

**Provider and Staff Focused Interventions to Optimize
Patient Portal Use in Adult Primary Care**

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Abstract

Phase II Site: Madigan Army Medical Center, Joint Base Lewis-McChord, WA

Project Title: Provider and Staff Focused Interventions to Optimize Patient Portal

Use in Adult Primary Care

Authors: Berends, E., Fillmore, S.

Background: Electronic patient portals (EPP) improve patient outcomes by facilitating patient-provider communication and increasing patient engagement. Portals reduce healthcare costs, decrease emergency visits and hospital admissions, plus more engaged patients schedule fewer clinic visits. Patients least likely to use an EPP are demographically akin to many service members. MHS Genesis Patient Portal is underutilized due to insufficient training regarding its capabilities and benefits.

Clinical Question: Among primary care providers and staff, what effect does EPP training have on portal utilization rates compared with current practice?

Project Design: We used Promoting Action on Research Implementation in Health Services framework for our project. The intervention included staff training on portal functions and capabilities. We developed patient-focused handouts and displayed advertisements throughout the clinic. Our outcome compared portal utilization during our four-week intervention with utilization four weeks prior and the same weeks one year ago.

Analysis: We used Mann-Whitney U tests to compare pre- and post-intervention portal utilization rates. Utilization was represented by individual messages and two-way conversations between patients and providers. We found a statistically significant increase in the number of provider-initiated messages ($p=0.029$) and an increase in provider-initiated conversations which approached statistical significance ($p=0.11$). Additionally, provider messaging response time decreased by 9.5 hours (22%) compared with the year prior.

Organizational Impact/Implications for Practice: Access to care is a priority in military medicine. Portal messaging allows care teams to address more patients' needs in less time, expanding access. We demonstrated that it is possible to increase portal messaging with a simple, low-cost intervention. Messaging must be included in staff scheduling as it is a valuable category of patient encounter. We recommend including MHS Genesis Patient Portal training in provider and staff on-boarding, implementing messaging documentation and coding policies, and expanding MHS Genesis Reporting Portal to expand portal use and support improvement efforts.

Provider and Staff Focused Interventions to Optimize Patient Portal Use in Adult Primary Care

Increasing demands and requirements continue to add to health care providers' workload, competing for their limited time and resources. These pressures have caused clinicians, administrators, and policy makers to search for solutions to save time, money, and resources while still focusing on improving patient outcomes. One proposed solution is implementation and optimal use of electronic patient portals (EPP) (Graham et al., 2020; Sorondo et al., 2016). Portals offer numerous functions for both providers and patients.

Electronic patient portals vary in functionality but are required to provide patients access to portions of their electronic medical record and a means for secure communication with their healthcare provider (Turner et al., 2019). Other features may include appointment scheduling, medication refill requests, the ability to review encounter notes, lab results, and radiology reports (Lyles et al., 2020). Some facilities have even partnered with their information technology departments to include patient education libraries within the patient portal (Volk & Obeid, 2019). These portal functions provide numerous benefits which improve healthcare delivery.

Problem Synthesis

Electronic patient portals improve patient outcomes by facilitating patient-provider communication, building trust, empowering patients, and increasing patient engagement in their healthcare while simultaneously reducing healthcare costs (Anthony et al., 2018; Poussard et al., 2021; Powell, 2017; Sorondo et al., 2016). However, research into portal use demonstrated that 63% of patients did not utilize an EPP despite having access to one, and 50% of patients were not being educated about EPP use at their visits (Anthony & Campos-Castillo, 2020; Anthony et al., 2018). Current literature suggests that patients who are male, younger, less well educated, have fewer chronic conditions, or lack a regular medical provider are less likely to take advantage of EPPs (Anthony et al., 2018; Chan et al., 2018; Mahmood et al., 2019).

Provider encouragement of, and engagement through EPPs are shown to directly increase portal use rates among patients and providers are more likely to promote the EPP if they are familiar with its uses (Hörhammer et al., 2021; Wolcott et al., 2017). A straightforward solution to this problem of lackluster patient portal use may exist: educate the primary care provider (PCP) about the patient portal function and its functions.

Military Nursing Relevance

The U.S. Army Medical Command's core mission and vision is to provide Soldiers with world-class health services around the globe, ensure individual and unit medical readiness, and conserve the fighting strength (Office of the Surgeon General, n.d.). However, the Military Health System (MHS) continues to struggle with access to care and meeting the standards set for maximum appointment wait times (Department of Defense Office of Inspector General, 2018). The Army Medicine of 2028 plan was designed to meet the Army Surgeon General's strategic mission and vision by reorganizing and reforming the medical service to be relevant in today's Digital Information Age (U.S. Army Medical Command, 2020). Electronic patient portals are integral to this plan, Wolcott, et al. (2017) reports that EPPs provide Soldiers access to tools to stay engaged in their healthcare and conveniently communicate with their PCP while potentially increasing access to care.

Many service members (SM) share similar characteristics of civilians who are least likely to use EPPs. According to the 2020 military census, 83% of the Active Duty US Military population was male, averaged 28.3 years old, with 66.4% of the force 30 years or younger, and 66.9% of Service Members had some college education or less (Department of Defense, 2020). Service Members are generally healthier than their civilian counterparts, but they are not immune to acute and chronic conditions such as joint pain, hypertension, or obesity (Meadows et al., 2018). Additionally, frequent provider and patient duty relocations makes establishing a therapeutic relationship difficult despite the fact that SMs have an assigned PCP. Medical readiness is crucial to maintaining a capable military force, but appointments take SMs away

from their mission. Patient portals enable SMs to better manage their health, day or night, reducing mission impact.

Wolcott et al. (2017) demonstrated that SMs are more likely to use EPPs when providers promote communication via the portal either by initiating messages or responding to patient messages directly (Wolcott et. al, 2017). Patient use rates are proportional to the level of their provider's engagement; patients who receive care from a "high initiation-messaging" provider are 60% more likely to send a message compared with "non initiation-messaging" providers and sent 334% more messages if their provider routinely responded to their messages (Wolcott et al., 2017). Portal messaging has been shown to improve patient outcomes and healthcare delivery. Portal benefits are not limited to SMs; all patients within the Department of Defense (DoD) can benefit from using EPPs.

Kruse et al. (2015) found that increased EPP use improves patient-provider communication, quality of care, and self-management in patients with chronic diseases. Graham et al. (2020) reported that patient portal benefits include: saving time booking appointments (51%), avoiding clinic visits (48%), and avoiding emergency department visits (2.7%). Patient EPP use is also associated with increased medication adherence and improved patient mental and physical health functional status (DesRoches et al., 2021; Kerner & Knezevich, 2020; Rhudy et al., 2019; Sorondo et al. 2016). Providers and payers benefit when patients use EPPs too. Appointment no-show rates among EPP users were 53% lower than non-portal users and EPPs reduce high-cost healthcare utilization by reducing emergency department visits and hospital admissions (Graham et al., 2020; Rhudy et al., 2019; Sorondo et al. 2016). With all the known benefits and high demand for patient portals, it raises the question of how to increase patient portal use.

Clinical question

Among primary care providers and staff, what effect does EPP training have on portal utilization rates compared with current practice?

Search Strategy and Results

We searched PubMed and CINAHL to identify English-language studies published in peer-reviewed journals between January 2015 and April 2021 that involved adult populations. Search terms included, patient portal, health resource utilization, family physicians, and primary care. We expanded our search with equivalent subjects and combined terms using Boolean phrasing. We focused our search on PubMed and CINAHL because these databases best match the clinician and biomedical technology nature of our clinical question. Our initial review revealed that the literature is predominantly geared towards identifying characteristics of patient portal users and non-users along with patient perceptions surrounding portal use. There was limited information on interventions to increase portal usage available at the time of our first search. We ultimately chose to expand our search to relevant articles irrespective of publication date due to the paucity of results and completed an additional search in July 2022 for any recent publications. A hand search during full text review generated two additional articles which were added to our search results. Our searches generated 499 articles, 10 of which were relevant to our clinical question (Appendix A). Ninety four were eliminated as duplicates, 359 were excluded based on their title or abstract, and 36 of the 46 articles that underwent full text review were excluded mainly due to the intervention, outcome measure, or study design. Abstract and full text reviews were performed independently by both authors to ensure consistency, conflict resolution required unanimous agreement.

Solution Synthesis

The literature revealed several solutions that were shown to increase EPP usage (Appendix B). We planned to implement a solution that most closely resembled the work done by Rhudy et al. (2019), Krist et al. (2014), Poussard et al. (2021), and Shimada et al. (2020). These studies provided stronger quantitative data with relevant qualitative data that allowed us to implement a solution that optimizes usage while addressing potential staff concerns. Their interventions varied slightly but were all based around encouraging provider EPP promotion to

increase portal enrollment or use. Rhudy et al. (2019) increased patient enrollment rates by 15% when nurses were coached to ask patients about portal use during the rooming process and enroll interested patients on the spot. Furthermore, Krist et al. (2014) found that providers were the key in increasing portal usage and patient portal enrollment doubled when providers took a more active role in encouraging portal use. Poussard et al. (2021) increased patient and provider messaging rates with an intervention that included staff and providers portal overview training, with key takeaways for patients and screenshots and was a model for our training session. Shimada et al. (2020) took a more patient-focused approach by mailing patients educational material, sending welcome messages through the portal, and finally, calling patients who had not yet sent a secure message. This intervention took place in Veterans Health Administration hospitals where, like our population, patients are automatically enrolled in an EPP meaning researchers were able to focus on increasing messaging without having to worry about enrollment rates first.

The literature review revealed that provider engagement is the main driving force behind patient portal usage in the general population, and this held true among Soldiers. Wolcott et al. (2017) reviewed four years of secure messages between 81,000 Soldiers and 3,000 providers and observed that provider messages, particularly provider responses to patient-initiated messages, drove patient portal usage. Additionally, direct staff engagement with patient enrollment and EPP promotion throughout every phase of a clinic encounter was more effective in increasing enrollment than passive measures such as mailers or handouts (Crotty et al., 2019; Krist et al., 2014; Rhudy et al., 2019). We used this information to focus our intervention towards educating providers and staff on portal functions and to actively engage with patients about the portal, specifically secure messaging, during visits.

Focus Area

Our project aim was to increase portal messaging via a simple, low-cost, and sustainable intervention. An additional goal was to educate providers and staff about the

benefits to both patients and the healthcare system associated with patient portal use. We also aimed to review current messaging volume, portal policies, and documentation requirements. We planned to use this information to provide recommendations for leadership and key stakeholders to take full advantage of portal benefits.

Business Case Analysis

The financial benefit of this project was directly correlated to the value providers and staff placed on messaging and ongoing portal prioritization. The start-up costs were minimal: time to develop, conduct, and analyze the needs assessment; developing the training program; printing discharge sheets and posters; and conducting staff training. The true costs occurred in the initial roll-out as patients transition from in-person encounters to electronic messages. As outlined in our business case analysis (Appendix D), for each person who elected to message a provider rather than make an in-person appointment for a low-acuity encounter, the clinic received \$78 dollars less in reimbursement (Centers for Medicare & Medicaid Services, 2021). Based on these figures, it takes seven such messaging encounters to generate as much revenue, or five to generate as many relative value units (RVU), as one in-person encounter. We anticipated there may be an initial decrease in reimbursement as low-acuity encounters are addressed through the portal, but theorized these costs would, in time, be offset by more high-acuity in-person or procedure appointments which generate greater revenue. While the prospect of an intervention leading to decreased revenue is less than desirable, we believe that with time, more complex encounters will lead to increased reimbursement.

Organizing Framework

We used the Promoting Action on Research Implementation in Health Services (PARIHS) framework to guide our Evidence Based Practice (EBP) project. The PARIHS framework considers evidence, context and facilitation as equal and necessary parts for successful implementation of research into practice. Within each of the three concepts there are sub-elements to further qualify each part. Each element and sub-element are rated on a

continuum from “low” to “high” (Rycroft-Malone, 2004). This framework, first proposed by Kitson et al., (1998) states that the goal is to have more elements on the “high side”, however all elements must be taken into consideration. Elements may be weighted differently depending on barriers and limitations with higher rated elements off-setting lower rated elements.

The three elements of evidence, context, and facilitation guided our project. Rycroft-Malone et al. (2004) and Rycroft-Malone et al. (2002) define these elements. Evidence includes both quantitative and qualitative data, both types of data are necessary depending on the clinical question. Clinical expertise and local data/information are just as valuable given the expertise and information is thought through critically, critiqued and discussed. This was specifically important in this project as most studies have focused on the patient demographics of portal users vs non-portal users and increasing enrollment. Facilitation is the process of removing barriers and making the process easier when implementing change. A facilitator is an individual who has the skills, attributes, and experience to adjust their role and leadership style to match the situation. Our facilitators included providers that successfully use portal messaging in their practice, clinic leadership, and the Chief Medical Information Officers. Context refers to the environment or setting in which the intervention takes place. Understanding the culture of the healthcare system is imperative when considering changes. Prior to developing our intervention we met with providers and staff to understand the culture of the clinic.

Transformational leadership creates a learning culture that clarifies roles and facilitates teamwork while taking into account individuals, group processes, and organizational systems.

Because our intervention involved changes in workflow processes, it relied on the support of the clinic staff to be successful (Rycroft-Malone et al., 2002). We chose this framework because it focuses on how to incorporate informal leaders, staff experience, clinic culture and individuals to accomplish the project goals. Additionally, this framework recognizes that evidence, context, and facilitation include aspects and definitions that are not traditionally seen as part of process improvement. Using this framework and considering all the elements

throughout the development of our project helped to ensure that our intervention was well received by the staff.

Project Design

General Approach

This project was a process improvement program with process and outcome measures, designed to increase patient EPP use as measured by portal messaging rates. We developed our intervention using information gathered from the literature review, high utilizers of portal messaging, and staff feedback regarding their attitudes and use of the patient portal. Our intervention included discussing the benefits of patient portals and messaging, provider and staff patient portal training, and a discussion about staff actions that positively affect patient portal use. We worked with clinical leadership to update discharge paperwork and patient handouts to include current portal information. We also designed and displayed informational posters to familiarize patients on accessing the portal, basic portal functions, and how to message their care team.

Setting and Population

The intervention took place at Winder Soldier Centered Medical Home (SCMH), a primary care clinic on Joint Base Lewis-McChord (JBLM) with 10,589 patients empaneled to 29 providers. Soldier-centered medical homes by doctrine are designed to care exclusively for Soldiers and the patient population at the time of the intervention consisted of Soldiers from 10 different Army units. Clinic staff included both civilian and military administrative staff, medics, licensed practical nurses (LPN), registered nurses (RN), nurse practitioners (NP), physician assistants (PA), and physicians. There was one full-time physician, one full-time PA, and two NPs assigned to the clinic. The remaining 25 military providers saw patients part-time as their duties were split between the clinic and their unit.

Procedural Steps

This project occurred in five phases over two years; see Appendix E for the complete timeline. The first phase of our intervention was to gather evidence and assess the current operational environment. Initial literature review and analysis occurred between April and May 2021 and continued periodically until July 2022. We also completed our business case analysis, presented our project proposal and established contact with the hospital's biostatistician. Once we arrived at JBLM, our next step was to meet with the chief and deputy chief medical information officers (CMIO) to discuss our intervention and investigate which portal usage metrics were measurable for our outcome data. This information also helped us decide which of the installation's more than ten primary care clinics was best suited to our project. We learned in our meetings with the CIMOs that our electronic health record (EHR) reporting tools are limited in their depth: information is only visible down to the physical building level. Therefore, all of the clinics located within the hospital's footprint are reported together and only six of the outlying clinics would have individually reported usage data. Of the five remaining clinics, we chose Winder SCMH because it is a large clinic, located outside the hospital building, and only serves Active Duty Service Members. Utilizing an SCMH was beneficial because service members can access the EPP with their military identification card without creating a logon and password like dependents and retirees must do, lowering their barriers to accessing the EPP. Once we chose our intervention site, we gathered data on the current enrollment and portal messaging rates for our baseline patient engagement level. We also met with the medical director of a clinic with high EPP utilization rates to discuss lessons learned and best practices. Lastly, we submitted our project proposal to the Madigan Army Medical Center's (MAMC) Human Research Protections Office for approval from the institutional review board (IRB).

Phase two began in September 2022 once we received approval from the hospital's IRB. This included observing clinic workflow, particularly around portal use, and creating a plan for incorporating the intervention without altering the clinic workflow. We then met with clinic

leadership to outline our intervention and goals. As suggested by Krist et al. (2014), we completed a provider and staff needs assessment to understand current knowledge of, attitudes toward, and use of the patient portal. This allowed us to better understand current messaging workflow, identify potential barriers to implementation, guide future staff education, identify leaders/facilitators to assist in overcoming barriers, build relationships with the staff, and inform them about the upcoming project. Developing rapport with staff and providers was an important element of the intervention under the context portion of the PARISH framework. Developing rapport started early in phase 2 as both authors completed practice hours in the clinic and got to work with and meet more of the providers and staff outside of project-related meetings.

Phase three of our project focused on developing the implementation plan: developing clinic training, outlining staff responsibilities, and creating patient resources. We planned the intervention around existing materials, equipment and resources in order for the intervention to be sustainable. We updated patient resources and posters previously published by the Defense Health Agency (DHA) to reflect the most current site-specific portal information and included similar items on the patient discharge sheet.

Implementation occurred during phase four of our project. We were able to train the majority of the staff during regularly scheduled training time with the presentation lasting approximately 20 minutes. Administrators, providers, nurses, and medics were all present for the training sessions. We held two training sessions, one for providers and one for staff, allowing us to tailor the training towards each group's specific needs though the general information presented was the same. Based on recommendations from Hefner et al. (2020), McCleary et al. (2018) and Ramsey et al., (2018), the training covered how to log on to the portal, available features, features not yet available at JBLM, step-by-step instructions on how patients send messages. We also encouraged clinic leadership to develop a formal portal policy and distribute patient handouts outlining appropriate messages. Hefner et al. (2020) theorizes

these measures will foster patient safety and mitigate provider burden from inappropriate messages.

We also provided business cards, posters, and updated discharge sheets with information about how to login to the portal, available functions, and messaging information. Providers and staff were asked to educate patients about basic portal functions and encourage patients to communicate with their care team via portal messaging. We also recommended that staff inform patients that the portal is their main method of communicating with patients to encourage patient utilization. We included this technique in our recommendations as it was suggested by the medical director of a JBLM primary care clinic known for high portal utilization rates (J. Sands, personal communication, July 7, 2022). We then displayed posters in waiting areas and patient exam rooms and provided the updated discharge sheets and patient resources for staff to distribute to patients.

The last phase of our project included data analysis and dissemination. We worked with the hospital biostatistician to evaluate portal messaging before and after our intervention and held information briefings for the clinic personnel and hospital leadership to share our findings.

Data Analysis Plan

The outcome measures in our intervention were portal messaging, conversation, and provider response times post-intervention (Appendix C). Although provider messaging response time was not part of our original outcome measures, we found the data was easily accessible and included in the messaging report within the hospital's EHR, MHS Genesis. Messaging information was gathered by the authors through the Patient Engagement report generated within the Discern Reporting Tool's MTF Information Portal. This report provides messaging rates down to the building level along with provider response time and represents all the available metrics regarding MHS Genesis Patient Portal use. Messaging categories included: patient-initiated messages, patient-initiated conversations, provider-initiated messages, provider-initiated conversations, and provider response times. Provider messaging

encompasses any message that originates from the clinic. The messages are not separated by specific titles (physician, PA, NP, RN, LPN). Conversations included any message with at least one response and the ensuing message thread. Messaging information was reported weekly from Sunday to Saturday; data collection began the first Sunday after the training sessions and ran for four weeks. We planned to use Mann-Whitney U tests to compare clinic messaging rates and provider response times post-intervention with messaging rates from the preceding four weeks, and the same eight weeks one year ago.

Potential Barriers

We identified several potential barriers while developing our plan. These barriers ranged from lack of leadership and provider buy-in, staff dissatisfaction over the possibility of increased workload, and patient disinterest in electronic portals. Those fears were generally unfounded; clinic leadership was supportive, and providers and staff were eager to learn ways to better utilize the patient portal. The needs assessment allowed us to tailor the training to address how the clinic is currently using the portal and specific questions or concerns they had. By holding information sessions during existing staff meetings, we decreased the time burden on leadership and staff members. We took advantage of this training time to discuss the potential for an increase in initial workload and explained that workload should improve as portal benefits are fully realized. We explained that portal messaging has the potential to decrease lower acuity or administrative appointments, expanding access to in-person appointments for high acuity visits, acute appointments, visits requiring face-to-face exams, and procedural appointments. A more difficult barrier to overcome was patient disinterest. One study among adolescent patients, ages 13-25, was successful in increasing EPP sign-up but was unable to increase usage rates (Ramsey et al., 2018). These patients reported a theoretical desire to use portals for appointment reminders, lab results, and general health promotion messages. We used this information to help develop our intervention training to target PP features to those areas.

Dissemination Plan

There were several dissemination options available to us at JBLM. First and foremost, we shared our findings directly with the clinic leadership and staff so they could see the results of their work. Madigan Research Day provided an opportunity to share our findings with hospital leadership and providers with a poster presentation. We presented a poster at the Uniformed Services University of the Health Sciences Research Days and gave a podium presentation at the Graduate School of Nursing Research Translation Colloquium. Research Days and the Research Translation Colloquium were open to university faculty, staff, and students. While we ultimately opted not to submit our project this year to a conference or journal for publication, we intend to submit an abstract to the 2024 Triservice Nursing Research Program (TSNRP) and Association of Military Surgeons of the United States (AMSUS) conferences. Both TSNRP and AMSUS serve as useful dissemination points for topics of particular interest to federal and military health care providers. There are also several military medical journals including *Military Medicine* published by AMSUS and the *Medical Journal* published by the US Army Medical Center of Excellence which we plan to explore in the coming months.

Health Insurance Portability & Accountability Act (HIPAA) Concerns

Patient medical records or portal messages were not accessed during this project. There was no personal identifiable information, protected health information, or sensitive information viewed or collected and this project presented no discernible risk to patient privacy.

Project Results

Analysis of Results

Of the five metrics measured, we achieved a statistically significant increase in provider-initiated messages ($p=0.029$) between our intervention and pre-intervention periods. There was an average of 183.25 messages sent/week pre-intervention and 312.25 messages/week post-intervention, a 70% increase. It is logical that the largest increase would occur in provider-initiated messaging because our intervention was explicitly geared towards educating providers

and staff rather than patients. As with anything involving people, it is difficult to attribute changes in behavior to just one factor. Staff excitement about our intervention likely was not the only factor working in our favor. Other causes of this increase in messaging could be due to the timing of the intervention in January, placing our pre-intervention period during the winter holidays. The clinic was closed five days during pre-intervention with four reduced staffing days compared with only 1 closure during the intervention period. However, when we compared the same two periods last year, there was only a 29% increase in average number of provider-initiated messages from 222 messages/week pre-intervention to 286 messages/week post-intervention ($p = 0.75$). Last year there were three closures and five reduced manning days during the pre-intervention control period and no changes in operating hours during the intervention-comparison period. Additionally, despite there being one more work day last year than this year, messages increased 8% ($p=0.69$) between the intervention period and last year's control period.

The increase in provider-initiated conversations approached statistical significance ($p=0.11$). Because it requires patients to reply to a provider message to be classified as a conversation, it stands to reason that conversation rates would not increase at the same pace as messages. Additionally, not every provider-initiated message warrants a patient reply and providers can elect to prevent patients from replying to a specific message. This forces a patient to initiate their own message and prevents those two messages from being categorized as a conversation thus decreasing the reported conversation rates. Interestingly, when we analyzed last year's conversation rates, we found there was actually a slight decrease (3.38%) in provider-initiated conversations.

While not originally part of our data analysis plan, average provider message response time was included in the Patient Engagement Report, and we chose to add it to our results analysis. Provider response times decreased 13.2 hours (28%, $p=0.34$) from 46.95 hours pre-intervention to 33.77 hours post-intervention. While this improvement was not statistically

significant, we believe it to be clinically significant. A 13-hour decrease in response time means patients receive a reply a full business day earlier which can have myriad effects such as reducing delays in patient treatment, decreasing patient anxiety, building patient-provider trust, and reinforcing positive messaging behaviors. This outcome could also be due in part to the discrepancy between clinic closures pre- and post-intervention as discussed above. Another possible cause is that as providers are sending more messages, they are more aware of their in-box and are more likely to notice new messages sooner. To account for this, we compared the 2022 provider response times and found that they increased by 10.5 hours (32%, $p=0.2$). As with this year, clinic operating hours were similarly mismatched between the two time periods last year.

Our intervention had minimal impact on patient-initiated messaging ($p=0.69$) or conversations ($p=0.31$). Patients did send about 10 more messages/week post-intervention compared with pre-intervention but conversation rates dropped 12%. However, given that our intervention was designed to target provider and staff behaviors, coupled with a short data collection period, it was unlikely that we would see any real change in patient messaging habits in only four weeks. With a longer data collection time we may have seen an increase in patient messaging.

Two of the studies we used in support of our project reported messaging rate outcomes while others only reported enrollment outcomes. Poussard et al. (2021) reported a 208% increase in patient-initiated messages and an 853% increase in provider-initiated messages over eight weeks, however, the total number of patient messages was not included and the increase in providers messages represents a mere 54 messages. Shimada et al. (2020) found they were able to increase messaging rates after 9 months by 17% and 6.7% in their intervention and control groups respectively and by 23.7% and 13.5% from baseline after 21 months. Krist et al. (2014) and Rhudy et al. (2019) aimed to increase portal enrollment and did not report messaging statistics. The former reported that 25.6% of patients created an account

with a 1% increase over 31 months and the latter had a 9.6% increase in enrollment after their first 4-week cycle and a 15.1% increase after the second 4-week cycle (Krist et al., 2014; Rhudy et al., 2019). It is difficult to draw direct conclusions between our work and the existing literature on messaging rates due to the differences in population size and study length. More comparison would be possible between our projects were ours to continue for a longer period of time.

Table 1

Messaging Rates and Average Provider Response Times

Characteristic	Intervention, N = 4 ^a	Pre-intervention, N = 4 ^a	Intervention control, N = 4 ^a	Pre-intervention control, N = 4 ^a
Patient-initiated messages	198.00 (24.79)	187.00 (67.17)	276.00 (44.21)	252.00 (107.07)
Patient-initiated conversations	120.75 (9.54)	138.25 (61.39)	51.00 (7.83)	44.50 (16.66)
Provider-initiated messages	312.25 (38.37)	183.25 (65.60)	286.75 (65.41)	222.00 (102.43)
Provider-initiated conversations	66.00 (15.12)	41.50 (13.89)	50.00 (15.75)	51.75 (29.66)
Provider response time average (hours)	33.77 (15.93)	46.95 (4.36)	43.29 (9.86)	32.70 (7.85)

^a Statistics presented: mean (SD)

Figure 1

Effect of Patient-initiated Messages, Intervention to Pre-intervention

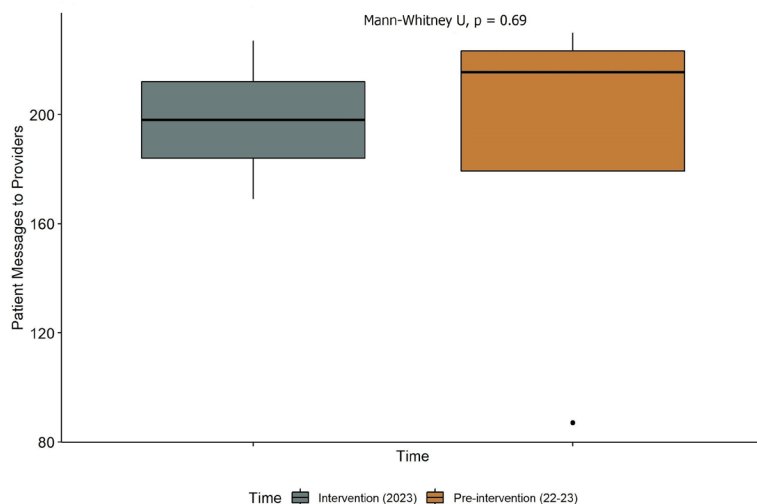
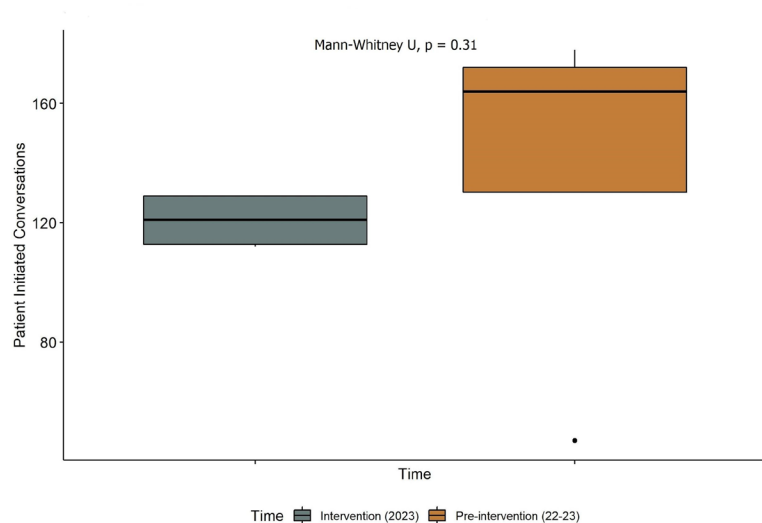


Figure 2

Effect of Patient-initiated Conversations, Intervention to Pre-intervention

**Figure 3**

Effect of Provider-initiated Messages, Intervention to Pre-intervention

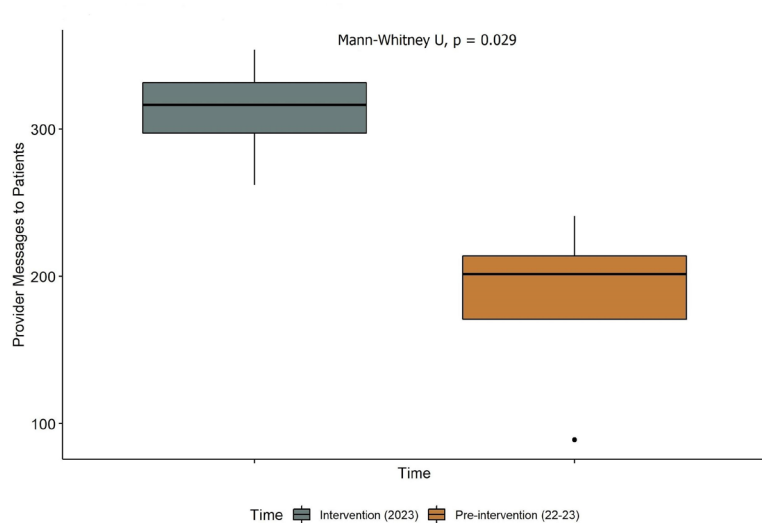
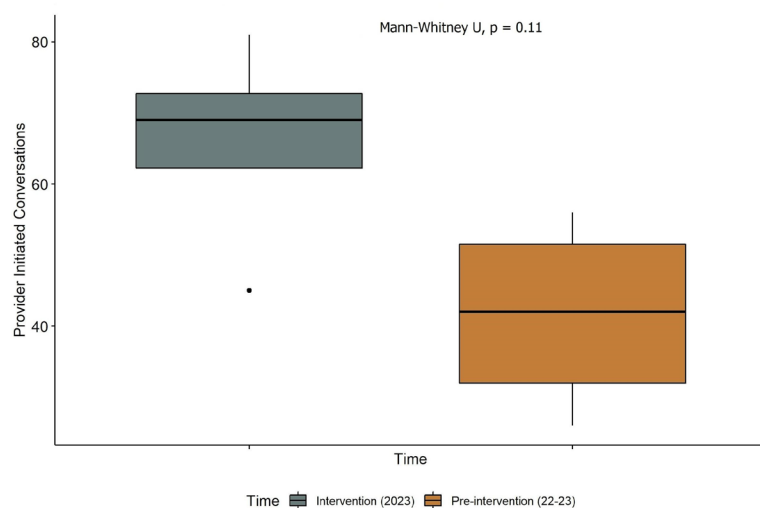
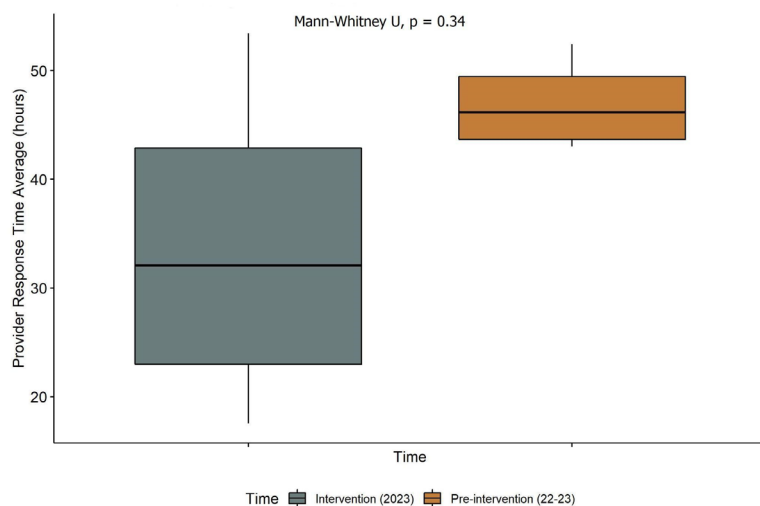


Figure 4

Effect of Provider-initiated Conversations, Intervention to Pre-intervention

**Figure 5**

Effect of Average Provider Response Time (hours), Intervention to Pre-intervention



Limitations

We faced several challenges, some of our own making, others beyond our control. We planned for a 4-week data collection timeframe which, in hindsight, was likely too short to capture

changes in patient messaging behaviors. If we were to implement this intervention again, we would expand the data collection time to at least eight weeks to allow for more points of information and more thorough analysis.

As discussed earlier, the intervention occurred after the holidays, meaning there were far more reduced manpower and closure days during the pre-intervention period compared to the intervention period, potentially affecting the outcomes. Last year's control periods were equally impacted by reduced holiday schedules.

The clinic switched from a patient-centered medical home to an SCMH in February 2022. Previously the clinic cared for Soldiers, children, dependents, and retirees, making it a more diverse population than the current SCMH. Along with the patient population change, the majority of providers are now military. These providers have more irregular schedules than the full-time staff as they attend unit activities with their Soldiers. Consequently, they spend fewer hours working in clinic, have more informal patient encounters outside of clinic, and may be slower to respond to patient messages which can only be accessed from within the EHR. The biggest barrier was in the area of data collection. Every MHS Genesis user has access to the Reporting Portal, making it easy for anyone with the know-how to run a report but it lacks sufficient capabilities regarding Patient Portal usage data. We found messaging volume is the only measure of patient engagement available. Even more significant, that information is only broken down to the level of the physical building. This means that the messaging information for every clinic located within the hospital is pooled together so individual clinics cannot differentiate their data. Users cannot review other helpful data such as messaging information for individual users, how many patients are actively using their EPP, what functions patients are using besides messaging, or how many patients are sending messages. This makes it difficult to perform performance improvement (PI) projects within the hospital or target interventions to specific areas. As it stands now, we are unable to determine the effect of increased messaging on in-person appointments. When sending messages in the previous military EPP, patients

were required to select a messaging category from a list of topics making it possible to categorize and quantify which topics patients are messaging providers about. The messaging subject line in MHS Genesis Patient Portal is a free-text box, making it difficult to categorize messages and determine if they are replacing lower acuity clinic visits.

Implications to Practice and Policy

Access to care is a priority in military medicine, however patients continue to have difficulties seeing a provider. A report by the Department of Defense Office of Inspector General (2018) examined access to care at seven military treatment facilities (MTF). This report notes that the standard for access to care is 24 hours for urgent appointments and 7 days for routine appointments: fewer than half of the MTFs met this standard. Patients at one facility waited an average of 8.2 days for urgent appointments and those at another waited 22.8 days for routine appointments (Department of Defense Office of Inspector General, 2018). We demonstrated that it is possible to increase portal messaging with a simple, low-cost intervention. Portal messaging allows care teams to address more patients' needs in less time, expanding access to care. After reviewing our results and considering the limitations we encountered, we have the following recommendations.

Dedicated Messaging Time

Time for messaging must be included in staff workload planning to sustain increasing message volume without contributing to burnout. In a study by Arndt, et al. (2017) providers spent 1.25 hours a day on secure messaging. Huang et al. (2022) reports after clinic hours, providers continue to spend up to 1.4 hours a day providing non-face-to-face care in the electronic health record, which includes, among other things, portal messaging.

Provider and Staff MHS Genesis Patient Portal Training

Our intervention, which consisted of provider and staff EPP training, led to a statistically significant increase in provider-initiated messaging. Staff response to our intervention was overwhelmingly positive, many staff members had not seen the portal firsthand and were

unfamiliar with the available portal functions or the benefits of portal use. This training gave providers and staff the knowledge to educate patients about portals, messaging, and the associated benefits. This aligns with the recommendations from Hörhammer et al. (2021) that providing staff with patient-facing portal training encourages EPP promotion.

Standardized Messaging Documenting and Coding Policy

Messaging is a billable service, however the rules governing coding and billing are confusing and not well understood. While talking with providers and administrators, we found that messaging is generally being added to the patient's chart but not captured for workload management and reimbursement so we were unable to determine how increased messaging affects providers and staff workloads. Having a portal messaging standard operating procedure will allow hospitals to accurately capture this information.

Expand MHS Genesis Reporting Portal Capabilities

As discussed, the paucity of Patient Portal information available through the Reporting Portal places severe limitations on research and PI efforts. Increasing MHS Genesis reporting capabilities will allow for further research and process improvements to take full advantage of the Patient Portal, provide better care, and expand access.

Future Directions for Research and Practice

This project provides a starting point as we look forward. Creating and implementing standardized patient portal training for new staff is a strong starting point. Training could be included into existing power chart training conducted at the hospital level during new employee orientation. Long term sustainment for this project can be accomplished through refresher training which can be as simple as quarterly reminders or handouts in staff meetings to keep the topic fresh in people's minds. When considering continued data collection it is important to keep in mind that the PCMH-SCMH transition occurred in Feb 2022, any comparison in messaging rates after Feb 2023 will be in the same population and will generate more reliable data.

It may be beneficial to study if increased messaging reduces appointment wait times or if messaging takes the place of low acuity appointments, freeing up in-person appointments for higher acuity encounters. Quantifying the amount of time military providers spend on messaging, along with a cost benefit analysis would help determine how to best allocate dedicated time for messaging.

Currently there are clinics in the Puget Sound Marketplace who have altered their templates to adjust for increased messaging. This was not an official policy; the changes were based on the clinic's leadership who identified a need.

Finally, investigating how other healthcare systems are allocating time, coding, and billing for messaging would provide a template for creating a system that is compliant with DHA requirements while aligning the DHA with industry standards regarding patient portals, messaging reimbursement, and scheduling.

Conclusion

Literature shows that electronic patient portals improve medication adherence, patient /provider communication, quality of care, and patient outcomes while reducing high-cost healthcare utilization. Patients who use EPPs are more engaged in their healthcare with fewer clinic visits and lower "No show" rates. Our purpose was to increase portal use measured through portal messaging. As Soldiers are among the users that are the least likely to use portals, interventions focused on increasing Soldier messaging are increasingly important as MHS Genesis is implemented across the Department of Defense.

Using a simple, low-cost, evidence based intervention, there was a statistically significant increase between provider initiated messages and an increase in provider initiated conversations that approached statistical significance. We did not see an increase in patient initiated messages or conversations but theorize that, given time, patient messaging would increase in response to provider portal use. To capitalize on the increased provider messaging we recommended MHS Genesis Patient Portal familiarization during provider and staff on-

boarding, MHS Genesis Reporting Portal updates to provide more granular data to facilitate research and practice improvement efforts, standardizing policy for documenting and coding messaging to capture workload and generate reimbursement, and dedicating time for messaging as part of staff schedules. These recommendations can improve portal functionality, generate reimbursement, and avoid staff burnout.

Moving forward, further time and study should be given to sustaining the current intervention and results, analyzing messaging workload, a cost benefits analysis of including dedicated time for messaging, any improvement with patient wait time for appointments, and investigating how other healthcare systems how other healthcare systems are allocating time, coding, and billing for messaging.

Improving patient portal utilization by providers and patients provides opportunities to strengthen the patient-provider relationship, provide an avenue to quickly address simple patient concerns while decreasing healthcare costs, increasing access to care, and improving patient outcomes within the Defense Health Agency.

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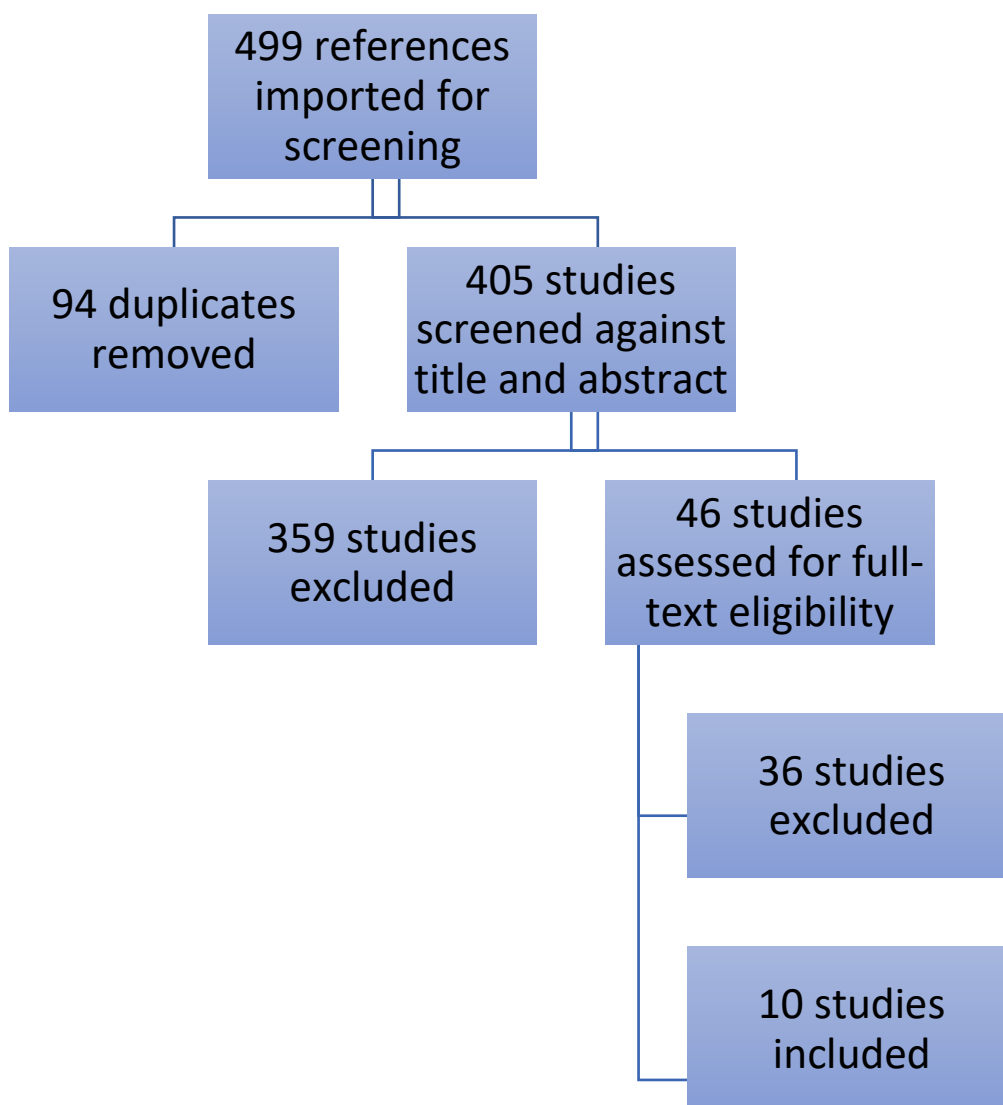
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Appendix A

Literature Inclusion/Exclusion Results



Appendix B

Evidence Table

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
Crotty, B., 2019	Correlational design using secondary data	N= 1897 HINTS respondents who were internet users, had an outpatient visit within past 12 months, and had complete data	EMR use encouragement by clinicians or staff Any patient EMR use Specific EMR use: messaging, accessing test results, prescription refills	Whether or not a person had accessed their EMR within the last year	Logistic regression with jackknife replication weights Controlled for: having a regular clinician, internet use, health insurance status, self-reported number of chronic conditions, demographics (age, gender, race, education)	Almost 40% of patients accessed EMR Clinician encouragement → higher access rates (15% vs 64.8%, p <0.01) and more likely to use all aspects of portal Odds of accessing EMR with clinician encouragement: OR= 10.44, 95% CI= 7.26, 15.00; p <0.01 Odds of accessing EMR if have a regular clinician: OR 2.32, 95% CI= 1.48, 3.65; p <0.01 Those more likely to get encouragement: better education, higher income, more chronic conditions, female Race, internet access, sex,	III/B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
						household income not significantly AW EMR use Messaging, refilling prescriptions, reviewing test results all AW clinician encouragement	
Hefner, J. L., 2022	Qualitative study using semi-focused focus groups of patients with a guide and structured interviews with physicians Purpose: Patient and physician experiences in training and use of the PP	N= 21 PCPs N=17 patients Large Midwestern academic medical center	Patients and PCP experiences and suggestion for portal use and training	PCP questions: Use of MyChart and the messaging feature with patients Concerns about using messaging with patients Ideas for potential training for patients and physicians Patient questions: How they learned about the portal If/how they were initially trained in its use How they decided when to send a message	Qualitative data analysis software program ATLAS.ti (Version 6.0)	Multimodal training would be most beneficial (in-office video training and electronic tutorial in the PP) Training should be available at sign-up and the same content should be accessible again when using the portal Specific content for education focused on navigation of the portal, expectations for use of SM, and additional instruction related to SM	VI/B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
				Ways they would have liked to be trained or felt other new or reluctant users could be trained			
Hörhammer, I., 2021	Questionnaire using 5-point Likert scale Purpose: Explore influence of managerial implementation practices, IT usability, and personnel's eHealth competences on support for PP implementation and eHealth-related stress among PCPs	N=919 responses Employees at two Finnish regional hospitals	Staff demographics Staff PP support Self-perceived competences Implementation practices Useability and stress with portal use	Demographics Support for the PP implemented Self-perceived eHealth competencies HIT implementation practices in the respondent's unit Usability and stress related to IT and the patient portal	Survey: Cronbach α score Results: Logistic regression Linear regression	HCP's perception of good implementation practices AW their high support for the PP Positive association between good usability and portal support Positive association between HCP's eHealth competence and their support for the PP Positive association between HCP's support and their PP endorsement to patients Good usability and high self-rated eHealth competence alleviates eHealth-related stress	VI/B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
Krist, A. H., 2014	Prospective mixed methods design Purpose: evaluate the feasibility of whether small to medium-sized primary care practices could engage patients to use the IPHR	N= 112,893 Clinic patients (18-75y/o) who had an office visit at 8 ambulatory care practices in a Virginia health network during the study period	Patients accounts created Learning collaboration Clinician perceptions about IPHR & beliefs about change	Did patients create an account Qualitative data on how practices implemented the IPHR were recorded, transcribed, and coded Clinician perceptions about IPHR & beliefs about change	Quantitative data: Simple linear regression to estimate monthly change in IPHR use Univariate logistic regression model to compare IPHR use between clinics Independent 2-sample t test to compare continuous patient characteristics between users and non-users Univariate logistic regression model to compare categorical patient characteristics between users and non-users Bivariate analysis to compare whether practices or clinicians had a greater impact on IPHR use p-values obtained using COVTEST option of the GILMMIX	25.6% of patients created an account (28,910/112,893) ~1% increase in sign-up per month 32.5% of patients who visited the clinic during the last month already had an account Older patients & those with chronic medical conditions more likely to create an IPHR Black & Hispanic patients less likely to use the IPHR Provider-related findings: IPHR use less likely when clinicians were >55 or <35 or male IPHR use strongly AW clinicians who thought of themselves as early adopters & were comfortable with IPHR training or use	II/A-B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
					procedure, SAS 9.3 6 Multivariate analysis to determine if any available clinician or patient covariates may have affected IPHR use Qualitative Data: Direct coding using an open-template approach to capture practice-identified IPHR implementation facilitators, barriers, and workflow impacts identified in learning collaborative transcripts		
McCleary, N. J., 2018	PI with survey and focus groups (staff & patients) Purpose: Understand the willingness of patients with cancer to use a PP Identify barriers to PP use	Patient survey: N= 1,178 (eligible) N=1,019 (responses) Focus groups: N= 20 staff N= 5 patient & family advisory council members	Staff education aimed to increase staff and faculty awareness and introduction of the PP to patients Staff-assisted enrollment support	Number of PP enrollments Patient demographic information (new/existing clinic patient, type of cancer, age, computer access)	Descriptive statistics to analyze patient characteristics among survey responders Chi-squared test to compare PP enrollment status (not enrolled in PP, enrolled but not using, and enrolled and using)	Communication preferences: Mail least preferred Phone or face-to-face preferred more than computer Most frequent PP usage to review appointment times, lab results, and radiology results	V/A

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
	Improve PP accessibility		Provide patients information on how to enroll on their own and understand functionalities after appointment Informational PP index cards distributed and advertised on TVs throughout clinics		P chart used to measure improvement in PP enrollment QI Macros software used for all analyses	Barriers to use: Not aware of features, lack of computer access or knowing how to use it, difficulty enrolling, uncomfortable sharing information online, lack of internet access Barriers to enrollment: Challenges with enrollment, lack of instructions on how to use the PP, limited emphasis on benefits of PP use Enrollment increased to 51% from 47% Staff found review of PP enrollment workflow useful Patients found all interventions helpful	
Poussard, K., 2021	Pre and post intervention studies Provider promotion, portal marketing,	N=233 Convenience sampling	Number of patients registered on the portal	PHE-5 score post intervention	Anderson-Darling, Shapiro-Francia, Shapiro-Wilk normality tests for dependent variables	Program increased patient engagement, number of active portal users, logins, secure messages,	III/B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
	and hands-on illustration followed by patient PHE-5 and patient portal feedback surveys	Population: outpatient primary care clinic in Southeastern Louisiana, low SES, 18-65 years old, internet access, read & write in English, active e-mail address, agreed to activate portal, no previous portal activity	Level of patient engagement No-show rates Portal analytics and Meaningful Use metrics		Descriptive statistics: SD & IQR (quantitative data), frequencies & relative frequencies (qualitative data) Paired t-test (identify a priori increases in posttest scores)	and lab views during 8-week timeframe	
Ramsey, A., 2018	Pilot study, experimental design Purpose: Provide hands-on assistance with PP sign-up and PP usage in an adolescent medicine clinic followed by online survey of preferred communication methods & message types to increase PP usage	N= 84 Adolescent patients (13-25 y/o) in an urban, academic, primary care clinic	Personal assistance signing up for PP and usage demonstration Patient communication preference Number of PP sign-ins Types of messages patients would prefer	Online survey for communication preferences MyChart activity logs & EMR data reports for number of PP activations and PP sign-ins	Descriptive analysis for technology use/access and communication preferences Bivariate logistic regression for gender- and age-based differences in messaging preference	PP sign-up increased by 11% PP usage rates did not increase Preferred message types: appointment reminders, lab results, general health messages	VI/B
Rhudy, C., 2019	Mixed method RCT with explanatory sequential quantitative data	N=16 16 of 65 Internal medicine	Introducing a standard patient portal sign-up process at the	Baseline audit of PP enrollment	Chi-square test between baseline patient portal enrollment data and	Iteration 1: Increase in PP enrollment by 9.6% above baseline	II/A-B

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
	Purpose: increase PP enrolment among patients assigned to resident providers in an Internal Medicine clinic by 10% Assess nurse-perceived workload post-intervention	Residents and "rooming" nurses in a large health system in Kansas City, KS.	end of the patient rooming process PP enrolment numbers Perceived nursing workload and nursing telephone call volume	Baseline nurse survey for facilitators and barriers to implementation Electronic reports detailing number of patients who signed up for PP during appointments Mid-intervention nurse interviews	post intervention patient portal enrollment data three months later.	Iteration two: increase by 15.1% above baseline Nurse interviews: Positive resident responsiveness in form of increased portal messages and less telephone encounters Increase in perceived patient understanding through fewer patient result-related questions Perceived decrease in time spent making and answering patient phone calls regarding patient results and clarifying questions	
Shimada, S. L., 2020	Randomized encouragement design trial Purpose: Increase patient engagement with SM through a PP	N= 1195 (595 SAP, 600 control) Patients at 3 VHA facilities who had PP accounts but had never used them	SM rates among SAP group and control group Patient-perceived provider autonomy support	SM rates of intervention group after receiving mailed educational materials, SM sent to patients, and telephone-based motivational interviews at 9 & 21 months	Descriptive statistics and chi-squared tests to compare control and SAP patient characteristics Chi-square tests to compare adoption	Intervention group had significantly higher SM adoption rates (17% vs 6.7%) Most SAP adopters sent first message without motivational interview (70.3%)	II/A

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
	Evaluate impact of SAP and SM adoption on perceived provider autonomy support and communication Assess patient-reported barriers to SM adoption		Patient-report of telephone communication with clinical teams Barriers to SM adoption	SM rates of control group at 9 & 21 months HCCQ survey via phone interview for patient perceptions	rates at 9 & 21 months Wilcoxon ranked sum test for differences in number of messages sent in each group Chi-square tests to determine if SM content differed between groups Chi-square tests to estimate association of each identified barrier to adoption on later adoption rates Chi-square test to compare characteristics of SM adopters to nonadopters regardless of which treatment group they were assigned Intention-to-treat analysis to estimate effect of SM adoption on patient-reported outcomes in SAP and control groups	Difference in adoption rates persisted for a year after encouragement ended SAP participants reported higher perceived provider autonomy support & less telephone use than control group Patient-reported barriers to SM adoption were self-efficacy, no perceived need for SM, difficulties with portal password or login SAP adoption rates were lower than anticipated (24% at 21 months)	

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
					Per-protocol analysis to compare all patients who sent SMS using multivariable regression analysis to control for patient characteristics, linear regression (continuous outcomes) & logit regression (binary outcomes)		
Wolcott, V., 2017	Correlational design using secondary data	N= 727,951 SMS 81,645 US Army Soldiers 2,983 US Army medical providers and staff Information from 4 years at 8 medical centers, 27 community hospitals, 180 primary care clinics	Provider-initiated and provider-response messaging Subsequent patient messaging	Number of messages, if any, initiated by patient Relationship between provider messaging and subsequent patient messaging	Negative binomial regression model Patient-level fixed effects included to control for patient-level heterogeneity	7% of patients initiated a SM each month PCPs: Initiated 0.007 (SD 0.06) messages/ patient/ month Responded to 0.09 (SD 0.19) messages/ patient/ month Patients receiving care from high response- and high initiation-messaging providers more likely to initiate SMS High initiating: 60% more likely to	III/A

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
						send a SM vs Noninitiation-messaging providers High response: 334% more messages vs Nonresponse providers Medium response providers:167% more messages vs Nonresponse providers Low response providers: 254% more messages vs Nonresponse providers Each additional primary care visit/month ? 14% more patients sent messages Specialty or ER visits not AW # messages sent New diagnosis in past 3 months AW statistically significant increase in messages: MSK 14%	

Citation	Design/ Method	Sample/ Setting	Major Variables Studied	Outcomes Measurement	Data Analysis	Findings	Evidence Quality
						Dyslipidemia 13% Mental health, hypertension, sleep apnea not AW messaging	

AW: Associated with **EMR:** Electronic Medical Record; **HCCQ:** Health Care Climate Questionnaire; **HCP:** Health Care Provider; **HINTS:** Health Information National Trends Survey; **HIT:** Health Information Technology; **IPHR:** Interactive Preventive Health Record; **IT:** Information Technology; **PCP:** Primary Care Physicians/Providers; **PHE-5:** Patient Health Engagement scale; **PI:** Process Improvement; **PP:** Patient Portal; **QI:** Quality Improvement; **RCT:** Randomized Control Trial; **SAP:** Supported Adoption Program; **SM:** Secure Messaging; **VHA:** Veterans Health Administration

Appendix C

Data Analysis Table

	Variable Name	Variable Description and type of measure	Data Source	Possible Range of Values	Level of Measurement	Time Frame for Collection	Statistical Test	Decision Rule
Event	IV	Staff involvement and audio/visual tools to assist patients with portal sign up and use.	Clinic training log	0= prior to training 1= After training	Nominal	One month and the same month 1 year prior to staff education and audio/visual resource implementation through one month after training complete and audio/visual deployment	None	N/A
	DV	Patient portal utilization. Outcome measure: Number of secure messages sent post-intervention. Quantifying portal use.	MTF Information Portal Patient Engagement report	0 - unlimited	Ratio	One month and the same month 1 year prior to staff education and audio/visual resource implementation through one month after training complete and audio/visual deployment	Mann-Whitney U test	Increase the number of portal enrollments and messaging by 10% or facility determined target rate.

Appendix D

Business Case Analysis

BUSINESS CASE with VALUE BASED CARE ASSESSMENT

Proposed Title for Project/Initiative/Opportunity to Improve

Provider & Staff Interventions to Increase Portal Utilization Reviewed in meetings

Opportunity Statement *(Description of proposed project/initiative/opportunity to improve)*

Increased utilization of electronic patient portals (EPP) by patients and clinic staff will increase access to care by reducing the number of in-person appointments for encounters that could be managed virtually. Active patient portal use has also been shown to increase patient engagement in healthcare and improves outcomes in certain chronic conditions.

Business Opportunity/Objectives *(Prioritize listing – macro and micro objectives)*

The goal is to increase patient portal utilization through enrollment with their primary care provider or primary care team

Macro: Increase portal enrollment by 25% or facility-determined target enrollment rate in the clinic of interest.

Micro: determine current patient portal enrollment levels, determine current level of staff portal knowledge/engagement, train clinic staff in sign-up procedures and portal functions, develop patient & staff-friendly enrollment plan.

Potential Impact of the Initiative/Project *(Identify outcome metrics & benchmarks/and how objectives align with Quadruple Aim, Value Based Care, and HRO goals)*

Increase access to care, increase clinic profitability by making in-person appointments higher RVUs & moving lower RVU appointments to electronic encounters, decrease ER visits due to clinic availability, increase patient involvement in healthcare.

Improve provider & staff efficiency with portal platform, increase provider, staff, & patient satisfaction with portal.

Alternatives (courses of action) chosen for Analysis

1. Put posters up around the clinic & hand out fliers with information on signing up for portal, appropriate use of portal, information available on portal
2. portal reminders by appointment line staff & hold music & clinic hold music, clinic staff discusses enrollment and provides handouts at every touchpoint throughout visit, provide opportunity to walk patient through enrollment/portal tour at completion of visit
3. "Status Quo": no changes in advertising

Analysis of Alternatives

Alternative 1:

Put posters up around the clinic & hand out fliers with information on signing up for portal, appropriate use of the portal, information available on portal, etc.

Pros

Minimal financial cost to develop and print posters/fliers. Minimal time burden to educate staff about the information on the posters. No changes to workflow management. Easily sustainable. Posters & fliers are an effective tool to provide and

Cons

Passive form of education. Posters easily missed or ignored by patients. No follow-up to assist patients in sign-up or navigation of the portal.

sustain health education to a large population over time (Barik et al., 2019; Hasanica et al., 2020).	
Alternative 2:	Provider & clinic staff training on how to enroll patients in the portal, portal “dos and don’ts” to ensure appropriate patient use, and benefits to patients and providers. Provide patients with portal reminders by appointment line staff & hold music & clinic hold music, display/provide handouts, clinic staff discusses enrollment at every touchpoint throughout visit, provide opportunity to walk patient through enrollment/portal tour during or at completion of visit if patient desires
Pros	Cons
Active patient education. Multiple points & modes of education. Hands on assistance with sign up, answer questions, and explain how to use the portal appropriately. Convenient for patients to sign up. Easier to evaluate effectiveness of intervention. Multi-modal approach including provider portal promotion more effective in increasing patient enrollment than posters or mailers alone (Krist et al., 2014; Rhudy et al., 2019).	Potential to slow down patient workflow in the clinic. Requires workspace and open access computer with internet access in exam rooms. Increased time burden on providers and support staff for training and implementation. Requires multiple departments for implementation (Appointment line, IT, coding/billing, group practice manager). Requires more resources to sustain.
Status Quo	No changes to current portal advertising, staff training, or clinic workflow
Pros	Cons
No changes in staffing, increased costs, additional training, or changes in workflow. Easily sustainable.	Patients and providers continue to use the portal as they see fit. There is no improvement in the type of appointments made virtually vs face to face. There is no standardized way in the clinic to inform staff and patients on the portal sign-up and use.
Assumptions	
Patient portal enrollment is less than DHA or MTF benchmark (if pre-set). Patients desire to engage in healthcare electronically, see a benefit in portal use, and will appropriately use the portal in lieu of telephone or in-person encounters. Providers desire to engage with patients electronically, see a benefit in portal use, and will encourage appropriate portal usage. Appropriate portal use will decrease in-person lower RVU-generating appointments thereby increasing availability for higher acuity in-person appointments. Exam rooms have dedicated computers with internet access to allow patients to access portal sign-up during office visit	
Recommendation and Rationale	
Recommendation	
Portal reminders by appointment line staff & hold music & clinic hold music, display/provide handouts, clinic staff discusses benefits of portal use and enrollment at every touchpoint throughout visit, provide opportunity to walk patients through enrollment/portal tour during office visit.	

Rationale

Active staff engagement with hands-on support was found to be effective in enrolling patients in an EHR portal in civilian practices (Krist et al., 2014; Rhudy, 2019). Portal usage decreases provider & nursing workload associated with telephone calls (Rhudy et al., 2019). Although this choice includes increased time and resources, we believe it will be the most successful intervention to increase portal enrollment and will have long term sustainability once interventions are included in workflow and staff on-boarding.

Value Based Care - Investment Required by the Organization and the Associated "VALUE" or \$ GAINED.

1. Quality project based on:

Patient Safety Benefit	- In-person appointment spots freed up → more provider availability when needed → potential for decrease in delay of care - Patient review of medical records for accuracy
Financial Benefit	- Increased appointment availability for RVU-generating encounters (i.e. procedures) - Decreased specialist referrals for encounters (i.e. procedures) that could be managed in primary care but were referred due to lack of appointment availability - Allows for comparison of costs/revenue by encounter type for further decision making
Operational Readiness Benefit	Increased access to care → easier for SMs to keep up with readiness → decreased MEDPROS delinquencies & missed work time
Communication Benefit	- Easier communication between patient & provider - Increased provider accessibility
Total	Overall increased access to care for acute appointments which generate more revenue (RVUs) for the clinic

2. Service projected based on:

Social Impact Benefit	Increased access to PCM → better health status & increased quality of life
Patient Satisfaction Benefit	- Same as above - Better patient/provider relationship - Time saved on in-person encounters
Provider Satisfaction Benefit	- Decrease in in-person encounters for concerns that can be addressed virtually (medication refills, follow-ups) - More time for patients that "need" to see their provider

Total	Access to care & improved patient/provider relationships lead to better care and better patient health
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3. Cost projected based on:

Request for information (RFI) on clinic staffing numbers and approximate GS level or Rank submitted to Phase 2 Director (P2D) for cost analysis.

Program Design and Development	Work time (salary) for MAJs Berends & Fillmore; approximately 100 hours each @ \$50/hr = \$10,000
Project Management	- Collaborative work time with MAJs Berends & Fillmore, PD2, clinic Group Practice Manager, and clinic OIC/CNOIC *cost pending return of RFI
Marketing & Supplies	- Printed Materials - Computer/tablet (preferably use one already in clinic to save money)
Staff Costs	- Training time for staff (preferably utilize pre-existing clinic training time to save money) - Patient interaction time to discuss portal and sign patients up (cost dependent on amount of time interaction takes & which staff member is doing it)
Revenue Loss	- Potential for decrease in throughput initially during project initiation. - Potential for initial decrease in RVU because virtual messaging appointments generate fewer RVUs than similar in-person encounter; 5.2 messaging encounters are required to generate the same RVUs as 1 in-person encounter or 6.4 messages to generate the same income. Example: medication renewal request - In-person, 20 minutes, CPT 99213 generates 1.3 working RVUs = \$92.18 - Portal message, 10 minutes, CPT 99421 generates 0.25 working RVUs = \$14.19 (Centers for Medicare & Medicaid Services, 2021). - Uptick in RVUs generated from portal encounters combined with higher acuity in-person appointments should offset this difference.

Total	- Minimal financial burden to the clinic, mostly project members who are not paid for by the clinic. - Start-up costs are dependent on the make-up of clinic staff & preexisting clinic training time. We do not anticipate a high cost to the clinic or MTF. Anticipating initial loss in revenue during the implementation period should lessen the impact.
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Risks and Mitigation Plan

Risks	Plan
1. Provider buy-in	1. Demonstrate benefits to providers & patients; develop implementation plan that doesn't increase workload or decrease productivity
2. Staff non-compliance with plan	2. Develop implementation plan that doesn't increase workload
3. Patient disinterest in electronic portal	3. Design implementation plan that uses providers and staff to highlight portal functionality and benefits to patients
4. Lack of leadership support (hospital & clinic)	4. Plan training around established training time, use existing infrastructure, highlight potential impact on productivity & HEDIS measures
5. Increased clinic workload without change in workflow	5. Quantify amount of added time per patient encounter due to portal discussion/sign-up. Delineate responsibilities and provide staff with scripts to streamline discussion.

Implementation Plan

Phase 1:	Gather evidence & assess current operational environment		
Milestone Description:	1. Search for and review existing literature on increasing electronic patient portal enrollment in the primary care setting 2. Determine Hospital Leadership interest/level of support for proposed topic, determine clinic of interest, quantify current portal usage 3. Gather information on staff & provider attitudes/ knowledge/ interest/ level of comfort with electronic communication & portal		
Deliverables	Due Date	Accountable Person	
1. Literature review of academic publications focused on electronic patient portals &/ telehealth	1. May 2021	1. MAJ Berends & MAJ Fillmore	

2. Review proposed plan with P2D & faculty, send RFI to P2D for MAMC-specific items, generate leadership interest in project, find POC in MAMC IT & GPM	2. October 2021	2. MAJ Berends, MAJ Fillmore, & MAJ Fiandt
3. Review current portal enrollment levels, Monthly patient sign up rate	3. December 2021	3. MAJ Fiandt, MAJ Berends & MAJ Fillmore
4. Staff survey on current knowledge, attitudes, and familiarity of portal	4. July 2022	4. MAJ Berends & MAJ Fillmore
5. Review current portal utilization rates by provider & encounter type to assess for potential barriers or identification of provider portal champion/advocate	5. July 2022	5. MAJ Berends, MAJ Fillmore, & MAMC IT POC

Resources Needed

1. Access to literature databases, time to search, review, & synthesize data, & formulate plan
2. Time to meet with P2D & faculty, access to communication with MAMC leadership via P2D
3. MAMC IT and GPM POC

Expected Level of Benefit

Critical baseline step in EBP process. Without supporting evidence, leadership support, and baseline data, the planning and implementation will not be successful, and the team will be unable to evaluate outcomes.

Phase 2:

Design Intervention

Milestone Description:

Observe clinic workflow, create plan of action, staff training, patient resources, establish outcome measurements, develop rapport with staff & providers

Deliverables	Due Dates	Accountable Person
Observe current clinic workflow particularly around portal use, delineate staff roles, develop staff training program, create role-specific script, develop patient resources	Summer 2022	MAJ Berends & MAJ Fillmore

Resources Needed

Access to clinic site, time to observe clinic workflow, time to develop rapport with staff & providers, access to the portal (patient & provider roles)

Expected Level of Benefit

Time to observe current clinic operations allows for better understanding of needs & allows EBP team opportunity to tailor implementation to the environment. Establishing rapport generates buy-in from staff & providers and it is critical to overcoming implementation barriers.

Phase 3:	Training		
Milestone Description:	Clinic training how the intervention will be implemented, staff responsibilities, workflow, patient resources		
Deliverables	Due Dates	Accountable Person	
Training time length, SOP for implementation, patient resource printouts, printed SOP, staff printouts with roles/responsibilities	Fall 2022	MAJ Berends & MAJ Fillmore	
Resources Needed			
Training time, computer & printer access, and printing paper			
Expected Level of Benefit			
Standardized training with handouts and SOP will help ensure that intervention is implemented in a standardized manner across all providers and staff to enable proper evaluation of intervention.			
Phase 4:	Implementation		
Milestone Description:	During implementation phase staff at all levels will educate, encourage, and assist patients in enrolling into the portal		
Deliverables	Due Dates	Accountable Person	
In room staff reminders or patient prompts, printed SOP, patient handouts, and staff handouts	Fall 2022, right after completion of training	MAJ Berends & MAJ Fillmore	
Resources Needed			
Computers with internet access in clinic or each exam room, staff participation, printer access and paper			
Expected Level of Benefit			
Increased portal enrollment both in the clinic, during the implementation phase and within 2 weeks after implementation.			
Phase 5:	Evaluation		
Milestone Description:	Compare baseline data from both previous month or the same month from 1 year ago to enrollment rate during the intervention implementation to evaluate for any changes in enrollment rates		
Deliverables	Due Dates	Accountable Person	
Enrollment rates during the intervention and two weeks after.	Winter 2002	MAJ Berends & MAJ Fillmore	

Resources Needed

IMD/GPM support in comparing data sets & calculating RVU changes

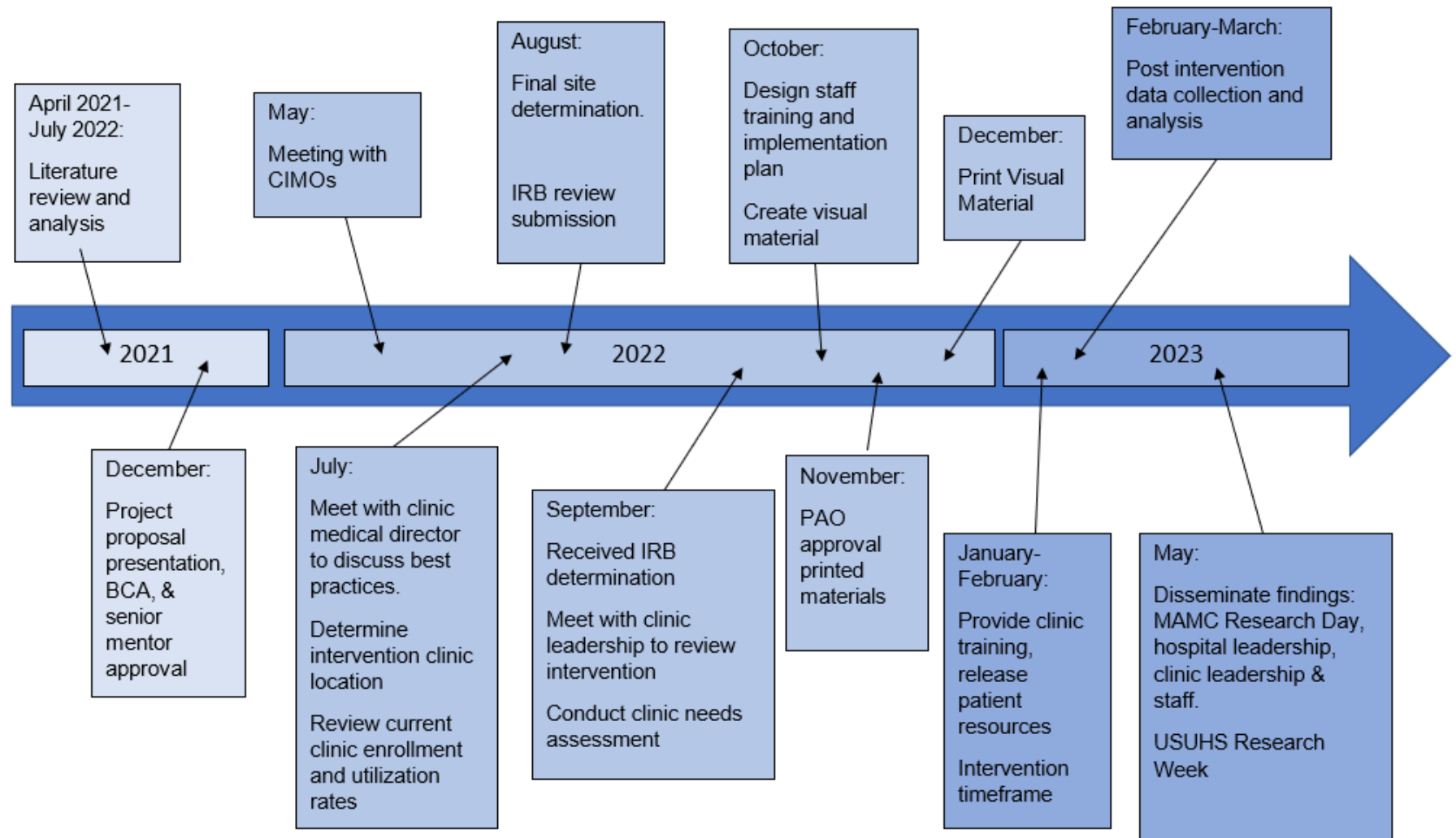
Expected Level of Benefit

We expect to see an increase in patients enrolling in the portal as staff encourage, support and assist with enrollment.

NOTE: Modified from Harvard Business Review Press. (2011). *Pocket mentor: Developing a business case*. Boston: Author (pp 82-85).

Appendix E

Project Timeline



Appendix F

Patient Portal Staff Information Session

1. What is your role in the clinic? MD ☐ PA ☐ NP ☐ RN ☐ LPN ☐
Medic ☐ MSA ☐ Other: _____
2. In what team/part of the clinic do you work? _____
3. On average, how many patient portal messages do you interact with each day?
1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐
>20 ☐ I don't see messages ☐ I see messages less than daily ☐
4. How much time do you spend engaged in patient messaging each day?
0-15 minutes ☐ 16-30 minutes ☐ 31-60 minutes ☐
61-90 minutes ☐ >90 minutes ☐
5. Does your clinic or team have a patient messaging SOP? Yes/No/Unsure
6. Do you like the concept of patient messaging? Yes/No
7. Do you encourage your patients to use the patient portal? Yes/No
8. Do you regularly initiate messages to patients via the patient portal? Yes/No
9. Is messaging a productive use of your time? Yes/No
10. Is messaging an efficient way to communicate with patients? Yes/No
11. Are you familiar with the patient version of the portal? Yes/No
12. Does addressing patient concerns via portal messaging reduce face-to-face visits? Yes/No
13. Does addressing patient concerns via portal messaging increase access to face-to-face visits?
Yes/No
14. Do you feel that patients are using messaging appropriately? Yes/No
If no, please provide an example of inappropriate messaging (please no PII/PHI)

15. What is the greatest strength of the portal? _____

16. What is the greatest weakness of the portal? _____

17. What do you see as a potential barrier to (increased) patient portal use? _____

18. Is there anything else you would like to share about the patient portal or messaging?

Appendix C: Daniel K. Inouye Graduate School of Nursing
DNP Project Team Mentor (Committee Membership) Agreement Form

Graduation Year: 2023

Name(s) of DNP Project Student Team: Berends & Fillmore

	Student name	Site location	Specialty
1.	Berends, Elizabeth	MAMC	FNP/WHNP
2.	Fillmore, Seth	MAMC	FNP
3.			
4.			

The tentative title of the DNP Project Proposal for this student group is:

Provider and Staff Focused Interventions to Optimize Patient Portal Utilization in Adult Primary Care

Committee Approved DNP Project Clinical Question:

Among primary care providers and staff, how does provider and staff EPP utilization training compared with current practice affect patient portal enrollment and utilization?

Names of DNP Project Team Mentors:

I agree to serve as a member of the DNP Project Team (Team Mentors) for the above DNP Student Project Team. As a Project Team Mentor, I agree to the duties and responsibilities outlined within the DNP Project Manual which include but are not limited to the provision of consultation and guidance supporting the entire DNP project journey and to ensure the DNP project is of sufficient rigor and demonstrates doctoral-level scholarship to meet the requirements for USUHS GSN graduation.

NOTE: You may have 3-4 DNP Team Mentors [committee members including your DNP Senior Mentor (Chair)]. The Phase II Site Director may also be a member of the group, as well as other USUHS faculty or others who may serve as content experts. All non-USUHS faculty selected as a Team Mentor must be approved by the DNP Project Director.

	Signature:		Date:
Senior Mentor (Chair):	<u>BEATTY.JONATHAN.R.140256</u> <u>4152</u> Digitally signed by BEATTY.JONATHAN.R.140256#152 Date: 2022.09.12 12:05:17 -04'00'		<u>09/12/2022</u>
Team Mentor (Committee):	<u>FIANDT.JENNIFER.COREY.11</u> <u>62428906</u> Digitally signed by FIANDT.JENNIFER.COREY.1162428906 Date: 2022.09.16 09:51:50 -07'00'		<u>09/16/2022</u>
Team Mentor (Committee):	_____		_____
Team Mentor (Committee):	_____		_____

Appendix H (CITI)

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2 COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

• **Name:** Seth Fillmore (ID: 10045325)
 • **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
 • **Institution Email:** seth.fillmore@usuhs.edu
 • **Institution Unit:** GSN
 • **Phone:** [REDACTED]

• **Curriculum Group:** OUSD P&R Human Research
 • **Course Learner Group:** Social and Behavioral Investigators and Research Study Team
 • **Stage:** Stage 1 - Basic Course

• **Record ID:** 41980345
 • **Completion Date:** 14-Apr-2021
 • **Expiration Date:** 13-Apr-2024
 • **Minimum Passing:** 80
 • **Reported Score*:** 93

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	08-Apr-2021	No Quiz
Belmont Report and Its Principles (ID: 1127)	08-Apr-2021	3/3 (100%)
History and Ethical Principles - SBE (ID: 490)	14-Apr-2021	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	12-Apr-2021	4/5 (80%)
The Federal Regulations - SBE (ID: 502)	12-Apr-2021	5/5 (100%)
Assessing Risk - SBE (ID: 503)	12-Apr-2021	5/5 (100%)
Informed Consent - SBE (ID: 504)	14-Apr-2021	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	12-Apr-2021	5/5 (100%)
Research with Prisoners - SBE (ID: 506)	14-Apr-2021	4/5 (80%)
Research with Children - SBE (ID: 507)	14-Apr-2021	4/5 (80%)
Research in Public Elementary and Secondary Schools - SBE (ID: 508)	12-Apr-2021	5/5 (100%)
International Research - SBE (ID: 509)	14-Apr-2021	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	13-Apr-2021	5/5 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	14-Apr-2021	5/5 (100%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	13-Apr-2021	5/5 (100%)
Records-Based Research (ID: 5)	09-Apr-2021	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	09-Apr-2021	4/5 (80%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	09-Apr-2021	5/5 (100%)
Research Involving Pregnant Women, Fetuses, and Neonates (ID: 10)	09-Apr-2021	3/3 (100%)
FDA-Regulated Research (ID: 12)	09-Apr-2021	4/5 (80%)
Research and HIPAA Privacy Protections (ID: 14)	10-Apr-2021	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	10-Apr-2021	4/5 (80%)
The IRB Member Module - 'What Every New IRB Member Needs to Know' (ID: 816)	13-Apr-2021	4/5 (80%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	13-Apr-2021	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/2k6a65ba09-f6b2-4f25-88f9-46749beaebbc-41980345

Collaborative Institutional Training Initiative (CITI Program)

Email: support@citiprogram.org

Web: <https://www.citiprogram.org>

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2 COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

• Name: Seth Fillmore (ID: 10045325)
 • Institution Affiliation: Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
 • Institution Email: seth.fillmore@usuhs.edu
 • Institution Unit: GSN
 • Phone: [REDACTED]
 • Curriculum Group: OUSD P&R Human Research
 • Course Learner Group: Social and Behavioral Investigators and Research Study Team
 • Stage: Stage 1 - Basic Course
 • Record ID: 41980345
 • Report Date: 15-Apr-2021
 • Current Score**: 93

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT SCORE	
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	13-Apr-2021	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	12-Apr-2021	4/5 (80%)
The Federal Regulations - SBE (ID: 502)	12-Apr-2021	5/5 (100%)
Belmont Report and Its Principles (ID: 1127)	08-Apr-2021	3/3 (100%)
Records-Based Research (ID: 5)	09-Apr-2021	3/3 (100%)
Assessing Risk - SBE (ID: 503)	12-Apr-2021	5/5 (100%)
Informed Consent - SBE (ID: 504)	14-Apr-2021	5/5 (100%)
Genetic Research in Human Populations (ID: 6)	09-Apr-2021	4/5 (80%)
Privacy and Confidentiality - SBE (ID: 505)	12-Apr-2021	5/5 (100%)
Research with Prisoners - SBE (ID: 506)	14-Apr-2021	4/5 (80%)
Research with Children - SBE (ID: 507)	14-Apr-2021	4/5 (80%)
Research Involving Pregnant Women, Fetuses, and Neonates (ID: 10)	09-Apr-2021	3/3 (100%)
FDA-Regulated Research (ID: 12)	09-Apr-2021	4/5 (80%)
Research in Public Elementary and Secondary Schools - SBE (ID: 508)	12-Apr-2021	5/5 (100%)
International Research - SBE (ID: 509)	14-Apr-2021	5/5 (100%)
Research and HIPAA Privacy Protections (ID: 14)	10-Apr-2021	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	13-Apr-2021	5/5 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	14-Apr-2021	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	14-Apr-2021	5/5 (100%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	13-Apr-2021	No Quiz
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	09-Apr-2021	5/5 (100%)
The IRB Member Module - "What Every New IRB Member Needs to Know" (ID: 816)	13-Apr-2021	4/5 (80%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	10-Apr-2021	4/5 (80%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	08-Apr-2021	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?x6a65ba09-f6b2-4f25-88f9-46749beaebbc-41980345

Collaborative Institutional Training Initiative (CITI Program)
 Email: support@citiprogram.org
 Phone: 888-529-5929
 Web: <https://www.citiprogram.org>

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2 COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- Name: Elizabeth Berends (ID: 10045708)
- Institution Affiliation: Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- Institution Email: elizabeth.berends@usuhhs.edu
- Phone: [REDACTED]

- Curriculum Group: Responsible Conduct of Research (RCR)
- Course Learner Group: Same as Curriculum Group
- Stage: Stage 1 - Basic Course

- Record ID: 42051039
- Completion Date: 16-Apr-2021
- Expiration Date: 15-Apr-2024
- Minimum Passing: 80
- Reported Score*: 96

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Introduction to RCR (RCR-Basic) (ID: 17009)	15-Apr-2021	3/3 (100%)
Authorship (RCR-Basic) (ID: 16597)	15-Apr-2021	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16598)	15-Apr-2021	4/5 (80%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	15-Apr-2021	5/5 (100%)
Data Management (RCR-Basic) (ID: 16600)	15-Apr-2021	5/5 (100%)
Mentoring (RCR-Basic) (ID: 16602)	16-Apr-2021	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	16-Apr-2021	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	16-Apr-2021	5/5 (100%)
Plagiarism (RCR-Basic) (ID: 15156)	16-Apr-2021	4/5 (80%)
Using Animal Subjects in Research (RCR-Basic) (ID: 13301)	16-Apr-2021	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	16-Apr-2021	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?ka53191f2-8dba-4407-9998-929d285fe9d2-42051039

Collaborative Institutional Training Initiative (CITI Program)

Email: support@citiprogram.org

Phone: [REDACTED]

[REDACTED]

Collaborative Institutional
Training Initiative

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2 COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- Name: Elizabeth Berends (ID: 10045708)
- Institution Affiliation: Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- Institution Email: elizabeth.berends@usuhs.edu
- Phone: [REDACTED]
- Curriculum Group: Responsible Conduct of Research (RCR)
- Course Learner Group: Same as Curriculum Group
- Stage: Stage 1 - Basic Course
- Record ID: 42051039
- Report Date: 29-Apr-2021
- Current Score**: 96

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Using Animal Subjects in Research (RCR-Basic) (ID: 13301)	16-Apr-2021	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	16-Apr-2021	5/5 (100%)
Plagiarism (RCR-Basic) (ID: 15156)	16-Apr-2021	4/5 (80%)
Authorship (RCR-Basic) (ID: 16597)	15-Apr-2021	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16598)	15-Apr-2021	4/5 (80%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	15-Apr-2021	5/5 (100%)
Data Management (RCR-Basic) (ID: 16600)	15-Apr-2021	5/5 (100%)
Mentoring (RCR-Basic) (ID: 16602)	16-Apr-2021	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	16-Apr-2021	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	16-Apr-2021	5/5 (100%)
Introduction to RCR (RCR-Basic) (ID: 17009)	15-Apr-2021	3/3 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?ta53191f2-8dba-4407-9998-929d285fe9d2-42051039

Collaborative Institutional Training [REDACTED] Program)

[REDACTED] www.citiprogram.org

Appendix I

USUHS FORM 3202N
 DANIEL K. INOUE GRADUATE SCHOOL OF NURSING
 EVIDENCE-BASED PRACTICE/PERFORMANCE IMPROVEMENT PROPOSAL

VPR Date Stamp

Project Number: GSN-61-13135

(VPR #11 assign)

Project Title: Provider and Staff Focused Interventions to Optimize Patient Portal Utilization in Adult Primary Care

SECTION A: STUDENT POC INFORMATION	
1. Name (Last, First, MI): Berends, Elizabeth, G. O.	Student E-mail: elizabeth.berends@usuhs.edu
2. Home Address: [REDACTED]	Cell Number: [REDACTED]
SECTION B: COMMITTEE CHAIR / SENIOR MENTOR INFORMATION	
3. Name (Last, First, MI): Beatty, Jonathan, R.	
[REDACTED]	Fax: [REDACTED] E-mail: jonathan.beatty@usuhs.edu
[REDACTED] Building No.: Building E, Room 1055	
SECTION C: PROJECT INFORMATION	
6. Attach the Abstract for the proposal, including the following sections: Site Location of the Project, Title, Authors, Background or Problem/Issue, Clinical Question/Purpose, Project Design, Anticipated Organizational Impact/Implications for Practice and also include the Proposed Timeline. Single space the abstract and use Times New Roman font, size 12.	
7. Is this proposal related to an active research project of the Chair/Senior Mentor identified in Section B? ☐ Yes ☒ No If yes, complete below; if no, proceed to Part 8. Project Number: [REDACTED] Project Title: [REDACTED] Project Start Date: [REDACTED] Project End Date: [REDACTED]	
8. Anticipated period of performance: Project Start Date: 11/1/2022 Project End Date: 11/30/2022	
9. Performance Site(s): Madigan Army Medical Center	
10. Does this project involve any classified information? (Contact the USUHS Security Office for guidance) ☐ Yes ☒ No	
11. Do you have a funding source for this project? ☐ Yes ☐ No ☒ NA If yes, specify the funding agency and the amount provided:	
SECTION D: SIGNATURES	
The following signatures attest to the validity of the above information:	
BERENDS, ELIZABETH, GENDEK OLSEN, 1388413855 Student (Project Point of Contact for the Group) (Signature and Date) [REDACTED] Chair/Program Director (Signature and Date) [REDACTED] DNP Project Director or PhD Director (Signature and Date) [REDACTED] SIMMONS, ANGELA, MARIE, 1143313375 313375 Associate Dean for Research, GSN (Signature and Date)	BEATTY, JONATHAN, R. 1402564152 84152 Chair/Senior Mentor (Signature and Date) [REDACTED] Chair/Program Director (Signature and Date) [REDACTED] SEIBERT, DIANE, C. 1084932279 Associate Dean for Academic Affairs, GSN (Signature and Date) ROMANO, CAROL, A. 1032050294 294 Dean, DGI Graduate School of Nursing (Signature and Date)
In light of the above signatures, the project is approved. WOODBERRY, MITCHELL WAYNE, 1060957114 L. WAYNE, 1060957114 USUHS Vice President for Research Digitally signed by WOODBERRY, MITCHELL WAYNE, 1060957114 Date: 2022.01.11 11:01:45 -0500 Date	

Appendix J



DEPARTMENT OF THE ARMY
MADIGAN ARMY MEDICAL CENTER
9040 JACKSON AVENUE
TACOMA, WA 98431-1100

MCHJ-ISI

9 September 2022

MEMORANDUM FOR Elizabeth Berends, MAJ, USA, NC, MSN, RN, DNP, Family & Women's Health Nurse Practitioner Student, and Seth Fillmore, RN, BSN, MAJ, ANC, DNP, Family & Women's Health Nurse Practitioner Student

SUBJECT: Determination of Not Research for project titled "Provider and Staff Focused Interventions to Optimize Patient Portal Utilization in Adult Primary Care".
Reference No. 222082.

1. The Madigan Army Medical Center Human Research Protections Office received the above-referenced complete Evidence-Based Practice (EBP) project application on 8 September 2022 to review for applicability of human subjects protection regulations.
2. This project will examine the challenges to the use of the MHS Genesis Patient Portal from a provider perspective. This EBP Team will then design and deliver an educational intervention to address provider barriers and concerns. The plan is to assist and encourage them to use this mode of telehealth as a valuable patient-centered benefit. The project will clearly address important patient-centered care issues, as well as organizational goals for efficient resource utilization. Patients, providers, and the entire healthcare team, as well as the organization, will benefit from this highly effective mode of health care delivery.
3. This study does not constitute research as defined under the human subjects protection regulations, as it is not "a systematic investigation . . . designed to develop or contribute to generalizable knowledge." [32 CFR 219.102(I)] Additionally, per DoD Instruction (DoDI) 3216.02, "activities, including program evaluation, customer satisfaction surveys, user surveys, outcome reviews, and other methods, designed solely to assess the performance of DoD programs where the results of the evaluation are only for the use of Government officials responsible for the operation or oversight of the program being evaluated and are not intended for generalized use beyond such program" are not research involving human subjects, and as such, are not covered under the requirements of DoDI 3216.02.

MCHJ-ISI

SUBJECT: Determination of Not Research for "Provider and Staff Focused Interventions to Optimize Patient Portal Utilization in Adult Primary Care .
Reference No. 222082

4. This determination should not be construed as approval to conduct this project. It is your responsibility to identify and obtain any necessary permissions or approvals to conduct the project prior to initiation. This activity may proceed with no further requirement for review by the Madigan Army Medical Center Human Research Protections Office, pending other required approvals.

5. In addition, your project may become research subject to IRB review if it is modified and/or includes a systematic investigation to develop or contribute to generalizable knowledge. In the event there is a change to the above-described project that may affect its determination, please submit a modification form for review and determination. No change to this activity may be implemented until the review is completed and you have been notified that there is no revision to the determination that your activity is still deemed not to be research. A request for review does not need to be submitted for the following changes to your activity: (1) personnel conducting the activity; (2) location or site at which activities will be conducted; (3) number of respondents; or (4) period of time over which the activity will be conducted. You are not authorized to take project data away from the institution.

6. All publications, presentations or abstracts arising from this work must be cleared through appropriate publication clearance procedures prior to publication IAW your institutions local publication clearance policy. Many journals are interested in publishing projects that are not research. If you do decide to publish your findings, please use paragraph headings such as: "issue," "procedures for collecting and evaluating information," "information found," "lessons learned," etc. and avoid using headings such as "research questions or hypothesis," "methods," "results," "study limitations," etc.

7. The Madigan Army Medical Center Human Research Protections Office point of contact for this review is Dr. Mary S. McCarthy, Center for Nursing Science & Clinical Inquiry, at 253-968-3695 or mary.s.mccarthy1.civ@health.mil.



Mary S. McCarthy, PhD, RN, FAAN
Exempt Determination Official
Center for Nursing Science & Clinical
Inquiry
Madigan Army Medical Center

Appendix K

4/28/23, 12:39 PM

Usuhs.edu Mail - Approval request for "Interventions to Optimize Patient Portal Use_Manuscript_BerendsFillmore.pdf"



Berends, Elizabeth <elizabeth.berends@usuhs.edu>

Approval request for "Interventions to Optimize Patient Portal Use_Manuscript_BerendsFillmore.pdf"

USU Pub Clearance (via Google Workspace Approvals) <approvals-noreply@google.com> Mon, Apr 17, 2023 at 4:30 AM

Reply-To: approvals-noreply@google.com

To: elizabeth.berends@usuhs.edu

Approval Complete

 USU Pub Clearance (usupubclearance@usuhs.edu) approved the file

 Interventions to Optimize Patient ...

 →   

Open

[Quoted text hidden]

https://mail.google.com/mail/u/0/?ik~4b21b7053d&view-pt&search=all&permmsgid=msg-f:1763422818393948107&simpl=msg-f:17634228183939481... 1/1

Appendix L



Appendix G: Daniel K. Inouye Graduate School of Nursing
DNP Project Completion Verification Form

DOCTOR OF NURSING PRACTICE PROJECT Completion Verification Form

The DNP Project titled:

Provider and Staff Focused Interventions to Optimize Patient Portal Use in Adult Primary Care

was completed at: Madigan Army Medical Center- Joint Base Lewis-McChord, WA

by the following student(s):

<i>(type student name)</i>	<i>(signature)</i>	<i>(date)</i>
MAJ Elizabeth Berends	BERENDS.ELIZABETH.GEN DEK OLSEN.1388413855 Digitally signed by BERENDS.ELIZABETH.GEN OLSEN.1388413855 Date: 2023.04.21 11:06:01 -0700	04/21/2023
MAJ Seth Fillmore	FILLMORE.SETH.GARDNER .1257206625 Digitally signed by FILLMORE.SETH.GARDNER.1257206625 Date: 2023.04.21 11:13:32 -0700	04/21/2023

The DNP Practice Project Team verifies that the following components of the DNP project, accomplished by the above students, is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation:

- Presentation of DNP project to the leadership/stakeholders at the Phase II Site,
- Abstract/Impact Statement (*Appendix F*), and
- DNP Project written report.

Verified by:

	<i>(type name)</i>	<i>(signature)</i>	<i>(date)</i>
Senior Mentor:	Maj Jonathan Beatty	BEATTY.JONATHA N.R.1402564152 Digitally signed by BEATTY.JONATHAN.R.1402564152 Date: 2023.04.24 15:08:48 -0400	
Team Mentor:			
Team Mentor:			
Phase II Site Director:	LTC Jennifer Fiandt	FIANDT.JENNIFER. COREY.1162428906 Digitally signed by FIANDT.JENNIFER.COREY.11624289 Date: 2023.04.24 12:40:41 -0700	

For RNA Students only - add the following additional signature for final verification of project completion:

RNA Project Director (<i>type name</i>)	(<i>Signature</i>)	(<i>Date</i>)