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BOSTON UNIVERSITY
SCHOOL OF MEDICINE

Thesis

**THE DEVELOPMENT AND EVALUATION OF VIRTUAL PEER-TO-PEER
WORKGROUPS AS A PLATFORM FOR LONG-TERM
INTER-ORGANIZATIONAL COLLABORATION IN HEALTHCARE**

by

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DANIEL THOMAS

ABSTRACT

The purpose of this study is to investigate the effectiveness of virtual peer-to-peer (P2P) workgroups as a platform for long-term collaboration in healthcare. Virtual peer-to-peer workgroups were developed and piloted by the Michigan Value Collaborative to increase knowledge and collaboration between providers across Michigan. The workgroups were designed to address barriers to change and long-term collaboration by allowing participants to share their improvement journey and provide feedback and ideas for improvement in a highly accessible platform. The pilot workgroups focused on heart failure readmission reduction initiatives as it is a much scrutinized metric and is penalized by public and private payers. Data on the workgroups were collected using pre and post-workgroup surveys filled out by participants. The results reveal that virtual peer-to-peer workgroups are effective in increasing knowledge and collaboration in the short-term, but more study is required to judge their long term effectiveness in improving care at participating providers. Virtual peer-to-peer workgroups can serve as a foundation for increasing regional collaboration in healthcare as it is a very simple platform that does not require major financial or resource commitments.

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LIST OF ABBREVIATIONS

BCBSM.....	Blue Cross Blue Shield of Michigan
CHF.....	Congestive Heart Failure
CMS.....	Centers for Medicare & Medicaid Services
CQI.....	Collaborative Quality Initiative
EBP.....	Evidence-Based Practice
HF.....	Heart Failure
IHI.....	Institute for Healthcare Improvement
IOM.....	Institute of Medicine
HRRP.....	Hospital Readmissions Reduction Program
MVC.....	Michigan Value Collaborative
P4P.....	Pay-for-Performance

INTRODUCTION

Evidence-Based Practices and the “Quality Chasm”

In the Institute of Medicine’s (IOM) groundbreaking 2001 report *Crossing the Quality Chasm*, the IOM focused on redesigning the healthcare system to improve quality of care and reduce preventable medical errors. The IOM summarized the primary barrier to improvement in one harrowing sentence: “between the healthcare that we now have and the healthcare that we could have lies not just a gap, but a chasm”. One of the primary causes of this chasm is the inability to rapidly translate research knowledge into practice, resulting in uneven quality of care for patients as well as potentially harmful errors (IOM 2001). The IOM noted the rise and prevalence of chronic conditions such as heart disease and asthma requires multidisciplinary and coordinated care teams the current system cannot consistently offer. The current healthcare system is lagging behind in delivering safe, appropriate, and timely care due to lack of coordination and illogical variations in care (IOM 2001). As part of the IOM’s blueprint to redesign healthcare delivery, a focus was placed on wide spread dissemination and implementation of evidence-based practices (EBPs), “to standardize healthcare practices to science and best evidence and to reduce illogical variation in care, which is known to produce unpredictable health outcomes” (Stevens 2013).

As a result of the IOM’s report, there has been a big push to study translational science to learn about the barriers that prevent the dissemination and implementation of EBPs in clinical settings. By studying the barriers that exist, the primary stakeholders in

healthcare (patients, providers, payers) can work together to develop innovative systems that drive improvement and hold each other accountable in the delivery of quality care.

Quality Improvement in Healthcare

Quality improvement efforts have two phases: “an initial phase when organizations are launching (or renewing) their improvement effort with the intent of achieving significant improvement relative to current performance, and a later phase when organizations are nearing the performance goal and/or improving past it” (Nembhard 2014). Research has shown there are two prominent learning pathways used by organizations during improvement efforts: importing best practices and internal creative problem solving (**Table 1**) (Nembhard 2014).

Table 1: Comparison of Learning Approaches (Source: Nembhard 2014)

	Importing Best Practices	Internal Problem Solving
Learning Strategy	Learning by imitation.	Learning by investigation and experimentation
Description	Implementation of established EBP into new setting.	Problem identification, root cause analysis, solution development, and implementation.
Knowledge Source	External	Internal
Impact on Quality Improvement Efforts	Most impact in initial phase of improvement.	Impact increases between initial and later phase.

Importing best practices leverages external knowledge to implement EBPs into a clinical setting, while internal problem solving is more creative and focuses on internal knowledge. Both play a significant role in quality improvement, but their effects can be amplified depending on what phase of improvement the organization is in (Nembhard 2014). Importing best practices is more strongly associated with improvement in the initial phase of improvement, while the impact of internal problem solving increases between the initial and later phases of improvement efforts (Nembhard 2014). In the later phase of improvement, the two styles are shown to interact positively with each other, but this is not seen in the initial phase (Nembhard 2014). As a result, importing EBPs can result in short term improvement; however, the improvements will not be sustained without continuous internal problem solving. As healthcare organizations aim to implement EBPs across their organization, they can make the mistake of believing that simply importing an EBP can lead to sustainable quality improvement. Nembhard contradicts this belief in her study, as “longer-term improvement is more likely achieved when organizations combine external with internal learning, embracing both industry standardization [EBPs] and organizational creativity” (2014). It is vital both learning approaches are used when implementing quality improvement initiatives, and this requires a long-term commitment to improvement across the organization, from management to providers.

Barriers to Change in Healthcare

Implementing EBPs in clinical settings is a very complex process that requires a vast amount of resources and commitment from organizations and providers in order to succeed across all phases of improvement. Research has shown organizations that successfully implement EBPs have certain features: a perceived need to change practices, openness to external sources of information, and internal championship for the recommended changes (Yuan 2010) (**Table 2**).

Table 2: Barriers Preventing Implementation of EBPs and Examples of Drivers of Change in Healthcare (U.S. Department of Health and Human Services 2016)

Barriers preventing implementation of EBPs	Examples of Drivers of Change in Healthcare
Not recognizing need for change.	HRRP or other pay-for-performance programs that link payment to quality of care.
Not open or not able to easily access new information.	The Cochrane Collaboration and other sources which compile evidence of best practices for easy reference.
No internal championship for change.	Increased staff and organizational readiness for collaboration.

Recent external drivers have forced health systems to overcome these improvement barriers. One recent example of an external driver of change is the Hospital Readmissions Reduction Program (HRRP), which was enacted by the Centers for Medicare & Medicaid Services (CMS) to impose financial penalties on hospitals for high

readmission rates. It has shown early promise in decreasing readmission rates, as providers recognized the need for quality improvement to prevent financial penalties (Wasfy 2016). There are also organizations like the Cochrane Collaboration that, “systematize, compile, and evaluate the best practice for given medical questions” (Dubner 2016). Organizations like the Cochrane Collaboration compile all research conducted in certain medical realms making it simple for all organizations and providers to access and understand what EBPs currently exist in their field. The combination of financial incentives and easy access to new information have provided the perfect storm to motivate health systems and providers to focus on continuous quality improvement; however internal championship continues to be a major barrier to change in healthcare (**Table 2**).

Internal championship. Internal championship is the primary driving force behind successful quality improvement initiatives. According to a Readiness Assessment Tool created by the US Department of Health and Human Services to assesses a healthcare organization’s readiness to implement quality improvement initiatives, there are three internal readiness characteristics associated with successful implementation of new quality improvement initiatives: organizational readiness, resource readiness, and staff readiness.

Organizational readiness. Organizational readiness requires a high level of commitment from key decision makers, and a deep understanding of the financial investment and time commitment that quality improvement requires (U.S. 2016). A healthcare organization has to have the proper structure and leadership in place in order

to successfully implement quality improvement initiatives, as it is a very long and slow-moving process. Leadership has to be committed to all phases of improvement, and not be satisfied with the short-term gains that may come in the initial phases of improvement. The organization also has to be aligned with the goals of their physicians and staff in order to ensure improvements is sustained over the long-term (U.S. 2016).

Resource readiness. Resource readiness represents the organization’s ability to support the quality improvement initiative (U.S. 2016). Resource readiness builds off organizational readiness as leadership has to be knowledgeable about, “the type and availability or organizational resources required for initial implementation of a [quality improvement] initiative, as well as ongoing support for quality improvement” (U.S. 2016). An organization has to be committed to providing the resources necessary for all phases of improvement, and that can include money, technology, training, or even consultation services (U.S. 2016).

Staff readiness. Staff readiness includes the belief that the initiative will improve patient care, open relationships between providers and administration, and the willingness of providers to take leadership roles in the implementation of improvement initiatives (U.S. 2016). While all three readiness characteristics are important, staff readiness is arguably the most vital to the successful implementation of quality improvement initiatives. According to Dr. John Toussaint, the CEO of the Thedacare Center for Healthcare Value and one of the modern pioneers of quality improvement in healthcare, “the most common reason [implementation of best practices fails] is [organizations]

using a top-down approach. The leaders [of an organization] write a multipage playbook...hand it out to physicians and staff...and tell them to implement the playbook” (2017). This approach demonstrates organizational and resource readiness, but quality improvement initiatives primarily fail because of a lack of staff readiness and motivation. Instead, Toussaint vouches for a bottom-up approach that allows physicians and staff to be active participants in the implementation of EBPs, and this strategy has been used successfully in quality improvement outside of healthcare for decades (Toussaint 2017). There has to be a continuous flow of information and synergy between all levels of the organization in order to successfully implement EBPs, and front-line staff has to be empowered to make decisions to improve care.

These three characteristics, “increase an organization’s ability to achieve its desired goals and avoid the obstacles common to transformation efforts”, and it is essential that organizations have organizational, resource, and staff readiness before proceeding with implementation of a quality improvement initiative (U.S. 2016).

Paying for Quality

With the recent shift from volume based care to value based care, pay-for-performance (P4P) initiatives have been increasingly used by public and private payers “to improve the quality, efficiency, and overall value of healthcare” (Burwell 2015; Health Policy Brief: Pay-for-Performance 2012). These programs incentivize continuous improvement, penalize poor care, and serve as a major external driver of change in

healthcare. The Affordable Care Act expanded the use of pay-for-performance in Medicare with programs such as the Hospital Value-Based Purchasing Program and the Hospital Readmissions Reduction Program (HRRP), which can reward or penalize hospitals based on various quality metrics. These programs are also utilized in the private sector: The Alternative Quality Contract was implemented in 2009 between Blue Cross Blue Shield of Massachusetts and seven provider groups (Health Policy Brief: Pay-for-Performance 2012). Pay-for-Performance program measures usually fall into four categories: structure, process, patient experience, and outcome measures (**Table 3**).

Table 3: Examples of Pay-for-Performance Measures (Health Policy Brief: Pay-for-Performance 2012)

Pay-for-Performance Measures	
Structure Measures	Related to facilities, personnel, and equipment used (e.g. use of electronic health records).
Process Measures	Assess performance and use of EBPs (e.g. aspirin given to heart attack patients).
Patient Experience Measures	Patients' perception of the quality of care and satisfaction with experience.
Outcome Measures	Effects of care on patients (e.g. patients' diabetes under control)

These measures reinforce the fact that providers have to be fully committed on all levels of the organization in order to avoid penalties from these programs, but so far there

have been mixed results so far when evaluating the effects of these programs. A study of the Premier Hospital Quality Incentive Demonstration project from 2003 to 2009 showed the improvement effects were short-lived, and after five years there was no significant difference between providers participating in the project and those that were not (Health Policy Brief: Pay-for-Performance 2012). Other analyses have shown P4P programs, “were having little effect across a range of clinical services, from quality of ambulatory care to rates of breast cancer screenings” (Jha 2017).

Ashish Jha, a Professor of Health Policy at the Harvard T.H. Chan School of Public Health, summarizes why he believes these P4P programs have failed:

[K]ey principles of what makes good P4P programs have not been met... [P4P] programs must have 3 design features: incentives that are large enough to motivate hospitals to make sizable investments in improving care, a focus on a small number of high-value measures that will motivate clinicians to engage in changing practice, and a simple design that will enable clinical and organizational leaders to know how they are doing. (2017)

Many of the previously studied P4P programs did not have large enough incentives, resulting in health systems or providers not perceiving a need for change (**Table 2**). Moreover, previous P4P programs were focusing on low-value or complicated measures that may have made it difficult to secure internal championship for change at a hospital (**Table 2**). Despite these early failures, the Hospital Readmissions Reduction Program (HRRP), which was implemented in 2012, has shown modest early results. A recent 2016 study showed that Medicare readmission rates for conditions selected by HRRP all

decreased more rapidly after the law was passed (Wasfy 2016). Jha writes about HRRP, “incentives for reducing readmissions are relatively large, readmissions are easy to measure, and most hospitals can track their readmission rate” (2017). With properly aligned incentives and simple measures, health systems perceive a need for change and work to make the appropriate quality improvements, as shown in the early HRRP results. Low-performing hospitals had more accelerated improvement than high-performing hospitals in the study, and since the HRRP applies financial penalties up to 3% of all inpatient revenue, it’s clear low-performing hospitals perceived the need to make a change (Wasfy 2016). It remains to be seen whether these results can be sustained over the long-term, but it is clear that pay-for-performance programs will continue to be implemented in healthcare. These programs require providers to continuously improve in order to avoid penalties, and can motivate providers to find new and innovative ways to learn and improve if designed properly.

Inter-organizational Collaboration in Healthcare

Inter-organizational collaboration has long been used in other knowledge-intensive fields, and it has recently become a very popular in healthcare as providers have found collaboration with peers very useful for quality improvement (Nembhard 2008). The changing healthcare environment and rising expectations for care have made it difficult for providers to just rely on their own internal knowledge for improvement, and providers have looked to their peers for help in their improvement initiatives. One of the most well-known inter-organizational collaborations in healthcare is the Institute for

Healthcare Improvement's (IHI) Breakthrough Series. The IHI's Breakthrough Series brings healthcare organizations together to discuss and work to improve a specific metric of care (e.g. reducing readmissions). The IHI organizes "Learning Sessions", in which multidisciplinary teams from each organization exchange ideas with each other and share their successes, failures, barriers to improvement, and lessons learned during their quality improvement initiatives (Breakthrough Series 2003).

Research has shown that participants in the IHI model are quite successful in improving care in the short-term. The IHI has reported that providers have been able to reduce waiting times by 50%, reduce ICU costs by 25%, and numerous other successes for participants after the Breakthrough Series (The Breakthrough Series 2003). However, there has not been strong evidence of sustained improvement for providers once these quality improvement collaborations end (Parand 2012). Sustained improvement has turned out to be a major hurdle for providers, and this can be due to the lack of internal problem solving or commitment to the later phase of improvement after the collaboration is over. It is clear these programs provide short-term gain during the initial phase of improvement, but "longer-term improvement is more likely achieved when organizations combine external with internal learning, embracing both industry standardization [EBPs] and organizational creativity" (Nembhard 2014). The IHI collaboration model was revolutionary in fostering external learning, but more needs to be done to nurture internal learning as well to sustain improvements, and new innovative collaboration models are starting to address these shortcomings.

Regional Collaboration

In order to foster long-term collaboration and increased external and internal learning, regional collaborations have started to become a popular model for improvement in healthcare. These innovative quality improvement collaborations focus their efforts on specific geographical areas to improve care and control healthcare costs (Emanuel 2016). Regional collaborations are different from the IHI Breakthrough Series as they foster long-term collaboration between regional peers, potentially resulting in greater internal and external learning in all phases of improvement. Many regional collaborations use clinical registries that contained detailed information about patients' care and outcomes, and this data is used by the registry coordinating center to provide specific feedback to hospitals and physicians on their performance (Share 2011).

Hospitals and physicians then convene to regularly review the data, "focusing on areas of variation in practice or outcomes. Best practices are then identified and implemented across the region" (Share 2011). Regional collaborations provide an even greater platform for external learning as providers can use insights from the clinical registries to drive improvement, while also developing long-term collaborative relationships with their peer providers. Internal learning is greatly improved with this platform as providers can use their external relationships and insights from the clinical registry data to empower internal staff to embark on improvement initiatives.

According to Dr. David Share, a pioneer for regional collaboration in the state of Michigan:

The large sample sizes and statistical power associated with regional collaborative improvement program registries allow for more robust, rapid assessment of relationships between process and outcomes and of the effects of quality improvement interventions than can be achieved by hospitals examining their own practice in isolation... [T]hese programs also have salutary but immeasurable effects on the local safety culture... participating hospitals and physicians simply start paying more attention to their practices and how to improve them. (2011)

The sheer amount of data increases internal learning and fosters internal problem solving as hospitals look to improve their practices. The success of regional collaborations is not surprising, as it builds off many aspects of previous inter-organizational collaboration models. Regional collaborations address the issue of sustaining quality improvements by organizing providers around a common theme, establishing goals, and using resources to help achieve these goals by being available through all phases of improvement. They also keep organizations and staff motivated and ready for quality improvement by providing targeted data and analytics about their current state and how they can improve, fostering improvement throughout all levels of the organization. Research has shown short-term gains can be easily acquired, but continuous problem solving and organizational empowerment is required for long-term and sustainable improvement (Nembhard 2014).

In a world of pay-for-performance measures that require continuous improvement, regional collaborations provide a platform for hospitals to succeed in this changing environment. Recent pay-for-performance programs like the HRRP have significantly improved care at low-performing hospitals, and if these providers are not

able to sustain these improvements, the financial penalties will burden them indefinitely (Wasfy 2016). If low-performing hospitals are able to sustain their improvements and national readmission rates are consistently getting lower, providers that were previously not getting penalized may find themselves getting penalized because average Medicare readmission rates have dropped for selected service lines. Regional collaboration models can be a major tool that can be used to improve care on a large scale, and they keep providers accountable for improving care over the long-term.

Long-Term Collaboration to Improve Healthcare in Michigan

The state of Michigan is one of the pioneers of the regional collaboration. Michigan has had a very successful and unique payer-provider collaboration model that has improved patient outcomes, reduced total costs, and enabled continuous improvement and learning (Arora 2015). The Blue Cross Blue Shield of Michigan's (BCBSM) Value Partnership program includes 20 Collaborative Quality Initiatives (CQIs) that work with 95% of eligible Michigan providers to provide continuous support for quality and process improvement work (Arora 2015). Most of the CQIs target common clinical conditions and procedures that are associated with high costs and variations in care (Share 2011). Some examples include the Michigan Surgical Quality Initiative, which targets general and vascular surgery, and the Michigan Bariatric Surgery Collaborative, "which enrolls more than 95% of patients undergoing bariatric surgery in the state" (Share 2011). There are currently 20 CQIs that help providers understand their patient data and provide insight on where opportunities exist to implement EBPs to improve care for specific

conditions (“Value” 2017). Providers are empowered to lead quality improvement in their hospitals, and use the CQIs for support and feedback throughout their improvement journey (Arora 2015). This model has been very successful at sustaining improvement work throughout Michigan as CQIs accumulated a benefit cost savings of approximately \$597 million statewide between 2008-2012 (Arora 2015). This unique payer-provider collaboration model provides a national blueprint for improvement and “represents a rare triple win: professional satisfaction and preserved autonomy for physicians; lower costs for payers; and better outcomes for patients.” (Share 2011).

Michigan Value Collaborative (MVC)

The Michigan Value Collaborative (MVC) is one of the Collaborative Quality Initiatives funded by Blue Cross Blue Shield of Michigan’s Value Partnerships program. MVC seeks to help Michigan hospitals achieve the best possible patient outcomes at the lowest reasonable cost by adhering to the Value Partnerships’ philosophy of using high-quality data to drive collaborative quality improvement (Michigan Value 2017). MVC aims to understand variation in healthcare use, identify best practices, and facilitate interventions for improving care before, during, and after hospitalization. The program improves healthcare quality across Michigan through rigorous performance feedback, empirical identification of best practices, and collaborative learning (Michigan Value 2017). MVC focuses on hospital-based procedures, medical care, and outpatient care, and can therefore facilitate interventions in multiple clinical areas or assist other CQIs in achieving their missions.

Spreading Quality Improvement

While regional collaborations in Michigan has been very successful, there are many limitations that prevent the regional collaboration model from being implemented nationwide. Blue Cross Blue Shield of Michigan is the largest private insurer in the Michigan and, “underwr[ote] substantial costs, offered additional financial incentives for hospitals to participate, and provided a neutral meeting ground for collaborating hospitals and physicians” (Share 2011). Despite the large initial financial investment (which is eventually paid back in cost savings), there has to be strong commitment from regional providers and payers in order to create a successful regional collaboration model. There are also potential limitations and barriers for participation as regional collaborations may not be valuable to all providers in a region. For example, hospitals that primarily help Medicare or Medicaid patients may not be as motivated to participate in a collaboration that is targeted to hospitals with large BCBSM populations. This limitation requires regional collaborative programs to be supported by a combination of payers and provider systems in order to ensure the benefits of the collaborative are shared by all providers in the region. Michigan’s regional collaboration model includes Medicare data and is inclusive of all providers regardless of payer affiliation, but it takes a big commitment from providers and payers alike to replicate this model. These large commitments may prevent the rapid implementation of regional collaborations nationwide, but the benefits of the model in improving care are undeniable.

Setting a Foundation for Collaboration

To investigate new and simpler strategies to improve long-term inter-organizational collaboration in healthcare, MVC developed and piloted virtual peer-to-peer (P2P) workgroups with the goal of providing a simple and highly accessible platform to enhance external and internal learning and collaboration among regional peers. MVC hypothesized the virtual peer-to-peer workgroups would enhance understanding of selected topics and increase openness to collaboration in the short-term, resulting in improved quality improvement initiatives and care in the long term.

SPECIFIC AIMS

The specific aim of this study is to analyze the effectiveness of virtual peer-to-peer workgroups as a platform for highly accessible and long-term collaboration in healthcare. This study aims to show increased learning and openness to collaboration in the short-term, resulting in improved quality improvement initiatives at participating health systems in the long term.

There has recently been an increased focus on actively disseminating and implementing evidence-based practices (EBPs) in clinical settings to improve care. New payment reforms emphasize continuous improvement and have resulted in increased use of inter-organizational collaboration in healthcare. Regional healthcare collaborations have been shown to improve outcomes and save hundreds of millions of dollars in Michigan and other states over the past few years, but the model can be difficult to replicate nationwide due to the large financial and resource commitments from providers and payers. The virtual peer-to-peer workgroups aim to be a highly accessible and simple way to provide long-term collaboration among peer hospitals. This study will detail the creation of the workgroups as well as their guiding goals and principles. There will also be a detailed analysis of the results and future improvements that can be made to the platform.

METHODS

Creating a Simple Long-Term Collaborative Platform

Blue Cross Blue Shield of Michigan's (BCBSM) Value Partnership program has shown the value of long-term collaboration in improving patient outcomes and reducing costs, but there are some limitations to the current model. Regional collaborations require major financial and resource commitment from payers and providers, and they may not be inclusive of all providers in a region due to payer or provider affiliations. Therefore, it is imperative that simpler and more accessible ways of long-term collaboration and learning are investigated, and virtual peer-to-peer workgroups represent a way to break down these barriers and provide an accessible platform for all providers in a region to collaborate.

The Michigan Value Collaborative (MVC) is in a very unique position as they do not focus on a specific clinical condition like other BCBSM Collaborative Quality Initiatives (CQIs). MVC studies variation and outcomes across many clinical areas, meaning they can drive quality improvement initiatives at participating providers as well as serve as a supplemental resource for other CQIs. This unique position, combined with established long-standing relationships with Michigan hospitals provided the perfect environment in which to develop, pilot, and study the effectiveness of virtual peer-to-peer workgroups. Strict guiding principles and goals were used to develop the virtual peer-to-peer workgroups (**Table 4; Table 5**). These guiding principles were developed from research on barriers preventing implementation of best practices and factors that contribute to successful inter-organizational collaboration (**Table 2**). Focusing on relevant and high-value metrics ensures participants will participate in the platform

because they recognize the need for improvement in that specific metric (**Table 4**). The pilot workgroups, which will be covered in depth later on, focused on heart failure readmissions, which is one of the service lines penalized by HRRP.

The next guiding principle was to target internal champions in providers across the region, as these participants will have traits necessary for successful inter-organizational collaboration: “mutual respect, interest in others’ perspectives, and most importantly a willingness to listen to one another, not just to respond, but to truly understand... [and] to contribute to a dialogue” (Janus 2016). This is because these participants will all be in the later phases of improvement, which requires creative problem solving and oftentimes fresh perspectives that cannot be found within the organization. As a result, these internal champions will have a willingness to learn and collaborate externally.

The MVC Coordinating Center modeled the third principle of the workgroups after the IHI Breakthrough Series’ “Learning Sessions”, which consisted of multidisciplinary teams from different organizations exchanging ideas with each other and sharing their successes, failures, barriers to improvement, and lessons learned during their quality improvement initiative (The Breakthrough Series 2003). By creating an open environment where workgroup participants share all their experiences, learning and collaboration between providers can improve. The fourth guiding principle is to share the results of the workgroups with all MVC members, and it is one of the most important principles. These “change packets”, or toolkits that summarize the workgroups, allow non-participants to benefit from the discussions (Nembhard 2009). The toolkits serve

as an outreach mechanism to not only increase awareness of the platform, but to hopefully lead to increased participation and collaboration between providers in the region. Since the workgroups are specifically targeting internal champions that are in the later phase of improvement, there are clear access limitations for the workgroups. The summary document aims to not only increase awareness of the platform to non-participants, but to also increase access to fellow peer hospitals as well. The toolkit summarizes common improvement themes as well as the specific initiatives going on at participating hospitals, which can significantly increase external learning opportunities for non-participants. Research has shown that simply copying an EBP into a clinical setting can result in short-term gains, so receiving a toolkit that lists EBPs and the providers that have implemented them can break down many barriers to change that may exist in the non-participating providers (**Table 2**). The last guiding principle ensures the providers continue to participate in the workgroups and find them valuable (**Table 4**). Since there are no major financial or resource investments in this platform, the success of the workgroups is driven by provider participation, so it is essential that providers find the platform valuable to their improvement efforts.

Table 4: Guiding Principles of Virtual Peer-to-Peer Workgroups

Guiding Principles of Virtual Peer-to-Peer Workgroups	
#1	Focus on a specific high-value metric for a specific service line (e.g. heart failure readmissions).

#2	Target internal champions at respective health systems, who can provide valuable insight with their experiences.
#3	Create an open environment where participants share all their experiences (e.g. successes, failures, barriers, lessons learned).
#4	Share the results of the workgroups with all MVC members to spark future collaboration and potentially increase participation in future workgroups.
#5	Collect feedback in order to continuously to improve the platform and ensure continued participation and long term collaboration.

These guiding principles ensure the MVC Coordinating Center meets the goals of the workgroups (Table 5).

Table 5: Goals of Virtual Peer-to-Peer Workgroups

Goals of Virtual Peer-to-Peer Workgroups	
#1	Increase knowledge in the selected workgroup topic by providing a highly-accessible platform.
#2	Facilitate long-term collaboration and increased participation in the workgroups with high-value and highly accessible materials and activities.

The primary goal of the workgroups is to increase knowledge on the selected workgroup topic. The platform will never be successful unless the participants are learning and can apply this new knowledge to their own health system. The next goal of the workgroups is to facilitate long-term collaboration and increase regional participation and collaboration by providing highly accessible materials and

discussions. One of the limitations of previous collaboration platforms was they were not highly accessible for all providers. Collaborations like the IHI Breakthrough Series require an application process, multidisciplinary teams, and traveling for the “Learning Sessions” (The Breakthrough Series 2003). Regional collaborations require capital and resource commitment from providers and payers, and in the end may not be inclusive of all providers in the region. This platform is designed to be independent of any regional affiliation or collaboration in order to allow collaboration without major investments from providers or payers. The pilot workgroups evaluated in this study were restricted to MVC members; however, the platform can easily be deployed with no restrictions. The virtual peer-to-peer workgroups build upon the successes of previous inter-organizational collaborations by addressing barriers to change in healthcare while also addressing limitations to previous collaborations by providing a highly accessible platform for increased internal and external learning (**Table 6**).

Table 6: How Virtual Peer-to-Peer Workgroups Address Barriers to Implementation of EBPs.

Organizational barriers preventing implementation of EBPs	How Virtual Peer-to-Peer Workgroups address barriers
Not recognizing the need for change.	Focus on relevant and high-value metrics that are easily measured.
Not open to information; not able to easily access new information.	Platform is centered on long-term information sharing.

No internal championship for change.	Participants are all heavily involved in initiatives are looking for ways to improve.
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Structure of Workgroups

During the development phase of the virtual peer-to-peer workgroups, a common criticism received was that not every provider would be able benefit from the workgroup discussions. For example, small, rural hospitals stated they were not interested in the initiatives going on in a large hospital system as they have more resources and opportunities to improve care for patients. From discussions with large providers, that was not necessarily true because even large hospitals had resource constraints at a departmental level. The MVC Coordinating Center found that large and small hospitals faced similar issues and barriers to improving care for patients, so the workgroups were structured in a way to allow hospitals to discover their similarities in order to achieve “mutual respect, interest in others’ perspectives, and most importantly a willingness to listen to one another” (**Table 2**) (Janus 2016).

The workgroups open with a discussion of root causes of the selected topic in order to bring clinical similarities between the participants to light. The participants then detail the initial phase of their improvement efforts: the implementation of an EBP into their clinical setting. The results and takeaways of their initiatives are shared, and then they detail their current phase of improvement (later phase) and issues that need to be

addressed. Typically, the later phase of improvement requires creative problem solving which can present multiple barriers. Participants can detail all aspects of their initiatives, and then receive feedback and answer questions from other participants. The flow of the presentation was specifically designed to copy the internal problem solving model (**Table 1**). By covering the participant's problem identification, root cause analysis, solution development, and implementation in their initial phase and later phase, the other participants can not only learn from the experiences of their peers, but also provide valuable feedback based on their own improvement journey.

As mentioned previously, accessibility has been a major limitation for previous collaboration models like the IHI Breakthrough Series and regional collaborations. Whether the platform requires traveling or affiliation with a regional collaboration, the number of active participants can be limited. The MVC Coordinating Center aimed to address these limitations with the workgroup platform. First, the workgroups were conducted via videoconferencing software in order to allow MVC providers from all over the state to actively participate while not losing the benefits of face-to-face collaboration. The virtual aspect of the workgroup platform is a major differentiating factor from other platforms, as it can facilitate long-term collaboration at very little cost while also making the platform highly accessible to new participants. The videoconferencing software not only facilitates face-to-face interaction, but also allows participants to share slides and data for all participants to see. The pilot MVC workgroups were not able to address limitations due to payer affiliation, as the workgroups were only available to MVC members. This is due to the role of BCBSM in MVC and ensuring that the benefits of the

platform are realized by participating providers in the regional collaboration. This restriction is something that can be easily changed, as the platform is designed to be deployed with no restrictions, but it is very important to find committed providers before launching virtual peer-to-peer workgroups.

Participants

As stated in the guiding principles of the workgroup, the workgroups target internal champions at hospitals with quality improvement initiatives in the selected service line (**Table 4**). This is to ensure robust peer-to-peer collaboration as every participant will be able to contribute to the discussion. Each workgroup consists of six to eight hospitals, with participants being administrators or clinical staff directly involved with quality initiatives at their hospitals. With every active participant in the later phase of improvement, they can all share their improvement journey and receive valuable feedback from other participants. In the later phase of improvement, importing best practices and internal problem solving are shown to interact positively with each other, so learning what has worked for others can be a very valuable for participants as they look to improve their own initiatives (Nembhard 2014).

The principle of initially targeting internal champions admittedly runs counter to the overall goal of accessibility to all providers in the area, but it is done for a very important reason. For the pilot workgroups, it is very important that only very motivated providers participate in order to build awareness of the platform to the rest of the region. Getting highly motivated providers results in very robust and comprehensive materials that can be

disseminated to the rest of the region, increasing awareness of the value of the platform. These materials increase the accessibility of high-performing providers in a region, which can increase future participation in the platform. As awareness of the platform increases, it becomes possible to loosen these restrictions in order to provide opportunities for providers in all phases of improvement to participate.

Dissemination

Following the completion of the workgroups, the MVC Coordinating Center develops and publishes a summary document for distribution to all MVC members. The document covers the common root causes, improvement themes, and the specific quality initiatives at each participating hospital. The summary packet goes through the improvement journey of each participating provider, and the identification of specific provider initiatives is a significant and novel part of the workgroup dissemination strategy. Generally, only providers with very successful or innovative initiatives ever openly share their initiatives with others, and they usually end up in major publications. Surprisingly, many participating hospitals were very receptive to the idea of sharing their improvement journey with their peers as they clearly understood the value in sharing their experiences. This did come with a caveat; however, as toolkits with specific provider initiatives could only be shared with MVC members. However, this represents a significant enhancement to the inter-organizational collaborative model and speaks to the willingness of providers to learn and collaborate with one another to improve care.

The MVC Coordinating Center also disseminated the results of the workgroups through other avenues to increase awareness of the platform. At the MVC's Semi-Annual Meeting, which had 164 participants from 74 MVC hospitals, the results of the workgroups were summarized and one of participants presented their heart failure readmission reduction initiative. Afterwards, there was a breakout session in which MVC hospitals were put into groups and presented with the following scenario: "Your hospital has a CHF readmission rate of 26% and you have identified the root cause as [insert root cause]". Each group was given a specific root cause and time to come up with initiatives to address the root cause. After a period of brainstorming, each group presented their initiatives to a panel of actual workgroup participants who gave feedback based on their own experiences. Additionally, news about the workgroups was presented on the MVC blog so MVC members could keep up with the progress of the workgroups as well as learn about new workgroups.

Topic

In following the guidelines to select high-value metrics for the workgroups, heart failure readmissions were selected as the topic for the pilot virtual peer-to-peer workgroups. As one of the service lines penalized by HRRP, it is a topic that providers in Michigan find extremely relevant.

Heart Failure in Michigan. Heart failure is a chronic, progressive condition in which the heart is not able to pump enough blood in order to meet the body's demand for blood and oxygen (About 2016). Heart failure is growing problem in the United States, as

it affects about 5.7 million adults and projections show that the prevalence of heart failure will increase 46% from 2012 to 2030, resulting in over 8 million people diagnosed with heart failure (Mozaffarian et al 2015). There are approximately 915,000 new cases of heart failure a year, and it is primarily affects the individuals over the age of 60 (Mozaffarian et al 2015).

The most common risk factors for heart failure are any diseases or behaviors that damage the heart (e.g. high blood pressure, diabetes, smoking, obesity) (About 2016). Heart failure patients often have many comorbidities when they come to the hospital as a result, as evidenced by data on heart failure patients in Michigan (**Table 11**). Increased heart failure prevalence as well as an aging population has made heart failure a very widely studied disease, and the care of these patients has become heavily scrutinized.

Heart failure is the leading cause of hospitalization and readmission among older adults, as Medicare patients with heart failure have a 30-day readmission rate of 20-25% (Pinkerman 2013). According to 2005 Centers for Medicare & Medicaid Services (CMS) data, heart failure is the most common principal discharge diagnosis among Medicare beneficiaries and third highest for hospital reimbursements (Feltner 2014).

There has been a plethora of research focusing on the diagnosis and outpatient management of heart failure patients (Feltner 2014; Health Research 2014; Pinkerman 2013; Chen 2007; Kim 2013). The high comorbidity rate of these patients requires their care to be comprehensive and multidisciplinary, as oftentimes these patients are not readmitted for one of their comorbidities rather than heart failure (**Table 12**). The plethora of research on EBPs for heart failure in combination with HRRP penalties

illustrates the motivation that exists for Michigan hospitals to improve and sustain their improvements.

Michigan currently ranks 40th in the country (22.3%) for heart failure readmissions based on CMS Hospital Compare data (out of 49 states; Maryland did not have reportable CMS data) (**Table 13**). Since Michigan is slightly above the national average for heart failure readmissions (22.0%), it is likely many hospitals in Michigan will be affected by HRRP financial penalties, which makes it imperative that Michigan hospitals are working to improve care for heart failure patients.

As seen in **Figure 1**, there are many Michigan hospitals below the national average. This data illustrates an opportunity as many hospitals in Michigan clearly have successful heart failure readmission reduction initiatives. A byproduct of reduced readmissions is lower 90-day episode payments, and unsurprisingly, the distribution of episode payments for heart failure is very similar to the distribution of readmission rates (**Figure 2**). Further investigation shows that most of the variation in episode payments comes from readmission payments (**Figure 3**). Therefore, as providers reduce readmission rates, episode payment variation decreases and care improves.

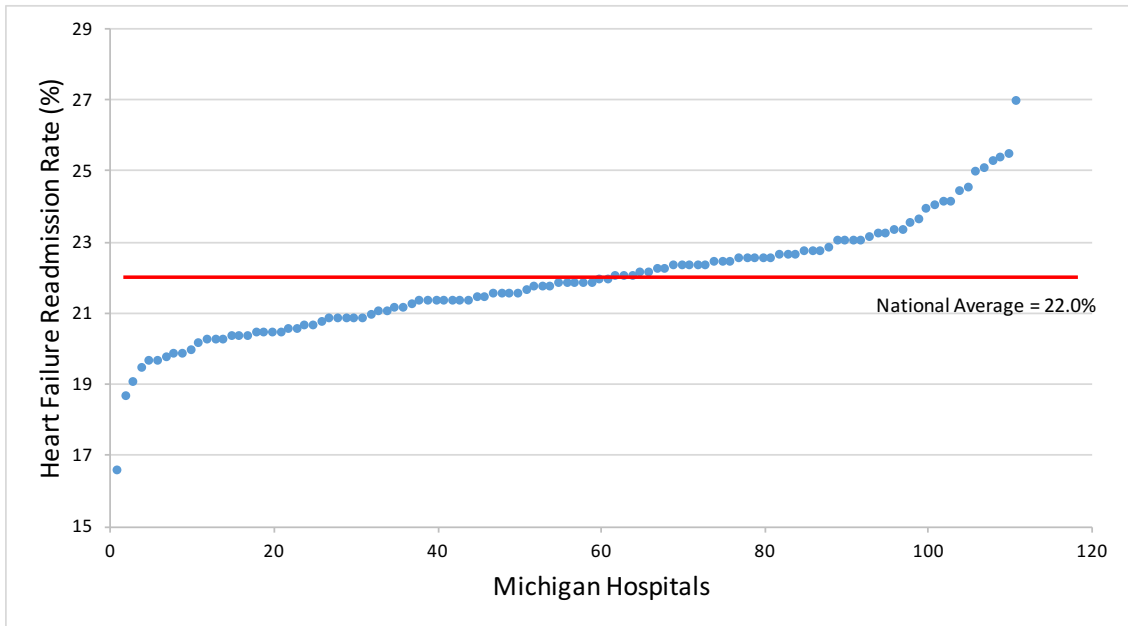


Figure 1: Plot of Michigan Hospitals and Heart Failure Readmission Rates (source: CMS Hospital Compare)

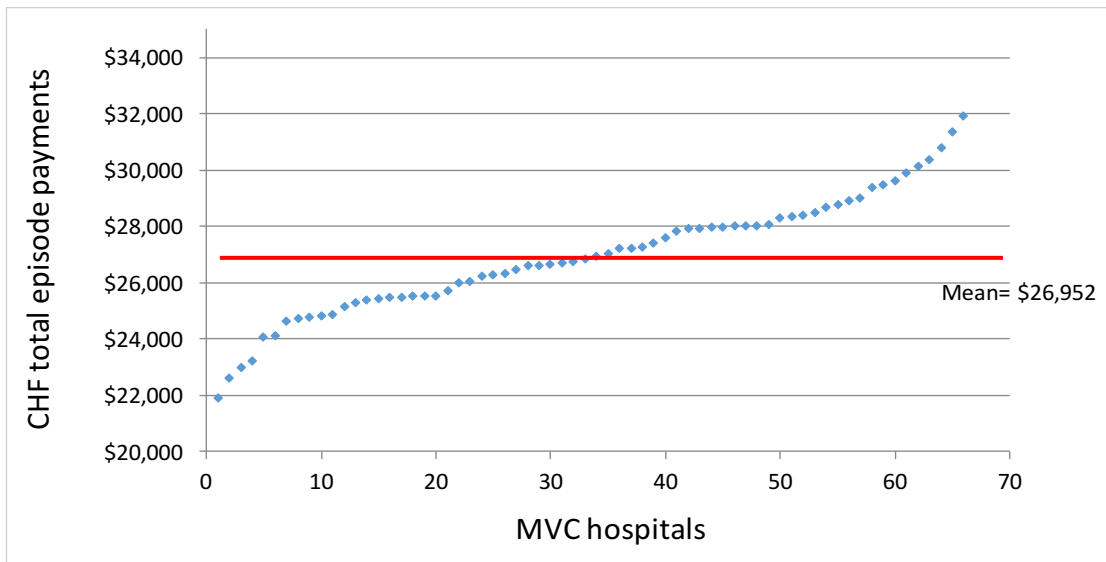


Figure 2: Variation for 90-day CHF Episode Payments in MVC Hospitals (source: MVC)

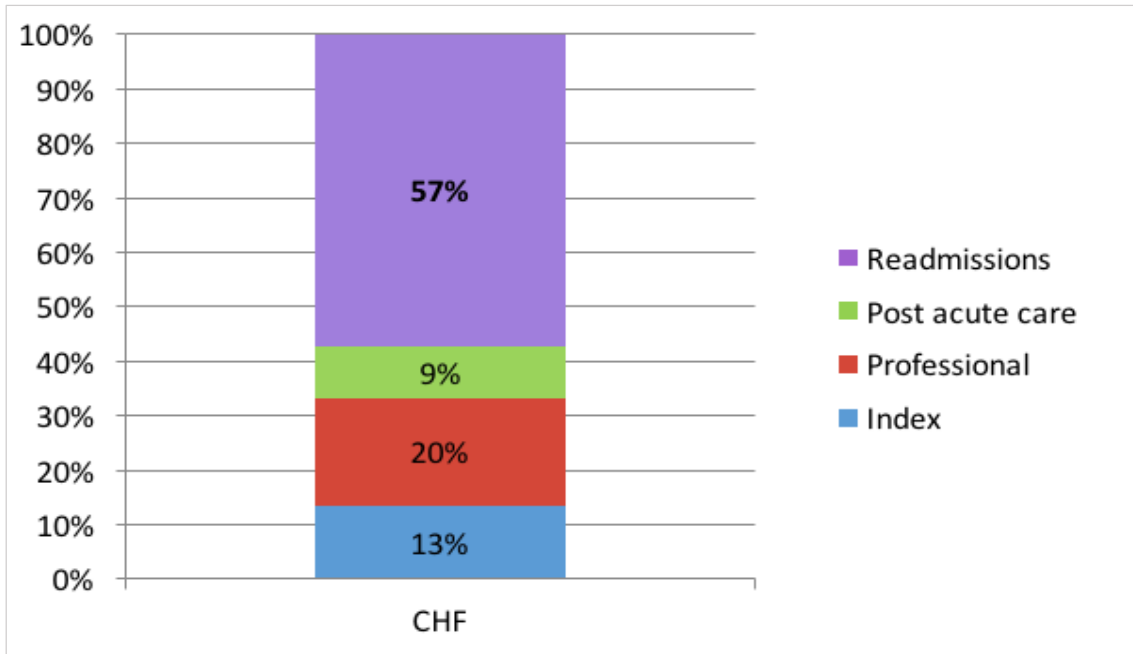


Figure 3: Variation in CHF Episode Payments (source: MVC)

As a result, many Michigan hospitals are implementing quality improvement initiatives to reduce heart failure readmissions. The MVC Coordinating Center developed a pay-for-performance metric that is used by BCBSM to give out additional payments to hospitals that reduce 30-day episode payments while meeting certain quality thresholds. Each MVC hospital selects two service lines in which they want to be assessed, and 53 (71%) MVC hospitals selected heart failure as the service line they wanted to be evaluated on in the pay-for-performance measure. In order to reduce episode payments to receive rewards from the metric, heart failure readmissions will have to be the primary target for MVC hospitals since they contribute to most of the variation in episode payments (**Figure 3**). It was clear due to these factors that heart failure readmissions would

be a high-value metric for Michigan hospitals, and would drive strong participation in the workgroups.

Data Collection

Surveys were distributed to participants before and after the workgroups in order to assess the participants and the effectiveness of the workgroups in achieving its primary goals (**Table 5; Table 14**). Both surveys use a 7 point Likert scale (1=strongly disagree, 4=neither agree nor disagree, 7=strongly agree) to determine the participant's level of agreement or disagreement with certain statements. The pre-workgroup survey focuses on the participants' understanding of heart failure readmissions and their willingness to collaborate with other hospitals in Michigan. The results will show if MVC participants see participating in the peer-to-peer workgroup platform as a potential learning experience.

The post-workgroup survey focuses on the workgroup experience and if the participant is likely to use information learned in the session in their own initiatives. The results will show if the participants found the workgroups to be a valuable learning experience, and if not, they can provide feedback on how to improve the platform. Additionally, all of the virtual peer-to-peer workgroups were recorded in order to synthesize the data into a toolkit that is later disseminated to all MVC hospitals.

RESULTS

Participation

26 hospitals MVC hospitals (35%) signed up to participate in the heart failure virtual peer-to-peer workgroups. Of the 53 hospitals that selected heart failure for the MVC Pay-for-Performance metric, 19 hospitals (36%) signed up.

13 hospitals (50%) that signed up for workgroups actually participated in a heart failure workgroup, and 5 hospitals (19%) dropped out after signing up. The remaining 8 hospitals (31%) were not able to participate due to scheduling issues.

Table 7 summarizes the workgroup participants by their role (a provider may have had more than one representative). The breakdown of participants showcases the diversity of front-line workers and management types that were participating and interacting with one another.

Table 7: Breakdown of Workgroup Participants by Role

Participant Role	Number of Participants (out of 16)
Nurse	13
Quality/Safety/Performance	7
Manager/Director	7

Pre-Workgroup Survey Results

The pre-workgroup survey showed that only 30% of participants agreed they had a strong understanding of heart failure readmissions and their root causes (**Table 8**). With

only 10% of participants claiming to not have a strong understanding of heart failure readmissions, almost every participant could contribute their own expertise and experiences to the conversation. This is further proven by 80% of participants at least somewhat agreeing they have had difficulty in overcoming obstacles to reduce heart failure readmissions. 90% of participants at least somewhat agreed the workgroups can help improve their current strategies to reduce heart failure readmissions, illustrating the participants had a willingness to learn and saw the workgroups as a potentially valuable platform for learning and improvement. The last question on the survey illustrates the current state of peer-to-peer collaboration within the regional collaborative. One of the primary goals of the BCBSM CQIs is to build a collaborative environment with strong peer-to-peer relationships between providers. The MVC Coordinating Center will aim to increase the amount that at least agree with feeling part of a collaborative (60%), and the workgroups provide an opportunity to do so.

Post-Workgroup Survey Results

The post-workgroup survey shows the virtual workgroup platform can be an effective tool for collaboration and learning (**Table 9**). 100% of participants agreed they have a strong understanding of heart failure readmissions after the workgroup, which is higher than the pre-workgroup survey (30%). Combining this result with 88.89% of participants (8/9) stating they were likely to use the information learned in the workgroups in future heart failure readmission reduction initiatives, providers will be using their new knowledge to improve initiatives in their hospital. With 100% of

participants stating they would be open to future workgroup sessions, it is clear participants found value in the platform as a learning and collaborative experience. 55.5% of participants at least agreed they would be likely to contact fellow workgroup participants after the workgroup to continue discussions, which shows more work is needed before long-term collaborative relationships are built between regional providers.

Table 8: Results of Pre-Workgroup Survey (n=10).

Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Strong understanding of HF readmissions and root causes.	0%	10%	0%	0%	60%	30%	0%
Difficulty overcoming barriers in reducing HF readmissions.	0%	0%	20%	0%	40%	40%	0%
Workgroups can help improve current strategies.	10%	0%	0%	0%	30%	60%	0%
Feels part of collaborative and has working relationships with fellow hospitals.	10%	0%	0%	10%	20%	40%	20%

Table 9: Results of Post-Workgroup Survey (n=9).

Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Strong understanding of HF Readmissions and root causes.	0%	0%	0%	0%	0%	89%	11%
Likely to use information learned in future initiatives.	0%	0%	0%	0%	11%	67%	22%
Likely to contact participants to discuss initiatives.	0%	0%	0%	22%	22%	44%	11%
Open to future workgroup sessions to discuss initiatives.	0%	0%	0%	0%	0%	78%	22%

DISCUSSION

This study analyzed the effectiveness of virtual peer-to-peer workgroups as a platform for long-term inter-organizational collaboration in healthcare. The virtual peer-to-peer workgroups build upon the successes of previous inter-organizational collaborations by addressing barriers to change in healthcare while also addressing limitations to previous collaborations by providing a highly accessible platform for increased internal and external learning. The results of the workgroups show the workgroups can be a successful platform for long-term collaboration, and can potentially lead to improved care in the region.

Overall, the pre-workgroup survey shows that the MVC Coordinating Center was successful in following the guiding principles of the workgroup (**Table 4**). Most of the workgroup participants were in the later phases of improvement, as shown by the level of understanding and experience in heart failure readmission reduction initiatives (**Table 8**). High quality participants ensure the conversation is robust as they can draw from their vast experiences to not only help themselves, but also help their fellow participants.

The workgroups also gave a lot of insight into the quality initiatives going on in Michigan. The number of nurses involved in the workgroups reflects the “bottom-up” approach to quality improvement as advocated by Dr. John Toussaint (**Table 7**) (2017). The “bottom-up” approach allows physicians and staff to be active participants in the implementation of EBPs, and this strategy has been used very successfully in quality improvement outside of healthcare for decades (Toussaint 2017). It’s clear many of the participants’ hospitals are following this model by having nurses at the forefront of heart

failure readmission reduction initiatives. The diversity of participants also speaks to the willingness of MVC participants to learn and share their experiences with one another at all levels of the organization. Nurses and front-line workers will have a different experience from management level employees, and facilitating the sharing of these perspectives can drive further collaboration, improvement, and understanding of different viewpoints and experiences.

The post-workgroup survey results show the workgroups can be as valuable platform for knowledge sharing (**Table 9**). The participants showed an increased understanding of heart failure readmissions and stated they were likely to use information learned in the workgroups in their own future initiatives. This result clearly shows the primary goal of increasing knowledge was achieved (**Table 5**). Goal #2 was also achieved as respondents were enthusiastic to participate in future workgroup discussions, showing the platform has value to providers (**Table 5**).

This study improves on current inter-organizational collaboration models in healthcare like the IHI Breakthrough Series and regional collaborations, by providing a simple longitudinal platform for long-term collaboration in healthcare. However, a lot more work is required to validate and improve the virtual peer-to-peer workgroup platform.

Strategies to Increase Accessibility for Future Workgroups

Throughout the process of developing and evaluating the virtual peer-to-peer workgroups, there were numerous issues that will need to be addressed in future

iterations of the workgroups. 13 providers (50%) that signed up to participate in a workgroup did not end up participating. Eight were not able to participate due to scheduling issues, and this will be improved in future iterations of the workgroups. Workgroups were initially scheduled based on a poll in which all interested participants selected times they were available for the workgroups. This was done because the workgroups are a voluntary activity, and the MVC Coordinating Center wanted to make participation as easy as possible. Now that the workgroups have preliminarily shown to be an effective sharing platform, the conversion rate of interested to active participants can be improved without sacrificing overall participation numbers. The MVC Coordinating Center will select pre-determined dates and times for workgroups, and interested parties will sign up for the dates they are available. This can result in a higher conversion of interested to active participants as the MVC Coordinating Center can schedule many sessions and increase accessibility to the platform.

The remaining five participants that dropped out before the workgroup didn't think they could contribute to the conversation after learning more about what was expected from participants. All five were in the initial phase of improvement, and their initiative was too new for them to adequately explain and show their effectiveness in the pilot workgroups. As a result of these dropouts and to increase accessibility to the platform, the MVC Coordinating Center will be experimenting with different ways to allow those with new initiatives to participate. An idea that has been tried is to allow a limited amount of participants to register as "listeners"; allowing them to sit in on the workgroup as well as ask questions to active participants. This option can be offered to

those who sign up and then decide to drop out, so only providers that have a willingness to learn can take advantage of this option.

Lastly, another barrier was the video conferencing technology, as some participants either had difficulties using the software or did not have access to a webcam. In these cases, the participants called into the workgroups, but the face-to-face aspect of the workgroups was lost in those cases. With improved scheduling techniques, it will become easier for the MVC Coordinating Center to work with participants to ensure they know how to properly use the technology before the workgroup session. Additionally, some couldn't access webcams because their hospital only had a couple computers that had webcam access. This often required the participant to book certain rooms and with short notice it would be difficult for them to do so. With pre-determined dates set by the MVC Coordinating Center, participants should have ample time to make necessary accommodations to fully participate in the platform.

Moving forward, the MVC Coordinating Center will look to run more heart failure readmission reduction workgroups as there were many MVC hospitals that selected heart failure as their pay-for-performance service line and did not sign up for the initial workgroups. With improved scheduling and strategies to improve access, participation should increase and the percentage of dropouts should decrease.

Strategies to Increase Long-Term Collaboration

The MVC Coordinating Center is currently holding longitudinal workgroups on heart failure readmissions in order to facilitate long-term learning and collaboration.

Seven (53%) of the original workgroup participants took part in the first longitudinal workgroup. This workgroup focused on the design and format of the longitudinal workgroups as a whole in order to ensure participants find the platform valuable, potentially driving increased future participation. The MVC Coordinating Center and the participants agreed on the following format listed in **Table 10**.

Table 10: Format of Longitudinal Workgroups

Longitudinal Workgroup Format	
Frequency and Duration	90 minute sessions every two to three months.
Topics	Selected by workgroup participants.
Agenda	<ol style="list-style-type: none"> 1. MVC Coordinating Center presents a literature review on the selected topic. 2. Selected participants share their experience on the topic. 3. Discussion.

Some of the selected topics include readmissions from skilled nursing facilities, palliative care programs, hand-offs to primary care physicians, risk stratification tools, and post-discharge clinics. The longitudinal workgroups not only represent a platform for continued and focused collaboration between workgroup participants, but it can also serve as an access point for new participants that are interested in the selected topics. The longitudinal workgroups are currently only offered to those who have participated in a workgroup, but if they turn out to be valuable and well-received, they will become more accessible for other MVC members.

Limitations

There are various limitations to this study. First off, the sample size is small, and that is a result of how many workgroups have been run up to this point. There will be more workgroups in the future so the MVC Coordinating Center will be able to continuously evaluate the effectiveness of the platform. The short time frame of the study is also a limitation because it is impossible to judge the effectiveness of the workgroups in improving quality improvement efforts for participants and improving care for patients. However, this study does show that virtual peer-to-peer workgroups can be a simple and effective platform for long-term collaboration in healthcare. Another limitation is the pilot MVC workgroups were deployed within the framework of BCBSM's Value Partnership regional collaboration, therefore it is difficult to know if the platform is truly sustainable on its own. A basic regional collaboration framework may be necessary for successful workgroups, and this may limit the ability of hospitals in other states from launching virtual workgroups. Additional time and analysis will be needed to see if EBPs are implemented in clinical settings and end up improving care for patients in the short and long term, and the MVC Coordinating Center has access to data to continuously evaluate the platform.

Future Research

As more workgroups are conducted, it will become easier to evaluate virtual peer-to-peer workgroups as a platform for long term inter-organizational collaboration and quality improvement in healthcare. The long-term effectiveness of the workgroups in

improving care can be done by studying claims data within the context of the MVC Pay-for-Performance program. There will be four different types of providers: those who participate in the workgroups and targeted heart failure as the service line to be assessed in the Pay-for-Performance program, those who participated and didn't target heart failure, those who didn't participate and targeted heart failure, and those who didn't participate and didn't target heart failure (**Figure 4**).

		PARTICIPATED IN WORKGROUP	
		YES	NO
SELECTED HF IN P4P METRIC	YES	A	B
	NO	C	D

Figure 4: Matrix for Future Analysis of Workgroups

When studying the long-term effectiveness of virtual peer-to-peer workgroups in improving care, there is a direct comparison between groups A and B (**Figure 4**). By using risk-adjusted 30-day episode cost data and readmission rate data from MVC members, it is easy to determine whether readmission episode costs and rates were significantly lower in group A. The MVC Pay-for-Performance metric can be used to see if participating in the workgroups resulted in more or less reward payments at the end of the measuring period. The same can be done between groups A & C and C & D. By analyzing episode cost data as well as readmission rates between these four groups, the

workgroups can be validated as an effective platform for sharing best practices and improving clinical care for patients long-term.

Over the short-term, the MVC Coordinating Center will continue to validate the workgroups as an effective platform for sharing and collaboration, but more time will be needed to judge their effect on outcomes and patient care. Oftentimes what is seen with collaborative quality initiatives is there is short-term improvement seen by participants, but these improvements are not sustained over the long-term (Health Policy Brief: Pay-for-Performance 2012). The virtual peer-to-peer workgroups aim to break that trend over the long-term by providing a simple, highly accessible, and provider-centered platform for sharing and collaboration throughout all phases of improvement. In addition, the workgroups aim to target not only the highly motivated, but also those that maybe haven't thought about quality improvement initiatives and give them a platform to learn from their peers to build knowledge to start improvement activities at their own hospital. Since the workgroups are a simple platform, groups all over the country can pilot and evaluate the workgroups without major financial implications, and it can serve as a foundation for improved regional collaboration in healthcare.

APPENDIX

Table 11: Common Comorbidities for Heart Failure Patients (n=49,332)
(Source: Michigan Value Collaborative)

Condition	Rate (%)
Specified Heart Arrhythmias	61.8
Diabetes without Complication	54.9
COPD	51.9
Vascular Disease	41.5
Renal Failure	40.5
Cardio-Respiratory Failure and Shock	34.4
Diabetes with Chronic Complications	28.6
Coagulation Defects and Other Specified Hematological Disorders	19.2
Morbid Obesity	16.8
Unstable Angina and Other Acute Ischemic Heart Disease	14.4
Chronic Kidney Disease, Severe	14.0
Other Significant Endocrine and Metabolic Disorder	11.0
Chronic Ulcer of Skin, Except Pressure	10.6

Table 12: Top 10 Readmission Diagnosis for Index Heart Failure Patient (Source: Michigan Value Collaborative)

Readmission Diagnosis	Rate (%)
Acute diastolic heart failure	9.4
Acute systolic heart failure	9.2
Acute renal failure	6.5
Combined diastolic and systolic heart failure	3.8
Congestive heart failure unspecified	3.5
Hypertensive disease	3.2
Sepsis	3.1
Atrial fibrillation	3.0
Pneumonia	2.5
Heart attack	2.4

Total readmitted with HF diagnosis: 25.9%

Table 13: CMS Heart Failure Readmission Rankings (Maryland not included due to lack of CMS data) (Source: CMS Hospital Compare)

Ranking	State	Rate (%)
1	UT	19.61
2	ID	19.94
3	SD	20.16
4	MT	20.21
5	CO	20.40
6	ME	20.58
7	NE	20.70
8	ND	20.80
9	AK	20.82
10	WI	20.83
11	KS	21.03
12	OR	21.15
13	AZ	21.19
14	NM	21.19
15	SC	21.23
16	IA	21.26
17	DE	21.27
18	VT	21.36
19	MN	21.37
20	WA	21.44
21	HI	21.53
22	TX	21.53
23	NC	21.60
24	IN	21.60
25	NH	21.61
26	WY	21.63
27	OK	21.64
28	GA	21.65
29	PA	21.83
30	AL	21.88
31	MO	21.90
32	OH	21.92

Ranking	State	Rate
33	CA	21.94
34	LA	21.95
35	IL	22.03
36	TN	22.06
37	VA	22.06
38	CT	22.09
39	MA	22.15
40	MI	22.32
41	KY	22.37
42	NV	22.41
43	NJ	22.49
44	FL	22.73
45	WV	22.76
46	AR	22.90
47	RI	22.95
48	MS	23.03
49	NY	23.23

Table 14: Pre and Post-Workgroup Surveys

Question	Rating (1-7)
My hospital has a strong understanding of HF Readmissions and their root causes.	
My hospital has had difficulty overcoming barriers during our efforts to reduce HF readmissions.	
These workgroups can help to improve my current CHF strategies	
My hospital feels part of a collaborative and has working relationships with fellow Michigan hospitals.	

Question	Rating (1-7)
My hospital has a strong understanding of CHF Readmissions and their root causes	
My hospital is likely to use information learned from the workgroups in initiatives to reduce CHF readmissions.	
I am likely to contact fellow workgroup participants to further discuss CHF initiatives.	
I am open to future workgroup sessions to discuss initiatives.	

- 1= strongly disagree**
- 2= disagree**
- 3= somewhat disagree**
- 4= neutral**
- 5= somewhat agree**
- 6 = agree**
- 7 = strongly agree**

LIST OF JOURNAL ABBREVIATIONS

AHRQ..... The Agency for Healthcare Research and Quality

JAMA.....The Journal of the American Medical Association

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