

## True “Meaningful Use”: Technology Meets Both Patient and Provider Needs

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Incentivized by the federal Meaningful Use program to provide patients with electronic access to their health-care information, electronic health records (EHRs) potentially play a key role in patient-physician communication.<sup>1,2</sup> Using information technology in the promotion of health communication is a goal of Healthy People 2020,<sup>3</sup> yet many health systems have experienced lower than desired uptake and use of portals by patients.<sup>4</sup>

Two features of EHRs are especially important for improving patient-provider communication and helping patients to self-manage chronic diseases: the after-visit summary (AVS) and the patient portal (PP).<sup>5</sup> The AVS is a summary of an outpatient visit printed from the EHR for the patient at the conclusion of an appointment. It includes personalized patient instructions, prescribed medications, and upcoming appointments. The patient portal is an interactive Web-based platform for exchanging clinical information between patient and providers. The PP at the University of Pennsylvania Health System allows patients to view lab/test results, review and make appointments, request refills, and contact providers.

Limited research documents the extent to which the AVS and PP meet provider and patient needs, including those of low-income and low-literacy patients. One study found that patients with low levels of education, but with computer and Internet experience, are enthusiastic about the perceived utility of PPs.<sup>6</sup> Another study reported that patients cared for in safety net clinics use e-mail, text messaging, and the Internet to communicate with providers; however, all safety net clinics may not offer PPs or secure messaging.<sup>7</sup>

This study provides an in-depth exploration of the perceptions and needs of patients and their providers around the AVS and PP. It also details the degree to which these features meet patient and provider needs and their recommendations for improvement.

### ABSTRACT

**Objectives:** Voluntary patient uptake and use of electronic health record (EHR) features have been low. It is unknown whether EHRs fully meet needs of providers or patients with chronic diseases.

**Study Design:** To explore in-depth user experiences, we conducted 6 focus groups: 3 of patients followed by 3 of providers discussing 2 key EHR components: the after-visit summary (AVS) and the patient portal (PP). Focus groups were audio-recorded, transcribed, and analyzed by 3 independent coders.

**Methods:** Participants with moderate-to-severe asthma and prevalent comorbidities were recruited from 4 primary care and 2 asthma clinics serving low-income urban neighborhoods. Participants discussed their expectations and experience using the AVS and PP, and responded to prototype formats of these features. Additionally, one-on-one interviews were conducted with 10 patients without PP experience to assess their ability to use the system.

**Results:** The 21 patient and 13 provider perspectives differed regarding AVS features and use. Patients wanted a unified view of their medical issues and health management tools, while providers wanted to focus on recommendations from 1 visit at a time. Both groups advocated improving the AVS format and content. Lack of awareness and knowledge about the PP was patients' largest barrier, and was traced back to providers' lack of PP training.

**Conclusions:** Our results underscore the importance of user-centered design when constructing the content and features of the EHR. As technology evolves, an ongoing understanding of patient and provider experiences will be critical to improve uptake, increase use, and ensure engagement, optimizing the potential of EHRs.

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**Take-Away Points**

This study provides a concrete example of the importance of user-centered design to enhance the uptake of, engagement with, and meaningful use of electronic health records (EHRs) by patients and providers. We explored the after-visit summary (AVS) and patient portal (PP) through a parallel design to uncover similarities and differences in how patients and providers view and use these features. This paper presents empiric evidence supporting the following modifications to the design and implementation of the EHR:

- Increase awareness of EHR features among patients and providers.
- Provide training of patients and providers regarding features of the EHR.
- Enhance the organization and scope of information provided through the AVS and PP.

groups and introduced 10 additional patients to the patient portal in one-on-one interviews. A purposive sample of 31 patients from the 6 clinics described was recruited from 2 asthma intervention studies.<sup>10,11</sup> Asthma was chosen because it is a common disease, offers a model for self-management also required of other diseases, and is often accompanied by comorbidities including diabetes in adults. Thus, it was in-

tended that our findings could be potentially generalizable to other chronic diseases in adults and to patients who have comorbidities that complicate their communications with their healthcare practices. Participants were 18 years or older with moderate or severe asthma per the National Heart, Lung, and Blood Institute Expert Panel Report 3 guidelines.<sup>12</sup>

Provider participants were physicians and nurses working in the included clinics. Providers and patients were invited until each focus group was assured of having 5 to 8 participants, and each focus group participant was offered a light meal, free parking or tokens for public transportation, and a \$25 stipend. Participants in the one-on-one interviews received \$10 for the first session and \$20 for the second.

**METHODS****Study Setting**

Patients and providers were recruited from 6 University of Pennsylvania Health System (UPHS) clinics in different locations and with different missions. These clinics included 4 primary care clinics (2 internal medicine and 2 family medicine practices) and 2 specialty practices (allergy-immunology and pulmonary)—all located in the West Philadelphia community that they serve. These clinics have used the EHR with its PP from Epic (Epic Systems Corporation, Verona, Wisconsin) for more than 5 years.

**Study Design**

Qualitative methods are often chosen for exploratory studies because their main strength is capturing participant experiences in depth and eliciting meanings that participants ascribe to their activities.<sup>8</sup> We selected a focus-group approach to allow expression of individual ideas and group synthesis<sup>9</sup>; while individuals' responses in focus groups may be influenced by social pressure, moderator techniques limit such pressure. In each group the RIVA Institute-trained moderator ensured that the discussion was not dominated by a few participants or a single point of view.

Three focus groups of patients were followed by 3 of providers. Anonymous responses from the patient groups were used to prompt discussion in the provider groups. All sessions were audiotaped and transcribed. To further explore the extent of patients' ability to learn to use the PP, 10 patients similar to focus group participants with no PP experience were recruited for one-on-one interactions that introduced them to the PP and evaluated the ease of learning to use it.

The University of Pennsylvania Institutional Review Board approved the protocols. All participants gave informed consent.

**Participants**

We studied 21 patients and 13 providers in focus

**Procedures**

**Focus groups.** Participants were shown a typical AVS. Its features included the patient's vital signs, health goals, current medications, allergies, new medication and other orders, upcoming appointments, diagnoses, individualized instructions, and recommended timing of any follow-up visits. Participants were asked to comment on content, design, and features, and on how they personally used the AVS. Next, patients were polled about computer/Internet access; familiarity with the PP, including procedures for enrollment and use; and attitudes about using the PP. The PP was described and "screen shots" of pages were displayed to prompt discussion of content, design, and features. Descriptions of the PP's functions included logging in, viewing scheduled appointments, viewing lab results, requesting or canceling appointments, requesting prescription renewals, and viewing past AVS forms.

Provider groups followed a similar structure, including discussions of their views on the AVS and how they use it, as well as their experiences with the PP. Providers were also prompted with examples of an AVS and "screen shots" of the PP, and finally, providers were asked to com-

ment on patients' use of and requirements for the AVS and PP.

**One-on-one interviews introducing the PP.** In one-on-one interviews, 10 participants were shown a brief introductory video of the PP and they were offered assistance in setting up an e-mail account, if necessary. They were then shown how to activate a PP account and how to complete 7 simulated tasks (Table 1). One week later, participants were tested on their ability to complete these tasks and interviewed about their ease in navigating the PP.

## Analysis

Data collection was iterative, as it is common in qualitative research to continue uncovering nuances in the data. Depending on participant responses, prompts and refinements were added to subsequent groups.<sup>13</sup> The 3 focus groups each of patients and providers provided feedback saturation.

Using a Grounded Theory approach,<sup>14</sup> 3 coders independently identified content codes in transcripts and notes related to perspectives on the content, design, use, and facilitators of, and barriers to, the AVS and PP. From these codes, themes emerged; they were agreed on by consensus of the 3 coders and 2 additional researchers, then summarized and interpreted.

## RESULTS

The study included 31 patients who were diverse in sociodemographic characteristics (Table 2). Almost all patients reported access to a computer inside or outside the home, and most had e-mail accounts. Some had used the Internet to obtain medical information. Almost half reported either limited typing skills or low confidence using the computer. Of the 10 patients introduced to the PP, 5 had Internet access in the home, and 4 had an e-mail account. Six had used the Internet to obtain medical information. Five reported limited typing skills. The study included 13 clinician participants, most female and from primary care practices (61%) (Table 2).

Below are the themes that emerged from the focus group analysis. Illustrative quotations for each theme appear in Table 3.

### The AVS

**Patient awareness, use, scope, and content of the AVS.** All patients were familiar with the AVS; however, they varied in how they used the AVS following the appointment. Three discarded it after each visit, 8 retained it for a limited variable time, and 8 kept every AVS. Patients who

■ **Table 1. The 7 Patient Portal Simulated Tasks, Demonstrated and Subsequently Tested**

Locate a laboratory result
Review upcoming appointments
Schedule an appointment
Locate the medication list
Request medication refills
Review the immunization record
Message their provider

retained the AVS described its value as an information source (Table 4).

Patients discussed health management information that would be useful to include in the AVS. They desired a comprehensive record of their health condition and treatment course, including information from multiple practices participating in their care. Patients also desired more information on device use and medication side effects. They objected to medical terminology and most could not locate instructions. Some noted that AVS medication information was inconsistent with medication bottle labels.

**Provider perspectives on the use, scope, and content of the AVS.** Providers viewed the AVS as supplemental to information discussed in the clinic encounter or as a receipt of the clinical "transaction." Providers were aware that patients used the AVS as a medication list but not of other uses such as a medical record for use during emergencies. Most providers expressed frustration with their inability to tailor the AVS format. They found it cumbersome, and disliked that it encompassed administrative data not pertinent to patients, such as diagnostic codes. They felt the excess information increased the literacy and time demands of reviewing the AVS with patients. Some noted errors in the medication lists.

Providers suggested specific format improvements for the AVS including: 1) moving instructions to the first page, 2) changing font sizes or color, 3) highlighting important information, and 4) providing pictures of medications. Most providers felt they would benefit from more training to customize the AVS for their patients.

### The Patient Portal

After discussing the AVS, the PP was introduced as an online interactive version of the information in the AVS and a patient's health record.

**Barriers to PP use for patients.** Almost all reported having a computer and Internet access nearby, if not at home. Despite access, 5 patients were not confident using com-

**Table 2.** Characteristics of the Participants

Characteristic	Focus Group Patients N = 21	Patients Introduced to PP N = 10	Providers N = 13
<b>Age, years: median (range)</b>	54 (26-66)	49 (21-45)	49 (30-71)
<b>Female</b>	17 (81%)	9 (90%)	10 (77%)
<b>No. of physicians</b>			11
<b>No. of nurses</b>			2
<b>Primary care practice</b>			8
<b>Race</b>			
African American	18 (85.7%)	9 (90%)	2 (15%)
White	2 (9.5%)		10 (77%)
Multi-race	1 (4.8%)	1 (10%)	1 (8%)
<b>Annual household income (n = 20)</b>			
Declined to answer	1 (5%)	1 (10%)	
<\$10,000	7 (35%)	6 (60%)	
\$10,000-\$19,999	5 (25%)	2 (20%)	
\$20,000-\$29,999	3 (15%)	1 (10%)	
\$30,000-\$49,999	3 (15%)		
\$50,000-\$99,999	1 (5%)		
≥\$100,000	1 (5%)		
<b>Education</b>			
8th grade or less	0 (0%)		
Some high school	1 (4.8%)	1 (10%)	
High school graduate or GED	7 (33.3%)	5 (50%)	
Some college	8 (38.1%)	4 (40%)	
College graduate	5 (23.8%)		
<b>Disease severity</b>			
FEV1, % predicted, mean ± SD	71.35 ± 19.41		
<b>No. hospitalized for asthma in past year</b>			
0 times	15 (71.4%)		
1-2 times	3 (14.3%)		
3 or more times	3 (14.3%)		
<b>No. who visited ED for asthma in past year</b>			
0 times	9 (42.9%)		
1-2 times	9 (42.9%)		
3 or more times	3 (14.2%)		
<b>Comorbidities</b>			
Hypertension or HBP	14 (67%)		
Diabetes	8 (38%)		
Hyperlipidemia or high cholesterol	9 (43%)		
Other heart disease	3 (14%)		
Cancer	0 (0%)		
BMI, kg/m <sup>2</sup> , mean ± SD <sup>a</sup>	36.5 ± 8.2		
<b>Computer access<sup>b</sup></b>	19 (90%)	8 (80%)	
<b>Had heard of PP prior to focus group</b>	13 (62%)	0	
<b>Had enrolled in PP prior to focus group</b>	7 (33%)	0 (0%)	

BMI indicates body mass index; ED, emergency department; FEV1, forced expiratory volume; HBP, high blood pressure; PP, patient portal.

<sup>a</sup>A person with a BMI above 30 is considered to be obese.

<sup>b</sup>Defined as having access to a computer either in the home or outside of the home—for example, at the library or at work.

■ **Table 3.** Themes and Illustrative Quotations

Theme	Quotation
<b>Patient Perspectives on the After-Visit Summary</b>	
Discarding AVS	Too much paper—they have to print out your medicines and instructions.
Keeping AVS	I put them in an envelope I keep at home. I have a folder for my orthopedic and general medicine. And I have another folder for my asthma problems. I keep a list of my medicines in each one of my folders. I also keep a list of what my doctor recommends.
Perceived value	I have a lot of different appointments and sometimes I might forget one appointment.
	I make him [husband] read it... A copy has to be kept in the glove compartment for emergencies. One in his work bag and one on me at all times.
Limitations	I have so many different medications...so many different doctors and so many different hospitals...when they see my medication list, they like to argue who put me on this medication and why am I on it.
	...you don't get multiple diagnoses. If I go to see the pulmonologist, when I leave with his instruction sheet...it won't talk about other things that [are] going on. When I go to the GI doctor and [I'm] getting ready to have this whole big surgery...they don't talk about morbid obesity or they don't talk about asthma.
Desire for more information	...[I would like] instructions on how to utilize the medication and getting a yay or nay whether your medications are conducive to each other...like what things could give an adverse reaction.
	...I would like to see how to take it. My 9-year-old son is on [an inhaler]. He didn't know. He was just blowing into it...He [said], "I don't feel anything, Mom. Is it broken?"
Literacy issues	They give it to you in doctor language, they don't give it to you in English.
	I go back to Google [when I don't understand]. Just gotta Google it.
	It [the medication instructions] doesn't match what's on my pill bottle or what's on the prescription. The medication might be correct.
<b>Provider Perspectives on the After-Visit Summary</b>	
AVS as a summary tool	I use it probably 99% of the time...as a summary tool...I say, "These are your vitals today," if someone has hypertension... "Here's your blood pressure, here's the medicines you're on"...and then I go over, "These are the problems we discussed, these are the medications you're on, and these are your instructions and these show here the appointments you have."
	...a fair amount of time I'll ask patients what they're taking and they'll bring me an AVS.
	...the way [the AVS] is designed, you can't just hand it to the patient, you have to go over it with them. And I think it's most helpful when I attach something from the patient instruction section, either something that I've typed in myself or from the pre-loaded smart text.
Needed improvements	There are common instructions we give but they're buried in the back...they don't stand out. It's formatted to be one big busy piece of paper that has worthless information for people who have a 6th grade or less reading level.
Need for training	I think there are probably a good chunk of people who could quickly be trained to use it more effectively.
	I never had any training. It would be nice for someone to systematically take me through.

(continued)

puters, although all knew someone who could help access the Internet. Lack of awareness of the PP and knowledge about its use for health management was the main barrier to PP enrollment. Although information on the PP had been mailed to patients and was available in many clinics, and although providers were encouraged to mention it to patients, the level of awareness and knowledge was low. Just over half (13 of 21, or 62%) had heard of the PP. Most

patients (11 of 13) with awareness did not know specifics of portal functionality. Only a third (7 of 21) reported signing up for the PP and only 5 of those 7 had logged on. Almost all who had logged on reported that their provider discussed the PP with them or suggested a specific use (eg, viewing test results). Of those who logged on, only 1 reported using it actively to manage health. The others had only logged on once or twice for test results. A few (3

■ **Table 3.** Themes and Illustrative Quotations (*continued*)

Theme	Quotation
<b>Patient Perspectives on the Patient Portal</b>	
Lack of awareness	I solely rely on [my health organization] to just keep my information. I go to my doctor, and she said, "Well, so-and-so said..." and I'm like, "Oh, that's on there?" Then I realize you keep everything. So I'm satisfied with that right there.
Lack of computer skills	I have a computer, I use the computer, but I'm not the person that is on the computer constantly. There are some things I do on the computer and some things I don't because I'm more old-fashioned than a lot of people.
Distrust of technology	My kids get on there and tell me everything. I just think this whole dynamic is just a little bit impersonal nowadays. You can go on the computer for everything. I've been a victim of identity theft twice. Everything becoming so computer-savvy is just too much for me.
Barrier to communication with provider	...it takes away from that personable situation with my doctor. Like why do I really need you? That's just how I look at it. What information can you give me that I can't give myself? I feel like we're so far from the table from our doctors anyway, and this is putting more of a block.
Positive attributes	I like it because trying to do the interaction thing for me can be very frustrating because waiting on the phone can drive me crazy. And they respond very quickly.
Experience does not match expectations	Easy! Even the app. Like for me, I used to go on there because I forget my doctors' appointments. I constantly forget when they are. A challenge I've had when I used it is when you can send a message to your care team...I select the physician whom the issue would be pertinent to. I understand why, but 99 times out of 100 a nurse I've never met writes or calls me back. And I've had my GP for so many years. He and I have a rapport, he understands, he knows kinda what my history [is], and the nurse who I never met, just sends me through all these hoops that I have to jump through...
Anticipating benefits	Under "MY PROFILE" it says "WALLET CARD." They're lying. It's not wallet-sized. It prints out your entire medical thing...It comes out in 8 by 11 sheets. If you're someone with a lot of problems...it's gonna be a book!... But it's handy for traveling and you have to see a doctor and they want to see your medical history... ...Test results. They said they would [arrive] in about a week. I was a wreck the whole week. I had to cancel—if I could've just found out my own information, that would've been better. ... do you think you'd be able to use it on a smartphone? Because I had an incident 2 weeks ago when I went away and lost my medicine. That wouldn't help me, would it? ... I was trying to get a referral over the phone and the lady told me I couldn't do [anything] over the phone, I would have to come in to the doctor. At that time, I wasn't able to come in.
<b>Provider Perspectives on the Patient Portal</b>	
Potential for too much access	It almost set some boundaries in some ways. Now everything is so instant communication. In some ways that is wonderful, but at some level, you need to have a bit of a break from it. Patients, once that door is open, do I really need to call about this? Then it's like every little thing...
Lack of training	...patients often signed up because somebody told them, "Oh, you can do this on the PP." Well, if the provider is uncomfortable using it and is not familiar with what it can do, they're not going to promote it to the patient. The patient's not going to sign up for it. I'm not as good...I personally have really struggled to use it. I also don't have a ton of patients on it...partially because I'm not encouraging it. Finding the message when you open it, it's like, "Where is it?" It's just not user-friendly when you're a provider...When I do release their lab results...I can't find where I put my notes and sometimes it appears and I consistently can't find where.
Control of communication	A lot of people still send us messages via e-mail which I hate because that means I then have to go to the EHR...It's 3 times as much work rather than sending the message in the EHR that automatically puts it right into the chart. Even on our end, learning how to navigate the system isn't easy. When our nurses first started getting messages and forwarding them to us, it would say, "Please help this patient with this concern." And it took a while to figure out what the concern was because it's buried somewhere down below in a link. There was really no introduction on how to use it.
AVS indicates after-visit summary; EHR, electronic health record; GI, gastrointestinal; GP, general practitioner; PP, patient portal.	

out of 21) distrusted technology and worried about confidentiality. Some believed the PP would be a barrier to communicating with their providers.

**Patient perceptions of the PP.** The 5 patients who had logged on reported positive experiences. However, patients observed that some of their expectations differed from actual experiences; for example, most patients assumed that the messaging system would allow them to select a specific provider recipient, rather than the practice, which was perceived to be less personal than leaving a phone message or sending a direct e-mail. One patient noted that the wallet-card function unnecessarily printed out one's entire medical history, not a short summary, but also wanted the option to have a full summary too. As conversations progressed and screen shots were displayed, patients without PP experience began to imagine how they could use it for test results, on a smartphone to renew medication, and to request referrals.

**Provider awareness of and experience with the PP.** Use of the PP by providers varied greatly. Some were concerned that unfiltered/unlimited access would create an unmanageable flood of patient communication, and one provider worried about requirements for triaging messages. Many also reported impeded use due to a lack of training—most had not been exposed to the patient interface. These all represent barriers to encouraging PP use by patients. Providers reported that patients tend to use the provider's direct e-mail address rather than the PP, requiring providers to transfer information into the EHR, which was inconvenient and time-consuming.

**Introducing the PP through one-on-one interviews** All 10 patients successfully completed the 7 tasks. Patients said that barriers to returning to the PP would be forgetting login information and lacking computer access at home.

## DISCUSSION

### AVS: Valued by All, Could Be More Effective for All

Our study suggests ways to enhance the EHR following recognized principles of EHR design, implementation, and policy.<sup>15</sup> We found that patients and providers both value the AVS, but use it differently: patients use the AVS as a summary of their overall health, while providers use it as a summary of an individual visit. Both groups recommended improved organization, simplification (eg, patients wanted plain language), and formatting of information. The PP's interactivity and flexibility have the potential to meet the demands of both patients and providers—a more comprehensive summary being desired by

■ **Table 4.** How Patients Used the AVS Outside of the Medical Appointment

Activity	Number of Patients (out of 21)
Remember appointments	4
Coordinate care among doctors	4
Share it with their families or caregivers	10
Use as an information source in emergencies	2
Rely on for an accurate medication list	5
Keep as a record of patient's diagnoses	2
Provide documentation of patient's allergies	1
AVS indicates after-visit summary.	

the former, and the recent-visit summary desired by the latter.

### The Potential of the Patient Portal

As in previous reports, registration for and use of the portal by patients in our study was low.<sup>16</sup> Despite our expectations, computer access and knowledge were not reported as the most critical barriers, since when introduced to the PP, 10 patients with little computer experience were able to obtain information from the system. Rather, insufficient awareness of and knowledge about the PP provided the largest impediments to use for both patients and providers. Additionally, while prior research has reported differences in patient and provider perspectives on the use of and access to PPs,<sup>17</sup> our study suggests that patient and provider use are likely correlated and interdependent. Our focus groups showed that neither patients nor providers understood how the other group uses the information available from the PP, nor the respective expectations for provision and use of that information.

The primary stimulus for patients enrolling in and using the portal was physician encouragement, especially recommendations for a specific activity. In our study, providers comfortable with the PP recommended it to their patients, and an aggressive marketing strategy has been found effective in driving patient enrollment, thereby increasing awareness of the PP.<sup>18</sup> A lack of training has previously been noted as a barrier to physicians using EHRs,<sup>19-21</sup> and this was one reason they were unaware that the PP could meet their communication requirements, subsequently making them uneasy recommending it to patients.

When PP functions were described for patients in our focus groups, they were interested in utilizing the system for increased ease of obtaining lab results, as found in another study of diabetic adults<sup>22</sup>; they also wanted to

obtain referrals, and a few wanted their medical records on their mobile devices. However, some functions of the PP failed to meet the needs of patients and providers. For example, the messaging capability did not meet patients' expectations for a personalized reply. Providers also found it difficult to use, citing lack of smooth integration of regular e-mail and the PP with the EHR. Other studies noted that maintaining traditional forms of communication along with PP use was important,<sup>22</sup> and some studies found providers are overwhelmed with PP messaging,<sup>21,23</sup> in part because they developed practice work flow-specific approaches to handling their e-mail (eg, direct response to patients rather than a triage system).<sup>23</sup>

### Limitations

This study has some limitations. We report the perspective of a sample of patients and providers from a single health system and patients with 1 chronic disease in common. Nevertheless, these participants came from 6 different primary care and specialty clinics, and they are from low-income urban neighborhoods and have significant comorbidities and limited prior use of the PP. Thus, they represent a group whose perspectives are important to capture. More important, the goal of this exploratory study was to investigate the alignment of their perspectives with those of providers, and thus the results underscore the need for user-centered design as next-generation content and capabilities are developed.

### CONCLUSIONS

The AVS and PP have the potential to address communication needs for patients and providers, but current attempts fall short. The PP is likely to evolve rapidly and offers an opportunity to improve patient-provider communication and access to healthcare. Improvements will require new emphasis on user-centered design and the process of engaging end users (eg, patients and providers) in the creation and development of a system or product.<sup>24</sup> As Robert M. Wachter noted in a recent editorial entitled "Why Health Care Tech is Still So Bad"<sup>25</sup> "Boeing's top cockpit designers...wouldn't dream of green-lighting a new plane until they had spent thousands of hours watching pilots in simulators and on test flights." The user-centered design process will allow emergence of new content and capability to meet actual needs of providers and patients. By improving the value and usability of the PP and AVS, adoption and use are more likely to increase. Once these changes are made and use becomes more prevalent, we must examine if PPs improve health outcomes.<sup>26</sup>

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