**Evaluation of MyHealtheVet Implementation at the
Portland Veterans Affairs Medical Center**

by

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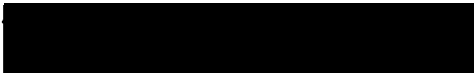Oregon Health & Science University

Certificate of Approval

This is to certify that the Master of Science thesis of
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Table of Contents:

Table of Figures:

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Abstract:

Objective: The objective of this research was to evaluate veterans' perceptions of the implementation process and capabilities of the MyHealtheVet (MHV) pilot program at the Portland Veterans Affairs Medical Center (PVAMC). The MHV program is a personal health record pilot project developed to give veterans online access to portions of their electronic health record. The goal of the MHV program is to improve the care veterans receive. This is a survey-based study to determine the factors in the MHV process that affect the success of veterans using MHV. The study specifically looked at whether or not the training that is given to the veterans prior to taking part in the MHV program is adequate to achieve this goal.

Participants: There are two study arms that distinguish the training modality: 1) veterans who received a classroom training course, and 2) veterans who were given paper-based training material but no classroom training course.

Methods: Veterans in arm 1 were sent an information sheet and a questionnaire via post. Veterans in arm 2 were recruited before activating their account and given a base-line questionnaire. A follow-up survey was completed after 2 months from the initial meeting. Questions consisted of subjects' perceptions of their relationship with the VA and their physicians, issues having to do with the enrollment process and training, as well as accessibility usability, content, utilization, and empowerment.

Secondary data (regarding usage utilization of MyHealtheVet) was collected for data analysis. Usage information included the number of subjects enrolled into program, and the number of times a request was made to download material into the eVAult, which was an indicator of how often veterans accessed their medical records through MHV.

Results: Veterans used MHV but did not find themselves downloading their medical records very often. There was difference in the training modalities as veterans who were trained in a classroom setting used MyHealtheVet more readily than veterans issued the training manual. The different types of training modalities did not affect one group over the other in satisfaction with the content and usability; both groups of veterans were highly satisfied.

Conclusions: In general, veterans used MyHealtheVet and were satisfied with its functionality and information overall. It was evident that veterans attending classroom training had a more beneficial outcome to accessing their medical records than those without classroom training. A pro-active training module should be developed in a future implementation that will review highlights of the application.

Introduction:

Background

The Internet is a resource used by consumers for a myriad of information. As users gain experience and new applications become available, they discover the Internet's multiple functionalities. Among online activities, growth is seen in online banking, seeking religious information, purchasing or selling items, checking news or sports and looking for health or medical information.[1] Those of the latter category are termed health seekers or e-health consumers because of their know-how to find and use health information on the Internet to prepare for medical appointments and make informed decisions for health related issues.

Health seekers are active in pursing information related to their health care to seek understanding for diagnosis and treatment and to find support from others. As they continue to use the Internet as a health resource, they find improvements in health information and services and changing relationships with their doctors.[2] By taking charge of their care, they can ask targeted questions and make their office visits more effective, knowing the next steps to proceed. Redesigning the health system for improvement in delivery of care involves a patient-centered approach.[3] Those in control of their health are more likely to participate in preventive care, have an improved sense of health, and have an increased optimism concerning the efficacy of therapy.[4]

Delivery of online care and providing health seekers with access to their medical records through the Internet will have the most significant impact to improve the quality of medical care.[5] Actually, interest in accessing a medical record online is found to be associated with patient attitude and behavior as well as proficiency in using the

Internet.[6,7] Patients taking an active role in their health care improve clinical outcomes and treatment adherence as well as increase satisfaction with their care.[8, 9] Individuals who search for health information from print media and the Internet are more interested in reading their medical records.[10] Having access to their medical records may extend their involvement in their healthcare by providing a direct information source about themselves. A consolidated, online health record serves as a single access point to the patient's health information, which can easily be shared with providers and/or caregivers. Patients can be more involved in the health care decisions that affect them, can monitor their health on a regular basis, and can manage chronic conditions.

These opportunities exist in personal health records (PHR).[11] One type of PHR is an Internet based application where an individual can maintain and store health information. It offers an integrated and comprehensive view of health information from doctors and self-entered information.[12] This information includes demographic, emergency, and medical information as well as care summaries and images.[5] It is maintained by the individual to be kept updated for health and disease management.[11] Individuals retain confidentiality and security by specifying who receives access to their information.[13] PHRs have many benefits that put individuals in the center of their healthcare.

The benefits for individuals using PHRs include patient empowerment, facilitating communication for decision making, recalling what care was received, avoiding duplicative tests, comparing existing data from earlier examinations, reducing ineffective treatments, ensuring proper use of prescription drugs, increasing compliance with clinical care process, maintaining a lifelong history across institutional boundaries,

and accessing medical information in emergencies. [5,14,15,16,17,18,19,20,21,22,23,24,25] PHRs offer

individuals control and an opportunity to participate in their own care and as well as

creating a supplemental tool to communicate with physicians and participate in their own

care. An integrative PHR enables an individual to develop a stronger sense of ownership

for his or her data, become a co-constituent of the health care system, and contribute to

the health care organization.[26] Health organizations may see an improvement in quality

and safety for their patients as well. A complete health record will alert health

organizations of potential drug interactions, allergies, and side effects or missed

procedure.[17]

Though there is a collection of evidence-based research on the benefits of PHRs,

there are concerns from physicians expressing opposition to have patients access their

own medical information. Physicians expect patients to become anxious over

misunderstandings in medical terminology, confused in reading laboratory and x-ray

reports, and offended by clinician notes.[23] These issues would increase time spent with

the patient and added work by having to explain the terminology and calm down their

anxiety.[17] There is also concern that patient-entered PHRs have limited functionality and

may not accurately report medical information for use in clinical practice.[27] Though there

are negative aspects, physicians generally have positive attitudes toward patients

accessing their electronic medical record.[28] They feel that their patients should be

provided with information from their medical records like medication lists, prescription

refills, and appointments. Typically physicians respond positively after experiencing their

patients using a PHR.[23]

There are previous studies indicating that the collaboration of an electronic health record (EHR) and patient-entered data are valuable for enhancing patients' participation in their healthcare. The pattern seems to follow satisfaction of functionality; however, patients were not using the PHR as frequently as expected. The Patient-Centered Access to Secure Systems Online (PCASSO) project implemented a secure tool for transmitting health information across the Internet where patients were favorable to the functionality of the system.[19] Users who did not access the system indicated that they did not have a recent clinic visit and did not find a reason to access their medical record. Usability and utility proved effective for users of the integrative application Patient Clinical Information System (PatCIS).[20] The enrollment process in this study, however, was limited and they found that patients were either frequently using the application or using it sparingly.

The System Providing Patients Access to Records Online (SPPARO) and Palo Alto Medical Foundation Online (PAMFOnline) studies found that in addition to patient satisfaction with PHR functionality, physicians accepted the PHR's ability to integrate some of the workflow.[23, 29] The SPPARO study patient population had congestive heart failure, and though the researchers expected higher use from a chronically ill group, the number of median hit-days was the same as the mean number of clinic visits, indicating little use between office visits. The authors were encouraged that patient use of the personal health record was correlated with number of clinic visits as well as if the patient was symptomatic. From this, the authors believed, those who would more likely use and benefit from SPARRO, where those who needed a similar tool for disease management. The PAMFOnline study targeted participants between 40-65 years old. This population

was selected because focus groups and literature reviews indicated that this group would be most interested in online-healthcare services for time efficiency and convenience. SPPARO and PAMFOnline indicated that symptomatic patients between 40-65 years old would mostly use and perceive benefits from having access to their records online and use the online application.

On Veterans Day, November 11, 2004, the Veterans Affairs (VA) allowed veterans to access personal health information via a web-based application MyHealtheVet (MHV).[30] Prior to the release of MHV, a demonstration program conducted among nine VA Medical Centers experimented with MHV's implementation. On the west coast, the Portland Veteran Affairs Medical Center (PVAMC) decided to participate in the project as a pioneer center to influence development and provide a new service of quality of care to their patients.

MyHealtheVet Pilot

MyHealtheVet began as a new application supporting the transformation of health information systems to more effectively serve the needs of patients, providers, and the health system.[32] It allowed veterans to electronically access portions of their medical record and store health information in a secure and private environment. The pilot program allowed veterans to completely control what information was stored in their personal health record. Health information is stored in a secure and private web environment called an eVAult, and veterans can grant permission to individuals to view specified areas of their eVAult for a specified period of time.

MHV Benefits

The MyHealtheVet system has a convenient and secure access point to personal health information, military health history, medications, medical events, tests, allergies, and health logs for blood sugar, blood pressure, cholesterol, heart rate, body temperature, body weight, and pain. As benefits of registering to MHV, veterans are able to access their medical information from anywhere via the Internet, gain better understanding of their health status, explore options to improve their health, and learn and use tools to become partners with caregivers in managing personal health care.[33]

As a registered user of MHV pilot, veterans can add medical information in the self-entered sections, track personal health metrics, and access a health education library.[34] In granting access rights to others they can share important health information with providers inside and outside of the VA, potentially improving the quality of care. As a benefit to the medical center, MHV serves to reduce health care delays caused by follow-up phone calls, faxing, and re-keying information.[35] It also provides veterans with the education to empower themselves to make proactive health decisions with their providers.

Design Features

The MyHealtheVet Steering Committee believed the pilot program fulfilled the vision of providing a service to empower veterans with information and tools to improve their health.[34] The MHV system is compliant with both the Privacy Act of 1974[36] and the Health Insurance Portability and Accountability Act of 1996 (HIPAA)[37]. MHV is an "opt-in" application; personal information about a veteran is not available until the veteran requests it or manually enters the information into the site his or herself.

The MHV pilot addresses the safety of patient data by using Secure Socket Layer (SSL) encryption for the transmission of personal health information. SSL protocol encrypts information transmitted between PC and server so that data stored on the system is unreadable or unidentifiable by name. In addition, in an effort to test its security and to maintain security precautions, security professionals regularly attempt to gain access to the system. Based on their recommendations, improvements are made to the MHV project. The pilot has been highly successful in that it has passed multiple security risk assessments and penetration studies. The web servers are protected by monitored firewalls and updated regularly with the latest security modifications. Complex passwords are required when veterans access MHV. The password must contain at least eight characters, beginning with a letter, and include at least three of the four classes of characters. The four classes of characters include upper case letters, lower case letters, numbers, and certain special characters (like "!", "#" or "~").

Initial Pilot Procedure

In June 2002, the Veterans Integrated Service Network 2 (VISN 2), based in upstate New York, (which served Canandaigua, Syracuse, Albany, Bath, and Buffalo) was the first site selected to implement MyHealtheVet. In Phase 1 of this pilot project, veteran employees connected with MHV information and resources; in Phase 2, primary care physicians (PCP) recommended veterans to participate in the pilot; and in Phase 3, new patients were selected to enroll into the pilot program.[38] Patients initiated the enrollment process by completing forms from the Release of Information Unit (ROI). The ROI unit screened patients and ensured that their PCPs had recommended them to participate. Once cleared to participate, a confirmation letter was sent to the patients,

which invited them to attend an orientation session. As a mandatory orientation, received their MHV username and password and were educated on how to use the tool to maximize their health outcomes.

PVAMC Pilot Procedure

In October 2004, the Portland Veteran Affairs Medical Center joined the MHV pilot and initiated a project that was similar to the one at VISN 2. Like, VISN 2, PVAMC was to implement the application at all clinics in an all-or-none fashion. Physicians were tasked to inform their patients of the new application and to get their patients enrolled into the program. However, after strong resistance by five clinics, due to perceived increase in workflow and workload, PVAMC decided not to use the physicians as project promoters and completely removed them from the enrollment process. Instead, flyers were placed around the VA for veterans to self-initiate their enrollment into MHV.

Interested veterans in the pilot are solely responsible for enrollment. The enrollment packet containing the ROI form (Form 10-5345) and an enrollment application are picked up at the hospital or downloaded from the Internet and then mailed to or dropped off at the PVAMC. The ROI unit screens the veterans who are eligible to participate in the pilot and gain access to their electronic medical records. The procedures at the ROI unit for requesting a paper copy of the medical record are the same as for those requesting the electronic version. These requests are processed within 30 days of receipt.

A 'locked' clinic is one that restricts access to their patients' medical records. A patient from a 'locked' clinic would not be able to participate in the pilot program due to this limitation. At the time of research, there were no cases of denied participation.

However, if a veteran is to be denied access to participate, they are notified and reminded that they are able to get paper copies of their medical record. When the veterans are cleared with ROI, the account manager is given the veterans' Form 10-5345 to initiate accounts within CPRS, the VA's Computerized Patient Record System.

Training sessions to help veterans use MHV

In the beginning of the pilot, PVAMC followed the VISN model by providing veterans with orientation and classroom training sessions. Originally, the classroom training served two purposes: 1) to get a signature from the veterans to complete the ROI forms and closure of the consultation in CPRS, and 2) to provide a user ID and password to the veterans to access their MHV accounts. By having veterans self-initiate their enrollment in the pilot rather than through physicians, the interest of veterans to access their medical records through MHV had increased three-fold.

The list of veterans enrolling quickly surpassed the number of scheduled orientation sessions and created a bottleneck in the process. From March 10, 2005 onwards, the classroom training was no longer offered. Instead, a letter was issued to the veteran with instructions to pick up a packet containing their username and password. After being verified and identified with two pieces of identification, they were given printed instructions and a quick reference guide[39] to assist them with the account activation process, navigation of MHV pilot, and requests to access personal information. Those who did not pick up this packet within a 90 day timeframe had to re-enroll in the MyHealtheVet pilot.

In both cases of training methods, the veterans, upon logging into their MyHealtheVet pilot page, are prompted to read through three separate disclaimers: a

general disclaimer, a medical disclaimer, and a privacy and security statement. The general disclaimer reminds veterans that endorsements and/or external links on the site are not completely edited but are provided with the intent of meeting the mission of the Department and the VA web site. The medical disclaimer reminds veterans of the following: that 1) they are the sole owners of the information in their account, 2) they can grant whomever access to certain parts of their MHV data, 3) their data is not guaranteed to be accessible during medical emergency, and 4) the medical information on the site is a service and not intended to replace professional medical advice. The privacy and security statement describes the precautions needed to keep their health information protected, including choosing passwords, logging out, and closing the browser after completing their sessions.

Objective:

The objective of this study was to evaluate the views of how veterans were experiencing the implementation process and use of MyHealtheVet in the pilot program at the PVAMC. This study evaluated veterans' usage of the application and evaluated whether veterans had experienced self-efficacy from using MHV during the pilot program.

Success was defined, for purposes of the study, as usage of the system and satisfaction by veterans in their use of MHV. The research scope included the following tasks: 1) Analyze the overall enrollment and download patterns of the veterans using MHV; 2) Examine if the classroom training component was successful in helping veterans to use MHV; and 3) Determine if the veterans' perceptions regarding their relationship with their physician and with the VA changed after accessing MHV.

For the second aspect of the research study (number 2 above), the goal was to compare the outcomes, including use and satisfaction with the system, for those completing the classroom training (arm 1) with those who received no training (arm 2). For this purpose, a survey was used to look at whether or not the packet of training materials given to arm 2 was adequate for veterans to use the system. If the written training was found to be inadequate or unsafe, it would be in the best interests of both veterans and the PVAMC to reinstate the classroom training requirement.

Hypotheses:

1) Overall, veterans will actively use the MHV application; 2) if veterans previously had training in a classroom setting, they will use MyHealtheVet more often and be more satisfied with the application; and 3) veterans will experience a better relationship with their physicians and the VA after using MyHealtheVet.

Methodology:

Setting

The Portland Veterans Affairs Medical Center is a 303-bed, consolidated facility serving Oregon, Southern Washington, and parts of Idaho. PVAMC provides healthcare services to eligible veterans and strives to become a premier integrated healthcare system for veterans and other beneficiaries.[31] In 2005, they had over 36,000 unique patients in primary care and approximately 608,000 outpatient visits.

Secondary Data Collection

Secondary Data was collected for data analysis regarding overall usage of MyHealtheVet pilot. Usage information included the number of subjects enrolled into pilot and the number of times a request was made to download material into the eVAult.

The MHV account manager oversaw a software program that indicated the number of enrollees into MHV and the number of times veterans were to "request a download" to update their eVAult. This data was collected to measure the enrollment and frequency of use of MHV pilot. This data did not contain any protected health information (PHI) or patient identifiers.

Recruitment

There were two study arms in this study: 1) veterans who were already enrolled in the MHV program and previously received classroom training for using MHV, and 2) veterans who did not receive classroom training for using the MHV program. Those in arm 2 were given written instructions to access MHV in lieu of an orientation.

Due in part that the MHV application is written in English, all users of MHV had to read English. Since the VA provided Internet access at their facility, accessibility was not a concern. It was estimated that 60 individuals per group would need to be recruited to be able to detect a standardized effect size of 0.6 given a power of 90% and an alpha error of 0.05 (two-sided).[40] The study protocol, informed consent process, and questionnaires were approved by the Portland Veteran Affairs Medical Center Institutional Review Board.

Arm 1

Veterans in arm 1 enrolled in the MyHealtheVet pilot and completed classroom training with the account manager on or before March 10, 2005. The account manager for MHV provided a complete list of veterans who enrolled in the study and who had classroom training. To guarantee a sample size of at least 60, all 180 veterans from the list were sent information about the evaluation study including a recruitment letter, information sheet and questionnaire. Interested veterans indicated their consent to participate in the study by returning the questionnaire in a pre-stamped envelope. Veterans were not contacted again.

Arm 2

In arm 2, veterans had to be enrolled in the MyHealtheVet pilot without being offered the classroom training and cleared from the ROI office to access their electronic medical records. Veterans picked up their enrollment packets at the Technology Information Management (TIM) Help Desk during open hours between 8 am and 4 pm. For three weeks of recruitment, starting May 20, 2005, sixty-one veterans were enrolled in the study and assigned to arm 2. Eligibility was determined by their responses to a series of questions about enrolling into MyHealtheVet. If the individual did not appear to have the capacity to consent or was not capable of comprehending the scope of the study, they were excluded.

Veterans completed the informed consent forms and then filled out the baseline survey at the TIM Helpdesk. They were reminded that they would be contacted in two months for a final survey. Most veterans conducted the final survey over the telephone; others made arrangements to meet at the VA.

Survey Content

Demographic items were collected (age, ethnicity, education, gender, general health, and income) including computer use and Internet use. The survey questions consisted of the subjects' perceptions of their relationship with the VA and their relationship with their physicians. Veterans answered questions regarding the enrollment paperwork and the training from either the classroom training or information packet. Other questions addressed accessibility, usability, content, utilization, feelings of empowerment, and referral of MHV to friends or fellow veterans.

There were minimal risks of harm in this study. In a previous study, subjects experienced increasing worry or confusion in accessing their medical record.[10] If the veteran became confused or worried, they had the option of removing themselves from the study. They could refuse to answer any of the questions that they did not wish to answer.

Analysis of surveys

Data from the surveys were collected then entered into SPSS (version 13.0 for students) for analysis. Data was grouped according to relevant arms. Measurements were applied with the appropriate statistics. Correlations between veterans who accessed MHV at least once and demographic information were measured using Spearman's Rho, ρ, and Kendal's Tau-b, τ_b, for ordinal data, and Pearson's Correlation for nominal data. The tests used to compare data between those with classroom training and those without included the independent t-test for nominal data, the Mann-Whitney test for ordinal data, and the Pearson chi-square test for binary data comparisons. Finally, the baseline and final surveys from arm 2 were matched to determine the before and after affect of using MHV

to relationships between veterans and VA, and veteran and physician. These comparisons were evaluated using paired data analyses, including the application of the paired sample t-test, Wilcoxon signed rank test, and McNemar's chi-square.

Results:

Secondary Data: Enrollment and Usage of MyHealtheVet Pilot Program

Figure 1: Overall PVAMC Enrollment Statistics

PVAMC Enrollment Statistics
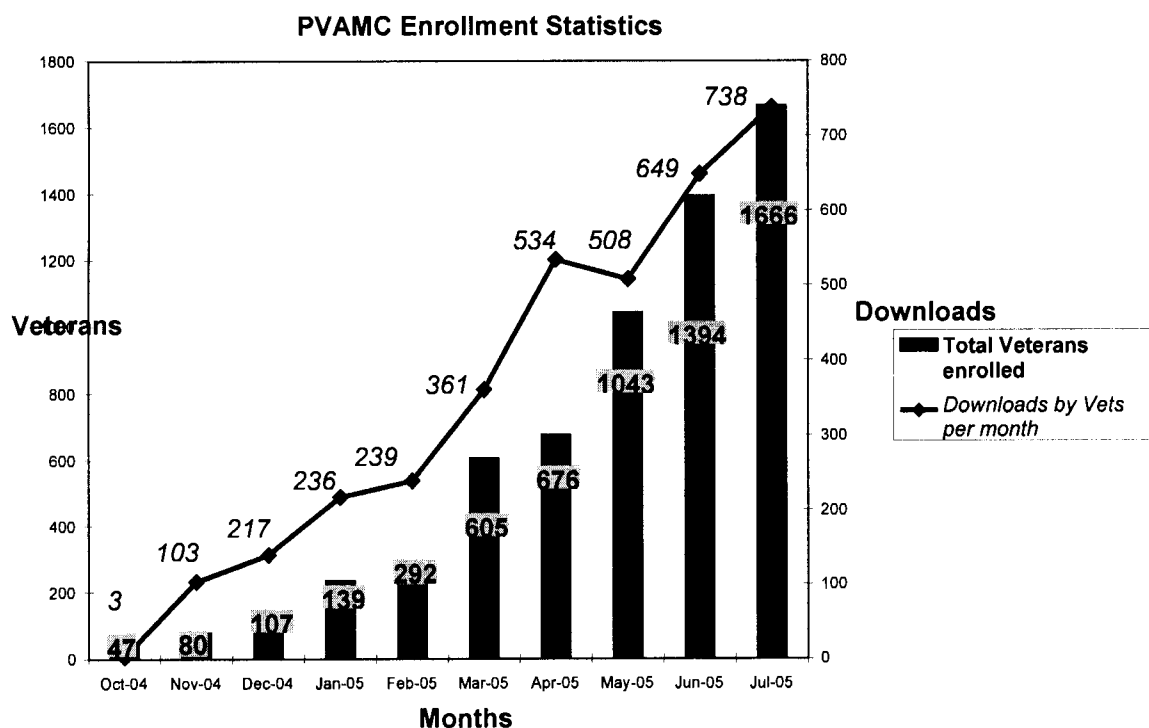
In reference to the MHV pilot study, a total of 1666 veterans enrolled during the time span October 2004 to July 2005. During October 2004 to February 2005, 292 veterans enrolled in the pilot study and were trained how to use MyHealtheVet in a classroom setting. From March 2005 through July 2005, 1374 veterans enrolled in the pilot study. The number of downloads increased with the number of enrolling veterans. A total of 3551 downloads were requested by veterans through July 2005 (see Figure 1).

Figure 2: Overall MHV Download Statistics

MHV Download Statistics
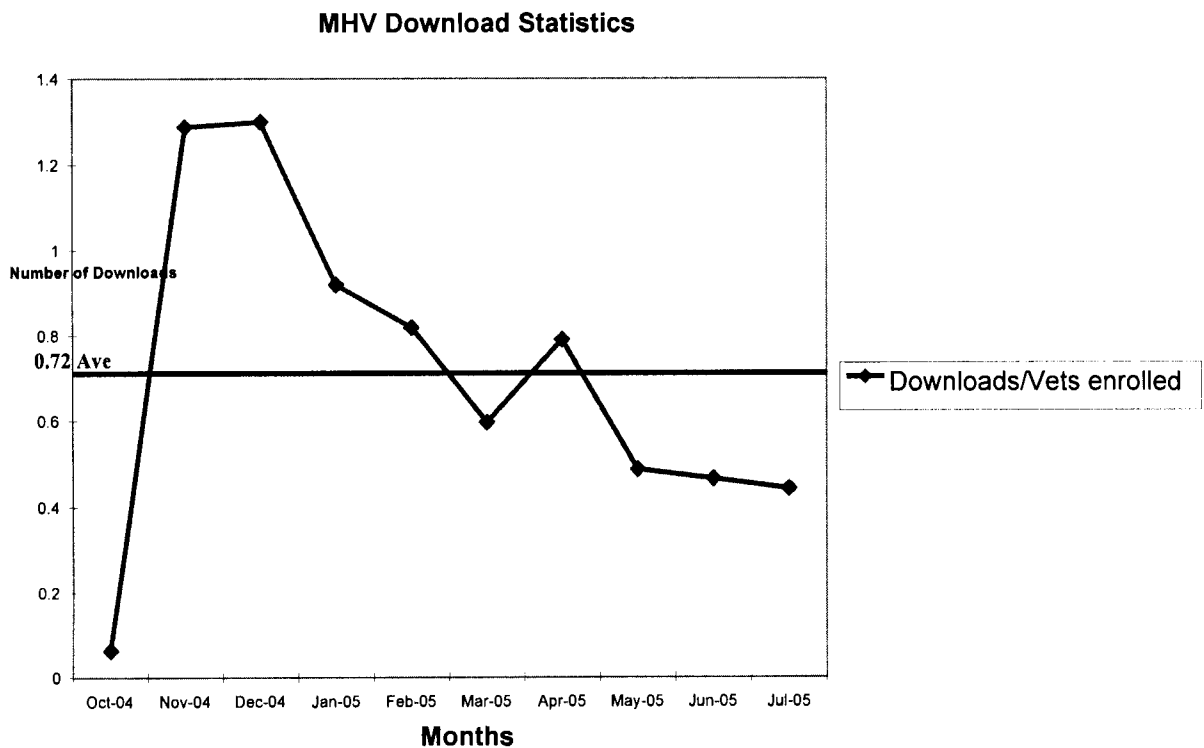
The average number of downloads per veteran per month was 0.72. Downloads peaked at the start of the pilot but decreased and began to level off near 0.45 at the end of the data collection in July 2005 (see Figure 2). Veterans were not downloading their medical information into the eVAult every month; however, they did so at least every other month.

Enrollment in "The Evaluation of MyHealtheVet" Study

Returning to the enrollment in the thesis study, in arm 1, 180 letters were sent out. Of the 91 surveys returned, one letter was returned due to insufficient address and one letter indicated that the veteran was deceased. Of 89 applicable surveys returned, 5 (6%) did not access MHV at all. In arm 2, 61 veterans were recruited, four were lost to follow-up and removed from the sample. Of the 57 responses, 11 (19%) did not access MHV. In

comparing the frequencies in which veterans from each group accessed MHV, a significant difference in distribution was evident (Mann-Whitney, Z=-2.517, p=0.031). Arm 1 accessed MHV more frequently than arm 2 in a two month period (see Figure 3).

Figure 3: Access Frequency
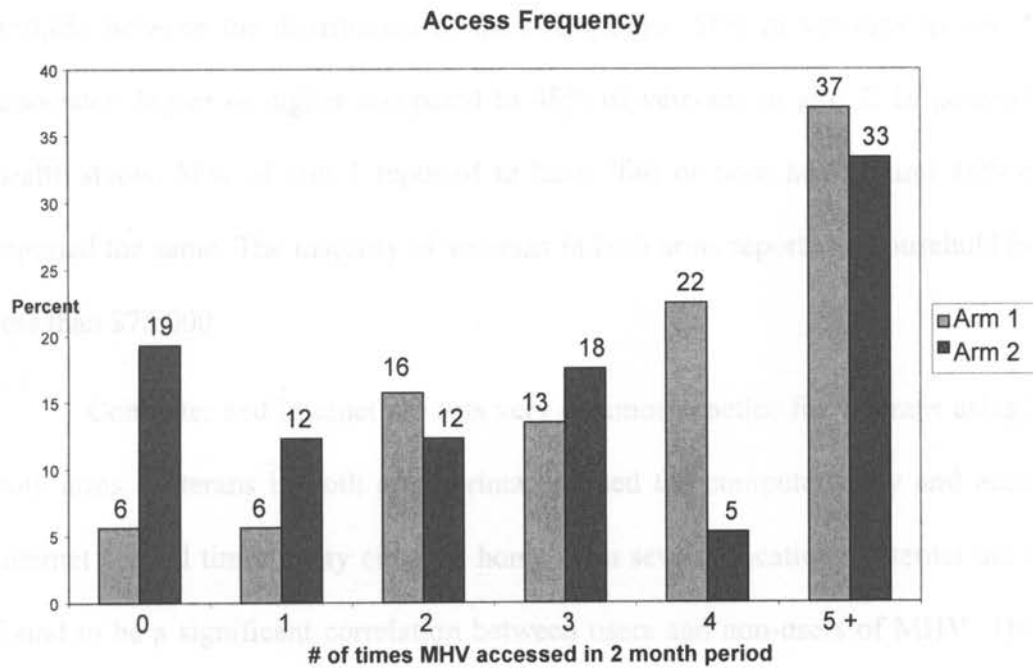
Table 1: Demographics

		Arm 1	N_1	Arm 2	N_2	p-value
Age	Mean	62	80	59	46	0.071^t
	Range	35 - 87		32 – 84		
Race	White	91%	76	84%	38	0.447^x
Gender	Male	94%	77	96%	44	0.175^x
Education	Associates degree or higher	61%	51	48%	22	0.069^u
Health	Fair or Poor	58%	49	46%	21	0.221^u
Income	<$75,000	94%	72	88%	38	0.524^u
Computer Use	Daily or everyday	88%	73	80%	37	0.259^u
Internet Use	Several times a day	67%	56	59%	27	0.530^u

^{t}Independent t-test, ^{x}Pearson chi-square, ^{u}Mann-Whitney U

The demographics of both groups who accessed MHV at least once were significantly the same (see Table 1). The age range for veterans in arm 1 ranged from 35 to 87 years old. In arm 2, veterans' ages ranged from 32 to 84 years old. The mean ages

for arm 1 and 2 were 62 and 59 respectively. The older the veterans were, the less likely they were to access MHV (Pearson correlation=-0.222, p=0.008). The populations of both groups were predominantly made up of white males (vs. non-white and female). Though a Mann-Whitney test indicated that there was no significant difference (p=0.069, α=0.05) between the distribution of the two groups, 61% of veterans in arm 1 had an associates degree or higher compared to 48% of veterans in arm 2. In perceiving their health status, 58% of arm 1 reported to have "fair or poor health" and 46% of arm 2 reported the same. The majority of veterans in both arms reported a household income of less than $75,000.

Computer and Internet use was very common practice for veterans using MHV in both arms. Veterans in both arms primarily used the computer daily and accessed the Internet several times a day either at home or in several locations. Internet use was also found to be a significant correlation between users and non-users of MHV. The more a veteran used the Internet, the more likely he would use MHV (τ_b=0.258, p=0.001; ρ=0.274, p=0.001).

Training Experiences:

Figure 4: Arm 1 vs. Arm 2 Training Usefulness

Training usefulness
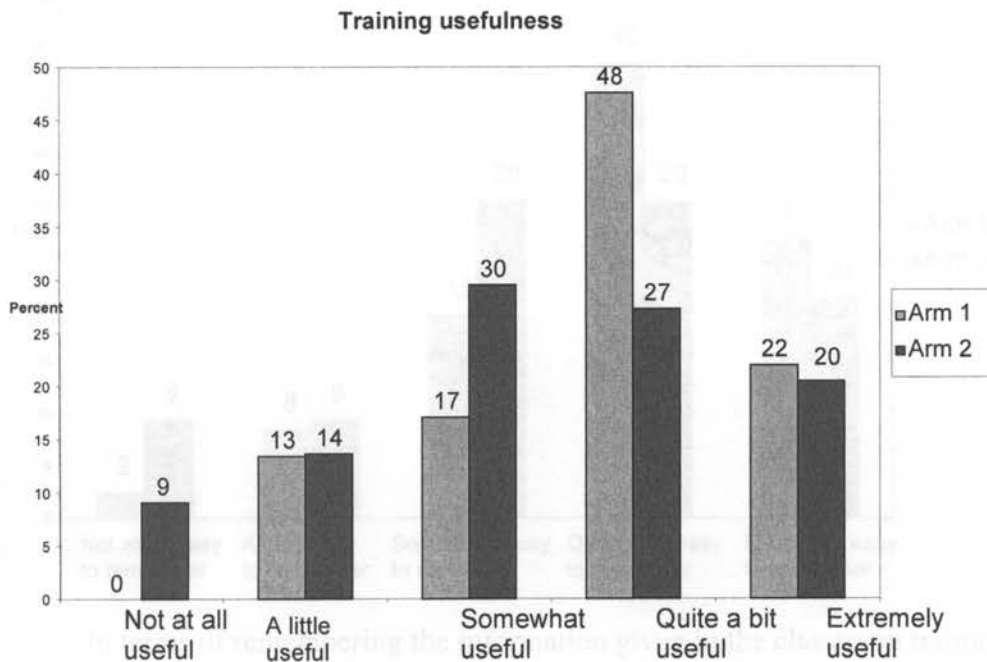
Figure 4 is a graph displaying how the veterans in both arms perceived their training usefulness. Arm 1 participants (those trained to use MHV in the classroom) answered at 70% that the training usefulness was "quite a bit useful" or "extremely useful". Veterans in arm 2, given the training packet, answered similarly at 48%. There was, however, no significant difference in distribution among the arms (Mann-Whitney, Z=-1.855, p=0.064, n1=82, n2=44).

Figure 5: Arm 1 vs. Arm 2 Training Memory
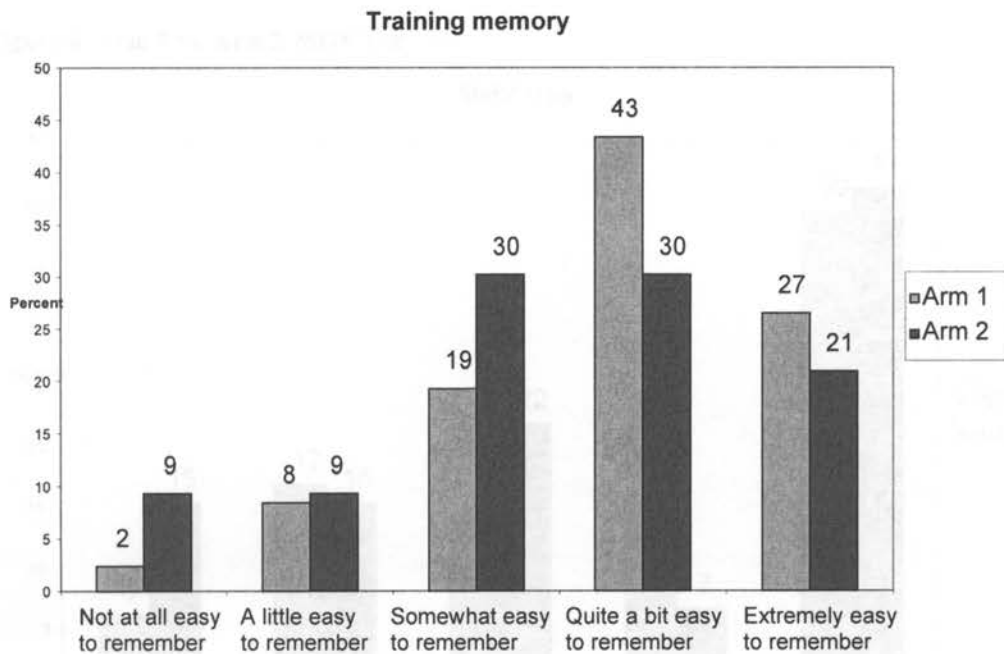
Training memory

In terms of remembering the information given in the classroom training or training manual, the two arms were not significantly different in distribution from each other (Mann-Whitney, Z=-1.779, p=0.075, n1=83, n2=43). Veterans in arm 1 (70%) were more likely to answer "quite a bit easy to remember" or "extremely easy to remember" than those in arm 2 (51%) (see Figure 5). The majority of the veterans in both arms felt that the amount of information provided to them was "about the right amount of information" (arm 1=86%, arm 2=78%, Mann-Whitney, Z=-0.419, p=0.675, n1=84, n2=45).

Evaluation of Accessibility:

Figure 6: Arm 1 vs. Arm 2 MHV Use

Figure 7: Arm 1 vs. Arm 2 Request to Download
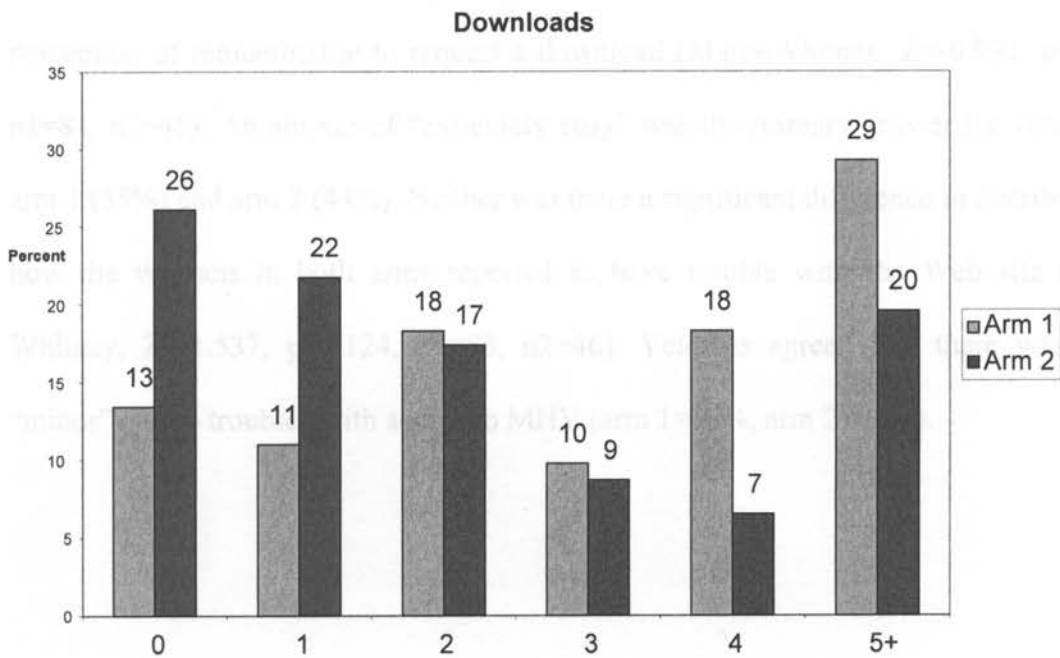
Veterans in both arms, who used MHV, showed similar access patterns, and the distribution was not significantly different (Mann-Whitney, Z=-0.888, p=0.375, n1=84,

- 21 -

n2=46) (see Figure 6). Yet, the requests they made to download data into the eVAult, showed a significant difference (Mann-Whitney, Z=-2.566, p=0.010, arm 1 n= 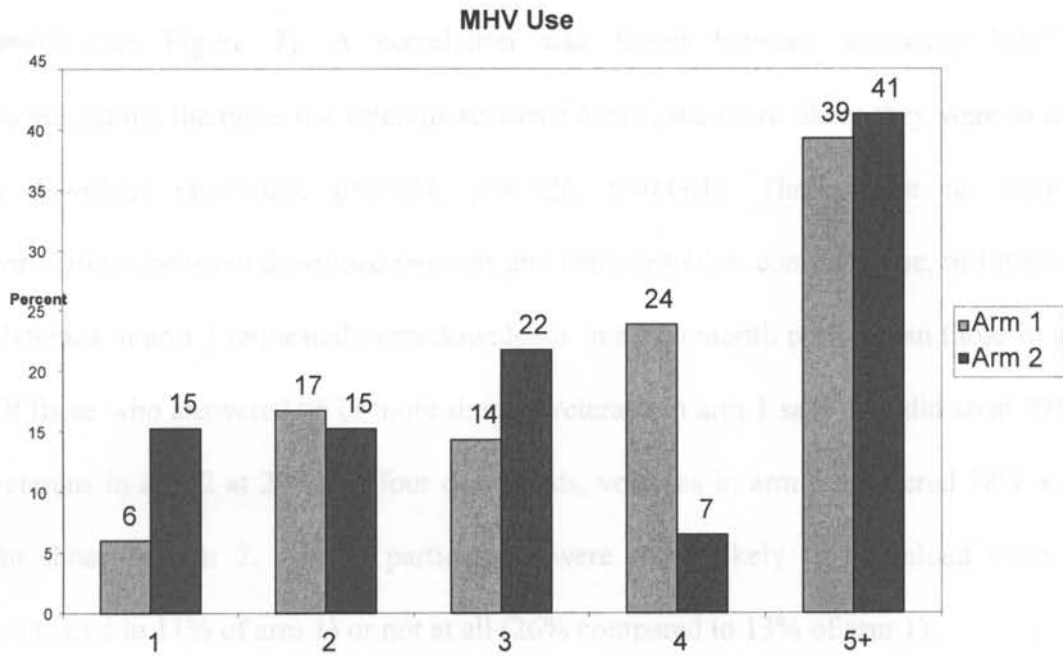82, arm 2 n=46) (see Figure 7). A correlation was found between accessing MHV and downloading; the more the veterans accessed MHV, the more likely they were to request a download (τ_b=0.620, p<0.001, ρ=0.726, p<0.001). There were no significant correlations between download requests and demographics, computer use, or Internet use. Veterans in arm 1 requested more downloads in a two month period than those in arm 2. Of those who answered "5 or more times", veterans in arm 1 said they did so at 29% and veterans in arm 2 at 20%. At four downloads, veterans in arm 1 answered 18% and 7% for those in arm 2. Arm 2 participants were more likely to download once (22% compared to 11% of arm 1) or not at all (26% compared to 13% of arm 1).

There was no significant difference in distribution between the veterans' perception of remembering to request a download (Mann-Whitney, Z=-0.991, p=0.322, n1=84, n2=46). An answer of "extremely easy" was the primary answer for veterans in arm 1 (55%) and arm 2 (44%). Neither was there a significant difference in distribution in how the veterans in both arms reported to have trouble with the Web site (Mann-Whitney, Z=-1.537, p=0.124, n1=83, n2=46). Veterans agreed that there was either "minor" or "no trouble" with access to MHV (arm 1=99%, arm 2=80%).

Evaluation of Usability

There was no significant difference in distribution between the veterans' response to usability. The majority of the veterans perceived the MHV website to be "extremely easy to use" or "quite a bit easy to use" (arm 1=70%, arm 2=60%; Mann-Whitney, Z= -1.488, p=0.148, n1=84, n2=46). The Web site was "not at all easy to use" for 11% of arm 2, and 1% of arm 1. Veterans in both arms were "quite a bit satisfied" with how MHV worked (arm 1=43%, arm 2=41%; Mann-Whitney, Z=-.827, p=0.408, n1=84, n2=46); however, 11% of the veterans in arm 2 were "not at all satisfied" with how the site worked compared to no one in arm 1.

Evaluation of Content

Veterans in both groups shared the same satisfaction regarding the content in MHV (Mann-Whitney, Z=-0.245, p=0.806, n1=84, n2=45). In both arm 1 and 2, the majority of the veterans were "quite a bit satisfied" or "extremely satisfied" with the information in MHV (arm 1=63%, arm 2=62%). Nine percent of veterans in arm 2 were not at all satisfied with the information and 1% of veterans in arm 1 were unsatisfied.

Figure 8: Arm 1 vs. Arm 2 Self-Entry Feature
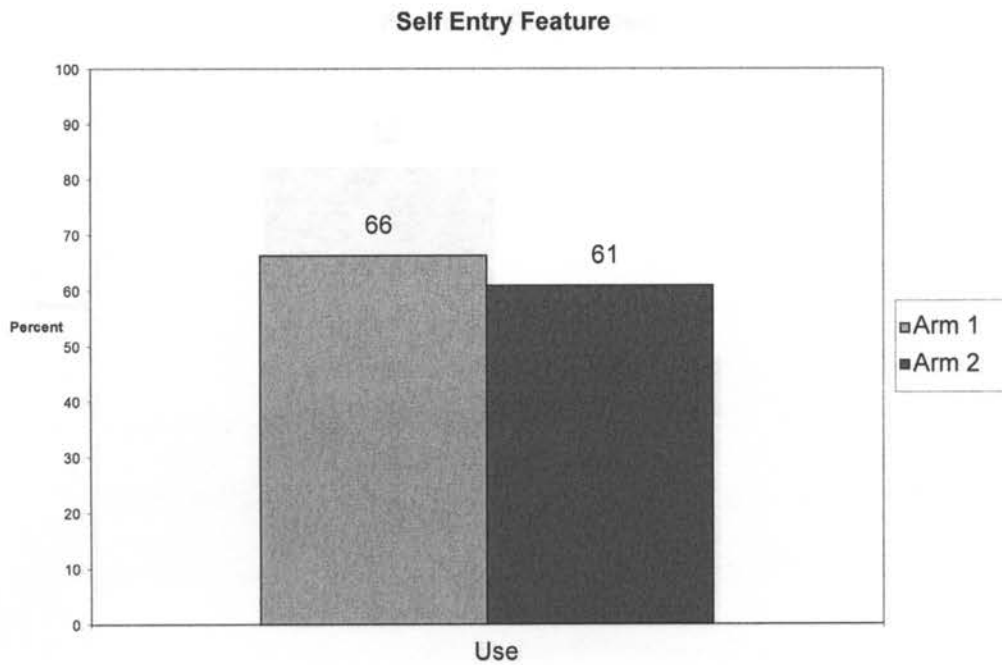
Self Entry Feature

Approximately 55/83 (66%) veterans in arm 1 and 28/46 (61%) veterans in arm 2 used the self-entry feature. The difference between these two percentages was not significantly different (Pearson χ^2=0.376, p=0.540, n1=83, n2=46) (see Figure 8). For those who used the self-entry feature there was no significant difference in distribution between the two arms (Mann-Whitney, Z=-1.759, p=.079). In general, veterans in both arms found the self-entry feature to be more useful than not. Veterans in arm 1 answered at 68%, "Quite a bit" or "Extremely useful", while in arm 2 only 44% of the veterans answered the same.

Figure 9: Arm 1 vs. Arm 2 Pharmacy Feature Use

Pharmacy Feature Use
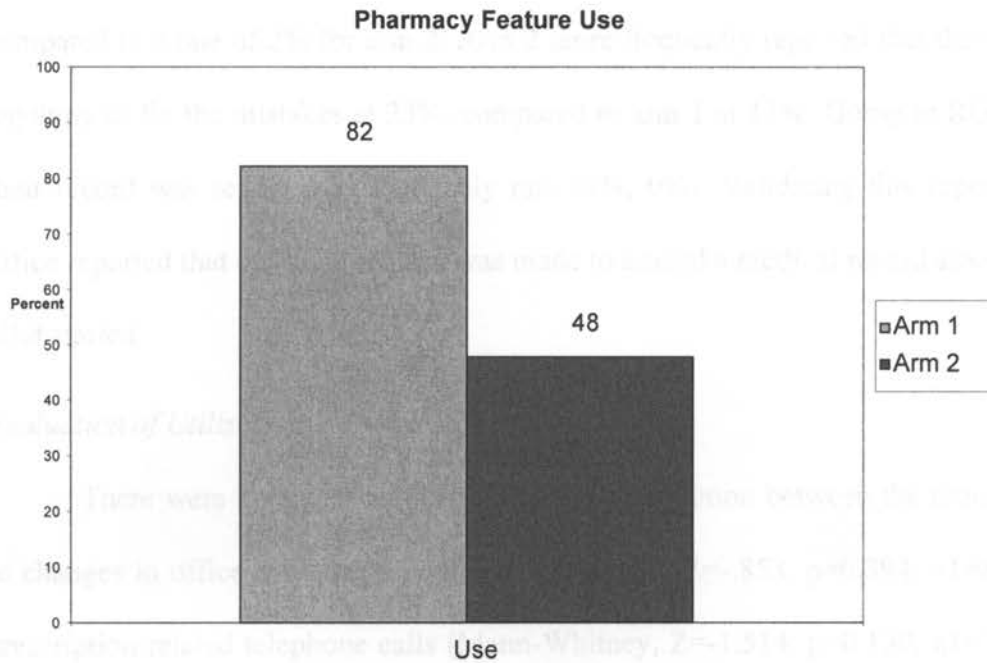
In arm 1, 69/84 (82%) veterans used the pharmacy feature as did 22/46 (48%) of veterans in arm 2. The difference between these two percentage was significant (Pearson $\chi^2=16.668$, p< 0.05, n1=84, n2=46) (see Figure 9). Of those who used the pharmacy feature, there were no significant differences in distribution between the groups (Mann-Whitney, Z=-0.374, p=0.708). In both arms, veterans found the pharmacy feature to be more useful than not. Veterans in arm 1 felt that this feature was "Extremely useful" at 58% and veterans in arm 2 agreed at 50%.

In the next survey question, veterans answered if they had discovered a mistake in their medical record and if they took any actions to correct them. The two groups were not significantly different from each other (Levene's test, F=3.545, p=0.062; independent t-test, p=0.493, n1=84, n2=44). Most veterans "Did not look for mistakes" (arm 1= 39%, arm 2=41%) or "Looked and didn't see any mistakes" (35%, 34%). If they did see a

mistake, arm 1 more frequently reported that they told their doctors to fix them at 12%, compared to a rate of 2% for arm 2. Arm 2 more frequently reported that they did not do anything to fix the mistakes at 23%, compared to arm 1 at 11%. Going to ROI to amend their record was reported as extremely rare (4%, 0%). Validating this report, the ROI office reported that only one request was made to amend a medical record since the MHV pilot started.

Evaluation of Utilization

There were no significant differences in distribution between the arms in regards to changes in office visit frequency (Mann-Whitney, Z=-.853, p=0.394, n1=84, n2=46), prescription related telephone calls (Mann-Whitney, Z=-1.514, p=0.130, n1=79, n2=46), or general phone calls (Mann-Whitney, Z=-.386, p =0.699, n1=78, n2=46). Veterans did not change their patterns in any of the above situations. The majority of veterans continued to see their physicians regularly (arm 1=92%, arm 2=87%). They made the same amount of calls about prescriptions (arm 1=68%, arm 2=76%). Still, one-third of arm 1 and less than a quarter of arm 2 answered that they made less calls. Both arms, again, answered that they made the same amount of general calls (arm 1=69%, arm 2=67%). Yet, still some veterans made less calls (arm 1=28%, arm 2=26%).

Evaluation of Empowerment Questions

Veterans were asked to respond to five questions by indicating how much they agreed with a statement. They were asked if access to their medical records provided them with a reason for not seeing the doctor as often, improved the quality of care they received, prepared them for office visits, helped them to understand their physicians' instructions, and lastly if access to their records provided them with a sense of control.

Figure 10: Arm 1 vs. Arm 2 Office Visits

I don't have to see the doctor as often
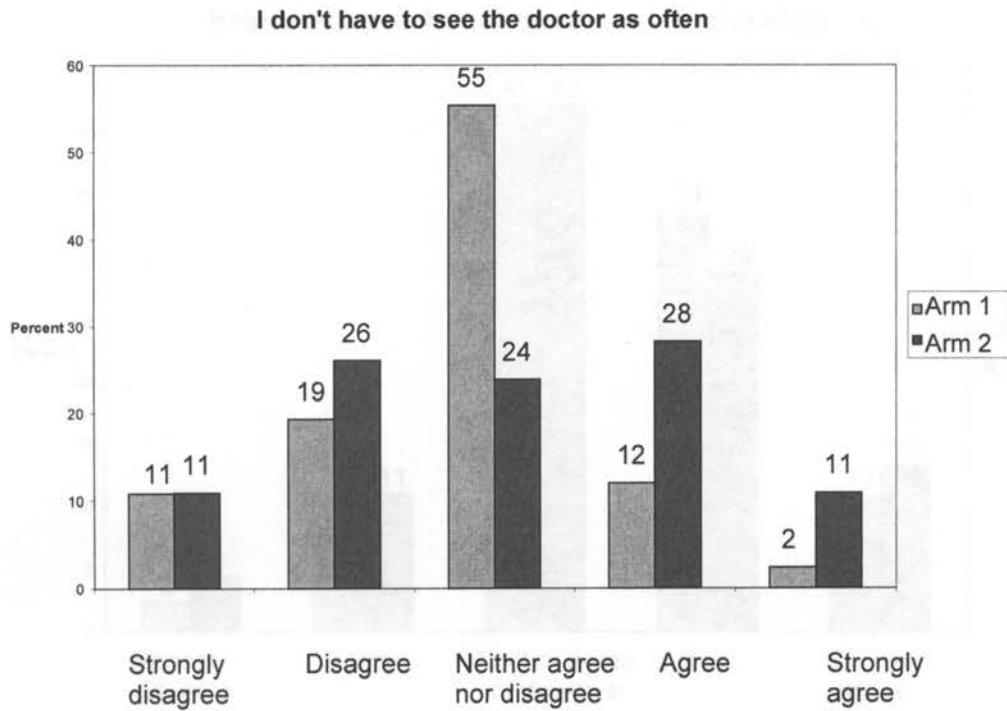
The first question asked veterans if access to health information online reduced the frequency that they saw their physician. Though the difference in distributions between the two arms was not significant (Mann-Whitney, $Z=-1.265$, $p=.206$, $n1=83$, $n2=46$), veterans in arm 1 did not find that there was a change in visiting their physicians (55% responded neutrally), while veterans in arm 2 were split between the responses "disagree" (26%), "neutral" (24%), and "agree" (28%) (see Figure 10).

Figure 11: Arm 1 vs. Arm 2 Quality of Care

Helped improve the quality of care I receive at the VA
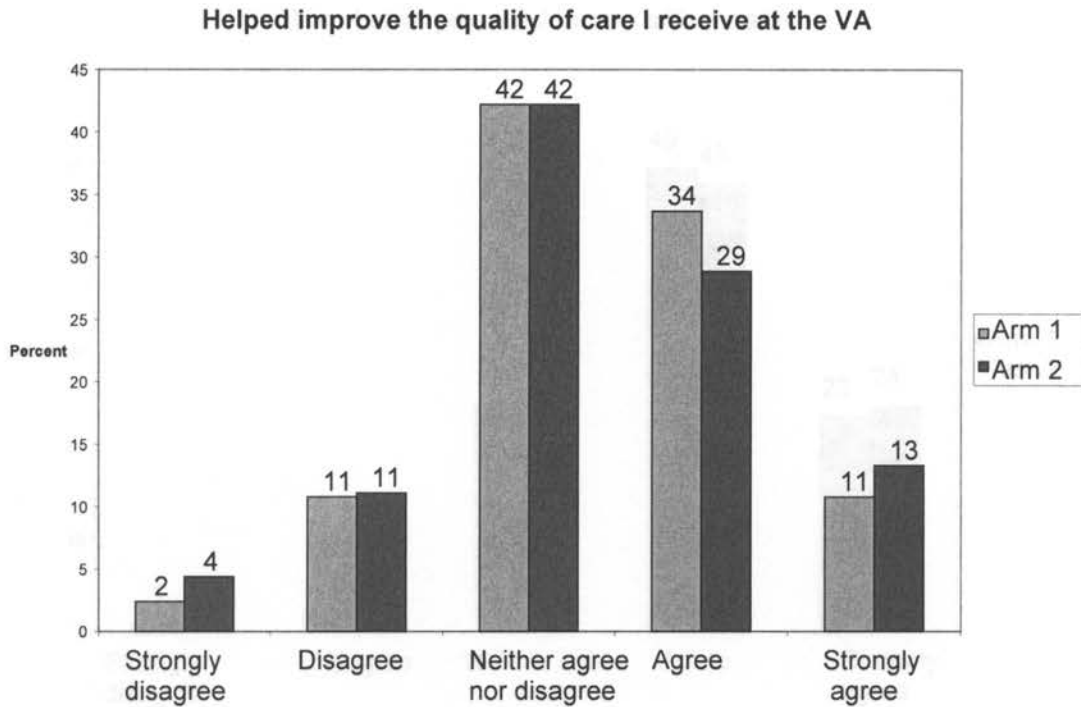
Veterans in both arms (Mann-Whitney, $Z=-0.214$, $p=0.830$, $n1=83$, $n2=85$) predominantly responded neutrally to the question asking them if having health information online had improved the quality of care they received at the VA (both arms at 42%); the two distributions were not significantly different (see Figure 11).

Figure 12: Arm 1 vs. Arm 2 Preparation

I am better prepared for my office visits
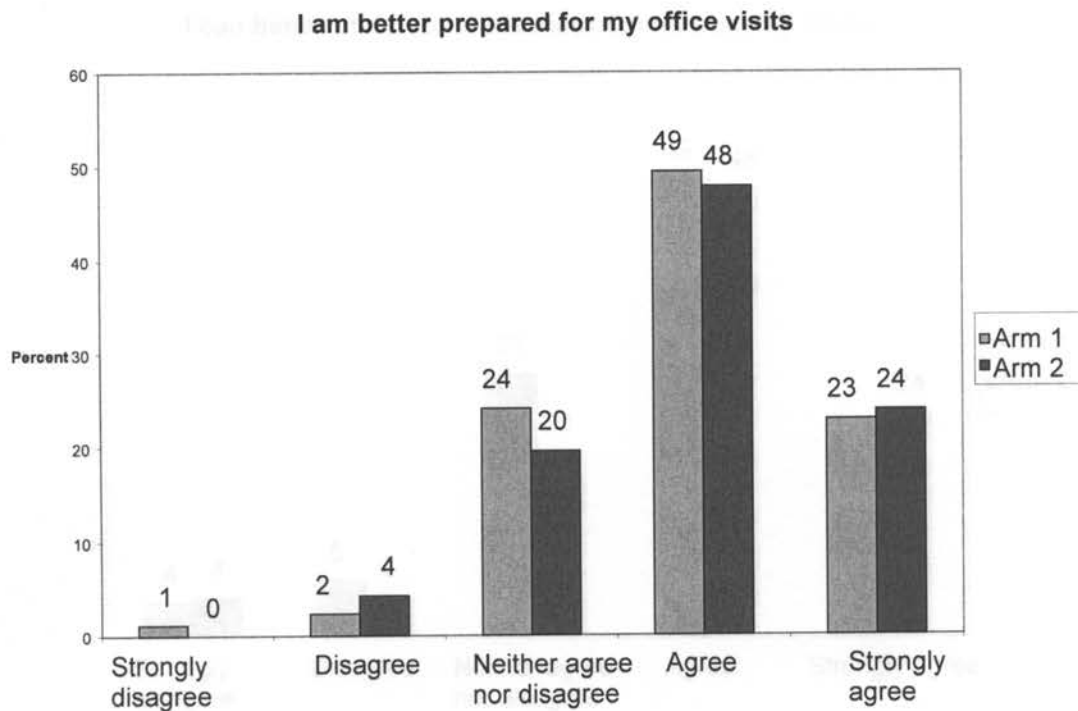
In response to "Having my health information online, I am better prepared for my office visits", veterans in both arms (Mann-Whitney, $Z=-0.991$, $p=0.322$, $n1=83$, $n2=46$) responded "Agreed" or "Strongly agreed" to the statement 72% of the time. The difference in distributions between the two arms was not significantly different (see Figure 12).

Figure 13: Arm 1 vs. Arm 2 Understand Instructions

I can better understand the instructions from my doctor
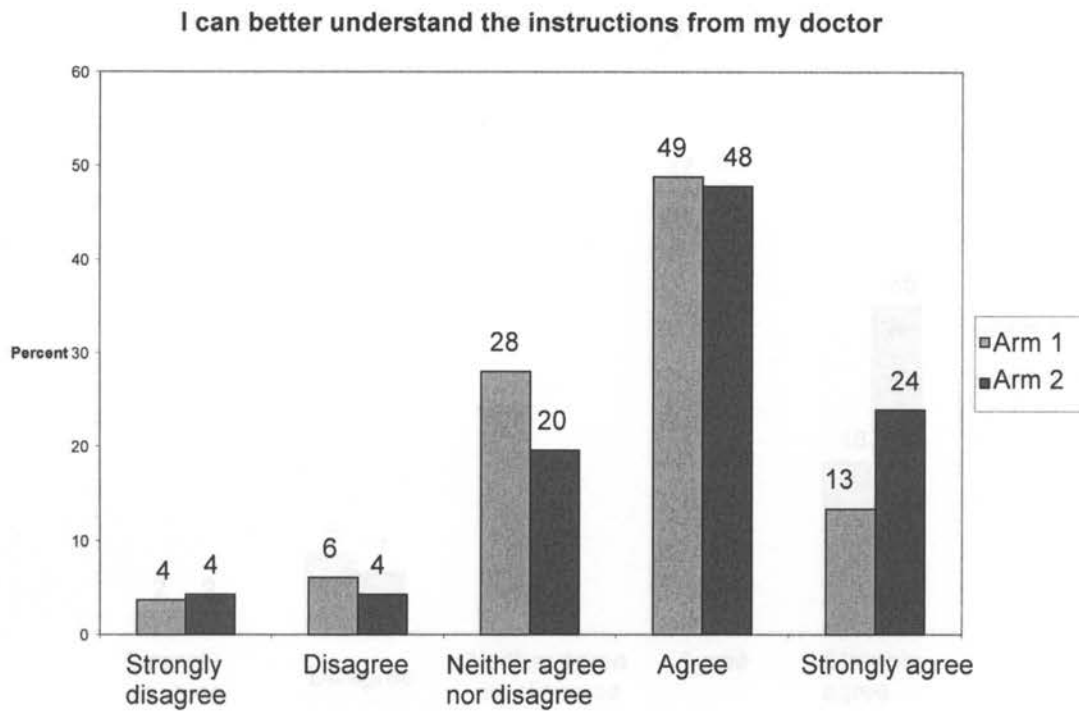
The majority of veterans in both arms "Agreed" and "Strongly agreed" (Mann-Whitney, Z=-1.425, p=0.154, n1=82, n2=46) with the statement "Having my health information online, I can better understand the instructions from my doctor" (arm 1=62%, arm 2=72%). Again, the difference in distributions between the two groups was not significantly different (see Figure 13).

Figure 14: Arm 1 vs. Arm 2 Control and Power

I have more control and power to manage my health care
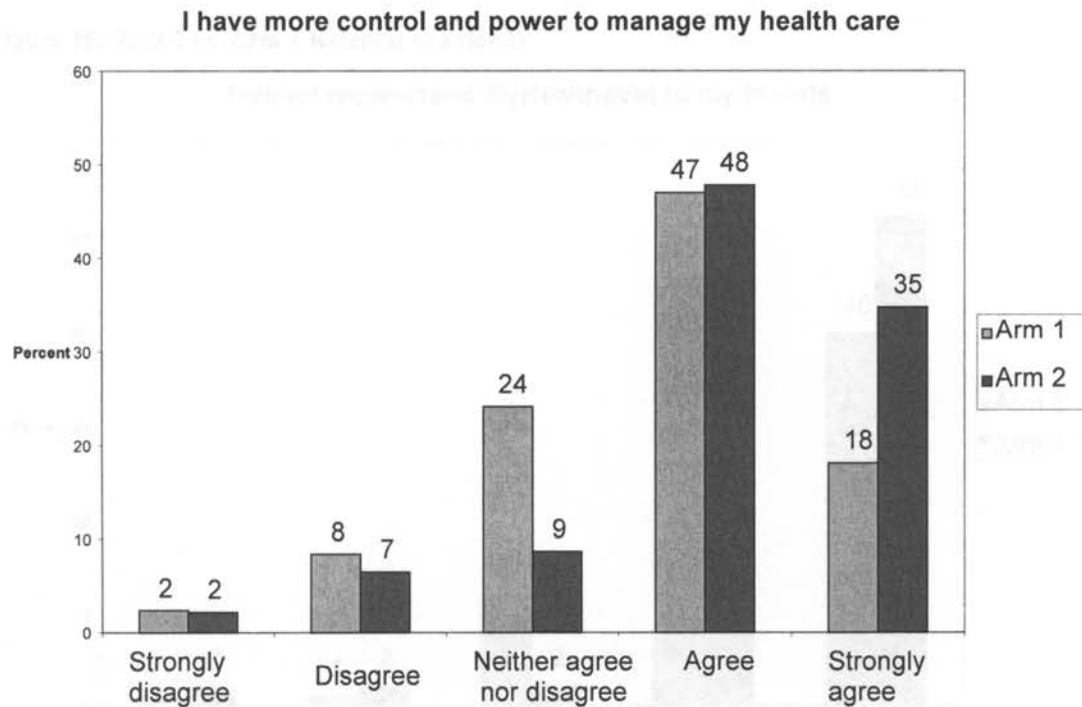
The only statement that had significantly different distributions in response from the veterans in the two arms was for, "Having my health information online, I have more control and power to manage my health care" (Mann-Whitney, Z=-2.417, p=0.016, n1=83, n2=46). Of the 42 veterans in arm 2 who answered this question, 35% agreed, while 18% of the 83 veterans in arm 1 "Strongly Agreed" with the statement (see Figure 14).

Figure 15: Arm 1 vs. Arm 2 Referral to Friends

I would recommend MyHealtheVet to my friends
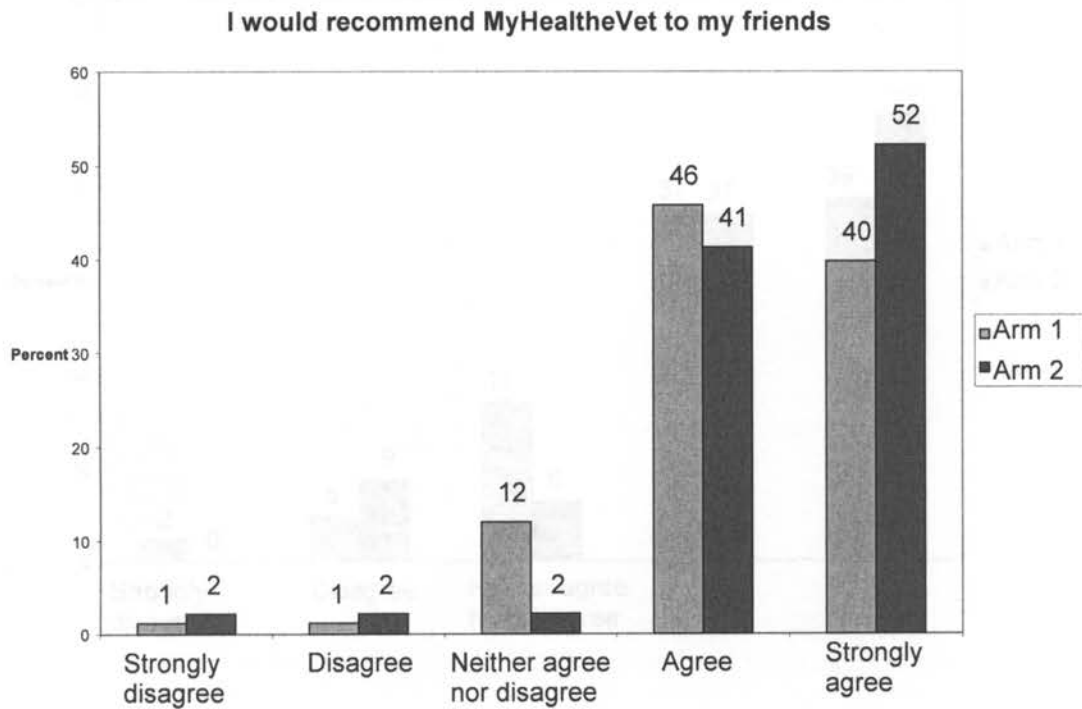
The majority of veterans in both arms (Mann-Whitney, Z=-1.541, p=0.123, n1=83, n2=46) either "Agreed" or "Strongly agreed" with the statement "I would recommend MyHealtheVet to my friends" (arm 1=86%, arm 2=93%). The difference in distributions between the two arms was not significantly different (see Figure 15).

I believe all veterans should use MyHealtheVet
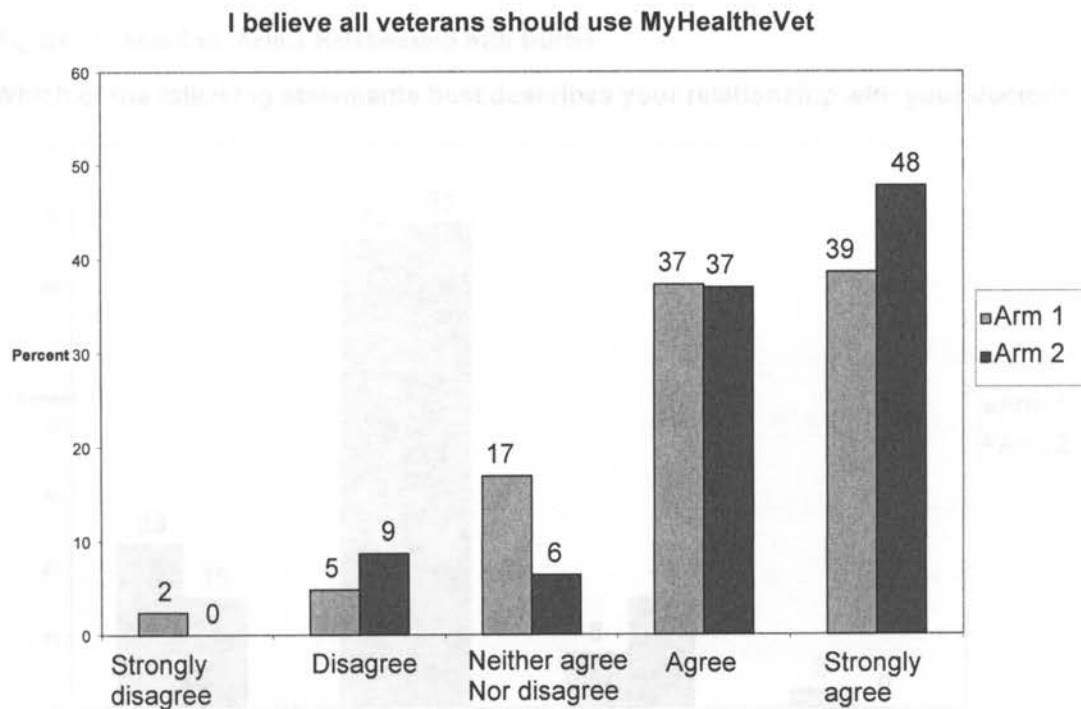
For the statement "I believe all veterans should use MyHealtheVet," the difference in distributions was not significantly different. Both arms (Mann-Whitney, Z= -1.176, p=0.239, n1=83, n2=46) also agreed or strongly agreed (arm 1=76%, arm 2=85%) with the statement (see Figure 16).

Figure 17: Arm 1 vs. Arm 2 Relationship with Doctor

Which of the following statements best describes your relationship with your doctor?
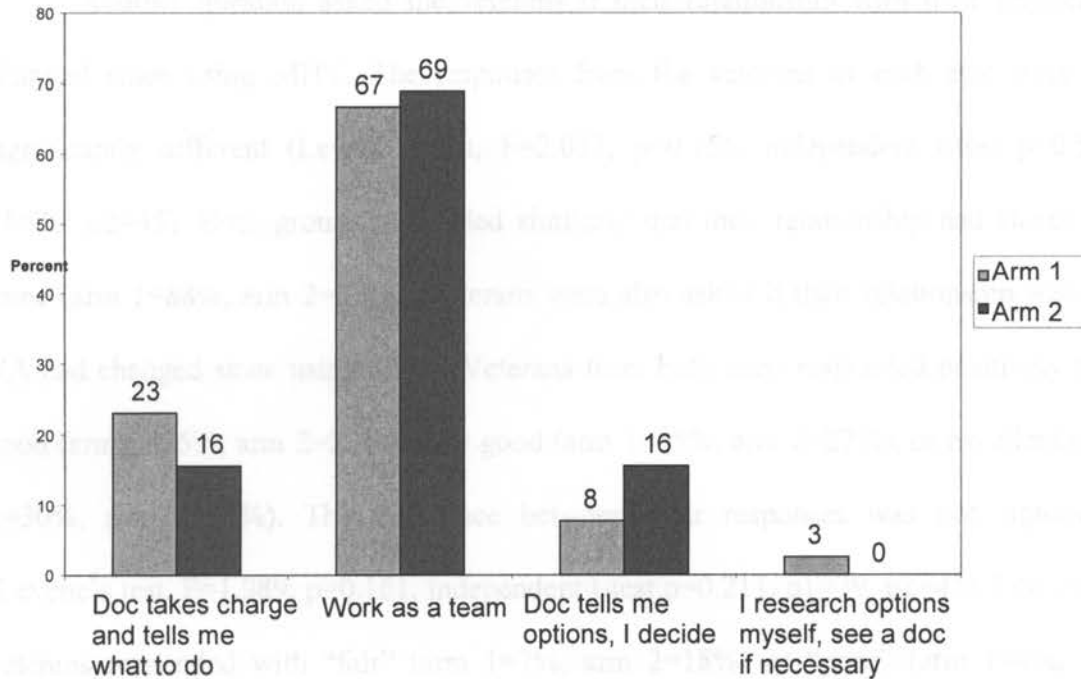
The following questions asked veterans in both arms about their relationships with their physicians. Both sets of veterans responded that they worked with their doctor as a team to develop a treatment plan (arm 1=67%, arm 2=69%) (see Figure 17). There was no significant difference between these two percentages (Levene's test, F=1.337, p=0.250; independent t-test, p=0.372, n1=79, n2=45).

The next question asked veterans if they had spoken to their physician about MHV during any of their appointments. In both arms MHV was not usually discussed between provider and patient (arm 1=52%, arm 2=65%). The difference in these two percentages was not significant (Pearson χ^2 =1.964, p=0.161, n1=82, n1=46). If MHV

was discussed, the veterans primarily brought the topic up (arm 1=80%, arm 2=81%) rather than the doctor. Again, the difference in these two percentages was not significant.

Another question asked the veterans if their relationship with their physicians changed since using MHV. The responses from the veterans in each arm were not significantly different (Levene's test, F=2.037, p=0.156, independent t-test p=0.539, n1=80, n2=45). Both groups responded similarly that their relationship had stayed the same (arm 1=88%, arm 2=87%). Veterans were also asked if their relationship with the VA had changed since using MHV. Veterans from both arms responded positively with good (arm 1=25%, arm 2=29%), very good (arm 1=35%, arm 2=27%), or excellent (arm 1=30%, arm 2=27%). The difference between their responses was not significant (Levene's test, F=1.989, p=0.161, independent t-test p=0.211, n1=79, n2=45). Few of the veterans responded with "fair" (arm 1=7%, arm 2=18%) or "poor" (arm 1=1%, arm 2=0%).

Both arms were not likely to bring any printouts from their MHV record to their appointments (arm 1=81%, arm 2=85%). There was no significant difference between these two percentages (Pearson χ^2=0.333, p=0.564, n1=83, n2=46). Though the percentage of those veterans who printed out and brought part of their MHV record to their appointments was small for both groups, the majority of the veterans spoke with their doctors till their questions were answered (arm 1=69%, arm 2=57%) or briefly talked with them (arm 1=31%, arm 2=43%). The difference in these percentages was not significant (Pearson χ^2=0.289, p=0.591, n1=16, n2=7). Seventy percent of the arm 1 veterans who did not bring a printout to their appointment and 69% of the arm 2 veterans who failed to bring a printout to their appointment responded that they will consider

bringing a print out to a future visit (arm 1=70%, arm 2=69%). There was no significant difference between these two percentages (Pearson χ^2=0.010, p=0.921, n1=67, n2=39).

Arm 2: Evaluation of Relationship Questions Before vs. After

Veterans in arm 2 were asked at baseline and at follow-up the same questions in order to gain a better understanding if MHV changed the relationships between themselves and their physicians or the VA in general. To evaluate if the veteran felt that his relationship with his physician was the same, the veteran chose between four answers signifying if the relationship was physician-controlled, patient-decision based, team-oriented, or purely patient initiated. Veterans answering this question before using MHV and after using MHV were significantly the same, at 66% before and 69% after. Veterans continued to work as a team with their physicians (Paired t-tests, p=0.375, n_b=50, n_a=45). They had also indicated that after using MHV, their relationship with their physicians were either the same (87%) or better (13%).

Figure 18: Arm 2 - Before vs. After Discussion of MHV

Discuss MHV at appointments
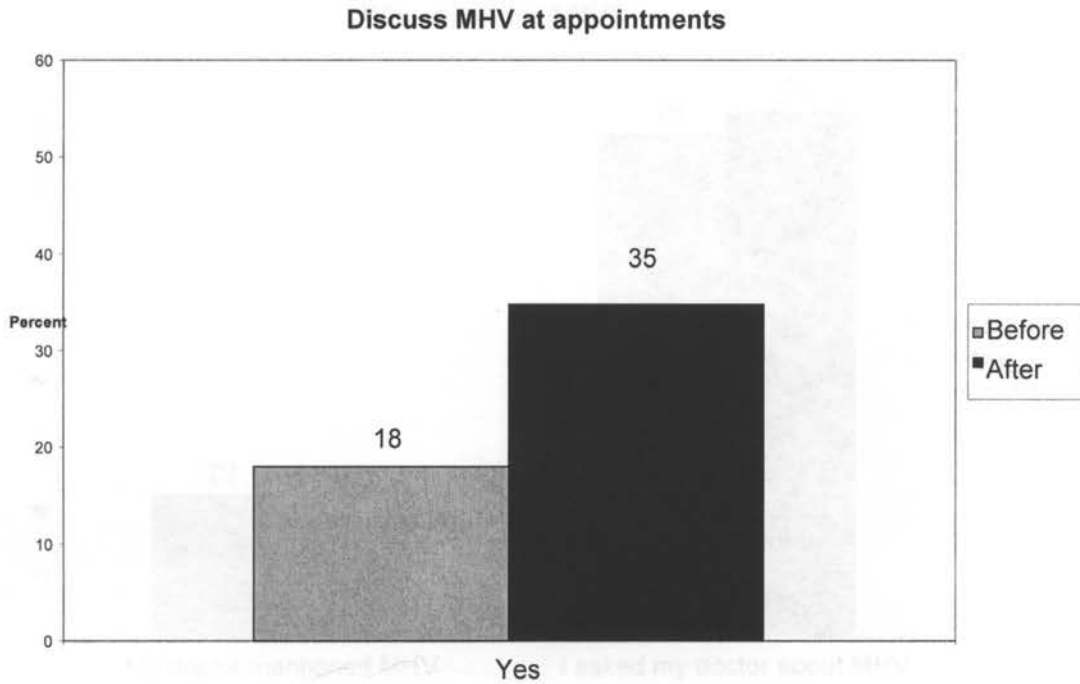
Veterans in arm 2 discussed MHV with their physicians approximately 18% before using MHV and 35% after using MHV, but this increase was not statistically significant (McNemar's χ^2 p=0.092 n_b=50, n_a=46) (see Figure 18).

Figure 19: Arm 2 - Before vs. After Who mentioned MHV
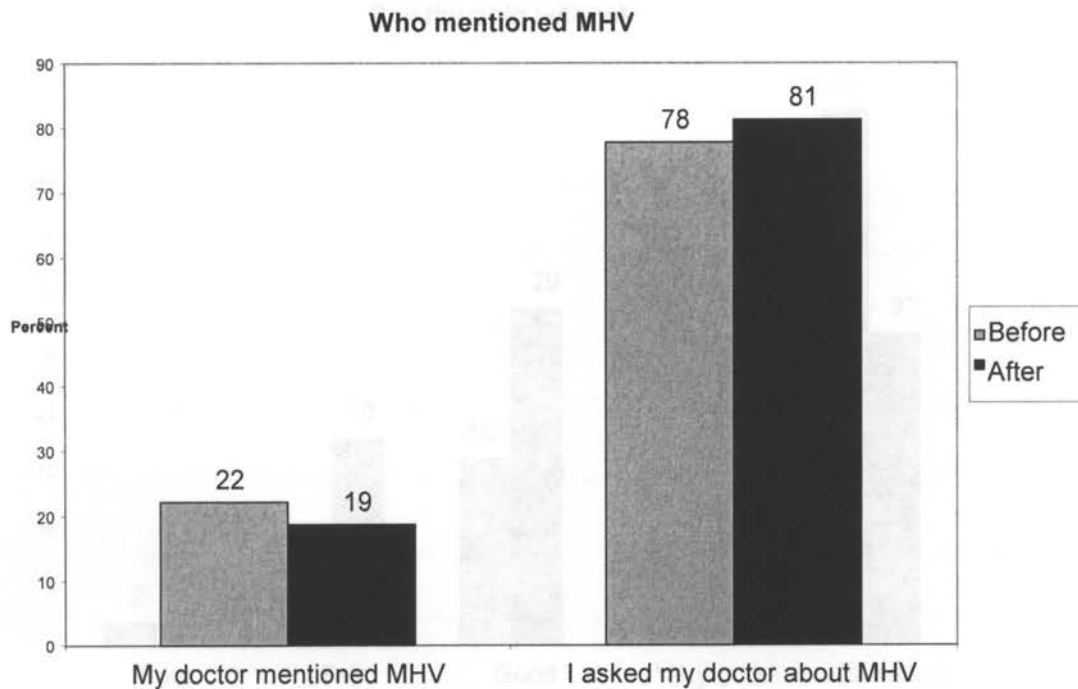
If veterans answered that they discussed MHV at their appointments, 81% said that they still brought up the topic rather than the doctor, compared to 78% of veterans answering the same before using MHV. There was no significant difference between veterans' answers before and after using MHV (McNemar's χ^2 p= 1.0, n_b=9, n_a=16) (see Figure 19).

- 38 -

Figure 20: Arm 2 - Before vs. After Relationship with VA

Relationship with VA
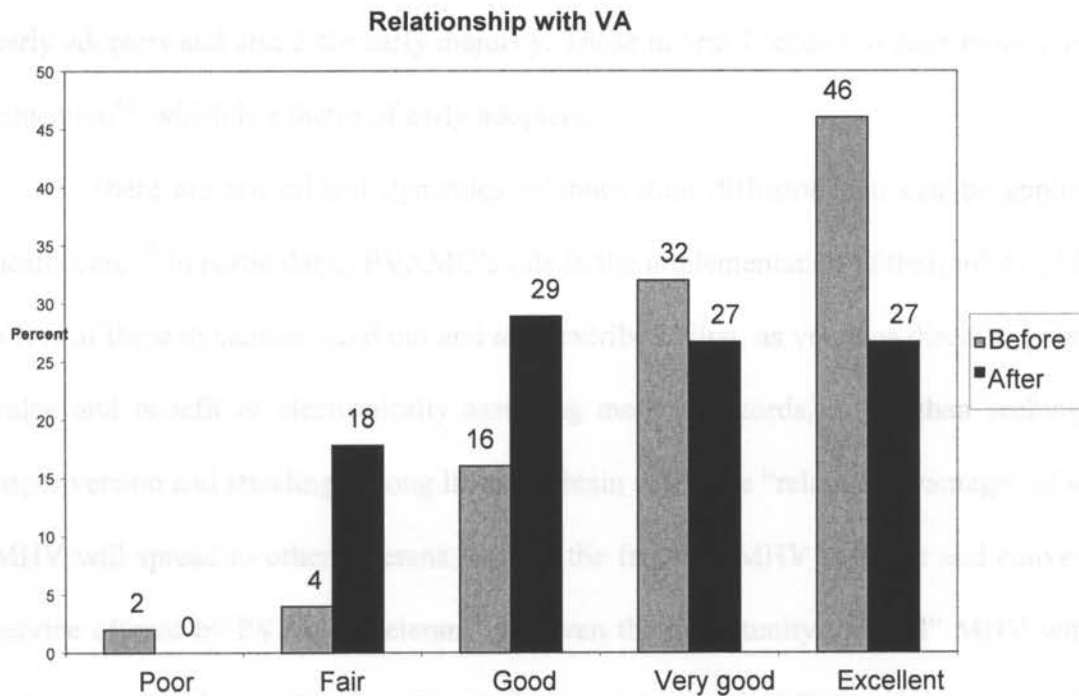
Before veterans were accessing MHV, they were more likely to say their relationship was "good" or better at 94%. After using MHV, veterans responded mostly positive with "good" or better at 83%, but the "fair" or worse percentage went up to 18% from 6%. A significant difference was found in the distribution regarding arm 2's relationship with the VA before and after using MHV (Wilcoxon signed ranks test, $p=0.002$, $n_b=50$, $n_a=45$) (see Figure 20).

Discussion:

Veterans enrolled in the MHV pilot can be considered health seekers. They use information technology to gain a better knowledge of their medical history and to take part in their health care outcomes. In most respects, they also follow Everett Rogers' diffusion of innovation (DoI) theory. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members

- 39 -

of a social system".[41] Following Rogers' bell-shaped curve, veterans in arm 1 are the early adopters and arm 2 the early majority. Those in arm 1 tended to have more years of education[41], which is a factor of early adopters.

There are ten critical dynamics of innovation diffusion that can be applied to health care.[42] In particular to PVAMC's role in the implementation of their pilot of MHV, a few of these dynamics stand out and are described. First, as veterans discover potential value and benefit of electronically assessing medical records, rather than seeking the paper version and standing in long lines to obtain them, the "relative advantage" of using MHV will spread to other veterans. Due to the fact that MHV is a free and convenient service offered by PVAMC, veterans are given the opportunity to "trial" MHV without commitment and monetary investment. Veterans are a select "homophilous group" that share similar characteristics whom are eager to spread the word about services that they can potentially benefit from. As PVAMC learns from their patients and define what will work, the VA appropriately synchs with the "pace of innovation". For example, initially MHV only allowed veterans to search through a static health information library or enter their own self-data, but the pilot incorporated the veterans' viewing of clinical information and later created an interactive pharmacy feature. Now that veterans are using the Internet to seek health information online they are "compatible" with the technical aspect of MHV and do not require a steep learning curve to access their personal health information online. Lastly, the "infrastructure" of MHV is Internet-based for easy accessibility. When a patient does not have Internet access, the PVAMC gives them this privilege by providing Internet stations at their hospitals. With any

implementation of a technical system, such as MHV at PVAMC, diffusion of innovation is influenced by word of mouth, familiarization, and use of the system.

As expected with increasing numbers of veterans enrolling in the pilot program, the total number of downloads requested by veterans to upload their eVAult also increased. However the trend of these downloads per enrolled veteran actually decreased. This did not necessarily mean that veterans were not using MHV. The veterans may have downloaded portions of their medical records once, but they still accessed MHV many more times, as indicated from veterans reporting that they went online to access MHV more than once in the two month period. This may indicate that veterans found the information they were requesting from these download requests was not changing without an interaction with their health care provider. Similarly, Cimino et.al, found that use of their system was variable and that differences in need for the accumulation of data may have contributed to this variance.[20] Overall, however, veterans were using MHV less over time based on the self-reported access to MHV and the download trend over time. In the remainder of this paper, actual usage and satisfaction of selected veterans using MyHealtheVet are discussed.

The arm 1 group found their training more useful than the other group and was also more likely to say that the information from their training was easier to remember than arm 2. This could be due to the arm 1 veterans' availability to ask for help. In-class trainings are intimate and veterans had direct contact with the instructor where questions were answered right away. There were terms emphasized during the training such as the download requests and logging off or closing the browser after using the application. The information provided during the classroom training was succinct and highlighted

important parts of MyHealtheVet. One advantage that veterans in arm 1 had over veterans in arm 2 was to bring in a spouse or caregiver during their training class for additional support. The caregivers would be able to ask additional questions or further assist the veteran on all the features.

The access pattern was similar for veterans in both arms but the requests for downloads were not. Veterans in arm 1 requested more information to be downloaded into their PHR than their counterparts. Also access frequency was correlated to download requests: the more often a veteran accessed MHV, the more likely he would request more information. Access to their medical records was the main feature for the pilot project. It is likely that the veterans were using this feature to their advantage each time they used the system. The issue of remembering to request a download was not significant; both arms felt the process was "extremely easy." The MHV quick guide may have been the essential memory tool to refer back to in using MHV. Veterans with the classroom training probably also remembered more often than those without to request a download because the account manager had emphasized this during the classroom training.

Though they did not discuss MHV with their providers at their office visits, in general, veterans across both arms worked as a team with their provider to construct a treatment plan. The majority of the veterans did not bring printouts from MHV to their appointments, but said that they would in the future if needed. Veterans did not perceive a difference in the relationship that they had with their providers after using MHV. In addition, they frequently answered that they had a good or better relationship with the VA.

There was not a statistically significant difference in the distributions of the veterans' responses concerning how they viewed the MHV website in usability and content. Yet, there were subtle differences between the two groups. In usability, both arms primarily thought MHV was easy to use; still it was not easy for 11% of veterans in arm 2 compared to 1% of veterans in arm 1. In addition, veterans in arm 2 were less satisfied with MHV while no one in arm 1 was unsatisfied. For content satisfaction, arm 2 was again less satisfied with the information than arm 1. Nine percent of arm 2 was not at all satisfied with the general information, though in arm 1 only 1% was unsatisfied. Veterans in both sets of arms used the self-entry feature with the same frequency but the pharmacy feature was used more often by those in arm 1. The implementation of the pharmacy refill pilot was introduced at this time and could have contributed to the use by the early adopters.

In terms of utilization, a majority of veterans in both arms reported that their office visits and phone calls remained unchanged; however, a substantial minority of veterans claimed to make fewer phone calls as well. This information may be good news to office staff to reduce the phone triage for simple tasks. Physicians had worried about their patients reading medical records then returning to them with mistakes or changes. From this survey, most veterans either did not look for mistakes or did not find any mistakes.

The five empowerment questions were taken from the Connecting for Health[12] survey to assess the attitudes towards the PHR. These questions were chosen to encompass how the PVAMC veterans felt about using the PHR. The different types of training did not necessarily affect the veterans' attitudes. Veterans in both arms did not

feel that having their health information online changed how often they visited with their physicians or improved the quality of care they received at the VA. They agreed that it helped them to better prepare for office visits and to better understand instructions from their physicians. The answers concerning control and power in managing their health care were different between the two arms. Although the majority of both groups agreed with the statement, veterans in arm 1 also answered more neutrally than the others arm 2. For unknown reasons, arm 2 valued the application more strongly.

The first hypothesis, that veterans will actively use MHV, was correct. Asking veterans how often they went online to access MHV, 88% of veterans in arm 1 and 68% of arm 2 accessed MHV two or more times in two month. The second hypothesis, if veterans previously had training in a classroom setting, they will use MyHealtheVet more often and be more satisfied with the application, was incorrect. Though there was a significant difference between the veterans with classroom training to those without in use, veterans in arm 1 logged into MHV more frequently and used the pharmacy feature more often than veterans in arm 2, the hypothesis was incorrect because the two arms were both highly satisfied with the application.

Another objective of this study was to evaluate how one group of veterans, arm 2, perceived their relationships with their providers and the VA before and after using MyHealtheVet. The hypothesis was that veterans would experience better relationships after using MHV. These veterans continued to work as a team with their providers to develop a treatment plan. In addition, veterans were initiating the discussion of MHV slightly more frequently after using the application than before. Initially, at baseline, the veterans reported that their relationship with their providers were good or better. At

follow-up, they believed that the relationship remained the same or became better. In their evaluation of the VA, the veterans' answers were more diverse. Initially, the veterans reported "good," "very good," or "excellent" relationships with the VA. However, at follow-up, the distribution of "fair" or "poor" answers was larger than before and the "good" or "better" answers were answered in equal frequencies. This may be because these veterans did not have enough time to use MHV given that they had two months to use the application. Also, veterans may have felt obligated to respond with a reputable answer in the presence of the researcher at baseline. In general, the third hypothesis, that veterans will experience a better relationship with their physicians and the VA after using MyHealtheVet, was incorrect since the patient-physician relationship primarily stayed the same and the patient-VA relationship worsened.

One full-time employee was dedicated to the MHV pilot. The account manager reported to the director of the pilot project and was responsible for sending out letters, producing and assembling training manuals, entering data about registered veterans into CPRS, teaching the classes, and keeping software updates regarding the usage patterns of the pilot. The computer training required a classroom setting including computers connected to the Internet. The 45 minute classes were scheduled at least two-times a day for 5 days a week. If the classes had continued, PVAMC would have needed to increase the number of classes and have the account manager more dedicated to teaching the classes.

When the training was eliminated, an additional part-time study volunteer offered to take over the administrative components of the project. This included compiling training packets and entering registered veterans into CPRS. Also, the account manager

did not meet with any veterans; the TIM help desk support was responsible for receiving the veterans and distributing the training packets, thereby allowing the account manager to concentrate on MHV maintenance. For both situations, the cost remained the same. In an effort to actively involve veterans in the benefits of MHV, the training classes are essential for emphasizing the important features needed to interact with MHV properly. The long term return on investment from veterans, plus the supplemental support the VA provides to them, can affect veterans in the management of their health.

Limitations and Future Implications:

Limitations in any study offer the opportunity for further research. First, time was a major factor. Veterans in arm 1 had more time to become familiar with the features of MHV before being offered the survey. Indeed, during their training, they were directed to "request a download" in their class. Veterans in arm 2, on the other hand, were given 2 ½ months maximum to use MHV and it is unknown as to when the veteran took the opportunity to "request a download" or even if they read the instructions provided to them.

The different recruitment styles may have also contributed to the limitations. Veterans in arm 1 were sent questionnaires via postal mail and were not contacted again. Veteran in arm 2 were recruited and asked to complete a baseline questionnaire. These veterans may have felt that their answers had to reflect positive responses. The follow-up questionnaire was conducted over the phone lasting least 10 minutes. This study could be re-evaluated using consistent data collection methods. Another evaluation of this study would be to collect objective data from the MHV system itself.

Other potential limitations include the small sample size and use of non-standardized instruments (questionnaires). Bias was introduced since the study was not randomized. Another limitation is that the study does not represent the general population. In a VA population the individuals were more likely to report that they were white males. Answers to the survey are based on the subjects' recall memory and may range depending on the veterans last access of MHV. In addition, medical record information was not downloaded in real-time and could also be reflected in the answers of the survey. The low response rate in arm 2 could be due to the lack of incentives to continue the study.

The features in MHV were not studied in complete detail. There is a wealth of information that can be collected from the pharmacy refill feature alone. Future studies should consider measurement of resource utilization as well. As mentioned earlier, calls to the VA regarding both general and pharmacy issues did not change; however, this information could have been collected and analyzed in consideration of reducing calls to the VA. Furthermore, this study was conducted within a pilot study. Already within limitation, the researcher could not evaluate if the PHR improved self-management and encourages studies in that direction. Should the VA not reinstate the training classes, other methods to explain how to use MHV need to be investigated (for example, a computer simulated classroom environment or an online tutorial.)

Conclusion:

This research study indicated that MHV was a helpful application. It was a supplemental tool and veterans did not want to see it go away. In general, veterans have good relationships with their providers and the VA, and the veterans do not believe MHV

affected their relationships significantly. Veterans were satisfied overall with the application and would refer friends and other veterans to use MHV. It gave them an opportunity to manage their health care and get more involved.

The pilot was, as it stood, a preliminary model. Revising or enhancing some features such as prescription renewal is a forthcoming project for the pilot. Introducing new features that veterans perceive as useful, will provide initiative for them to use the application. Veterans were eager to see what more they could access and use in their medical record. The pilot study continues to change to benefit the veterans. Password and user ID pick up can now be done on the main floor at the VA at a kiosk where they have the opportunity to request a download into their eVAult. Although, there are no indications at this time that the VA will provide patients with real-time downloads to the eVAult, secure patient-physician messaging will be incorporated into the pilot in the near future.

The results of this study indicated that there were a couple of significant differences between the two training modalities. The classroom training was the more appropriate introduction to training veterans to use the application. More veterans with this training were using MHV and requesting downloads. If costs were equivalent, the classroom setting would provide a better environment for veterans to learn about the MHV application and understand the essential features and instructions.

The MHV pilot was a successful implementation for veterans to access their medical records. Enrollment numbers were high as well as usage of the application. To PVAMC, the definition of success for the pilot was solely measuring enrollment numbers, which it did come to achieve. The PVAMC should continue its effort to

enhance their patients' involvement in their healthcare by providing a training tutorial as well as enhancing and adding features.

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Appendices:

APPENDIX A

COMPUTER:

1) How often do you use a computer?
   a. Daily or everyday
   b. At least once a week
   c. At least once a month
   d. Never use a computer

2) Where do you have access to the Internet?
   a. At home only
   b. At work only
   c. Someplace else
   d. More than one place
   e. I do not access the Internet

3) How often do you use the Internet?
   a. Several times a day
   b. Once a day
   c. 3-5 days a week
   d. 1-2 days a week
   e. Every few weeks
   f. Less often or none

RELATIONSHIP:

4) Which of the following statements best describes your relationship with your doctor?
   a. My doctor takes charge of my medical problems and tells me what I should do
   b. My doctor tells me the options and then we work as a team to develop a treatment plan
   c. My doctor tells me the option, and then I decide what the treatment plan will be
   d. I research treatment options myself and only see a doctor if necessary for assistance

5) Did you talk about MyHealtheVet at any of your appointments?
   a. Yes, My doctor mentioned MyHealtheVet
   b. Yes, I asked my doctor about MyHealtheVet
   c. No, We have not discussed MyHealtheVet

6) Did you print out and bring part of your MyHealtheVet record to your appointment?
   a. Yes, my doctor and I talked about the information until my questions were answered.
   b. Yes, but my doctor and I did not talk about the information for very long.
   c. No, I did not bring a printout but I plan to in a future office visit.
   d. No, I did not bring a printout and do not plan to in the future.

7) How has the relationship with your doctor changed since you started using MyHealtheVet?
   a. It is much better
   b. It is better
   c. It is the same
   d. It is worse
   e. It is much worse

8) How would you describe your relationship with the VA after using MyHealtheVet?
   a. Excellent
   b. Very good
   c. Good
   d. Fair
   e. Poor

ROI:

9) How did you find filling out forms for the Release of Information (ROI) office?
   a. Very hard process
   b. Fairly hard process
   c. Somewhat easy process
   d. Fairly easy process
   e. Very easy process

TRAINING:

10) How useful was the training?
   a. Not at all useful
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely useful

11) Was it easy to remember the information in your training?
   a. Not at all easy to remember
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely easy to remember

12) Was there enough information in the training class [or packet]?
   a. Far too little information
   b. Somewhat too little
   c. About the right amount of information
   d. Somewhat too much
   e. Far too much information

ACCESSIBILITY:

13) How often did you go online to use MyHealtheVet?
- a. More than 5 times in two months
- b. 4 times in two months
- c. 3 times in two months
- d. 2 times in two months
- e. 1 time in two months
- f. Not at all

14) How often did you need to "request a download" to update your eVAult?
- a. More than 5 times in two months
- b. 4 times in two months
- c. 3 times in two months
- d. 2 times in two months
- e. 1 time in two months
- f. Not at all

15) How easy was it for you to remember to "request a download"?
- a. Not at all easy
- b. A little
- c. Somewhat
- d. Quite a bit
- e. Extremely easy
- f. Did not "request a download"

16) Did you have any trouble with the MyHealtheVet website?
- a. No trouble at all
- b. Minor troubles
- c. Major troubles

Please comment, if you had any troubles with the website:

_____

USABILITY:

17) How easy was the MyHealtheVet website for you to use?
- a. Not at all easy
- b. A little
- c. Somewhat
- d. Quite a bit
- e. Extremely easy

18) How satisfied were you with the way MyHealtheVet website worked?
   a. Not at all <u>satisfied</u>
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely <u>satisfied</u>

CONTENT:

19) Were you satisfied with the information in MyHealtheVet?
   a. Not at all <u>satisfied</u>
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely <u>satisfied</u>

20) Did you find the self-entered features useful?
   a. Not at all useful
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely useful
   f. Did not use the self-entered feature

21) Did you find any mistakes in your medical record?
   a. I did not look for mistakes
   b. I looked and there were no mistakes
   c. I saw a mistake and told my doctor to fix it
   d. I saw a mistake and went to ROI to fix it
   e. I saw a mistake but did not do anything to fix it

22) Did you find the pharmacy feature useful?
   a. Not at all useful
   b. A little
   c. Somewhat
   d. Quite a bit
   e. Extremely useful
   f. Did not use the pharmacy feature

UTLIZATION:

23) Did having your medical record online save you from going to an office visit?
   a. I didn't need to see my doctor as often
   b. No change in office visits
   c. I had to see my doctor more often because I was concerned with what I saw

24) Did the number of calls to your doctor about prescriptions change after you had access to your medical record?
   a. I didn't make as many phone calls
   b. I made the same amount of phone calls
   c. I made more phone calls

25) Overall, did the number of calls to your doctor change after you had access to your medical record?
   a. I didn't make as many phone calls
   b. I made the same amount of phone calls
   c. I made more phone calls because I was concerned with what I saw

EMPOWERMENT:
Please rate how much you agree or disagree with the following statements:

26) Having my health information online, I don't have to see the doctor as often.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

27) Having my health information online, I have more control and power to manage my health care.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

28) Having my health information online has helped improve the quality of care I receive at the VA.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

29) Having my health information online, I am better prepared for my office visits.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

30) Having my health information online, I can better understand the instructions from my doctor.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

REFERRALS:
Please rate how much you agree or disagree with the following statements:

31) I would recommend MyHealtheVet to my friends.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

32) I believe all veterans should use MyHealtheVet.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

DEMOGRAPHICS:

33) How old are you?

34) Do you consider yourself
   a. White
   b. Black or African American
   c. Hispanic
   d. Asian or Pacific Islander
   e. Native American or Alaskan Native
   f. Mixed racial background
   g. Other

35) What is the highest level of education you have completed?
   a. Some high school or less
   b. High school graduate or equivalent (GED)
   c. Some college, but no degree
   d. Associate degree
   e. Bachelor's Degree (BS, BA)
   f. Graduate school (MS, MD, PhD, JD)

36) Are you:
   a. Male
   b. Female

37) In general, would you say your health is:
   a. Excellent
   b. Very good
   c. Good
   d. Fair
   e. Poor

38) What was your total family income before taxes last year:
   a. Less than $20,000
   b. $20,000 – $50,000
   c. $50,000 - $75,000
   d. $75,000 - $100,000
   e. More than $100,000

APPENDIX B

<table>
<tr><td>**VA** Department of Veterans Affairs</td><td>**VA Informed Consent Form**
Page 1 of 7</td></tr>
</table>

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HealtheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

SPONSOR:

None

CO-INVESTIGATOR(S):   Michelle Lee, BA, 510-552-0585

PURPOSE:

This study involves research. You have been invited to be in this research study because you indicated an interest in a My HealtheVet account. My HealtheVet is an Internet-based application that gives you access to your personal electronic medical record.

The purpose(s) of this research study is to learn about the enrollment process to My HealtheVet.

Approximately, 120 individuals will agree to be in this research study from the Portland VA Medical Center. Approximately, 60 veterans who have completed the on-campus training and 60 veterans new MyHealtheVet users will agree to be in this research study.

If you agree to join and do not withdraw from the study before all procedures are complete, your participation in this study will last for 3 months.

DESCRIPTION OF STUDY PROCEDURES:

As a new enrollee of MyHealtheVet, you will be required to complete two short questionnaires in the course of the study. The first questionnaire will be given to you before you begin you access the MyHealtheVet website. You will be asked to answer questions about yourself and questions about your perceptions of your relationship with your doctor and with the hospital. You will also be required to provide a telephone number and/or address so that we may contact you to complete the second questionnaire. This should take 5-10 minutes.

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

Research Service Template Version 10/06/2004

VA FORM
JAN 1990 **10-1086**

VA Department of Veterans Affairs	**VA Informed Consent Form**
	Page 2 of 7

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HealtheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

After you have completed the training class and used the system for two months you will be asked to complete a second questionnaire either by telephone or after an office visit at the VA. In the questionnaire, you will be asked questions regarding your experience with the enrollment process (i.e., Release of Information (ROI) clearance and training), the MyHealtheVet website, the content of MyHealtheVet, using MyHealtheVet, your relationship with your doctor and the VA, and how having MyHealtheVet has affected your role as a patient. This will take 10-15 minutes to complete.

The questionnaires that you are asked to complete are done for research purposes. If you did not join, you would not complete these procedures.

You were asked to participate in the study since you have indicated your interest in accessing a My HealtheVet account

You will not be receiving any treatment in this research study

Along with demographic questions the questionnaire will ask you about your relationships with your doctor and the hospital, experience with the computer and Internet, the enrollment process (i.e, ROI clearance and training), MyHealtheVet website (usability, accessibility, content, utilization), and how MyHealtheVet has affected your role as a patient.

RISKS and DISCOMFORTS of PARTICIPATION:

Some of these questions may seem very personal or embarrassing. They may upset you. You may refuse to answer any of the questions that you do not wish to answer. If the questions make you very upset, we will help you to find a counselor.

Being in this study may result in a breach of confidentiality, or loss of privacy. The research team will keep your information as confidential as possible and your questionnaire will be coded with a unique identifier.

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

Research Service Template Version 10/06/2004

VA FORM
JAN 1990   **10-1086**

APPENDIX B

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HealtheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

When accessing your electronic medical records online in a public place, there is a risk that someone may see what is on the computer screen or may see a paper copy if you print the records. If you have any questions or concerns about loss of privacy by using My HealtheVet, please contact the My HealtheVet Help Desk, at 800-555-7691.

BENEFITS of PARTICIPATION:

You will not benefit from being in this study. However, by serving as a subject, you may help us learn how to benefit patients in the future.

ALTERNATIVES:

You may choose not to be in this study.

CONFIDENTIALITY of RESEARCH RECORDS:

How confidentiality will be maintained. Your information used for this study will be kept confidential as required by law. Your name or identity will not be used in any published reports about this study.

When your information is given to other researchers working with this study, your information will be labeled with a unique code. Only Michelle Lee will be able to identify you. The paper research records will be accessible only to Michelle and will be kept in a locked filing cabinet in a locked office.

Your identity will not be disclosed unless you give specific, separate consent to this or if it is required by the law. The law requires us to keep study records for six years following the end of the study.

Mandatory reporting of suspected child or elder abuse. Under Oregon Law, suspected child or elder abuse must be reported to appropriate authorities.

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

Research Service Template Version 10/06/2004

VA FORM
JAN 1990 **10-1086**

Department of Veterans Affairs	**VA Informed Consent Form**
	Page 4 of 7

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HealtheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

Others who will have access to your information. Others who will have access to your information for this research project are the Portland VA Medical Center Institutional Review Board (the committee that oversees human research) and authorized VA personnel and other federal agencies, such as the FDA, the Office for Human Research Protections (OHRP), and the Government Accounting Office (GAO), in order to meet VA and other Federal or local regulations.

COSTS:

Veteran subjects. A Veteran participant will not be required to pay for care and services (treatment) received as a subject in a VA research project. VA patients must be eligible for VA services. However, some veterans are required to pay co-payments for medical care and services provided by VA. These co-payment requirements will continue to apply to medical care and services provided by VA that are not part of this study (e.g. normal hospital and prescription expenses, which are not part of the research study).

There are no costs to you.

PAYMENT for PARTICIPATION
You will not be paid for your participation in this research project.

LIABILITY:
Research Related Injuries. Every reasonable effort to prevent any injury that could result from this study will be taken. In the event of physical injuries resulting from the study the VA will provide necessary medical treatment (not just emergency care) to a research subject injured by participation in a research project. You will be treated for the injury at no cost to you. This requirement does not apply to treatment for injuries that result from non-compliance by a research subject with study procedures. For eligible veterans, compensation damages may be payable under 38 United States Code 1151. For all study participants, compensation damages resulting from the negligence of federal government employees may be available in accordance with the provisions of the Federal Tort Claims Act. For additional information concerning claims for damages, you may contact VA

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Research Service Template Version 10/06/2004

VA FORM
JAN 1990 **10-1086**

VA Department of Veterans Affairs	**VA Informed Consent Form**
	Page 5 of 7

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HealtheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

Regional Counsel at (503) 326-2441. You have not waived any legal rights or released the hospital or its agents from liability for negligence by signing this form.

Whom to contact in the event of a research-related injury to the subject:
If you believe that you may have suffered a research related injury, contact: Dr. David Douglas at 503-721-1440. Dr. Douglas will give you further instructions.

In the event of a life- threatening emergency, call 911, or in an emergency situation, present yourself to the Emergency Care Unit (ECU).

PARTICIPATION:

Questions about research or about your rights as a subject. Michelle Lee at (510) 552-0585 has offered to answer any questions you may have about this research study. If you have any questions regarding your rights as a research subject, you may contact the Portland VA Medical Center Research Service (503) 273-5122.

Participation is voluntary. Your participation in this research study is voluntary. The authorization to use your protected health information is also voluntary. You may refuse to sign this informed consent form and authorization. However, in order to participate in this study you must sign the informed consent form and authorization.

Your rights if you do not participate. You do not have to join this or any research study. If you do join, and later change your mind, you may quit at any time. If you refuse to join or withdraw at any time from the study, there will be no penalty or loss of any benefits to which you are otherwise entitled. This will not affect your relationship with or treatment with the Veterans Health Administration. You will still receive all the medical care and benefits for which you are otherwise eligible. This will not affect your rights as a VHA patient.

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

Research Service Template Version 10/06/2004

VA FORM
JAN 1990 **10-1086**

APPENDIX B

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Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

Your participation may be terminated by the investigator without regard to your consent if you fail to comply with instructions or chose to withdraw from MyHeatheVet.

If you choose to withdraw from the research study you will be contacted to answer a series of follow-up questions.

Your right to withdraw. You may withdraw from this study at any time without prejudice to yourself or to any future medical care with this institution or with the Department of Veterans Affairs (DVA).

RESEARCH SUBJECT'S RIGHTS: I have read or have had read to me all of the above.

Dr. Douglas or Michelle Lee, research staff, has explained the study to me and answered all of my questions. I have been told of the risks and/or discomforts and possible benefits of the study. I have been told of other choices of treatment available to me.

I understand that I do not have to take part in this study.   I understand that my refusal to participate will involve no penalty or loss of VA or other benefits to which I am entitled.

In case there are medical problems or questions, I have been told I can call Dr. David Douglas at 503-721-1440 during the day. If any medical problems occur in connection with this study, the VA will provide emergency care.

I understand my rights as a research subject. I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done. I will receive a copy of this signed informed consent form and authorization for my records.

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

Research Service Template Version 10/06/2004

VA FORM
JAN 1990 **10-1086**

APPENDIX B

Subject Name: _____ Date: _____

Title of Study: Evaluation of My HeatheVet Implementation

Principal Investigator: David M. Douglas, MD   VAMC: 648 – Portland, OR

_____
Printed Name of Subject or
Subject's Legally Authorized Representative

_____ _____ _____
Signature of Subject or   Date   Time
Subject's Legally Authorized Representative

_____
Relationship to Subject, if Subject's Legally Authorized Representative

_____   _____
Signature of Witness   Relationship to Subject/Position Title

_____
Signature of Investigator or Investigator Representative: "I conducted the informed consent process
with this Subject."

If the Investigator did not sign above: "I have reviewed this consent form and attest to the integrity of
this informed consent process." Investigator Initials: _____

*Initial of patient or patient representative. "I have received a copy of this informed
consent/authorization document": _____

Subject's Identification (I.D. plate or give Name – first, last, middle)   **Version Date:** 03/15/05

**Research Service Template Version
10/06/2004**