PCMHs, ACOs, and Medication Management: Lessons Learned from Early Research Partnerships

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The Patient Protection and Affordable Care Act has greatly accelerated the formation of team-based models of care delivery, primarily accountable care organizations (ACOs) and patient-centered medical homes (PCMHs).[1] Many have written about the need to incorporate medication management services into these systems in order to improve care and reduce total health care costs.[2-4] Two primary ways of doing so have emerged: (1) an embedded model, whereby pharmacists are employed directly by a physician practice, or (2) a "virtual care team" model, whereby a PCMH or ACO develops an arrangement with external pharmacists in community settings to provide coordinated services.[5]

While many research projects are testing embedded models, few examples of virtual care team approaches have been reported to date.[6] Virtual care teams leverage the accessibility of community pharmacies and the benefits of longitudinal face-to-face interventions but lead to unique challenges related to developing partnerships, sharing data, and coordinating care. The National Association of Chain Drug Stores (NACDS) Foundation is supporting 3 research projects that launched in early 2013 and are among the first virtual care team models to reach the implementation stage.[7] The purpose of this commentary is to describe lessons learned from the research teams' early experiences to inform future research and practice in this domain.

Overview of Research Teams

Virtual care team research is by its nature a collaborative process. Diverse partners are necessary to provide coordinated services, share information, and evaluate the success of the services provided. Table 1 summarizes the partners involved in the 3 virtual care team projects funded by the NACDS Foundation. Each project is led by an academic research institution and includes a partnership between a PCMH or ACO and community pharmacies. While this basic structure is common across all 3 projects, the designs differ significantly.

The North Dakota project involves a statewide PCMH network (MediQHome) supported by a regional pharmacy chain with 27 participating pharmacy locations providing medication management services (medication therapy management [MTM], medication synchronization, and adherence). MediQHome was developed by Blue Cross Blue Shield of North Dakota and focuses primarily on chronic disease states (e.g., diabetes or hypertension) by providing timely medical information to primary care providers using MDinsight, a technology network. The project goal is to integrate the community pharmacist services into the MediQHome and then to assess patient outcomes.

The Iowa project involves a Medicare Pioneer ACO and a consortium of more than 20 chain and independent pharmacies in the 8-county service region; these pharmacies, while diverse, are all providing common medication management services to the ACO patients.

Nebraska's project involves an individual chain community pharmacy working closely with a PCMH in a small community in a model that will eventually be expanded to other communities throughout the state. Each of the projects will span 2 years and will track the clinical, economic, and humanistic outcomes observed from the incorporation of virtually provided medication management services into the PCMHs and ACOs.

Early Lessons Learned

We focused on a limited set of key issues that have arisen as the 3 studies have progressed through planning and moved into implementing the virtual medication management services (see Table 2 for overview of project designs). These issues were identified during site visits and regular calls of the Foundation staff with the research teams. The specific issues include partnerships, alignment of services, data sharing, provider engagement, and patient engagement.

Partnerships

Given the diverse nature of the partners needed to carry out these projects, the academic researcher often plays the role of convener in addition to evaluator. The presence of pre-existing relationships between partners (e.g., academic institutions, PCMH/ACO, health plans, community pharmacies) often facilitated the research proposal's development. These relationships tended to be the result of training and educational activities such as residencies, experiential rotations, and shared faculty positions with the partners. Creating these precursor relationships was reported as a major enabler to bring the right partners to the table for virtual care team projects.

Significant effort is required by the academic researcher not only to develop, but also to maintain relationships with partners and ensure that planned milestones are met. The "real-world" nature of these 3 projects (which frequently precluded the use of traditional, randomized control trial

TABLE 1	Sample Research Architecture				
	Academic Institution	**PCMH/ACO**	**Pharmacies**	**Health Plan**	**Technology Vendor/ Enabler**	**Other**
Project 1: Iowa	University of Iowa	Trinity Pioneer ACO	Consortium of 25 pharmacies in ACO service area	N/A	OutcomesMTM	N/A
Project 2: Nebraska	University of Nebraska Medical Center	Kearney Clinic	Walgreen Co.	Blue Cross Blue Shield of Nebraska	Nebraska Health Information Initiative	N/A
Project 3: North Dakota	North Dakota State University	MediQHome Network	Thrifty White Pharmacy	Blue Cross Blue Shield of North Dakota	OutcomesMTM	Prime Therapeutics

ACO = accountable care organization; NA = not applicable; PCMH = patient-centered medical home.

methodologies) demands flexibility and creativity. Establishing the project teams typically involved members of the research team at the academic institution, as well as key people at the other participating organizations. Leaders from the ACO or PCMH should include a top administrator as well as representatives from various stakeholder groups within the organization, such as pharmacy, medical staff, and IT/data personnel. Involvement by top administrators allowed for the relevant group to make decisions and receive adequate support in a timely manner. Involving an interprofessional group of health care providers in the project design was valuable to ensuring successful implementation. In addition, it was vital to include team members from the participating community pharmacy organizations in order to address the practical significance of the many issues that needed to be discussed and decided. In planning their studies, the research teams found it valuable to host weekly or bi-weekly conference calls with all partners leading up to the launch. Once the medication management program was operating, it was determined that team meetings could be held less frequently. However, because "natural experiments" of the types discussed here frequently generate unexpected consequences (whether barriers to data collection or evolution in patient care and quality assurance processes), it was important to ensure that meetings continue to occur on a regular (but less frequent) basis.

Alignment of Services

Active partner engagement from the outset has been a critical driver of project implementation. Research teams that engage the PCMH or ACO to identify their highest priority needs, and align the pharmacy services to meet those needs, have reported success. The needs of PCMHs and ACOs are diverse. The Nebraska PCMH reported their biggest needs as comprehensive medication reviews paired with adherence information reported back to the physicians. The Iowa ACO has interest in managing medications of high-risk patients being discharged from its primary medical center. This has made medication reconciliation a part of the medication management program, which may be a new service for community pharmacists. The North Dakota PCMH seeks to integrate medication management services, including comprehensive medication review, medication synchronization, and medication adher-

ence. Understanding the unique challenges that ACOs and PCMHs have in managing their patient populations can help position pharmacies to provide valued services.

In addition, it is important to have an awareness and understanding of ongoing programs across all partners. For example, if partnering with a health system that has a pre-existing hospital discharge program, the medication management services should augment, not duplicate, what is already being done. To be integrated properly, services should not unnecessarily disrupt the workflow of the ACO/PCMH or pharmacy. Having an appreciation for how to coordinate processes leads to greater buy-in from partners and potential sustainability. For academic researchers, this also requires an understanding of partner motivations beyond improving patient outcomes for a given disease state. By design, ACOs and PCMHs accrue financial gains from achieving certain process and outcome targets. Projects that align those incentives with the financial incentives of the community pharmacy partner are most likely to be supported in both organizations. In the North Dakota project, for example, pharmacists are reimbursed using the established payment model OutcomesMTM for cognitive services, including comprehensive medication reviews and other interventions such as medication adherence. The community pharmacy partner also has developed an incentivized program for community pharmacies to participate in medication synchronization. The improved clinical outcomes associated with these interventions align with the goals of the PCMH, and the pharmacists are equally incentivized both clinically and financially. Similarly, pharmacists in the Iowa project will be paid the usual MTM payments used by OutcomesMTM. Concomitantly, corporate partners must recognize that academic researchers have a professional obligation to evaluate the project using rigorous scientific methods in an objective fashion and cannot guarantee specific outcomes before the research takes place.

Data Sharing

Pharmacists need access to patient medical records to match diagnostic information with prescribing activities. Pharmacists working in integrated health system settings are more likely to gain access to these records. Unfortunately, pharmacists working in community settings, who are the most accessible to patients, have access to virtually none of this information.

TABLE 2	Detailed Project Overview						
	Size of Study Population (Approximate Number of Patients)	Research Design	Disease Focus of the PCMH/ACO	Disease Focus of Study	Clinical Measures Evaluated	Economic Outcomes Measured	Humanistic Outcomes Measured
Iowa	10,000	Quasi-experimental nonequivalent groups	N/A	High risk based on medication use and hospital discharge	30-day readmission rate, all-cause hospitalization rate, and ER visits related to adverse drug events	Annual per capita cost of care	None
Nebraska	Phase 1: 800 Phase 2: up to 5,000	Prospective randomized control	N/A	Hypertension and diabetes	Blood pressure, blood glucose, hospitalization rate, and ER visits	Overall health care utilization and costs	Patient and provider satisfaction
North Dakota	up to 8,000	Quasi-experimental design with a treatment group and control group	Chronic diseases including asthma, hypertension, and diabetes	Chronic diseases including hypertension and diabetes	Blood pressure, HbA1c, LDL, HDL, and PDC	Drug costs, medical costs, and total health costs	Patient satisfaction

ACO = accountable care organization; ER = emergency room; HbA1c = hemoglobin A1c; HDL = high-density lipoprotein; LDL = low-density lipoprotein; NA = not applicable; PCMH = patient-centered medical home; PDC = proportion of days covered.

In addition, patients may have their prescriptions filled at several different pharmacies, which prevents pharmacists from helping patients complete their drug therapies as intended. More complete patient records can be created by incorporating claims data with clinical data in the PCMH or ACO and distributing this information to the appropriate providers, which includes community pharmacists.

Accordingly, this integrated process requires planning, commitment, and communication among partners to make these models work. Hence, another critical factor of success is having a clear plan to assimilate data across the spectrum of health care providers from the outset. The diverse partnerships involved in this type of research resulted in a number of disparate data sources with needed patient information. To facilitate service delivery (e.g., identifying qualified patients and sharing recommendations or requests) from all health care providers, as well as for the evaluation of outcomes, these data sources should be integrated. In some cases, 2 parties may have access to the same data (usually patient claims data), which necessitates a discussion about which party is in the best position to provide the data. In our experience, research teams that discussed strategies to share patient data early on in the project development process overcome these barriers more efficiently and effectively.

The specific data sharing challenges cited by participating research teams primarily centered on 2 fronts: (1) the need for pharmacists' ability to view medical and pharmacy records and (2) an enhanced communication channel between the community pharmacists and the PCMH or ACO. Success on the former depends on the current capabilities of partners. In the Nebraska research project, the pharmacy was provided full access to the PCMH's registry, and pharmacists are now able to view lab values and other critical pieces of information that can improve patient care. Pharmacists can act on this information and send a secure e-mail with recommendations to a dedicated clinical care coordinator within the PCMH. In other research projects, full integration could not be achieved from the outset, but steps in the right direction were possible. For example, the Iowa research team has a focus on improving handoffs to community pharmacies following a hospital discharge. While the goal is to enable the real-time pharmacist access to discharge summaries for the targeted patient population, this capability did not exist at project implementation. A solution was that discharge summaries were made available to community pharmacists by calling the pharmacy staff at the medical center. As pharmacists schedule appointments with targeted patients, requested discharge summaries are delivered via fax prior to patients' appointments.

Another example of the challenges of data sharing was seen in the North Dakota project. Here, direct access to the PCMH records is not currently possible; however, the development of a medication suite with access for community pharmacists is a long-term goal. Accordingly, the partners, along with the physician advisory board, have made this a priority, and this is expected to be achieved during the time period of the project. In the interim, PCMH record access is achieved through access to claims information provided to the MTM vendor. The MTM vendor integrates the medical and pharmacy information into its system and sends out interventions to the community pharmacy for a patient with a chronic disease state based on claims analysis. Then, the community pharmacist assumes the responsibility to act on the intervention, provides the services, and bills accordingly for the services.

TABLE 3	Summary Recommendations for Successful Research Collaboration

- Early, frequent, and thorough communication among research partners (or potential partners) appears to be the key to a successful long-term project.
- Data sharing is often one of the largest barriers to overcome, so thoroughly evaluate what data are needed and how they can be shared early on, involving key decision makers from all stakeholders to ensure successful execution.
- Involve front-line health care practitioners from multiple disciplines in the design of the project for optimal engagement. Do not overlook input from staff and managers.
- Leverage pharmacists' accessibility, patient relationships, and drug expertise for meaningful interventions.
- Pursue innovative research that identifies new opportunity for improved medication management in integrated care delivery models.
- To fit within the dynamic environment facing partners, projects should be shorter term (e.g., no more than 2 years).
- Strategies to engage patients in their own medication management are critical.

Provider Engagement

Researchers noted that the willingness of practicing pharmacists to take on new roles within PCMHs and ACOs has been very enthusiastic. To ensure consistency of the delivery of research interventions, education was provided to participating pharmacists, including refresher courses on clinical guidelines for targeted disease states, both in-person and via online modules. Researchers also provided information on the research project goals and objectives to increase buy-in and understanding. While virtual care teams are necessarily interprofessional, some research teams also enhanced intraprofessional collaboration, linking pharmacists in community and hospital settings to assist with handoffs following hospitalizations and improve continuity of care.

Education has also been provided to physicians at the participating PCMHs and ACOs to ensure that they are familiar with the goals of the project and to raise awareness of their ability to refer patients for medication management services, among other goals. Identifying physician champions and the use of physician advisory committees have been useful strategies for generating support and buy-in from the physician community. In addition, 1 project team included a clinic manager, who has been able to contribute useful insights about operational issues within the clinics (e.g., responding to faxes from community pharmacists in a timely manner).

The physician advisory committee issues exhibit both commonalities and differences across the 3 projects. In a general sense, having key physicians participate in the advisory board provides advocacy for the project. The board also helps to identify gaps that need to be addressed, and board members will participate in the publication process. The specific types of advocacy needed, and the specific gaps in the patient care and assessment processes will necessarily vary depending on the scope of the project. As an example, in the North Dakota project, the partners identified the current inability of pharmacists to gain access to medical information (including laboratory data) as well as other data concerning chronic diseases as an area for improvement. Since the primary aim of this grant was to integrate medication management into the medical home with other providers, this became a major concern for

the partners. With input from physicians and pharmacists, the medication suite will provide a useful format for both groups of providers when it is implemented.

Patient Engagement

Medication management services focus on improving adherence and other patient medication issues. These issues are rooted in patient behavior change, and thus strategies to engage patients in their own medication management are critical. Patient demand for medication management services has been limited. Previous research has shown that a variety of issues can limit patients' use of medication management services, such as lack of familiarity with the service, limited outcome expectations from the service, patients' relationships with their pharmacists, and the support for medication management stated by the patients' physicians.[8-13] Some of these issues can be addressed by providing timely and understandable information to patients likely to receive medication management services. Also, the community pharmacists could be prepared to offer the services to interested patients.

Some of the research teams provided training to participating pharmacists on motivational interviewing to help support patient behavior change. Research teams also focused on enhancing patient engagement through a mix of physician referrals, "warm handoffs" to the community pharmacists, and direct outreach by the local pharmacists. In 1 case, a patient targeted to receive medication management will receive information about the program through a telephone call or a mailed letter. Further, this information is supplemented by information on the organization's website.

Another intervention being used by the North Dakota research team focuses on reducing nonadherence. Community pharmacists are working with the PCMH to identify causes of nonadherence and to coordinate services to change the behavior and improve the patient outcomes. The Appointment-Based Model (ABM)—a process by which patients schedule a time to meet with their community pharmacists on a monthly basis to pick up all of their refills and have a mini-MTM session to improve medication management[14]—was established in this project to improve patient medication adherence by synchronizing

all of a patient's chronic fill medications to come due on a single day of the month. By simplifying the refill process, the researchers hypothesized that patients will be more likely to take their medications as prescribed.

■ Conclusions

PCMHs and ACOs are expanding and evolving at a rapid pace; thus, there is significant opportunity for innovation, especially in chronic disease management. For most chronic conditions, the primary intervention is based on drug therapy. Many patients face barriers that limit access to primary care providers in the PCMH for help with their medication regimens. Pharmacist-led medication management holds great promise to improve care and control health care costs. More specifically, pharmacists in community settings are well positioned to provide complementary and synergistic services virtually to PCMHs and ACOs. Including pharmacists in the PCMH and empowering them to perform comprehensive medication reviews, resolve medication-related problems, optimize adherence interventions, and recommend cost-effective therapies will enhance patient care in a cost-effective manner. More research is needed in this area, and the early lessons summarized here may prove useful to future research teams as they embark on this critical path (Table 3).

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