

Veteran and Staff Experience from a Pilot Program of Health Care System–Distributed Wearable Devices and Data Sharing

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Abstract

Objective The growing trend to use wearable devices to track activity and health data has the potential to positively impact the patient experience with their health care at home and with their care team. As part of a pilot program, the U.S. Department of Veterans Affairs (VA) distributed Fitbits to Veterans through four VA medical centers. Our objective was to assess the program from both Veterans' and clinicians' viewpoints. Specifically, we aimed to understand barriers to Fitbit setup and use for Veterans, including syncing devices with a VA mobile application (app) to share data, and assess the perceived value of the device functions and ability to share information from the Fitbit with their care team. In addition, we explored the clinicians' perspective, including how they expected to use the patient-generated health data (PGHD).

Methods We performed semi-structured interviews with 26 Veterans and 16 VA clinicians to assess the program. Responses to each question were summarized in order of frequency of occurrence across participants and audited by an independent analyst for accuracy.

Results Our findings reveal that despite setup challenges, there is support for the use of Fitbits to engage Veterans and help manage their health. Clinicians believed there were benefits for having Veterans use the Fitbits and expected to use the PGHD in a variety of ways as part of the Veterans' care plans, including monitoring progress toward health behavior goals. Veterans were overwhelmingly enthusiastic about using the Fitbits; this enthusiasm seems to extend beyond the 3 month "novelty period."

Conclusion The pilot program for distributing Fitbits to Veterans appears to be successful from both Veterans' and clinicians' perspectives and suggests that expanded use of wearable devices should be considered. Future studies will need to carefully consider how to incorporate the PGHD into the electronic health record and clinical workflow.

Keywords

- ▶ remote monitoring
- ▶ wearable device
- ▶ patient-generated health data
- ▶ virtual care

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Background and Significance

Interest is rapidly growing for using wearable devices, such as the Fitbit and Apple Watch, to monitor and track patient data.^{1,2} From the patients' perspective, these devices provide an opportunity to become more engaged in their health and motivated to achieve their goals. Previous studies, including a recent systematic review of the literature, found that the use of Fitbits in interventions can promote healthy lifestyles in terms of physical activity and weight loss.³⁻⁵ From the clinicians' perspective, these devices collect patient-generated health data (PGHD) that can guide discussions on healthy behavior, reinforce positive behavioral change, and, potentially, help manage patient care.⁶⁻⁸ The type of data that is automatically tracked can include steps/movement, calories burned, heart rate, and sleep patterns. However, as new versions of wearable devices emerge, additional potential innovations could accelerate the adoption of these devices for mainstream health care. Through these devices, people may be better equipped to understand their health status in real time. For example, Fitbit has developed an algorithm to predict cases of coronavirus disease 2019 (COVID-19) before the onset of patient-reported symptoms by tracking subtle changes in respiratory heart rate.⁹

Patients who are served by the Veterans Health Administration (VHA) within the U.S. Department of Veterans Affairs (VA) have a variety of health needs that may benefit from the use of wearable devices, such as the Fitbit. Many Veterans are considered overweight or obese.^{10,11} Therefore, being able to track movement (steps) and calories burned with the Fitbit wearable device, as well as track exercises/workouts and record a food log with the Fitbit app, may potentially influence weight loss. While weight loss is likely the most beneficial health outcome that the Fitbit may help facilitate, Veterans may also use the Fitbit to monitor their sleep patterns, heart rate, and oxygen levels, which may be relevant to a variety of health conditions.

Given the considerable and growing interest in sharing data from wearable devices, the VA developed a mobile app tool called Sync My Health Data (SMHD), an app that allows Veterans to authenticate to an aggregator service that collects Fitbit data and sends it to the VA. The VA's Office of Connected Care initiated a pilot program that distributed VA-purchased Fitbits to Veterans who were recommended for participation by their clinicians and who were willing to share their data. For this pilot program, synced data from the Fitbits are stored in a secure VA data resource and could be visualized by VA staff through a web application called Virtual Care Manager beginning in early June 2021. While there have been several health-related programs involving the use of Fitbits,⁴ to our knowledge, this article reports the first study to implement a Fitbit program in a VA. Following the conclusion of this pilot, Fitbits were also made available to selected participants in VHA's MOVE! (weight management) program. Findings from that study are being finalized.

The Fitbit pilot program was launched in January 2020 through four participating VA medical centers located in

San Diego, CA, Tampa, FL, New Orleans, OH, and St. Cloud, MN. The original plan was to distribute the Fitbits to Veterans in-person at VA medical centers. However, the onset of the COVID-19 pandemic shortly thereafter in the United States necessitated a pause of the program so that alternative distribution plans could be made. The primary distribution method became mailing the Veteran the Fitbit and setup instructions so that the Veteran could receive the Fitbit and complete the setup at home. A helpline phone number was provided for setup assistance as needed. The pilot program ended during the summer of 2021, with a total of 695 Veteran participants who were recommended for the program by members of their VA care team. Across the four participating VA medical centers, 24 clinicians participated in the pilot program by referring Veterans for Fitbits.

Objectives

Our objective for this article was to assess the pilot program from both Veterans' and clinicians' viewpoints. From the Veterans' perspective, we explored barriers to Fitbit setup and use, perceived value of the device functions, and perceived value in sharing information with the VA. From the clinicians' perspective, we assessed how they expected to use the PGHD from their patients' Fitbits, as well as other perceived benefits from distributing Fitbits to the Veterans. Specifically, the goals of the pilot program were:

- Explore barriers to Veteran Fitbit setup and use (wearing).
- Understand Veterans' perceived value of the device functions, perceived value of ability to share information with the VA, and satisfaction with the setup and maintenance process.
- Assess Veterans' ability and/or barriers to share data from wearable devices via SMHD.
- Understand clinicians' perceived value of the Fitbit program, including expected use of the PGHD.

Methods

Participants

We performed interviews with 26 Veterans and 16 VA clinicians to assess the Fitbit pilot program from both the patient and clinician perspectives. A subset of 200 Veterans who were part of the Fitbit pilot program (695 total) were sent a letter describing the interview opportunity and instructed to register through an online form if interested in participating. The 200 were selected reverse-alphabetically of the 695 total. To increase our participation numbers, another batch of 200 letters were sent after the initial round, resulting in a majority of the 695 Veterans being invited to participate. As part of the online form, Veterans entered demographic information. We scheduled all Veterans who expressed an interest for an interview over a 5-week period in 2021 (last two weeks of June and first three weeks of July) for a total of 26 Veteran interviews (17 male, 9 female). The age range of the 26 participants was as follows: 35-44 (5); 45-54 (2); 55-64 (7); 65-74 (11); and 75+ (1) years.

Veterans received a \$50 check for their participation in the interview.

We recruited 16 clinicians (7 male, 9 female) associated with the Fitbit pilot program from four VA medical centers: James A. Haley Veterans' Hospital, Tampa, FL (8); Southeast Louisiana Veterans Health Care System, New Orleans, LA (2); VA San Diego Healthcare System (3); and St. Cloud VA Health Care System, MN (3). Half of the participating clinicians were from the VA hospital system in Tampa since that hospital system issued the majority of the Fitbits for the pilot program. Clinicians were eligible for the interview if they had nominated patients to receive a Fitbit. The 16 volunteers had the following clinical backgrounds: 7 registered dietitians, 2 physical therapists, 2 physicians, 1 nurse practitioner, 1 respiratory therapist, 1 registered nurse, 1 licensed practical nurse, and 1 sleep medical technologist. VA clinicians did not receive compensation for their participation in the inter-

views. Clinician demographic information was collected at the beginning of the interview.

Interviews

Veteran and clinician volunteers were scheduled for an interview through video conferencing applications (Microsoft Teams or WebEx). Veteran interviews were scheduled for 60 minutes; clinician interviews were scheduled for 30 minutes. We limited clinician interviews to 30 minutes to increase the likelihood of participation. All interviews were conducted during June and July 2021. During the video calls, the participants were interviewed using the guides displayed in **Tables 1** and **2**. Development of the interview guides were informed by a review of relevant literature.^{12–18} The interviews were semi-structured in nature,^{19,20} allowing the interviewer (J. J. S.) the flexibility to ask related follow-up questions on topics of interest while also providing the same

Table 1 Interview guide for Veteran participants

| | |
|----|---|
| 1 | About when did you receive your Fitbit from the VA? |
| 2 | What made you agree to receive a Fitbit from the VA? |
| 3 | Do you have a smart phone? If so, what type of phone (e.g., iPhone, Samsung Galaxy)? |
| 4 | Do you have apps on your smart phone that are health-related? If so, what are they? |
| 5 | About when did you complete the setup of your Fitbit and Sync My Health Data (SMHD) app? |
| 6 | Tell me about your experience setting up the Fitbit for use. <ul style="list-style-type: none"> • Did you have any challenges getting it set up? • [Or if they indicate that they never completed the setup, ask why] • Did you work with VA staff to setup, use, or share data with the Fitbit? |
| 7 | Tell me about your experience using the Fitbit. <ul style="list-style-type: none"> • Do you find the Fitbit to be easy or difficult to maintain over time? What challenges, if any, are associated with maintaining the Fitbit? • How comfortable have you found it to be? Do you wear it every day? • Do you wear it during the day or night or both? • What type of data do you monitor with the Fitbit? • What functions of the Fitbit do you find most valuable? • Has anything surprised you? • Have you discussed the data from your Fitbit with your VA provider? If yes, how satisfied have you been with those discussions with your provider? Please explain. • If your VA care team has seen or can see your data, do you think that would improve communication between you and your care team? |
| 8 | Have you experienced any benefits from wearing your Fitbit? What kind? <ul style="list-style-type: none"> • Have you made any lifestyle changes based on the Fitbit? • What are some outcomes you hope for as a result of using a Fitbit? (e.g., increase self-awareness, improve my general health and well-being, help me reach a specific goal) |
| 9 | Do you think there is any value in sharing your information from the Fitbit with the VA to help manage your care? Please explain. <ul style="list-style-type: none"> • Are you comfortable sharing all information from the Fitbit? Is there certain information you would not want to share? |
| 10 | Is there anything else you wished your Fitbit did for you? |
| 11 | Has it met your expectations? |
| 12 | Would you recommend using a Fitbit to other Veterans? Why or why not? |
| 13 | Do you see enough value in the Fitbit that you would buy one yourself, if VA had not provided it? |
| 14 | Is there anyone who currently helps you with managing or tracking your activity with the Fitbit on a daily or weekly basis? If yes, how do they help? |
| 15 | Is there anything else you would like to volunteer or discuss about the VA's Fitbit that we have not already covered? |

Abbreviation: VA, Veterans Affairs.

Table 2 Interview guide for clinician participants

| | |
|----|--|
| 1 | What’s your position and title? |
| 2 | About how many Veteran names did you submit to receive Fitbits? |
| 3 | How did you identify candidate Veterans to receive a Fitbit? |
| 4 | What has been your experience with Veterans setting up the Fitbit for use? <ul style="list-style-type: none"> • What barriers or facilitators did you find regarding Veteran setup of the Fitbit? • Did you have to help trouble-shoot with any Veterans to setup, use, or share data with the Fitbit? |
| 5 | What has been your experience with Veterans wearing and using the Fitbit? <ul style="list-style-type: none"> • Have they mentioned it in any subsequent discussions? |
| 6 | How would you expect to use, if at all, any patient-generated health data (PGHD) that comes to VA from the Fitbit? <ul style="list-style-type: none"> • Use to aid in treatment or diagnosis, improve communications? |
| 7 | How would you expect to receive the data? (E.g., directly into EHR) |
| 8 | How would you expect to see the data? E.g., patient-by-patient or the ability to view cohorts of patients <ul style="list-style-type: none"> • What data? E.g., “exception”/out of range data only or all data with ability to see values that are outside expected parameters |
| 9 | Do you think there’s benefit from making devices available to patients? What kind? <ul style="list-style-type: none"> • Benefits to patient? • Benefits to provider? |
| 10 | What improvements or new functions would you like to see with wearable devices for Veterans to help manage patient care? |
| 11 | If VA were to purchase more devices, how would you want that program to work? <ul style="list-style-type: none"> • How would you expect to make a device available to a patient (e.g., EHR consult)?/How would you want Veterans to receive the device? • Would you want any feedback or notification when they were “up and running” with the device? |

Abbreviations: EHR, electronic health record; VA, Veterans Affairs.

set of core questions for each type of participant (Veterans and clinicians). All interviews were audio recorded. A second team member served as a note-taker during each interview. The typed notes from each interview were reviewed by the first author for completeness. The audio recordings were reviewed as needed to fill any gaps in the notes or missing context.

Analysis

Responses to each question were summarized in order of frequency of occurrence²¹ across participants by the first author (J. J. S.). A higher frequency of occurrence corresponded to greater support for each finding. While there are other ways to organize these types of qualitative results, we find that frequency of occurrence is an effective way to organize the findings for stakeholders and have used this method in previous studies.²²⁻²⁴ Summaries of findings for each question were then reviewed by a second team member (J. H.) for accuracy (frequency of occurrence). In addition, the second analyst reviewed the organization of findings and in some cases extracted relevant subfindings of importance within each overarching finding. This type of auditing procedure by a second team member enhances rigor and strengthens validity of the analysis.²⁵ We have successfully used this technique in previous studies.^{24,26}

Results

Here, we report the most notable results from the Veteran and clinician interviews.

Veterans

Motivation for Trying a Fitbit

Veterans agreed to receive a Fitbit from the VA for a variety of reasons. At least 10 were part of the VA’s MOVE! Weight Management Program and 9 learned about the Fitbit through MOVE! Program staff (9/26). Regardless of whether Veterans were enrolled in the MOVE! Program or not, four Veterans noted that they were motivated to try the Fitbit to improve eating habits and lose weight. One Veteran noted, “*I wanted to have a way to help improve my eating habits and diet to do better within my household.*” Three were motivated by the ability to monitor sleep and exercise with the Fitbit. Three simply tried it because it was being freely offered by the VA, and two were considering purchasing one before the VA offered it. Three Veterans agreed to try the Fitbit only because their provider recommended it.

Experience Setting up the Fitbit

Veterans received instructions with their Fitbit in the mail for how to set up Fitbit (including downloading the Fitbit app) as well as downloading and setting up the SMHD app. Initially, the sync rate for sharing data via SMHD was 60%, so each site added a standardized follow-up process, which could include secure messaging, phone calls, letters, or clinician outreach, to further assist the Veteran in setting up and syncing their data with SMHD. Although most Veterans were able to successfully complete the setup process, including syncing their Fitbit with the VA using the SMHD app, four Veterans needed assistance by VA staff to complete the setup. For

example, one said, *“I had a hard time, but somebody from the VA helped me and it worked out really well... I remember what the issue was, I had the wrong password.”* Six Veterans specifically reported having problems following the provided instructions. All 26 Veterans had at least set up the Fitbit device and used it. However, six Veterans had not successfully synced their Fitbit with the VA through the SMHD app at the time of the interview, suggesting that there is a need for further improvement to setup support for Veterans.

Experience Using the Fitbit

A large majority of Veterans reported an overall positive experience using the Fitbit (23/26). For example, one Veteran said, *“I love it. I've set goals for myself to hold me accountable. It motivates me.”* Two Veterans expressed a more neutral experience, and only a single Veteran described an overall negative experience. The Veteran with the negative experience expressed that the screen was not bright enough to use outside and that he could not sleep with it because it needed to charge. None of the other Veterans expressed these frustrations, and several reported that they had no issues charging their Fitbits before going to sleep at night. Although most wore their Fitbit during the day and night (19/26), five Veterans specifically reported finding it uncomfortable to sleep with at night. Most Veterans found the Fitbit comfortable to wear during the day; however, eight Veterans reported issues with the Fitbit band (e.g., developing a rash or band too tight). Some purchased their own bands that were more comfortable or that could be worn around their ankles.

Types of Data Monitored

Using their Fitbits, Veterans monitored the following types of data, in order of number of Veterans in the sample (26): steps (23), sleep habits/pattern/scores (16), heart rate (13), calories burned (10), exercise/workouts (6), water consumption (3), food log (3), breathing (2), oxygen levels (2), weight (1), and mindfulness exercises (1). Some of these are automatically monitored by the Fitbit (e.g., steps, heart rate), while others need to be logged by the Veteran with their Fitbit app (e.g., food log). When the Veterans were asked what data or functions of the Fitbit were most valuable, steps (8), including an hourly step reminder, and heart rate (8) were cited the most, followed by sleep habits/pattern/scores (6) and calories burned (5). One Veteran stated, *“Checking my heartbeat, my steps, and the calories—those are the really good elements of the app to me.”*

Sharing Fitbit Data with VA Care Team

The synced data from the Fitbits were made available to VA staff via Virtual Care Manager in early June 2021, only a few weeks before the interviews. Therefore, most Veterans did not have an opportunity to discuss their Fitbit data with their VA care team unless they brought data with them to an appointment. However, a large majority (23/26) of the Veterans thought there was value in sharing information from their Fitbit with the VA and a majority (22/26) felt that if their VA care team has seen or could see their data, that

would lead to improved communication between him/her and their care team. For example, one Veteran noted, *“I think it would [improve communication] because they know I'm struggling with pain. It would be helpful for them to see days that I'm not doing anything [when in pain] and reach out to me to see how I'm doing.”* All 26 Veterans indicated that they would be comfortable sharing all information from the Fitbit with the VA.

Benefits from Using the Fitbit

All Veterans interviewed except one believed they experienced some benefit from using the Fitbit. The Veteran (male, 55–64 age group) who did not see any benefit in using the Fitbit was the same one who had an overall negative experience (“Experience Using the Fitbit” section). When asked about specific lifestyle changes they have made as a direct result of using the Fitbit, exercise/movement was the most cited lifestyle change (21/26). As one Veteran noted, *“Since the Fitbit I have re-realized the importance of movement and exercise—I even started taking yoga classes. I've seen a correlation between that and my weight loss. I've been dieting for a bit and was not able to see the results that I have now by increasing my activity on a regular basis.”* Walking/steps was the most common type of exercise. Others included biking, yoga, and stretching. Other cited lifestyle changes were improved diet (5), mindful activity (2), and dedicating more hours for sleep (1). Veterans set specific goals and outcomes related to Fitbit use, including more exercise/movement (12), weight loss (10), improved general health (8), more or better sleep (5), and better cardio health (3). When asked if they would recommend using a Fitbit to other Veterans, all but one indicated that they would recommend it. Finally, 21 of the Veterans agreed that they see enough value in the Fitbit that they would buy one themselves if VA had not provided it.

VA Clinicians

Expected Use of PGHD

VA clinicians were asked how they would expect to use any PGHD that comes to VA from their patients' Fitbits. Several clinicians (5/16) indicated that they would use the data to monitor adherence to an established plan, assess activity level, and formulate goals based on the data and use it to readjust goals as needed. Others (4/16) noted that they would specifically use step counts as a compliance indicator or confirmation of patients' stated level of activity. Others expected to use the PGHD to monitor and manage a patient's heart rate (2/16). In addition, 2/16 clinicians expected that Veterans knowing their VA care team was looking at their data could provide motivation/encouragement to meet their health goals. One clinician who supervised a sleep laboratory indicated that he would analyze the sleep architecture provided by the Fitbit. However, he sees the Fitbit data as more of a self-management tool. He stated, *“If patients have their data they have more control over their health and I'm likely to see better compliance with patients using their CPAP [continuous positive airway pressure device].”*

Accessing the PGHD

The majority of VA clinicians expressed a preference for the ability to access PGHD directly through the electronic health record (EHR) (12/16) rather than through a separate application. As one clinician expressed, *“The more integration into [the EHR] the better. If there is an easy way to have it linked into the EHR that would be useful to be able to pull up information quickly.”* A minority felt it would be important to keep the “raw” PGHD separate from the EHR (4/16). For example, one clinician noted that if PGHD were to be in the EHR as part of the official medical record, it would need an addendum and interpretation by a clinician.

Preferred Display and Organization of PGHD

Clinicians were asked how they would expect to view the data for their patients. The majority stated a preference for seeing the data patient-by-patient (11/16). Three clinicians would prefer to see the data by cohorts of patients, and two wanted the opportunity to view the data either way. For example, one clinician noted, *“What’s more important for a clinical indication would be patient-by-patient [view] but I could see uses for aggregate data collection as well.”* When asked if there was a preference for seeing only data that is outside of an expected range or the ability to see all data, the majority of clinicians wanted to see all available data with the ability to see values that are outside of expected parameters (13/16).

Perceived Benefit to Patients

Clinicians believed there were clear benefits to making Fitbits available to patients. The benefit most mentioned was motivation for the Veterans to be active and meet their goals (7/16). Others felt that providing Veterans a Fitbit held them more accountable for their health care (5/16). A couple of clinicians specifically mentioned that the Veterans’ structured, military background helps with the VA Fitbit program because they are used to being accountable and reporting to someone. One clinician stated, *“With their military background, Veterans are very structured. Monitoring specific intensity and duration as prescribed eliminates vagueness. Removing ambiguity helps with compliance.”* Other clinicians (3/16) noted that another benefit was that Veterans feel or are more engaged in their health care (e.g., setting goals and demonstrating increased buy-in for doing exercises).

Perceived Benefit to Clinicians

Clinicians specifically mentioned a benefit of having Veterans use the Fitbits was the ability to monitor activity and use the data to develop a plan (e.g., rehabilitation) or goals for the Veteran (7/16). From this, one clinician noted that she could provide more accurate and individualized care by receiving and reviewing the Fitbit data. Another said, *“What they say is not what is going on. [The Fitbit data] allows me to recognize accomplishments and focus on that. Being able to turn the negative into something positive with more realistic patient-centered goal setting.”* Others noted the benefit of having the hard data versus the Veterans’ self-reported information about their level of activity (2/16).

Discussion

These findings suggest there may be support for the use of Fitbits among both Veterans and VA clinicians. Clinicians believed there were clear benefits for having Veterans use the Fitbits and expected to use the PGHD in a variety of ways as part of the Veterans’ care plans. Clinicians were most interested in using the PGHD for monitoring Veteran progress toward health behavior goals and using the PGHD as a compliance indicator or confirmation of patients’ stated level of activity. What is less clear from the clinical perspective is how to best access the PGHD and how the PGHD should be displayed. The majority of clinicians expressed a preference for being able to access the PGHD directly through the EHR. The PGHD is currently only accessible through a separate system, Virtual Care Manager, and only if Veterans have synced using the SMHD app. While having all data integrated in the EHR is desirable from the workflow perspective, including PGHD in the EHR will need to be done carefully (e.g., acknowledgment and interpretation from a clinician before becoming part of the official medical record). In fact, in a white paper on PGHD prepared for the Office of Policy and Planning Office of the National Coordinator for Health Information Technology, no examples were found of PGHD flowing directly into the EHR without a review process or review policies in place.²⁷ Health care organizations have well-defined policies for what should be documented in an EHR and by whom; thus, review of PGHD by a clinician before becoming part of the EHR is expected. The Agency for Healthcare Research and Quality (AHRQ) is providing guidance in this arena. Regarding display of the PGHD, most clinicians preferred seeing the data patient-by-patient. However, incorporating the ability to see the PGHD in different ways (e.g., by patient cohorts and through different filters) may generate new insights into improving the health of Veteran cohorts rather than one Veteran at a time. While we did not find similar studies that describe clinician preferences for how PGHD should be displayed, standard usability heuristics²⁸ are relevant here. For example, “user control and freedom,” as well as “flexibility and efficiency of use,” supports a display design that allows the clinician to view the PGHD at the patient level or by patient cohorts or other meaningful ways through the use of filters.

Veterans were overwhelmingly enthusiastic about using the Fitbits, despite some setup challenges. This enthusiasm seems to extend beyond the 3 month “novelty period,”²⁹ as 15/26 of the Veterans had been using their Fitbits for greater than 3 months at the time of their interview. Many of the Veterans reported positive lifestyle changes as a result of using the Fitbit, including more exercise/movement, more or better sleep, and improved overall health. Further, many reported feeling motivated by the Fitbit to achieve their health goals and that they would recommend the Fitbit to other Veterans. As an interesting comparison point of perceived Fitbit benefits between the clinicians and Veterans, 31% of the clinicians (5/16) perceived that providing Fitbits to Veterans would hold them more accountable for their health care. However, only 15% of Veterans mentioned accountability in their interviews. Thus,

finding ways to increase Veteran engagement with the program by fostering feelings of accountability may be important for future program success.

One of the more interesting findings was that all 26 Veterans interviewed indicated that they would be comfortable sharing all data from their Fitbit with the VA; none shared privacy concerns in the context of sharing any data with the VA for the purpose of their care. We did not ask Veterans about concerns related to the use of their data for purposes other than clinical care. Previous studies show that Veterans' attitudes toward sharing data with both VA and non-VA providers is generally positive.^{30–32} The key to maintaining this trust is to assure patients that data generated from the wearable devices will be kept private and be meaningfully used by their care team.³³ Transparency is needed for Veterans to understand existing data-sharing strategies that govern both the VA and the device manufacturer.³⁴ Overall, the Veterans felt that there was value in sharing the data from their Fitbit with the VA and that it could lead to improved communication with their care team.

Findings from our study should be interpreted considering some limitations. While our findings show that there is support for distributing Fitbits to Veterans, this study does not provide evidence that there would be a concrete clinical benefit to doing so. Further research is needed to demonstrate potential clinical benefits. Also, the synced data from the Fitbits became available to VA staff in early June 2021, only a few weeks before the interviews. Therefore, our study focused on *expected* use of the PGHD. Six of the Veterans in our sample had not successfully synced their Fitbit with the VA through the SMHD app. However, these Veterans were still able to report their experience using the Fitbit. We did not track specific patient–clinician “pairs” in our sample; thus, we are not able to directly report about the shared experiences between a Veteran and clinician. Sampling bias may have occurred with the Veteran participants as we did not account for their current health engagement level; this may have impacted their decision to participate in the pilot program and could have influenced findings from the Veteran interviews. This study is also limited to the VA and thus generalizability of some findings may be limited to the unique contextual factors of the VA health care system. Nevertheless, we expect many findings from this study to have relevance to other health care systems that begin to incorporate the use of wearable devices.

Conclusion

The VA's pilot program for distributing Fitbits to Veterans appears to be successful, from both the Veterans' and clinicians' perspectives, and suggests that expanded use of wearable devices should be considered. In addition to the Fitbit, other wearable devices should also be evaluated in comparison to the Fitbit to assess which device(s) can best meet the needs of Veterans. Future studies will need to carefully consider how to incorporate the PGHD into the EHR and

clinical workflow. Usability studies should investigate how to best display the data for clinicians in various roles. As functionality continues to expand for wearable devices, it will be important to provide high-quality instructions and tutorials for patients to take full advantage of these devices. Attention should also be given to ensuring clinician and institutional competencies for incorporating data from wearable devices into clinical practice are sufficient and maintained as use of this technology grows.^{35,36}

Clinical Relevance Statement

Interest is rapidly growing for using wearable devices, such as the Fitbit and Apple Watch, to monitor and track patient data. The use of Fitbits in interventions can promote healthy lifestyles in terms of physical activity and weight loss. These devices collect PGHD that can guide discussions on healthy behavior and reinforce positive behavioral change. Clinicians believed there were clear benefits for having Veterans use the Fitbits and expected to use the PGHD in a variety of ways as part of the Veterans' care plans, including monitoring progress toward health behavior goals. Veterans were overwhelmingly enthusiastic about using the Fitbits; this enthusiasm seems to extend beyond the 3 month “novelty period.”

Multiple Choice Questions

- Devices that collect PGHD can guide what type of discussions between the clinician and patient?
 - Palliative care.
 - Healthy behavior.
 - Health insurance.
 - Vaccination.
- Correct Answer:** The correct answer is option b (healthy behavior). Previous studies, as described in the Introduction of this article, found that the use of Fitbits in interventions can promote healthy lifestyles in terms of physical activity and weight loss. From the clinicians' perspective, these devices collect PGHD that can guide discussions on healthy behavior, reinforce positive behavioral change, and, potentially, help manage patient care.
- What type of data was monitored the most by the Veterans using a Fitbit in this study?
 - Calories burned.
 - Sleep habits.
 - Steps.
 - Heart rate.

Correct Answer: The correct answer is option c (steps). Using their Fitbits, Veterans monitored the following types of data, in order of number of Veterans in the study sample (26): steps (23), sleep habits/pattern/scores (16), heart rate (13), calories burned (10), exercise/workouts (6), water consumption (3), food log (3), breathing (2), oxygen levels (2), weight (1), and mindfulness exercises (1). Some of these are automatically monitored by the

Fitbit (e.g., steps, heart rate), while others need to be logged by the Veteran with their Fitbit app (e.g., food log).

Protection of Human and Animal Subjects

The findings reported in this publication were not derived, in whole or in part, from activities constituting research as described by VHA policy (VHA Office of Research & Development Program Guide 1200.21). Since this project was designed for VHA internal purposes only and was not intended to produce generalizable knowledge, this project does not constitute research activities that are subject to a variety of requirements and oversight by VA Office of Research Oversight and Office of Research and Development including institutional review board (IRB) approval. Although IRB approval was not required or sought, publication of the findings reported in this article has been authorized by the VHA. Privacy and confidentiality of data was maintained for all Veterans and clinicians interviewed for this project.

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Conflict of Interest

None declared.

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