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# *Digital health*

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*A way for pharma  
companies to be  
more relevant in  
healthcare*



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# *Executive summary*



**In the post–Affordable Care Act (ACA) environment,** pharmaceutical companies have a clear opportunity to play a greater role in delivering a better experience for patients, improving clinical outcomes, and reducing the total cost of care — the three objectives of the “triple aim” framework. The key is digital health technology, which can increase patient activation and engagement through a patient engagement platform (PEP). The right application of digital technology can also create new opportunities for pharma companies to revamp their business model.

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# *The digital opportunity*

Pharmaceutical companies have an opportunity to use their expertise to play a greater role in healthcare reform, while also revamping their business model. We believe that the key is digital health technology, which can allow pharma companies to leverage their deep disease expertise and marketing capabilities. The Institute for Healthcare Improvement (IHI) defines patient engagement as “actions people take for their health and to benefit from care.” The activation of a patient, as defined by Judith Hibbard of the Health Policy Research Group, involves “understanding one’s own role in the care process and having the knowledge, skills, and confidence to take on that role.”<sup>1</sup> A growing body of research finds that patient activation benefits not only the patient but also all other health stakeholders.

One study by AARP found that activated patients had a lower incidence of hospital readmission following treatment, experienced fewer medical errors, and were less likely to suffer a problem due to miscommunication among providers.<sup>2</sup> Meanwhile, clinicians, policymakers, and health economists concur that improving healthcare quality while controlling costs will require greater patient engagement. In turn, engagement is critical to drive (1) better disease prevention, by giving patients the tools to self-monitor and change behavior; (2) greater success in treatment, thanks to greater compliance with lifestyle changes and therapy; and (3) superior clinical decision making, as a result of the patient sharing more information with the clinician.

The pharmaceutical industry can play a critical role in helping to activate and engage patients, in part through digital health solutions. Broadly speaking, digital health is the convergence of advances in genomics and digital technology. Digital health solutions, which are as diverse as Web portals, body sensors, and apps, can help the patient self-monitor and get needed support between physician visits. These tools — particularly mobile health solutions — are increasingly popular among patients and physicians (*see Exhibit 1, next page*).

Independent companies have sprung up to focus on the unmet needs of patients, physicians, and payors, addressing different challenges related

Exhibit 1

There is diverse activity in m-health among different stakeholders, and pharma can help connect the dots

# M-HEALTH

The emerging field of mobile health (m-health) has enabled consumers to use smartphone technology to answer their own health-related questions with the quick tap of a touchscreen. Here's a look at m-health and the impact it's making on our culture and our well-being:

## PHYSICIAN USE OF MOBILE TECHNOLOGY

DOCTORS ♥ TABLETS

**250%** MORE LIKELY TO OWN A TABLET THAN ANY OTHER CONSUMERS



USE TABLETS FOR MEDICAL PURPOSES



FIND THEY EXPEDITE DECISION MAKING



REPORT MOBILE DEVICES DECREASE TIME SPENT ON ADMINISTRATION



visits to physicians' offices were made by Americans in 2011



of U.S. consumers are interested in m-health solutions

~85% of doctors use smartphones and medical apps

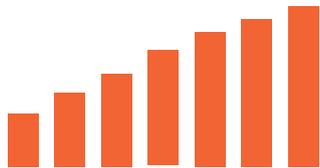


There are more than **10,000** medical/healthcare apps available in Apple's iTunes App Store

56% of doctors who use mobile devices say they expedite decision making

40% say they decrease time spent on administration

## U.S. PHYSICIAN SMARTPHONE ADOPTION



IN 2012 **85%** OF U.S. PHYSICIANS OWN OR USE ANY SMARTPHONE PROFESSIONALLY



It's the third-fastest growing app category for both iPhone and Android phones



of doctors would like their patients to monitor their health at home, particularly their weight, blood sugar, and vital signs

## ONLINE PATIENT-PHYSICIAN COMMUNICATION



of U.S. physicians communicate online with patients via email, secure messaging system, instant messaging, or online videoconferencing



## PATIENT USE OF MOBILE TECHNOLOGY



13% have accessed, stored, or transmitted personal health information or records in the past year  
48% are interested in doing so



52% say they would like access to tools or websites that enable them to review quality rankings, satisfaction rankings, and patient reviews for specific doctors and hospitals



52% are comfortable in consulting with their physician through a video connection

Source: AMD; Cisco Global Cloud Index 2013; Cisco Visual Networking Index 2013; comScoreIntel; Forrester, Frost & Sullivan; Gartner; IDC; IMS Research; Manhattan Research 2012; Pew Internet and American Life Project Health Online 2013; Rock Health 2013 Midyear Digital Health Funding Update; YouGov

to patient engagement and activation, with various levels of scientific proof and sophistication. Some current digital experiments and initiatives involve health systems that empower patients to use their home devices to track and report data to their doctors (such as Partners HealthCare in Boston).<sup>3</sup> In other initiatives, pharmacies (such as Walgreens) allow third-party apps to scan barcodes so patients can refill medication prescriptions.<sup>4</sup> In still others, insurance companies are using “big data” capabilities to assess prior authorization decisions (such as WellPoint’s use of IBM’s Watson).<sup>5</sup>

Although these digital health pilots and forays are relatively new, there are clear indications that they can be effective in achieving the objectives of the “triple aim” framework (as defined by the IHI): improved care experience for patients, better clinical outcomes, and lower total cost of care. Kaiser Permanente found that patients are 2.6 times more likely to stay with their in-network physician if they are able to exchange messages with the physician using Kaiser’s KP.org site.<sup>6</sup> Aurora Health Care in Wisconsin discovered that the rate of appointment no-shows fell from 10 to 2 percent when patients booked appointments through Aurora’s online scheduling system. A study at Fairview Health Services in Minnesota found that activated patients had lower overall costs of care. Among more than 30,000 patients, researchers found that those with the lowest activation scores (i.e., the lowest ability to directly participate in their own care) had health costs that were 8 to 21 percent greater than patients with the highest activation scores.<sup>7</sup> It will take more time to assess whether these early improvements translate into sustainable advances toward the triple aim, but they seem promising.

Many of the digital health approaches today are point solutions, targeted at monitoring one specific measure such as a patient’s blood pressure, whereas patient engagement relies on helping to meet the patient’s broader needs as a person. These point solutions are necessarily incomplete. Where does the pharmaceutical industry come in? Pharma can use its expertise to enable a more holistic digital solution that would have greater success in engaging patients. An illustrative patient engagement platform (PEP) shows the components of such a digital health solution (see “*How Pharma Can Integrate into the New Healthcare Environment*,” next page).

## **How pharma can integrate into the new healthcare environment**

A patient engagement platform (PEP) takes a systems approach to help drive patient engagement and activation to align with the tenets of the “triple aim” framework: improved care experience for patients, better clinical outcomes, and lower total cost of care. A holistic PEP would provide value to the three key health stakeholders (patients, providers, and payors) through the following six components (see Exhibit A, page 9).

**1. Smart devices:** Patient engagement and activation is possible only if meaningfully personalized information makes the PEP relevant to the patient. This is now possible with huge advances in technology — inexpensive sensors, a broad array of apps, and smart devices. Allowing patients to share information collected by a wireless blood pressure cuff, a food-tracking app (such as MyFitnessPal), or a movement-tracking gadget (such as Fitbit) is the first step in understanding the patient’s lifestyle and building engagement across the continuum of care.

**2. Patient tools:** Using the information shared by the patient (through active input or passive collection via a smart device), the PEP would provide highly relevant insights to the patient and increase his or her ability to self-manage. The delivery of customized information, personalized coaching, and guidance, such as medication reminders and information on possible side effects, is crucial in engaging patients in this manner. Patient tools could include a communication channel with the physician; for example, blood pressure or blood sugar readings outside healthy ranges might trigger an alert to the physician’s office that results in a call from a nurse. Some providers may permit selected patient-provided information to be integrated into the electronic health record.

**3. Customer insights:** Within the constraints of privacy and marketing compliance regulations, a PEP can provide valuable aggregate data for the continuous learning and improvement of the digital solution. More importantly, direct patient interaction would provide insights that shape the clinician’s, payor’s, and pharma company’s understanding of the patient journey and can be used to improve physician–patient interaction, treatment protocols, and the next generation of medication therapies.

**4. Payor/sponsor analytics:** If the PEP is designed to provide some value to payors, it is less likely to meet resistance from them. Payors (and employers using self-funded health plans) would value information and data that support their efforts at value-based purchasing and benefit design and are based on real-world evidence. Once the PEP has had success with patient and physician adoption, it could be integrated with the growing number of wellness programs and tools provided by plans and employers. For example, anonymous summary analytics can help both the plan and the employer understand the impact of the PEP on better therapy adherence or improved clinical decisions made by physicians.

**5. Community and personalized content:** Research has shown that patients feel more socially supported and knowledgeable when they use online social networking forums, and these patients have better clinical outcomes. Forums such as PatientsLikeMe have shown that individuals will put aside privacy concerns to benefit from the social support, empathy, and expertise of fellow patients. Facilitating connection to such forums and providing objective, relevant medical information to better inform the patient-to-patient discussion

would increase the value of the PEP. Physicians, too, find value in forums of other medical experts, such as Sermo and KevinMD.

**6. *Physician tools:*** Physicians will find a digital solution useful if it meets three criteria: aiding in diagnosis and selection of treatment; increasing the efficiency of the care process; and improving the physician–patient relationship. More and more physicians are using smartphones in their professional activities (roughly

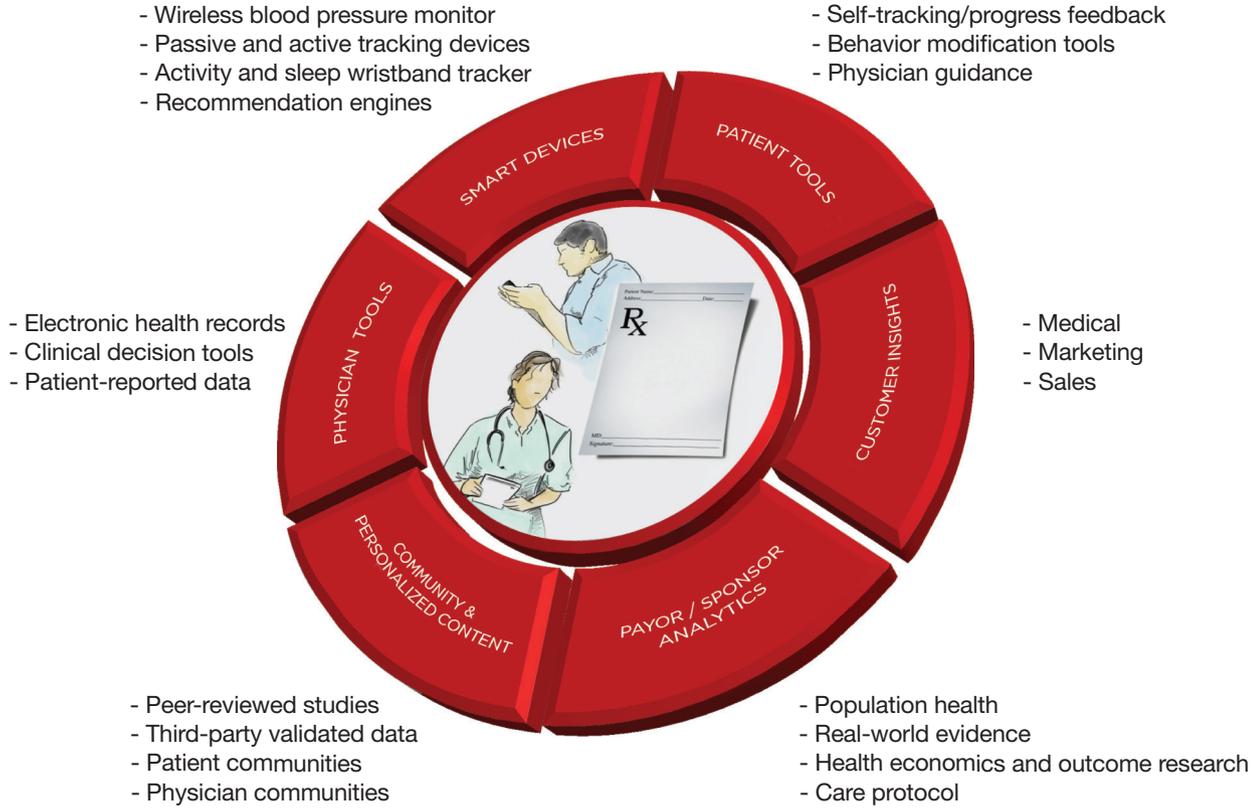
85 percent in 2013, up from 78 percent in 2012). A tool that allows the physician to see relevant patient-collected data could improve the clinical decision or allow the physician to identify an at-risk patient out of a panel of hundreds of patients. By using cognitive computing innovations such as IBM’s Watson, the PEP could include access to virtual assistants to facilitate physicians’ referencing and decision making and improve patient confidence that the physician is at the cutting edge of care.



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*Exhibit A*

**A patient engagement platform has six components**



Source: Strategy&

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# *Business model evolution*

A digital health solution like the PEP described in this paper would provide value regardless of the “sponsor” of such a tool. We believe pharma should seize the opportunity and become a key participant in the development of such platforms, for three reasons:

First, as physicians struggle to manage packed schedules while balancing pay-for-performance reimbursement schemes, and payors and employers look to reduce spending, they all become more receptive to seeking help from nontraditional players such as pharma companies. In our interviews with physicians, health plans’ chief medical officers, and employee benefits managers, we have noted a willingness to engage with pharma, as long as the proposed solutions demonstrate value and are not purely self-serving.

Second, medication adherence is increasingly recognized as an important driver in containing unnecessary costs. A recent report from the Congressional Budget Office estimated that “a 1 percent increase in the number of prescriptions filled by beneficiaries would cause Medicare’s spending on medical services to fall by roughly one-fifth of 1 percent [US\$1.7 billion].” Pharma has a natural part to play in addressing this need.

Perhaps most important, the third argument for seizing the opportunity in digital health is that it would allow pharma to address some of its current business model challenges. Let’s examine how a digital health solution like a PEP may help pharma begin to redefine its place in the healthcare system and evolve its commercial model. A pharma-sponsored digital health solution would address some of the industry’s current challenges in several clear ways.

- *Demonstrated value to patients.* Although patients understand the value of their medications, most do not identify the manufacturer as a key player in their wellness and treatment. A pharma-branded PEP that provides customized information and behavior modification tools to patients would be valuable to all healthcare stakeholders and raise the profile of the sponsoring pharma company. Imagine

a situation in which a patient needs to transition from the first-line generic to a second-line therapy. He has many choices, including the pharma company's product. However, if he has already been using the company's branded pharma digital solution, he is far more connected to that brand and more likely to ask for the company's therapy by name when transitioning. This would be particularly true of a digital solution that uses a "freemium" model — one in which the PEP unlocks additional features/functionality (such as co-pay coupons, specific product information, or access to nurse practitioners) when the patient uses the sponsoring pharma company's medication.

- *Access to physicians.* More physicians are becoming "no see" physicians to pharma companies, and current multichannel efforts at most companies have resulted in a spotty return on investment and limited ability to scale. A PEP that has successful patient adoption is more likely to intrigue the clinician. The physician then becomes part of a large ecosystem in which widespread patient adoption of certain devices (such as the Fitbit, the Nike+ FuelBand, and wireless blood pressure and blood sugar monitors) and apps (such as MyFitnessPal and Calorie Counter) enhances the physician's practice. If customized content is also delivered to the physician via this integrated platform, the PEP more easily becomes part of the physician's workflow. A pharma company with multiple products for a specific disease state can use a PEP to stay "top of mind" for physicians as they consider the next medication for the patient. This is particularly true if the PEP helps the physician be more successful in keeping patients on their therapeutic regimen (including medication and other changes like diet and exercise). One pharma company executive who is in the process of rolling out a PEP across multiple products to treat a specific condition likened the platform to a sort of iTunes for multiple medications (similar to how you can use iTunes on an iPod, iPhone, and iPad).
- *Value to payors.* Today, pharma is mostly outside looking in — as payors and providers compile real-world evidence (RWE) and treatment protocols. A PEP rolled out in collaboration with an employer, health plan, or hospital system would allow pharma to have a seat at the table in the design of RWE studies and clinical protocols. As pharma gains more experience with patient engagement platforms, they could be an important part of the wraparound services that materially enhance product success. For example, a PEP that provides "virtual psychotherapy" may be validated in a clinical trial undertaken to demonstrate that patients are more apt to persist with medicine if using a PEP that helps them push past the side effects in the early weeks of starting therapy. Ongoing data from the PEP would drive the design of future RWE

studies, clinical protocols, and formulary design, and pharma would have an opportunity to provide deep disease expertise and content-marketing expertise for the adoption of the PEP.

The business changes described above are incremental to the current model rather than an outright pivot to a new model. They assume, initially, a freemium model in which the industry develops and rolls out a PEP that can be used with a pharma company's product or a competing product, without charging specifically for the digital solution. The business case relies on acquiring additional revenues from adherence and improved brand loyalty. In our experience, developing and rolling out a PEP will also have some impact on the operating model (organizational roles, budgeting across brands, and coordination with other sales and marketing efforts). As pharma gains more experience with this new identity, the business model could evolve so that the digital health solutions become a separate source of revenue (particularly if used with competitor products) and the digital properties are monetized.

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# Early lessons

Most pharma companies are just beginning the process of developing (or participating in) digital health solutions for patient engagement. However, some helpful lessons have already emerged for those embarking on this path:

- *Take a “patient as a person” view.* Early digital solutions developed by pharmaceutical companies focused exclusively on medication adherence. However, healthcare reform’s emphasis on continuity of care provides an opportunity for pharma to play a larger role. Digital health efforts must facilitate patient education, behavioral change, and better communication with clinicians. Taking the long view (rather than evaluating the digital solution only on the basis of immediate revenue increases from better adherence and branding) is important if pharma companies are to truly help shape the healthcare system of the future and gain significant adoption rates for their PEP.
- *Focus on user experience.* In our experience, the design of pharma’s digital health solutions has been driven by the objective to reach the broadest segment of patients/physicians at the lowest cost. This mind-set often results in a “one size fits nobody” solution in which the features/functionality are not targeted to specific patient/physician personas. Patients will inevitably compare any digital health solution to their favorite app or website; a design that has the specific patient/physician target segment in mind is much more likely to result in adoption and market traction.
- *Don’t go it alone.* Competitive pressures, different interpretations of regulations, and a reflexively protective posture regarding intellectual capital make the concept of partnering with outside organizations difficult for pharma leaders. However, successful digital health solutions will need to fit into the complex ecosystems of our healthcare system, and it is impossible for any one player to address all needs. Pharma companies that embrace collaboration are able to both leverage best-in-class solutions and accelerate time-to-market. For example, there is no reason to reinvent storage solutions

for secure, comprehensive patient medical data when Microsoft's HealthVault has already solved that problem and has a business model that encourages partnerships.

This collaborative mind-set needs to extend to skills as well. For example, using outside legal counsel with expertise in the use of digital health tools and related compliance and regulatory issues may be more effective than using an internal legal staff. On the working-model side, we have seen companies do well by adopting an "excubator" model, in which an outside firm serves as the development partner to stand up a fully functioning operation (including apps, back-end systems, staff, partner ecosystems, and so on). As the project gains momentum, the external partner transfers knowledge and products back to the pharma company.

Healthcare reform still has sizable unknowns, such as the number of additional enrollees, what form the changes to care delivery will take, and how payment models will be structured. It is clear, however, that pharma needs to play a more active role in asserting its value to the healthcare system. Using digital health technology to activate patients can help pharma meet the objectives of the triple-aim framework and position itself to evolve its role in healthcare and its commercial model. The only question is whether pharma companies will step up from their position as mere suppliers and take part in shaping the future healthcare system.

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# Endnotes

<sup>1</sup> “Patient Engagement Health Policy Brief,” Health Affairs, Feb. 14, 2013.

<sup>2</sup> Jessica Greene, Judith Hibbard, and Martin Tussler, “How Much Do Health Literacy and Patient Activation Contribute to Older Adults’ Ability to Manage Their Health?” Public Policy Institute, June 2005.

<sup>3</sup> Christina Farr, “Boston Hospitals Monitor Patients from Their Homes,” VentureBeat.com, July 29, 2013.

<sup>4</sup> Brian Horowitz, “Walgreens Opens API for Mobile Prescription Scanning to Developers,” eWeek, Feb. 2, 2013.

<sup>5</sup> Ken Terry, “IBM’s Watson Helps Doctors Fight Cancer,” Information Week, February 11, 2013.

<sup>6</sup> Marianne Turley, Terhilda Garrido, Alex Lowenthal, and Yi Yvonne Zhou, “Association Between Personal Health Record Enrollment and Patient Loyalty,” American Journal of Managed Care, July 12, 2012, ADMC.com.

<sup>7</sup> JH Hibbard, J Greene, and V. Overton, “Patients with Lower Activation Associated with Higher Costs, Delivery Systems Should Know Their Patients’ ‘Scores,’” Health Affairs, Feb. 2013.

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