Why Patient Engagement is Key in 2017

Cultivating a loyal patient base in the new era of healthcare

In this e-guide

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Patient engagement technology appears to be at the top of everyone's list in 2017. Our 2017 Healthcare IT Purchasing Intentions Survey showed it as the #1 driver of change for providers this year.

It's no wonder, considering the impact on improving outcomes and enhancing care.

Allowing you to connect with your patients on a different and deeper level, engagement tools also provide patients with greater access to the healthcare information they crave.

In this expert e-guide, you'll discover the ins and outs of patient engagement – from PHR vendors to virtual assistants and AI applications.

Read on to discover different tactics to boost your connections, retain patients, and foster deeper levels of care.

In this e-guide

How PHR vendors can drive interoperability, patient engagement

Reda Chouffani, Co-founder | Biz Technology Solutions

Today, many online personal health record vendors offer free data hosting services for patients as a means to attract them to store data on their servers.

However, despite the no-charge model, many PHR sites suffer from a lack of widespread adoption that has commonly been linked to a lack of easy access to patient data that resides in many of today's closed EHR systems.

As a result, a few vendors have opted to shut down their websites, while others continue to support the early adopters with the hope that the push for interoperability will accelerate and more data can be easily transitioned into their systems. If interoperability allows more personal health record (PHR) vendors to enter the market and easily transfer data to their systems, their business could morph into a fee-based service model where they charge for additional services.

Integration and storage figure into PHRs

PHR products currently available in the marketplace fall into two categories. The first is technologies offered by the EHR vendor, which tends to have a

tighter integration with the platform that holds its records. These systems are typically offered by the hospital to their patients so that they not only have access to their health records, but also have the ability to schedule appointments, view lab orders and pay their bill. The second is products from PHR vendors that are independent from any EHR seller and typically focus on enabling the storage of patient-generated data and health information that's imported from an EHR extract where possible.

In reality, patients' data is likely to live in more than one EHR system. This makes it challenging for patients to maintain their records under one provider's system.

As a result, they are forced to use multiple systems. In most cases, it's not a desirable situation. But as we experience the federal and public push for improved interoperability in EHR systems, hope is given to independent PHR vendors that soon the task of connecting and exchanging data from EHR systems will become a reality.

Bridging patient-generated data and EHRs

Once PHR vendors begin to offer connectivity to a wider number of EHR systems, patients will see that these vendors play a much bigger role and offer a number of different services to them. There are two aspects to what PHR vendors have the opportunity to help solve in the marketplace as patient records flow to their systems:

- Similar to what providers envision their EHRs will be able to offer in the future -- one in which patients' health data will be accessible to them under one system -- PHR vendors are looking to deliver the same functionality, but for patients, not providers.
- A number of PHR service providers have also opted to incorporate patient-generated data from medical devices, wearables and fitness trackers into the patient's record. Patients find it valuable to go to one place and see all their personal information, including information from other family members consolidated and stored in one system regardless of what their primary care physician or hospital uses.

Offering additional services to assist patients

With more comprehensive data available within the PHR systems, vendors can provide more value to their users. For starters, access to this information gives vendors the opportunity to offer additional services to those who can benefit from them based on their health condition. Some of the services that may be available to patients include the following:

- advanced chronic disease management and monitoring services;
- life coach services to help support patients with their conditions;
- patient education based on their health condition;
- genomics that would assist patients in incorporating their genetic details into their record;
- eVisits for routine checkups and follow-ups;
- virtual support communities;

- advanced analytics and assessment of their record by third-party AI solutions;
- integration with connected medical devices; and
- health monitoring and support services, such as transportation and health coaching.

Some of these may be paid services where patients would be billed either one time or periodically via a subscription.

With the ever-increasing need for patients to become more engaged in their care, PHR solutions are able to make that task a little easier for patients. Thanks to the ability to offer medical data in a meaningful and user-friendly way, patients are able to consume it and take advantage of some of the additional services available. However, it remains to be seen whether patients will be willing to pay for PHR services or if insurance payers will contribute to or assist with that.

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Five ways a healthcare virtual assistant can improve patient engagement

Reda Chouffani, Co-founder | Biz Technology Solutions

Apple's Siri, Google's Assistant and Microsoft's Cortana have successfully made voice-enabled devices popular with smartphone users, including healthcare professionals and patients. Powered by artificial intelligence (AI), these voice assistants are able to interact with users and help them with day-to-day tasks. As the technology begins to find its way into the homes of consumers through voice-based assistant devices, vendors are exploring the different capabilities and features that can benefit patients and healthcare professionals.

It is not uncommon for technology enthusiasts to equip their homes with voice-enabled devices like Amazon's Echo and Echo Dot. These standalone gadgets have become home virtual assistants that use voice commands to turn lights on or off, play music, set reminders or reorder home supplies. Now along with the Echo, Google has released its own home automation and voice-based assistant, adding another option for consumers who want powerful and inexpensive tech gadgets.

The big question for many in healthcare is how this technology can drive patient engagement. Here are five uses for a healthcare virtual assistant.

Patient reminders at home

The ability to remind patients about their medication is a critical function. Medication adherence is one area that physicians recognize is challenging to enforce. A healthcare virtual assistant can verbally notify and interact with patients when it's time to take their medication. There are also additional reminders that can be delivered through the interactive system. For example, patients suffering from diabetes can benefit from friendly reminders to check glucose levels. Reminders can be set up by a provider or the patient through an app. The healthcare virtual assistant offers a friendly voice patients are familiar with that provides a way to keep up with tasks and reminders that are relevant to their health.

Data collection capabilities

In the past, providers looking to collect specific data at a certain frequency from their patient relied on paper, home computers or mobile devices to capture it. The new voice-based devices have the ability to capture data simply by interacting with patients verbally. Platforms such as Voice Experience Designer by Orbita are already on their way to showcase those capabilities how they can interact with patients using the Echo Dot at HIMSS17. Orbita recognized that physicians and hospitals frequently need to survey patients when at home, and built a tool that allows them to create any set of questionnaires to interact with the patient 24/7 and collect the necessary data from them.

A constantly evolving system with integration capabilities

Beyond the abilities of processing voice requests and responding to voice commands, voice-based assistants have the ability to interact with other third-party platforms to perform different tasks and pull data from. This allows it to be the central hub for interacting with a number of different devices and systems, as well as a common interface for the patients.

A health assessment tool at home

Another area of impact would be around performing different health assessments at home and triggering specific events based on the findings. The results of such assessments may be directing patients to the nearest emergency room, or simply writing a note that is sent to their primary care physician. Hospitals can use these assessments to monitor patients who have recently been discharged. The healthcare virtual assistant can interact with the patients at certain intervals, assess their condition and identify if anything raises concerns that they may be at risk.

A patient education tool

The voice-based device can also turn into an instruction manual or patient education library. It can deliver educational content to patients based on their condition or answer questions they may have. Patients can also inquire about symptoms of certain health illnesses from the digital assistant.

While these home tech gadgets have been widely adopted for smart home automations, healthcare is going to consider these voice-based assistants as an option to support patient engagement initiatives. These devices offer a human-like interaction and are able to be personalized to the individual. But Alexa, Cortana, and other AI voice assistants all have one common threat and weakness -- their dependence on internet connectivity. These devices may one day have their own built in cellular signal so they are less dependent on the home connectivity, but until then, we can expect more voice-based assistants to enter the healthcare arena.

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Health consumerism will drive future of healthcare, expert says

Shaun Sutner, News and Features Writer

In this Q&A, Nick van Terheyden, M.D., chief medical officer of Dell's healthcare and life sciences services division, talks about the rise of health consumerism, and what it means for providers and patients.

Can you talk about health consumerism and its effect on healthcare providers?

Nick van Terheyden: I think one of the most interesting areas around healthcare innovation is where we take existing technology that's being applied elsewhere and apply it in the healthcare setting. That, to me, is always a very engaging and productive approach, because it's not so much net new as net reapplication of technology in a different setting. And from a health consumerism standpoint, we've seen that across a number of industries where it's engagement and interaction and devolution of control and access. Take the hospitality industry. They've understood the process.

Go back to when the airlines introduced the automated check-in kiosk. There was a huge amount of resistance to that. I'm sure that there are still some people that prefer to go to the check-in desk, and there are lots of people who still do. But I think most of us have become very familiar with that process. In fact, many of us love that aspect of being able to do it at

home. I think we have a tremendous opportunity to sort of capitalize on that, provide real-time information, offload some of those more mundane tasks that occur in healthcare.

This is not about getting rid of people. This is about freeing up those resources that are already over-utilized. The idea that you only spend seven minutes with your physician is really a function of them doing all these other tasks. While they add some value, they're not really the value that I, as a patient, am looking for. So, I think the technology is really enabling that shift of activity, allowing people to be engaged. I'm a big proponent of this interaction and the opportunity for technology to enable that interaction, allow me access.

What are some of the other health consumerism techniques, methodologies and technologies that will be successful going forward?

van Terheyden: The internet of things and what I would call the internet of medical things is now starting to add information and utility to all of the data that we traditionally have collected in a much more abbreviated form. You go to your physician's office twice a year, maybe. You have your blood pressure measured. Maybe it's more often. Even if it's four, five times a year, that's not a lot. Why can we not do that in the house? Why can we not take the measure of your weight and process that? And we are. We're starting to do that.

And there's some pushback from physicians who say, 'That's not relevant. I don't care about the number of steps you do.' And I would always turn around and say, 'It's never a data problem. It's always a filter problem.' And

we need to filter that data appropriately. I, as a physician, am interested in the number of steps -- or, rather, the increase or decrease in your step count -- over the course of the last two or three months since I've seen you. The same with your weight [and] same with your activity. All of those things, I think, are relevant.

As we start to input more information, we start to complete the record. If you imagine your medical record as a piece of string, what we typically have was all tiny snips of that string when you visited a facility or a hospital or your physician. Now, we're starting to complete that picture. And we're getting more insights into patients and more insights at different times. And that's all going to add value, and improve the overall quality for patients, and allow them to get better healthcare and to be healthier through that data and the support of their physicians who will be freed up to be able to deliver, you know, more interactions and more support.

So, you're saying that the role of the brick-and-mortar hospital and the doctor's office is likely going to diminish as we get more health consumerism, telemedicine and internet of medical things?

van Terheyden: Absolutely. And I know that we will see construction of hospitals, and I think their function will change. The medical home, I think, is an imperative if you ask anybody and, certainly, the older generation. I want to age in my own home; I don't want to age in just any home. And our capacity to allow for that is going to be driven by our ability to support that effectively both with passive monitoring, as well as active engagement and active monitoring -- and not just of the individuals, but also with help from the family members.

And I think the coordination of that [monitoring] with remote children who want to be part of that care but have struggled and mom or dad can't explain [to them] what the physician said. But now, suddenly, we can have this communal source where everybody goes to and has access to information. And my ability to see into to my mother's activities and know that she got up in the morning and that she's OK without troubling her, it's really very reassuring. I think that's going to change things. Hospitals will increasingly become specialized treatment centers for things that can't be done or shouldn't be done in the home, you know, either through complexity or from a safety standpoint.

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🔖 Openness in delivering healthcare information key to patient engagement

Shaun Sutner, News and Features Writer

In the second part of a two-part Q&A, Nick van Terheyden, M.D., chief medical officer of Dell's healthcare and life sciences services division, discusses patient engagement and the democratization of delivering healthcare information.

Could you talk about the democratization of delivering healthcare, greater access to healthcare information and other factors that empower patients?

Nick van Terheyden: I think the biggest driver, or one of the biggest drivers, of this is mobile technology. It's not that long ago that the iPhone arrived on the scene. And it's now all pervasive. And I know that's widely variable, certainly in the international setting. It's not quite the same accessibility. But even in poorer parts of the world, in Africa, mobile technology remains one of the mainstays of access and distribution.

So, in our world, a great example of that: I remember I had a friend who was just a goldmine, a Google for movies. You'd know the movie or you'd know somebody who was in the movie who you were trying to think of, and you could call her and say, 'Hey, it's ...' And I'd describe what I knew and she would help me get to the movie I was trying to think of. That's been entirely
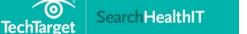
replaced by access to [film website] IMDb. I can always get to the movie I'm trying to think of.

The same is true with all this healthcare information. Even when you go to Africa, where their access to the technology is limited quite often to text-based phones, even with the simple process of text-based messaging, they've got systems that allow them to expand the reach and accessibility of healthcare information for their community. They have a much less dense availability of physicians. So, where there are fewer physicians per person ... they use paraclinical resources. They support them with text messaging. We've seen work on outbreak information. Everybody knows about Ebola. But there are many other diseases that have a transmission effect and the ability to communicate that so that you can bring the resources and support and also quarantine appropriately.

One of my favorite examples, because it has this really compelling message at the end, [is] the ultrasounds that are carried out on pregnant moms that were stored and forwarded using a minimal amount of data. They were done by people who were trained to do them, but couldn't read them. They weren't typically physicians, but rather, more often than not, a midwife or somebody like that in these remote villages. This is about access and democratization of delivering healthcare information, and pushing it out to the people and making the people [who] are experts more available.

You've referred to patient engagement as the 'drug of the century.' Could you elaborate on that and also talk about some of the best ways to create patient engagement in delivering healthcare?

van Terheyden: So, first off, I want to be sure that I give credit to [health IT theorist] Leonard Kish, who originally coined that phrase. I reference it a lot. What he did was essentially make a comparison of patient engagement to treatment with a drug. And if you could take patient engagement, put it into a pill and offer it for sale, people would fall over themselves to buy the patient engagement drug because it's so effective at improving the overall quality of health for patients.

In a Kaiser study in 2009 of coordinated cardiac care, the folks [who] were enrolled in this coordinated, engaged group had an 88% reduction in the risk of dying of cardiac-related causes. That's an astounding result. The clinical care teams in that engagement reduced overall mortality by a hard number of 76%. So, as a tool, I think patient engagement [has] been proven to really deliver value. I also think it makes sense. I talk a lot about democratization of healthcare and the accessibility of healthcare information. One of my other great leaders in this space that I look to a lot is Eric Topol, [M.D.], whose original book, *The Creative Destruction of Medicine,* and then subsequently, *The Patient Will See You Now*, have been really important.

Those books really emphasized this change and move away from this paternalistic system that I grew up in. When I went to medical school, I was essentially imbued with these huge amounts of knowledge. It wasn't that long before I got into medical school that medical textbooks were off-limits, and you couldn't get into a medical library if you couldn't prove you are

clinician. That's all obviously changed appropriately, and being the holder of information is no longer the expertise. And we, as physicians, are not the ultimate experts.

How can patients benefit most from participating in delivering healthcare and patient engagement?

van Terheyden: This patient engagement demands that people get involved. Obviously, their capacity to understand all the details is highly variable. And that's really one of the functions for the clinical teams is to help guide them through that challenging terminology, challenging science and understanding to explain it in ways to allow them to make informed decisions. And that's really the sort of key to this process. It's not just physicians engaging, but patients engaging.

And I think there is much to blame, certainly, in my parents' generation. You know, the idea that you would ever challenge your physician. If he said X was true, X was true. You would never question that or ask why even. That was just what they did. And I think we have to move away from that. Younger generations are better at it, but still not as good as we need to [be]. And we need to encourage that so that they become fully engaged participants in the care process, and spending as much time on their own healthcare as they do when they go and buy a toaster on Amazon and review all the data about toasters and decide which is the best one for them. We should be doing the same thing with delivering healthcare.

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Four uses for artificial intelligence in healthcare

Reda Chouffani, Co-founder | Biz Technology Solutions

We surround ourselves with technology that is able to help us in our daily lives. The success of autonomous cars, advancements in clinical research and personal digital assistants has shown the incredible potential of technology and how far it has come in recent decades. Despite the progress that many other industries have made, healthcare is likely to be the one market where artificial intelligence can truly have an impact that goes beyond convenience and positively affects human lives.

Artificial intelligence (AI) is defined as the science and engineering of creating intelligent computer systems that are able to perform tasks without receiving instructions directly from humans. These computer systems use a number of different algorithms and decision-making capabilities, as well as vast amounts of data, to provide a solution or response to a request.

Today, more than ever, many technology vendors are making significant investments in AI to ensure they are able to offer solutions and services that can use the technology. Microsoft, Google, Apple, IBM and Amazon, to name a few, have all adopted and fully committed to AI and are already providing these services to consumers.

Anytime a new technology enters healthcare, there are a number of challenges it faces. Common setbacks of artificial intelligence in healthcare include a lack of data exchange, regulatory compliance requirements and patient and provider adoption. AI has come across all of these issues, narrowing down the areas in which it can succeed.

The most popular use of artificial intelligence in healthcare is in IBM's smart cloud, where Watson lives. The Watson platform has been used in a number of disciplines within healthcare including with payers, oncology and patient risk assessment.

There are a number of other applications within healthcare where AI can deliver incredible value, but healthcare executives must evaluate and see if they can adopt some or all of them in order to begin their journey in the AI space. The following are four areas in which artificial intelligence in healthcare is gaining steam.

Personal health virtual assistant

With most of today's U.S. adolescents, adults and seniors owning a smartphone, they are likely to have access to an intelligent personal virtual assistant on their device. The likes of Cortana and Siri are backed by powerful systems with robust AI capabilities. These systems have the potential to provide tremendous value when combined with healthcare apps.

Healthcare apps can be used to deliver medication alerts, patient education material and human-like interactions to gauge a patient's current mental

state. The application of AI in the form of a personal assistant can have an incredible impact on monitoring and assisting patients with some of their needs when clinical personnel are not available.

Advanced analytics and research

The capabilities of AI do not stop at understanding human commands and knowing what type of response is needed. For example, AI has been used in many advanced use cases in oncology to help detect abnormalities in X-rays and MRIs, in genomics to perform complex processing and in precision medicine to provide assistance in creating highly customized treatments for individual patients.

In the example of IBM Watson, the AI has successfully applied its capabilities to process structured and unstructured patient data. In the field of oncology, IBM Watson can provide evidence-based treatment recommendations for cancer patients.

Personal life coach

Care providers who treat patients with chronic diseases recognize the importance of maintaining contact with their patients outside of the exam room. Several hospitals have introduced life coaching services as part of their overall care, but the cost of such services compared to the current shrinking reimbursements makes it difficult to sustain such programs.

However, with today's robust AI capabilities and mobile apps, patients can receive feedback on a number of data elements captured on their phone or wearable devices. Whether it relates to medication adherence or is simply a motivational voice that encourages fitness activities and healthy habits, AI as a personal life coach creates a customized experience for each individual patient and offers proactive alerts that can be sent back to physicians.

Healthcare bots

One of the new areas of AI that is beginning to gain adoption is in the field of customer service, and healthcare bots are likely to be available soon as part of what healthcare providers offer. A bot is an AI application patients can interact with through a chat window on a website or via telephone to receive help with their requests. Bots can be used in situations such as scheduling follow-up appointments with a patient's provider online. Other examples include when a bot helps a patient with their medication or billing needs. These use cases improve customer service; offer 24/7 assistance for basic requests, such as scheduling, billing and other clinical requests; and reduce the overall administrative costs for hospitals.

Today, some feel confident in trusting AI to drive them from point A to point B, but while healthcare is not ready to fully trust AI to independently diagnose patient diseases, advancements in machine learning and big data have contributed to healthcare by assisting in processing data and discovery insights much faster than humans can. AI, working alongside experienced clinicians, is likely to continue to be the current course for many healthcare

organizations for some time, and until we can prove that AI has what it takes to accurately diagnose patients, the expansion of its current use in healthcare is likely to be a careful and well-planned process.

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