Understanding Patients' Preferences and Experiences During an Electronic Health Record Transition

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ABSTRACT

BACKGROUND: The Department of Veterans Affairs (VA) has embarked on the largest system-wide electronic health record (EHR) transition in history. To date, most research on EHR-to-EHR transitions has focused on employee and system transition-related needs, with limited focus on how patients experience transitions.

OBJECTIVE: (1) Understand patients' preferences for information and support prior to an EHR transition, and (2) examine actual patient experiences that occurred at facilities that implemented a new EHR.

DESIGN: We used a two-step approach. We had discussions with geographically diverse patient advisory groups. Discussions informed semi-structured, qualitative interviews with patients.

PARTICIPANTS: Patients affected by the EHR transition.

MAIN MEASURES: We met with four patient advisory groups at sites that had not transitioned their EHR. Interviews were conducted with patients who received care at one of two facilities that recently transitioned to the new EHR.

KEY RESULTS: Patient advisors identified key areas important to patients during an EHR transition. 1) Use a range of communication strategies to reach diverse populations, especially older, rural patients. 2) Information about the EHR transition should be clear and reinforce trustworthiness. 3) Patients will need guidance using the new patient portal. From the patient interviews, we learned if and how these key areas mapped onto patients' experiences. Patients at the sites that had transitioned learned about the new EHR through a variety of modalities, including letters and banners on the patient portal. However, their experiences varied in terms of information quality, leading to frustrations during and between healthcare encounters. Patient portal issues exacerbated frustrations. These raised concerns about the accuracy and security of the overall EHR.

CONCLUSIONS: Maintaining clear communication across patients, local leadership, and providers throughout an EHR transition is essential for successful implementation. Patient-facing communications can set expectations, and help patients receive adequate support, particularly related to the patient portal.

KEY WORDS: electronic health record; patient portal; qualitative; patient experience; patient engagement

INTRODUCTION

The US Department of Veterans Affairs (VA) has embarked on one of the largest electronic health record (EHR) transitions in history [1]. VA is moving from a homegrown EHR to a commercial product, impacting more than 300,000 employees and 9 million patients. A 10-year phased implementation strategy to roll out the new Oracle Cerner Millennium EHR began in October 2020 and is slated to eventually reach 150 medical centers and over a thousand outpatient clinics [2]. A recent literature review identified organizational, technological, and human factors as important for successful EHR implementation [3]. To date, end-user training on the new EHR has focused on frontline providers and other healthcare personnel. This employee-focused strategy emphasizes training, technical support, managing cost and information technology (IT) systems, and overcoming provider and staff resistance to change [4, 5]. Yet, there is a gap in knowledge about the patient experience. We have only been able to identify three extant studies examining patient experiences during EHR-to-EHR transitions [6–8].

Patients can be affected by EHR transitions directly via changes to the patient portal and appointment scheduling procedures, and indirectly via changes to healthcare teams' workflows and processes [9, 10]. Positive patient experience is an important component of successful EHR transitions [3], and providers have concerns about how changing an EHR

can impact patients' experiences [5]. Ideally, transitioning to a new, standardized EHR will result in higher quality care and better communication [5], but it is essential that patients know about the transition and how it will affect them. For example, the VA Electronic Health Record Modernization Integration Office website provides some patient-oriented information about the transition, including how the transition might affect care, the timeline, and "frequently asked questions" [1]; however, it is unknown how many patients access this information or whether it meets their needs. To address this gap, we sought to: 1) understand patients' preferences for information and support prior to the EHR transition, and 2) examine actual patient experiences that occurred at sites that implemented the new EHR.

Methods

We used a two-step process to understand patient perspectives about VA's EHR-to-EHR transition. First, we met with existing patient advisory groups at VA facilities that had not yet undergone the EHR transition, to identify preferences for information and support. Patient advisory groups can constructively steer research activities [11, 12]. The information generated from the advisory groups directly informed our next step. Second, we conducted one-on-one, semi-structured qualitative interviews to elicit patients' experiences with the new EHR, at sites that had recently transitioned. Patient advisory group discussions and qualitative interviews were led by two team members with more than three decades of combined expertise in qualitative methods (anthropologist GMF, sociologist TMH).

We joined virtual, standing patient advisory groups between January and March 2022, during the groups' regular 60–90-min meetings. We purposefully sampled groups to represent four diverse geographic areas. The goals of the patient advisory group discussions were to explore the needs of patients in anticipation of the EHR transition and inform the development of our interview guide where we could ask patients about their experiences with their EHR transition. Each discussion began with a brief overview of Oracle Cerner Millennium and the current VA implementation plan. Discussions were generative, and led by a facilitator with the prompts: "*What have Veterans heard/read about the change?; What do Veterans need to know?; How can the VA help Veterans during this change?*" They were held virtually using Microsoft Teams. One patient advisory group explicitly requested we not video/audio record the group, to further differentiate these discussions from research activity, nor did we collect demographic information. Instead, we wrote descriptive field notes and an analytic summary after each discussion. Discussion summaries were iteratively reviewed first by individual discussion and then across all discussions [13]. The full team, which included a health services researcher (AMC), an informaticist (JAD), and an expert in patient portal use (SLS), identified information key

areas across discussions. We shared a summary of all discussions with each group, in-line with community participatory research practices [14].

Second, we conducted in-depth, one-on-one, semi-structured qualitative interviews between August and November 2022, with active patients at two sites that had transitioned to the new EHR April-June 2022. We shared a recruitment flyer via social media and email to contacts at both sites. We also mailed letters to *My HealtheVet* patient portal users prior to and after the transition ($n = 75$). Active patients were defined as having a primary care physician and a future appointment. Patient portal users were defined as having sent a secure message in the past 180 days and having refilled a prescription through the patient portal since their site transitioned.

Interviews were conducted, recorded, and transcribed using Microsoft Teams. Interviews lasted 45–60 min and explored awareness of the EHR transition, experiences with care before and after the transition, and if applicable, use of the patient portal before and since the transition. After each interview, the interviewer wrote a summary memo including key observations in an analytic template.

Interview transcripts were first reviewed, summarized, and iteratively discussed by the qualitative leads, and then discussed with the full team. Findings from the in-depth interviews about patients' experiences were organized into the three key areas identified by the patient advisory groups. For each key area, the qualitative leads created a comprehensive synthesis of the interview data, with exemplary quotes from interview participants, to ensure accuracy and breadth of experiences. This study was approved by VA's Central Institutional Review Board, who also determined that meeting with patient advisory groups was not a research activity.

RESULTS

We spoke with four patient advisory groups from facilities in the Northeast, Southwest, rural Mountain West, and West Coast. Advisory group members ($n = 29$) were diverse in age, life experiences, and careers (including working for the VA). Interview participants ($n = 23$) received care at an urban facility in the Midwest or a rural facility in the Pacific Northwest that recently transitioned to the new EHR. Interviewees ranged from 32 to 83 years old (mean 62) and were largely white (87%) males (74%).

Patient advisory group members identified three areas important to patients' EHR transition information and support preferences: 1) Use a range of strategies to reach diverse patient populations 2) Information about the EHR transition should be clear and reinforce trustworthiness 3) Patients need guidance using the new patient portal. We used these three areas to organize interview findings. Notably, interviewees largely separated their overall healthcare experiences from those related to the EHR. For example, one patient said VA is "one of the best systems out there"

while also remarking they are "working out the bugs" with the new EHR. Altogether, patients' positive comments were tempered by their needs during the EHR transition. As one interviewee put it, "I thought it was gonna be a simple transition. Like, turn one on and turn the other one off, but it's been more complicated than that."

Below we present patient advisory group recommendations by area, followed by interview data describing if and how patients experienced these.

Key Area 1: A Range of Communication Strategies Are Needed to Reach Diverse Patient Populations

The patient advisory groups identified the need for using multiple strategies to share information about the EHR transition. Suggested modalities were print (e.g., flyers), digital (e.g., the current patient portal), word-of-mouth (e.g., providers or peers), and television or radio for those not online. They also stressed the importance of providing information packets to community partners in rural areas.

Patient Experiences with EHR Transition Communications. Interviewees at sites with the new EHR learned about the transition from mailed letters, signs at the facility, providers, peers, the news, and patient portal notifications. The information patients received, however, was largely insufficient, lacked critical details related to how patients would be affected, and was sometimes incorrect. Several interviewees were unaware of the transition until either a medical appointment or logging into the old *My HealtheVet* patient portal, where they received a notification that their portal had changed to the new *My VA Health*. One participant learned about the new patient portal the day before their interview, while a few seemed unaware that the portal had changed even during the interview.

Interviewees noted information about the EHR transition should meet the needs of older patients, rural patients, and those who receive healthcare from multiple facilities. For example, a 78-year-old interviewee stated: "Change is not always a good thing because when you get older, you get kind of set in your ways. …But it's like everything else. It takes time and you get used to it." Similarly, a 33-year-old interviewee noted older patients may need personalized phone calls in addition to emails and flyers. Participants from the rural facility described a reliance on the patient portal to connect with providers because of unpredictable cellphone service and significant driving distances. Many rural interviewees described receiving care at multiple facilities: 1) their newly transitioned VA facility; 2) from the larger, urban VA that had not yet transitioned; 3) and care in their community. One interviewee split his care between VA facilities—one which had transitioned to the new EHR and one that had not; he noticed that only "half" of his information was

available in the new portal. His confusion was exacerbated because none of his providers at either facility were listed in the new portal for him to secure message.

Many interviewees stated they received limited information about the EHR transition; some did not find out about a new patient portal until they lost access to *My HealtheVet*. As one interviewee said, "You have to communicate. You can't just, you know, end one program today and start a new one tomorrow." In another example, an interviewee described how she had received a letter about the EHR transition and logged onto the portal on the transition date, but nothing had changed. She later learned the transition had been delayed. She was not notified of the new transition date, and only found out when she later logged in and the old portal no longer worked.

Key Area 2: Information About the EHR Transition Should Be Clear and Reinforce Trustworthiness

The patient advisory groups stressed the importance of clear and direct communications from VA leadership, their local facilities, and providers that build and maintain trust. Suggestions included providing patients with information about why the system is changing, when changes will happen, and what to expect. They recommended using "short and simple" and "happy, healthy" messages about the transition. They cautioned against "over promising and under-performing" and emphasized putting "the bottom line, up front" to instill confidence in the VA. Patient advisory groups underscored the importance of patients knowing the VA is protecting their data when transferring their medical record information to the new EHR system.

Lack of Information Led to Frustration with Healthcare Encounters. Across interviews, patients recounted frustrating experiences they attributed to the EHR transition. Without prompting, over half of interviewees ($n=13$) used the word "frustrating." Frustrations spanned from being unaware the medical record was changing, to challenges during medical appointments, to problems using the new patient portal. Describing her experience as a "choose your own adventure," one participant summarized the transition as "a little confusing" and that "more direct information would have been helpful."

In another example of frustrations, GF started an interview by stating they would be discussing the new EHR. The interviewee bluntly and immediately responded, "It's absolute shit!" He then detailed how he waited 20 min for his nurse to input his information. He noted this was not a unique experience—"absolutely every single person I've dealt with has had a problem with the system." Other participants similarly reported their providers had difficulty using the new EHR. One stated that at every appointment "I have

to tell them everything all over again." He further speculated that it "seems like my whole record hasn't caught up."

Interviewees also talked about their providers' frustrations. One patient recalled her provider's frustration with the new system which "seems hard for them to navigate." Many patients were empathetic, with one stating: "You know, they're human too… I see their frustration."

Lack of Information and Portal Issues Raised Concerns About the Overall EHR Interviewees specifically raised issues with the patient portal, which undermined overall confidence in the new EHR. Problems spanned the logon process, the inability to find their providers, issues sending/receiving secure messages, incorrect or missing medication lists, and the inability to order prescription refills. Patients relayed numerous, ongoing challenges logging into their patient portals, finding the process overly difficult to navigate—"it's as if the whole system is designed to be more complicated." One participant described being unable to get past the homepage in the five months since her facility transitioned. Logging into the new portal was exacerbated by a new, unrelated two-factor authentication policy that coincided with the EHR transition.

Numerous interviewees reported missing medications, prescriptions expiring early, and poor functionality for renewing and refilling prescriptions. One patient said his patient portal would freeze if he tried to refill too many prescriptions simultaneously. As a result, he got "very frustrated" and "walk[s] away." A rural participant relied on the portal because of poor cellular service. Because of her difficulties accessing the new portal, she called her provider to refill her prescription, but "we just played phone tag for a whole week." Another echoed how much of a "pain" prescription renewal was. As a solution, patients would call-in renewals, sometimes waiting up to 40 min on hold. Others brought their prescription refill requests to the hospital pharmacy, an option unavailable to those who lived further away.

Lack of Information Raised Concerns About Security. This range of issues undermined confidence about the security and accuracy of patients' medical records. Further, because the new EHR was developed by an outside entity, one interviewee expressed that it "really upsets" him. He felt his records were being "farmed out;" he preferred his records "be in one spot, not of half a dozen." Adding to concerns over security and trust, an interviewee learned from a nurse during an appointment that the EHR identified him as "deceased." He had not returned since to see if he had been resurrected. In another instance, a nurse wanted to check a patient's feet

because his record indicated he had diabetes—a diagnosis he does not have. Together, these experiences highlight how misinformation in patients' records affected their trust in the veracity of the new EHR.

Key Area 3: Patients Need Guidance and Training on the New Patient Portal

The advisory groups stressed the importance of needing to understand how to use the new patient portal. Unprompted, each advisory group suggested the need for "dummy accounts" to practice using the new system prior to their facility's transitioning to the new EHR. All groups described the importance of everyone having a role and being equipped to support patients. One member stated, "I need someone at the other end who will walk me through it when I'm having a rough time." Members recommended peer navigators to help patients. There were diverse views on the role primary care providers should play, given clinical demands. Additional resources, including online chat, could provide patients with immediate assistance. Finally, members highlighted the role of community organizations, particularly for rural areas where these groups already serve as a resource.

Patients' Experiences Learning the New Patient Portal. In contrast to the advisory group recommendations, no patients described the opportunity to test or practice on the new patient portal in advance of the transition. Instead, many inadvertently learned there was a new patient portal when they were unable to complete a task like logging on, sending secure messages, or refilling prescriptions. Patients often sought help with their portal issues and, while some found help using a hotline, others felt passed around or simply lost.

At transition sites, patients reported little training or support. Across interviews, patients commented on the lack of available help, especially in person. One interviewee's solution was to "struggle through and try to get through it, even though it's very complicated." Staffing issues further contributed to patients' frustrations both in that there was limited in-person help and that their appointments were scheduled too far in advance to meet their immediate needs or frequently rescheduled. Indeed, compounding challenges between COVID-19 waves, staffing, and now the EHR transition led to increasingly frustrating interactions. Nonetheless, some patients were able to get providers to help them navigate the new patient portal. One interviewee stated: "What helped me the most… [was a nurse who] actually called me and together we both walked through the new secure messaging." Providers played valuable roles in supporting patients during the transition.

DISCUSSION

This study is one of the few that examine patients' experiences during an EHR-to-EHR transition. Across the patient advisory groups discussions and patient interviews, we spoke with patients from six healthcare facilities about both recommendations and specific experiences during an EHR-to-EHR transition. They highlighted the need to proactively develop a multi-pronged, patient-facing strategy to meet the diverse needs of 9 million VA healthcare users. Our findings provide a roadmap for VA and other healthcare systems transitioning to a new EHR.

Patient advisory groups emphasized the need for clear communication and actionable information informing patients about the transition. Prior to the advisory group meetings, few attendees were aware of the transition—including several who worked for the VA. Lack of awareness may be reasonable at sites not scheduled to transition in the near term. Nevertheless, this lack of awareness was echoed in the interviews with patients at the two sites that had already transitioned. Despite VA providing information via letters and banners on the patient portal, these efforts fell short of meeting patients' needs immediately following the transition. Patients received letters announcing the originally planned transition date, but none reported receiving notice that implementation had been delayed due to VA's "strategic pause" designed to address critical issues, including patient safety [15].

Several patients identified discrepancies between their current prescriptions and what they saw in the portal. While we do not know whether this was a common experience, incomplete data migration is a known problem with EHR-to-EHR transitions [16]. Prior work has found that VA providers [17] and patients [18] are receptive to medication reconciliation through secure messaging. A proactive approach to detecting and addressing discrepancies will not only ensure safety but increase patient trust. Patients should be encouraged to fill their prescriptions in advance of their site's transition; review medications post-transition; and contact their healthcare team to resolve discrepancies.

Patient challenges with the new EHR were not only frustrating in the moment but could undermine relationships with providers and trust in VA. It does not matter if a poor experience, like being mislabeled as diabetic or deceased, is truly the result of the new EHR. If patients make this connection, it undermines their confidence in the system. Proactive communications can help set expectations, with statements about the need to plan for extra time at appointments, and patience with staff as they navigate new systems.

The EHR transition has direct and significant implications for all patient portal users since it is the main way patients are exposed to their EHR content. The VA has invested heavily in continually improving the *My HealtheVet* portal since its national rollout in 2003, leveraging user-centered design to optimize portal design and functionality [19]. These efforts resulted in high rates of *My HealtheVet* adoption with 53% of

patients registered for portal use as of October 2022. In that month alone, 1.46 million unique patients logged onto the (older) patient portal to fill prescriptions (43% of users), view appointments (35%), or secure message their healthcare teams (33%). This high *My HealtheVet* adoption makes it critical that VA support these patients in transitioning to the new portal. Patient portal use has been associated with improvements in medication adherence [20, 21], patient self-management [22], health outcomes [23, 24], patient-provider communication [25], and patient satisfaction and patient engagement [26, 27].

Despite the importance of portals, we found that many interviewees were unaware there was a change in their portal, were aware of the change but unable to access their account, or accessed their portal to discover missing or inaccurate information. Some confusion can possibly be explained by similar-sounding patient portal names (*My HealtheVet* vs. *My VA Health)*. For those who were aware, the information they received was not always actionable.

Additionally, we learned about the unique needs of rural patients. Many of the rural patients we spoke with reported high patient portal reliance. This allowed them to secure message providers or refill prescriptions online in lieu of driving to an appointment or using unreliable cellular service. Many rural patients already have increased fragmentation of medical records from receiving care at both VA and non-VA facilities [28, 29]. Fragmentation of records was exacerbated when only one of the VA facilities they used had transitioned to the new EHR. This resulted in patients being unable to see all of their active prescriptions in the patient portal as well as providers being unable to effectively communicate with each other about the patient's care.

Our findings should be understood in the broader context of an EHR transition. Transitions to new medical records are almost always challenging [16]. These expected challenges were worsened by a global pandemic which created staffing pressures and made training difficult (30).

Our work is not without limitations. First, our recruitment strategies yielded proactive patients who were frequent patient portal users. While these experienced users noticed differences between the new and old portals, they are a subsample of portal users and thus we miss the experiences of low users or patients who are not proactively engaged with the healthcare system. Further, these patients were largely white, males. The lack of representation of minoritized groups in the patient advisory groups and the interviews limits the perspectives represented in our findings. Second, we rely on patients' perceptions of the new EHR, which may be based on an incomplete understanding of the situation. This in no way diminishes the importance of their experiences. The onus is still on the system to improve patient experiences with the transition. We do not have systematic data about the extent to which the EHR or patient portals might be inaccurate, nor do we know if specific circumstances— like receiving care in both VA facilities that have and have

Table 1 Patient-Facing Recommendations for Health Systems Undergoing an EHR Transition

Key area	Recommendation
Use multiple communication strategies	*Utilize a range of strategies to reach diverse patient populations* • Paper brochures and mailings • Signs around the hospital • Online via social media, the hospital webpage, and patient portal • Encourage providers, peers, volunteers, and community partners to help spread the word • "Warm hand offs" for patients who are in immediate need of assistance • For portal users, send a secure message from their primary care team notifying them of the change, provide links to resources • Ask for patience during the transition
Provide accurate, timely information	*Provide clear communication both before and during the transition to prevent misunderstandings and build trust* • Notify patients both before and during the transition • Provide accurate and timely information • Give patients information in advance to allow them to prepare and ask questions • Have ongoing communication with patients regarding delays or changes • Provide brief rationale for transition • Explain security measures being taken • Acknowledge potential impact on clinical encounters • For people with upcoming appointments, say: "Please be patient, we just transitioned." • Engage and equip staff, local organizations, and national partners with information • Provide contact information for assistance resolving issues • Have trained staff available on-site, online, and by telephone who can assist with patient portal issues
Guidance and training for the new patient portal	*Patients need guidance and training on using the new patient portal* • Everyone should have tools to refer patients to transition-related resource • Develop a patient-friendly website with resources and *Frequently Asked Questions (FAQs)* about the patient portal transition • Provide video demonstrations of how to use key portal features (viewing appointments and health records, sending secure messages, refilling prescriptions) • Acknowledge and address the challenges of having 2 + portal systems for patients seen at multiple hospitals • Provide guidance on how to report problems so that any unintended consequences of the portal transition can be rapidly identified and addressed • Proactively anticipate potential problems with data migration that could affect the patient portal (e.g., incomplete prescription medication lists) • Consider the need for medication reconciliation to ensure all patients continue to receive and take the correct medications • Leverage clinical staff to reconcile medical record information across systems (e.g., medication)

not transitioned—created confusion about prescriptions. Inaccuracies could happen in any system but may be more noticeable and cause greater concern in the context of an EHR transition.

Our findings point to issues that warrant further exploration. While it is critical to understand and address provider challenges, patients' relationships with their providers, trust in the system, and possibly health, are at risk without complementary efforts directed at patients. There are important lessons from these early sites that can be applied to future implementation. Based on our findings, we developed key recommendations for VA and other systems to consider as they implement an EHR (see Table 1).

CONCLUSION

We explored patients' preferences for learning about, and experiences with, an EHR-to-EHR transition. Institutions should carefully consider the needs of diverse users during this process. Having multiple communication strategies, clear and accurate information, and close attention to the patient portal, can support successful implementation while maintaining patients' trust.

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