TRANSFORMING HEALTHCARE

Planning and Designing the Care Transitions Innovation (C-Traln) for Uninsured and Medicaid Patients

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BACKGROUND: Uninsured and Medicaid patients are particularly vulnerable as they transition from hospital to home. Transitional care improvement programs require time and capital, incentives for which may be unclear for those lacking a third-party payor. This article describes our experience developing a hospital-funded transitional care program for uninsured and Medicaid patients.

METHODS: We performed an inpatient needs assessment, convened multi-stakeholder work groups, and engaged institutional change-agents to inform program development and a business case.

RESULTS: We mapped needs to specific program elements, including a transitional care nurse, pharmacy

consult and provision of medications for uninsured patients, medical home linkages including community payment for medical homes, and monthly quality improvement meetings. A business case was informed by local needs and utilization data, and compelled the hospital to invest in up-front resources for this population.

DISCUSSION: We are studying our program's impact on 30-day readmission and emergency department rates through a clustered, randomized controlled trial. Lessons from our experience may be useful to others aiming to improve care for socioeconomically disadvantaged patients. *Journal of Hospital Medicine* 2012;7:524–529. © 2012 Society of Hospital Medicine

Hospital readmissions are common and costly, and represent a significant burden to the healthcare system. The challenges of postdischarge medication uncertainty, lack of self-management support, and lack of timely access to health professionals¹ are compounded in uninsured and Medicaid individuals by limited access to medications and primary care, financial strain, insecure housing, and limited social support.²

Our hospital cares for a large number of uninsured and low-income publicly insured patients. The Portland area safety-net, which consists of a network of 14 federally qualified health centers and free clinics, has limited capacity for uncompensated care. Uninsured patients—and to a lesser degree, Medicaid patients—have difficulty establishing primary care. Prior to the implementation of our program, uninsured and Medicaid patients without a usual source of care were given a list of safety-net clinics at discharge, but frequently could not access appointments or navigate the complex system. There were no well-developed partnerships between hospital and outpatient clinics for uninsured or Medicaid patients. The hospital lacked a systematic approach to securing postdi-

scharge follow-up and peridischarge patient education, and uninsured patients were financially responsible for most medications upon discharge. The costs of uncompensated or undercompensated potentially preventable readmissions for these patients, along with the recognition of gaps in quality, ultimately provided the rationale for a medical center-funded transitional care intervention for uninsured and low-income publicly insured patients.

Several transitional care improvement programs have shown effectiveness in reducing hospital readmissions, 1,3-5 but most have been conducted in settings where patients have secure access to outpatient care, and none have focused specifically on uninsured or Medicaid patients. Moreover, the development of these programs requires time and capital. Transitional care programs that have published results, to date, have been funded through government or private foundation grants 1,3-5; however, broader implementation of transitional care innovations will require financial and intellectual engagement of healthcare institutions themselves.

This report describes development of the Care Transitions Innovation (C-TraIn), a multicomponent transitional care intervention for uninsured and low-income publicly insured adults at a large, urban academic medical center, Oregon Health & Science University (OHSU). Because institutional funding and engagement is critical to the sustainability and scalability of similar programs, we also describe our process for gaining institutional support. Our hypothesis is that C-TraIn can reduce readmissions and emergency department (ED) use at 30 days after hospital discharge, compared with usual care.

Additional Supporting Information may be found in the online version of this article.

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Time	Key Step	How Step Was Achieved	Take Home Points
July 2008–July 2009	1. Identified key stakeholders	Considered varied stakeholders impacted by transitional care gaps for uninsured and Medicaid patients	Casting a wide net early in the process promoted high level of engagement and allowed self-identification of some stakeholders
	Framed problems and opportunities; exposed costs of existing system shortcomings	Educational conference (that we called a Health Systems M&M) fostered a blame-free environment to explore varied perspectives Discussion of exposed drivers and costs of misaligned incentives; highlighted inroads to developing a business case for change	Individual patient story made policy issue more accessible to a wide range of stakeholders
Oct 2008–June 2009	3. Identified administrative allies and leaders with high bridging capital	Follow-up with administrator after Health System M&M allowed further identification of key administrative stakeholders Ongoing meetings— over 9 mo—to advocate for change, explore support for program development	Administrator insight highlighted institutional priorities and strategic plans Key ally within administration facilitated conversation with executive leadership whose support was a critical for program success
July 2009–June 2010	Framed processes locally with continued involvement from multiple stakeholders	Performed multicomponent needs assessment	Patient assessment included inpatients for ease of survey administration Utilized efforts of student volunteers for low-budget option Existing administrative support aided patient tracking Non-integrated health system and lack of claims data for uninsured limited usefulness of administrative utilization data
	Performed cost analysis to further support the business and quality case	Used OHSU data from needs assessment patient sample to estimate potential costs and savings of saved readmissions and avoided ED visits Qualitative patient interviews exposed opportunity for quality improvement	Business case highlighted existing costs to OHSU for uncompensated care; program presented a solution to realign incentives and better allocate existing hospital expenditures Highlighted pilot as an opportunity for institutional learning about transitional care improvements
	6. Use needs assessment to map intervention	Drew upon local and national health systems expertise through literature review and consultation with local and national program leaders Matched patient needs to specific elements of program design	OHSU's Care Transitions Innovation (C-Traln) includes elements aimed at improving access, patient education, care coordination, and systems integration (Table 2)

Abbreviations: ED, emergency department; M&M, morbidity and mortality; OHSU, Oregon Health & Science University.

METHODS

Engaging Institutional Leaders

Early and continued efforts to engage hospital administrators were integral to our ultimate success in gaining institutional funding and leadership support. Initially, we convened what we called a Health Systems Morbidity and Mortality conference, featuring an uninsured patient who told of his postdischarge experiences and costly, potentially preventable readmission. We invited a broad array of potential stakeholders, including representatives from hospital administration, hospital case managers and social workers, community safety-net providers, inpatient and outpatient physicians, residents, and medical students. Our patient was previously admitted to OHSU and diagnosed with pneumonia, hypothyroidism, sleep apnea, and depression. At discharge, he was given a list of low-cost clinics; however, he was unable to arrange follow-up, could not afford prescriptions, and felt overwhelmed trying to navigate a complex system. Consequently, he received no outpatient healthcare and his illnesses progressed. Unable to stay awake as a long-haul trucker, he lost his job and subsequently his housing, and was readmitted to the intensive care unit with severe hypercarbic respiratory failure, volume overload, and hypothyroidism. The \$130,000 charge for his 19-day rehospitalization was largely un-recuperated by the hospital. The case was a stark example of the patient-safety and financial

costs of fragmented care, and the conference was a nidus for further institutional engagement and program development, the key steps of which are described in Table 1.

Planning the Intervention

Findings from a patient needs assessment and community stakeholder meetings—described below—directly informed a multicomponent intervention that includes linkages and payment for medical homes for uninsured patients who lack access to outpatient care, a transitional care nurse whose care bridges inpatient and outpatient settings, inpatient pharmacy consultation, and provision of 30 days of medications at hospital discharge for uninsured patients (Table 2).

Needs Assessment

We conducted a mixed-methods needs assessment of consecutive nonelderly adult inpatients (<65 years old) admitted to general medicine and cardiology, between July and October 2009, with no insurance, Medicaid, or Medicare-Medicaid. Five volunteer medical and pre-medical students surveyed 116 patients (see Supporting Information survey, Appendix 2, in the online version of this article). Forty patients reported prior admission within the last 6 months. With these participants, we conducted in-depth semi-structured interviews assessing self-perceived transitional care

TABLE 2. Key Program	Elements and Resources
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Program Element	Description	Resources per 200 Patients
Transitional care RN	Augments patient education and care coordination in the hospital until 30 days after discharge. Tasks include: • developing a personal health record with inpatients • completing a home visit within 72 hr of discharge to focus on medication reconciliation and patient self-management • low-risk patients receive 3 calls and no home visit (see Supporting Information, Appendix 1, in the online version of this article) • 2 subsequent phone calls to provide additional coaching, identify unmet needs, and close the loop on incomplete financial paperwork The nurse provides a warm handoff with clinic staff, assists in scheduling timely posthospital follow-up, and assures timely transfer of DC summaries. She coordinates posthospital care management with Medicaid case-workers when available.	1.0 FTE nurse salary*
Pharmacy	Consultation: Inpatient pharmacists reconcile and simplify medication regimens, educate patients, and assess adherence barriers. Prescription support: For uninsured patients, pharmacists guide MD prescribing towards medications available on the C-Traln value-based formulary, a low-cost formulary that reflects medications available through \$4 plans, a Medicaid formulary, and FQHC on-site pharmacies. Uninsured patients are given 30 days of bridging prescription medications at hospital discharge free of charge.	0.4 FTE inpatient pharmacist salary Estimated \$12/prescription; 6.5 prescriptions/patient [†]
Outpatient medical home and specialty care linkages	OHSU has partnered with outpatient clinics on a per-patient basis to support funding of primary care for uninsured patients who lack a usual source of care. Clinics also provide coordinated care for Medicaid patients without assigned primary care, and have committed to engaging in continuous quality improvement. Clinics include an academic general internal medicine practice, an FQHC specializing in addiction and care for the homeless, and an FQHC that serves a low-income rural population. Timely posthospital specialty care related to index admission diagnoses is coordinated through OHSU's outpatient specialty clinics.	Estimated 8 primary care visits/yr at \$205/visit (FQHC reimbursement rate) equates to \$1640/ patient/yr.
Monthly care coordination meetings	We convene a diverse team of community clinic champions, OHSU inpatient and outpatient pharmacy and nurse representatives, hospital administrative support, and a CareOregon representive. At each meeting, we review individual patient cases, seek feedback from diverse, and previously siloed, team members, and engage in ongoing quality improvement.	

Abbreviations: DC, discharge; FQHC, federally qualified health centers; FTE, full-time equivalent; OHSU, Oregon Health & Science University; RN, registered nurse. *We do not charge for home visits during pilot phase of implementation. † Based on our experience with the first 6 months of intervention.

barriers. Investigators drew preliminary themes from the interviews but delayed a scientifically rigorous qualitative analysis, given a compressed timeline in which to meet program development needs. Of the 116 patients surveyed, 22 had Medicare-Medicaid. Given that many of these patients discharged to skilled nursing facilities, we focused program development using data from the 94 uninsured and Medicaid patients (Table 3).

Finding 1: Thirty-three percent of uninsured and 11% of Medicaid patients lacked a usual source of care. This was highest among Portland-area residents (45%). Program element: We forged relationships with 3 outpatient clinics and developed a contractual relationship whereby OHSU pays for medical homes for uninsured patients lacking usual care. Finding 2: Patients were unclear as to how to self-manage care or who to contact with questions after hospitalization. Program element: Transitional care nurse provides intensive peridischarge education, performs home visits within 3 days of discharge, and serves as a point person for patients during the peridischarge period. Finding 3: Among uninsured patients, cost was the leading barrier to taking medications as prescribed and often led to self-rationing of medications without

provider input. Program element: We developed a low-cost, value-based formulary for uninsured patients that parallels partnering clinic formularies, \$4 plans, and medication assistance programs. After 30 days of program-funded medications, patients then get medications through these other sources. Inpatient pharmacists consult on all patients to reconcile medications, identify access and adherence gaps, provide patient education, and communicate across settings. Finding

TABLE 3. Needs Assessment Summary Findings (July 1-October 1, 2009)

	Uninsured (n = 43 patients)	$\begin{array}{c} \text{Medicaid} \\ \text{(n} = 51 \text{ patients)} \end{array}$
Lack usual source of care (%)	33.3	11.1*
Self-reported 6 mo rehospitalization (%)	60.0	48.6
Average no. Rx prior to hospitalization	4.4	13.8
Barriers to taking meds as prescribed (%)	42.9	21.6*
Cost of meds as leading barrier (%)	30.0	2.9*
Marginal housing (%)	40.5	32.4
Low health literacy (%)	41.5	41.7
Transportation barrier (%)	11.9	31.4*
Comorbid depression (%)	54.8	45.9
Income <30 K (%)	79.5	96.8

TABLE 4. Key Stakeholders for Program Development and Implementation

Clinical staff

Hospital medicine physician

General internal medicine physician

Hospital ward nurse staff

Pharmacy (inpatient, outpatient, medication assistance programs)

Care management/social work

Emergency medicine

Health system leadership

Hospital administrative leadership

Primary care clinic leadership

Safety-net clinic leadership

Specialty clinic leadership

Hospital business development and strategic planning

CareOregon (Medicaid managed care) leadership

Other 0

Patients 3 4 1

Health systems researchers

Clinical informatics

Hospital financials (billing, financial screening, admitting)

4: Comorbid depression was common. Program element: We sought partnerships with clinics with integrated mental health services. Finding 5: Over half of patients live in 3 counties surrounding Portland. Program element: We restricted our intervention to patients residing in local counties and included postdischarge home visits in our model. Partnering clinics match patient geographic distribution. Finding 6: Selfreported 6-month readmission (60%) rates exceeded rates estimated by hospital administrative data (18%), supporting qualitative findings that patients seek care at numerous hospitals. Program element: Given that utilization claims data are unavailable for the uninsured, we included phone follow-up surveys to assess self-reported utilization 30 days postdischarge. Finding 7: Using administrative data, we estimated that the hospital loses an average of \$11,000 per readmission per patient in direct, unremunerated costs. Indirect costs (such as costs of hospital staff) and opportunity costs (of potential revenue from an insured patient occupying the bed) were excluded, thus presenting a conservative estimate of cost savings. Program element: We used local cost data to support the business case and emphasize potential value of an up-front investment in transitional care.

Defining the Setting

We convened a series of 3 work group meetings with diverse internal and external stakeholders (Table 4) to further define an intervention in the context of local health system realities. Work groups shaped the program in several specific ways. First, community clinic leaders emphasized that limited specialty access is an important barrier when caring for recently hospitalized uninsured and Medicaid patients. They felt expanded postdischarge access to specialists would be important to increase their capacity for recently dis-

charged patients. Thus, we streamlined patients' post-hospital specialty access for conditions treated during hospitalization. Second, initially we considered linking with 1 clinic; however, health systems researchers and clinic providers cautioned us, suggesting that partnering with multiple clinics would make our work more broadly applicable. Finally, pharmacists and financial assistance staff revealed that financial assistance forms are often not completed during hospitalization because inpatients lack access to income documentation. This led us to incorporate help with financial paperwork into the postdischarge intervention.

Pilot Testing

We conducted pilot testing over 4 weeks, incorporating a Plan-Do-Study-Act approach. For example, our transitional care nurse initially used an intervention guide with a list of steps outlined; however, we quickly discovered that the multiple and varied needs of this patient population—including housing, transportation, and food—were overwhelming and pulled the nurse in many directions. In consultation with our quality improvement experts, we reframed the intervention guide as a checklist to be completed for each patient.

Pilot testing also underscored the importance of monthly meetings to promote shared learning and create a forum for communication and problem solving across settings. During these meetings, patient case discussions inform continuous quality improvement and promote energy-sustaining team-building. Information is then disseminated to each clinic site and arm of the intervention through a designated "champion" from each group. We also planned to meet monthly with the hospital executive director to balance service and research needs, and engage in rapid-cycle change throughout our 1-year demonstration project.

Funding the Program

We talked to others with experience implementing nurse-led transitional care interventions. Based on these discussions, we anticipated our nurse would be able to see 200 patients over the course of 1 year, and we developed our budget accordingly (Table 2). From our needs assessment, we knew 60% of patients reported at least 1 hospitalization in the 6 months prior. If we assumed that 60% (120) of the 200 patients randomized to our intervention would get readmitted, then a 20% reduction would lead to 24 avoided readmissions and translate into \$264,000 in savings for the health system. Even though the hospital would not reap all of these savings, as patients get admitted to other area hospitals, hospital administration acknowledged the value of setting the stage for community-wide solutions. Moreover, the benefit was felt to extend beyond financial savings to improved quality and institutional learning around transitional care.

PROGRAM EVALUATION

We are conducting a clustered, randomized controlled trial to evaluate C-TraIn's impact on quality, access, and high-cost utilization at 30 days after hospital discharge. Results are anticipated in mid-2012. We chose to perform an analysis clustered by admitting team, because communication between the C-TraIn nurse, physician team, and pharmacist consult services could introduce secular change effects that could impact the care received by other patients on a given team. There are 5 general medicine resident teams, 1 hospitalist service, and 1 cardiology service, and the physician personnel for each team changes from month to month. Because the cardiology and hospitalist services differ slightly from resident teams, we chose a randomized cross-over design such that intervention and control teams are redesignated every 3 months. To enhance internal validity, study personnel who enroll patients and administer baseline and 30-day surveys are blinded to intervention status. We are collecting data on prior utilization, usual source of care, outpatient access, insurance, patient activation,⁶ functional status,^{7,8} self-rated health,⁷ health literacy, care transitions education, alcohol and substance abuse, and social support. 10 Our primary outcome will be selfreported 30-day hospital readmission and ED use. We will also evaluate administrative claims data to identify 30-day OHSU readmission and ED utilization rates. We will assess whether improved access to medications, rates of outpatient follow-up and time to follow-up mediate any effect on primary outcomes. Secondary outcomes will include outpatient utilization, patient activation, self-rated health, and functional status.

Given limited experience with transitional care programs in socioeconomically disadvantaged patients, we are measuring acceptability and feasibility by tracking rates of those declining the intervention, and through semi-structured interviews at 30 days. We are monitoring fidelity to core elements of the program through chart and checklist reviews, and seeking provider feedback through in-person meetings with key implementers. To ensure possibility of broader adoption beyond OHSU, we are developing a toolkit that defines core program elements and can be adapted for use in various settings.

DISCUSSION

Using a process of broad stakeholder engagement, exposure of financial incentives, and data-driven understanding of institutional and population needs, we built consensus and gained institutional financial commitment for implementation of a multicomponent transitional care program for uninsured and Medicaid patients. Our experience is relevant to other hospital systems, and may have particular relevance to academic medical centers, whose tripartite mission of clinical care, research, and education make them a natural place for healthcare reform.¹¹

Several key lessons from our experience may be widely applicable. First, key administrative allies helped us understand institutional priorities and identify key institutional change-agents. Though initial attempts to gain support were met cautiously, persistent advocacy, development of a strong business case, and support from several administrative allies compelled further leadership support. Second, unlike traditional grant funding cycles, hospital budgets operate in real-time rapid-change cycles, necessitating rapid data collection, analysis, and program design. Such demands could potentially threaten the viability of the program itself, or result in premature diffusion of novel practices into disparate populations. Communication with administrative leadership about the value of sound research design within the context of fasterpaced institutional needs was important and allowed time for data-driven program development and diffusion. Simultaneously, we recognized the need to move quickly, provide regular progress updates, and use existing institutional resources, such as volunteer students and business development office, when possible.

We found that cross-site hospital-community partnerships are an essential program element. Partnership occurs through a payment agreement and through active engagement in ongoing quality improvement, including clinic representation at monthly team meetings. Clinic partnerships have enabled multidisciplinary cross-site communication and relationships that facilitate innovation across routinely siloed elements of the system, allowing the team to anticipate and respond to patient problems before they lead to readmissions or poor outcomes. Our experience matches findings from recent program evaluations that found that care coordination attempts are unsuccessful without strong cross-site linkages. 12 These linkages are especially challenging and needed for uninsured and Medicaid patients, given their traditional lack of access and the additional social and financial barriers that influence their care. 13

Limitations of our study include: implementation at a single, academic medical center; secular changes (which we mitigate against using randomized trial design); and potential for low power, if readmission rates are lower than anticipated from needs assessment data. Additionally, the need for a willing and invested program champion to coordinate an often messy, complex intervention may limit generalizability.

While transitional care programs continue to proliferate in response to increasingly recognized gaps in a fragmented care system, ^{14,15} few interventions specifically address the needs of socioeconomically disadvantaged patients. The major study that did⁵ was conducted in Massachusetts, where many patients received care through a state Free Care program and robust local safety-net. Others have largely been tested in integrated care settings, ¹ and target patients who are part of managed care programs. ^{1,4,16}

To our knowledge, there are no well-described programs that include explicit purchasing of outpatient medical homes for uninsured patients who would not otherwise have access to care. Our experience shifts the paradigm of the role of hospitals in care for the uninsured and underinsured: instead of a reactive, uncoordinated role, we assert that the hospital's strategic up-front allocation of resources has a sound business, quality, and ethical foundation. This is especially important, given a new era of payment reform and coordinated care organizations. There is an opportunity to both improve quality for the uninsured and Medicaid patients, control costs, and gain valuable experience that can inform transitional care improvements for broader patient populations. If our study is successful in reducing readmissions, there may be important implications as to how to redefine the hospital's role in outpatient access to care linkages, especially for uninsured and Medicaid patients.

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