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CENTERING ON THE PATIENT:

HOW ELECTRONIC HEALTH RECORDS ENABLE CARE COORDINATION

Centering on the Patient:

How Electronic Health Records Enable Care Coordination

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About the eHealth Initiative

Since 2001, the eHealth Initiative (eHI) has represented the multiple and diverse stakeholders who are improving healthcare through the use of Health Information Technology (HIT). The eHealth Initiative's mission is to drive improvement in the quality, safety, and efficiency of healthcare through information and technology. eHI is the only national organization that represents all of the stakeholders in the healthcare industry.

eHI counts over 200 organizations amongst its members, including: clinicians, consumer and patient groups, employers and healthcare purchasers, health plans, health information technology (HIT) suppliers, hospitals and other providers, laboratories, pharmaceutical and medical device manufacturers, pharmacies, public health agencies, quality improvement organizations, standards groups, and state, regional and community-based organizations.

In 2005, eHI launched Connecting Communities, a rapidly growing coalition of leaders representing more than 250 state, regional and community-based initiatives focused on improving healthcare through health information exchange.

Working with its membership, eHI advocates for the use of health IT that is practical, sustainable and addresses stakeholder needs, particularly those of patients.

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EXECUTIVE SUMMARY

Electronic health records (EHRs) are considered an essential ingredient of care coordination by Medical Homes; however, detailed descriptions of how it actually happens in real life are rarely found. eHealth Initiative, working with sanofi-aventis and Health & Technology Vector (H&TV), recently concluded an exploratory project to understand how eHRs can be used to improve care coordination for complex patients. The project provided a multi-dimensional picture of this one element of transforming primary care to the medical home. It began with an operational definition of, and measures for, care coordination. Then, the Care Coordination project built and demonstrated two models for improving care coordination between medical homes and specialists.

NEED FOR BETTER CARE COORDINATION

The project has worked both to identify existing gaps in care coordination between medical homes and specialists and to build tools to help fill the gaps. The original literature review found little research documenting the experience of care coordination under real-world conditions, although the concept is integral to the patient-centered medical home. Many statistics point to the need for better care coordination in ambulatory care, specifically the rates of unnecessary hospitalizations, adverse drug events and re-admissions nationally.

Similarly, research and demonstrations on the process of transforming primary care to the medical home model have just begun to focus on how the link between the medical home and specialists should work. Most evaluations have instead produced data on expanded access for patients, teamwork among clinicians and use of electronic tools for tracking and managing patient care. Other care-coordination research, as well as new measures from National Quality Forum (NQF), focus mainly on care transitions, especially from the hospital to the primary care physician.

Some integrated systems, such as Geisinger have produced research on care coordination, documenting reduced use of hospitals and ERs by embedding care coordinators with medical home practices. However, most care in the United States is not delivered through integrated systems, and most providers neither operate as medical homes nor employ care coordinators. Current reimbursement for primary care does not support either type of innovation.

National legislation has acknowledged the need for better coordination to improve care and lower costs, notably the HITECH (Health Information Technology for Economic and Clinical Health Act) incentives for providers to move to the meaningful use of electronic health records. The Patient Protection and Affordable Care Act (PPACA) creates incentives for providers to form accountable care organizations (ACOs) in which primary care physicians, specialists and hospitals agree to accept bundled payments for episodes of patient care. These incentives recognize the need to improve care coordination. The project was designed and supported by sanofi-aventis in the spirit of furthering patient-centered improvements in care coordination, while supporting integrated healthcare solutions for diabetic patients. The eHealth Initiative's role is to highlight the benefits

of using e-health to improve communications among health care providers and patients, and to improve health care.

This is the context in which the Care Coordination Project has worked.

OBJECTIVES

The project, fully titled the Care Coordination & Medical Homes: Bringing Primary Care Physicians, Patients, Families, and Specialists Together, provided expertise and support for medical homes to innovate with care coordination. The project began with the following objectives:

» To develop and test an operational prototype of care coordination in EHR-enabled (electronic health records) medical home primary care settings for patients with Type 2 diabetes and comorbidities.

» To enhance cross-provider communications, focusing on the PCP (primary care physician) –Cardiology interface

» To support improvements in care with electronic tools.

PARTNERS, ROLES AND PATIENTS

Five organizations comprised the working team for the Care Coordination Project, and assumed the following roles:

» eHealth Initiative (eHI) convened the organizations, managed the project and its funding, and developed the metrics used.

» Sanofi-aventis provided project funding and facilitation.

» Health & Technology Vector (H&TV) designed the interventions, collected data, and provided clinical direction throughout.

» The Taconic Independent Practice Association (Taconic IPA) and associated organizations provided one of the demonstration sites, in New York, and deployed the on-site Care Coordinator funded by the project.

» The Community Health Center, Inc. (CHC) in Connecticut provided the other demonstration sites and deployed the central Care Coordinator funded by the project.

Both of the demonstration sites worked with cardiologists to whom they regularly refer, to promote improved coordination for mutual patients. eHI convened a multi-stakeholder group of advisors to the project, including representatives from several national organizations: National Quality Forum (NQF), National Committee for Quality Assurance (NCQA), National Business Coalition on Health (NBCH), Disease Management Association of America (DMAA), American Academy of Family Physicians (AAFP) and one private and one public payer. Representatives of the organizations

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gave advice both before and after the six-month demonstration.

Sixty patients were identified from each site who had Type 2 diabetics with at least one cardiac comorbidity and a history of seeing a cardiologist as well as the medical home providers.

PLANNING

During the first six months of the project, eHI, sanofi-aventis, and H&TV worked together to enlist and engage the demonstration sites, plan the project and assess the baseline care coordination activities.

H&TV led the team's work to do the following:

» Chart detailed workflows of how care coordination works in each setting

» Agree upon which areas of the workflows the demonstration should attempt to improve

» Set up the basic substrate of care coordination: roles of the treatment team; content of plans of care including treatment goals, and communication methods among primary care, patient and cardiologist

» Develop a prototype Care Plan Summary (CPS) to include all care data for the patient, and the improved processes that the sites would use.

eHealth Initiative, in consultation with the team and the project's advisers, chose a list of detailed metrics both to guide the development of new workflows and tools and to measure results. More than 30 specific process metrics were covered: information communicated between medical home and cardiology; components of care planning within the medical home; and information given to patients.

DEMONSTRATION

The six-month demonstration phase extended from January 18 through July 16, 2010. The two sites deployed different models of care coordination that fit with their different practice styles, implementing the improvements and tools designed by the project team. Both practices are EHR-enabled and are either recognized or applying for NCQA PPC (Physician Practice Connections) -PCMH (Patient Centered Medical Home) recognition. A full time care coordinator at each site was funded by the project.

Taconic IPA member practice and the On-site Care Coordinator. At the Taconic IPA member practice, most patients are insured by Medicare or commercial insurance. Taconic IPA member practice's Care Coordinator initiated a model of embedded nurse managers modeled after the Geisinger experience and the Johns Hopkins Guided Care model, working on-site directly with patients. For the patients selected, the member practice referred to a large regional cardiology practice.

The Care Coordinator worked directly with patients and providers to do the following:

» With patients: care planning, coaching and goal setting, reconciling medications, updating their Care Plan Summaries (CPS) and giving them to the patients at every chronic- visit

» With medical home providers: Coordinating care within the office, obtaining provider approval of goals set for each patient and determining needs for each patient

» With cardiologists: Communicating patient information to the regional cardiology practice for co-managed patients (most patients in this group), through updated individual Care Plan Summaries and spreadsheets of changed medications or lab results suitable for import into the cardiology group's EHR.

Community Health Center and the Central Care Coordinator. The three clinics of the 12-site Community Health Center (CHC), a safety net provider with Medicaid and uninsured patients, had mature medical-home processes in place including practice teams. The Community Health Center's Central Care Coordinator implemented systematic changes to the use of the EHR and trained staff at the three clinics to use them. Those changes included:

» A new common referral form developed for the project and accepted by all cardiologists

» New drop-down boxes within the EHR that prompted providers to include additional relevant clinical information in referrals

» A version of the Care Plan Summary built within eClinical Works, the EHR

» A process for faxing a Care Plan Summary to the cardiologist three days in advance of a patient appointment.

Existing teams of physicians, nurses and other staff interacting directly with patients carried out the care planning tasks whereas the central care coordinator had oversight and coordination of all the sites activities . The Community Health Center referred to multiple cardiology practices for their three primary care sites.

The two sites contacted cardiologists beginning in the planning stage and throughout the demonstration stage. Individual cardiologists showed interest in the demonstration, but most declined to use the unified Care Plan Summary at this point. However, the cardiologists for both sites did continue to provide summaries of their findings and recommendations after each patient encounter.

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RESULTS

The project team collected data from patient records both at baseline and at the end of the demonstration phase. Analysis of the data shows the following:

» Community Health Center had a mature medical-home processes in place and relatively high scores on many of the metrics at baseline, including notably, medication reconciliation at each visit. In spite of this high level of functioning they were able to improve their processes for the three clinics, including adopting a common referral form for cardiology and raising the percent of referrals that included specific requests from the cardiologists. Their changes most notably produced increases in the rates of information given to the patient at each visit, care goals set, goals signed off by providers and patients, and summaries received by PCPs from cardiologists.

» The Taconic IPA member practice, starting from a different set of baseline scores on systematic processes, was also able to make improvements in setting care goals, reconciling medications, having patient and provider sign-off on goals and giving information to the patient. The percent of patients whose cardiologist summaries were received by the PCP also improved.

Overall, the project demonstrated improvements in six months in care planning, content of manual communications, intra-office coordination, more advanced use of EHRs, patient coaching, substantive referral requests to specialists, enlarged nursing role and information for patients. The project also identified areas where the eHR was unable to support tasks considered essential to inter-practice care coordination, most notably electronic communications between PCPs and cardiologists. Gaps in the eHR functionalities needed to support care coordination resulted in a "wish list" for future enhancements.

Where the project did not substantially move the needle was in cardiologists' use of new tools and electronic communication between practices. The latter process was not ready: the communities did not have the tools for electronic data exchange, and the providers did not have compatible EHR systems. Anecdotally, the project did demonstrate how such information might improve care, and some cardiologists stated an interest in expanded clinical data exchange.

LESSONS LEARNED

The team took the following lessons from this first six-month demonstration:

» Care coordination represents a wide range of tasks including population management, care management, transitions coordination, and intensive nursing management of complex patients. A comprehensive definition of care coordination starts with building the foundation of basic care planning for patients, which was in the providers' minds but was not explicit.

» High-touch care coordination can engage the patient and can work, even in the absence of high-tech electronic exchange.

» EHRs make care coordination possible, within the medical home and produce more systematic information.

» Additional eHR functionalities are needed to further support Medical Homes care coordination tasks

» Inter-office communication still is person-to-person, health information exchange is not yet ready, and engaging the patients is crucial so that they can be the conduit between providers.

» Success depends on incorporating care coordination into the office workflow, integrating a new process into a busy practice and gaining buy-in from both primary care providers and specialists.

» A business model with economic incentives that support visit volume rather than coordination of care can hinder care coordination efforts.

» Care coordination is essentially a nursing function rather than a primary care provider (MD or NP) function. Other care coordination tasks, such as panel management, self-management goal settings, and referral tracking can be done by allied health care personnel acting as primary care team members.

» Stratification of the most complex patients into nursing care coordination may make it financially sustainable by providing reductions in total patient costs and therefore attracting reimbursement from payers.

FUTURE PLANS

Both of the Connecticut and New York sites are now using the findings and experience from the project to expand care coordination in ways that work for their settings. The project team (eHI, sanofi-aventis, and H&TV) is working on a Phase II for the Care Coordination Project. Phase II is a proof of concept using three sites, measuring outcomes of care coordination and testing electronic data transmission; it adds emphasis on patient self-management and care coordination aspects. The project team plans to incorporate the results of the Care Coordination Project, along with results of a concurrent project that has developed metaguidelines for treating patients with diabetes and cardiac comorbidities into the phase II project plan.

I | INTRODUCTION

A.) CROSS-SPECIALTY CARE COORDINATION:
THE GAP BETWEEN THEORY AND PRACTICE

Adult patients with multiple conditions often rely on a primary care provider (PCP) as their main doctor. For multi-morbid patients, the PCP is charged with delivering primary care services and coordinating the actions of multiple sub-specialists.[I] The importance of coordinated interactions between PCPs and specialists as a prerequisite for high quality, cost-effective care is widely acknowledged; however there is evidence that care coordination remains an ongoing challenge and an elusive goal. [II-V] This is understandable given the underdeveloped infrastructure to support it [VI], poor reimbursement [II], lack of time and absent decision support tools that bridge clinical guidelines for multiple diseases [VII]. Moreover an imprecise operational definition of care coordination and its differentiating features from closely related activities such as care management, disease management and case management further hampers any attempt to measure and report it. While many definitions of care coordination have been offered, an operational definition and unambiguous set of metrics relevant to everyday practice are just beginning to emerge.[VIII, IX] This report will use the term care coordination as defined by the National Quality Forum because that organization is recognized as the harmonizer of quality standards:

> *"Care coordination is a function that helps ensure that the patient's needs and preferences for health services and information sharing across people, functions, and sites are met over time. Coordination maximizes the value of services delivered to patients by facilitating beneficial, efficient, safe, and high-quality patient experiences and improved healthcare outcomes."* [X]

In keeping with the NQF definition, the project focused on the development of a prototype care coordination model, describing its structural and functional components and defining roles and responsibilities of staff devoted to coordinating care within and between sites.

Considering outpatient inter-provider care coordination as a distinct component of the medical home, a list was developed of practical questions about how to implement such a program. What resources -- human talent, technology and knowledge base are best suited to coordinate care across PCPs and specialists? What are the unique logistical, workflow, staffing, physical plant and business requirements? How can EHRs be deployed to coordinate actions across multiple practitioners? What amount and frequency of information exchange is necessary between patients and providers to deem care truly coordinated? What new roles, if any, should multi-morbid patients and caregivers play and how will care coordination routines change the relationship between patients and providers (especially nurses)? What changes in the traditional PCP-specialist relationship will be necessary? Very few practice-based answers to these and other questions were available at the outset, therefore the principal goal of the project was to bridge the gap

between the theory and practice of care coordination. The project was designed to address many of the questions posed above from the perspective of the medical home.

B.) PROJECT OVERVIEW

Three organizations joined to undertake the Care Coordination Project: eHealth Initiative (eHI), Health & Technology Vector (H&TV) and the funder, sanofi-aventis. The National Business Coalition on Health (NBCH) also played a role. Together, they designed a project to test ways of improving coordination of care in ambulatory settings.

The objectives of the project were as follows:

» To develop and test an operational prototype of care coordination in EHR-enabled medical home primary care settings for patients with Type 2 diabetes and comorbidities.

» To enhance cross-provider communications, focusing on the PCP-Cardiology interface

» To support improvements in care with electronic tools.

To address the subject, the project team used the following definition of care coordination, from the National Quality Forum:

"Care coordination is a function that helps ensure that the patient's needs and preferences for health services and information sharing across people, functions, and sites are met over time. Coordination maximizes the value of services delivered to patients by facilitating beneficial, efficient, safe, and high-quality patient experiences and improved healthcare outcomes."

From the five domains of care coordination that the NQF established *(See Table 1, pg. 9)*, the project deployed resources and chose metrics. Following is a summary table of the project's components organized by those five domains.

The project funded a full-time Care Coordinator for each site and provided expert assistance in the assessment and design of models of care coordination. After six months of planning, detailed assessment of clinic work flows, identifying care management or care coordination tasks already in place, analyzing the capabilities of two electronic health records, staff roles and responsibilities and design work on a prototype for care coordination, the project conducted a six-month demonstration. It collected data on patient care both before and after the demonstration phase.

The following sections give more detail.

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TABLE 1. COMPONENTS OF THE CARE COORDINATION PROJECT

NQF Domain	Action Item(s)	Resources	Desired Output—End of Project
Healthcare Home (Overall care management)	• Overall workflow • Agreed-on roles & protocols • Management for individual patients • Data generation, storage and synthesis • Metric testing • Follow-through on care plans	• Two primary care practices • Clinical leadership • Full-time Care Coordinators • Technical support from eHI and H&TV • H&TV site activity record keeper • On-site EHR data manager from the site organizations	• Operating Manual for Care Coordination of Patients with Diabetes and Comorbidities • Demonstration project metrics
Proactive Plan of Care	• Agreed upon treatment goals (PCP-cardiologist-patient) • Shared appointment grid	• PCP and cardiologist, other site personnel; care coordinators • Patient and/or caregiver	• PCP-Cardiologist and Patient signed-off treatment goals • Proactive quarterly shared (PCP/C/Pt) encounter appointment grid
Communications	• Three-way communications among PCP, cardiologist and patient • Agreed-upon referral and response forms	• Electronic health information exchange protocol • Clinical summary format: Care Plan Summaries	• Record of all PCP-cardiology practice and patient communications outside of the clinical encounter (coordination- related) • Standard referral and response forms
Information Systems	• Electronic Health Record keeping • CC Decision support tool (TBD)	• EHR and HIE infrastructure • H&TV-supported business analyst	• EHR templates and capabilities relevant to CC activity • Business specs for CC use of EHRs
Transition of Care and Hand-offs	• Workflow and roles of team members • PCP and cardiologist roles and responsibilities • Shared medication list and reconciliation	• PCP sites' clinical and administrative leadership in collaboration with cardiology practices	• Updated Health Care Team identification document • Description of non-overlapping PCP and Cardiologist roles and responsibilities • Documentation of shared and reconciled medication list.

II | DEMONSTRATION SITES AND PROTOCOLS

The Care Coordination project tested methods of coordinating care in two different types of patient care settings. The first setting is three primary care sites within a statewide Community Health Center, in Connecticut. In each location are teams of physicians, nurse practitioners and RNs who care for primarily Medicaid, low income and uninsured patients. The Care Coordinator is located in a central location and the care coordination protocol is implemented by physicians and nurses located in the respective clinics, with support from the Care Coordinator. The second setting is a small office in New York. This demonstration site is comprised of two physicians, one physician assistant and one nurse practitioner, whose patients have primarily commercial or Medicare insurance. In this setting, the Care Coordinator is located on-site in the office.

CONNECTICUT COMMUNITY HEALTH CENTER

The Community Health Center, Inc. (CHC) is the statewide Federally Qualified Health Center in Connecticut, providing primary health care services to anyone who needs them, but with a special commitment to the uninsured, under insured or patients with special needs such as HIV/AIDS. A majority of their patients are covered by Medicaid. Community Health Center is an independent, non-profit organization. The range of services includes prevention and health promotion, treatment of illness and management of disease, including on-site behavioral health care services and diabetic education, podiatry, dentistry and nutrition counseling. The approximately 100,000 patients who access care at one of the 12 Community Health Centers come from a wide variety of ethnic backgrounds, with Hispanic being the predominant background. With over 50 languages used by the patient population, a language line translation service is available in each examining room.

All of the Community Health Center locations use eClinical Works as their electronic health record system and are connected within Community Health Center. The Connecticut site is linked electronically with Walgreen's Pharmacy located in the same building for ordering prescription drugs electronically. All sites are linked electronically with Quest for ordering laboratory tests and receiving results that are uploaded directly into a patient's medical record. There was no electronic health record connectivity to any cardiology practice at the start of the project.

The staff is organized in teams, called pods, co-located in one workspace. A pod consists of two PCPs, one nurse, usually an RN, two medical assistants, and one assigned receptionist who is not in the workspace.

Participating practice sites. Community Health Center clinics at three separate Connecticut locations participated. Community Health Center deployed a registered nurse, the full-time Care Coordinator funded by the project, behind the front lines of care. She developed the processes, worked with their IT Department to make needed changes in patient records and referral forms, conducted education with physicians and nurses on the new method of coordinating care, and

followed up on opportunities to coordinate care for specific patients. Using the learnings from the Care Coordination project, Community Health Center has begun implementing a similar process for other patients with multiple comorbidities.

TACONIC IPA

Taconic IPA is a nearly 4,000-member physician group (MDs and DOs) focused on practice transformation, quality improvement and population health, in the Hudson River Valley in the state of New York. The group represents approximately 1300 practices, ranging from small, independent primary care and specialty practices to Federally Qualified Health Centers to private multi-specialty groups, with 200 providers or more.

Taconic IPA has partnered with two additional companies, MedAllies and Taconic Health Information Network and Community (THINC), to promote the meaningful use of technology and pay-for-performance incentives to improve the quality, cost effectiveness, and patient satisfaction of healthcare. Together these three organizations form the Hudson Valley Initiative, which is nationally known as a leader in healthcare IT adoption and practice transformation. With the support of Taconic IPA and MedAllies, 66 Hudson Valley primary care practice sites have achieved Level 3 patient-centered medical home (PCMH) recognition by NCQA. These 66 sites service an estimated 700,000 patients.

Participating practice site. For this project, Taconic IPA chose a small primary care practice with NCQA PCMH level 3 recognition serving 5,000+ patients. The practice uses the NextGen electronic health record system. The vast majority of cardiac patients from this practice use a large regional cardiology practice. There is no electronic connectivity for structured data exchange between the primary care practice and regional cardiology practice. SureScripts provides reports of prescription fills in the region. Results from Quest laboratories can be uploaded into the patient's EHR in NextGen as structured data.

The practice consists of one full-time MD, one part-time MD, one physician assistant and one advanced practice nurse. Three of the four providers had patients represented in the intervention group. There was also one medical assistant and one registered nurse, who left before the project was over.

The Taconic IPA member practice deployed a registered nurse, funded by the project as the full-time Care Coordinator, for the 60 patients selected from the New York office. The model of care coordination, adopted by the Taconic IPA member practice, entails working directly with patients, doing a complete intake interview with each one, and following up as often as necessary before and after provider visits. The model was informed by elements from Geisinger Health's ProvenNavigator program as well as the Johns Hopkins Guided Care program. The nurse received training in both models of care.

A.) CENTRAL CARE COORDINATOR PROTOCOL AND PRACTICE (COMMUNITY HEALTH CARE)

The Central Care Coordinator at Community Health Center had oversight and coordination responsibilities across three primary care clinics located in different communities. She worked with practicing clinicians to adapt the protocol and utilize the Care Plan Summary. The flowcharts of the initial process of care coordination at Community Health Center and the process adopted for the project are in Exhibit 6 *(see pg. 81)*.

The first focus was on referral forms required by different cardiology practices, identified as an area for improvement in Community Health Care's work flows. *(See Exhibit 6, pg. 81)* Initial calls with all of the cardiology groups found that they would all accept the proposed Community Health Center form and that separate forms for each cardiology practice were not necessary. This was the first improvement for the project and was implemented immediately, streamlining that part of office workflow.

The next focus was on specifying the eClinical Works version of the Care Plan Summary, three separate computer screens that clinicians were asked to complete for each of the patients in the project. The process illuminated the fact that providers had different methods of creating a care plan for each patient and needed a consistent method.

The Care Coordinator conducted a 45-minute training on the new care coordination protocol with each physician-nurse team in the participating sites, emphasizing the design of a care plan for each patient, including treatment goals and self-management goals. Where the prototype MS Word version of the Care Plan Summary shows pie charts to represent the patient's progress, the Community Health Center used their standing method of assigning a score of 0 – 4 to indicate the patient's progress against goals. She also trained the staff on inquiring about upcoming cardiologist appointments and entering a command to send the newly adopted Care Plan Summary to the cardiologist three days before a visit. As a result of the needs identified for this project, the Community Health Center conducted refresher training for all nurses and medical assistants on motivational interviewing and on setting self-management goals with patients. The latter is a standard practice of the Community Health Center that was not being done consistently. Further, the Information Technology (IT) department trained all staff at the participating sites on using eClinical Works to produce the Care Plan Summary.

B.) ON-SITE CARE COORDINATOR PROTOCOL AND PRACTICE (TACONIC IPA MEMBER PRACTICE)

The on-site Care Coordinator worked at the demonstration site full-time, carrying the responsibility for initiating and managing the new care coordination process. The flowcharts showing the existing process for care coordination and the process to be demonstrated are in Exhibit 7 *(see pg. 85)*.

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The first focus was the referral process for cardiologists, since the baseline data showed very few referrals for the 60 patients that were identified as being seen by the regional cardiology practice and by the member practice. Many of the patients were ongoing longtime patients of the regional cardiology group. For new patients, it was learned that member practice did not write referrals routinely or enter them into the EHR, since referral forms were seldom required by the patients' insurance plans. For the 60 patients in the member practice selected for the project, the Care Coordinator initiated the process of sending clinical information, either with the patient or by phone or fax, to the cardiology group and ensuring that the cardiology group knew where to send their summaries. In some cases, the cardiology group did not have the correct primary care provider recorded. (See the next section for information on working with cardiologists.)

Next, the Care Coordinator began working individually with the selected patients to understand their conditions and the medications they were taking, to develop care plans and set goals and to communicate both within the medical home and with cardiologists. The Care Coordinator, a new employee of the Taconic IPA member practice, was trained on the EHR system by Taconic IPA member practice staff and their software vendor. She established the new protocol within the office and joined the morning huddle when one of the project's patients was scheduled and suggested any needed updates to treatment goals. She then saw the patient and updated the care plan after his/her visit with a provider. The providers in the office signed off on treatment goals, either changing them or agreeing with the Care Coordinator's suggestions. If the Care Plan Summary could be completed before the patient left the office, she gave it to the patient; if not, she called the patient after the appointment to go over the summary and sent it to the patient's home.

She further followed up by phone regularly with patients, calling each one at least monthly. She called many patients more often depending on risks, and followed up with those who were starting on new medication, directed to a cardiologist or directed to obtain testing. Important issues in care coordination, such as medication changes, were handled by phone. The Care Coordinator also reviewed and reinforced goals, addressed gaps and barriers, and provided assistance with obtaining services.

C.) COORDINATION WITH CARDIOLOGISTS

Before the demonstration started, the sites and their management began to enlist the participation of cardiologists. Engaging cardiologists was a more complex task than anticipated. As the team developed the Care Plan Summary, the two site organizations presented it to the cardiologists that worked most with the sites. Obtaining buy-in from cardiologists on using the Care Plan Summary was a challenge for both sites. In both cases, they found differences among cardiologists in their willingness to receive data other than heart-disease related data. In New York project staff worked closely with the cardiology group to develop a cardiology-specific version of the CPS and the structured data exchange for labs and medications as a substitute process.

» At Community Health Center, the medical home staff makes a cardiology appointment for the patient. The Care Coordinator set up a process to generate an order sending the Care Plan Summary to the cardiologist, as an e-fax three days in advance of the appointment. This process was followed rarely, as there were few referrals to cardiology.

» At the Taconic IPA member practice, where the Care Coordinator knew about an existing cardiologist relationship, she sent an abbreviated version of the Care Plan Summary to the regional cardiology practice each time she updated the summary with the patient. This process started in the last two months of the demonstration, after meetings with some representatives of the regional cardiology practice.

» Also at the Taconic IPA member practice, several times a week the Care Coordinator queried NextGen and sent the regional cardiology practice an MS Excel list of patients who had new lab results or changed medications *(See Exhibit 3, pg. 74)*. The regional cardiology practice encouraged this. Unlike the Care Plan Summary, the lab list provided data in a form that the regional cardiology practice could upload to its EHR. This was more successful than communicating via the Care Plan Summary.

Section 4 gives more detail on how the sites in the project used the Care Plan Summary, and Section 3 discusses the technology challenges.

D.) CARE COORDINATION TEAM AND ADVISERS

The on-site project team for Care Coordination held a one-hour conference call every week throughout the planning and demonstration phases of the project. Because this was an exploratory project, the team used a rapid-cycle improvement strategy, sharing challenges and solutions, feeding back information from working with patients and doctors and updating the project's interventions. They used a shared workspace for all the projects documents. Following is the on-site project team:

» Linda Shelton, eHI, project lead

» Barbara Riihimaki, RN, Health & Technology Vector

» Registered Nurse, Care Coordinator for Community Health Center

» Registered Nurse, Care Coordinator for New York project

» Research Associate, for New York project

» Medical Director, for New York project

» Medical Home Specialist, for New York project

» NextGen Specialist, for New York member practice software vendor

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On March 18, the team held an in-person, mid-term meeting to assess progress to date and make adjustments. Two of the providers in the project, one from New York and one from Connecticut, participated in the mid-term meeting by phone, but were not regular members of the project team.

eHI assembled a group of strategic advisers that represented a range of perspectives on care coordination, including a payer, two national quality-measurement organizations, a disease management organization, a physician association and an EHR vendor. The strategic advisers met once before the start of the demonstration project; the team called on them during the demonstration for specific advice from their organizations. They reviewed the final products and gave eHI useful input throughout the project. The strategic advisers were the following:

» Bruce Bagley, MD, Medical Director of Quality Improvement, American Academy of Family Physicians

» Kevin Cain, Assistant Vice President Government Affairs and Programs, National Health Council

» Charlie Jarvis, Assistant Vice President for Healthcare Services and Government Relations, and Cherie Holmes-Henry, NextGen Healthcare Information

» Rosemary Kennedy, Senior Director of Nursing & Healthcare Informatics, National Quality Forum

» Tracey Moorhead, President and Chief Executive Officer, DMAA: The Care Continuum Alliance

» Jerry Salkowe, MD, Vice President of Clinical Quality Improvement, Mohawk Valley Plan (formerly)

» Sarah Scholle, MPH, DrPH, Assistant Vice President, National Committee for Quality Assurance

» Robert Zavoski, MD, Medical Director, Connecticut Department of Social Services

In addition, executives from the partner organizations were involved through their staff, attended some team meetings and gave advice throughout the project:

» A. John Blair III, MD, President & CEO, Taconic IPA

» Jennifer Covich Bordenick, CEO, eHealth Initiative

» Janet Corrigan, PhD, President and Chief Executive Office, National Quality Forum

» Margaret Flinter, APRN, Vice President and Clinical Director, Community Health Center, Inc.

» Tehseen Salimi, MD, Vice President, Global Evidence & Value Development (EVD) Medical Affairs, sanofi-aventis

» Andrew Webber, President and CEO, National Business Coalition on Health

» Victor Villagra, MD, FACP, President, Health & Technology Vector, Inc.

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III | METRICS

A.) PROCESS METRICS

The team established measures to be used in the project that would assess how the demonstration practices coordinated care with cardiologists, and specifically how well they remediated the "voltage drops" *(See Table 4, pg. 38)* seen in the initial flowcharts.

The point of origin for developing the measure list was the NQF definition of care coordination. That definition establishes five domains *(See Table 1, pg. 9)*:

    1.)   Health care home

    2.)   Proactive plan of care

    3.)   Communications between sites of care

    4.)   Information systems

    5.)   Transitions of care and hand-offs

The team's goal was to choose metrics that reflected a sharp focus on just care coordination and that could feasibly show change in a six-month demonstration period. It was deliberately decided not to use clinical measures such as HbA1c testing or levels, as these are used in many other projects related to diabetes care and were not likely to show change in six months. To find relevant measures, staff queried all available measure sources, including National Quality Forum (NQF), National Committee for Quality Assurance (NCQA), Agency for Healthcare Research and Quality (AHRQ) and the draft measures being developed for the HITECH program to determine meaningful use of EHRs. They considered the needs of the program and the available data, and how to incorporate into measurement the viewpoints of the patients and the providers.

The team found that most care coordination measures already approved by NQF related specifically to care transitions, such as from hospital to physician's office, rather than to coordinate between medical homes and specialists. NCQA had a list of draft measures that had not yet been fully specified and tested, but that were relevant to coordination between primary care and specialists. The largest source of measures was the NCQA Physician Practice Connections Patient-Centered Medical Home (PPC-PCMH) recognition standards. The other sources also provided ideas, and the team chose those that most applied to the efforts being made in the demonstration phase. Lastly the project team designed and tested new metrics that had not been previously formulated.

Table 2 shows the metrics decided upon. Because the unit of interest for the quantitative metrics was the medical home rather than the patients, and because the nature of the project was considered to be exploratory in nature, it was decided not to seek Institutional Review Board (IRB) approval for the data collection. A formal patient survey thus was not part of the data collection, although one site did informal follow-up interviews of several patients. The project team interviewed participating providers both before and after the demonstration phase. The interviews yielded qualitative information.

TABLE 2. COORDINATION PROJECT MEASURES

Domains of Coordination:

A.) Healthcare Home

B.) Proactive Plan of Care

C.) Communications

D.) Information Systems

E.) Transitions of Care and Hand-offs

No. & Importance	Title and Statement	Type	Data	Source	Brief Description
Healthcare Home					
A1 **High**	Care Management: Organization uses care plans, assesses progress and addresses barriers for chronically ill	Process	Percent of patient records containing items	NCQA PPC-PCMH Standard 3 Element D	Review of patient records for the presence of the following elements, some of which are beyond NCQA Standard 3: • Individualized treatment goals discussed at each visit • Goals signed off by PCP, patient and cardiologist • Assessment of progress toward goals at every visit • Follow-up on missed appointments • After-visit follow-up (not specifically measured)
Proactive Plan of Care					
B1 **High**	Comprehensive Care Plan: Proactive plan of care developed with patients *The Care Plan Summary was developed to be a robust definition of plan of care—there was not a formal care plan previously at either site*	Process	Patient records	NQF-Endorsed Safe practice 23, adapted	% of patients with a care Plan Summary including the following aspects: • Patients' and families' primary language • Any cultural beliefs that might affect the care plan • Standardized assessments based on conditions (Care Plan Summary developed to show what these are for diabetes and cardiac conditions) • Treatment goals • Patient self-management goal(s)
B2 **High**	Shared quarterly appointment grid (idea) or reported or ordered cardiologist appointment	Process	Patient records	Developed for project	Instead of the proposed appointment grid, measures were: • % of patients with date of cardiologist appointment • % of cardiologist appointments missed showing follow-up of missed appointments

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No. & Importance	Title and Statement	Type	Data	Source	Brief Description
B3 **High**	Provider team names and roles	Process	Patient records: Percent of patients whose plan shows provider roles	Developed for project. CCD or CCR specifications were not yet available	% of visits where Care Plan Summary includes completed: • List of all physicians and mid-level practitioners engaged in making assessments and prescribing treatments • Roles for each
Communications					
C1 **Low**	Medication reconciliation: Organization develops, reconciles and communicates accurate patient medication list	Structure	Observation, examples	Structure measures: NQF-endorsed Safe Practice 17; PPC-PCMH Standard 2 Element D Process measures:	Not used as metric, but structure was implemented. NQF specification involves a number of specified activities. Examples include: • Educating clinicians regarding the importance of medication reconciliation • Providers receiving the patient in a transition of care checking the medication reconciliation list to make sure it is accurate • Reconciling any discrepancies (that is, omissions, duplications, adjustments, deletions, additions) while the patient is under the care of the organization (this requires data from specialist and other sources)
C2 **High**	Medication reconciliation: Evidence of medication review and reconciliation at every visit	Process	Patient records: Percent of visits showing medication reconciliation	Joint Commission Ambulatory Care standards; Meaningful Use objective of medication reconciliation for > 50% of transitions from another provider Final measure developed for project	% of visits where there is documentation of medication reconciliation by clinician
C3 **High**	Out-going information about referrals to specialists: % of encounters for which clinical summaries were shared between clinicians and with patients	Process	Patient records: percent of patients referred	Meaningful Use: clinical summary is sent for > 50% of transitions; clinical summary is given to patient for >50% of office visits Final measures developed for project	• % of referrals in which patient visits specialist • % of referrals for which medical home sends care summary to specialist • % of visits in which medical home gives patient a care summary • % of visits in which medical home gives patient a medication list

No. & Importance	Title and Statement	Type	Data	Source	Brief Description
b	Incoming information from specialists about completed referrals: Specialist communicates to medical home and patient; medical home implements recommendations	Process	Patient records: percent of completed referrals	Meaningful Use, see above NCQA draft measures adapted for project	• % of cardiology visits in which specialist returns recommendations to PCP • % of cardiology visits in which specialist gives patient a written summary • % of cardiology summaries returned for which primary care provider reviews specialist recommendations • (did not evaluate whether PCP discussed and implemented cardiology recommendations with patient)
Information Systems					
D1 **Low**	Use of HIE: Implemented ability to exchange health information with external clinical entity (specifically, actual exchange of labs, care summary, and medication lists)	Structure	Observation, documents that show implementation EHR templates	Meaningful Use: 40% of prescriptions transmitted electronically; >40% of labs entered as structured data NCQA PPC-PC-MH Standard 5 (E-Prescribing) and Standard 6 Element B (E-Lab) NQF Health Information Technology Structural Measures Endorsed 2008-08-29	Assessed by NCQA: • Electronic prescription writing • E-prescribing decision support • Test tracking, flagging and follow-up • Retrieving lab results and images directly from the source • Transmission of information between practices
D2 **High**	Referral tracking: Organization tracks referrals until it receives results	Structure	Example reports showing procedures activated	NCQA's PPC-PCMH Standard 7 Element A	Assessed by NCQA
D3 **High**	Between-visit management: Organization uses EHR system to track lab tests, diagnostic studies and referrals	Structure	Process in place to track clinical results between visits	NQF Measure 0491, from CMS NCQA PPC-PCMH Standard 2F	Assessed by NCQA
Transitions of Care and Hand-offs					
E1 **Low**	Provider experience of care	Outcome	Pre- and post-project structured interviews with clinicians	Multiple, developed for project	Interviews to describe clinicians' perception of coordination of care pre-pilot and post-pilot, and to understand how coordination has worked and needs to work
E2 **High**	Efficiency of care delivery: avoidance of duplication, avoidance of gaps.	Outcome	Claims	None yet; not done	No data available for this project; outcome measure suggestion for next phase

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B.) Selection of Patients

Target Patients. The criteria for selecting patients to follow in the project were as follows:

> » Adult (age >45)

> » A diagnosis of Type-2 diabetes

> » A comorbid cardiac condition, requiring cardiology consultation and treatment.

The patients received cardiology care from of independent cardiology groups at a different site from the PCP in the local geographic area. The target was 60 patients for each site, understanding that those 60 patients might not remain in the project the whole six months and that the final count should be at least 30.

Because of different data layout at the two sites, and different relationships to cardiology, the two sites selected patients somewhat differently.

Selection of Patients at Community Health Center. Community Health Center included patients from three of its 12 locations: clinic sites in three small Connecticut towns. Patients were selected by querying the eClinical Works database for those patients who [I] had the required age and diagnoses, [II] had at least one visit to a PCP between January 18, 2009 and January 18, 2010, and [III] had at least one referral to cardiology in the past year.

The selection criteria created some unanticipated issues. The Community Health Center providers judicious in their use of referrals to specialists the fact that patients had had a referral in the previous year made them less likely to have another formal referral during the research period of six months (although this did not mean that patients were not seen their cardiologists). Second, many Community Health Center patients are mobile, moving out of the area for months and then returning. This created some attrition and shortened the time period in which to coordinate care.

Selection of Patients at Taconic IPA member practice. A query was run from the NextGen database identifying all Type-2 diabetics in this practice's panel, who had at least one PCP visit between January 18, 2009 and January 18, 2010. The list was then matched against the database of the regional cardiology practice used by the Taconic IPA member practice, to determine which of these patients had also seen a cardiologist in the regional cardiology practice and what their comorbid cardiac condition was. Fifty-nine patients were identified that met these conditions. During the course of the project, a new query of Type-2 diabetics in the PCP's panel was run from NextGen. The Care Coordinator researched the electronic medical record of all those patients to determine if they had a comorbid cardiac condition and were a patient of the regional cardiology practice based on a returned consult summary. Fourteen additional patients were added to the project by its completion. The analysis covers only the original group of 59 patients.

Selected Patient Groups. The differences in selection method and in insurance coverage of the patients at the two sites resulted in somewhat different groups and different aspects of care coordination to explore. The Community Health Center patients were more likely to be fully managed by the Community Health Center providers and visit a cardiologist just for consultation, while the Taconic IPA member practice patients were more likely to be actively co-managed by the medical home and the cardiologist. Table 4 *(see pg. 38)* shows the resulting data on the patients, summarized below:

» **Average age:** Taconic IPA member practice patients averaged 9 years older than Community Health Center patients

» **Gender breakdown:** Both sites showed a fairly even division by gender.

» **Number of appointments:** At both sites, the patients selected averaged more than eight visits in a year, reflecting their multiple diagnoses and complex medication regimens.

» **Diagnoses:** In addition to Type 2 diabetes, all of the patients had at least one cardiac diagnosis, and many had more than one. Following are the diagnoses shown in the EHRs of patients in the project:

▸ *Abnormal EKG*
▸ *Angina Pectoris*
▸ *Aortic Aneurysm*
▸ *Aortic Regurgitation*
▸ *Aortic Stenosis*
▸ *Atherosclerosis*
▸ *Atrial Fibrillation*
▸ *Atrial Flutter*
▸ *Bypass Coronary Artery Disease*
▸ *CABG*
▸ *CAD*
▸ *Cardiac Defibrillator*
▸ *Cardiomyopathy*
▸ *Carotid Artery Stenosis*
▸ *Carotid Atherosclerosis*
▸ *Chronic CHF*
▸ *Coronary Artery Disease*
▸ *Coronary Atherosclerosis of Native Coronary Artery*
▸ *CVA*
▸ *Defibrillator*
▸ *Diastolic Dysfunction*

▸ *Dyslipidemia*
▸ *Dyspnea*
▸ *First Degree Heart Block*
▸ *H/O Aortic Valve Replacement*
▸ *H/O Third Degree AV Block*
▸ *Hypercholesterolemia*
▸ *Hyperlipidemia*
▸ *Hypertension*
▸ *Ischemic Heart Disease*
▸ *Left Bundle Branch Block*
▸ *Left Heart Failure*
▸ *Left Ventricular Hypertrophy*
▸ *Mitral Regurgitation*
▸ *Pacemaker*
▸ *Palpitations*
▸ *Paroxysmal Atrial Fibrillation*
▸ *Peripheral Vascular Disease*
▸ *Prior MI*
▸ *Stent*
▸ *Syncope*
▸ *Unspecified Essential Hypertension*

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IV | INTERVENTIONS AND NEW PROCESSES TRIED

A.) CARE PLAN SUMMARY: CONTENTS AND RESEARCH

Sharing of key information among members of a health team, including the patient, was a key requirement for coordinating efforts from separate providers. Discussions with both primary care sites showed that neither site had a Care Plan Summary, highlighting critical shared information, among all care team members. For example, there was no particular place to get answers to questions such as:

» Who are the members of the health care team?

» Can patients and members of the health care team recognize each other?

» Is there a single source document of contact information and their respective roles in caring for the patient?

» Are there explicit treatment goals for the most important diagnoses or problems?

» Are all members of the care team aware of those common treatment goals and do they agree? (The team would not seek consensus on specific treatment modalities, but only on treatment goals)

» Is there a common source document tracking and informing all providers of the patient's performance against agreed-upon goals?

» Is there a common, updated (reconciled) medication list, their purpose and adherence rates?

Lacking a common care coordination document, most of the answers to the above questions remain tacit or unanswered for the duration of the patient's care. Under these conditions, gaps in care, duplication and patient and provider confusion are understandable results. While the team could easily envision a time when electronic charts across sites would "talk to each other," coordinated care is unlikely without a tool designed specifically to converge all efforts on attaining explicit goals. The Care Plan Summary (CPS) is the result of extensive review of the care coordination literature and careful consideration of operational requirements: (brevity, relevance of information, appropriate content selection, portability (electronic or paper based) and readability (patient friendly). Moreover, the team tracked the Office of the National Coordinator's (ONC) published guidance on meaningful use criteria and parsed items included in the Continuity of Care Document and those required to drive inter-practice care coordination.

B.) Care Plan Summary: Use and Adaptation

Over several meetings, the Care Coordination Team agreed on the contents and format of the Care Plan Summary as designed and revised by Victor Villagra, MD *(See Exhibit 1, pg. 68)*. The Care Plan Summary was in MS Word format. The team agreed that the document should contain all the elements as proposed: demographic data, the team of individuals caring for the patient, the total care plan for the patient, lab and biometric values and a medication list. The team also decided that a manual document in MS Word would serve, while they were developing the content and the care coordination process. At some point, the document would need to be produced much more easily from an EHR.

One disclaimer is important: The project did not directly address care coordination in settings other than between a PCP and a cardiologist, e.g. it excluded care coordination from an emergency room, hospital or other care delivery setting. These involve complex workflows and the ability to send information to and from disparate EHR systems that was beyond the scope of this project. However, when needed by the selected patients, the providers and care coordinators did help coordinate with other specialists and service providers.

Initial Use of Care Plan Summary. Both Care Coordinators presented the summary to their practices. After consultation with clinicians and with the Care Coordination Team, the Care Coordinators implemented the Care Plan Summary in two different ways:

1.) Taconic IPA member practice —On-site Care Coordinator

Intra-office care coordination. Most coordination proceeded by personal phone calls and e-mail from the Care Coordinator. Many patients were ongoing with the regional cardiology practice at project start, seen at regular intervals. For new patients the providers continued their routine of telling patients when they should see a cardiologist without always recording referrals in the EHR. Cardiologists continued their regular pattern of returning a consultation summary to the PCP in their records each time they saw any patient. One of the early discoveries of the project was that PCP entry in the specialists' records was not updated, and several patients were identified who had outdated PCP information in their cardiology record.

To engage the cooperation of the cardiologists with the care coordination plans, the Taconic IPA member practice management set up meetings with the regional cardiology practice where all selected patients received cardiology services. The result was mixed, with some members declining to use the complete Care Plan Summary and others seeing it as quite valuable. The two major objections were its length and its inclusion of data not relevant to cardiology, such as the status of routine screening tests like mammograms. As the cardiologists were not responsible for ordering such screening, some of them believed that receiving such information would raise liability issues. To address these concerns a modified version of the CPS and routine manual and a structured data exchange was implemented, as already discussed. Without the CPS, the biggest

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challenge was tracking when a cardiology visit was scheduled and completed, which the Care Coordinator continued to do via telephone messages.

2.) COMMUNITY HEALTH CENTER—CENTRAL CARE COORDINATOR

Intra-office care coordination. As noted in the previous chapter, the Community Health Center employed a totally paperless use of the eClinical Works EHR. The Care Coordinator and management of Community Health Center appreciated the content of the MS Word version of the Care Plan Summary. However, they were not willing to introduce a requirement for the clinics to use a form that was separate from the EHR. Therefore, the Care Coordinator called on the considerable IT resources of the Community Health Center to develop an alternative Care Plan Summary within eClinical Works. This included three eClinical Works screens *(See Exhibit 2, pg. 72)*:

» A Care Plan Summary Flow sheet, which includes all of the elements of the care plan for the patient, including diabetes issues, other comorbidities, treatment goals and plans, and self-management goals

» The Medication List from eClinical Works, to which the care coordination project began adding the purpose of each medication in a text field

» A Coordination Letter, which used the reporting capability of eClinical Works to produce the demographic and care team sections of the Care Plan Summary.

The three participating sites of the Community Health Center were to use the eClinical Works screens to provide information about each patient's care, both for the patient and for the cardiologists to whom the Community Health Center referred. The physician in each physician-nurse team was to develop the treatment goals and the nurse was to spend further time counseling the patient, completing the parts of the Care Plan Summary and providing a report to the patient. The IT department of Community Health Center and the Care Coordinator trained the staff in these processes.

IMPLEMENTATION OF CARE COORDINATION
LARGE MULTI-SITE PRACTICE WITH CENTRAL CARE COORDINATOR

Process on Which Staff Members Were Trained

» **Orientation**—The nurses who implemented the CPS document needed to understand the style of each PCP in discussing and treating issues with patients and what (s)he likes to tell patients.

» **Intake**—A nursing visit was ordered for each patient at the beginning of the project to do intake, explain the form, set goals, etc.

» **Cardiology follow-up visits**—For patients who were already established with a cardiologist, there were parallel processes working for follow-up visits. The PCP frequently did not know when the patient saw the cardiologist for follow-up, except through a general note in the summary sent from the cardiologist to the PCP. The cardiologist did communicate urgent issues to the PCP, but did not necessarily communicate normal findings upon follow-up visits. The challenge was to get the cardiologist engaged in signing off on principal care goals so PCP, cardiologist and patient are all working toward the same end.

» **Use of CPS process**—The letter was signed by the PCP during the huddle. The nurse discussed goals with the patient and obtained the patient's signature and signed the form at the completion of the visit. A copy was made for the patient and scanned into the patient's document section of the medical record; at subsequent visits a new CPS letter was printed, signed and updated. The nurse printed the flow sheet form (HTML) and gave it to the patient.

» **Huddles**— The Care Plan flow sheet was used as a guide for the huddle; Principal Care Goals were updated as needed.

» **Medication list**—The patient's medication list was printed and given to the patient. Providers were trained to enter in ECW what each medication is for, a new process, to make the medication list more user-friendly for the patient.

» **Communication with cardiology**—The three documents were to be sent to the cardiologist office, after the completion of the first patient visit, during the project and thereafter with any cardiology referrals. The nurse asked patients when they are due to go back to the cardiologist during the first visit. She generated an "Action" telephone encounter in ECW and assigned it to the PCP's medical assistant. This alerted the medical assistant three days before the scheduled visit and instructed her to send the most current CPS flow sheet, medication list and CPS letter to the cardiologist.

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> » **Other referrals**—There are multiple reasons why patients see a cardiologist and multiple ways that patients were identified for the project:
>
>   ‣ Referral from PCP to cardiologist
>
>   ‣ Subsequent follow-up visits to cardiologist following initial referral
>
>   ‣ Emergency Room visit
>
>   ‣ Self-referral
>
>   ‣ Referral from another specialist without notifying the PCP.
>
> » **Cardiologist consult notes**—What information a PCP wants to know, needs to know, and when, from the specialist about a specific patient were difficult questions in determining frequency of exchanging information. The answers varied with the situation.
>
> » **Updating the CPS**—The CPS was updated as frequently as there were changes to the items in the document, e.g. change in medications, insurance, the care team members, lab results, patients' self-perception of how they are doing in taking their medications, etc. That did not necessitate a new form sent to the cardiologist with each change.

Inter-office coordination with cardiologists. Community Health Center had an early success in examining the referral forms. One potential area that the project has already identified for Community Health Center is the alignment of hand-off tools between primary care and specialists. Before the project, each group of cardiologists had a different preferred referral form. Health plans' referral forms, and some of those produced by EHRs, focus on insurance information rather than clinical information. Community Health Center's Care Coordinator obtained agreement from all cardiologists to use a single form. She further changed the drop-down boxes in the EHR so that the primary care teams produced referrals with clinical care instructions. This eliminated the multiple forms and improved the referral process according to project metrics.

Other aspects of coordination took longer to achieve. Working through the Community Health Center's scheduling system, the clinical teams made cardiology appointments for the patients in the project as they do for all patients. The Community Health Center regularly records referrals in the eClinical Works system and tracks whether the referrals have happened. For the care coordination project, they then set up a reminder in the system to send the Care Plan Summary three days before the scheduled cardiology appointment.

Community Health Center management held meetings on care coordination with cardiologists used by each of the three participating clinics and found, again, mixed interest in using the

Care Plan Summary. However, at the same time, one cardiology group discontinued taking new Medicaid patients, so the Community Health Center did not use that group. The Community Health Center was then able to steer patients in the project to a cardiologist who accepted their patients, was interested in the project and used the Care Plan Summary information.

Without a business reason to improve communication, it was a major challenge to get the cardiologists engaged in communicating patient information and to obtain progress toward care goals between PCP and cardiologist.

The Community Health Center tried several ideas for engaging cardiologists, but none were ultimately successful.

IMPLEMENTATION OF CARE COORDINATION— SMALL PRIMARY CARE PRACTICE WITH ON-SITE CARE COORDINATOR

Orientation—The Care Coordinator met with the primary care providers (PCP) to learn their individual styles of discussing issues with patients

Intake—The Care Coordinator spent over an hour with each patient at the beginning of the project, completing a detailed intake form, including all medications the patient was taking.

Huddles—The Care Coordinator met with the PCPs at the beginning of each day to discuss broad goals for the patients to be seen that day.

Preparation— When possible, the Care Coordinator reviewed the patient's chart prior to the patient's visit and documented principal care goals.

Goal setting—The Care Coordinator set principal care goals for each patient based on national clinical guidelines, and the PCP reviewed and sometimes revised the goals based on guidelines, the PCP's experience and the patient's agreement on care.

Adjustment—Information on the Care Plan Summary (CPS) changed as the Care Coordinator got to know the patients and as patients developed a level of trust with the Care Coordinator and shared more information. At subsequent visits, it seemed best to just focus on most important goals, rather than to risk overwhelming the patient with all goals.

Use of the CPS—The CPS had to be flexible to add or delete principal care goals appropriate to the individual patient. While in a manual mode, completing some areas of the CPS at the time of the initial visit was time consuming, e.g. medication list – dosage, purpose and who can reorder.

Follow-up— The Care Coordinator reviewed the CPS with the patient prior to leaving the office. In some cases, the CPS needed to be completed and sent to the patient following the visit when all areas had been completed. A follow-up call with the patient explained this again.

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Progress on goals—While in a manual mode of producing the CPS, the progress indicator toward each principal goal was a percent complete rather than a pie chart. It was a rough estimate and not an exact calculation. The Care Coordinator used percentages. For example, if a patient was almost at his/her goal, the Care Coordinator estimated progress as 85% or 90% and discussed with the patient that this is a rough estimate.

Sign-off by PCP—Actual sign-off by the PCP did not always happen when the patient was in the office. The Care Coordinator documented progress towards goals on the CPS, adjusted self-management goal(s), etc. The PCP needed time to read this. If the PCP made changes, then the Care Coordinator called the patient to discuss and sent an updated CPS to the patient. If there were no changes, then PCP's sign-off was added to patient's EMR, but a new CPS was not sent to the patient.

Cardiology visits—Tracking follow-up visits with a cardiologist was challenging since the cardiologists did not normally communicate follow-up appointment scheduling to the PCP. Information about cardiology follow-up visits usually came from the patients. The Care Coordinator made sure that the medical home received the cardiologist's traditional summary after each visit.

Cardiology consult notes—The Care Coordinator frequently used the cardiologist's notes to set targets for specific principal care goals.

Communication—The Care Coordinator often served as the primary communicator between the PCP and the cardiologist to get specific patient information. She worked to empower the patient in understanding the care goals through the user-friendly CPS. The patient also communicated with the cardiologist about current PCP treatment.

Sick visit opportunities—For patients seeing the PCP for a sick visit, the Care Coordinator gave them at least their medication list, but did not try to go over other principal care goals.

Changes and adaptations of the Care Plan Summary

The demonstration phase of the project lasted from January 18 through July 16, 2010. Throughout, the Care Coordination Team met by conference call weekly to share progress and challenges. They made adjustments to forms and process throughout the project to improve coordination and exchange of information. In March and April, the team fully examined progress to date and made some changes to the use of the Care Plan Summary.

Central Care Coordinator—Community Health Center. Throughout the project, the Community Health Center utilized the eClinical Works version of the Care Plan Summary. Providers, while understanding the goals of the project, found the requirement to go to three screens within the

EHR to be cumbersome. There was, therefore, mixed use of the Care Plan Summary for patients. Physicians at the largest of the three Community Health Center clinics were enthusiastic and exerted leadership to follow the Care Coordination protocol. Because of the already mature team-based practice, implementation of the model was smooth where team leaders were supportive of it. At the other two clinics, physicians seemed somewhat less enthusiastic, and saw the process as more work than benefit. In those sites, it was difficult for the Care Coordinator to get the process implemented.

Later sections of this report show the results for both Community Health Center and the Taconic IPA member practice, in terms of data on use of care coordination methods, and lessons learned.

On-site Care Coordinator—Taconic IPA member practice. The cardiologists to whom the Taconic IPA member practice sent information welcomed increased data exchange but declined to utilize the full Care Plan Summary as the primary and only means of communication as originally envisioned. Project staff collaborated with clinical and administrative staff at the cardiology group to develop alternate strategies that addressed their concerns while ensuring delivery of the requested information. The end result included two different types of information:

» For all patients in the project, the Care Coordinator sent, multiple times a week, two MS Excel spreadsheets to the regional cardiology practice: one that showed any new or changed lab results and one that showed any new or changed medications. She produced these automatically through a query of the NextGen system for the practice. *(See Exhibit 3, pg. 74)*

» For those cardiologists who did wish to receive the Care Plan Summary, the team developed a segmented one *(See Exhibit 4, pg. 76)*, with a table in the middle where the information to be omitted for cardiology purposes was stored. When she determined that the patient was going to a cardiologist, the Care Coordinator produced a complete Care Plan Summary for the patient, but deleted the middle table for the one she e-mailed to the cardiologist. (This happened during the last two months of the demonstration, whenever a new Plan Summary was created or changes were made to an existing Care Plan Summary.)

Late in the project, the Care Coordinator and support members of the team looked for possible uses of NextGen to produce a document close to the Care Plan Summary. See Exhibit 5 *(see pg. 79)* for one template that the Care Coordinator tried. As the project progressed, the providers in the Taconic IPA member practice regularly began developing treatment plans for additional patients. They relied upon an existing template in NextGen called the Patient Plan.

C.) ROLES AND RESPONSIBILITIES

Based on the number of practices served by care coordinators, two different roles were identified. In the case of a multi-site central care coordinator (at Community Health Center), the staff role

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included no (or minimal) direct contact with patients. The central care coordinator interacted directly or remotely with nurses working at each site with their respective patients and their local PCPs. This role was identified for the role as Central Care Coordinator. This role did not include direct patient education, medication reconciliation or patient-specific inter-practice traffic of information. All these activities were carried out by the POD nurse at their respective locations.

In the second case of a single-practice coordinator (at the Taconic IPA member practice), the staff role included extensive direct contact with patients during and between visits. This role was identified for the Care Coordinator because there was no separation between her role in coaching, patient education and medication reconciliation, and her role in activities more specifically related to coordination and bridging information between practitioners.

Table 3 shows a detailed breakdown of roles and responsibilities for the Central Care Coordinator and the on-site Care Coordinator.

TABLE 3. ROLES AND RESPONSIBILITIES OF STAFF INVOLVED IN CARE COORDINATION

Roles and Responsibilities	Patient	PCP	Specialist	Central Care Coordinator	Care Coordinator
Care of Patient's Health and Wellness					
General assessment of patient's health and wellness	X	X			
Assessment of patient's medical problems	X	X	X		
Coordinate appropriate laboratory and diagnostic testing ordered by the PCP and Specialist (long-term for Specialist when interactive EHR)					X
Set time interval for next appointment		X	X		
Support the health management of defined patients	X			X	X
Collaborate with primary care providers to enhance evidence-based clinical guideline adherence and promote best practice by initiating/adjusting therapies as directed by the practitioner and providing appropriate follow-up and monitoring as needed					X
Support the health management of populations: Activate systems of care that facilitate close monitoring of high-risk patients to prevent and/or intervene early during acute exacerbations				X	X
Review the current literature regarding effective engagement and communication strategies, case management strategies, and behavior change strategies and incorporate into clinical practice				X	X
Identify the targeted population within his/her practice site and risk stratify members to prioritize needs and direct interventions (Long term)				X	X

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Roles and Responsibilities	Patient	PCP	Specialist	Central Care Coordinator	Care Coordinator
Operating as a Medical Home					
Commit to being/using a medical home	X	X		X	X
Treatment for conditions to be managed between PCP/SCP		X	X		
Monitoring tests and services ordered for each patient		X	X		
Modulate treatment as needed (make adjustments)	X	X	X		
Reconcile patient's medication and give patient a copy at each visit	X	X	X		X
Oversee/coordinate patient use of community resources and facilitate access to those services as needed	X			X	X
Monitor referrals to ensure that referrals are kept, referral information is sent consistently to specialist and consult reports are consistently received		X		X	X
Monitor care coordination reports, e.g. referrals ordered, laboratory and diagnostic tests ordered to ensure that processes involved in care coordination of selected patients are implemented consistently and that services are received				X	X
Use a CQI approach to continuously evaluate process, identify barriers, and propose process improvement strategies to enhance the Medical Home delivery of modal and/or coordination of care				X	X
Leadership in promoting team work					
Work with leadership to design, implement and evaluate a system of care coordination among members of the health care team				X	X
Work with members of the health care team to foster a team approach and optimize interventions and educate team members on new processes or review existing processes to ensure coordination of services				X	X
Design an individualized plan of care with the patient and work collaboratively with the patient, family, primary care provider, and other members of the health care team to ensure coordination of services	X				X
Utilize conflict resolution, assertiveness, negotiation, and collaboration skills in facilitating member throughout the health care continuum	X			X	X
Commitment to patient care plan					
Establish treatment plan for each patient	X	X	X		
Set principal care goals for clinical, preventive and health risk measures	X	X	X		

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Roles and Responsibilities	Patient	PCP	Specialist	Central Care Coordinator	Care Coordinator
Promote and support patient participation in self-management of their health care and engage patients, or encourage staff to engage patients, in motivational interviewing for behavioral change in setting and meeting goals	X			X	X
Work with the patient and involved staff to develop their plan of self-care and understanding of what the nurse will be doing for them	X				X
Oversee self-care monitoring routines that the Care Coordinator establishes in conjunction with the patient		X			
Oversee/assess and track the health care, educational and psychosocial needs of the patients and families		X		X	X
Set and pursue self-management goals; discuss any deviations or problems with taking medications or other self-management actions in care plan	X				
Communicate between patients and CC as needed on various aspects of their health care important in coordinating their care	X			X	X
Review information given at each visit and confirm understanding. Report any inaccuracies or inconsistencies	X				
Monitor that all aspects of the Care Plan Summary are consistently completed and given to patients at agreed upon times including information on main team members, self-management goals, primary care goals, and medication list				X	X
Incorporate excellent written, verbal, and listening communication skills, including health literacy and linguistic appropriateness, positive relationship building skills, and critical analysis skills into case management practice/coordination of care				X	X
Communication between practices					
Return consult findings, recommendations and response to principal care goals to PCP within agreed upon time frame following visit			X		
Coordinate additional testing and secondary referrals with the PCP to avoid duplication and other inefficiencies	X	X	X	X	X
Work with the PCP office if patient does not keep appointment and does not reschedule			X		X

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Roles and Responsibilities	Patient	PCP	Specialist	Central Care Coordinator	Care Coordinator
Work with specialists to promote processes that support coordination of care and to solicit and use their input to improve those processes				X	X
Work to ensure a smooth transition between inpatient and other care settings and home and assist patients in understanding their care requirements	X				X
Keep all practices up to date on visits with specialists, medications taken, tests done	X				
Data management/system enhancements					
Monitor electronic health records and reports to ensure that information important for care coordination both internally and externally is consistently entered into the electronic health record				X	X
At an aggregate, practice-wide level, continuously evaluate laboratory results, diagnostic tests, utilization patterns and other metrics to monitor quality and efficiency results for assigned population				X	X
Maintain required documentation for all case management activities in patient's electronic health record. Collect required data and utilize this data to adjust the treatment plan when indicated					X
Work with Data Support/IT to develop forms and reports within the existing EMR system that support care coordination				X	X
Identify and develop business specifications for electronic medical record enhancements to capture and share patient information important to the patient's health care (Long term)				X	X
Work with electronic systems to enable a patient portal with flexibility for setting appointments and sharing information (Long term)				X	X
Work with local health systems to enable electronic linkages between PCP and specialists, lab systems and other health care providers (Long term)				X	X

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Roles and Responsibilities	Patient	PCP	Specialist	Central Care Coordinator	Care Coordinator
SKILLS AND ABILITIES					
Demonstrated customer focused interpersonal skills and relationship building to interact in an effective manner with practitioners, the interdisciplinary health care team, community agencies, patients, and families with diverse opinions, values, and religious and cultural ideals				X	X
Demonstrated ability to influence and negotiate individual and group decision-making				X	X
Demonstrated ability to use conflict resolution and collaboration skills to facilitate processes throughout the health care continuum				X	X
Demonstrated ability to work autonomously and be directly responsible to management				X	X
Demonstrated leadership qualities including time management, verbal and written communication skills, listening skills, problem solving and decision-making, priority setting, work delegation and work organization				X	X
Demonstrated skill with the CQI process				X	X
Critical thinking skills and ability to analyze complex data sets				X	X
General computer knowledge and capability to use computers				X	X
EDUCATION AND/OR EXPERIENCE					
RN license or eligible for licensure in the state required				X	X
LSW license or eligible for licensure in the state required				X	
Bachelor's degree in health care preferred				X	X
Case Management Certification preferred					X
Three to five years clinical experience required				X	X
Home Health care, visiting nurse service, or previous care management experience highly desirable					X
Knowledge of the basic concepts and principles of case and care management required					X
Knowledge of the Chronic Care Model desirable					X
Experience with population management systems preferred				X	X

D.) Process Flows

Each primary care site workflow is somewhat unique. The processes at the two sites had evolved based on each site's approach to maximizing efficiencies and enhancing patient/customer service, but not necessarily enhancing care coordination. A careful assessment of existing workflows with the goal of enhancing intra-clinic and inter-practice care coordination can reveal the absence of certain routines that make coordinated care difficult, inconsistent, inefficient or at times, impossible. We called the absence of these routines care coordination "voltage drops." The goals of a detailed care coordination walk-through were to identify voltage drops and to brainstorm about practical ways [I] to modify the workflow and [II] simultaneously register electronically the incorporation of the new or modified activity. This approach allowed each site not only to implement better care coordination routines, but also to document it with minimal additional resource allocation.

The team mapped the normal flow of the process of care coordination, both within the office and with cardiologists at each setting. Exhibit 6 *(see pg. 81)* shows the Community Health Center process, with initial voltage drops circled and improvements implemented by the project shown in yellow.

Exhibit 7 *(See Exhibit 1, pg. 85)* shows the Taconic IPA member practice process, with initial voltage drops circled and improvements implemented by the project shown in yellow.

V | RESULTS AND ANALYSIS

A.) RESULTS SHOWN IN PATIENT ENCOUNTER DATA

Table 4 shows the results of data collection from patient records at baseline and after the six months of demonstration. Note that the metrics are divided into sections according to the part of the process to which they refer. At each site, data collection required a review of each patient record by the Care Coordinator. The second part of the table specifically highlights the part of the process related to the care plan goals, showing the percent improvement seen in the six-month demonstration.

B.) ANALYSIS OF RESULTS

This section presents the results of data collection, using the project metrics, before and after the six-month demonstration. Overall, the data show that the project made the most difference in building the foundation of care coordination within the medical home, including care planning and medication reconciliation. Smaller improvements were documented in inter-office coordination between PCPs and cardiologists.

METRIC DEFINITION AND DATA COLLECTION

The project team developed care coordination metrics based on an extensive review of the literature, a review of requirements for medical home certification by the National Committee for Quality Assurance (NCQA), National Quality Forum (NQF) specifications for care coordination, and other leading national organizations as well as receiving input from the project advisors (see previous sections).

With metrics defined, both pilot sites were approached and a deep dive was completed to determine the state of care coordination at each place. The initial assumption was that most of these metrics would be recorded in the EHR application, making data collection relatively simple. It was quickly realized that some of the metrics needed to be manually researched through attachments to the patient's electronic record, through manual registries, or, in Community Health Center's case, through a separate scheduling system.

The Care Coordinator at each location collected data under the direction of Health & Technology Vector. The team worked to standardize the metrics as much as possible. However, many of the metrics were new because inter-office care coordination introduced new dimensions to the care routines of complex patients. The entire project team underwent a steep practice-based learning period about measuring care coordination and implementing novel processes to enhance it. There was a small variation in some measure specifications between sites, making direct comparison between the sites difficult, but each site was consistent in its pre and post data collection. Baseline data covered a one-year period while the post-demonstration period captured results for six months of project implementation. The intent was to evaluate early results, understand trends, identify barriers and suggest corrective actions early in the course of the project. There was consensus among project

TABLE 4. PRE-PILOT (BASELINE) AND POST-PILOT DATA FROM PATIENT RECORDS

| | DEMOGRAPHICS | | | | PCP OFFICE VISITS | | | | | |
| | Gender | | Mean Age | | PCP Visits per Pt/Time Period | | Kept Appt/ # patients | | F/U on Missed Appt with PCP | |
	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA
Pre-Pilot	F = 29 M - 31	F = 32 M - 27	59	67	11	8	81%	86%	86%	56%
Post-Pilot	F = 25 M - 27	F = 30 M - 26	58	62	5	4	92%	83%	71%	95%
Change	-8	NA	-1	-5	NA	NA	11%	-3%	-15%	39%

| | PRINCIPAL CARE PLAN GOALS | | | | | | | | | | | |
| | Discussed/ Set Specific Principal Care Plan Goals | | Progress Assessed by PCP or nurse (regardless of goal set) | | Sign-off by PCP | | Sign-off by Pt | | Sign-off by Nurse or CC | | Sign-off by Cardio | |
	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA
Pre-Pilot	0%	66%	78%	10%	0%	58%	0%	0%	0%	0%	0%	0%
Post-Pilot	78%	90%	80%	70%	61%	67%	55%	69%	55%	78%	0%	0%
Change	78%	24%	2%	60%	61%	9%	55%	69%	55%	78%	0%	0%

| | ACTIONS DURING PCP VISIT | | | | | | | |
| | Care Summary Given to Pt | | Provider Team Names Given to Pt | | Med List Reconciled | | Med List Given to Pt | |
	CHC	TIPA	CHC	TIPA	CHC	TIPA	CHC	TIPA
Pre-Pilot	0%	0%	0%	0%	94%	53%	18%	0%
Post-Pilot	57%	78%	57%	78%	93%	65%	69%	58%
Change	57%	78%	57%	78%	-1%	12%	51%	58%

| | REFERRAL (CONSULT) SUMMARY | | | | | |
| | PCP Received Summary | | Includes Recommendations | | PCP reviewed | |
	CHC	TIPA	CHC	TIPA	CHC	TIPA
Pre-Pilot	64%	47%	100%	58%	100%	96%
Post-Pilot	100%	98%	100%	91%	100%	23%
Change	36%	51%	0%	33%	0%	-73%

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participants that given additional time and timely corrective actions, care coordination metrics would improve more consistently.

PATIENT POPULATION

The target recruitment number was sixty patients, with diabetes and heart disease for each site. This number allowed for modest and unavoidable attrition.

» The Community Health Center identified 60 patients that met the criteria, including 29 women and 31 men, with a mean age of 59. During the project, eight patients were dropped for various reasons, e.g. death, transferring out of Community Health Center, geographic moves, etc. The end population at Community Health Center was 52 patients with a mean age of 58.

» The Taconic IPA member practice started with 59 patients, including 32 females and 27 males, with a mean age of 67. Although new Taconic IPA member practice patients were added into the project during the demonstration, they were not included in the reported results. Taconic IPA member practice's ending population was 56 patients, with a mean age of 62 due to three deaths of the original patients.

The difference in mean age between the locations was attributed to patient mix (medical issues, socioeconomic status, insurance coverage, and race/ethnicity etc.). Patients at the Community Health Center on average had more visits per patient, during each measurement period.

ESTABLISHED CARE COORDINATION PROCESSES

The degree to which care coordination took place was assessed by tabulating the frequency with which sites scored across the more than 30 care coordination metrics used. As expected, a number of care coordination processes were in place in each location at the beginning of the project, but were not consistently implemented. The lack of consistency in implementation made it difficult to score the activity, but a decision was made to capture the information at the point in time of the data collection. There were also processes important to care coordination that neither location was doing consistently or at all.

» Community Health Center initially had more care coordination processes in place due to its size and organizational structure, e.g. assessing progress against goals (78%), medications reconciled at each visit (94%), making referrals to cardiologists (90%) and including required documents (75 – 85%), receiving summaries from cardiologists including findings as requested by the PCP (100%), and recording the primary care giver (100%) and cultural aspects impacting care coordination (82%). One reason for the number of referrals to cardiologists was that cardiologists do not readily co-manage these patients, due to reimbursement amounts thus requiring repeated referrals to cardiologists for these patients.

- » The Taconic IPA member practice had some data documentation in place for care coordination processes, e.g. recording the patient's primary language (98%) and primary care giver recorded (95%), but did not record referrals to cardiologists consistently because existing patients are co-managed by cardiologists on an ongoing basis and many insurers did not require referrals for new patients.

NEW SMALL IMPROVEMENTS (10 – 29% CHANGE)

The pre-post data was analyzed for the number and magnitude of improvements seen, and categorized improvements as either small or large *(See Table 4, pg. 38)*.

- » Community Health Center: A variety of small improvements were observed in Community Health Center's processes. Some electronic changes were made in their EHR, that have since become part of the clinics' standard operating process. For example, when referrals are made, specific project-driven improvements are used, e.g. time frame for consultation and requested actions in the drop-down box for referrals. In another example, increased attention was placed on recording the patient's primary language to mitigate provider-patient communication barriers.

- » Taconic IPA member practice: Small improvements at the Taconic IPA member practice focused mainly around defining and working with the health care team (PCP, care coordinator and patient) and on discussing and setting principal care goals. The Care Coordinator worked with the PCP in morning huddles, or via e-mail, to determine goals and then met with patients in person, in the office or via telephone to set self-management goals, coach them as needed and periodically assess progress towards the goals. Much focus was placed on consistently reconciling what medications the patient was taking and counseling patients on the importance of knowing key facts about these medications. Since so few formal referrals are made to cardiologists, the Care Coordinator also started to fax or e-mail Care Plan Summaries (CPS) to cardiologists whenever there was an update or change to the Care Plan Summary.

LARGE IMPROVEMENTS (> 30%)

- » At Community Health Center, large improvements were seen related to the health care teams' defining and setting principal care plan goals, setting self-management goals and getting the team to agree to these. Flow sheets were developed within the EHR to document goals, give them to the patients and eventually send them to the cardiologist. None of these processes were in place initially. Additionally, retraining and emphasis was placed on consistently implementing and documenting the existing process of reconciling medications at each visit. Barriers to additional large improvements were related to the inability to engage a larger number of staff members in implementing the interventions in the relatively short duration of the project. Additional insights and root causes of this shortcoming are discussed in the provider interview section.

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» At the Taconic IPA member practice, there were more large improvements, driven by the Care Coordinator located in the office. Huge gains were seen in all aspects of defining principal care plan goals and setting self-management goals. The Care Coordinator worked directly with patients in the office, either before or after seeing the PCP or called them on the telephone, if she did not see them in the office. She also did home visits to get baseline intake information recorded. Large improvement was also noted in recording cultural aspects. More work is needed to better define what cultural aspects are important for care coordination. Documentation of ethnicity, religion and diet is needed.

No Change or Small-Denominator Results

Due to the small number of recorded referrals during the demonstration period in both locations, it was difficult to show improvements in the processes in this area. To some extent this problem is related to absent data, rather than absent activity.

» Community Health Center: The number of referrals at Community Health Center declined dramatically from the baseline period. For the five referrals that the Community Health Center teams made in the demonstration period, however, they used the new systematic processes. Qualitative improvement was seen in sending accompanying documents, setting time frames for the referrals and stating what the PCP wanted from the cardiologist.

» The Taconic IPA member practice recorded only eight referrals in the baseline period and two referrals in the demonstration period. However, 89 consult summaries were received in the baseline period and 44 summaries were received in the demonstration period for co-managed patients, highlighting the problem of documentation rather than inter-practice communication.

In both sites, cardiologists continued their traditional practice of sending consult summaries for most patients, even in the absence of formal referrals.

New Process Change Shortfalls

The biggest barrier encountered was a lack of interest from cardiologists in working with the Care Plan Summary and to review and agree to principal care goals that they perceived not to be important to the cardiac condition. Some cardiologists had no interest in receiving the Care Plan Summary, as designed by the project team; none updated them or sent them back. The project team feels that care coordination requires ongoing and explicit three-way communications between the patient, the PCP and the cardiologist. The Care Plan Summary was thought to be a simple, practical and informative document that formalizes communications, however, in its present largely paper-based form, it did not foster an increase in such communication.

» Community Health Center developed a process to send the Care Plan Summary documents to the cardiologist 3 days prior to the patient's next cardiology visit, but no documentation was found to demonstrate that it happened during the project.

» The Care Coordinator at the Taconic IPA member practice sent a modified version of the Care Plan Summary. Some cardiologists said they were pleased to receive this version, but none of the Care Plan Summaries were returned with sign-off by the cardiologists. The same Care Coordinator also started to send an MS Excel spreadsheet with lab results and medication updates to the cardiologists multiple times per week, whenever these items changed for a patient. This spreadsheet allowed direct import into the cardiology EHR and was enthusiastically endorsed by the cardiology group.

Going into the project, the team had also hoped to gain cooperation from cardiologists to share their appointment calendar, so that an appointment with the cardiologist could be made prior to the patient leaving the PCP's office. The project team did not actively pursue this intervention due to its technical complexity and the short project timeline. The current practice of relying on the patient to call the cardiologist's office and make an appointment continues. This creates a significant barrier for the PCP and Care Coordinator to know whether or not the patient even makes and keeps the appointment, until either the consult report is received or the patient reports the cardiology visit, or lack of visit, at the next PCP visit. This part of the process represents a significant blind spot in any effort to track and coordinate care and therefore needs additional work.

Documentation Challenges

A major change occurred mid-project at the Taconic IPA member practice in how the PCP reviewed cardiology summaries. Rather than manually signing off after reviewing the summary, an electronic process was implemented, so the summary automatically went into the patient's EHR. As a result, there was no easy way to determine whether the PCP had reviewed the summary.

Other Considerations Affecting the 6-Month Results

» Some patients excluded themselves from the care coordination process because they were doing well medically and did not feel the need for additional assistance.

» Some patients did not want to participate in the process.

» The care coordination process was not possible during some sick visits.

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SUMMARY

There were multiple areas of large and small improvement and some areas of no improvements. The biggest improvements were in intra-office processes where the PCP and health team have control. Much of the project focused on building the supporting structure for care coordination—establishing care plans, setting goals and understanding what care the patient was receiving from other physicians. A critical contribution of the project was the interdisciplinary, iterative design of a Care Plan Summary document that formalizes inter-practice communications and facilitates care coordination. The smallest improvements were in inter-office processes related to referrals because for co-managed patients, referrals are not required and processes in the cardiologist's office are outside of the control of the PCP. When referrals are made, especially at Community Health Center, some EHR changes have been accepted as standard practice and will continue to be effective. In addition, Community Health Center was able to get cardiologists to agree to a standard EHR-generated referral form, rather than using each group's unique referral form. Regardless of location, gaining the involvement of cardiologists in shared goal setting is critical for better inter-office care coordination.

The size of the PCP office impacted results. Community Health Center has multiple locations with multiple staff that made change harder, but the changes that have been incorporated into standard processes will likely continue. The on-site Care Coordinator drove large improvements in the foundation of care coordination at the Taconic IPA member practice.

The number of patients impacted by all aspects of care coordination will depend on the ability of practices to integrate some tasks into the daily workflow of the medical home, while accurately identifying those patients in need of intensive nurse care management. Improvements in long term population health and achievement of care goals commonly measured in primary care (screenings, immunizations, blood pressure and diabetes control) will require care coordination functions to be performed by all members of the medical home team. Reductions in hospitalizations, ER visits, expensive high-tech interventions, and end-of-life resource utilization will require dedicated and experienced nurse care managers, focusing on a very small segment of each practice's patients.

C.) PATIENT FEEDBACK AND REPORTS

The Taconic IPA member practice, which has an existing business services agreement with Community Primary Care that permitted it, attempted to contact all 57 surviving patients by phone after pilot completion. Of those reached 12 agreed to provide feedback about the care coordination program in a brief 15 minute structured and open-ended interview. Keeping this response rate in mind (21%), patients' responses to care coordination varied from marginal to significant utility, with none stating that they found no benefit. At the Community Health Center, patient feedback interviews were not attempted.

Following are the script and questions asked of the Taconic IPA member practice patients by phone:

The Taconic Independent Physician's Association is considering expanding the recent care coordination program you participated in with Community Primary Care to other practices. I would like to ask you some questions about your experiences, with nurse care coordination and the care plan summaries, [NAME REMOVED] gave you, to evaluate what the strengths and weaknesses of care coordination. The whole survey will take between 5 and 10 minutes and is only meant to improve the care coordination program. I will not be asking any questions about your personal health or details of your care as provided by the physicians. Your answers will be completely anonymous and you may decline to answer any question. Do you have any questions at this time?

1.) In 2010, I worked directly with my primary care provider or a member of his or her staff to set at least one goal for my health care. Examples of goals include "will keep food diary," "will walk 10 minutes 3 times per week," or "will monitor blood pressure and call office if elevated."

‣ Yes/No

2.) In 2010, I received at least one written care plan describing my care goals.

‣ Yes/No

3.) The care plan(s) I received helped me take better care of myself.

‣ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

4.) The nurse care coordinator helped me take better care of myself.

‣ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

5.) As a result of the written care plan(s) and the nurse care coordinator, I understand my health and how to manage it better than I did previously.

‣ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

6.) As a result of the written care plan(s) and the nurse care coordinator, I feel my overall health has improved in 2010.

‣ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

7.) In 2010, my primary care provider seemed more informed and up-to-date about lab tests, medications, and other care I received from the cardiologist.

‣ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

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8.) In 2010, my cardiologist seemed more informed and up-to-date about lab tests, medications, and other care I received from my primary provider.

> ▸ Strongly Agree/Somewhat Agree/Neither Agree nor Disagree/Somewhat Disagree/ Strongly Disagree

Please finish these statements with whatever comes to mind, in your own words. Thank you.

9.) The thing I liked best about care coordination was:

10.) The thing I thought most needed improvement about care coordination was:

RESULTS

The sources of value the patients identified centered around two areas – information sharing and its easing of transitions across settings and the direct hands-on approach of the care coordinator herself.

INFORMATION SHARING

One self-identified highly complex patient, PA, identified her chief complaint and the utility of the care plan specifically this way:

> *"I go to a lot of doctors and they make you spend two hours filling out these forms that you know they're not reading. I want to yell at them, 'Read the damn forms!' But that poisons your relationship with the doctor. They're almost like a blind person. I would make copies [of the Care Plan Summary] and bring it with me and put it in their hands in the room and they would actually read it and ask me about it. I didn't have to repeat myself over and over and over. That gets very depressing. I made lots and lots of copies." – PA*

Of particular note in PA's case is that she had recently had a surgical procedure, that made speaking very difficult for her, but when offered the opportunity to terminate the telephone call, she refused, saying that she wanted to share her perspective. She went on to say "the term coordination says it all. I felt like it all worked together."

Even participants who found relatively little value to other parts of the pilot overall, identified information sharing as a chief benefit. Another respondent, the daughter of the patient, who had previously said "I never really understood what she was doing for Mom" identified the medication list on the Care Plan Summary as having significant value. "It was great when we had to go to the hospital, because they're always asking for the medications, and we had the list ready." In both these cases, the patient was put in direct control of sharing information whose creation they had directly witnessed. By contrast, very few patients noticed an improvement in back office communication, between the PCP and the cardiologist of clinical information, such as lab values. These responses suggest that the best way to engage the patient and demonstrate an immediate value to coordination is to ease information sharing across practice sites, in a way that is highly visible to him or her.

The Care Coordinator

As previously discussed, the Taconic IPA member practice Care Coordinator was more hands-on than in the Community Health Center sites, working directly with the patients and their care givers to set goals and monitor achievement. The goals set did not address clinical end points but functional or behavioral. Instead of "lose 10 pounds" for instance, the goal might be "join Weight Watchers" or "take a 20 minute walk three times a week." All goals were written to encourage the patient to take ownership for meeting that goal.

All the patients remembered the process of goal setting, and the goals themselves were judged useful by some patients. One patient, unknowingly echoing language from the primary care provider, said

> "The goals she set were reasonable, appropriate, realistic, and designed around my lifestyle. I once had a physician say I had to go from 4700 calories a day to 1200. I told him he was crazy. [NB: the physician in this anecdote was NOT the current PCP.] [The Care Coordinator] brought the education to my level and help me and [my wife] understand and set realistic goals that I could do. She opened doors and brought the education to me." –RV

One patient, reflecting the previous patient's implicit statement that part of process of effective goal setting is patient health education said "I didn't need it [care coordination] because [my PCP] is so good at patient education. But I can see where she would be needed for less informed patients. When a doctor doesn't communicate with patients and doesn't take the time my PCP takes, the Care Coordinator position is essential." (BA) Several patients also said that even though they knew these were their goals and had discussed them previously with their PCP, having it in writing made it more real and encouraged them to actively pursue goal achievement.

The final, and perhaps hardest to measure, source of value to the patient was the time the care coordinator took with the patient. There can be no better expression of what this meant to the patients than their own words.

> "She was a very caring person who sat and listened. She was right on her toes. When she called to tell me she was leaving, I was devastated and went into a deep depression. I was referred to a psychiatrist, after she left, to address my depression and then the psychiatrist put me on the same medication [my PCP] already had me on. I need someone to talk to. She was someone to talk to. " – PD, had an existing depression diagnosis prior to event described.

> "With her, he was not just another number; another patient. She took a personal interest in him and kept pushing and pushing. She was on top of him all the time." – AB, wife of patient

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"She was my pusher. Without her constantly pushing, I'm not as good at following my goals. I'm still following the diet, but I stopped going for my walks. She was interested in me. She made me feel important." – VT

[In response to the question "What did you like best about care coordination?"] "The caring – someone was there for me." –NB

"She actually listened to him. She helped him a lot. She was good for him, just talking to him. She was very helpful. She was someone for him to talk to." – CK, wife of patient

It is worth noting that the Taconic IPA member practice hired an RN after project completion to fill some of the roles that the previous Taconic IPA -employed Care Coordinator had filled. The Taconic IPA member practice saw value in having someone who the patients identify as being explicitly patient-centered in its practice. This language of patient-centeredness combined with the language the patients used in describing the embedded Care Coordinator suggests the clear value of the Care Coordinator in jointly advancing the twin goals of improved information transfer and patient engagement central to the Medical Home concept.

ANECDOTES FROM CARE COORDINATORS

Along with the data collected from patient records, the team collected anecdotes about patients who benefitted from care coordination. The anecdotes are important in illustrating patients' unmet needs, even in high-tech, modern primary care practices. Following are examples of the stories, from the Care Coordinators:

1.) The patient had Insulin adjusted as his blood sugars were consistently high. I called him at home and his fasting blood sugars were 160-170's, evening blood sugars low 200's. On further questioning, the patient admitted that he was not taking Insulin as prescribed, but using his own sliding scale. We discussed why and uncovered that he was afraid of having a hypoglycemic episode, which he had experienced one time in the past. I reviewed S/S, treatment for hypoglycemia and the need for blood sugar more frequently, if he was concerned. The importance of taking insulin as prescribed was reinforced. I will follow-up with patient.

2.) Patient taking Cholestyramine ordered by specialist - not on the medication list. I went to add it and saw that it comes either with sucrose or "light", with Aspartame. Called the patient, who had a very difficult time finding on the packet that it contained sucrose. One web site said there is one teaspoon of sugar in each packet. She takes it 4 times a day. Her A1C's were: 2/10 - 7.6, 3/10- 7.4 (8/10 A1C - 6.6). The patient also takes Lantus, Byetta and Amaryl to control her Diabetes. Talked to PCP; script changed to "light" to avoid extra sugar.

3.) A patient seen by the Care Coordinator for intake 3/3 complained of headache, long standing. CC checked the chart to see what diagnostic tests had been performed in the past. Found MD note of 12/14, "will get MRI and Carotid Doppler." (Referrals are not entered as such in EHR) Patient states he never had this done. CC asked patient to check at home for script. Patient called CC back, could not find script. CC spoke to patient's primary MD (different MD in office, not one seen on 12/14) – tests never ordered. MRI and Doppler ordered, pt. notified, Carotid Ultrasound done that afternoon, pt. to schedule MRI.

4.) Intake by CC for the project uncovered that a patient, age 85, was not taking Warfarin for his atrial fibrillation. He had fallen after a shift volunteering at the VA hospital, and he was treated for a laceration and told to stop warfarin because of bleeding. This was a month ago and he never re-started the warfarin. CC called the cardiologist who said patient should resume warfarin immediately.

D.) PROVIDER INTERVIEWS

Project staff also interviewed providers involved in the project, using a structured interview form. Following is a summary of their responses:

BASELINE INTERVIEW FINDINGS, BOTH SITES

The team conducted baseline interviews with medical home providers, cardiologists and administrators at each of the two sites. The findings were consistent with the baseline patient data, and provided suggestions that the team used in implementation of new care coordination processes.

The interviews yielded the following observations about communication **from the medical home to cardiologists**:

» Different PCPs send different information to cardiologists.

» The use of different EHR systems by PCPs and cardiologists complicates the process of sending/sharing information.

» One cardiologist did not perceive there to be sufficient communication with PCPs; another felt overwhelmed by receiving too many irrelevant notes.

» Cardiologists often do not have access to information needed from PCPs, sometimes relying on calling PCPs or patients to obtain medication lists and other information.

» Cardiologists would like easier access to cholesterol test results and similar information.

» Sometimes it can be difficult to reach cardiologists and to get patients appointments to see cardiologists, because of the low reimbursement cardiologists receive from Medicaid.

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Regarding communication in the opposite direction, **from cardiologists to the medical home**, the interviews found the following:

» PCPs sometimes do not have referral summaries from cardiologists, when desired at the next patient visits.

» When received, information from cardiologists is not in an electronic form easily usable by PCPs in EHR system. PCPs have little time to read scanned documents.

» It is often difficult to verify that a referral visit actually took place.

» It can be very time consuming to obtain information manually.

» Cardiologists and PCPs sometimes have different beliefs regarding what information actually is sent via faxed consultation reports.

» Sometimes the difficulty in sharing of information stems from a disagreement over who manages the patients' care between PCPs and cardiologists.

» Many cardiologists do not have EHRs and even those that do are not easily interoperable with the primary care locations; this results in haphazard faxes to PCPs.

» PCPs/staff spend significant time on calls and other measures to try to obtain information from cardiologists, even about whether or not a referred visit occurred.

Post-Demonstration Interview Findings, Both Sites

The team again interviewed a selection of primary care and cardiology providers to obtain their views on the project and the interventions tried.

PCPs were asked to explain what the project was designed to accomplish. Of the four physicians interviewed, all stated that the project was designed to help patients set and achieve self-care goals with the help of a nurse care coordinator. The providers also stated that the project sought to better coordinate care with cardiologists, but that they did not know if cardiologists were fully aware of their role in the project.

Many clinicians felt the experience with the care coordination project was positive and there had been some lasting effects in inter-clinic settings. One cardiologist, in particular, felt that even after the departure of the care coordinator from the primary care setting, he was receiving better and more complete information than he had previously, from the channels the dedicated care coordinator had set up.

One internist saw positive effects on the patients, particularly for the one-third of the targeted patient pool he felt had benefited the most from having a staff member whose primary function was patient-centeredness. There was enough benefit to have hired an RN who will perform some of the same functions at the member practice as the dedicated care coordinator. As noted in

Next Steps, the new nurse is taking the guided care training and will be focused on ongoing patient relationships and coordinating care transitions. Because the positive effects he saw were more dependent on the care coordinator's active participation, he did not see the same ongoing effects on communication as the cardiologist had described. "I saw one of the main goals of the project as a reduction in repeated labs and improved availability of clinical information for patients with frequent hospitalizations. She set many goals with the patients for behavior. She set reasonable, sensible goals, but I'm not sure how realistic it is to change the habits of the lifetime in six months." (Also note that the Care Coordinator started a process of sending updated clinical information about patients to the cardiologist. However, communication back from the cardiologist was unchanged: the medical home received the same visit summaries that they had received before, but nothing more.) Perhaps due to the differing natures of the patient panels between Community Health Center and the Taconic IPA member practice, many of the complexities identified at Community Health Center were not found in the Taconic IPA member practice. For instance, no language or social complexity factors were identified as important in this panel of patients. Both providers felt the most clinically complex patients were the most likely to benefit, particularly those with frequent hospitalization. Neither found significant changes to the office workflow or improved back office efficiencies, although both said that perhaps a larger patient group would have made a bigger difference.

Primary care physicians were asked how closely they were involved in the care coordination process. They stated that given time limitations, their involvement was predominantly to set the care goals and provide minimum encouragement and congratulations for progress made. The details of patient coaching were entirely relegated to nurse care managers. The PCPs thought this degree of involvement was just right. They did not have expectations that their involvement would be more or less than it had been.

The main impact care coordination had on patients was to enhance their motivation to change lifestyle habits and compliance with medications. However, the physicians recognized that motivation decayed over time. Also, because of cultural issues, patients cannot easily sustain changes engendered in the physician office. It was also noted that cardiologists seldom have bilingual staff. This is a challenge to quality care which one provider saw as a problem of care coordination.

The impact on office work flow related to time, space and staff roles. A care coordination patient required more time from the provider, but it was not enough to lower their productivity on any given day. "We still saw the same number of patients." The Care Plan Summary was very well received, because the information needed could be found in one place (at-a-glance). Office space proved to be a challenge. A care coordination patient session with the nurse took place in the same exam room where the PCP had seen the patient. This impeded the rapid flow of patients making the process more stressful for all the personnel. Regarding staff roles "this project was owned entirely by the nurses". The critical role of the nurse was highlighted emphatically; the

project could not have been done without their presence. One PCP suggested that more bilingual nurses and a social worker would be needed to have a greater impact on patients. Another PCP suggested that greater depth of cultural and linguistic competence was needed.

Feedback from primary care physicians on the care coordination process highlighted other findings. PCPs felt the type of patients that would benefit the most from care coordination would be those with greatest difficulty in achieving goals. Frequently, those problems are of social and economic nature.

Improving the process of care coordination would require that the cardiologists be invited to participate as part of the project team from the outset. One PCP had experienced excellent PCP-Cardiologist relationship in a previous work setting. In that case both providers were part of the same organization. Therefore, having a cardiologist in the premises might reproduce the same condition.

The primary care physicians identified some challenges associated with the care coordination process. But overall, PCPs would like to see the care coordination project continued with additional staff support. A challenge mentioned by one PCP stressed the brittleness of patients' medical-social-economic conditions. "No sooner do I have the patient nicely tuned-up, boom they lose their job and everything falls apart."

Other impressions of the care coordination project yielded unexpected observations. One PCP suggested that changing how physicians care for patients require DATA. The project should be presented as research aimed at collecting information to determine what works and what does not, from the ground up. This project may have been presented as a good idea from the outset, but lacking data to support that statement fell short in persuading that physician.

The biggest lesson learned was the need to explore what is involved in care coordination, before attempting to start coordinating care, although the two of the physicians had a different perspective on what was involved. An internist, who worked more directly with the care coordinator, had this to say: "Good fundamentals will create an understanding of the care coordinator and her role and boundaries in your practice."

A cardiologist, on the other hand, identified another point at which an improved understanding between team members will help. "The primary care providers are involved with the care of the diagnosis for which the patient is also seeking specialty treatment. The patients aren't good at carrying communication between the PCP and the specialist. [The care coordination pilot] made us aware of what we were each trying to do with the patient when we see them. We understand each other's goals for the patient better." The implicit conclusion, in both statements, is if the whole team understands what every member of the care team contributes to the overall patient's care, you will have gone a long way toward understanding how to coordinate care.

E.) CHANGE MANAGEMENT

Consistent with other medical-home projects around the country, the Care Coordination project found that just initiating change was a major task in itself. Further, some of the underlying processes necessary for care coordination were not present and had to be built or strengthened. For instance, the process of setting and documenting self-management goals with patients was expected but not routine at Community Health Center, a new concept at the Taconic IPA member practice, and not a part of treatment at the cardiology practices. Following are the major specific challenges that the Care Coordination Team met and how they handled the challenges.

Existing practice styles. Both sites found the first challenge to be integrating new processes into existing, busy primary care practices. In a presentation at the Taconic IPA's spring collaborative meeting, a vice-president from the Geisinger Health Plan said that "a good care coordinator nudges providers" to engage in care planning and follow-up with patients. This was necessary in the demonstration project, as some providers had to be convinced over time to first accept and then support better care coordination.

At Community Health Center, the Care Coordinator had to turn a big ship, but had well-developed tools for doing so. Data show that coordination activities started at a higher level with more existing organizational structure (physician-nurse teams, daily staff huddles preparing for patients' visits, some disease management protocols, etc.) than at the Taconic IPA member practice, but improved somewhat less during the six-month demonstration phase. The structure also provided ways to implement change, as staff training and updates to the EHR were common occurrences.

At the Taconic IPA member practice, in a smaller office, change happened more quickly, but was dependent on the actions of the individual Care Coordinator. As a new person, she had to build trust with all members of the staff and insert herself into the office routine. This meant initiating updated concepts into what was a traditional model, although the practice had NCQA recognition as a level 3 medical home. She had to make scheduling staff understand that she needed to see the patient after the provider appointment. Within a few months, she had established her role and was respected as a patient advocate. Getting her own appointment book within the NextGen EHR helped to turn the corner. At the mid-term meeting, a primary care physician noted that the Care Coordinator was helpful in coaching and motivating patients and helping them understand goals better. The providers in the office soon began including the Care Coordinator in establishing care plans and following up with the patients in the project. The primary care physician stated that he would like to see the coordinator's function applied to more of the most complex patients.

Medication reconciliation. The Care Coordinators both acknowledged that medication reconciliation posed more challenges than anticipated. First, the baseline data showed lower results than expected just on documenting reconciliation activity. Second, the on-site Care Coordinator routinely found, in her intake with patients, discrepancies between what the EHR showed and what the patients were actually taking. There were further discrepancies with

what the cardiologists thought the patients were taking. Third, both sites expected to begin soon receiving electronic medication histories based on actual prescriptions filled. The Taconic IPA member practice tested the use of data from SureScripts, which state law required getting permission from each patient individually. One interesting consequence of obtaining consent from the patients was the discovery that patients often thought that this information sharing was already happening. The patients' expectation was that, if the providers were using e-prescribing, that the information was automatically available to any other provider using e-prescribing. While the immediate task of patient education was easily accomplished, the experience did become part of the lessons learned, in that patients may be less likely to include information in their recall that they believe is already available to the provider.

The Care Coordinators met the challenge of medication reconciliation in different ways. For the Taconic IPA member practice patients, the Care Coordinator's intake process included detailed medication reconciliation, with patients either bringing in all their medications or seeing the Care Coordinator at their homes. It took 30-40 minutes. This resulted in many corrections to the EHR and in the cardiologists' subsequent interest in receiving medication data on patients. The Care Coordinator began receiving SureScripts electronic data on patients' prescription fills by the end of the project. She found the data not easily downloadable to the EHR; she used it as an adjunct to the patients' reports rather than as a final, comparable list of medications. With a new version of NextGen and the development of the regional Health Information Exchange[1], the Taconic IPA member practice expects prescription data to be much more usable within two years. For Community Health Center, medication reconciliation was thought to be a regular, every-visit process. The Care Coordinator initiated training for the staff when the project's baseline data showed that medication reconciliation had happened about 94 percent, rather than 100 percent, of the time. Post-demonstration analysis showed about the same percentage.

A comprehensive definition of care coordination. Both sites worked hard to improve their overall processes of treating people with multiple chronic conditions. The baseline data looked at specific processes of care coordination both within the medical home (intra-practice care coordination) and between the medical home and specialists (inter-practice care coordination). Baseline data and process flowcharts showed that both sites needed to boost both intra-practice and inter-practice care coordination. The team put considerable work into improving communication among all treating clinicians and with patients.

The project adopted the expansive definition of care coordination from NQF. By including the NQF domains of the medical home, care planning and treatment goals, the project's concept of care coordination included what could be called care management or even case management. It

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[1] After the conclusion of the pilot and before the release of this report it was announced that MedAllies is one of eight pilots Health Information Service Providers (HISP) for the ONC-sponsored Direct Project communication platform. The MedAllies pilot is designed for a fast, secure and easy exchange of clinical information between providers using disparate EHR systems without those providers ever needing to leave the EHR workflow familiar to them within their system. EHR software platforms forecast to be implemented by the end of 2011 include AllScripts and NextGen, the systems used at the cardiology practices.

became clear that meeting the objectives of care coordination required considerable time spent by nurses and doctors working with patients and with specialists. Specifically, the project has strengthened these processes from the ground up:

» Documenting care plans, which in many cases were assumed by the providers but not written

» Establishing treatment goals and self-management goals with patients

» Delegating patient counseling, education, use of tools, motivating and skill training to a nurse care manager

» Tracking performance against goals and updating care plans and treatment goals as needed by changes in the patient's condition

» Improving information contained in referral requests, and tracking referral requests

» Producing clinical summaries for cardiologists and patients.

Acceptance of new care coordination tools by cardiologists: The first iteration of the Care Plan Summary was reviewed by cardiologists at both sites. The elements of the document deemed acceptable and helpful were the demographic information, identification of the Principal Care Team members and contact information, acknowledgement of reading and accepting the care goals. However, the cardiologists wanted to limit the information received to what they considered relevant for their scope of care. The care goals for cardiac diseases were acceptable, as was the active medication list and a modified version of the lab results list focusing on hematology, chemistry, metabolic, and coagulation results. Omitted details dealt mostly with non-cardiac preventive care, such as mammograms, colorectal screening, and retinal health screening along with related labs such as Prostate Specific Antigen levels. The Care Plan Summary was amended to satisfy the requirements of cardiologists. This led to separate versions of the Care Plan Summary, with one version to the PCP and patient and another version for the cardiologist *(See Exhibit 4, pg. 76)*.

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F.) Lessons Learned

The exploratory nature of the project gave the team a chance to continue learning from the actions taken and improving the protocols dynamically throughout the six-month implementation period. In addition to the shorter term challenges encountered and met, the team identified several lessons learned. These lessons stand as advice for other entities working to improve care coordination.

I.) High-touch care coordination can be successful, even in non-integrated medical homes, and can improve patient care.

Even when the high-tech aspects for inter-practice communication are not in place, extra time spent with patients on care coordination yields more comprehensive care. Where there is commitment from providers, patients received additional assistance with understanding their plan of care, understanding their treatments, integrating information from specialists, and setting and pursuing self-management goals.

The patient data showed good improvements in discussing and setting principal care goals with the patient and health care team and consistently reconciling medications. Strong communication with the patient also happened in several areas: giving a copy of the Care Plan Summary and medication list to the patient as well as following up on missed PCP appointments. While outcomes of care were not measured, it was assumed that engaging patients in actively pursuing goals should result in better management of their conditions. Anecdotal evidence indicates that patients and their caregivers are willing and able to become more engaged and assume an active role in their own care coordination, even to the point of transmitting information between the medical home and specialists.

II.) Workflow and work quantity are the challenges.

This advice comes from many other medical-home projects also. It is a major challenge to layer a process change onto an office where clinicians are already busy practicing the traditional way. The project saw this at the Community Health Center sites, where the funding was for a central Care Coordinator, but the actions took place at the clinic sites. In some cases, the new processes were seen as extra work. The on-site Care Coordinator at the Taconic IPA member practice was an additional pair of hands; still, it took some adjustment for the staff to begin sending patients to her.

Ultimately, the time spent planning and coordinating care should avoid some of the time-consuming problems of uncoordinated care, such as medication misunderstandings, unavailability of test results and visits where either the patient or the provider is unprepared. Getting to that stage requires that the practice have the energy for change, or as the National Demonstration Project (NDP) evaluators called it, "adaptive reserve." [X]

III.) Setting stratification criteria for patients is important to using care coordination resources wisely.

The patients who need care coordination, especially who need personal coordination by a care team member, are patients with complex health needs. In this project, many care coordination tasks were accomplished by nurses; setting and validating a treatment plan required the physicians' input. Both are highly paid professionals. Because the project just focused on coordination between medical homes and cardiology practices, the patients chosen were those who had both Type 2 diabetes and a cardiac comorbidity. The patients at both sites included some who had multiple other comorbidities and a clear need for coordination, and some who were currently well-managed and controlled for their two diagnoses.

Both sites agreed that, without a grant, they could implement the tested processes only for the more complex, potentially high-cost patients. The team noted that the primary justification for expending more effort and resources for care coordination is to avoid costs from preventable hospitalizations and ER visits. The Taconic IPA member practice team members find that payers are more likely to support intense interventions for the patients most likely to be hospitalized.

The team and advisors discussed possible selection criteria for identifying complex patients in the follow-on phase of the project. Options included:

» Diabetes patients who were not under control, either for blood glucose, blood pressure or LDL levels

» Patients with diabetes, high blood pressure and at least one additional chronic condition

» Patients who were prescribed at least four daily medications

» Patients with chronic conditions who were co-managed by the medical home and two other specialists

» Patients with diabetes and ongoing behavioral health treatment

» Patients who have had a hospitalization or an ER visit, in the last year, for any of their chronic conditions

» Patients identified as high-risk through the use of predictive modeling tools, applied to EHR data bases or claims.

» Further, one site suggested that patients be made more aware of the addition of care coordination to a practice, so that they could be more knowledgeable in their participation.

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IV.) Care Coordination is a nursing function more than a physician function.

As the complexity of caring for multi-morbid patients became more apparent, the new role of care coordination emerged as a distinct and separate function. It involves connecting the dots, eliminating redundancies, closing gaps, and making sure patients and providers are literally all on the same page, etc. While PCPs are considered the putative care coordinators, in reality the role has fallen on a better suited and more qualified candidate: the nurse. Recognition of this fact cannot be an afterthought, but should be openly recognized and nurtured. There are nurses who by virtue of their training and experience are well-suited to build the care coordination model; however, the special skills and personal attributes of the Care Coordinator could be taught to others. Growing a pool of qualified Care Coordinators should be a deliberate strategy, to recruit more practitioners for care coordination.

V.) The choice of nurses or others to be care coordinators is crucial to success.

For the different roles that Care Coordinators played in this project, the two people chosen were well-suited; and the team believes this is crucial. Because coordinating care entails persuading others to collaborate on clinical and administrative tasks, the attributes of a successful care coordinator include:

» Experience counseling patients about behavior change, adherence, using self-care tools and a basic understanding of motivational interviewing techniques and readiness to change.

» Good clinical knowledge base. At a minimum, familiarity with diabetes and cardiac care guidelines, although knowledge in other areas, particularly behavioral health, is a major advantage. This is a necessary attribute of care coordinators because the role is highly visible and requires a great deal of trust on the part of patients, providers and administrators alike.

» Excellent interpersonal and communication skills. Those skills must span dealing with patients and dealing with providers. In working with providers, diplomacy has been highlighted by successful care coordinators as a key to effectiveness. Cultural competency has been deemed critical in dealing with patients.

» Team work. While the role of the care coordinator is critical, there are boundaries and hand-offs that need to be recognized and respected. This includes hand-offs to other clinical staff (MAs, dietitians, social workers, etc.) and boundaries with complex patients where physicians need to assume the greatest role in managing the patient.

» Organizational skills: the complex interactions between members of the health care team require excellent organizational skills. The advent of electronic medical records will greatly facilitate the task.

Both Care Coordinators were responsible for inaugurating a new role within their organizations, so being assertive team players was important. The care coordinator who was integrated with a medical home office was new to both the Taconic IPA member practice and the Taconic IPA organization. However, she had a substantial background working independently of physicians and supervising other nurses in home health care. She evolved her role to establishing a treatment plan for each patient, based on guidelines, having the primary care provider sign off on it, and following up with the patient as she deemed necessary.

The Care Coordinator who backed up the front-line teams had been a nurse manager in the same organization; she was well-known and respected within Community Health Center. She had management's confidence, knew the organization well and had begun other new processes there in the past. She was, thus, able quickly to have the electronic tools developed, and the care teams trained on using them. Due to unavailability of Community Health Center's Chief Medical Officer during the project, the Care Coordinator had to convince both physicians and nurses on the care teams to use the tools. She further trained other staff on their parts of the coordination process, including medical assistants who make referrals to specialists. This made her background with the organization, plus her management skills, crucial.

The team agreed that different tasks in the care coordination role can be played by staff with different backgrounds. Some medical homes elsewhere in the country give medical assistants the primary responsibility for maintaining a coordinating liaison with the patient. Where the patient's self-management is severely limited by behavioral health issues, it may be that a behavioral health professional is an appropriate coordinator. Providing coordination of referrals, coaching of patients with chronic illness who are stable, and other panel-management tasks can be done by a wide range of staff, within the limits of state licensing. Management of the most complex, high utilizing patients requires experienced nurse care managers. Whatever the professional background, one task all new care coordinators must take on is the task of making change happen in an organization.

VI.) The process of improving care coordination is integral to the process of transforming to a medical home.

The project took one element of a medical home, care coordination with one specialty, and fully developed it, in settings where other elements of the medical home were not necessarily fully developed or mature. This is likely to be true of most other primary care practices in the country. Evaluations of the TransforMED National Demonstration Project, which took place between 2006 and 2008, emphasize the complexity and time involved in all aspects of the transformation[2]. Even practices with ongoing support, such as the facilitated practices in the TransforMED demonstration, found that two years was a short time for the full transformation that the patient-centered medical home envisions.

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[2] Reference Annals of Family Medicine supplement, June 2010.

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The practices in this project were similarly challenged to change an ingrained way of doing things. One practice in the Care Coordination Project was already recognized by NCQA as a level 3 (highest level) PCMH; the other has most of the processes recognized by NCQA ingrained in its operation; both use EHRs exclusively and both e-prescribe. The patients in the Care Coordination Project, however, represented a registry, and the project required special work and follow-up with those patients. Because use of registries for population management was a fairly new process, not regularly used by either practice, the care coordination registry did not fall into an established routine. Another PCMH concept is the use of treatment plans and treatment goals for patients with chronic disease. However, the project really had to formalize what was meant by a treatment plan and treatment goals, and establish a process for setting them. While both practices had tools within their EHRs that could document treatment plans and goals, the process of making them explicit for each patient required adjustments to routines.

Related to the stage of transformation to a medical home is the leadership and commitment of on-site physicians. The TransforMED evaluation identified physician leadership as a crucial component. The Care Coordination Project ultimately saw less change where on-site clinical leaders were not fully committed, even though both sites provided significant infrastructure to support the Care Coordination project.

VII.) Reimbursement methodologies and patient payer mix can either help or hinder care coordination.

The two sites in the project provided an interesting contrast in their relationship to cardiologists. The Connecticut site, serving a low-income, primarily Medicaid population, had to encourage cardiologists to see its patients because of the low rates of reimbursement. In that setting, it is fairly easy to implement a process that just calls on cardiologists for brief consultations. In fact during the project, one cardiology group used by the Community Health Center stopped accepting all new Medicaid patients. One cardiologist left that group and became the cardiologist of choice for a Community Health Center office. That one cardiologist also was the most accepting of the Care Plan Summaries sent by the Community Health Center.

The other site, New York, had a different challenge with cardiology. Its patients were covered by either Medicare or commercial insurance, and most were being essentially co-managed by cardiologists from the regional cardiology practice. All of these financial arrangements followed traditional fee for service models; none incentivized care coordination, shared savings, or quality metrics. As a result, the cardiologists were motivated to continue long term relationships with patients in parallel with primary care practitioners, and less supportive of changes that might reduce utilization of their services.

In both cases, cardiologists were willing to accept some new information from the medical homes, and to continue to provide summaries of their visits with patients. However, they did not engage in bidirectional care planning or change their own processes.

VI | CARE COORDINATION IT SOLUTIONS

The Care Coordination Project began with an objective of developing a "care coordination decision support tool," envisioned as a high-tech addition to the EHRs that the sites were already using. The team further expected that the tool developed would ultimately result in a high-tech clinical summary to be exchanged electronically between the medical home and the cardiology specialists. Actual implementation of the care summary was much less high-tech. This section describes what the project used and how it will move toward better high-tech solutions.

A.) STATUS OF HIT AND HIE IN AREAS OF SITES

Some national and regional initiatives seemed to support the goal of care summaries flowing between medical homes and specialists. The following observations made the team hopeful that the decision support tool could at least, be specified by the end of the demonstration.

- » Producing a care summary is also a requirement for the HITECH Act incentives for 2011; another request is to test sending electronic care summaries between entities.

- » National specifications organizations, such as Health Level 7, have set specifications for a Continuity of Care Document (CCD) to be used for health data exchange.

- » In New York THINC, a vendor- and payer-neutral convening authority for regional sponsorship of transformations intended to improve population health is working toward digital interoperability in its area and has designed a compatible electronic clinical summary and community health record.

However, none of these initiatives was geared to 2010 operation, and in fact will be a challenge for 2011. The Taconic IPA member practice did receive data on prescription fills from SureScripts, but it was not in a form that could be uploaded to NextGen records. The Care Coordinator reviewed it and found that it was useful in some cases, but that it still required manual input to the patient's record.

B.) THE CARE PLAN SUMMARY AND WORKAROUNDS

The medical homes in the project used different EHRs than the specialists to whom they referred patients. Both sites communicated with specialists by fax, phone and patient. As the project progressed, there was more use of fax and phone, but a continuing reliance on the patient. Two primary care physicians at the mid-term meeting said that they would like the cardiologists to give the patient a paper summary to bring to his/her next primary care appointment. They saw this as a good method of communicating, in spite of the facts that [I] they might not find out about changed medications for months after the cardiologist visit, and [II] they recognize the difficulty of asking the patient to keep and remember to transfer a piece of paper from one doctor to another. They did acknowledge that the cardiologists they worked with reliably faxed a short consult note after every visit with a patient, if the cardiologists had an accurate record of who the patient's primary care physician was.

The processes tried in the demonstration would not be sustainable without much more convenient electronic tools and communication. The Care Coordinator at the Taconic IPA member practice generated a Care Plan Summary from MS Word *(See Exhibit 4, pg. 76)* and sent information to individual cardiologists according to their preferences. She also frequently sent the MS Excel lists of medication changes and lab changes previously mentioned for all participating patients. This was a high-touch solution that probably would not be sustainable for a larger group of patients. At the Community Health Center, although the Care Coordinator put in place a process to send a summary to the cardiologist in advance of a patient's appointment, she found few instances of that process being followed. There were only five referrals for the project's patients during the demonstration.

There were divided opinions among team members regarding the need to produce two separate versions of the CPS, one for patients, the other for physicians using lay language and medical language respectively. Concerns about producing two separate CPS versions included the additional time and effort that would be required of care coordinators and the possibility that the contents in the two versions may vary slightly or be interpreted differently by patients and providers. It was acknowledged that using one single document written at the 4th-grade level would greatly benefit patients and that providers would not have much difficulty "interpreting" its contents. The issue was if the lay version would be beneficial enough to doctors. While the purpose of the CPS from the outset was putting patients, caregivers and clinicians "on the same page," ad AND whether this needed to be taken literally or not remained unsettled and will require further discussion and thoughtful consideration.

It became clear that the most realistic form for the electronic tool to take would be a more sophisticated use of the existing EHRs. eHI staff initially pictured developing a CCD-specified patient summary to be shared electronically between provider offices and some preliminary discussions were held. It quickly became apparent that the supporting systems for that approach were not nearly ready. Even in the two EHR-enabled care environments, such electronic communication is not envisioned to happen for more than a year from now. Software developers also are consumed at this time with meeting the specific requirements of meaningful use in the HITECH Act.

Both EHR systems have functions that support care coordination that the sites were not using and that may be able to support the processes in each site. Thus, directions for how to use existing EHRs to produce patient summaries for care coordination will be a significant contribution to e-health going forward and will lay the foundation for electronically exchanged care coordination summaries.

The project proceeded with lower-tech tools that were not fully integrated with the medical homes' EHRs or interoperable with the cardiologists' medical records. However, these lower tech tools worked for a small pilot project—a MS Word document and two MS Excel documents for the Taconic IPA member practice and three eClinical Works screens for Community Health Center, faxed or phoned to cardiologists. They worked because of staff's willingness to work around the Information Technology tools, while the project continued to develop them.

For the next phase, the team recommends a step up to a higher level of electronic support. Given the continuing developmental stage of health information exchange, the higher level of electronic support may just mean better use of existing EHRs. A set of challenges that the team saw at the beginning of the demonstration phase remain challenges for the next phase: Getting information out of electronic health records (EHRs) -- e.g., giving user-friendly information to the patient and family, sending data to specialists and implementing registries to ensure follow-up with patients.

See Exhibit 8 *(see pg. 91)* for the Care Plan Summary converted to screen shots, for use by EHR vendors and others interested in implementing care summaries.

C.) eClinical Works Solutions

Exhibit 2 *(see pg. 72)* shows the three screens built in eClinical Works to support the Care Coordination project at Community Health Center. Community Health Center recognized the limitations of this combination of screens as patient information, and the difficulty of clinicians accessing three separate screens during a patient visit. Community Health Center therefore has streamlined the process for the PCP's by adding an additional flow sheet that contained only the Principal Care Goals for the PCP to complete. This improved the simplicity of the workflow for the PCP but did add additional work for the team nurse who now needed to print the PCP's goals, the Care Plan Summary flow sheet, the Care Plan Summary letter and the medication list. The patient received all of the documents mentioned above at the completion of the visit.

The team asked eClinical Works to respond to the project's findings with their advice on how best to use the eClinical Works EHR for care coordination and care management. Specifically, eClinical Works was asked what they can do for care coordination, providing better information for patients and better information exchange between primary care and specialists. eClinical Works has now developed and is testing a Behavior Health Care Plan which hopefully can be adapted for use with medical conditions. Community Health Center has also begun to roll out a health exchange with local emergency rooms, that provides clinical information to them and the opportunity to schedule a next day visit with the health center, booking directly into the practice management system.

D.) NextGen Solutions

Exhibit 8 *(see pg. 91)* includes slides showing the NextGen templates that the Taconic IPA member practice team customized for continuing care coordination and care management at their site. They are currently adapting these for use with the Guided Care Model in practices that use NextGen.

eHI asked NextGen to respond to the project's findings with their advice on how best to use the NextGen EHR for care coordination and care management. Specifically, eHI asked what NextGen can do for care coordination, providing better information for patients and better information exchange between primary care and specialists. The next version of NextGen includes a one-page summary of a patient's status, showing a unified problem list, symptom list and medication list

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as well as a care plan. The new version also provides for systematic medication reconciliation, bringing data in from SureScripts, comparing it side-by-side to the patient's medication list, and allowing clinicians to update the EHR easily.

E.) POTENTIAL SOURCES FOR ELECTRONIC TOOLS

It became clear during the project that, as noted above, there were not platforms for health information exchange that would allow the manual Care Plan Summary as currently constructed to become an electronic tool. Therefore, in order to provide an electronic tool to perform the same functions, it was necessary to look more deeply into what was available from the existing EHRs. Specifying and using screens beyond the ones they customarily use would mean that the practices would need to become more advanced users of EHRs. As a result of the Care Coordination project, the two organizations wish to make it much easier for their affiliated clinicians to use their EHRs to facilitate care coordination. The IT departments of the two organizations and the Care Coordination team suggested the following resources:

Flow sheets and templates: Most EHRs provide a number of standard flow sheets and templates, some tailored for specific diseases or conditions. They also provide the capability for users to develop their own flow sheets and templates, as Community Health Center did with the eClinical Works EHR. This is a first place for practices to look for resources.

Users group: Most vendors cultivate groups of users who make their solutions available to each other on the vendors' web sites. The users' group for eClinical Works yielded a specialized flow sheet for patients with diabetes and heart disease. Although it was more narrative than graphic, it pulled data from the patient's record to summarize where the patient stood, and included a graph of progress on the major metrics.

Report programs: Some practices meet their reporting needs by using report programs that extract data from the EHRs, populating customized reports with data from the patients' EHRs. The team believed this would be one solution to the need to give patients and specialists the same information, but in different formats to meet their different needs.

New versions: EHR vendors are working now to help their clients meet the requirements for meaningful use of EHRs to qualify for government stimulus payments. Some of the meaningful use requirements, including producing a care summary for patients making a transition of care, are congruent with the needs of care coordination. As HITECH incentives drive more providers to a new version of their EHR functionalities may include care summaries that more closely meet the needs of coordinating care for patients with multiple problems. eHI will be a catalyst for bringing the care coordination findings to that development.

VII | NEXT STEPS

Both demonstration sites have begun building on the foundation of the care coordination project. In addition, the partner organizations eHI, sanofi-aventis, and H&TV are developing a proposed Phase II of the project as a proof of concept.

COMMUNITY HEALTH CENTER NEXT STEPS

Community Health Center plans to continue the work of care coordination post demonstration, but with a slightly different focus. Primary Care Provider/RN teams now identify their 20 most complex and unstable patients, those most at risk for hospitalization or decompensation. Community Health Center has developed its own risk stratification tool, but anticipates moving to a standardized tool for predictive modeling.

PCPs choose for the list those patients who are in need of extra nursing interventions and follow-up and are at high risk for either hospital readmission or loss to follow-up. Community Health Center has not provided them with current risk stratification of their panels, but has begun to discuss criteria for the content for that type of report.

Community Health Center has created a template for Care Coordination in the electronic health record that will capture structured data fields, to assist the nurse in clear communication with the patient and PCP. They plan to refocus on having a nurse follow patients, who have been discharged from the hospital to ensure that they have adequate supplies, verify medication changes (using the discharge summary from the hospital), documenting any new specialists that the patient will be seeing and finally scheduling the return visit to the PCP. The nurse will also assess how well the patient and family are coping and responding to the transition in levels of care. Community Health Center recognizes that providing this model of care in its current team structure will be difficult to sustain. They plan to re-evaluate staffing ratios and PDSA (Plan-Do-Study-Act) some potential changes. Community Health Center also recognizes that there are some workflow processes that should be adjusted to further improve coordination. These include notification of ER visits from local hospitals, discharge summary workflow processes, activation of a Patient Portal and expansion of the electronic health exchange. Community Health Center has signed a MOA with the University of Connecticut Health Center Cardiology Division to perform cardiology e-Consults. This is in the early stages of development. They feel that this service will greatly enhance the care provided to patients, by using technology to drive improved and timely care coordination.

Community Health Center has tested and implemented a health exchange with all of the local hospitals. When the patient has given consent for the exchange of information, emergency room staff will have access to the patient's medical record and will also have the ability to give the patient an appointment with their PCP for the following day, if needed.

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THE TACONIC IPA MEMBER PRACTICE AND THE HUDSON VALLEY INITIATIVE NEXT STEPS

The Taconic IPA member practice, as part of the overall Hudson Valley Initiative, is putting the following steps in motion with a goal of translating basic principles of successful integrated delivery networks to the Hudson Valley, an open community setting.

1.) Review of current existing models of care coordination, in light of experiences with this project to evaluate which approaches will best contribute to success in an open community (completed)

2.) Completion of Johns Hopkins Guided Care curriculum, hands-on training at Geisinger Health Systems ProvenHealth Navigator , and Institute for Healthcare Improvement (IHI) prototype manual testing to evaluate and synthesize best practices (first two completed, third ongoing)

3.) Consultation with Geisinger to apply principles and practices from the Geisinger ProvenHealth Navigator model to an open, non-integrated health delivery system (ongoing)

4.) Hiring of a new RN for the member practice office to continue the care coordination tasks, focusing particularly on the most complex patients and those who have been hospitalized (ongoing)

5.) Creation of a draft care coordination manual adapted to the Hudson Valley listing community resources and other site-specific information for care coordination (draft completed)

6.) Testing of materials from this project and other sources, especially stratification and panel management lessons learned, in the care of 5,000 diabetic patients seen by three community health centers, as part of a New York State HEAL 10 funded project (started January 2010)

7.) Development of technological platform for structured data exchange, between participating providers as part of Stage 1 Meaningful Use regulations (ongoing – the Direct Project pilot is expected to begin exchanging data by the end of 2011)

8.) In conjunction with THINC, negotiation with the current payer/employer Practice Transformation program supporters for an ongoing care coordination fee paid to primary care providers participating in the project. (Ongoing)

EVALUE8 NEXT STEPS

The National Business Council on Health (NBCH) eValue8 program is now examining the metrics developed for care coordination, to determine their usefulness in the eValue8 Request for Information (RFI) for health plans. Following are some of the options for their participation:

» Coordination with disease management: Where could Care Coordination Alliance (formerly Disease Management Association of America) members provide tools to best help this effort? Coordination between health plans' DM and physicians is widely thought to be less than optimal.

» Health plans' role in improving care coordination—possibilities include: 1. Provide incentives; 2. Provide data (health plans in Hudson Valley are providing both incentives and data); 3. Employ case managers; and 4. Design benefits to facilitate care coordination.

» Evaluation of health plans for care coordination: NBCH will incorporate the most useful features into the NBCH eValue8 tool. They are looking, from a data perspective and a process perspective, at how health plans can best be of assistance so that NBCH can create appropriate measures. There is a strong interest in the medical home concept among health plans.

eHI, Sanofi-aventis, and H&TV Next Steps

The next step for the Care Coordination Project is a proof-of-concept project that further refines the findings and measures outcomes. Given the lessons learned in the six-month demonstration, eHI and H&TV are proposing a Phase II that will do the following:

» Expand the use of complex care coordination processes developed in Phase 1 to at least three medical home sites, for one year.

» Bring in the findings of the separate metaguidelines project and test their use with participating providers.

» Evaluate patient clinical outcomes, cost and utilization and patient experience with care coordination using a pre-post design.

» Engage a payer in the project who partners with providers to transform care.

» Collaborate with the Office of the National Coordinator for Health IT and vendors, toward making the care coordination tools created in Phase I, align with the HITECH requirements for Meaningful Use of EHRs and related technology.

» Leverage health information exchange technology (where available) for electronic transmission of patient Care Plan Summaries between primary care physicians, specialists, local emergency rooms and hospital.

» Test the use of e-consultation and tele-visits for patients enrolled in the project.

» Improve communication protocols between PCPs, cardiologists and endocrinologists who agree to participate in the project.

» Improve patient compliance and health outcomes.

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VIII | EXHIBITS

TABLE OF EXHIBITS

EXHIBIT 1. CARE PLAN SUMMARY, INITIAL DESIGN

Care Plan Summary: JANE DOE

Date of birth: 2/24/1951

34 Pratt Street, Rockville, CT 06107

Home telephone #: 1-860-234-5678

Cell phone #: 860-890-1234

e-mail address: jane.doe@gmail.com

Disclaimer: This document is an aid to coordinate Jane Doe's among the providers and caregiver(s) and the locations identified herein.

Today's Date: 12/05/2009	Primary Insurance: Medicaid
Today's visit with: Dr. Goodman (PCP)	Cultural preferences: Spanish, Jehovah's Witness
Last PCP visit: 10/05/09	Caregiver: Self (860-789-1234)
Last Visit with Cardiologist: 5/26/2009….Date of next visit with cardiologist. b/o for patients who do not follow up with cardiology CHC nurse needs to	Drug allergies: Penicillin

First Contact Health Team[3]

Patient: Jane Doe;   860-789-1234
PCP: John Goodman, MD   860-432-1000
PC-Team Nurse: Mary Smith, RN[4] 860-432-1000
VNA Nurse: Barbara Good, RN   860-678-3000
Cardiologist: Peter Hardy, MD   860-987-2000
Other Specialist: _____
Care Coordinator: Deb Ward, RN 860-432-1000

I read {   } and I agree with {   } Principal Care Goals: Date_____
I read {   } and I agree with {   } Principal Care Goals: Date _____
I read {   } and I agree with {   } Principal Care Goals: Date_____
I read {   } and I agree with {   } Principal Care Goals: Date_____
I read {   } and I agree with {   } Principal Care Goals: Date_____

Conditions	Consultant[5] (Affiliation)	Principal Goals[6]	Status as of (date)	Progress Indicator	
				Last Checked	Today
Coronary Artery Disease	Peter Hardy, MD (Middlesex Cardiology Group)[7]				
Lipids (170mg/dl) pcp/C		LDL: 100 mg/dl	140 mg/dl		

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[3] Names included here are at the discretion of the PCP/Team Nurse and requires no less than 3 encounters/ year

[4] Main point of contact for health questions at the Community Health Center

[5] If blank= primary care provider or staff at the PCP clinic

[6] These are some of the most important care goals but not the only ones. Your doctors will continue to work with you and/or your caregiver to put together a comprehensive, coordinated care plan.

[7] The specialist works in close coordination with the PCP. All members of the care team agree on treatment goals

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Conditions	Consultant[8] (Affiliation)	Principal Care Goals[9]	Status as of (date)	Last Checked	Today
Symptom Control		No chest pain at rest or with daily activity	Follows self-care regimen	🟢	🟢
Improve exercise		tolerance to *brisk walk* without chest pain	Completed supervised exercise regimen at the WMCA	🟢	NA
Prevention of heart attack		Follow dietary recommendations	Follows dietary self-care regimen	🟢🔴	🟢🔴
Type 2 Diabetes	John Goodman, MD				
Glycemic control-HbA1c (8.5)		HbA1C: 7.0	8.0	🔴🟢	🔴🟢
Vision		Prevent blindness	Retinal Eye Exam current	🟢	🟢
Kidney function:		Prevent damage	Microalbumin test current	🟢	🟢
Check foot and circulation in the legs		Prevent foot ulcers	Skips Plavix often[10]	🔴🟢	🔴🟢
Circulation in the brain[11]		Prevent a Stroke	Follows self-care regimen	🟢🔴	🟢🔴
Health Risks- pcp/C (Baseline)	John Goodman, MD				
Tobacco pcp/C (1 pack/day)	Nora Marlborough, CHEd CHC	Quit	1pk/day	🟢🔴	🔴🟢
Weight (210 lbs) pcp/C	Kyle Lowery, RD, CHC	170 lbs[12]	179 lbs	🔴🟢	🔴🟢

_____

[8] If blank= primary care provider or staff at the PCP clinic

[9] These are some of the most important care goals but not the only ones. Your doctors will continue to work with you and/or your caregiver to put together a comprehensive, coordinated care plan.

[10] Also requires good blood pressure control, weight loss and quitting smoking

[11] Check carotid pulses and listen for bruits

[12] Not necessarily the ultimate goal but attainable within 6-12 months

Conditions	Consultant[13] (Affiliation)	Principal Care Goals[14]	Status as of (date)	Last Checked	Today
Activity Level (Sedentary) pcp/C		30 min. 3Xs/week	30 min. 2Xs/week	🔴🟢	🟢🔴
Prevent Infection (Every Winter) pcp		Administer Flu vaccine	Up to date	🔴	🟢
Early Detection Breast Cancer (Yearly) **pcp**	Clinton Radiology	Mammogram	Up to date	🟢	🟢
Early Detection or Prevention of Colon Cancer (Per PCP recommendation) pcp	Willy Colon, MD Hartford Medical Group- GI	Colonoscopy (or Sigmoidoscopy or FOBT)	Pending	🟢	🟢
Early Detection Cervical Cancer (Every three years) pcp/	John Goodman, MD	PAP	Up to date	🟢	🟢
Depression Screening (Yearly) pcp/		PHQ-2	Pending	🔴	🟢
Systolic Blood Pressure (160mmHg) pcp/C		135 mmHg	155 mmHg	🟢🔴	🔴🟢
Diastolic Blood Pressure (100mmHg) pcp/C		80 mmHg	88 mmHg	🔴🟢	🔴🟢
General Medication Adherence		Taking them as Prescribed	Adherence assessed	🔴🟢	🔴🟢

Patient's Self-management Goal: (CHC uses a scoring system of 1-4 with 4= exceeded, 1= set, 2=started, etc. Taconic uses percentages.)

Reconciled (mm/dd/yyyy) Medication List					
Active Medications	**Dose (How much to take)**	**What is for**	**Who Prescribed?**	**Refill instructions: Call your pharmacy for all medications**	**Adherence level/Comments**
Baby Aspirin(Bayer Low)	81 mg (1 pill)/day in the morning)	Improve circulation, thin blood	Dr. Goodman		

---

[13] If blank= primary care provider or staff at the PCP clinic

[14] These are some of the most important care goals but not the only ones. Your doctors will continue to work with you and/or your caregiver to put together a comprehensive, coordinated care plan.

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Active Medications	Dose (How much to take)	What is for	Who Prescribed?	Refill instructions: Call your pharmacy for all medications	Adherence level/Comments
Metformin (Glucophage)	850mg (1 pill/day in the morning)	Diabetes	Dr. Goodman		
Glargine insulin (Lantus)	20 Units (1 injection) at night	Diabetes	Dr. Goodman		
Clopidogrel (Plavix)	75 mg (1 pill/day)	Heart	Dr. Hardy		Taking 25% of Rxd dose. Cannot afford
Lovastatin (Mevacor)	20 mg (1 pill/day at nighttime)	Cholesterol	Dr. Goodman		
Hydrochorothiazide (Hydrodiuril)	50 mg (1 pill/day in the morning)	Blood pressure (fluid pill)	Dr. Goodman		
Lisinopril (Prinivyl)	20 mg (1 pill/day in the AM)	Blood Pressure	Dr. Goodman		
Comments about medication: Patient not taking her Lasix.					

Exhibit 2. eClinical Works Care Plan Summary Flow sheet, Medication List and Coordination Letter

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Improvements to the Medication List

Aspirin 325 mg . Sig: 1 tab orally daily for prevention of heart attack and stroke

Plavix 75 mg tablet, Sig: 1 tab orally once a day for CAD/Stent

Trizivir by Dr XXX

Exhibit 3. Taconic IPA member practice Medication and Lab Spreadsheets Communicating Changes to Cardiologists (MS Excel)

MEDICATION CHANGE REPORT

Patient 1								
Medication Name	Dose	Start Date	Stop Date	DAW	Quantity	SIG	Modified Date	Modified By
METFORMIN HCL	1000 MG	07/06/10	//	N	180	Take one tablet by mouth two times per day	07/06/10	Lindley, Patricia
DIABETA	5 MG	07/06/10	//	N	360	Take two tablets by mouth twice per day	07/06/10	Lindley, Patricia

Medication Name	Dose	Start Date	Stop Date	DAW	Quantity	SIG	Modified Date	Modified By
AMOXICILLIN	500 MG	07/02/10	//	N	30	Take 1 capsule (500MG) by ORAL route 3 times every day for 10 days	07/02/10	Schmitt, Kimberly

Patient 3								
Medication Name	Dose	Start Date	Stop Date	DAW	Quantity	SIG	Modified Date	Modified By
LOPRESSOR	50 MG	08/15/07	07/06/10	N	60	Use as directed	07/06/10	Sinha, Rabi
ELOCON	0.1%	12/04/09	07/06/10	N	45	Apply by TOPICAL route every day a thin film to the affected skin areas	07/06/10	Roberts, Heather
AMBIEN	10 MG	07/06/10	//	N	30	Take 1 tablet (10MG) by ORAL route every day at bedtime	07/06/10	Roberts, Heather

Patient 4								
Medication Name	Dose	Start Date	Stop Date	DAW	Quantity	SIG	Modified Date	Modified By
SYNTHROID	75 MCG	07/06/10	//	N	30	Take 1 tablet (75MCG) by ORAL route every day	07/06/10	Lindley, Patricia

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Lab Change Report

Patient 1			
Test Description	**Result**	**Create Date**	**Modified By**
BASOPHILS,%	0.4 %	07/01/2010	Admin, NextGen
BASOPHILS,ABSOLUTE	20 Cells/mcL	07/01/2010	Admin, NextGen
EOSINOPHILS,%	2.3 %	07/01/2010	Admin, NextGen
EOSINOPHILS,ABSOLUTE	113 Cells/mcL	07/01/2010	Admin, NextGen
HEMATOCRIT	41.3 %	07/01/2010	Admin, NextGen
HEMOGLOBIN	14.1 g/dL	07/01/2010	Admin, NextGen
LYMPHOCYTES,ABSOLUTE	1573 Cells/mcL	07/01/2010	Admin, NextGen
MCH	32.4 pg	07/01/2010	Admin, NextGen
MCHC	34.3 g/dL	07/01/2010	Admin, NextGen
MCV	94.5 fL	07/01/2010	Admin, NextGen
MONOCYTES,%	5.3 %	07/01/2010	Admin, NextGen
MONOCYTES,ABSOLUTE	260 Cells/mcL	07/01/2010	Admin, NextGen
MPV	8.1 fL	07/01/2010	Admin, NextGen
NEUTROPHILS,ABSOLUTE	2935 Cells/mcL	07/01/2010	Admin, NextGen
PLATELET COUNT	158 Thous/mcL	07/01/2010	Admin, NextGen
RBC	4.37 Mill/mcL	07/01/2010	Admin, NextGen
RDW	14.0 %	07/01/2010	Admin, NextGen
TOTAL LYMPHOCYTES,%	32.1 %	07/01/2010	Admin, NextGen
TOTAL NEUTROPHILS,%	59.9 %	07/01/2010	Admin, NextGen
WBC	4.9 Thous/mcL	07/01/2010	Admin, NextGen
Test Description	**Result**	**Create Date**	**Modified By**
ALBUMIN	4.4 g/dL	07/01/2010	Admin, NextGen
ALKALINE PHOSPHATASE	40 U/L	07/01/2010	Admin, NextGen
ALT	14 U/L	07/01/2010	Admin, NextGen
AST	18 U/L	07/01/2010	Admin, NextGen
BILIRUBIN,TOTAL	0.9 mg/dL	07/01/2010	Admin, NextGen
CALCIUM	9.4 mg/dL	07/01/2010	Admin, NextGen
CARBON DIOXIDE	17 mmol/L	07/01/2010	Admin, NextGen
CHLORIDE	106 mmol/L	07/01/2010	Admin, NextGen
CREATININE	1.01 mg/dL	07/01/2010	Admin, NextGen
EGFR AFRICAN AMERICAN	>60 mL/min/1.73m2	07/01/2010	Admin, NextGen
EGFR NON AFR AMERICAN	>60 mL/min/1.73m2	07/01/2010	Admin, NextGen
GLOBULIN,CALCULATED	2.7 g/dL	07/01/2010	Admin, NextGen
GLUCOSE	100 mg/dL	07/01/2010	Admin, NextGen
GLUCOSE,FASTING	DNR mg/dL	07/01/2010	Admin, NextGen
POTASSIUM	4.4 mmol/L	07/01/2010	Admin, NextGen
PROTEIN,TOTAL	7.1 g/dL	07/01/2010	Admin, NextGen
SODIUM	140 mmol/L	07/01/2010	Admin, NextGen
UREA NITROGEN	17 mg/dL	07/01/2010	Admin, NextGen
Test Description	**Result**	**Create Date**	**Modified By**
HEMOGLOBIN A1C	7.2 Percent	07/01/2010	Admin, NextGen

PART 1: PATIENT, CARDIOLOGIST, MEDICAL HOME

Care Plan Summary FOR:

Date of birth:	Today's Date:
Adr:	Today's visit with:
Cell phone:	Last PCP visit:
Home telephone:	Caregiver:
e-mail address:	Drug allergies:
Primary insurance:	Cultural preferences:

Cardiology connection Last visit with cardiologist: Next visit with cardiologist:

First Contact Health Team

Patient:	I read [ ] and I agree with [ ] Principal Care Goals: Date_____
PCP:	I read [ ] and I agree with [ ] Principal Care Goals: Date _____
PC-Team Nurse:	I read [ ] and I agree with [ ] Principal Care Goals: Date_____
VNA Nurse:	I read [ ] and I agree with [ ] Principal Care Goals: Date_____
Cardiologist:	I read [ ] and I agree with [ ] Principal Care Goals: Date_____
Other Specialist: _____	
Care Coordinator:	

Component	Starting values (6/20/04)	Principal Care Goals	Status as of 10/05/09	Progress Indicator Last ✓ Today
Cardiology: Peter Hardy MD				
Lipids	LDL: HDL: Total:	LDL: ≤100 mg/dl HDL: ≥ 50mg/dl Total: ≤ 200 mg/dl	LDL: HDL: Total:	
Symptom Control		No chest pain at rest or with daily activity		
Improve exercise		Tolerance to *brisk walk* without chest pain		NA
Prevention of heart attack		Follow dietary recommendations		
Primary Care: John Goodman MD				
Glycemic control-HbA1c	HbA1c:	HbA1C: ≤7.0	HbA1c:	
Systolic Blood Pressure	mmHg	135 mmHg	mmHg	
Diastolic Blood Pressure	mmHg	80 mmHg	mmHg	
Tobacco		quit		
Weight	lbs	170 lbs	lbs	

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PART 2 (PATIENT AND MEDICAL HOME)

Component	Starting values (6/20/04)	Principal Care Goals	Status as of 10/05/09	Progress Indicator Last ✓	Today
Vision		Prevent blindness	Retinal Eye Exam:	🟢	🟢
Kidney function:		Prevent damage	Microalbumin test:	🟢	🟢
Check foot and circulation in the legs		Prevent foot ulcers		🟢🔴	🟢🔴
Circulation in the brain		Prevent a stroke		🟢🔴	🟢🔴
Activity Level		30 min. 3Xs/week		🟢🔴	🟢🔴
Depression Screening		PHQ-2 yearly		🔴	🟢
Prevent Infection		Administer Flu vaccine every winter		🔴	🟢
Early Detection Breast Cancer		Mammogram yearly		🟢	🟢
Early Detection or Prevention of Colon Cancer		Colonoscopy (or Sigmoidoscopy or FOBT)		🟢	🟢
Early Detection Cervical Cancer		PAP every 3 years		🟢	🟢

PART 3: PATIENT, CARDIOLOGIST AND MEDICAL HOME

Reconciled (mm/dd/yyyy) Medication List--sample Refill instructions: Call your pharmacy for all medications				
Active Medications	**Dose (How much to take)**	**What it is for**	**Who Prescribed?**	**Adherence level/Comments**
Baby Aspirin (Bayer Low)	81 mg (1 pill)/day in the morning)	Improve circulation, thin blood	Dr. Goodman	
Metformin (Glucophage)	850mg (1 pill/day in the morning)	Diabetes	Dr. Goodman	
Glargine insulin (Lantus)	20 Units (1 injection) at night	Diabetes	Dr. Goodman	
Clopidogrel (Plavix)	75 mg (1 pill/day)	Heart	Dr. Hardy	Taking 25% of Rxd dose. Cannot afford
Lovastatin (Mevacor)	20 mg (1 pill/day at nighttime)	Cholesterol	Dr. Goodman	
Hydrochorothiazide (Hydrodiuril)	50 mg (1 pill/day in the morning)	Blood pressure (fluid pill)	Dr. Goodman	
Lisinopril (Prinivyl)	20 mg (1 pill/day in the AM)	Blood Pressure	Dr. Goodman	
Patient's Self-management Goal: <u>Reduce sugar intake and keep blood sugar below 100 each day.</u> **CHC uses a scoring system of 1-4 with 4= exceeded, 1= set, 2=started_, etc.** **Taconic uses percentages: 25%, 50%, 75%, 100%**				

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Exhibit 5. NextGen Care Management Template Designed by Taconic IPA member practice (excerpts)

Case Management

SUBJECTIVE | SUBJECTIVE.cont ROS + SOC HX | OBJECTIVE | ASSESS/PLAN | PLAN , cont.

Medication Reconciliation:

☑ Reviewed and updated prescription and OTC medications and allergies

☐ Taking all medications as directed

☐ Not taking all medications as ordered due to:

Additional Comments:

Brand Name	Dose	Sig Desc
AZITHROMYCIN	250 MG	2 tab orally day one then one tab orally qd x 4days
BACTRIM DS	800-160MG	take 1 tablet by ORAL route every 12 hours

Ingredient/Allergen	Brand Name
OMEPRAZOLE	PRILOSEC
OMEPRAZOLE MAGNESIUM	PRILOSEC

☑ Medication Risks: OTC that could interfere with rx or medical conditions

☐ **Diabetes:** Insulin using _____ for injections ○ rotating sites ○ not rotating sites
☐ denies leakage ☐ bruising ☐ burning at injection site

☐ No new medications or medication changes since last follow up _____

Additional comments: _____

LAB RESULTS		09/17/2008 13:56	09/17/2008 14:48	09/17/2008 15:12	09/18/2008 08:57	09/18/2008 09:30	09/18/2008 09:54	1(
AMYLASE,SER								

HOME
Demographics
Record Vital Signs
Nurse Documentation
Chart Summary
View Results

Allergies
Immunizations
Past Medical History
Family History
Social History
Health Maintenance
HPI / Problem List
Review of Systems
Physical Exam
Procedures
Assessment
Disease Management
Plan / Lab / OS / Diag
Document Library
E&M Coding

Case Management

SUBJECTIVE | SUBJECTIVE.cont ROS + SOC HX | OBJECTIVE | ASSESS/PLAN | PLAN , cont.

Chronic Problem List [Add] **Current Health Status:**

Chronic Problem
Unspecified essential hypertension
DIABETES TYPE II

Hospital/ED Summary: (to enter, right-click and select "Add new")

EncounterType	Disease	Management	Date	Admit	Discharge	MD
office visit	cough	medication	04/06/2010	/ /	/ /	Abrahao MD

FUNCTIONAL STATUS

Activities of Daily Living

Indpependent: laundry, mobility
Minimal assistance with: meal prep
Moderate assistance with: medications
Total assistance with: click in field to select from pop-up
Additional Information:

Total Asst. ☒

bathing
dressing
feeding
housekeeping
laundry
meal prep
medications
mobility
shopping
telephoning
toileting
transferring
transportation

[Close]

Fall Risk Factor Assessment lower extremity weakness, visually impaired
☐ No risk factors

Current Rehab therapies or treatments ☐ None at the present time

☐ Physical Therapy
☐ Occupational Therapy
☐ Speech
☐ Home Health
☐ Chemotherapy
☐ Radiation Therapy
☑ Chiropractic — back, 3 times a week
☐ Cardiac Rehab
☐ Pulmonary Rehab
Other:

Current DME/Assistive Devices ☐ None   DME Company
☐ Current DME/Assistive Devices include _____

EXHIBIT 6. CHC FLOWCHARTS OF EXISTING AND IMPROVED CARE COORDINATION PROCESS

Initial Patient - CHC - 1

Prior Gaps:
I) No Standard Care Plan Form
II) Inconsistent Setting of SMGs
III) No Care Coordination

Improvements:
IV) Care Coordination Process Implemented
V) PCGs Documented
VI) SMGs Discussed/Set
VII) CPS Documents Created
VIII) Sign-Off of PCGs and SMGs by Team

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Ongoing Care Coordination Patient - CHC - 2

Nurse Assesses Progress and Discusses PCGs/ SMG with Pt (III) & (VII) → **Pt Sees PCP**

Yes

CC Checks Reports on Upcoming PCP Appointments → **CC Reminds Team of CPS Opportunity via Email** → **Current Pt Appointment** → **Review PCGs/ Gaps/Needs at Morning Huddle (I) & (V)** → **PCP Signs Off on CPS Letter** → **Pt Sees Nurse First?** → No → **PCP Assesses Pt Progress and Documents PCGs (II), (III), (IV)**

PCP Orders Lab Tests/ Imagining Tests as Needed → **PCP Adjusts/ Reconciles Meds** → **Pt Sees Nurse** → **Nurse Assesses Progress and Coaches/ Counsels Pt on SMG/PCGs** → **Ask Pt Date of Last and Next Cardio Visit** → **CPS Documents Finalized (VIII)** → **Copy of CPS Given to Pt Including Med List (IV) & (VII)**

CPS Scanned into EHR → **Nurse Creates Telephone Encounter to MA re: Cardio Visit (IX)** → **MA Sends CPS Documents to Cardio 3 Days Prior to Visit (X)** → **MA Closes the Telephone Encounter**

Prior Gaps:
I) No Care Coordination Process
II) Inconsistent Assessment Against Virtual Principal Care Goals
III) PCGs and SMGs documented Inconsistently
IV) Med List Given to Patient Inconsistently

Improvements:
V) Review PCGs/Gaps/Needs Consistently and Sign-Off by PCP
VI) PCGs/Needs Documented
VII) SMGs Discussed/Set Consistently
VIII) CPS Documents Developed and Given to Patient Consistently
IX) Tracking of Next Cardio Visit
X) Send CPS Documents to Cardio Prior to Pt's Next Visit

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Referral Process - CHC - 3

PCP Completes Referral Screen in EHR → **Stat?**

- **No** → **Assigns to MA/RC (Shows in "R" Bubble)** → **Standard Referral Form (I)** → **Shared Schedule? (II)**
  - **No** → **MA/RC Calls Specialist's Office** → **Referral Time/Date Set and Entered into Notes?**
    - **No** → **Specialist to Set Time/Date Later**
    - **Yes** → **MA/RC to Notify Pt?**
      - **No** → **MA/RC Sends/Faxes Paperwork to Specialist's Office** → **Specialist's Office Notifies Pt** → **Specialist's Office Faxes Time/Date to CHC (Depends on Group)**

- **Yes** → **PCP/Designee Telephones Specialist** → **MA/RC Sends/Faxes Paperwork** → **Time/Date for Appt Set** → **MA/RC Gives Info to Pt Verbally** → **MA/RC Enters Time/Date into Referral Notes** → **See Close-out Workflow**

Still in Office?
- **No** → **Sends Paperwork to Specialist's Office** → **Documents in Referral Notes** → **Calls 3 Times** → **Connect?**
  - **No** → **Sends Letter to Pt** → **Documents in Referral Notes**
  - **Yes** → **Acceptable?**
- **Yes** → **Notifies Pt Verbally and Via Paper Form (III)** → **Acceptable?**
  - **No** → **Enters Time/Date If Known into Referral Notes (IV)**
  - **Yes** → **Sends Paperwork to Specialist's Office** → **Documents in Referral Notes** → **Enters Time/Date If Known into Referral Notes (IV)** → **Goes Into Pending Referral File** → **MA/RC May Scan Notice Into EHR** → **See Close-out Workflow**

Prior Gaps:
I) Separate Referral Forms for Some Groups Required
II) Need to Share Appointment Calendar Between PCP and Specialist
III) Referral Form Not Given Consistently and Does Not Indicate Patient Responsibility if Appointment Not Kept or Changed
IV) Not Consistently Entered Into Notes

Improvements:
V) Use Standard Referral Form in EHR

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Close-Out of Referrals - CHC - 4

Prior Gaps:
I)   No Standard Follow-Up of Open/Pending Referrals
II) Summary May Vary and Is a Narrative
III) Consult Date Inconsistently Entered When Summary Reviewed/Addressed
IV) In-House Referral Treated as In-House Visit and Not as a Referral
V) Unclear Standards for Follow-Up

Improvements:
VI) Report of Open Referrals for Follow-Up by CC

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EXHIBIT 7. TACONIC FLOWCHARTS OF EXISTING AND IMPROVED CARE COORDINATION PROCESS

Initial Presentation - Taconic - 1

New Pt or New Dx

Current Pt? — Yes → Add New Dx to Problem List in EHR (I) & (II)

No ↓

Pt Hx Self-reported

Pt Signs Record Release Form → MA Calls Previous Provider for Records → Records Sent? (paper/fax) — No → Contact Previous Provider → Records Sent? — No → Rely on Pt Self-reported Hx

Records Sent? — Yes → PCP Reviews Hx
Records Sent? — Yes → PCP Reviews Hx

Needs/Gaps Discussed in Morning Huddle (III) → CC Candidate? (III)

See PCP First? — No → CC Does Initial Assessment & Self-Management Goals (IV) → Pt Sees PCP → Standard Tests → CC Sends Telephone Encounter to PCP re: Pt's Needs/Goals/PCG (V) → PCP confirms Needs/Gaps → CC Creates CPS

See PCP First? — Yes

CC Candidate? (III) — No → Standard Tests: Finger Stick, HbA1c → PCP Determines Other Dx Tests → MA Scans All Sheets Into EHR

Meet with CC (III) → CC Does Initial Assessment & SMG (IV)

Meets with Pt? — No → PCP & CC Sign-off on CPS → CC Follows-up with Pt via Phone & Mails CPS (VI) → Scanned into EHR

Meets with Pt? — Yes → Reviews with Pt, Pt & CC Sign-off, Gives Pt CPS (VI) → PCP Signs-off on CPS → Scanned into EHR

Prior Gaps:
I) No Standard Care Plan Form
II) No Standard Self-Management Goals Set for Diabetic/Cardiac Conditions

Improvements:
III) Determine Whether Pt Is Candidate for Care Coordination
IV) Meet With CC to Discuss/Set Principal Care Goals/Self-Management Goals
V) Sign-off by PCP on PCGs
VI) Sign-off by Pt & CC on PCGs/SMGs & Copy Given to Pt

Ongoing Patient - Taconic - 2

Prior Gaps:
I) No Assessment or Standard Care Plan
II) No Care Coordination Process
III) Principal Care Goals Documented Inconsistently
IV) Inconsistent Medication Reconciliation

Improvements:
V) Assessment Made in Office or at Home
VI) Principal Care Goals & Self-Management Goals Set with Patient & Team
VII) CPS Developed & Given to Patient

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Referral Process - Taconic - 3

PCP Completes Referral Screen in EHR → Stat? → No → PCP Tells MA Via Task/Workflow List → MA Calls Specialists Office (I) → Referral Time/Date Set? → MA Gives Pt Card with Cardio Office Info. Pt Calls to Set Date/Time → Pt Calls PCP with Time/Date and Name of Specialist?

Stat? → Yes → PCP/Designee Telephones Specialist → MA Sends/Faxes Paperwork to Specialist's Office (II)

PCP/Designee Telephones Specialist → Time/Date for Appointment Set → MA Gives Information to Pt Verbally and Specialist Appointment Card → MA Enters Time/Date Into Appointment Date Field (IV) → See Close-out Workflow

Pt Calls PCP... → Yes → MA Sends/Faxes Paperwork to Specialist's Office (III) ← Yes ← Cardio Calls for Referral Info? (V)

Pt Calls PCP... → No → Cardio Calls for Referral Info? (V)

MA Sends/Faxes Paperwork to Specialist's Office (III) → MA Enters Appt Time/Date and Cardio Name Into EHR (IV)

Cardio Calls for Referral Info? (V) → No → See Close-out Workflow

Referral Time/Date Set? → No → MA Gives Info and Specialist Appt Card to Pt → Date Acceptable? → Yes → MA Sends/Faxes Paperwork to Specialist's Office (III) → Documents in Time/Date Appt Field (IV) → Goes into Pending Referral File → See Close-out Workflow

Date Acceptable? → Yes → MA Calls Specialists Office (I)

MA Enters Appt Time/Date and Cardio Name Into EHR (IV) → Goes into Pending Referral File

Prior Gaps:
I)   Need to Share Appointment Calendar Between PCP and Specialist
II) Appointment Card Does Not Indicate Patient to Call PCP if Appt is Changed or Not Kept
III) Care Plan Document/Summary Not Sent
IV) Time/Date/Cardio Name Not Consistently Entered
V) Not Referral Into Sent if Patient or Cardiologist Does Not Call

Close-Out of Referrals - Taconic - 4

Prior Gaps:
I)   Report Developed But No Standard Follow-Up of Open/Pending Referrals
II) Summary May Vary and Is a Narrative
III) Consult Date Inconsistently Entered When Summary Reviewed
IV) Prior to CC, No Notification from Specialist on Missed Appointments
VIII) No Electronic Sign-Off to Know PCP Reviewed Summary

Improvements:
IV) Heart Group Calls CC If Missed Appointment
V)   CC Keeps Calling Pt Until Reached
VI) CC Helps Eliminate Barriers to Keeping Appointment
VII) Consult Summary Automatically Attached to EHR
IX) Follow-up with Patient and Cardiology Office

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Lab/Blood Tests - Taconic - 5

Request Held in Queue at Quest → Pt to Schedule, Pt Verbally Informed of Location of Draw Stations and Fasting/Non-Fasting → Pt Had Test Done? — No → CC Reviews EHR for Results (I) & (IV) → CC Calls Pt to Determine if Test Done and Helps Address Barriers If Not Done (IV)

No (Future)

Pt Had Test Done? — Yes

PCP Orders Blood Tests/Cultures → Enters Order in EHR → Transmitted to Quest → Same Day? — Yes → Specimen Obtained Immediately in Office → Specimen Sent to Quest Central Processing

Results Received? — Yes → Results Sent Electronically to PCP's Inbox and Hard Copy Printed in Office → Results and Date Ordered Automatically Entered into Pt"s EHR (II) → Automatically Sends "Task" to Group PAQ and PCP's Inbox ("!" if Abnormal Lab) → PCP Reviews Printed Copy (III) → Writes Follow-up Instructions → Sends Electronically to MA for Follow-up

Results Received? — No → CC Calls Pt to Confirm Test Done (IV) → CC Calls Lab for Report (V)

Results and Date Ordered... → Closed Out in EHR

PCP Reviews Printed Copy (III) → May Call Pt if Abnormal/Sensitive/Urgent

Writes Follow-up Instructions → MA Calls All Pts for Normal and Abnormal Results → Documents in Lab Action Template

Prior Gaps:
I)   Prior to CC, No Consistent Follow-up on Open Tests
II) No Automatic Entry if LabCorp Used
III) Not Signed Off in EHR

Improvements:
IV) CC Follows Up with Pt When Test Results Not Received
V) CC Calls Lab if Report Not Sent for Completed Tests

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Imaging Tests - Taconic - 6

Flowchart elements:

PCP Orders Imaging Tests (e.g. Chest X-Ray) → Sends to Front Office to Schedule → Stat?

Stat? — No → Pt to Schedule, Given Order on Prescription Pad

Stat? — Yes → Front Office Calls Imaging Office → Front Office Informs Pt of Time/Date/Location → Gives Pt Instructions Verbally and Print-Out from EHR (II)

Pt to Schedule, Given Order on Prescription Pad → CC Checks EHR for Results (I)

CC Checks EHR for Results (I) — No → Test Done?

Test Done? — No → CC Calls Pt to See if Test Done & Helps Address Barriers If Not Done (V)

Test Done? — Yes → Results Sent to PCP Via Fax/ Email (IV)

CC Calls Pt to See if Test Done & Helps Address Barriers If Not Done (V) → Test Done?

Test Done? — Yes → Results Received? — No → CC Calls Imaging Center for Results (VI)

Test Done? — No (loop back up)

Results Received? — Yes → PCP Reviews Report and Signs) → PCP Enters Comments in Referral Template (III)

Results Sent to PCP Via Fax/ Email (IV) → PCP Reviews Report and Signs)

PCP Enters Comments in Referral Template (III) — Yes → Follow-up Needed?
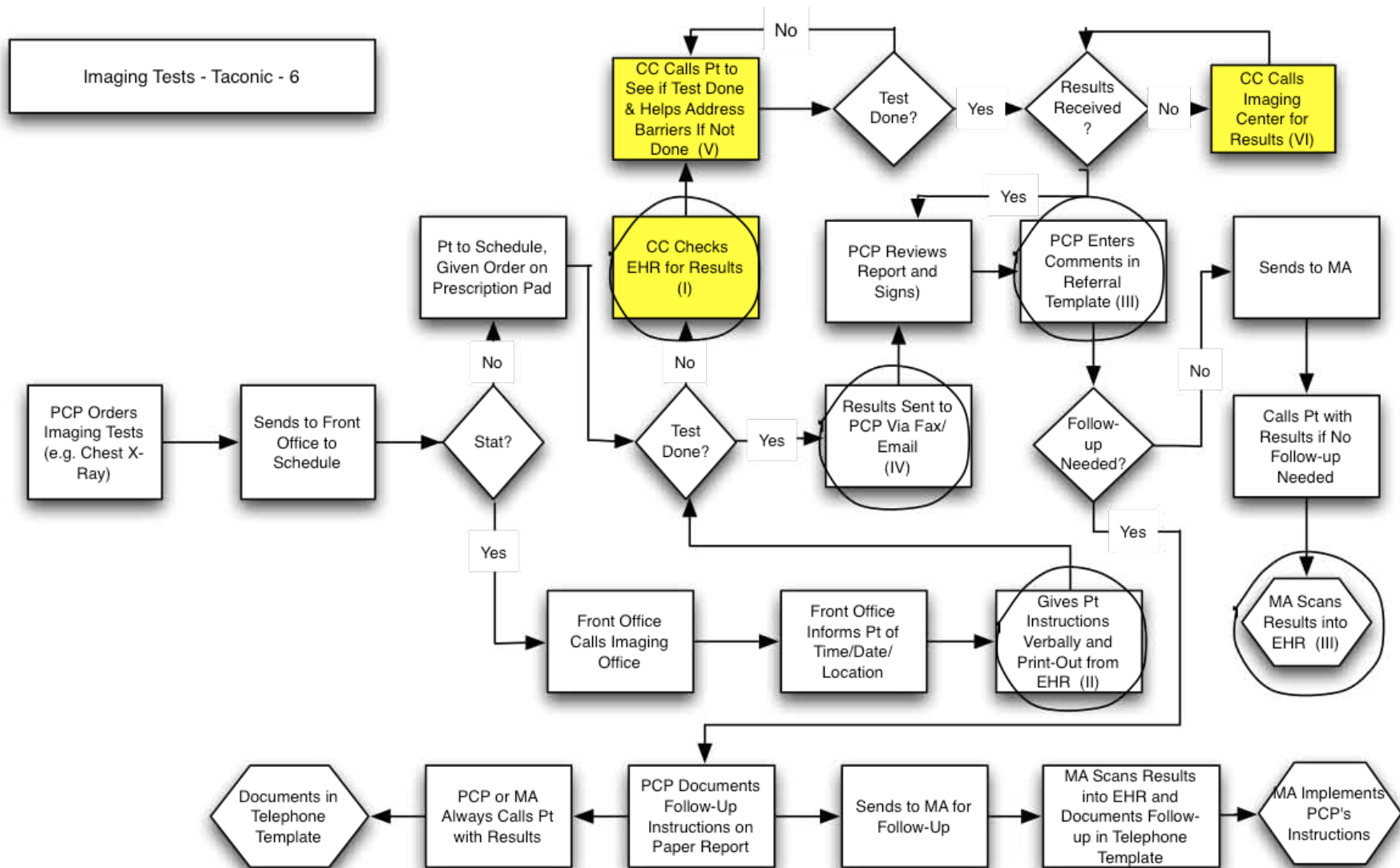
Follow-up Needed? — No → Sends to MA → Calls Pt with Results if No Follow-up Needed → MA Scans Results into EHR (III)

Follow-up Needed? — Yes → PCP Documents Follow-Up Instructions on Paper Report

Gives Pt Instructions Verbally and Print-Out from EHR (II) → PCP Documents Follow-Up Instructions on Paper Report

PCP Documents Follow-Up Instructions on Paper Report → Sends to MA for Follow-Up → MA Scans Results into EHR and Documents Follow-up in Telephone Template → MA Implements PCP's Instructions

PCP Documents Follow-Up Instructions on Paper Report → PCP or MA Always Calls Pt with Results → Documents in Telephone Template

Prior Gaps:
I) Prior to CC, No Follow-Up of Missed Imaging Tests
II) No Consistent Written Instructions Given
III) Completion Box/Date Not Consistently Entered Into EHR
IV) Sent Multiple Times - No Electronic Fax That Goes Into Pt's EHR and Linked to PCP

Improvements:
V) CC Follows-Up with Pt to Determine If Test Was Done and Helps Address Barriers If Not Done
VI) CC Follows-Up with Imaginig Center for Results

EXHIBIT 8. CARE PLAN SUMMARY IN SCREEN SHOTS

EHR Demo - Demographics

Care Plan Summary for: [　　　　　　]   [Demographics] [Diabetes/Cardiology] [Diabetes/General] [Medications]

Date of birth: 9-18-1938	Today's Date: 8/20/2010
Adr: 1050 Smith St Jones, NY 01100	Today's visit with: Dr. John Goodman
Cell phone: 845-555-1212	Last PCP visit: 4/20/2010
Home telephone: 845-777-8888	Caregiver: Self
e-mail address: patient.test@gmail.com	Drug allergies: None
Primary insurance: Medicare	Cultural preferences: None

Cardiology connection Last visit with cardiologist: 1/7/10 Next visit with cardiologist: ———

First Contact Health Care Team

Patient: Test Patient
PCP: John Goodman
PC-Team Nurse: Mary Black
VNA Nurse: ———
Cardiologist: Peter Hardy
Other Specialist: Samuel Better
Care Coordinator: Diane Ward, RN

I read ☐ and I agree with ☐ Principal Care Goals: Date ___ ___
I read ☐ and I agree with ☐ Principal Care Goals: Date ___ ___
I read ☐ and I agree with ☐ Principal Care Goals: Date ___ ___
I read ☐ and I agree with ☐ Principal Care Goals: Date ___ ___
I read ☐ and I agree with ☐ Principal Care Goals: Date ___ ___

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EHR Demo - Cardiac Plan

Care Plan Summary for: [　　　　　　]   [Demographics] [Diabetes/Cardiology] [Diabetes/General] [Medications]

Component	Starting values (6/20/04)	Principal Care Goals	Status as of 10/05/09	Progress Indicator Last ✓	Today
Cardiology: Peter Hardy MD					
Lipids	LDL: HDL: Total:	LDL: ≤100 mg/dl HDL: ≥ 50mg/dl Total: ≤ 200 mg/dl	LDL: HDL: Total:	🔴🟢	🔴🟢
Symptom Control		No chest pain at rest or with daily activity		🟢	🟢
Improve exercise		Tolerance to *brisk walk* without chest pain		🟢	NA
Prevention of heart attack		Follow dietary recommendations		🔴🟢	🔴🟢
Primary Care: John Goodman MD					
Glycemic control-HbA1c	HbA1c:	HbA1C: ≤7.0	HbA1c:	🔴🟢	🔴🟢
Systolic Blood Pressure	mmHg	135 mmHg	mmHg	🔴🟢	🔴🟢
Diastolic Blood Pressure	mmHg	80 mmHg	mmHg	🔴🟢	🔴🟢
Tobacco		quit		🔴🟢	🔴
Weight	lbs	170 lbs	lbs	🔴🟢	🔴🟢

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EHR Demo - Medication List

Care Plan Summary for: [_____]   [Demographics] [Diabetes/Cardiology] [Diabetes/General] [Medications]

Reconciled (mm/dd/yyyy) Medication List				
Refill instructions: Call your pharmacy for all medications				
Active Medications	**Dose (How much to take)**	**What it is for**	**Who Prescribed?**	**Adherence level/Comments**
Baby Aspirin (Bayer Low)	81 mg (1 pill)/day in the morning	Improve circulation, thin blood	Dr. Goodman	
Metformin (Glucophage)	850mg (1 pill/day in the morning)	Diabetes	Dr. Goodman	
Glargine insulin (Lantus)	20 Units (1 injection) at night	Diabetes	Dr. Goodman	
Clopidogrel (Plavix)	75 mg (1 pill/day)	Heart	Dr. Hardy	Taking 25% of Rxd dose. Cannot afford
Lovastatin (Mevacor)	20 mg (1 pill/day at nighttime)	Cholesterol	Dr. Goodman	
Hydrochorothiazide (Hydrodiuril)	50 mg (1 pill/day in the morning)	Blood pressure (fluid pill)	Dr. Goodman	
Lisinopril (Prinivyl)	20 mg (1 pill/day in the AM)	Blood Pressure	Dr. Goodman	
Patient's Self-management Goal: Reduce sugar intake and keep blood sugar below 100 each day. CHC uses a scoring system of 1-4 with 4= exceeded, 1= set, 2=started_, etc.				

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