

***Grant Final Report***

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# Abstract

**Purpose:** The purpose of this project was to: 1) enhance a three year old community portal built on a data exchange that would allow for a longitudinal patient record; 2) deploy EMRs in independent physician practices throughout a community; 3) facilitate a multi-payer incentive program; and 4) perform an evaluation of safety and quality improvements from the project.

**Scope:** The project was to leverage a three year effort to bring health information technology to the Hudson Valley of New York. Fifty providers from a large physician organization made up of independent practitioners, a regional health plan, three hospitals and a reference lab were key stakeholders in a regional Health Information Exchange. The grant funds were to be used to expand the functionality of the Health Information Exchange and increase the number of stakeholder participants in the community effort.

**Methods:** Using high levels of end-user participation and the previously built data exchange interfaces, the community portal functionality was enhanced. A new costing and implementation model was developed for deployment of ambulatory EMRs in physician practices of all sizes.

**Results:** A timely successful launch of a longitudinal medical record was accomplished using the existing interfaces. EMR adoption in small physician practices was favorably influenced by the efforts of this project. A multi-payer incentive program was initiated.

**Key Words:** Health Information Exchange, Health Information Technology, Electronic Medical Records, Multi-Payer Incentive Program, Pay-for-Performance, Quality, Safety

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# Final Report

## Purpose

1. Complete a community wide data exchange.
2. Deploy ambulatory EMRs with a uniform approach in a large community of independently practicing physicians.
3. Unify the regional payers around a pay-for-performance initiative that includes incentives for technology adoption to improve quality.
4. Evaluate the impact of a community wide data exchange and electronic medical record in an independent physician practice setting. The parameters measured included improved safety and quality.

## Scope

During the three years preceding the grant project, the basic foundation for a community-wide data exchange infrastructure was developed. In addition to clinical messaging, the infrastructure provided a solid foundation for network connectivity on which to build a portal to view a longitudinal record made up of information from the various healthcare stakeholder participants. Physicians used a single sign-on to access administrative, demographic, insurance, and clinical data in one system.

In 2001, Taconic IPA (TIPA) completed the initial plan for the deployment of the Hudson Valley Health Information Exchange (HVHIE). The initial stakeholders were MVP Healthcare (MVP), Vassar Brothers Medical Center, Kingston Hospital, MDS Laboratories, and 50 TIPA physicians. The model called for a four pronged strategy: (1) the leasing of Internet-based Health Information Exchange (HIE) software; (2) development of user-friendly training and information technology support services; (3) support by a payer who would establish incentive programs to reward physician adoption of technology; and (4) assessment methods to evaluate the success of the proposed effort.

The Taconic Independent Practice Association (TIPA), formed in 1989, is a not-for-profit healthcare corporation and at the inception of this grant had a network representing over 3000 physicians in nine counties of southeastern New York State. TIPA physicians were located in over 600 offices ranging from solo practitioners in rural areas to large multi-specialty, multi-location practitioners in urban areas with an average of three practitioners per office. TIPA with the financial support of MVP created the original concept of building a community-wide data exchange in the Hudson Valley of New York in 2000 with the long-term goal of improving quality through healthcare technology. TIPA and MVP each invested \$500,000 in the project. In addition, TIPA committed \$500,000 per year for ten years to fund the community-wide initiative

which subsidized the cost of healthcare technology and services for physicians in the region. Also, TIPA contributed personnel, resources, and consultants to the initiative. TIPA developed a division within the professional relations staff to educate physicians on the value of health information technology. One of TIPA's greatest roles in the project was to break down the organization-centric mentality among the varying healthcare participants within community, thus allowing competing hospitals and laboratories to enter data into one centralized community system. Also, TIPA served as a catalyst to bring multiple competing payers together to discuss incentives for technology adoption leading to quality.

MVP, founded in 1983, is an independent, regional, not-for-profit healthcare insurer. At the inception of this project, MVP covered over 600,000 lives in New York, Vermont, and New Hampshire. MVP provided multiple product lines (HMO, PPO, and ASO) to over 10,000 businesses including IBM, Verizon, and Wal-Mart. MVP had always believed that reimbursement should be tied to quality. Initially, MVP and TIPA tried using a physician payment withhold approach to incent quality. The bonus payments were based on the performance of the overall physician organization which diluted credit to individual physician's performance and ultimately failed to significantly alter performance. Subsequently, MVP and TIPA went to individual physician profiling with annual quality bonuses. The physician profiles were derived from risk adjusted claims, laboratory, and pharmacy data. The method used standard HEDIS criteria and physician satisfaction surveys and was an improvement over the prior withhold program. However, the payment included only one payer and had no incentive for technology adoption. At the inception of this project, MVP and TIPA were working on changes to the pay-for-performance program. The program design was similar to the Integrated Healthcare Association (IHA) in California with the intention of including several payers and large self-insured employer groups. However, unlike the IHA at that time, TIPA intended to have a much higher percentage of the bonus payment tied to technology.

At the time of the project, MDS Laboratories which was subsequently acquired by LabCorp of America provided laboratory testing, research and development of new drugs, and products manufactured to prevent, diagnosis, and manage disease. In the HVHIE, laboratory results were delivered electronically via a community wide data exchange to TIPA physicians. LOINC standard codes were used to allow comparison of laboratory results across multiple sources on the HIE.

Vassar Brothers Medical Center was a 315 bed acute care facility serving the community since 1887. Vassar had the region's only cardiothoracic surgery center, the busiest maternity center between New York City and Buffalo, and a Level Three Neonatal Intensive Care Unit.

Benedictine Hospital was a 222-bed acute care community hospital located in Kingston, NY. The hospital had been accredited as a community cancer hospital by the American College of Surgeons Commission on Cancer.

Kingston Hospital was a 160-bed community hospital specializing in medical/surgical care.

In addition to TIPA's contributions to the project, individual practicing physicians purchased the basic computer technology to connect to the HVHE including personal computers, high-speed Internet access, and appropriate hardware (firewalls, routers, printers, etc).

## Methods

The prior section gave an overview of the efforts leading to and the status of the community health information technology project at the inception of the grant. The grant project anticipated adding a longitudinal viewing capability to the then existing community wide data exchange portal. A uniform implementation of ambulatory EMRs was planned. Also, the project included engaging multiple payers in addition to MVP for incentive payments for technology adoption. Finally, a formal research project would be performed to evaluate the project.

### Enhancement of HVHIE with Community Viewer

Surveys were sent to all providers using the data exchange portal to gauge interest in a longitudinal patient summary or an “EMR lite” as it was called at the time. We believed that the additional functionality would help speed the progression to more robust ambulatory EMRs. A work group was formed to review functionality and choose a product. We used the data exchange interfaces developed over the previous years for the added functionality.

### Community-Wide Ambulatory EMR Deployment

When the project began, ambulatory EMR adoption was less than 15% in our region and three large groups accounted for most of the implemented systems. Less than 3% of groups under six providers had systems. For the project, we had to develop an approach that would increase the adoption rate for all providers, but we needed to address the marked discrepancy in the small physician practices. This was particularly important because the small provider groups accounted for the majority of ambulatory care delivered in our region.

The three greatest adoption hurdles were cost, uncertainty of EMR software capability and longevity, and lack of practice expertise for implementing and maintaining the EMRs. To address the cost problem we developed a subscription model that significantly reduced up-front cost. Fortunately, CCHIT came into existence during this project and significantly reduced the uncertainty surrounding software vendor products and company viability. Although not universal, the ability of a practice to handle an EMR implementation is related to the size of the physician group. Groups under ten and particularly fewer than six struggle more than larger groups do. We started with a standard EMR vendor implementation approach except that our trainers remained in the community. All trainers were certified in the system they implemented. As we gained experience with EMR implementations in practices of all sizes, we developed techniques to enhance the efficiency and smoothness of the process. Also, we used an iterative approach with each practice which required ongoing re-visits after implementation and during support. Our current approach is one of low level ongoing implementation after the initial intense implementation period that continually builds on increased user expertise with the software. This approach would have been cost prohibitive if our training workforce was not local.

## Engaging Multiple Payer

MVP was the only payer involved in the community technology initiative initially. Their leadership included a p4p program that began in 2000, the addition of a technology component to their incentive structure early on, and the willingness to encourage other payers to become part of the initiative. At the beginning of this grant we started a workgroup to develop a multi-payer incentive program. IBM, the largest employer in the region, took a leadership roll in the workgroup encouraging health plans and other self-insured employers to engage in the process. During the course of the grant TIPA turned over the community convening aspect of the project to a RHIO that formed in 2005 and was called Taconic Health Information Network Community Regional Health Information Organization (THINC RHIO). At that point, a Quality Committee of THINC RHIO was formed which took on the efforts of the workgroup working on incentives. Many payers became part of the Quality Committee and the outcome is discussed in the results section of this report.

## Research Projects

**Study 1: Determining the Effect of Laboratory Result Viewing Through an Electronic Portal.** The purpose of this study is to determine the effect of viewing laboratory results through an electronic portal on quality of care

There is a paucity of data on the effectiveness of commercially available electronic systems for improving health care in office practices, where the majority of health care is delivered. In particular, the effect of electronic laboratory result viewing on quality of care, including preventive care, chronic disease management and patient satisfaction, is unclear.

We conducted a cross-sectional study of primary care physicians (PCPs) in the Taconic IPA in New York. All PCPs in this IPA have the opportunity to use a free-standing electronic portal for laboratory result viewing. We analyzed 15 quality measures, reflecting preventive care, chronic disease management and patient satisfaction, which were collected in 2005 by MVP Health Care for physician report cards. Using generalized estimating equations and stepwise regression with backward elimination, we explored associations among portal usage and the quality measures, adjusting for adoption of electronic health records (EHRs) and 10 other physician characteristics, including case mix.

**Study 2: Determining the Effect of Stand-Alone Electronic Prescribing Systems on Safety and Quality.** Prescribing errors occur frequently in the ambulatory setting. Interventions such as electronic prescribing hold promise for reducing the frequency of errors but research on its impact has been limited and inconclusive. Our objective was to assess the rates and types of outpatient prescribing errors and understand the impact of a stand-alone electronic prescribing system with clinical decision support on these error rates.

This was a prospective cohort study of multiple ambulatory physician practices in the Hudson Valley Region of New York State. Half of the 30 participating prescribers used paper-based prescriptions throughout the study period and half adopted electronic prescribing. Prescription and chart review was conducted to identify medication errors at baseline and one year.

# Results

## Enhancement of HVHIE with Community Viewer

After analyzing the survey results from physician users and going through a software product selection process with a physician user workgroup, a new longitudinal medical record product was chosen to be added to our community portal. We were able to use interfaces build over the previous three years for the new product which reduced the typical implementation time from 12 to three months. The longitudinal viewer was well received by the physician community, particularly Emergency Department physicians and physicians on-call. However, the results reporting software that came with the community viewer was not as functional as the software on the previous portal software and we had to deal with serious discontent in the physician community. Unfortunately, we were not able to find a vendor at that time that had both a strong longitudinal viewer product and a robust results reporting product. Since that time, vendor products have improved and that problem can be avoided.

**Conclusion.** Once an HIE is built, good strategic planning will allow leveraging of existing infrastructure with savings of time and money when adding new functionality. End user involvement is critical for the success of deploying new technology in the community. End users are necessary in the decision making process of choosing new functionality. Also, vigorous and constant communication and feedback are crucial after new systems or functionality is deployment.

## Community-Wide Ambulatory EMR Deployment

The current rate of adoption in our region is 36% with 37% in groups under six. These figures represent a doubling of EMR penetration in our region during the time of this project with small practices catching up with the rest of the region.

**Conclusion.** We believe the higher rate of EMR adoption by small physician practices in this project is attributable to our low up-front cost structure and our implementation approach. Our enhanced and on-going combined implementation and support method is only possible because the bulk of the personnel are located in the community. The local workforce approach is not part of the current national EMR vendor implementation model for small practices. Most vendor implementations are a combination of remote training coupled with brief on-site end-user training session. Although these results are preliminary, they raise questions about the traditional national EMR vendor implementation approach and whether that approach may be a factor in the low EMR adoption rate for small physician practices.

## Engaging Multiple Payer

As described in the Methods section, the payer effort was turned over to THINC RHIO. As a result of the TIPA AHRQ project, THINC RHIO is now overseeing a pay-for-performance/Medical Home (p4p/MH) project in New York's Hudson Valley. The project is

multi-payer and is anticipated to run from 2008 through 2012. Eligible physicians for the initial phase of the project will include Family Practice, Internal Medicine and Pediatric physicians practicing in the Hudson Valley. During the initial phase, up to 500 physicians will be enrolled in the project. Incentive payments will include two components: 1) an outcomes component based on process and outcomes measures derived from aggregated administrative data received from all health plans participating in the project and 2) a structural component determined by achieving Level II Medical Home recognition using the NCQA PPC-MH assessment tool. All physicians participating in the project will receive a baseline quality report during the 4<sup>th</sup> quarter of 2008 based on 2007 claims data aggregated across all health plans participating in the project. The baseline report will give participating physicians an indication of their performance on the quality measures in the report and an understanding of areas on which to focus to improve their score on the follow years report and maximize the quality portion of their 2009 bonus. All participating physicians will receive another quality report in the 4<sup>th</sup> quarter of 2009 based on 2008 claims data aggregated across all health plans participating in the project. The report will include the same measures as the report received the previous year and the 2009 report will be the basis for the quality portion of their 2009 incentive payment. The other portion of their 2009 incentive payment will be based on receiving Level II NCQA-MH recognition. Each health plan will determine the performance thresholds, timing and incentive distribution method the participating physicians. The project anticipates 20% of the total incentive payment for meeting plan determined thresholds on the aggregated quality report and 80% for achieving medical home recognition. All participants will have the opportunity to achieve Level II medical home recognition; however, because of the magnitude of effort required to achieve Level II status and the time line of the grant, we anticipate that approximately half of the physicians will achieve Level II status.

After the initial phase of the project which will end in 2009, all payers will be able to continue developing incentives methods based on the evolution of the project. Additional medical home thresholds and maintenance levels will need to be developed. Also, a combination of aggregated claims data and standardized structural, process and outcome measures reported directly from ambulatory EHRs will be added throughout the duration of the project.

**Conclusion.** The development of a multi-payer incentive program has taken the entire time of this project. To succeed in a multi-payer effort, trust takes time and a consensus process laced with a large educational component is essential. The project required three years of monthly meetings with several workgroups. The workgroups were made up of individuals that believed in the goals of the effort and were willing to contribute significant time in addition to their expertise.

## Research Projects

**Study 1: Determining the Effect of Laboratory Result Viewing Through an Electronic Portal.** One-third of physicians (54/168, 32%) used the portal for result viewing at least once over the previous 6 months. Use of the portal was associated with higher quality. Use of EHRs was not associated with higher quality, although only 10% of physicians were using them, thereby limiting power to find a difference.



**Study 1 Conclusion.** Electronic laboratory result viewing was independently associated with higher ambulatory care quality. Future longitudinal studies are needed to confirm this association.

**Study 2: Determining the Effect of Stand-Alone Electronic Prescribing Systems on Safety and Quality.** We analyzed baseline prescriptions for approximately 1000 patients whose providers used paper prescriptions and approximately 1300 patients whose providers were planning to adopt electronic prescribing. At one year follow up, we analyzed approximately 950 patients whose providers used paper prescriptions and approximately 1600 patients whose providers used e-prescribing. For the group of exclusively paper-based prescribers, we found that baseline error rates were similar at baseline and follow up. For the group of providers who adopted electronic prescribing, we found that there was a decrease in error rates from baseline to error rates after electronic prescribing adoption. The decreased in error rates was highly statistically significant.

**Study 2 Conclusion.** Prescribing errors occurred at a much higher rate than previously reported. Stand-alone electronic prescribing with clinical decision support significantly reduced the rate of errors and is an important potential tool for reducing ambulatory medication error rates.

## **List of Publications and Products**

Study 1 was published in the April 2008 issue of the Journal of General Internal Medicine (Kern, L et al. “Electronic Result Viewing and Quality of Care in Small Group Practices.” *J Gen Intern Med* 23(4):405–10).

A manuscript describing the results of study 2 is currently being prepared for submission.