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# Proposal Defense: Improving Patient Portal Adoption in Primary Care

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Proposal Defense: Improving Patient Portal Adoption in Primary Care

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**DNP Project Plan**

### **Abstract**

**Introduction:** Stage three of Meaningful Use (MU) is currently underway and is focused on promoting patient portal use. If the electronic medical record patient portal use is less than 25%, primary care providers face reductions in value-based reimbursements. National adoption rates from portal use remain under 27% with some providers averaging well below the needed 25%. The following practice question is proposed, “In a low-income urban adult clinic, how does an interactive electronic education intervention compared to no education intervention affect patient portal adoption rates?”

**Objectives:** The purpose of this project is to identify whether an electronic patient educational video and self-service kiosk will increase the use of portals among low income older adults in a primary care office. The overarching goal of the proposed project is to increase patient portal adoption to the MU requirement of 25% of participants by March 4, 2019.

**Methods:** A convenience sample of 1,894 adult patients attending a primary care appointment is expected. A retrospective data analysis will be used to gather pre and post-intervention portal adoption percentages. Data will be compared using chi-square methodology. Demographic information will be used for descriptive statistics. Survey data will be used to capture study learnings and to evaluate the intervention. In this quality improvement project, data will be collected from persons receiving a primary care appointment at the clinic that participate in the patient education video and self-serve kiosk over a 84-day period. The rate of portal adoption for persons using the video and kiosk will be compared to the portal adoption rate before the video was available. Additional, de-identified demographic information will be collected in order to understand if there are differences in portal adoption among patient types.

**Results:** It is predicted that patient portal use rates will reach 30% in response to the evidence-based intervention.

**Conclusions:** It is expected that the proposed workflow changes with an educational intervention will eliminate the barrier of a lack internet access and will thus increase patient portal rates.

**Implications:** The vision of the proposed project is to be cycle one of many cycles. With the clinic's vast number of students and support of educational staff, this project can provide a framework for future quality improvement projects aimed at improving patient portal use and patient outcomes.



### Proposal Defense: Improving Patient Portal Adoption in Primary Care

In 2009, the federal government recognized a need to modernize the current healthcare system. In response to this, the Health Information Technology for Economic and Clinical Health (HITECH) Act was implemented (Centers for Disease Control and Prevention [CDC], 2017). The HITECH Act aims to advance the exchange of electronic healthcare information in a meaningful manner (CDC, 2017). The Centers for Medicare and Medicaid Services (CMS), simultaneously called for the use of electronic health records (EHRs) that efficiently exchange information and add value to healthcare (CDC, 2017). To ensure compliance with this, the CMS initiated a three-stage plan called Meaningful Use (MU) which provides financial incentives to organizations that adopt and comply with their recommendations (CDC, 2017).

Stage three of MU is currently underway and is focused on promoting patient portal use by ensuring that a minimum of 25% of patient's use their EHR portal regularly and a minimum of 35% of portal users receive an individualized digital message from their healthcare provider (CMS, 2015). If these objectives are not met, healthcare practices may receive a one to five percent reduction in their Medicare and Medicaid reimbursement, also known as value-based care reimbursement (CMS, 2018). In response, healthcare providers who largely provide primary care to Medicare and Medicaid patients may not be able to financially maintain operations if their patients do not adopt the portal. Although the stakes are high, the federal government has implemented these incentives in response to the link between portal engagement and improved population health (Ricciardi, Mostashari, Murphy, Daniel, & Siminerio, 2013).

### **Background**

The Office of the National Coordinator for Health Information Technology (ONC, 2017) defines a patient portal as a secure, online website which allows patients to have round the clock

access to their personal health information. Portals contain information about the patient's medical visits, medications, immunizations, allergies, and test results (ONC, 2017). More advanced portals allow patients to message their primary care provider securely, request medication refills, schedule routine appointments, check insurance coverages, download forms, and view medical education materials (ONC, 2017). Patient engagement in the EHR portal, encourages the patient to be an active member in their own healthcare team (Patel, Barker, & Siminerio, 2015). This patient centered engagement empowers patients to advocate for their health and reduces barriers that exist among healthcare practices (Patel et al., 2015). It was further found that patients who utilize their portal have a better understanding of their chronic conditions, are more satisfied with the care they receive and demonstrate improved health outcomes (Patel et al., 2015; Ricciardi et al., 2013). Although evidence supports the benefits of portal use, approximately 73% of patients nationally have not signed up for portal access (Tavares & Oliveira, 2017).

According to Irizarry et al., (2017), low national adoption rates are driven by the gap that exists between consumers and the knowledge of portal benefits. The gap is further widened in populations that face numerous barriers (Heath, 2016). Promoting the benefits of and identifying the barriers towards portal access, have been found to increase adoption rates and patient comfort while using portals (Heath, 2016). A small primary care office in South-Central Michigan currently has low patient EHR portal adoption rates. Clinic leadership has expressed concern about the low portal adoption rates and is interested in organizational changes that could improve them. The purpose of this proposal is to describe an evidence-based quality improvement (QI) project at a South-Central Michigan primary care office.

### **Assessment of the Organization**

Organizational assessment provides a framework for organizations to examine their strengths and weaknesses as they relate to current performance (Tavakoli, 2010). Organizational assessments further allow organizations to identify their contributions to and level of support for change (Weiner, 2009). Prior to planning a QI project, an evidence-based organizational assessment was used to evaluate the project site. During organizational assessment, the Burke and Litwin's (1992) Causal Model was used to gather organization specific data and identify key stakeholders. This data was obtained via interviews and observation, over the previous year. This data was then analyzed using the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. Lastly, site-specific patient portal data was gathered, and a clinical question was formed. The purpose of this section is to discuss the process used for and the finding of the evidence-based organizational assessment.

### **Stakeholders**

Key stakeholders are defined as individuals or groups that can affect or be affected by a project's outcomes (Burson, 2017). Identification of key stakeholders is crucial, as their input and support are central to the successful identification of a clinical problem (Burson, 2017). At the project site, the patients, their families, healthcare providers, healthcare staff, payers, community contributors, the board of directors, and the community itself were all identified as key stakeholders. Since the project site is non-profit, provides social services and relies on community support, any measure to increase productivity and engagement will also impact the ability of the project site to provide services within the community. To further identify what facilitators and barriers exist and their impact on key stakeholders, an organizational assessment was performed using the Burke and Litwin Causal Model.

### **Framework for Assessment**

The evidence-based organizational assessment used during project site evaluation was the Burke and Litwin (1992) Causal Model. When looking at the model (Appendix A), a triangle is formed between the transformational factors of external environment, mission, leadership, and organizational culture. The triangle is representative of external environment influencing leadership, whom provide the organization with direction, and transform the organization through mission, strategy, and organizational culture (Spangenberg & Theron, 2013).

In-turn, the transactional factors of structure, management practices, systems, and work climate, are influenced in either a positive or negative manner. Transformational and transactional factors both influence motivation and drive the organizations performance (Stone, 2015). They also have the common goal of altering individual and organizational performance (Stone, 2015). Lastly, any factor can influence change through indirect feedback towards the top, in a hierarchal order (Stone, 2015).

The Burke and Litwin (1992) Causal Models 12 transformational and transactional factors were used to assess the organization. Following evaluation, the high local poverty rate in the clinics external environment, was found to have the largest impact on the remaining factors and facilitates the largest amount of change within the organization. Currently, the metropolitan community consists of over 114,000 members with an average income that is approximately half of state and national averages (United States Census Bureau [USCB], 2017). Clinicians are aware of this disparity and are committed to serving the under and uninsured community members.

Upon examining the remaining factors, specific facilitators and barriers to organizational change were identified. The mission and strategy, leadership, organizational culture, structure,

systems, management practices, task requirements and individual skills/abilities, motivation, and individual needs and values were all found to be supportive of organizational change and improved organizational performance. Clinicians are openly supportive of organizational changes aimed at improving the health of the surrounding community. This level of commitment is a direct reflection of the organizations mission to provide high quality, comprehensive, and sustainable healthcare to the uninsured and underserved populations.

Although the organization is strongly committed to change, the current work group climate has the potential to serve as a barrier to future change initiatives. The current work group climate fluctuates between unified and disconnected. The underlying causes of this fluctuation is secondary to leadership and managerial changes over the last five years.

Currently, the medical director also serves as the CEO and is the pillar of leadership within the organization. The CEO employs a transformational style of leadership that focuses on consistent change aimed at improving the organization and thus transforming it. The previous CEO lead the organization with a transactional style of leadership, that focused on rewarding highly productive employees, maintaining the status quo and implementing change gradually, and only when necessary. Due to this drastic change in leadership, a new office manager was hired.

When looking at the manager's current style, she vacillates between democratic, autocratic, persuasive, and consultive. Using this flexible management style allow the office manager to adapt her own managerial skills as situations within the organization arise. One barrier that exists for the office manager, is that she has only been with the organization for two years. Prior to her arrival, the previous manager's style was laissez-faire and produced a chaotic work environment that lacked structure. Although the current office manager is diligently

working to improve the clinic's work group climate, some of her employees remain resistant to change ideas. Once this occurs, the CEO openly supports the office manager and resistant staff then complies with the changes.

When examining the current work group climate, an observable divide exists between front office (front desk clerks) and back office staff (medical assistants). The front office staff are physically located in the patient waiting room, receptionist area, and the back-office staff sits together in a large open office space on the opposite end of the clinic. Front and back office staff rarely see each other face to face, and mostly communicate when transferring a patient call or question via telephone. Due to this lack of interaction, miscommunications regarding workflow and responsibilities have caused tensions to build. These tensions have created an evident divide between the front and back office staff, and teamwork has declined. In response to this tension, the office manager implemented a team building exercise that required back-office MAs to work in the front-office for several days. Currently, the resentment between staff members, has decreased but still poses a potential threat to organizational change initiatives.

## **SWOT**

The SWOT analysis is a tool used to examine the "internal and external attributes and threats to a recognized phenomenon of interest." (Burson, 2017, p. 122). These phenomena can be experienced at any systems level from macro (community) to a micro (process), without changing the variables of investigation (Burson, 2017). The SWOT analysis can further be used to identify process gaps or confirm current observations (Burson, 2017). When applied to a phenomenon, an internal assessment of strengths and weakness along with an external analysis of opportunities and threats must occur (Burson, 2017). In response the project site's leaderships desire to improve the process of patient portal adoption, a SWOT analysis of the project site was

performed. Throughout this analysis, the strengths, weaknesses, opportunities, and threats to increasing patient portal adoption rates were identified (see Appendix B).

**Strengths.** Strengths within the project site's internal environment are vast. The most evident of the strengths is the strong mission and values among staff, which guides the daily practice environment. This is further strengthened by the chief executive officer's (CEO's) transformational leadership style that supports QIs aimed at increasing patient portal usage. The CEO openly supports increasing patient portal adoption rates and recognizes a need for change to current practices. The office manager is also supportive of this transformation and improved compliance with the MU requirements. Lastly, the collaborative team approach among back office team members will be useful and help to create staff buy-in towards process improvement.

**Weaknesses.** The greatest weakness that will affect portal adoption is the major changes that have occurred within leadership and management over the past five years. This transformation has led to several practice changes and if not implemented properly, another change could feel redundant or disruptive. Unfortunately, the initial process intervention implementation may cause an increased workload for front office staff. If the benefits of patient portal access on future workload is not valued, this could threaten long term process change and sustainability.

The next site weakness is the disconnect that exists between front and back office staff. Although this does not directly affect the patient portal adoption rates, lack of staff cohesion can serve as a barrier to staff buy-in. This will require an increased education effort during the implementation of the QI project. Lastly, the project site has not provided the patient population with any formal education on portal access. The lack of patient knowledge regarding portal access benefits may require an increased effort to expose patients to the portal.

**Opportunities.** During external analysis, several opportunities were identified. The first opportunity is the identification of barriers to portal access within the underserved population. Upon this discovery, population specific interventions can be implemented, and adoption rates can improve. Another opportunity is that the QI intervention could serve as a model for adoption among other underserved populations. Next, the project site could also assist as a model for increasing portal adoption in other small, non-profit clinics. Lastly, increased portal adoption rates have the potential to also improve patient-provider communications, patient outcomes, and increase health literacy.

**Threats.** Upon analyzing the external threats, the lack of compliance with value-based care reimbursement requirements appears to be a large threat to the future financial stability. Without process change, the project site will soon receive lower value-based care reimbursement for their large Medicare and Medicaid population. This large income loss could threaten the project site's long-term sustainability. Socioeconomic disparities among the patient population were also identified as a threat to portal adoption. This is mostly related to a possible lack of opportunities to gain portal access or lack of health literacy. Lastly, if the patients and staff do not value the benefits of portal access, buy-in will be threatened.

### **Clinical Findings**

Current portal adoption rates were provided by site's financial director using EHR generated data reports. Reports were generated for two date ranges (1/1/2017-12/31/2017 and 3/1/2018-5/31/2018). All data was deidentified, sorted by proxy record numbers and downloaded into a spreadsheet format. User data was not separated by age, sex or race, but was categorized using the Epic terms of active, inactive, pending, code expired and declined (McCarthy, 2017).



According to the Epic User Web (McCarthy, 2017), active users are patients who have signed up for and used the portal. Those who have not been given an access code are defined as inactive. Individuals who received a portal activation code have not signed up for access are defined as pending. For security, the activation code expires after 60 days and patients who fail to sign up for the portal within this time frame are designated as code expired. Lastly, patients who were offered an activation code but defer access are defined as declined. The most recent sample of 1,749 patients was used to evaluate current portal adoption rates (see Appendix C).

Upon evaluation of the data from March through May 2018, it was discovered that 39% (n=686) of patients have pending portal access status. It is unclear whether they will sign up for portal access within the next 60 days. The next two highest portions of patients, (37%, n= 646), either let their access code expire (24%, n=413) or declined to sign up for portal access (13%, n=233). When comparing the project site's 2017 active patient portal use of 15% (n= 448) to the national average of 25.8% (Tavares & Oliveira, 2017), the rates are significantly lower. Data further shows that active portal use has not significantly improved since 2017 and remains at 16% (n=279). Lastly, approximately 8% (n= 138) of patient's have not received a portal access code and remain inactive.

### **Clinical Practice Question**

Upon completing the organizational assessment, it is evident that the members are highly committed to improving patient outcomes for underserved populations. Although major changes have occurred in leadership and management over a five-year period, staff perceives these changes as a positive. Maintaining this positive outlook on change will be central to the sustainability of future process improvement. Current improvement processes are aimed at decreasing office tension and are showing favorable results; their progress will continue to be

monitored by the office manager. In conclusion, no office setting will be free of threats and weakness. The organization has identified low patient portal adoption rates as a threat to population health. Accordingly, an evidence-based project to answer the following practice or clinical question is proposed: In low income urban adult patients, how does an interactive electronic education intervention, compared to access code handout without an education intervention affect patient portal adoption rates?

### **Review of the Literature**

A review of current literature pertaining to patient portal adoption was conducted. The review aimed to examine the factors that improve portal adoption rates, the populations that encountered the most barriers during portal adoption and the evidence-based interventions found to improve portal adoption rates. These findings will be used to guide the QI project. The findings will also be used to predict the barriers to and facilitators of patient portal adoption.

### **Method**

A systematic methodology was used when searching for and reviewing literature. Utilizing the aims of the review, a search was conducted to establish inclusion and exclusion criteria. Methodology used for the review was documented. Results of the literature review were recorded.

### **PRISMA**

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline served as the framework for this review (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). A comprehensive electronic search was conducted in the PubMed, CINAHL, and Cochrane data bases. The search was limited to reviews in the English language

during the period of 2013 to 2018. Keywords were patient access to records, patient portals or electronic health record, and access.

### **Summary of Results**

A total of seven papers met the inclusion criteria and were included (see Appendix D). The results (see Appendix E) included three descriptive studies (Abramson, Patel, Edwards, & Kaushal, 2014; Nambisan, 2017; Wallace et al., 2016), one correlational study (Tieu et al., 2016), two mixed-method studies (Irizarry et al., 2017; Krist et al., 2014) and one quasi-experimental study (Casey, 2016). All articles were peer-reviewed and were largely published in open access journals. Most of the studies were published in medical or nursing informatics journals (Casey, 2016; Irizarry et al., 2017; Nambisan, 2017; Tieu et al., 2016), with the remaining journals focusing on family medicine (Krist et al., 2014; Wallace et al., 2016) and managed care (Abramson et al., 2014).

### **Evidence to be used for Project**

As previously stated, this reviewed aimed to identify three evidence-based factors: The first factor was to examine the factors that have been found to improve portal adoption rates. The second factor was to identify what populations encounter the most barriers during portal adoption. The third and final factor was to identify evidence-based interventions that improve portal adoption rates.

Through identifying each study's unique characteristics, interventions and measures, the facilitators and barriers of portal adoption were identified. An additional two studies discussed evidence-based interventions that successfully improved portal adoption rates in a primary care setting. Throughout this section, a discussion about all the studies finding will be synthesized and presented in relation to each of the questions proposed by the review.

**Question one.** The first question proposed by this review, is “what factors improve portal adoption rates?” Upon evaluating the literature key characteristics and behaviors were linked to increased adoption rates. Portal adopters were largely, 18-34 years old (Abramson et al., 2014), of Asian descent, suffered from a disease and/or were female (Krist et al., 2014). Although the exact reason for the increase was not explained, it is speculated that individuals with these characteristics may fundamentally be driven to value portals when managing their health (Abramson et al., 2014; Krist et al., 2014).

Specific behaviors or feeling were further found to increase an individual’s likelihood of adopting the EHR portal. One key behavior was internet use, specifically using the internet monthly (Abramson et al., 2014) or to seek health information (Nambisan, 2017). The studies also found if a portal’s features are viewed as useful (Irizarry et al., 2017) and contained relevant information (Casey, 2016), adopters expressed feeling enthusiastic and motivated to use it. Lastly, if portal adopters felt that their protected health information was secured (Abramson et al., 2014), felt driven to manage their personal health (Nambisan, 2017), or that portal use would improve their quality of life (Abramson et al., 2014); they were significantly more likely to start or continue using and EHR portal regularly.

**Question two.** The second question proposed by this review is, “what populations encounter the most barriers when adopting portals?” The literature found that non-white males; specifically Blacks or Hispanics, or Spanish speaking individuals; had significantly lowered portal adoption rates (Krist et al., 2014; Wallace et al., 2016). Socioeconomically, individuals who were low-income, under, and uninsured were less likely to log in to the portal (Abramson et al., 2014; Wallace et al., 2016), The studies further suggest that minorities and underserved individuals experience significant barriers; such as lack of internet access and low health

literacy; that prevent them from using a portal (Abramson et al., 2014; Nambisan, 2017; Tieu et al., 2016; Wallace et al., 2016). In contrast, once these barriers were overcome, the minority and underserved populations used the portal more frequently and benefited more from portal use than other populations (Abramson et al., 2014; Nambisan, 2017; Tieu et al., 2016; Wallace et al., 2016).

**Question three.** Finally, portal adoption among older adults is also addressed within the literature. When looking at portal adoption in individuals that are 65 and older, a phenomenon known as the digital divide was discussed. Unlike the generations after them, older adults aged 65 and older were not exposed to portable technology until they were in late adulthood and thus have been slow to adopt, until recent years (Anderson & Perrin, 2017). Over the past several decades, older adult internet use has increased from 12% to 65%; and the use of portable technology has over double in the last five years (Anderson & Perrin, 2017). Even with sharp increases in technology use, the literature has found that older adults continue to feel pushed into portal adoption and often feel that they need help with signing up for and navigating the portal (Irizarry et al., 2017). Despite these feelings, older adults value the convenience of health IT but continue to value face to face or personal contact when discussing their health with a healthcare provider (Irizarry et al., 2017).

The last question proposed by this review is, “what evidence-based interventions have been found to improve portal adoption rates?” Structured face to face or hands on interventions show the greatest potential of increasing portal adoption rates (Casey, 2016; Irizarry et al., 2017; Krist et al., 2014). Providing computer training significantly increased portal adoption among older adults (Casey, 2016). An overarching theme among the studies, found that successful portal adoption interventions must be tailored to the populations needs and aim to decrease the

barriers faced by adopters (Casey, 2016; Irizarry et al., 2017; Krist et. al, 2014). Interventions were further found to be effective if they identified individuals at risk for low adoption, such as those with low health literacy (Tieu et al., 2016), were based on a systematic team approach (Krist et al., 2014), and provided an educational intervention that supported individuals through basic functionalities (Casey, 2016). Lastly, individuals who received an educational intervention, also expressed increased comfort with technology use (Casey, 2016).

### **Limitations**

This literature review had several limitations. The first limitation was that most of the studies discovered were descriptive in nature and without an intervention. The next limitation was that the interventional studies used a mixed method and quasi experimental design. No meta-analysis, systematic reviews or randomized control trials (RCTs) were found to identify interventions within the primary care setting. Due to the vast difference in time, resources and workflow characteristics, acute or long-term care settings were excluded and were not applicable to primary care setting.

### **Relevance to Clinical Practice**

Portal adoption is very much personalized and as such, barriers must be identified. Individuals with decreased health literacy, lower socioeconomic status, are of advanced age and/or are a minority show the lowest adoption rates (Abramson et al., 2014; Irizarry et al., 2017; Nambisan, 2017; Tieu et al., 2016; Wallace et al., 2016). Interventions that provided education significantly improved adoption rates among these population (Casey, 2016; Irizarry et al., 2017; Krist et. al, 2014; Tieu et al., 2016). In conclusion, the results of this review suggest that the current evidence in favor of a patient centered teaching intervention as an effective strategy for promoting portal adoption among adults age 18 years of age and older.

### **Phenomenon Conceptual Model**

Donabedian's (1966) model of Structure Process Outcome (SPO) was used to guide the evaluation of workflow within the project site (Appendix F). The SPO model provides quality management through the assessment of the structures, processes and outcomes of care (Jones, 2016). At the core of the SPOF, the interplay between the structures, processes and outcomes are used to guide desired end-results (Donabedian, 1966). Upon identifying the factors that affect patient portal adoption, the intersection of clinical structure, the process of providing portal access and the outcomes of care will be evaluated.

**Structure.** Structure is defined as “the conditions under which care is provided” (Donabedian, 2003, p. 46). Donabedian (2003) states that structure is not limited to, but includes material resources, human resources and the organizational characteristics. When specifically evaluating the clinic's structure, the physical location, payer mix, available equipment, and the staff mix will be discussed.

The clinic site is small clinic located in metropolitan South-Central Michigan. The organization is considered a “free-clinic”, as they provide low to no cost medical care to patient that are without medical insurance coverage. Due to the nature of the clinic, the payer mix is predominantly Medicaid, Medicare, and the uninsured. Because of this, financial resources are limited secondary to low service reimbursement.

To maintain daily operations, the clinic relies on local donations for funding and equipment. Currently, the clinic uses donated EHR access and computers to chart and manage patient EHRs. The donated EHR also provides a patient portal service which allows the clinic's patients to view and manage their protected health information and communicate with their providers. Another benefit is that the donated portal services are linked to the largest local

healthcare system and allows patients to view their laboratory and diagnostic testing results.

Without this donation, it appears that the clinic would not be able to financially afford electronic healthcare services.

With the clinic's limited budget, a minimal amount of staff is employed. The paid medical staff includes the founding physician, the physician CEO, one additional family practice physician, an office manager, three medical assistants (MAs), and three front office clerks. Voluntary staff includes one nurse practitioner who volunteers her services as a primary care provider for 12-14 hours weekly. Three medical residents work on a contingent basis under the physician staff as part of their educational requirements. As a result of the donated practitioner services, community support and dedication of staff, the clinic was able to provide medical care to over 4,000 patients in 2017. Without the clinic's services, most patients would be unable to utilize primary care services.

**Process.** Process is defined as "the activities that constitute healthcare" (Donabedian, 2003, p. 46). Donabedian (2003) states that process includes workflow, prevention and patient education. When specifically evaluating the clinic's process, the current workflow and patient portal education/support efforts will be discussed. Currently, clients are checked into the clinic by front office staff whom gather basic demographic information. At this point in the workflow, the patient is asked to be seated in the waiting area for an average of thirty minutes. Once available, the patient is taken to an exam room by the MA, where vital signs, reason for the visit, and current medications are gathered. The patient then sits in the exam room until the provider comes in to see them. Once the provider is available, they will exam, diagnose, and treat the patients. Discharge instructions are then reviewed, and the patient is sent back to the front office, where the staff checks them out. At this point, the front office staff prints discharge instructions



and the patient is given a printed portal activation code to use at home. Discussion about signing up for the patient portal is minimal and rarely discussed by staff during the workflow.

Regarding patient education, available resources were also donated. Currently, most education is provided in the form vendor provided waiting area television videos, in-room vendor provided preloaded tablets and face to face provider interaction. Staff training and patient education on the benefits of patient portal access is non-existent. Efforts to increase patient portal use are uncommon and mainly provider dependent.

**Outcome.** Outcomes are defined as “the changes in individuals and populations that can be attributed to healthcare” (Donabedian, 2003, p. 46). Donabedian (2003) states that outcomes include changes in knowledge, behaviors change that affect future health and satisfaction with care. When specifically evaluating the clinic’s outcomes, the changes in knowledge about portals and patient satisfaction with care will be discussed. Currently, the clinic does not provide portal benefit education to staff or patients. Due to this lack of education, patient and staff portal adoption buy-in and use is minimal. Currently, medication refill and laboratory result request take a minimum of two days for staff follow up. Patients openly criticize the untimely return of telephone calls or requests and believe that this process should be improved. Lastly, staff agrees with patients about this process and state that over half of their in-office time is spent answering and returning telephone calls.

### **Project Plan**

Within this sections the project’s purpose, objectives, design, setting, participants, and the implementation model will all be examined. The proposed evaluation and measures, analysis plan, resources, budget, timeline, and sustainability plan will also be discussed.

### **Purpose of Project and Objectives**

The purpose of this QI project is to utilize an electronic patient educational video and self-service kiosk to increase the use of patient portals among low income adults in a primary care office (see Appendix G). The overarching goal of the proposed project is to increase patient portal use to the MU requirement of 25% of participants by March 4, 2019. The following objectives are integral to the project reaching the goal in a timely manner:

- Conduct a QI project that minimally impacts staff workload and increases patient portal use.
- Develop a patient education intervention that improves patient knowledge of portal benefits.
- Build an education video that encourages patients to make an informed decision about portal use.
- Plan an intervention that is evidence-based, and patient centered.
- Execute the evidence-based intervention over an 84-day period.

### **Design for the Evidence-Based Initiative**

Within this section, the evidence-based QI design will be discussed. Prior to the project's initiation, staff must be educated on the benefits of portal access. This will be accomplished prior to intervention initiation through lunch and learn sessions. For patients, education will be provided during the intervention period. The education will be completed during the appointment check-in process. During this time, patients will be given a handout that contains basic information about, along with the highlights and benefits of patient portal access (see Appendix H).

Next, a workflow process change will occur so that patients will receive their portal access code at the beginning of the office visit. This process change allows patients to utilize non-productive appointment time for portal sign-up. Utilizing this time will also promote patients sign up for portal access during the initial 24-hours when portal sign up is most prevalent. Following the distribution of portal access codes, patients will be directed to the self-service kiosk.

At this point, patients will be seated in front of two computer screens, one on the left and one on the right-hand side of the participant (see Appendix G) The left-hand screen will be dedicated to displaying three click-to-play videos. The first video was labeled “Why should I sign up for My Chart?” and will play a one-minute video that discussed the benefits of portal education. The second video was labeled “How do I sign up for My Chart?” and will display a three-minute video that walks the participant through the sign-up process, step by step. The third video was labeled “Common My Chart features” and shows participants how to access commonly used communication, education and appointment scheduling features. The right-hand screen will be dedicated to the portal sign-on/sign-up page. No other websites will be accessible on either screen. Once the patient has completed the portal sign up videos, an onscreen, optional electronic pop-up questionnaire will be present to the participants on the right-hand screen. This questionnaire consists of three post intervention questions, that address the usefulness of and the patient’s satisfaction with the education materials provided (see Appendix I). During any point of this process, the patient can decline to participate and choose to be seated in the waiting area. All training materials and educational videos, apart from the step-by-step portal sign up instructions, have been approved for public distribution by the IHI and are available for public download (see

Appendix J). The portal sign-up videos were created by the Doctor of Nursing practice (DNP) student and are available upon request.

### **Setting**

The site for this QI project is a small non-profit medical clinic in South-Central Michigan. The clinic is a certified medical home for over 4,000 uninsured and underserved metropolitan community members that would otherwise be without primary medical care ("Spring Chronicle," 2018). In this clinic, the patient health care coverage distribution is Medicaid (70%), Medicare (20%), commercial insurance (2%), locally funded free health plans (1%), and uninsured (7%). Administrative approval to conduct the QI project, at the project site has been secured and is available upon request.

### **Participants**

Participants for this project will include adult patients, proxy family members, along with front and back office staff. All adult patients aged 18 years of age and older that have a scheduled appointment at the clinic during the implantation of this project will be offered the opportunity to participate. Anyone under 18 years of age or is unable to use the computer will be excluded. If an excluded individual does not meet these requirements, a designated proxy will be given the opportunity to participate. Primary care providers, MAs, clerical staff, medical residents and students are willing to participate in the QI project.

### **Resources & Budget**

The resources needed for this project include a site mentor, access to the EHR, IT support and access to the clinic's policies and procedures manual. There are not any foreseen monetary needs for the project, as the kiosk, IT services, project manager services, and printing services are being provided as in-kind donations (see Appendix K for proposed budget). Office furniture

is available at the site and the survey program is a fee-free service. The project will involve on site time to collaborate with providers, MAs and front office staff. Ensuring that the intervention is utilized, and any quality concerns will be addressed by the student weekly. A site mentor has been assigned to the DNP student and will be available to consult via in person meeting, telephone or email during project site hours. The benefits of this project will include an increased focus on patient centered care, greater compliance with the MU requirements and the future mitigation of a three to five percent value-based care reimbursement reduction.

### **Implementation Model**

The Plan-Do-Study-Act (PDSA) cycle was chosen to guide implementation of this project. The PDSA is a scientific method, focused on action-oriented learning (IHI, 2017). The PDSA is comprised of four cyclic steps: Plan, do, study, and act (Appendix L). Step one is to plan for testing and includes identifying the proposed data collection methods, creating a timeline, and assigning the roles of individuals that will be involved in the implementation process. Step two occurs when the improvement initiative is tested on a small scale, and deviations from the original plan are documented. During step three, lessons learned are discussed, data is analyzed, and the results of testing are compared to predicted results. During step four, results are used to make improvements and modifications to the intervention. Following the conclusion of step four, a new cycle of the PDSA is initiated in the planning stage or step one. During this “round of change”, previous study learnings should be considered, and changes should be made according to their impact on the final results. Having multiple rounds or cycles of the PDSA model, permits improvement initiatives to evolve and adapt to the unique needs of the setting in which improvement is occurring (IHI, 2017). Throughout the remainder of this section, the proposed project will be discussed, using the PDSA model as a framework.

**Plan**

When applying the PDSA to the proposed QI project, it is currently in the planning stage or step one. The previously discussed project plan was used to identify the evidence-based intervention, the project setting, inclusion criteria for project participation, resources need and the proposed budget. During the planning stage, project specific implementation steps and a timeline were created, and proposed projects measures were identified. Following the planning but prior to implementation, the ethics and protection of human subjects were considered and Institutional Review Board (IRB) approval was gained.

**Implementation steps and timeline.** The timeline and steps for implementation of the project are as follows (Appendix M):

1. Complete proposal and acceptance of project by faculty at Grand Valley State University (GVSU) and site mentor by November 5, 2018.
2. The DNP student will meet with office staff on November 28, 2018 to provide staff education on the benefits of patient portal access and new process changes.
3. The DNP student will provide the project site with the kiosk on December 5, 2018. An off-site IT specialist will be present to help with initial setup and troubleshooting.
4. Implementation of the proposed QI will occur on December 10, 2018. The DNP student will be visiting the project site daily during the first week of implementation. The DNP student will also be available via telephone to answer questions or provide support. During this period, necessary deviations from the plan will be evaluated and changed as needed.
5. The DNP student will meet with office staff weekly during the project implementation period starting on December 10, 2018 and concluding on March 4,

2019. During the visits, the DNP student will collect de-identified patient satisfaction survey data via secured internet access at the project site. All data will be transported via an encrypted, password protected thumb drive.
6. The intervention trial will conclude on March 4, 2019.
  7. Final data will be collected from the project site's financial director on March 6, 2019.
  8. Data will then be taken off the thumb drive, de-identified, and entered into the master database on the student's personal password protected computer from March 6 through March 13, 2019
  9. Data will be analyzed, and hand delivered to the statistician for final evaluation on March 14, 2019. Any serendipitous findings will be identified at this time.
  10. Final data analysis of the master database will be completed on March 25, 2019.
  11. Study results will be distributed to the site by April 12, 2019.
  12. Final project defense will be completed at GVSU by April 19, 2018.

**Measures.** A convenience sample of 1,894 adult patients attending a primary care appointment is expected. In this quality improvement project, data will be collected from persons receiving a primary care appointment at the clinic that participate in the patient education video and self-serve kiosk over an 84-day period. Retrospective data extraction will be used to gather pre and post-intervention portal adoption percentages on paired participants. Data will be compared using chi-square methodology. The rate of portal adoption for the 84 days post intervention will be compared to the portal adoption rate before the handout and video was available. Demographic information will be used for descriptive statistics. Additional, de-identified demographic information will be collected in order to understand if there are

differences in portal adoption among patient types. All data will be collected from the site's financial director in the form of an EHR generated spreadsheet (Appendix N displays variables). This information will be collected by the DNP student immediately following the projects conclusion on March 4, 2019.

Additionally, the patient response to intervention will be evaluated post intervention in the form of the electronic three-question patient satisfaction survey (see Appendix I). The patient satisfaction survey was adopted from the After-Scenario Questionnaire (ASQ). According to Lewis (1993), the ASQ was designed to assess participant satisfaction with the use of a computer product or program, following the completion of a series of tasks. The ASQ was found to be highly reliable ( $\alpha < .90$ ), valid ( $p < .01$ ) and sensitive ( $p = .05$ ).

Throughout the entire intervention period, the DNP student performed weekly site visits. During these visits, the DNP student will meet face to face with staff and monitor how they are adjusting to the process changes. At this time, staff will be given the opportunity to provide feedback to the DNP student, so that any immediately concerning issues may be addressed. Survey data will be used to capture study learnings, evaluate the intervention and provide descriptive data for future intervention improvement.

**Ethics and Protection of Human Subjects.** An application for review and approval or exemption of this project will be submitted to the Grand Valley State University Institutional Review Board. Beyond further planning, no project activities will commence until the review is completed and Board approval or exemption is granted. The purpose and scope of this project are limited to evidence-based practice improvement or QI. No patient identifiable information will be collected. No physical, social, psychological, legal, or economic threats to patients are associated with this project. As such, it is anticipated that the impact of the project will pose



minimal or no risk to participants. These may include the inconvenience or impacts associated with the request for anonymous and voluntary participation in the project. All members of the team have completed human subject's protection training via the Collaborative Institute Training Initiative and their interactions with patients will be guided accordingly.

## **Do**

The next phase or second step of the PDSA cycle is the do phase. During this time, the proposed intervention is carried out and observations are documented. Any deviations from the proposed plan are recorded. These deviations are also termed as defects and will be analyzed during the study phase of the cycle. When applying the do section to the proposed project, the data collection and data management procedures will be discussed.

**Data Collection Procedures.** The DNP student will acquire the participant data once, via retrospective data extraction for the dates of 9/16/2018- 12/9/2018 (time one), and for the dates of 12/10/2018- 3/4/2019 (intervention). Patient specific demographic data variables to be gathered are medical record number, age, gender, race, employment status, marital status, primary care provider, insurance carrier and the number of active medications on file. The portal status of active, code expired, declined, inactive and pending will be collected during the 84 days prior and 84 days during project intervention. This data will be attained from the project site's financial director and placed on the secure thumb drive. Patient satisfaction survey data is anonymous and will be collected weekly via secured connection at the project site.

**Data Management.** The on-site financial director will be responsible for uploading de-identified data directly from the EHR at the end of the project period. The DNP student will be responsible for the management of data thereafter. The DNP student will also be responsible for

uploading of the anonymous patient satisfaction survey results weekly. Data will be uploaded on the DNP student's personal password protected computer for entry into the master database.

Received data will be de-identified by the DNP student. De-identification will be accomplished by first pairing all participants unique medical record number (MRN) during the time one and intervention data collection periods. The DNP student will then take the participant MRNs and reassign the participant to an anonymous number, starting with one. The de-identified data will subsequently be entered into a Statistical Analysis Software compatible electronic master database.

Within the database, data will be organized numerically by the de-identified participant number. Following entry, all data will be stored on a password protected and encrypted flash drive. The DNP student will be responsible for entering all data into the master database. At the end of the study period, the de-identified master database will be hand delivered to a statistician for analysis. Data will be retained for three years on GVSU's secured virtual private network.

### **Study**

The next phase or third step of the PDSA cycle is the study phase. During this time, the results of the QI project are analyzed. The overall successes and failures are examined, and the root causes of defects are identified. Once this information is analyzed, changes to the original plan are proposed and will affect the subsequent cycles. When applying the study section to the proposed project, the analysis plan will be explored.

**Analysis Plan.** The DNP student will consult with a statistician to analyze collected data following the conclusion of the project. The aim of the analysis is to investigate if patient portal adoption rates are significantly improved following the intervention. This will be accomplished by comparing pre and post-intervention portal adoption percentages of paired participants.

Demographic information will be used for descriptive statistics. Survey data will be used to capture study learnings and to evaluate the intervention. Serendipitous findings and any variables found to significantly affect portal adoption will be reported. Following the conclusion of the project, clinical staff will be updated with the finding during a power point presentation. The results of this project will be analyzed for both clinical and statistical significance.

### **Act**

The final phase or fourth step of the PDSA cycle is the act phase. During this time, the proposed changes to the project plan are either adopted or rejected. If the proposed changes are not possible or if the project is no longer feasible, the study may be discontinued at this point. If it is decided to continue the project, then the PDSA cycle will restart back to the plan phase.

When applying the act section to the proposed project, the sustainability plan will be explored.

**Sustainability Plan.** The clinic's CEO and office manager have communicated a need for improved patient portal usage through QI of the current portal sign up process. Once implemented, the proposed process changes will require minimal time and effort from staff for sustainment. The site's commitment to providing high quality, patient centered care will solidify and be central to the sustainability of the proposed QI project. The vision of the proposed project is to be cycle one of many cycles. With the clinic's vast number of students and support of educational staff, this project can provide a framework for future QI projects aimed at improving patient portal use and patient outcomes.

### **Conclusion**

It is expected that the proposed workflow changes with an educational intervention will eliminates the barrier of a lack internet access and will thus increase patient portal rates. It is predicted that patient portal use rates will reach 30% in response to the evidence-based

intervention. The vision of the proposed project is to be the first of many cycles aimed at improving patient portal adoption at the project site. With the clinic's vast number of students and support of educational staff, this project can provide a framework for future QI projects aimed at improving patient portal use and patient outcomes.

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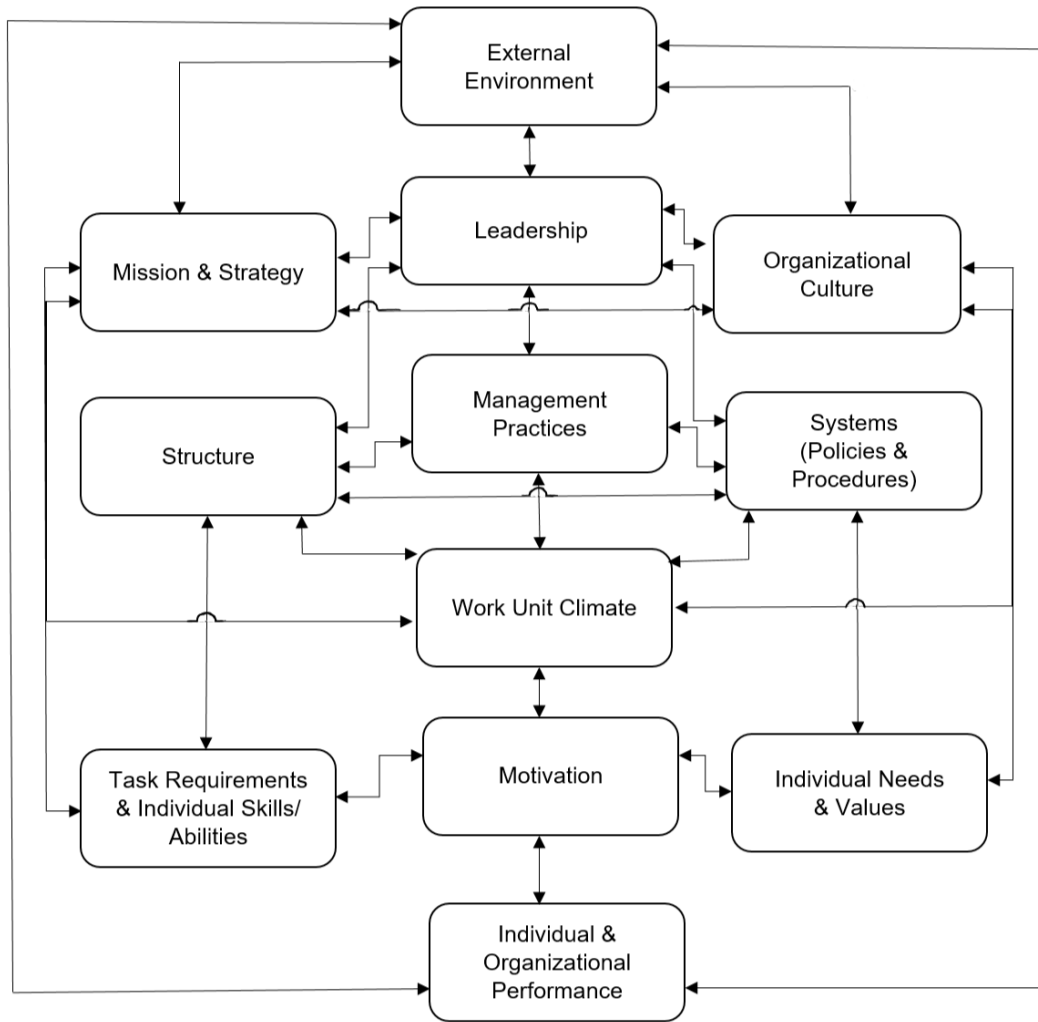
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**Appendix A**

Burke and Litwin Causal Model (1992).



**Appendix B**

SWOT Analysis of the project site.

<p style="text-align: center;"><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Strong mission and values among staff</li> <li>• Transformational Leadership</li> <li>• Collaborative team approach among back office team members</li> <li>• CEO’s supports improving patient EHR adoption rates</li> <li>• The office manager is supportive of change and improved compliance with meaningful use.</li> </ul>	<p style="text-align: center;"><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Major changes within leadership and management over the last 5 years.</li> <li>• Disconnect between front and back office</li> <li>• Increased effort to educate all staff secondary to lack of cohesion among roles.</li> <li>• Patient population has had no formal education on personal EHR access.</li> <li>• Increased workload for staff could threaten sustainability.</li> </ul>
<p style="text-align: center;"><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• QI intervention could serve as a model for adoption among for underserved populations</li> <li>• Improve patient-provider communications</li> <li>• Opportunity to discover patient population barriers to personal EHR access and improve adoption rates.</li> <li>• The clinic can be a model on how to improve EHR adoption in small, non-profit organizations.</li> </ul>	<p style="text-align: center;"><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Disparities among the patient population</li> <li>• Lack of ways for patients to gain EHR access.</li> <li>• Patients may not value the benefits of personal EHR access.</li> <li>• Value-based care reimbursement requirements are currently unmet and threaten the financial sustainability.</li> </ul>

**Appendix C**

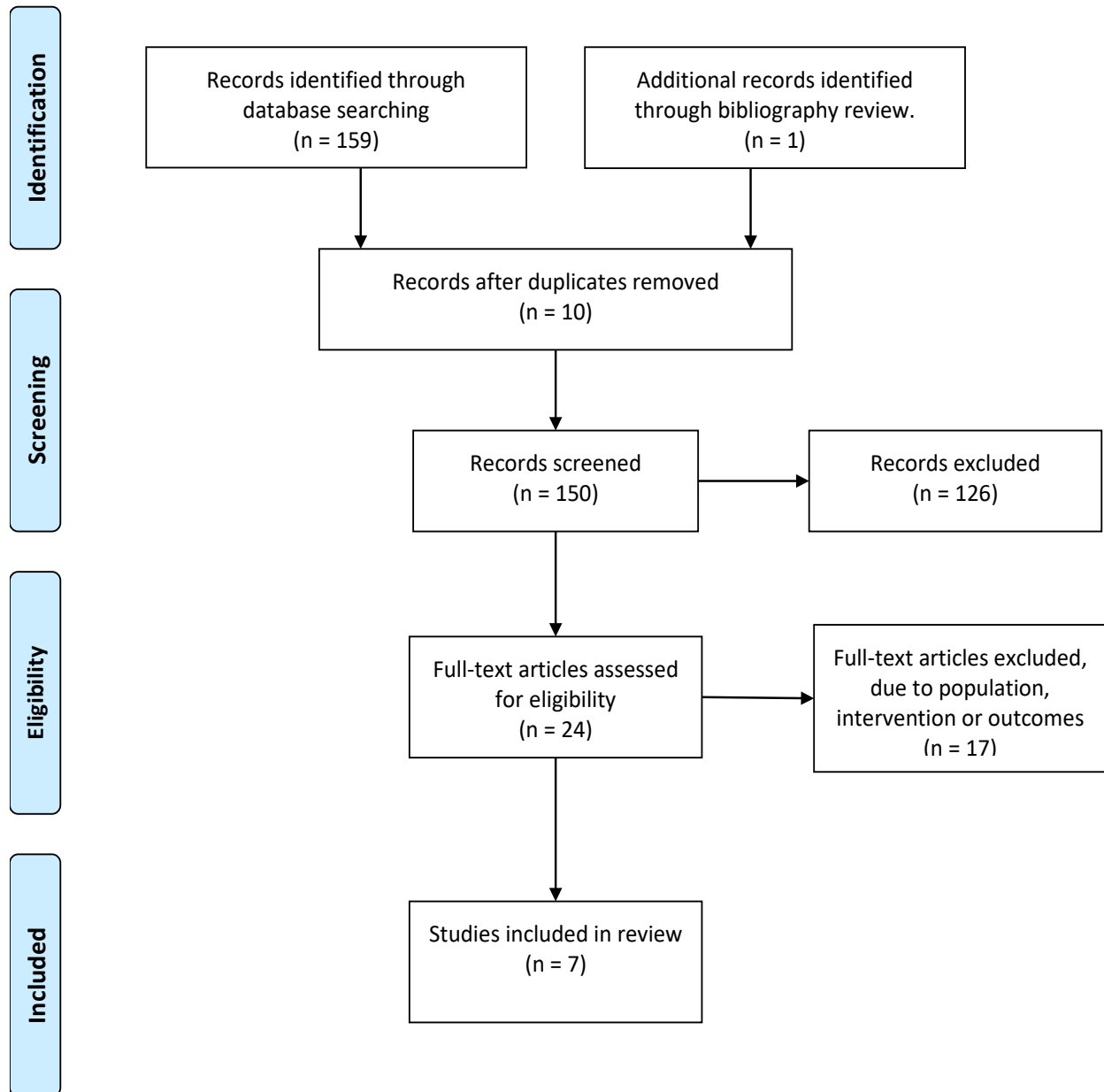
The organization's current EHR adoption rates, arranged by portal access code status.

Patient EHR Status	1/1/2017- 12/31/2017	%	3/1/2018- 5/31/2018	%
Active	448	15	279	16
Code Expired	1108	38	413	24
Declined	361	12	233	13
Inactive	328	11	138	8
Pending	673	23	686	39
Total # charts reviewed	2918	100	1749	100

**Appendix D**

Flow diagram of search selection process. Adapted from "Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement," by D. Moher, A. Liberati, J.

Tetzlaff, D. Altman, and PRISMA Group. Copyright 2009 by PLoS Medicine.



**Appendix E**

Literature Reviewed and sorted by author, design, inclusion criteria, intervention, results and conclusion.

Author (Year) Purpose	Design (N)	Inclusion Criteria	Intervention	Results	Conclusion
<p><b>Abramson, Patel, Edwards, &amp; Kaushal (2014)</b> The study's purpose was to identify portal personal health record (PHR) preferences and the factors that are linked to their usage.</p>	<p>Descriptive study that used retrospective survey data from four cross-sectional studies that occurred in New York States (N=701).</p>	<p>Greater Buffalo, adult residents of eight specific counties were included. Three studies used exclusively English-speaking residents that had telephone service. One study included Russian, Spanish and Mandarin speaking residents that were patients at one of five local primary care practices.</p>	<p>Original data was collected via telephone and in person interviews. For this study, a comprehensive investigation of pooled self-reported survey data was analyzed. Most questions were either yes/no, on a five-point Likert-scale or a three-point question. Multivariate regression was used to identify the factors associated with PHR usage among New York State residents.</p>	<p>Most respondents (74%, n = 494) reported that they would use a PHR and would expect a large range of abilities from it. Participants who reported that they would use a PHR were found to have the following characteristics: Monthly internet use (OR= 5.8, 95% CI = 3.3-10.2), feelings that PHR access improves their protected health information's security (OR= 2.6, 95% CI = 1.5-4.7), and believe that PHR will improve their quality of life (OR= 4.1, 95% CI = 2.6-6.6). PHR use was highest among 18-34 years old's and those with internet access.</p>	<p>The descriptive study found that a high number of respondents expressed interest yet current PHR usage remained low. Having monthly internet access, a belief that PHR access improved quality of care or a belief that PHR access increased the security of their health information increased the potential of PHR use. The study further concludes that ensuring widespread access to the internet will be necessary to avoid healthcare disparities among the underserved.</p>

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<p><b>Casey (2016)</b> The purpose of this study was to identify portal personal health record (PHR) use rates among chronically ill older adults, their toughs on PHR use and to examine the effect of an educational intervention on improving PHR adoption rate.</p>	<p>Quasi-experimental study that used a convenience sample from a primary care group practice in central Florida (N= 50).</p>	<p>English speaking, 40-85-year-old patients with a diagnosed chronic condition were included. Participants with a mental, behavioral or physical condition that would preclude participants from filling out a 20-minute questionnaire and a 10-minute education intervention were excluded.</p>	<p>A Background and Computer Questionnaire (DBQ) was completed by all participants, followed by an educational intervention (hands-on PHR demonstration). The intervention taught participants how to log-in, verify the med list, download records, view lab results, send messages, review visit summaries, and sign-out. A four-week post intervention follow-up phone survey was done. The study used a pair matched control group to compare outcome measures.</p>	<p>The study found that the participants' comfort level with computer use increased significantly following the educational intervention (<math>Z = -1.668, p &lt; 0.005</math>). The study also found that the amount of participant PHR use (<math>M = 1.08</math>) was significantly higher than the control groups (<math>M = 0.16, p = 0.001</math>). Lastly, keeping laboratory results available and up-to-date increased PHR use.</p>	<p>The study found that an intervention with hands-on computer instructions is an effective method to increase PHR use among chronically ill adults. Participants also found the educational intervention to improve their comfort levels with computers in general. Lastly, participants found the PHR to be a valuable if it is kept current and accessible.</p>
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<p><b>Irizarry et al. (2017)</b> The purpose of this study was to discover older adult's (65 year or older) feelings about portal adoption and its usefulness as a healthcare engagement tool.</p>	<p>A mixed-method approach was used to assimilate quantitative survey with qualitative focus groups analysis. Data was obtained from a broad variety of resident in the Pittsburgh area (N=100).</p>	<p>A convenience sample of English-speaking community-dwelling &gt; 65 years of age without cognitive impairment participated in the study.</p>	<p>Live person, 45-minute-long phone surveys were used to collect sociodemographic, health, and technology related information. All participants received a 10-dollar compensation for their participation. Some participants were purposefully selected to participate in follow-up focus groups. Selection was based on survey responses to health literacy and previous patient portal use. The first 10 participants who met criteria were used.</p>	<p>The study used qualitative data to ensure that the patient population was representative of a racially diverse population. The data found significant differences in race (P=.03), ability to find health information on the web (P=.01), education (P=.01), income (P=.001), health status (P=.003) and portal engagement (P=.001). Qualitative analysis found participants to have five overreaching attitudes towards portal adoption: “(1) Don’t want to feel pushed into anything, (2) Will only adopt if required, (3) Somebody needs to help me, (4) See general convenience of the portal for simple tasks and medical history, but prefer human contact for questions, and (5) Appreciates current features and excited about new possibilities.”</p>	<p>The study found that most older adults are interested in patient portal use. This was not affected by health literacy level, previous portal use, or previous experience with web-based health information. The study suggests the use of the older adult’s caregiver who can serve as a proxy if they are unable to navigate the portal. Portal adoption interventions should be tailored to the older adult’s needs and would be most effective during face-to-face contact with healthcare providers. Providing this contact will reduce feelings of depersonalized healthcare.</p>
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<p><b>Krist et al. (2014)</b> Healthcare leaders encourage clinicians to offer portals that enable patients to access personal health records, but implementation has been a challenge. Although large integrated health systems have promoted use through costly advertising campaigns, other implementation methods are needed for small to medium-sized practices where most patients receive their care.</p>	<p>Mixed-methods study that assessed a proactive implementation strategy aimed at increasing patient portal adoption in 8 primary care offices. The study took place in five Northern Virginia counties. (N=112,893)</p>	<p>Participants were recruited through convenience sampling during clinic appointments and mail invitations. All patients aged 18 to 75 years-old were included. No other specific inclusion or exclusion criterion were listed.</p>	<p>The study evaluated proactive implementation strategy for a patient portal adoption in eight primary care practices. Three practices engaged staff in notifying patients about the portal. One practice had front desk staff give information cards to patients and explained the portal. Nurses then reviewed the portal sign-up instructions with patients, and then clinicians reinforced its value. The remaining practices relied heavily on clinicians to discuss portal adoption with patients.</p>	<p>All intervention resulted in a significant increase of patient portal adoption rates (25.6%), which is significantly higher than efficacy trials that used mailed invitations (12.4%). The highest daily sign-up rate was one day post office visit (23.5%). Patients who had comorbidities (32.5%), were female (25.95%) or of Asian descent (30.8%) had the highest portal adoption rates. Ethnically, Blacks (26.8%) and Hispanics (24.1%) had the lowest portal adoption rates. The intervention implementation process varied widely among and so did the adoption rates (from 22.1% to 27.9%, <math>P &lt; .001</math>). Clinics who adopted team-based, multi-step workflow interventions had the highest rates of portal adoption.</p>	<p>This study found that directly engaging patients in portal use by using population and practice tailored interventions significantly increases portal adoption rates among patients. If primary care practices receive the necessary support to redesign workflows and implement proactive interventions, primary care practices may be able to match or exceed the adoption rates that are achieved within large health systems that utilize high-cost marketing strategies.</p>
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<p><b>Nambisan (2017)</b> This study explores the factors behind the reduced adoption rate of patient portals among the underserved by focusing on their Patient Web Portal Readiness (PWPR).</p>	<p>Descriptive study that used survey data from patients of five free clinics in the Northern Virginia region of the United States (N= 132).</p>	<p>Adult patients at five free clinics in Northern Virginia who volunteered to participate in the study were included. No exclusion criteria were listed within the study.</p>	<p>A questionnaire with a 5<sup>th</sup> grade vocabulary level was administered. The survey was available in three languages: English, Spanish and Arabic. Any participant who could not read or write was provided a structured interview by a trained graduate student. All participation was voluntary and without incentive.</p>	<p>Participants were largely Hispanic (40.2%), black (23.5%) and white (19.7%) and had a low income (67.4%). Most participants (81.8%) had some form of access to the internet, regularly accessed it (56.1%) and used it to access health related information (66.7%). Personal Health Information Management (PHIM) was found to positively influence PWPR, (<math>t = 3.447</math>; <math>p &lt; 0.01</math>). Having a positive outlook on record keeping improved PWPR, (<math>t = 3.791</math>; <math>p &lt; 0.001</math>), but not with PHIM. Internet access was not associated with PWPR, while Internet use for seeking health information did positively impact on PWPR (<math>t = 2.047</math>; <math>p &lt; 0.05</math>). and PHIM (<math>t = 7.540</math>; <math>p &lt; 0.001</math>). Age, gender, education, income, ethnicity and chronic illness did not have any impact on PWPR or PHIM.</p>	<p>The study findings show support for the hypotheses related to the impact of the two key factors – PHIM activities and attitude toward personal health recordkeeping – on PWPR. The findings also indicate that the use of Internet for health information seeking has relatively more impact than patient’s Internet access on PWPR. Overall, the findings imply the critical importance of complementary activities – e.g., PHIM activities, Internet-based health information seeking– to enhance PWPR among the underserved population.</p>
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<p><b>Tieu et al. (2016)</b> The purpose of this study was to identify the barriers underserved patient and caregivers face while engaging in a patient portal. The study specifically aimed to see if limited health literacy is a specific barrier to navigating and interpreting health information.</p>	<p>Descriptive study that used performance testing, think aloud interviews and surveys from an underserved population in San Francisco (N=25).</p>	<p>Participants were recruited through convenience sampling at clinic and diabetic group appointments. Participants were eligible if they were English speaking, were without cognitive impairment, were diagnosed with a chronic disease or were caregiver of a patient with a chronic illness and had not accessed, viewed or used a patient portal.</p>	<p>A short survey was used to obtain demographic data, disease diagnoses, health information interests, current internet use and level of health literacy. Eligible participants were asked to complete the following tasks on a mock portal: Log in, view a visit summary, view health education, view a test result and look up health data online. Participants were given two attempts to complete each task within two minutes. The System Usability Scale was used post portal engagement to evaluate the participants thoughts on the main features.</p>	<p>Participants were largely black (36%) and female (68%). Most participants were interested in using the internet to manage their healthcare (72%) and had limited to very limited health literacy (60%). Participants with limited health literacy required greater amounts of assistance when completing the five tasks. Participants with limited health literacy faced higher amounts of basic computer (69%) and medical content (25%) barriers than those with adequate health literacy (10%, 10%). Overall, the study found that participants with limited health literacy completed fewer unassisted tasks, took longer to complete tasks encounter more barriers and had higher levels of difficulty with medical information when using a patient portal for the first time.</p>	<p>The study's findings suggest that there is a strong need for accessible patient portal training and support that is tailored to the needs of vulnerable populations. Using health literacy measurement may be useful in the identification of patients who need the largest amount of support with health technologies.</p>
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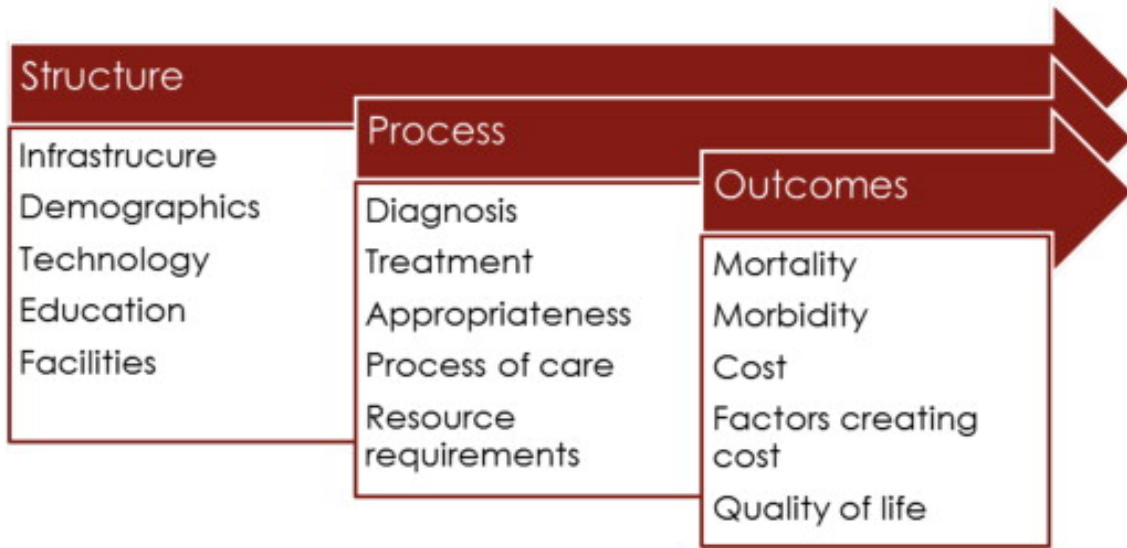
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<p><b>Wallace et al. (2016)</b> The purpose of this study was to illustrate the longitudinal portal use of an underserved adult population during the initial adoption period of a patient portal.</p>	<p>Descriptive retrospective longitudinal study that assessed adoption and use of a patient portal over a 12 months period. Electronic health record data was extracted from databases in Alaska, California, Indiana, Massachusetts, Minnesota, Montana, North Carolina, Nevada, Ohio, Oregon, Texas, Washington, and Wisconsin (N= 36,549).</p>	<p>A random sample of patients aged 18 years of age and older, who were using a portal for the first-time during May 1, 2012, and April 30, 2013 were included.</p>	<p>The Epic EHR system was used to gather data on the participants portal use over 12 consecutive months. This information was available through the practice-based research network (PBRN) and consisted of underserved individuals. Log-on frequency was categorized as: never, once, 2-23 times, and 24 times. Individual who logged in over 24 times were designated as “Superusers”. The activities of viewing, online requests or services, and communication were all recorded.</p>	<p>The study found that 29% of participants logged into their portal of which 6% were designated as “Superusers”. Men, nonwhites, Hispanics, Spanish-speaking and low-income participants were found to be significantly less likely to activate their portal. Under and uninsured patients were less likely to log in to portal, but were more likely than privately insured participants to use the portal patients once they had logged in.</p>	<p>The study suggests that the lower adoption rates among minorities and underserved populations may experience significant barriers that prevent them from using a portal. However, if these barriers are overcome and they can log in, the minority and underserved populations may gain the most benefits from using a portal. Considering this information, hospital, clinic and patient level barriers must be identified and rectified to increase patient portal adoption rates.</p>
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**Appendix F**

The Donabedian Model Adopted by Lighter (in press)



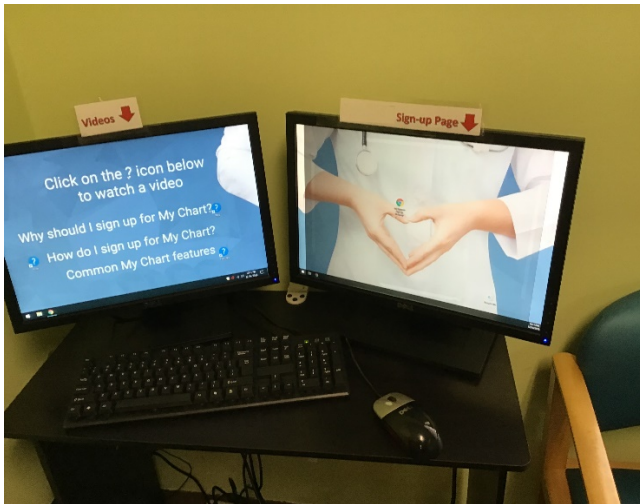
## Appendix G

### Kiosk Setup

Depicted below is the kiosk setup used for the QI project. A desktop computer with two screens was setup so the left-hand screen played videos while the right-hand screen could be used to follow along with the instructions and sign up for portal access. Safety precautions were taken to ensure that the desk would not tip and electrical components were not accessible to small children. This was done by using anti-tip brackets and electrical outlet covers that are commonly used when “baby proofing” an office.



*Figure 1.* Photograph of the completed kiosk setup, complete with privacy screens.



*Figure 2.* Photograph of the two-screen kiosk setup.

## Appendix H

Portal FAQs Handout from HealthIT.gov. Material presented on the HealthIT.gov Web site is considered federal government information and is in the public domain.

### Frequently Asked Questions about the Patient Portal

#### What Is a Patient Portal?

A patient portal is a secure online website that gives you convenient 24-hour access to your personal health information and medical records—called an Electronic Health Record or EHR—from anywhere with an Internet connection.

#### Why Is Using a Patient Portal Important?

Accessing your personal medical records through a patient portal can help you be more actively involved in your own health care. Accessing your family members' health information can help you take care of them more easily. Also, patient portals offer self-service options that can eliminate phone tag with your doctor and sometimes even save a trip to the doctor's office.

#### What Can I Do With a Patient Portal?

The features of patient portals may vary, but typically you can securely view and print portions of your medical record, including recent doctor visits, discharge summaries, medications, immunizations, allergies, and most lab results anytime and from anywhere you have Web access.

Other features may include

- Exchanging secure e-mail with your health care team
- Requesting prescription refills
- Scheduling non-urgent appointments
- Checking your benefits and coverage
- Updating your contact information
- Making payments
- Downloading or completing intake forms

A patient portal may also allow you to access these features on behalf of your children or other dependent family members.

#### How Do I Get Access to a Patient Portal?

Ask your health care providers. If they offer a patient portal, they will provide you with instructions for setting it up. There may be a couple of steps involved in setting up your account, including creating a secure password. This is to make sure only you have access to your health information.

Once your account is set up, you'll be ready to conveniently access your health information and medical records.

#### Your Health Information Is Private, Secure, and Protected

Patient portals have privacy and security safeguards in place to protect your health information.

- To make sure that your private health information is safe from unauthorized access, patient portals are hosted on a secure connection and accessed via an encrypted, password-protected logon.
- EHRs also have an "audit trail" feature that keeps a record of who accessed your information, what changes were made, and when.
- Although patient portals use safeguards, there are other safety tips you should follow when accessing the patient portal. Always remember to protect your username and password from others and make sure to only log on to the patient portal from a personal or secure computer.

**Appendix I**

Patient Satisfaction Survey

Please answer each question on the ease of use of portal sign up and the videos that were provided today. Each answer is rated on a 1 to 7 scale, with a rating of 1 meaning you strongly disagree and a 7 meaning you strongly agree.

1. Overall, I am satisfied with the ease of completing this task.

(Strongly  
Disagree)

(Strongly  
Agree)

<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7
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2. Overall, I am satisfied with the amount of time it took to complete this task.

(Strongly  
Disagree)

(Strongly  
Agree)

<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7
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3. Overall, I am satisfied with the support information (on-line help, messages, documentation) when completing this task.

(Strongly  
Disagree)

(Strongly  
Agree)

<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7
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**Appendix J**

Implementation Materials with Location

Table 1

Implementation Materials	Location
Waiting Room Video Playlist	<a href="https://www.youtube.com/playlist?list=PLPWJ-Vf8gXaPYC31zK9qwapNdEN6JnvMh">https://www.youtube.com/playlist?list=PLPWJ-Vf8gXaPYC31zK9qwapNdEN6JnvMh</a>
Handout	<a href="https://www.healthit.gov/sites/default/files/measure-tools/nlc-faqs-about-patient-portal.docx">https://www.healthit.gov/sites/default/files/measure-tools/nlc-faqs-about-patient-portal.docx</a>
Video 1	Available Upon Request
Video 2	Available Upon Request
Video 3	Available Upon Request

**Appendix K**

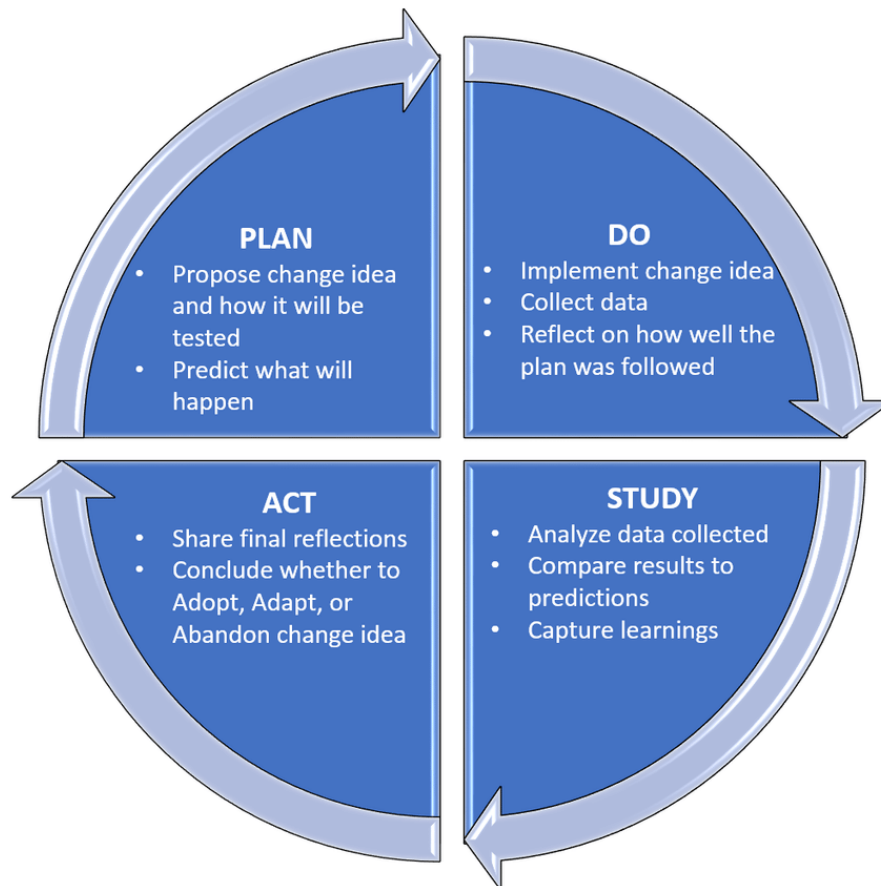
Proposed Budget

<b><u>Doctor of Nursing Practice Project Financial Operating Plan</u></b>	
<b>Project Title</b>	
<b>Revenue</b>	
Project Manager Time (in-kind donation)	\$ 14,400.00
Team Member Time:	
Doctor of Nursing Practice- A/OA (Site Mentor)	\$ 2,240.00
Financial Director (weekly data pulls)	\$ 360.00
Office Manager (staff meetings)	\$ 110.00
Medical Assistants (staff meetings)	\$ 14.00
Front Office Staff (staff meetings)	\$ 14.00
Consultations	
IT Specialist (in-kind donation)	\$ 195.00
Statistician (in-kind donation)	\$ 100.00
Equipment	
Kiosk (in-kind donation)	\$ 300.00
Survey Monkey online software	\$ -
Cost mitigation	
Increased Medicare payment	\$ 1,244.01
<b>TOTAL INCOME</b>	<b>\$ 18,977.01</b>
<b>Expenses</b>	
Project Manager Time (in-kind donation)	\$ 14,400.00
Team Member Time:	
Doctor of Nursing Practice- A/OA (Site Mentor)	\$ 2,240.00
Financial Director (weekly data pulls)	\$ 360.00
Office Manager (staff meetings)	\$ 110.00
Medical Assistants (staff meetings)	\$ 14.00
Front Office Staff (staff meetings)	\$ 14.00
Consultations	
IT Specialist (in-kind donation)	\$ 195.00
Statistician (in-kind donation)	\$ 100.00
Equipment	
Kiosk (in-kind donation)	\$ 300.00
Survey Monkey online software	\$ -
Cost of printing instructions sheet	\$ 50.00
<b>TOTAL EXPENSES</b>	<b>\$ 17,783.00</b>
Net Operating Plan	\$ 1,194.01

## Appendix L

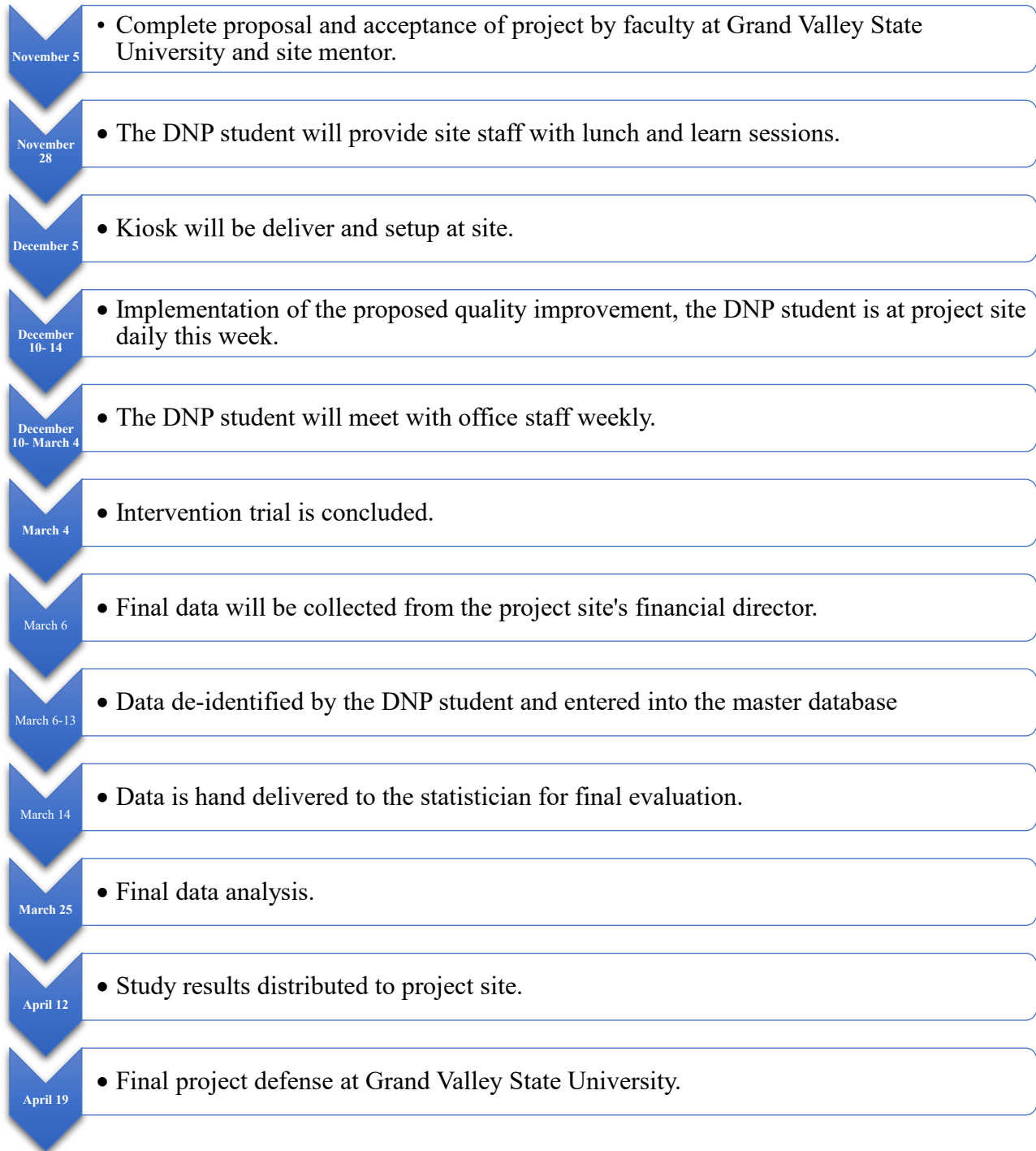
The Plan-Do-Study-Act Cycle.

Available from: [https://www.researchgate.net/figure/A-visual-diagram-of-a-Plan-Do-Study-Act-PDSA-Cycle\\_fig1\\_319377456](https://www.researchgate.net/figure/A-visual-diagram-of-a-Plan-Do-Study-Act-PDSA-Cycle_fig1_319377456)



### Appendix M

#### Proposed Project Timeline



**Appendix N**

Data Collection Variables

Data Set Label	Variable Label	Variable Description	Attribute Descriptor & Classification Categories	Variable Format	Measure Level
PARTICIPANT	PARTICIPANT_CODE	Participant Identification Number	0-2000, 9999= Not assessed, 8888= Missing Data	Numeric	Scale
PARTICIPANT	AGE	Participants Age	18-199, 9999= Not assessed, 8888= Missing Data, 7777= Over 90 years old	Numeric	Scale
PARTICIPANT	AGE_CLASS	Participants Age Above 64	0= No, 1= Yes, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
PARTICIPANT	GENDER	Participants Gender	1=Male, 2=Female, 3= Unknown, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
PARTICIPANT	RACE	Participants Race	0= White, 1= Black, 2=Hispanic or Latino, 3= Asian, 4=Other, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
MEDICAL	INSURANCE	Insurance carrier	0= Medicaid, 1= Medicare, 2= Uninsured, 3= Localy Funder Health Program, 4= Private Insurance, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
PARTICIPANT	EMPLOYED	Participants Current Employment Status	0= Employed, 1= Unemployed, 2= Retired, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
PARTICIPANT	PARTICIPANT_PCP	Primary Care Provider		Categorical	Nominal
MEDICAL	MED_COUNT	Number of medications on file	0-99, 9999= Not assessed, 8888= Missing Data	Numeric	Scale
PARTICIPANT	MARITAL_STATUS	Participants Marital Status	1= Single, 2= Married, 3= Widowed, 4= Divorced/Legally Seperated, 5= Other, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
PARTICIPANT	MARITAL_CLASS	Participant Married	0= No, 1= Yes, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
<b>Pre Intervention is BELOW and marked T1</b>					
PORTAL	PORT_STAT_T1	Portal Status Pre-Intervention	0= Active, 1= Pending 2= Code Expired, 3= Declined, 4= Inactive, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
<b>Post Intervention is BELOW and marked T2</b>					
PORTAL	PORT_STAT_T2	Portal Status Post-Intervention	0= Active, 1= Pending 2= Code Expired, 3= Declined, 4= Inactive, 9999= Not assessed, 8888= Missing Data	Categorical	Nominal
<b>Survey Coding is BELOW</b>					
SURVEY	SAT_SURV-Q1	Overall, I am satisfied with the ease of completing this task.	0-7, 9999= Not assessed, 8888= Missing Data	Numeric	Scale
SURVEY	SAT_SURV-Q2	Overall, I am satisfied with the amount of time it took to complete this task.	0-7, 9999= Not assessed, 8888= Missing Data	Numeric	Scale
SURVEY	SAT_SURV-Q3	Overall, I am satisfied with the support information (on-line help, messages, documentation) when completing this task.	0-7, 9999= Not assessed, 8888= Missing Data	Numeric	Scale

**DNP Project Results**

### Structured Abstract

**Introduction:** Stage three of Meaningful Use (MU) is currently underway and is focused on promoting patient portal use. If the electronic medical record patient portal use is less than 25%, primary care providers face reductions in value-based reimbursements. National adoption rates from portal use remain under 27% with some providers averaging well below the needed 25%. The following practice question was proposed, “In a low-income urban adult clinic, how does an interactive electronic education intervention compared to no education intervention affect patient portal adoption rates?”

**Objectives:** The purpose of this project was to identify whether an electronic patient educational video and self-service kiosk increased portal use among low income older adults in a primary care office. The overarching goal of the proposed project was to increase patient portal adoption to the MU requirement of 25%.

**Methods:** A convenience sample of 1,894 adult patients attending a primary care appointment was used. Retrospective data analysis was used to gather pre and post-intervention portal adoption percentages. Data was compared using frequency tables and chi-square tests. Demographic information provided descriptive statistics. In this quality improvement project a patient education video and self-serve kiosk was implemented over an 84-day period. The rate of portal adoption among paired (both group) and unpaired samples (pre-intervention only and intervention only groups) were compared to the portal adoption rate before the video was available.

**Results:** No statistically significant change among portal adoption was found in the paired group, thus raw percentage changes were evaluated. Once demographic data was gathered, participants were further classified into one of three groups. The classification was based upon

the frequency and date in which the participant visited the project site for an appointment: Pre-intervention only, intervention only or both. The both group was found to have the highest percent of portal adopters (24%, n=208), non-portal adopters (24%, n=208) and the lowest percentage of undecided participants (52%, n=461). Intervention only participants were found to have the lowest percentage of non-portal adopters (11%, n=54) and the highest percentage of undecided participants (66%, n=325). Pre-intervention only participants had the lowest percentage of portal adopters (19%, n=97).

**Conclusions:** Although this project did not find statistically significant changes in portal adoption, the lowered number of non-adopters and higher number of portal adopters may be clinically significant to the project site. It is hypothesized that participants who visited their PCP more than once in a 168-day period, may have firmly decided whether to adopt or not adopt the patient portal prior to the QI project.

**Implications:** Future projects should include three 60-day time periods. Adding this third time period would allow the researcher to evaluate if the undecided intervention only participants subsequently adopted the portal. Therefore, it is suggested that this project should be replicated, and results should be evaluated during three time periods versus two. Adding a community partner panel may increase intervention use and improve participant adoption. Lastly, increasing site visit frequency would increase staff support during implementation.

**Keywords:** Portal, Adoption, Improving, Underserved, Primary Care, EHR



## Introduction

The Office of the National Coordinator for Health Information Technology (ONC, 2017) defines a patient portal as a secure, online website which allows patients to have round the clock access to their personal health information. Portals contain both basic information about the patient's health (visits, medication, and test results), along with advance features such as primary care provider (PCP) secure messaging, medication requests, and patient education (ONC, 2017). Engagement in the electronic health record (EHR) portal, encourages the patient to be an active member in their own healthcare team (Patel, Barker, & Siminerio, 2015). This empowers patients to advocate for their health and reduces barriers that exist among healthcare practices (Patel et al., 2015). Active portal users were further found to be increasingly educated about their chronic conditions, were more satisfied with their healthcare and demonstrate improved health outcomes (Patel et al., 2015; Ricciardi et al., 2013).

Although evidence supports the benefits of portal use, approximately 73% of patients nationally have not signed up for portal access (Tavares & Oliveira, 2017). In response to persistent low adoption rates, the Health Information Technology for Economic and Clinical health (HITECH) Act was implemented (Centers for Disease Control and Prevention [CDC], 2017). The HITECH Act aims to advance the exchange of electronic healthcare information in a meaningful manner (CDC, 2017). To ensure compliance with this, the CMS initiated a three-stage plan called Meaningful Use (MU) and provides financial incentives to organizations that comply with their recommendations (CDC, 2017).

Stage three of MU is currently underway and is focused on promoting patient portal use by ensuring that a minimum of 25% of patient's use their EHR portal regularly (CMS, 2015). If this objective is not met, healthcare practices may receive a one to five percent reduction in their

Medicare and Medicaid reimbursement, also known as value-based care reimbursement (CMS, 2018). Healthcare providers who largely provide primary care to Medicare and Medicaid patients may not be able to financially maintain operations if their patients do not adopt the portal.

According to Irizarry et al., (2017), low national adoption rates are driven by the gap that exists between consumers and the knowledge of portal benefits. The gap is further widened in populations that face numerous barriers (Heath, 2016). Promoting the benefits of and identifying the barriers towards portal access, have been found to increase adoption rates and patient comfort while using portals (Heath, 2016). A small primary care office in South-Central Michigan currently has low patient EHR portal adoption rates. Clinic leadership has expressed concern about the low portal adoption rates and is interested in organizational changes that could improve them. The purpose of this proposal is to describe an evidence-based quality improvement (QI) project at a South-Central Michigan primary care office.

### **Available Knowledge**

A review of current literature pertaining to patient portal adoption was conducted. The review aimed to examine the factors that improve portal adoption rates, the populations that encountered the most barriers during portal adoption and the evidence-based interventions found to improve portal adoption rates. These findings were used to guide the QI project. The findings were also be used to predict the barriers to and facilitators of patient portal adoption.

Upon evaluating the literature key characteristics and behaviors were linked to portal adoption rates. Portal adopters were largely, 18-34 years old (Abramson et al., 2014), of Asian descent, suffered from a disease and/or were female (Krist et al., 2014). Although the exact reason for the increase was not explained, it is speculated that individuals with these characteristics may fundamentally be driven to value portals when managing their health

(Abramson et al., 2014; Krist et al., 2014). At the same time, studies suggest that minorities, individuals with a low socioeconomic status, or are under/uninsured, experience significant barriers; such as lack of internet access and low health literacy; that prevent them from using a portal (Abramson et al., 2014; Nambisan, 2017; Tieu et al., 2016; Wallace et al., 2016). Once these barriers were overcome, the minority and underserved populations used the portal more frequently and benefited more from portal use than other populations (Abramson et al., 2014; Nambisan, 2017; Tieu et al., 2016; Wallace et al., 2016). Age also was a factor in portal adoption and despite the sharp increases in technology use over the last decade, portal adoption among older adults remains low (Irizarry et al., 2017). One study found that, although older adults' value the convenience of health IT, they place more value on face to face or personal contact with a healthcare provider (Irizarry et al., 2017).

An overarching theme among the studies, found that successful portal adoption interventions must be tailored to the populations needs and aim to decrease the barriers faced by adopters (Casey, 2016; Irizarry et al., 2017; Krist et al., 2014). Interventions were further found to be effective if they identified individuals at risk for low adoption, such as those with low health literacy (Tieu et al., 2016), were based on a systematic team approach (Krist et al., 2014), and provided an educational intervention that supported individuals through basic functionalities (Casey, 2016). Interventions that provided education significantly improved adoption rates (Casey, 2016). The results of the review suggest that the current evidence in favor of a patient centered teaching intervention as an effective strategy for promoting portal adoption among adults.

## **Organizational Assessment**

The project site is a small “free” clinic located in metropolitan South-Central Michigan. Prior to planning a QI project, evidence-based organizational assessments were used to evaluate the project site. The Burke and Litwin (1992) Causal Model identified links between performance and the internal and external factors which affect the performance. Gathered data was then analyzed using the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis.

Upon completing the organizational assessment, three key factors were found to have the largest impact on performance within the organization. The first factor is that the high local poverty rate in the clinic’s external environment, inherently reduces patient portal adoption rates. The second factor is that the underserved community will most likely face multiple barriers while adopting the patient portal and thus may not buy-in to the benefits of having portal access. The third factor is that a lack of cohesion exists among the medical assistant and front desk clerk roles. Due to this lack of interaction, miscommunications regarding workflow and responsibilities have caused tensions to build. This tension may make staff buy-in of the process change more difficult, especially if staff is unable see how patient portal access will improve their job roles.

Donabedian’s (1966) model of Structure Process Outcome (SPO) was used to guide the evaluation of workflow within the project site. The SPO model provides quality management through the assessment of the structures, processes and outcomes of care (Jones, 2016). A thorough examination of the project site’s structure, processes, and outcomes reveals that the current workflow and the lack of portal education are not effective in improving patient portal adoption.

When specifically evaluating the clinic's process, the current workflow and patient portal education/support efforts were found to have the largest impact on portal adoption. Prior to the QI projects workflow changes, patients would remain in the waiting area for an average of thirty minutes prior to their appointments. This non-productive gap in time, was an opportunity to streamline the current workflow and introduce a patient portal education intervention and is depicted in figure 1. Furthermore, the clinic does not provide structured portal benefit education to staff or patients. Due to this lack of education, portal adoption buy-in and use is minimal.

The organization has identified low patient portal adoption rates as a threat to population health. Assessment of the project site identified an opportunity to streamline the portal access process. The assessment further found that a lack of a patient or staff portal education, has created a gap in knowledge and an opportunity to implement a patient portal education intervention. The Plan, Do, Study, Act Model was used to guide implementation and form the project timeline shown in figure 2. Accordingly, an evidence-based QI project to answer the following practice or clinical question was proposed: *In low income urban adult patients, how does an interactive electronic education intervention, compared to access code handout without an education intervention affect patient portal adoption rates?*

### **Implementation**

In order to address the clinical practice question, we first assessed the pre implementation portal adoption rate. When comparing the project site's 2017 patient portal adoption rate of 15% (n= 448) to the national average of 25.8% (Tavares & Oliveira, 2017), the rates are significantly lower (see table 1). It was further found that portal adoption has not significantly improved since 2017 and remains at 16% (n=279). The overarching goal of the QI project was to increase patient portal use to the MU requirement of 25% of participants by the project's conclusion.

Within this section, the evidence-based QI design will be discussed.

Prior to the project's initiation, staff was educated on the benefits of portal access such as improved health outcomes, increased patient centered care and enhanced health literacy. This was accomplished through a lunch and learn session. For patients, initial education was provided during the appointment check-in process in the form of an informational handout. The handout contained basic information about, along with the highlights and benefits of patient portal access.

Next, the workflow was redesigned so that patients received their portal access code at the beginning of the office visit. This process change allows patients to utilize non-productive appointment time for portal sign-up. If a participant declined the portal access code or to use the self-serve kiosk (which is described below), they were directed to have a seat in the waiting room. If the participant was interested in gaining portal access, they were directed to the self-serve kiosk.

At this point, the patient was seated in front of two computer screens, one on their left and one on their right-hand side. The left-hand screen was dedicated to displaying three click-to-play videos that discussed the benefits of portal education, guided the participants through the sign-up process, and showed participants how to access commonly used portal features. The right-hand screen was dedicated to the portal sign-on/sign-up page. Once the participant completed the portal sign up videos, an optional electronic questionnaire "popped-up" on the right-hand screen.

This questionnaire consisted of three post intervention questions, that address the usefulness of and the patient's satisfaction with the education materials provided. The participant survey was adopted from the After-Scenario Questionnaire (ASQ). The ASQ was originally designed to assess participant satisfaction with the use of a computer product or program,

following the completion of a series of tasks (Lewis, 1993). The ASQ is highly reliable ( $\alpha < .90$ ), valid ( $p < .01$ ) and sensitive ( $p = .05$ ).

Throughout the entire intervention period, the DNP student performed weekly site visits. During these visits, the DNP student met face to face with staff and monitor how they were adjusting to the process changes. Staff were given the opportunity to provide feedback to the DNP student and their concerns were addressed. Survey data was designed to capture study learnings, evaluate the intervention and provide descriptive data for future intervention improvement.

### **Methods**

A convenience sample of 1,894 adult patients attending a primary care appointment between 12/10/2018 and 3/4/2019 were included, anyone under the age of 18 years old was excluded. Retrospective data extraction was used to gather portal adoption percentages. The portal adoption percentages for the 84-days pre intervention was compared to the 84 days post intervention. Data was de-identified, listed in frequency tables and chi-square testing was used when appropriate.

The EHR generated terms of active, pending, declined and inactive were used to define participants portal status. Participants with an active status were considered adopters. Those with declined or inactive portal statuses were considered non-adopters. Lastly, participants with a pending status were considered undecided on whether to adopt the portal. These terms were defined, using the EHRs definitions shown in table 2. Portal status was collected during both the pre-intervention and intervention periods.

Participant specific demographic data variables were also gathered. The participants medical record number (MRN), age, gender, race, employment status, marital status, primary

care provider, insurance carrier, and the number of active medications on file were collected. Following the retrospective data collection, all medical record numbers were de-identified by first pairing the MRN numbers in pre-intervention and intervention databases, and then reassigning every participant a code, starting with the number one. The de-identified data was subsequently entered into a Statistical Analysis Software compatible electronic master database. Gathered demographic data was used for descriptive statistics.

Survey data will be used to evaluate the intervention. Serendipitous findings and any variables found to significantly affect portal adoption will be reported. Following the conclusion of the project, the project site was updated with the finding. The results of this project were analyzed for both clinical and statistical significance. Lastly, the QI project was reviewed by the Grand Valley State University's Institutional Review Board (IRB) and was found to be a systematic investigation, not designed to create new generalizable knowledge. Therefore, the project does not meet the federal definition of research and IRB oversight was not needed.

### **Results**

Retrospective data collection was used to gather demographic information on a total of 1,895 participants, spanning 168 days and is shown in table 3. The average age among participants was 47 years old (M 47.3, SD 14.09), who took an average of 9 medication (M 9.31, SD 7.15). There were slightly more female (n=1003, 53%) participants than male (n=892, 47%). Most participants were Caucasian (n= 1176, 65%) and African American (n= 409, 23%) and carried Medicaid (n=1131, 60%) or Medicare (n= 508, 27%) insurance. The remaining participants were uninsured (n= 190, 10%), carried a private insurance (n= 42, 2%) or used a locally funded health plan (n=23, 1%). When evaluating employment status, half of the participants were found to be unemployed (n= 935, 59%). The remaining participants were either



employed (n=523, 33%) or retired (n= 136, 9%).

Once demographic data was gathered, participants were further classified into one of three groups. The classification was based upon the frequency and date in which the participant visited the project site for an appointment: Pre-intervention only, intervention only or both. The classifications were created to identify whether a statistically significant change in portal status had occurred in the unpaired (pre-intervention and intervention only) or paired groups (both). Raw percentages were also gathered in the unpaired and paired groups and were used to identify if a clinically significant percentage change in portal adopters had occurred.

During evaluation of the raw percentages, the three-time classifications were used and are shown in table 4. When evaluating the groups for portal adopters, the both groups was found to have the highest percent of active users (24%, n=208), followed by intervention only (n= 114, 23%), while pre-intervention only participants had the lowest percentage (19%, n= 97). Non-portal adopters were highest in the both group (24%, n=208), followed by the pre-intervention only group (21%, n= 107), and were lowest in the intervention only group (11%, n= 54). Lastly, pending portal status was highest in intervention group (66%, n= 325), followed by the pre-intervention group (60%, n= 311), and was lowest in the both group (52%, n= 461). An insignificant number of participants had an inactive portal status and thus the percentages were not evaluated. No participants opted to take the post intervention survey and this data is unavailable. No statistically significant change in portal adoption was found in either the paired or unpaired groups and is displayed in table 5.

### **Discussion**

Upon evaluation of the demographic data, the population was, not surprisingly, found to be largely underinsured and unemployed. These finding shows that the population evaluated within

the project is underserved and will most likely face multiple barriers when adopting a portal (Wallace et al., 2016). Although the results did not show statistical significance, the raw percentage changes within the three groups of participants may pose clinical significance to the QI project site.

After evaluating portal adoption among the both group, no clinically significant change in portal status was found. Again, participants in this group had at least one appointment during the pre-intervention period and another following workflow and education intervention implementation. It could be hypothesized that these participants were most likely come in for appointments regularly and had an increased amount of chances to adopt or decline portal access prior to the QI project's implementation.

When evaluating portal adoption percentages among the pre-intervention only and intervention only groups, some percentage changes did occur. Portal adoption was higher in the intervention only group (23%, n= 114) than the pre-intervention only group (19%, n= 97). Non-portal adopters were also lower in the intervention only group (11%, n= 54) than the pre-intervention only group (21%, n=107). Lastly, participants that may adopt the portal in the future but had not decided, consisted of over half of the participants in all three time periods, with intervention only participants having the largest number of undecided adopters (66%, n= 325).

### **Limitations**

Although the project did not increase portal adoption to the MU goal of 25%, several limitations may have contributed to this. The greatest limitation was time. Due to the short study period of 168 days, it is unknown if participants with a pending portal status at the project's conclusion, will adopt the portal within the next 60 days. If time was not limited, participant portal status in the intervention only group could be re-evaluated for portal status change. The

next limitation was that since the pre-intervention and intervention only groups are not paired, the finding cannot be generalized or considered significant.

In retrospect, the project would have benefited from the use of a technology-based teaching framework. The Engagement Theory is such a framework and is focused on the factors that drive individuals to adopt or not adopt technology (Kearsley & Shneiderman, 1998). This framework could have been used to identify whether participants would be driven to meaningfully engaged in computer-based learning videos. The Engagement Theory further highlights the use of a collaborative learning environment (Kearsley & Shneiderman, 1998). Not including community partners in the intervention design, limited collaboration and did not provide feedback on the community member's perceived barriers to portal adoption.

Lastly, no participants filled out the post intervention survey and there is no way to know how many participants used the kiosk and educational videos to adopt the portal. Unfortunately, the degree to which the education intervention may have affected portal status percentages versus workflow change alone could not be identified. It is also unknown whether participants found the intervention helpful.

### **Conclusion**

In conclusion, the results of this QI are intriguing but not generalizable. With more time to evaluate the longitudinal changes among the participants portal adoption, a better understanding of how this project affected portal adoption among this underserved population could be gained. Although this project did not find statistically significant changes in portal adoption, the lowered number of non-adopters and higher number of portal adopters may be clinically significant to the project site. Lastly, it was found that participants who visited their PCP more than once in a 168-day period, had no change in portal status and thus may have firmly decided whether to adopt or

not adopt the patient portal. Therefore, the QI project site may need to focus their efforts towards improving portal adoption among individuals who do not visit their PCP frequently or who have not had multiple exposures to a patient portal.

### **Implications for Practice and Further Study in the Field**

The greatest limitation to this project was time. Future projects should include an additional time period where the intervention group, could also be evaluated. Since the portal activation code is only valid for 60 days, this could be accomplished by changing the project to three, 60-day evaluation periods. Although this project did not find a statistically significant changes in portal adoption post intervention, redesigning workflow and increasing patient portal education did not decrease portal adoption. In the light of the benefits of adoption a patient portal, it argued that even one patient adopting a portal versus declining it could be considered clinically significant. Therefore, it is suggested that this project should be replicated, and results should be evaluated during three time periods versus two.

Upon project design evaluation, framework change, and the use of a mixed method design would be advised. Obtaining qualitative data on the barriers to and facilitators of portal adoption, could have been used to guide the interventions design. Furthermore, using a technology-based teaching framework would have created a collaborative approach with community members. This collaborative view would have focused the intervention on the needs of the specific community that was studied. Therefore, adding a community partner panel may be an effective way to gather this information.

It is also suggested that future projects add a view counter to the videos. This counter would allow the researcher to track the number of times the video was opened. If participants declined to take the post-intervention survey, an estimate on how many participants may have

used the video could still be evaluated. Lastly, time in the office by the DNP student was limited to one day per week. Increasing the weekly site visit frequency from one eight-hour day to three to five two-hour days would give a clearer picture of how the implementation process was evolving. This increased number of visits may have also helped staff to feel increasingly supported.

Figures

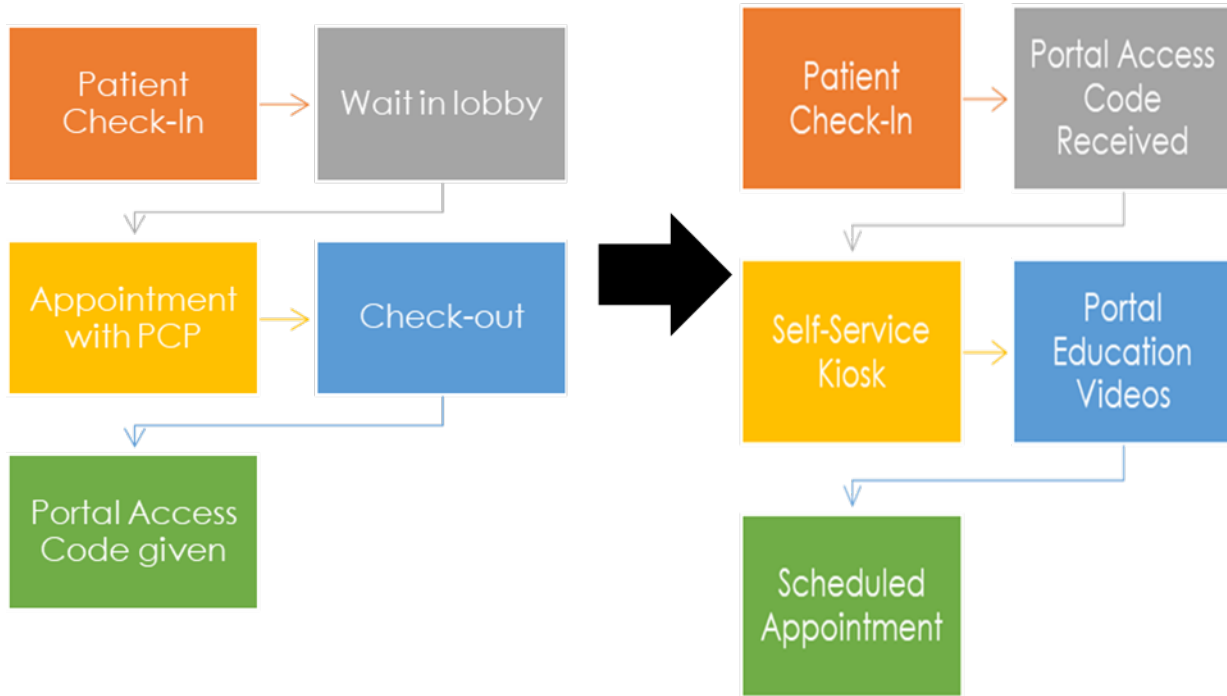
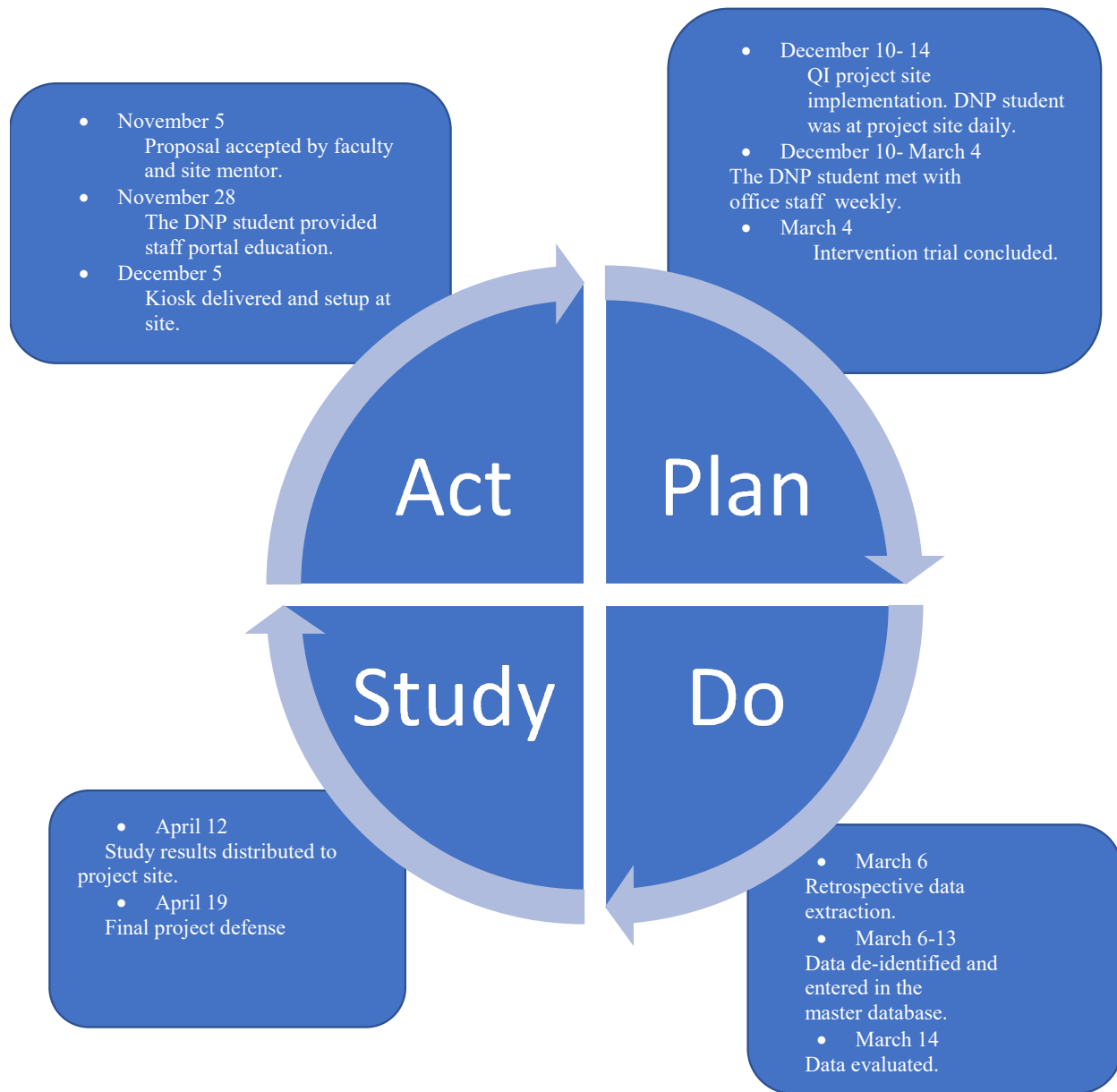


Figure 1. Workflow changes at the project site. The left-hand diagram shows the workflow prior to the QI project. The right-hand diagram shows the workflow changes, with the addition of patient portal education.



*Figure 2.* The Institute for Healthcare Improvement’s (2017) PDSA cycle was used as a framework throughout the project. This figure shows how the project timeline and how it corresponded to the steps within the PDSA cycle.

### Tables

Table 1

*Participant Portal Adoption Prior to QI Project Initiation*

Patient EHR Status	1/1/2017- 12/31/2017	%	3/1/2018- 5/31/2018	%
Portal adopter (Active Status)	448	15	279	16
Did not adopt the portal (Code Expired Status)	1108	38	413	24
Declined to use the portal (Declined Status)	361	12	233	13
Did not receive a code (Inactive Status)	328	11	138	8
May sign up for the portal in 60 days (Pending Status)	673	23	686	39
Total # charts reviewed	2918	100	1749	100

*Note.* This table displays the project site's EHR adoption rates prior to the QI project's initiation. The table is arranged by portal access code status, using the Epic User Web classifications and definitions (McCarthy, 2017).



**Table 2**

*Participant Portal Adoption Variable Definitions*

	<b>Active</b>	<b>Pending</b>	<b>Declined</b>	<b>Inactive</b>
<b>Portal Adopter</b>	Patients who have signed up for and used the portal.			
<b>Non- Portal Adopter</b>			Patients who were offered an activation code but defer access.	Patients who have not received a portal access code.
<b>Unknown Adopter</b>		Patients who received a portal activation code have not signed up for portal access.		

*Note.* These above Epic User Web definitions (McCarthy, 2017) were used to classify if a portal had or had not adopted the patient portal.

Table 3

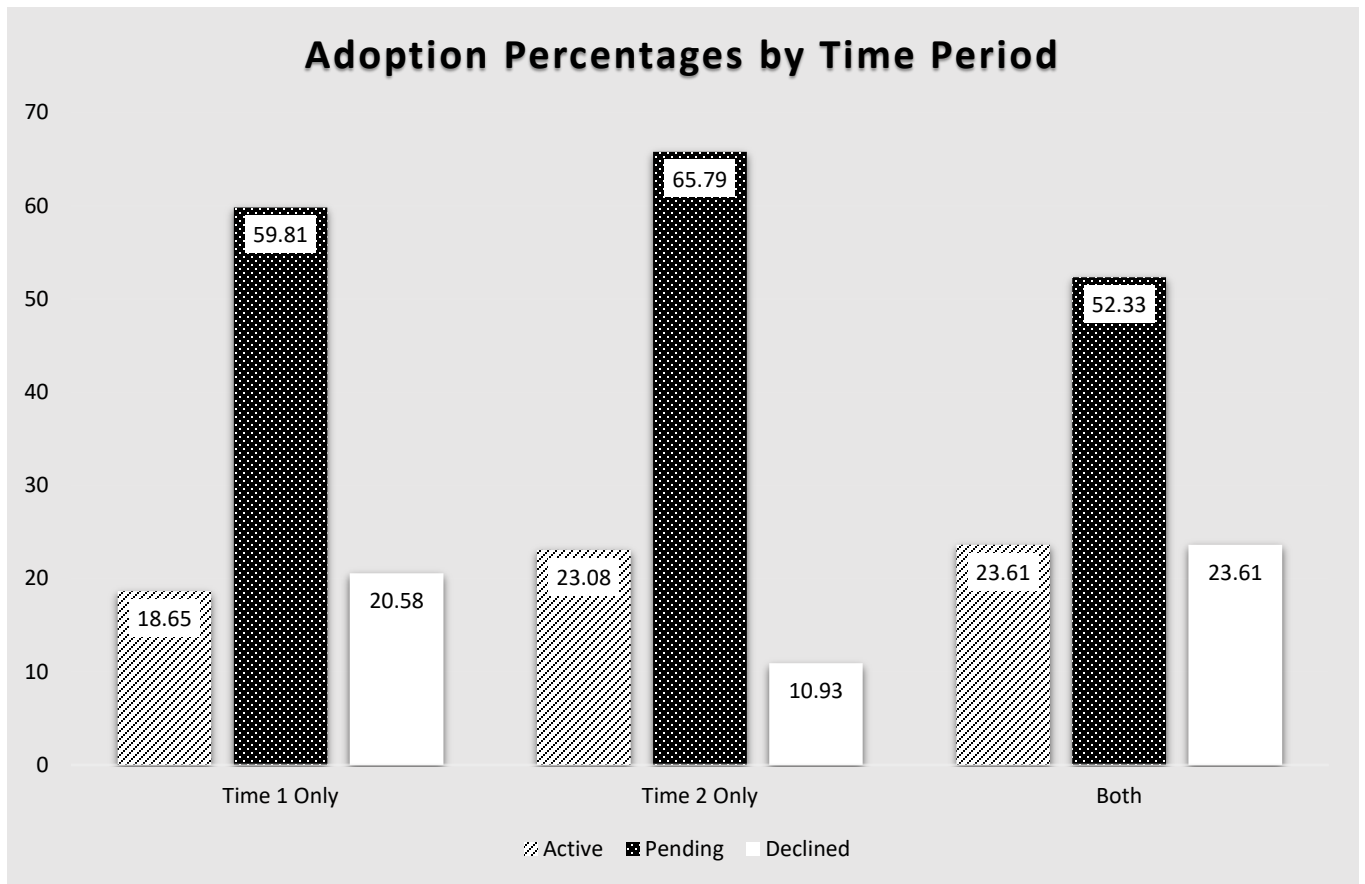
*Participant Demographic Data*

<b>Variable</b>	<b><i>n</i></b>	<b>%</b>	<b>Cumulative <i>n</i></b>	<b>Cumulative %</b>	<b>Frequency Missing</b>
<i>Gender</i>					0
Male	892	47.07	892	47.07	
Female	1003	52.93	1895	100.00	
<i>Race</i>					95
White	1176	65.33	1176	65.33	
Black	409	22.72	1585	88.06	
Hispanic	71	3.94	1656	92.00	
Asian	27	1.50	1683	93.50	
Other	117	6.50	1800	100.00	
<i>Insurance Type</i>					1
Medicaid	1131	59.71	1131	59.71	
Medicare	508	26.82	1639	86.54	
Uninsured	190	10.03	1829	96.57	
Locally Funded	23	1.21	1852	97.78	
Private	42	2.22	1894	100.00	
<i>Employment Status</i>					301
Employed	523	32.81	523	32.81	
Unemployed	935	58.66	1458	91.47	
Retired	136	8.53	1594	100.00	
<i>Marital Status</i>					35
Single	943	50.70	943	50.70	
Married	436	23.44	1379	74.14	

*Note.* Raw percentage, participant demographic data is displayed in the table above. Data was sorted by portal status.

Table 4

*Participant Portal Adoption Percentages by Time Period*



Variable	Active	Pending	Declined	Inactive	Total (n=1895)
	%	%	%	%	
<b>Pre-intervention Only</b>	<b>18.65</b>	<b>59.81</b>	<b>20.58</b>	<b>0.96</b>	<b>520</b>
<b>Intervention Only</b>	<b>23.08</b>	<b>65.79</b>	<b>10.93</b>	<b>0.20</b>	<b>494</b>
<b>Both</b>	<b>23.61</b>	<b>52.33</b>	<b>23.61</b>	<b>0.45</b>	<b>881</b>

*Note. This table displays the Raw percentages of participants portal status, based upon which time period they were classified into.*

Table 5

*Divergent Pairs of Portal Status for Those Who Visited Twice*

Paired Portal Status at Time 1	Paired Portal Status at Time 2				
	N=881				
Frequency	Active	Pending	Declined	Inactive	Total
Percent					
Row Percent					
Column Percent					
<b>Active</b>	207	1	0	0	208
	23.50	0.11	0.00	0.00	23.61
	99.52	0.48	0.00	0.00	
	100.00	0.22	0.00	0.00	
<b>Pending</b>	0	460	1	0	461
	0.00	52.21	0.11	0.00	52.33
	0.00	99.78	0.22	0.00	
	0.00	99.78	0.48	0.00	
<b>Declined</b>	0	0	208	0	208
	0.00	0.00	23.61	0.00	23.61
	0.00	0.00	100.00	0.00	
	0.00	0.00	99.52	0.00	
<b>Inactive</b>	0	0	0	4	4
	0.00	0.00	0.00	0.45	0.45
	0.00	0.00	0.00	100.00	
	0.00	0.00	0.00	100.00	
<b>Total</b>	207	461	209	4	881
	23.50	52.33	23.72	0.45	100.00

*Note.* This table of divergent pairs shows who changed their portal status within the paired group.

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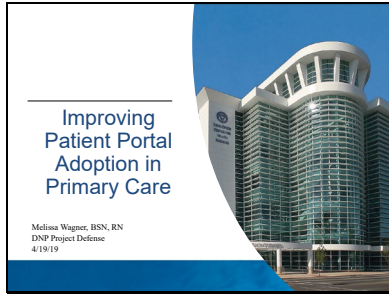
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**“Oral” Defense Presentation**



Slide 1



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Slide 2



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Slide 3

Objectives for Presentation



- REVIEW THE CLINICAL PRACTICE PROBLEM
- REVIEW THE EVIDENCE BASED RECOMMENDATIONS AND THEORETICAL FRAMEWORKS
- DISSEMINATE PROJECT METHODS, RESULTS AND IMPLICATIONS FOR PRACTICE
- OBTAIN APPROVAL OF FINAL PROJECT PITCH AND GRADUATE

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Slide 4

Introduction

- Patient portal are secure, online website which allows patients to have round the clock access to their personal health information.
- Portal features include secure messaging, medication refill requests, appointment scheduling and medical education materials.

The Office of the National Coordinator for Health Information Technology (ONC) 2013

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Slide 5

Significance

- Stage three of Meaningful Use is currently underway and is focused on promoting patient portal use.
- If patient portal use is less than 25%, primary care providers face reductions in value-based reimbursements.
- National portal adoption rates remain under 27% with many averaging well below the needed 25%.

CDC, 2010; CMS, 2015; CMS, 2017; Tavenor & Oliveira, 2017

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Grand Rapids, MI

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Slide 6

Goal of this Project

- Increase patient portal use to the MU requirement of 25% of participants by February 20<sup>th</sup>, 2019.

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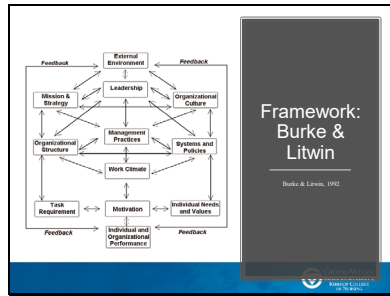
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Slide 7




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Slide 8

<b>SWOT</b>	<b>STRENGTHS</b> <ul style="list-style-type: none"> <li>Strong mission and vision serving staff</li> <li>Experienced leadership</li> <li>Collaborative team approach among staff and business partners</li> <li>Highly trained and caring patient care providers</li> <li>High patient care</li> <li>The care manager supports staff through and across the organization with thoughtful care</li> </ul>	<b>WEAKNESSES</b> <ul style="list-style-type: none"> <li>Major changes within leadership and management over the last few years</li> <li>Disconnect between front and back office</li> <li>Disconnect across the organization necessary to lack of cohesion among staff</li> <li>Lack of financial resources to provide additional IT resources within the clinical setting</li> <li>Patrol population has had no formal education on personal IHR access</li> </ul>
	<b>OPPORTUNITIES</b> <ul style="list-style-type: none"> <li>Improved IHR platform may provide an avenue for adoption among the underserved population</li> <li>Improve patient/provider communication</li> <li>Opportunity to decrease patient acquisition barriers to personal IHR access and improve patient care</li> <li>The staff may be a good fit to help improve IHR adoption in their own work environment</li> </ul>	<b>THREATS</b> <ul style="list-style-type: none"> <li>Disruption among the patient population</li> <li>Lack of time for patients to gain IHR access</li> <li>Patients and staff may not value the benefits of personal IHR access</li> <li>Values based care implementation requirements are currently varied and unclear the future change</li> <li>Additional methods for the front and back office staff could disrupt communication</li> </ul>

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Slide 9

- Active patient portal use is currently 15%.
- Culture within the organization is willing to change for quality improvements.
- Maintaining this positive outlook on change will be central to the sustainability of future process improvement.

Assessment of the Organization



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Slide 10

Key Stakeholders



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Slide 11

Clinical Practice Question

In low income urban adult patients, how does an interactive electronic education intervention, compared to access code handout without an education intervention affect patient portal adoption rates?

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Slide 12

- Following the planning but prior to implementation, the ethics and protection of human subjects were considered and Institutional Review Board (IRB) at Grand Valley State University (GVSU) approval was gained.
- The project was found to be a systematic investigation, not designed to create new generalizable knowledge, and IRB oversight was not required.

IRB Approval

Grand Valley State University

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Slide 13

**Aims of Literature Review**

- Examine the factors that improve portal adoption rates
- Identify the populations that encountered the most barriers during portal adoption
- Identify evidence-based interventions that improve portal adoption rates

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Slide 14

**Review Method**

- PRISMA framework
- PubMed, CINAHL and Cochrane data bases.
- English language during the period of 2013 to 2018.
- Keywords were patient access to records, patient portals or electronic health record and access.

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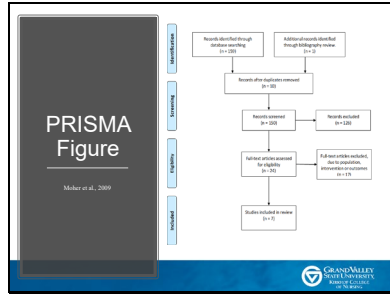
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Slide 15



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Slide 16

- Results**
- 7 articles met inclusion criteria
    - 1 Quasi-experimental study
    - 2 Mixed method studies
    - 3 Descriptive studies
    - 1 Correlational study
  - Individuals with decreased health literacy, lower socioeconomic status, are of advanced age and/or are a minority show the lowest adoption rates.
  - Interventions that provided education significantly improved adoption rates among these population.
- Grand Valley State University logo is present at the bottom right of the slide.

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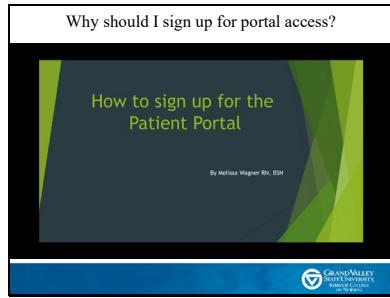








Slide 23



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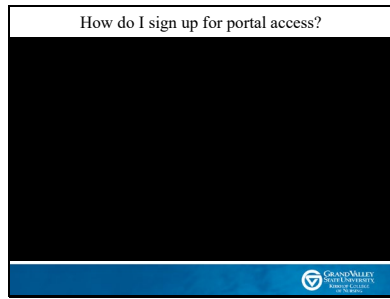
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Slide 24



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Slide 25



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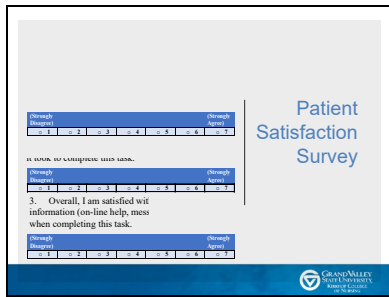
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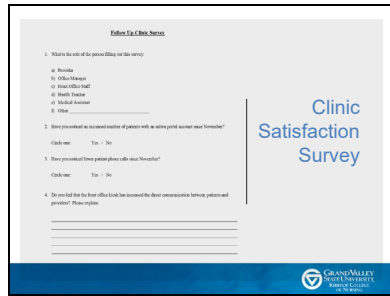
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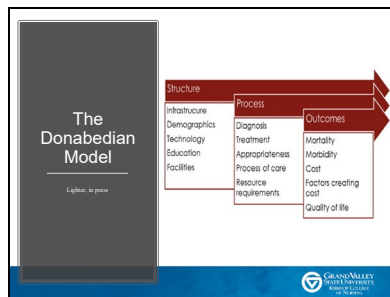
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Slide 28



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Slide 29

**Project Purpose**

- The purpose of this QI project is to utilize an electronic patient educational video and self-service kiosk to increase the use of patient portals among low income adults in a primary care office.
- This will be accomplished by answering the clinical question:
  - In low income urban adult patients, how does an interactive electronic education intervention, compared to access code handout without an education intervention affect patient portal adoption rates?



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Slide 30

- **Conduct** a QI project that minimally impacts staff workload and increases patient portal use.
- **Develop** a patient education intervention that improves patient knowledge of portal benefits.
- **Build** an education video that encourages patients to make an informed decision about portal use.
- **Plan** an intervention that is evidence-based, and patient centered.
- **Execute** the evidence-based intervention over a 168-day period.

**Project Objectives**



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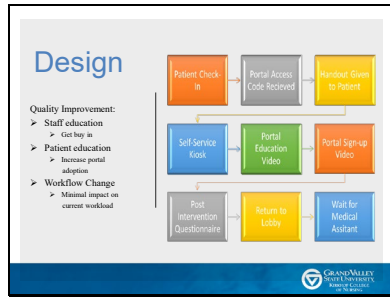
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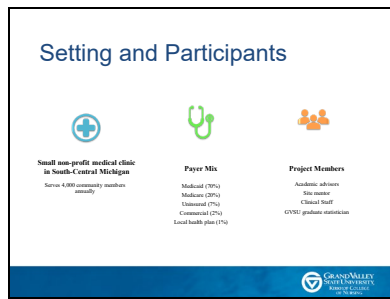
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Slide 32



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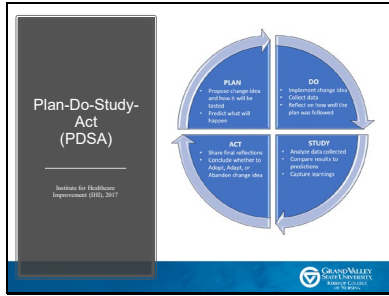
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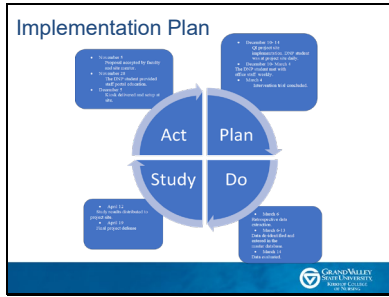
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Slide 35

Retrospective Chart Review for baseline descriptive data

- Age
- Gender
- Race
- Employment status
- Marital status
- PCP
- Insurance carrier
- Number of medications on file

Evaluation & Measures

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Evaluation & Measures

- Pre/Post Automated Data Pull
  - Percentages both pre and post intervention of portal status:
    - Active
    - Code Expired
    - Inactive/Declined
- Post Intervention
  - Patient satisfaction survey results
  - Follow-up clinic survey (Project site use only)

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### Analysis Plan




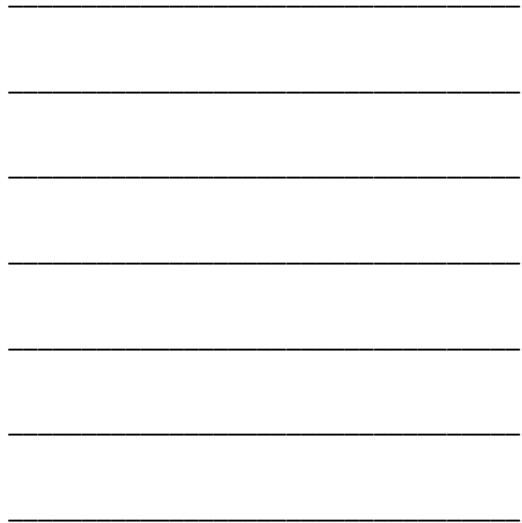
**DESCRIPTIVE STATISTICS  
AND PERCENTAGE  
CHANGES**



**COMPARISON PREPOST  
IN A PAIRED AND  
UNPAIRED SAMPLE**




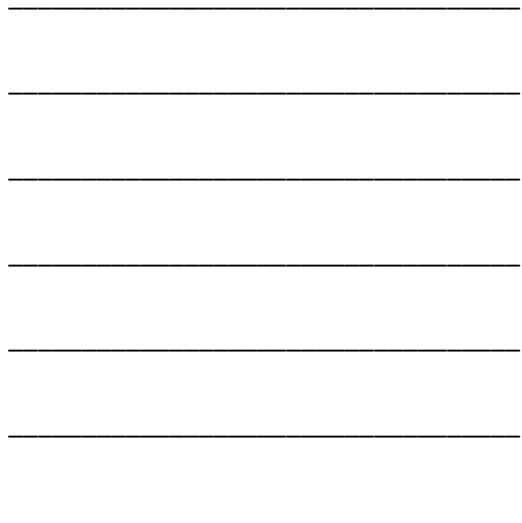
**FREQUENCY TABLES  
WITH CHI-SQUARE  
TESTING**

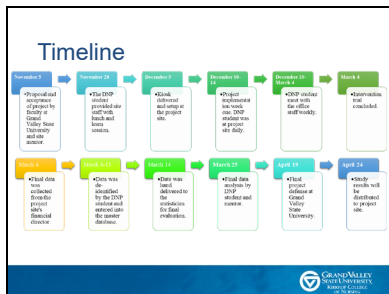
Slide 38

## Budget and Resources

Detailed Budget Practice Pattern Expansion/Conversion Plan	
Project 858	
<b>Revenue</b>	
Project Manager Time (on-kind donation)	\$ 16,000.00
Team Member Time	\$ 2,240.00
Director of Practice Practice - AXIA (Onk Member)	\$ 600.00
Financial Director Practice (Onk Member)	\$ 110.00
Office Manager (off and onrange)	\$ 140.00
Practice Activities (off and onrange)	\$ 140.00
Practice Office Staff (off and onrange)	\$ 140.00
Travel	\$ 140.00
TE Research (on-kind donation)	\$ 140.00
Publications (on-kind donation)	\$ 140.00
Equipment	\$ 800.00
Books (on-kind donation)	\$ 140.00
Survey, Model, online software	\$ 140.00
Contract Management	\$ 1,000.00
<b>TOTAL REVENUE</b>	<b>\$ 24,200.00</b>
<b>Expenses</b>	
Project Manager Time (on-kind donation)	\$ 16,000.00
Team Member Time	\$ 2,240.00
Director of Practice Practice - AXIA (Onk Member)	\$ 600.00
Financial Director Practice (Onk Member)	\$ 110.00
Office Manager (off and onrange)	\$ 140.00
Practice Activities (off and onrange)	\$ 140.00
Practice Office Staff (off and onrange)	\$ 140.00
Travel	\$ 140.00
TE Research (on-kind donation)	\$ 140.00
Publications (on-kind donation)	\$ 140.00
Equipment	\$ 800.00
Books (on-kind donation)	\$ 140.00
Survey, Model, online software	\$ 140.00
Contract Management	\$ 1,000.00
<b>TOTAL EXPENSES</b>	<b>\$ 24,200.00</b>
Net Operating Profit	\$ 0.00

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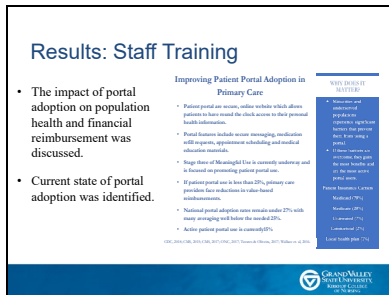
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Slide 41

### Results: Staff Training Continued

Current Workflow

- Workflow changes were presented.
- This was accomplished through a lunch and learn session.

Workflow Change

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### Results: Patient Demographics

Variable	n	%	Completed	Completed %	Uncompleted
Gender					
Male	492	47.67	492	47.67	
Female	508	52.33	508	100.00	
Race					
White	1176	44.34	1176	68.12	
Black	489	22.72	1163	92.66	
Hispanic	71	2.94	1245	92.95	
Asian	27	1.26	1483	91.38	
Other	117	4.26	1269	100.00	

Variable	n	Mean	Median	Std Dev	Minimum	Maximum	Skewness	Kurtosis
Age	1816	62.81	68.00	6.88	18.00	99.00	-0.20	1.00
Medications	1816	6.00	3.00	3.00	0.00	60.00	4.00	13.00

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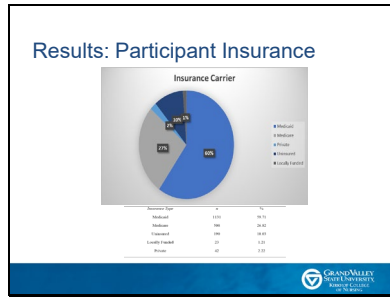
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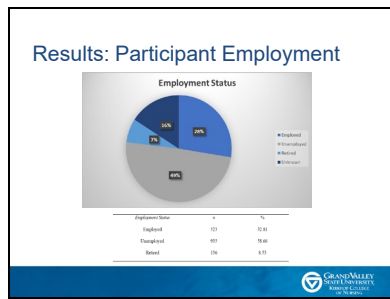
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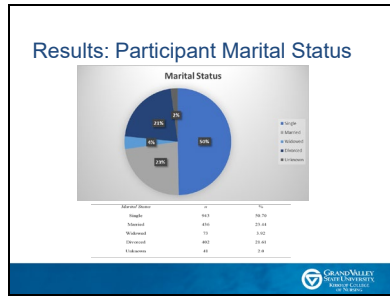
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### Participant Portal Adoption Classifications

- 84-days pre intervention (time one) versus 84 days following intervention (time two).
- Three groups based upon time period.
  - Time one only (pre-intervention)
  - Time two only (following intervention)
  - Both (pre and during intervention).
- Unpaired (time one only and time two only) or paired groups (both) changes.

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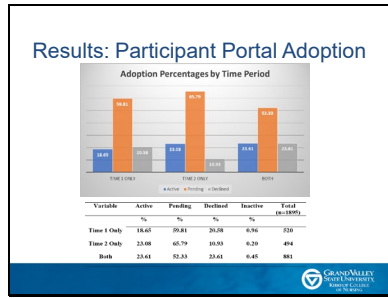
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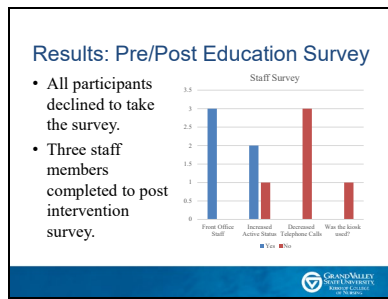
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**Discussion**

- Populations was largely underserved and will most likely face multiple barriers when adopting a portal (Wallace et al., 2016).
- Participants in the both group most likely come in for appointments regularly and had an increased amount of chances to adopt or decline portal access prior to the QI project's implementation.
- Portal adoption was higher in the time two only group (23%, n= 114) than the time one only group (19%, n= 97).
- Non-portal adopters were also lower in the time two only group (11%, n= 54) than the time one only group (21%, n=107).
- Time two only participants having the largest number of undecided adopters (66%, n= 325).



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**Limitations**

- Time
  - Will some participants adopt the portal within the next 60 days?
- Unpaired Findings
  - The results cannot be generalized beyond the project site or considered significant.
- Lack of Post Intervention Survey
  - Unable to evaluate the kiosk and educational videos impact on portal adoption.
  - Unable to identify to what degree the education intervention may have affected portal status percentages versus workflow change alone.



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**Implications for Practice**

- Three 60-day time periods.
  - Portal activation code is only valid for 60 days.
- Portal adoption did not decrease.
  - One patient adopting a portal versus declining it could be considered clinically significant.
- This project should be replicated, and results should be evaluated during three time periods versus two.
- Site visits.
  - Increasing the weekly site visit frequency from one eight-hour day to three to five two-hour days.



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**Conclusion**

		
MEANINGFUL USE REQUIRES HEALTH CARE PROVIDERS TO IMPROVE THEIR PORTAL ADOPTION RATES OR FACE DECREASED REIMBURSEMENT	EVIDENCE SUGGESTS THAT A PATIENT CENTERED TRAINING INTERVENTION HAS THE HIGHEST SUPPORT FOR INCREASING PORTAL ADOPTION RATES	OUR STUDY SHOULD FOCUS ON INCREASING THE PORTAL ADOPTION AMONG INDIVIDUALS WHO DO NOT VISIT FREQUENTLY



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**Sustainability Plan**

- Recognized need for improved patient portal usage by clinic leadership and management.
- Process change requires minimal time and effort from staff for sustainment.
- New location could not accommodate kiosk.
- Key stakeholders are dedicated to change.
  - Site will continue workflow changes and patient education handouts.
- Future DNP student could continue project with a second "round" of change.
  - Three 60-day time periods.



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**Dissemination**

- Project Defense
  - April 19th, 2019
- Site/Stakeholders
  - April 24<sup>th</sup>, 2019
- Scholarworks
  - May 1st, 2019
- Publication
  - Journals, publications
- Conference Presentation Opportunities
  - Poster Events
  - Oral Presentations



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**DNP Essentials Reflection**

- **Essential I: Scientific Underpinnings for Practice**
  - Integrating nursing science with other science-based theories (AACN, 2006).
- **Essential II: Organizational and Systems Leadership**
  - Organizational and systems leadership for quality improvement and systems thinking (AACN, 2006).



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**DNP Essentials Reflection**

- **Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice**
  - The DNP will evaluate, integrate, translate, and apply the principles of evidence-based practice (AACN, 2006).
- **Essential IV: Information Systems Technology**
  - The DNP will use technology in a meaningful way that support practice, clinical decision making, and safety (AACN, 2006).



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**DNP Essentials Reflection**

- **Essential V: Advocacy for Health Care Policy**
  - Analyze health policy, and lead legislative aimed at improving population health and nursing practice (AACN, 2006).
- **Essential VI: Interprofessional Collaboration**
  - Lead interprofessional teams through effective communication and collaboration (AACN, 2006).



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**DNP Essentials Reflection**

- **Essential VII: Clinical Prevention and Population Health**
  - Synthesize epidemiological, biostatistical, cultural, psychosocial, occupational and environmental science data aimed at improving population health (AACN, 2006).
- **Essential VIII: Advanced Nursing Practice**
  - Improve clinical outcomes by demonstrating advanced levels of clinical judgement, and systems thinking, while delivering evidence-based nursing care (AACN, 2006).



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Slide 59

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Slide 63

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