

# engaging patients, improving outcomes

ONC challenge grant for consumer-mediated  
information exchange





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**PROGRAM NAME**                    ONC Challenge Grant — Consumer-Mediated Information Exchange

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**PILOT SITE LOCATION**        Parkview Physicians Group — Cardiology; Fort Wayne, Indiana

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**STAKEHOLDERS**                NoMoreClipboard, Indiana Health Information Technology, Inc., The Med-Web HIE, Parkview Physicians Group — Cardiology, Parkview Research Center, Office of the National Coordinator for Health Information Technology, Parkview Heart Institute, Indiana University School of Medicine — Fort Wayne, Midwest Alliance for Health Education

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**THE CHALLENGE**                Rapidly develop, deploy and pilot policies, mechanisms and solutions that enable consumers to access, manage and benefit from electronic health information exchange data

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**KEY TAKEAWAYS**                1) With the proper assistance and training, seniors with chronic conditions can and will use a PHR to actively engage in the management of health  
2) Easy access to electronic clinical data is valuable to patients, and enables them to identify potential errors that may exist in provider HIT applications  
3) The use of a PHR can contribute to improved levels of patient engagement and adherence to recommended treatment plans  
4) Active use of a PHR can contribute to improved clinical outcomes including reduced A1c levels, even among senior patient populations

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WebChart provides patient engagement tools including portals and personal health records through a licensing agreement with NoMoreClipboard. The NoMoreClipboard platform and technologies are seamlessly integrated with WebChart EHR for a unified user experience.

## OVERVIEW

In January of 2011, the Office of the National Coordinator for Health Information Technology (ONC) awarded a Challenge Grant focused on consumer-mediated information exchange to NoMoreClipboard and Indiana Health Information Technology — Indiana's state designated entity. Working with five HIEs operating in Indiana and a dozen pilot sites, NoMoreClipboard is making HIE data available to patients with a personal health record.

Working with project stakeholders, NoMoreClipboard is developing and deploying policies, mechanisms and solutions in support of three key objectives:

- 1) **Data liquidity** — making HIE data available and easily accessible to patients using established interoperability standards
- 2) **Patient identification and authentication** — making certain that HIE data is only made available to the appropriate patient
- 3) **Secure messaging** — enabling the secure exchange of messages between consumers and clinicians with an HIE serving as a routing service

## USE CASE

Parkview Physicians Group — Cardiology (PPGC) is a 24 physician cardiology practice in Northeast Indiana and an early adopter of health information technology. PPGC provides care at three primary offices and a dozen clinics in surrounding communities, and conducts 30,000 office visits and consultations as well as 40,000 hospital visits and consultations each year.

Patient engagement is intrinsic to ePHR use, and therefore it can be an effective tool in the management of diseases and reducing healthcare costs.<sup>1,2</sup>

PPGC is an Indiana Challenge Grant pilot site, and is conducting a study labeled **ePHR-COPE** (Deployment of **e**lectronic **P**ersonal **H**ealth **R**ecords post **C**oronary intervention — analysis of **O**utcomes and **P**atient **E**ngagement). Two hundred PPGC patients who have recently undergone cardiac revascularization (coronary artery bypass graft and/or stent insertion) have been equipped with an interoperable personal health record pre-populated with clinical data, and the practice is evaluating the impact of an electronic PHR on intermediate health outcomes as compared to national statistics of similar patients.

## POLICIES, MECHANISMS and SOLUTIONS

PPGC identified 200 patients who recently underwent cardiac coronary revascularization (stent or bypass) and expressed willingness to participate in an IRB approved study. Personnel from the Parkview Research Center (PRC) collected patient consent, and helped patients set up a NoMoreClipboard PHR account and provided training on use of the PHR.

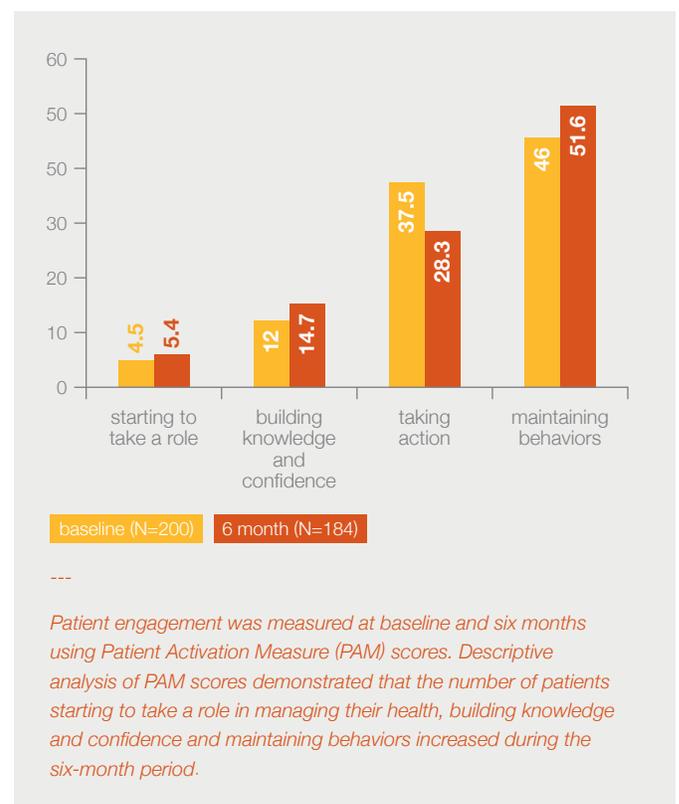
WebChart, the electronic health record system used by PPGC, was configured to support PHR account creation and population. With the patient present, PRC personnel were able to send a Continuity of Care Document (CCD) and the PPGC medical record number to NMC from the electronic patient chart in the EHR. The CCD routed through the Med-Web HIE which serves Northeast Indiana, and NMC returned a PHR account activation code. When a PHR account was created, the activation code was entered — establishing a match between the PPGC and NMC medical record numbers and releasing discrete data from the CCD to populate the PHR account. When new data is available in the PPGC EHR system, the practice can post that data to NMC with a single click — triggering a new CCD which is routed through the Med-Web.

When patients agreed to participate in the study, the practice conducted baseline lab testing to capture patient weight, blood pressure, lipid and HbA1c levels. An online baseline survey is also conducted, and PRC personnel helped patients complete this survey during the initial visit. The survey was designed by PRC and uses the Patient Activation Measure — a validated survey tool that measures patient engagement. The survey also incorporates the Technology Acceptance Model, an information system theory that models how users come to accept and use technology. This survey and lab tests were repeated at six months, and will also be repeated at twelve months.

PPGC and PRC personnel are planning to compare ePHR patient outcomes with national statistics of similar patients by comparing data in the PINNACLE

Registry. The PINNACLE Registry is operated by the American College of Cardiology, and is cardiology's largest ambulatory quality improvement registry.

**Figure 1: ePHR PAM levels (%)**



NoMoreClipboard also worked with PPGC to incorporate a daily health diary into the patient PHR. Patients can self-enter and transmit their blood pressure, heart rate, blood glucose, height, weight and BMI to the practice. Patients can also sign up for daily reminders to complete and submit their diary information, and all messages are transmitted securely through the Med-Web HIE.

## CHALLENGES

PPGC had to adjust its workflow and allocate resources to recruit patients, help them set up a PHR account and provide training on its use, and coordinate baseline and follow-up lab tests and surveys. While this required significant modifications to workflow and dedicating personnel to this effort, PPGC is now better equipped to meet Meaningful Use Stage Two requirements for ensuring that at least five percent of practice patients use electronic engagement tools.

Recent health technology innovations, including patient-centric interoperable electronic personal health records [ePHR] increase patient engagement by improving patient-provider interaction through two-way communication...<sup>1,2</sup>

## RESULTS

PPGC has successfully recruited 200 patients, all of whom have a PHR and have completed baseline labs and surveys. As of this writing, 184 patients have completed 6 month surveys and serial lab testing.

> The majority of participating patients were elderly (70% were 56-74 years old). About 64% of the

study population were covered by Medicare, and the majority of patients had some college education or were college graduates.

- > There was a high prevalence of diabetes in the study population (33%). 27.2% of patients had undergone CABG, 54.5% had PCI-stent and 18.5% had both CABG and PCI-stent.
- > Baseline surveys included a Patient Activation Measure (PAM) that uses a 13 measure instrument to derive a PAM score ranging from 1-4 that corresponds to patient engagement. Those with higher scores are considered to be more engaged in their care and demonstrate better self-management, decision making and communication with their providers. At baseline, 46% of patients had a PAM score of 4 and 38% had a PAM score of 3 — indicating high engagement levels. An analysis of 6 month survey data indicates that patient activation and engagement have increased among the patients using the PHR. *(see figure 1)*
- > In several cases, patients have reviewed the clinical data imported into their PHR and have identified errors. As patients have access and visibility to their data, they are notifying the practice to correct data in the EHR.
- > While not all patients are active users of the PHR, most patients are logging into their accounts on a regular basis and use the PHR to coordinate care with other healthcare providers. At the date of this

writing, data has been imported from the PPGC EHR to patient PHR accounts more than 600 times, and patients have logged into the PHR more than 2400 times. On average, a patient logged in 8.7 times over a six-month period. Approximately 15 percent of the patients are using the health diary to self-report and share health measures.

- > Based on the number of times they logged into their ePHRs, users were classified into three groups: inactive (32/184), active (101/184) and super user (51/184). There was a significant improvement in HbA1c among active users and super users, with the mean hemoglobin A1c reduced from 6.25 percent at baseline to 6.07

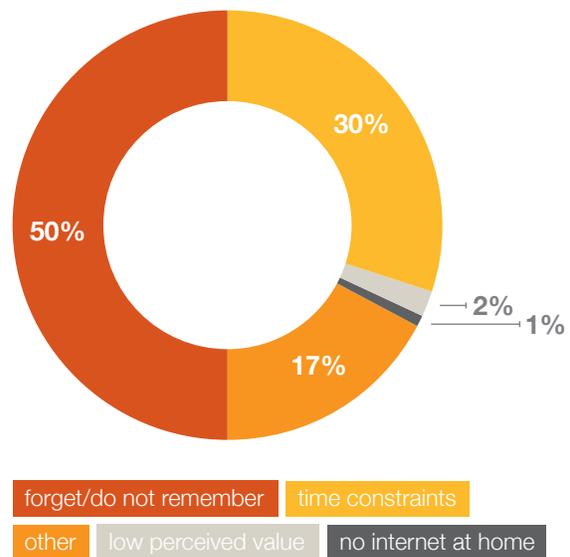
percent at six months. There was no significant improvement in blood pressure and LDL at six months. (see table 1)

- > The primary reason given for not using their ePHR was “do not remember.” Other barriers included time constraints, no internet at home, low perceived value, computer difficulties and overwhelming health issues. (see figure 2)

**Table 1: Change in intermediate health outcomes among different user types**

Health Status Measure		mean	paired T test p value for change		
			inactive user	active user	super user
SBP	baseline	130.03 mmHg	.542	.101	.732
	6 month	132.47 mmHg			
DBP	baseline	69.04 mmHg	.559	.299	.491
	6 month	69.54 mmHg			
LDL	baseline	82.99 mg/dL	.350	.367	.178
	6 month	82.32 mg/dL			
HbA1c	baseline	6.25%	.265	.010	.042
	6 month	6.07%			

**Figure 2: Reasons for low use of ePHR**



## LESSONS LEARNED

The study demonstrates that patients provided with an ePHR had improved understanding of their conditions and adopted healthy behaviors. Patients with a history of diabetes showed a statistically significant improvement in their glycemic control, indicating the potential impact of ePHR on effective condition management.

Computer literacy emerged as a key factor in acceptance of ePHR technology, and it may be essential for providers to provide basic training in computer and internet use to boost ePHR acceptance. Reminders and encouragement may help sustain regular ePHR use.

“One of the more interesting lessons learned thus far is to not make assumptions about patient willingness to adopt and use a PHR based on demographic factors such as age,” said Jeff Donnell, president of NoMoreClipboard. “Clinicians often tell us that tools like PHRs are a great idea for others, but their patient populations won’t use these tools based on age, income or inability to use technology. Our experience with PPGC patients and with other clients who serve patients who supposedly reside on the wrong side of the digital divide tells a different story.”

Dr. Michael Mirro, a cardiologist with PPGC, concurs. Mirro began using an electronic health record system in the mid-90s, is a big proponent of electronic patient engagement and has served as the chair of the health information technology committee for the American College of Cardiology. “We are really encouraged by the response of our patients, and we were pleasantly surprised when patients enrolled in the study started

telling their friends — some of whom called the practice asking if they could participate,” said Mirro. “While it is unrealistic to expect every patient to use a PHR or patient portal, we had one of our patients tell us the PHR was the missing tool they needed to get organized, and that everything else including diet and exercise fell into place once they started using NoMoreClipboard.”

“I know that as we look ahead to Meaningful Use Stage Two, many in the provider community are concerned that the requirement to get five percent of your patients to use electronic engagement tools is unrealistic,” added Mirro. “Our experience with a senior population indicates otherwise. More importantly, we are seeing that patients who participate in electronic exchange and use these tools are more engaged, more likely to adhere to prescribed therapies and treatment plans, and more likely to enjoy improved outcomes and quality of life.”



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1 Ahern, D.KI, et al., Promise of and Potential for Patient-Facing Technologies to Enable Meaningful Use. American Journal of Preventive Medicine, 2011. 40(5): p. S162-S172.

2 Winkelman, W. J., et al., Patient-Perceived Usefulness of Online Electronic Medical Records: Employing Grounded Theory in the Development of Information and Communication Technologies for Use by Patients Living with Chronic Illness. Journal of the American Medical Informatics Association, 2005. 12(3): p. 306-314.