setting coordination with particular emphasis on patient self-management of medications. In short, a series of well-coordinated dismounts.

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Reference

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Address correspondence to Dr. Troy Trygstad, Network Pharmacist Program and Pharmacy Projects, NC Community Care Networks, 2300 Rexwoods Dr, Ste 200, Raleigh, NC 27607 (troy@t2email.com). N C Med J. 2012;73(1):35-36. ©2012 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2012/73107.
tion includes not only what to watch for, but specifically what to do about it, including whom to call and what steps to take to prevent an adverse outcome or a return to the hospital. Care managers use motivational interviewing techniques, teach-back, and other evidence-based health coaching strategies to optimize outcomes.

**CCNC self-management notebook.** Patients are provided with a personalized CCNC self-management notebook to use as a personal health record, educational resource, and tracking system for disease self-management, such as the recording of daily weight for heart failure or glucose monitoring for diabetes. The notebook also serves as a communication tool to enhance continuity of care as the patient interacts with the PCP, specialty providers, and other health care services.

**Data support and information exchange.** Each CCNC network has an information-sharing relationship with virtually all hospitals that serve Medicaid patients in the region. Locally this may include CCNC care managers having direct access to the hospital medical record, as a fully incorporated member of the hospital care team, or it may consist of no more than a faxed census of Medicaid inpatients to the network office for manual review. Through a joint initiative of the North Carolina Department of Health and Human Services, CCNC, and the North Carolina Hospital Association—which was launched in the summer of 2010—hospitals have been encouraged to facilitate CCNC transitional care efforts through the electronic exchange of real-time hospital admission, discharge, and transfer data for Medicaid recipients. By centrally receiving electronic notification of a patient’s admission status, diagnosis, and provider information, the CCNC Informatics Center can more efficiently sort the information and alert the appropriate transitional care management team and PCP about the patient’s admission. Historical claims data are used to further risk-stratify the Medicaid population. Risk indicators generated through historical claims review are linked to the real-time hospital alerts, to automate part of the screening process and to aid in triaging limited care management resources for the highest-risk patients. At the time of this writing, 51 hospitals were participating in twice-daily data exchange with the CCNC Informatics Center, representing 55% of Medicaid discharges statewide (Table 1, available only online), with additional hospital connections underway.

**Cultivation of cross-agency partnerships.** A core premise of the CCNC approach to care management has been the cultivation of strong relationships at the state and local levels among primary care and specialty professional groups, hospitals, the Division of Public Health and local health departments, the Division of Social Services, the Division of Aging, home health and hospices, palliative care teams, local management entities and mental health providers, the area health education centers, and community- and faith-based organizations. These relationships allow for cross-organizational team approaches to transitional care for certain populations, such as pregnant women and infants, patients receiving community mental health services, and seniors eligible for area aging services. The overarching goal of these partnerships is to better meet patient needs without duplicating services and to ensure the delivery of high-quality, cost-effective care across settings.

**Flexibility to innovate and leverage local partnerships.** Several innovative models that leverage hospital- or practice-based resources toward common goals are emerging from local collaborations. In one example, the CCNC care manager meets regularly with the hospitalist physician group and multidisciplinary hospital team to develop a coordinated longitudinal care plan for patients with frequent admissions. Hospital-employed pharmacists or pharmacy students in several hospitals now use CCNC information systems to access medication fill history and preferred drug information, to decrease medication reconciliation errors and to establish accurate medication instructions at the time of hospital discharge. A number of community clinics have reserved appointment availability or provided funding or space for embedded care management staff, to assure that CCNC patients can be assessed within a week of hospital discharge. Several PCPs are working with their networks to pilot novel home visit models for high-risk patients who reside in assisted living facilities or who cluster in low-income residential complexes. CCNC encourages local flexibility in the allocation of transitional care resources to foster such collaborations, to develop and test innovations, and to spread best practices.

### Three-Year Experience: Statewide Rollout

CCNC’s presence was well-established in all 100 North Carolina Department of Health and Human Services, the Division of Social Services, the Division of Public Health and local health departments, the Division of Aging, home health and hospices, palliative care teams, local management entities and mental health providers, the area health education centers, and community- and faith-based organizations. These relationships allow for cross-organizational team approaches to transitional care for certain populations, such as pregnant women and infants, patients receiving community mental health services, and seniors eligible for area aging services. The overarching goal of these partnerships is to better meet patient needs without duplicating services and to ensure the delivery of high-quality, cost-effective care across settings.

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### Table 1.

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<th>Hospitals Contributing Live Admission, Discharge, and Transfer Data to Support Community Care of North Carolina Transitional Care Coordination for Medicaid Recipients</th>
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Note. The percentage of cumulative Medicaid discharges is based on hospital discharges for North Carolina Medicaid recipients, calendar year 2010, as observed in Medicaid paid claims.

### Figure 1.

**Rapid Scale of Care Management Interventions During 3 Years: Count of Home Visits and Medication Reviews, by Quarter**

This figure is available in its entirety in the online edition of the NCMJ.
The CCNC transitional care program reached its current staffing capacity by early 2011, but it continues to gain efficiencies through new partnerships and refined workflow processes. The impact of current transitional care efforts at full scale cannot be fully measured until more time has elapsed for claims data processing, but effects on time to rehospitalization are already discernable. With regard to hospital discharges during 2010, discharged individuals enrolled in a CCNC medical home were statistically significantly less likely to be readmitted to a hospital, compared with those not enrolled in a CCNC medical home, even when readmission rates were considered as far as 12 months after discharge (Figure 3). Compared with non-CCNC-enrolled individuals, our results suggest a 6% and a 4% absolute difference, or a 22% and an 8% relative reduction for the non-ABD (Wilcoxon-Gehan statistic = 57.10, P < .0001) and ABD groups (Wilcoxon-Gehan statistic = 33.76, P < .0001), respectively, during the year after discharge. This finding is consistent with the effects of transitional care reported elsewhere [4], and this effect is likely underestimated, since only a fraction of the discharged individuals eligible for care coordination actually received transitional care, because of limited resources. When these results are extrapolated, for every 100,000 admissions, CCNC will prevent more than 6000 additional admissions for the non-ABD group and more than 4000 additional admissions for the ABD group, up to a year after the initial admission.

More broadly, the transitional care program and other population management efforts are successfully bending...
the cost curve for North Carolina Medicaid recipients with complex care needs. Medicaid spending for ABD eligibility (nondual) beneficiaries enrolled in CCNC decreased by $122 per member, per month from state fiscal year 2009 (year ending June 2009) to state fiscal year 2011 (year ending June 2011), despite the enrollment of higher-risk patients into the CCNC program during that period.

Challenges Ahead

Not all Medicaid recipients have access to the benefits of care coordination through CCNC. Although 1.2 million of North Carolina’s 1.6 million Medicaid recipients are now enrolled in the CCNC program, those who are not enrolled contribute disproportionately to avoidable hospital use. During 2010, these unenrolled recipients represented 13% of the nondual Medicaid population but accounted for 48% of all potentially preventable readmissions. Extending CCNC benefits to all Medicaid recipients will be critical to achieving near-term quality and cost objectives, and doing so will require concerted outreach and enrollment efforts at the state and local levels, as well as federal approval of regulatory changes, in some cases.

Medicaid recipients with mental illness also experience a disproportionate share of avoidable hospitalizations and readmissions (Figure 4). Failed transitions are more common for patients with mental health comorbidity, regardless of the primary reason for hospitalization. For example, among CCNC-enrolled patients with diabetes, those with a mental health or substance abuse condition have twice the inpatient admission rate as those without a mental health or substance abuse condition. At present, behavioral health integration is a priority initiative across all CCNC networks, with the aim of establishing better local systems for assuring both communication between physical and mental health care providers and a coordinated plan of care across service agencies and settings of care.

More than 700 Medicaid recipients are discharged from North Carolina hospitals every day, and approximately half of those discharged individuals might be considered candidates for potentially preventable readmissions. Given the volume of need and the limited resource capacity, a third challenge is to continue to refine our risk stratification methods and transitional care management processes, to achieve greater efficiencies. With the promise of greater statewide capacity for electronic exchange of health information over time, opportunities for alerting outpatient providers and the community care team about specific patient risks and care needs will become even more robust.

Finally, the promise of better patient experiences, better outcomes, and lower costs through collaborative approaches to transitional care will never be fully realized without a truly population-wide approach to systems change. Ultimately, provider organizations—whether hospitals or primary care medical homes—cannot effectively implement process changes differentially on the basis of payment source of individual patients. Routinization of systematic improvements in transitional care processes, spanning multiple provider organizations and settings of care, will require support from payers beyond Medicaid for maximum impact and sus-

![FIGURE 3. Time From Hospital Discharge to Next Hospital Admission](image)

Note. The figure includes data from 52,474 unique nondual Medicaid enrollees who were discharged from a hospital during calendar year 2010 (sample sizes: nonenrolled/non-aged, blind, and disabled [ABD], 4351; enrolled/non-ABD, 22,801; nonenrolled/ABD, 759; enrolled/ABD, 17,731). It excludes admissions and discharges related to obstetrics, newborns, malignancies, burns and trauma; it also excludes same-day transfers. All individuals were enrolled in Medicaid as of December 2010. Individuals enrolled in Community Care of North Carolina (CCNC) were statistically significantly less likely to be readmitted to the hospital during the year after a discharge, compared with those who were not enrolled in CCNC (ABD group: Wilcoxon-Gehan test = 33.76, P < .0001; non-ABD group: Wilcoxon-Gehan test = 57.10, P < .0001). At 12 months after discharge, 21.8% of the non-ABD individuals enrolled in CCNC were readmitted to the hospital, compared with 27.9% of the non-ABD individuals not enrolled in CCNC. Among the ABD group, 49.0% of those enrolled in CCNC were readmitted, compared with 53.2% of those not enrolled in CCNC.

![FIGURE 4. Potentially Preventable Admissions (PPAs) and Potentially Preventable Readmissions (PPRs) per Thousand Medicaid Recipients per Year (PKPY), by Community Care of North Carolina (CCNC) Enrollment and Presence of a Mental Health Condition, State Fiscal Year 2010](image)
tainability. The transition from hospital to home is a dangerous passage for many patients, and it is a prime opportunity for costly and adverse events. It is a problem that cannot be solved by individuals or organizations working in isolation; rather, it can be solved only through accountability at the community level. During the course of 3 years, CCNC has deployed a care coordination infrastructure that assures safer transitions for Medicaid recipients throughout the state, to the benefit of more than 4000 patients and families every month, and to the mutual benefit of hospitals, taxpayers, and primary care practices. NCMJ

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References


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