Robin Robinson

Connecting the Dots *to* Connected Health

As the mHealth market grows, the industry prepares to optimize digital opportunities.

Measuring easily quantifiable data is one of the keys to better health. Therefore, the future belongs to digestible, embedded, and wearable sensors that work like a thin e-skin. These sensors will measure all important health parameters and vital signs —for example, temperature, blood biomarkers, and even neurological symptoms — 24 hours a day. They'll transmit data to the cloud and send alerts to medical systems in real time when, for example, a stroke is happening. Devices will call the ambulance and send all of the related data immediately. It's a brave new world for patients and pharma companies.

When it comes to connected health, life-sciences companies have a clear opportunity to incorporate advances in technology in order to improve health outcomes, says Patrick Flochel, global pharmaceutical leader at EY. Working in tandem, mobile health apps and wearable technologies, along with a solid basis in behavioral economics, are already being enlisted in the battle against non-adherence. Life-sciences companies can — and should — consider ways of offering these technologies alongside their products.

"If companies fail to grasp this opportunity, they will find an increasingly significant slice of the reimbursement pie being distributed to new, non-pharma competitors," Mr. Flochel says. "If they succeed, they will find new ways to own more of the care pathway, and build trust with payers and patients."

"Connected health will help us better understand disease, and therefore enable us to drive better outcomes," says James Zackheim, VP, Neupro patient solutions team at UCB.

"The key to connected health is to recognize its potential to improve more than just individual health outcomes, but the role it will play in changing the course of population health," he says. "With the gradual transition to value-driven healthcare, the expectations we have for pharmaceutical companies will change. We will reach a point when the expectation will be that, as an industry, we impact not just the symptoms but the ability of patients to reach their individual goals, the progression of their disease, or preferably both."

Connected health will allow the flow of medical information to all stakeholders, provide the tools that will make these connections effective, and improve the health decision-making process, says Stuart Sowder, Pharm.D., VP, external medical communications at Pfizer.

"We can help people connect all aspects of their healthcare, including their preferences and behaviors, toward improving outcomes," he says.

The increase in connected health technologies provides significant opportunities to monitor and influence a person's healthcare activities.

"We all have experience of fitness monitors or various other systems and applications, and we recognize that having this type of information can influence decision making," says Graham Reynolds, VP, marketing and innovation, West Pharmaceutical Services. "For companies like West, our opportunities relate to the ability to link a drug delivery event, such as the taking of a medication or the administration of an injection in some way, to a tool that can record and interpret this information. In particular, linkage between injection devices and an infrastructure that enables that injection event to be captured can be valuable with insights into patient compliance and behaviors. Our goal is to help improve patient outcomes by increasing patient adherence, and the capture of this data through some type of connected system can be extremely valuable."

The quantified-self movement and connected health are inherently patient-oriented, and promise to drive improved outcomes through better patient health awareness, early detection, improved condition and treatment monitoring, and automated reporting. To capitalize on this, companies first need to assess where their portfolio or brands fit into this dynamic, says Jesse Pease, head of digital, Triple Threat Communications. Companies may consider offering mobile solutions to improve patient-HCP communication based on tracked health parameters or perhaps automated systems to track and improve adherence.

"Before the solution can be developed, however, the company must first understand its primary goals, establish how those fit within the dynamic of connected health, then determine what role can be fulfilled," Mr. Pease says. "Once that is determined, careful selection of strategic, technology, and integration partners is crucial to successfully building a solution for connected health."

While data collection is the advantage of quantified self, or quantified health, the challenge is using all that data in a way that realizes its full value, says Jeff Baker, CEO of Noble.

> "Technologies should provide custom solutions that decrease the treatment burden, yet they often provide limited value."
>
> **ALYSON CONNOR**
> MicroMass Communications

> "This new world of connectivity ensures that the patient voice is heard at every turn."
>
> **BONNIE BRESCIA** / BBK Worldwide

> "Digital technologies are having an increasing influence on improving patient experience in clinical trials."
>
> **TIM DAVIS** / Exco InTouch

> "By leveraging the power of mHealth into therapies, pharmaceutical companies will remain an important part of the conversation between patients, physicians, and payers."
>
> **BRAD EINARSEN** / Klick Health

"A digital health solution should be both sustainable and scalable," he says. "It is essential that actionable recommendation be created from this high resolution data to benefit all stakeholders, from brand and device teams to doctors and patients and to society as a whole."

To maximize opportunities for connected health, solution-developers should create offerings that allow patients and providers to take meaningful action in response to the data that get reported, through either real-time intervention from a provider or algorithms that deliver clinical guidance in response to data gathered in-system. Data streams should be part of holistic interventions that change patient behavior by delivering the skills and tools they need to more effectively manage their conditions.

"Many patient solutions that are, in theory, data-centric simply provide access to potentially confusing data without providing an explanation or direction to make the data actionable," says Rob Peters, senior VP, strategy at MicroMass Communications. "Despite the growing volume of data available today, data alone aren't sufficient to drive the level of improvement patients need."

Healthcare is poised to take advantage of this trend by tracking ambient and user-engaged data over time in convenient, almost invisible ways. There's not much question that the newfound data will almost certainly be a boon to patients' health. The challenge for pharma lies in penetrating the channel of data between the patient, physician, and health organization, which is often sealed tight. According to Brad Einarsen, director, digital insights, Klick Health, the way for pharma to become involved in this new data channel between patients, physicians, and hospitals is to include their digital tools as part of the therapy.

"This means incorporating digital tools as part of the R&D budget up front, including them in all trials, and ensuring they are part of the prescription process," Mr. Einarsen says. "By leveraging the power of mHealth in the therapies themselves, pharmaceutical companies will provide better products and remain an important part of the conversation between patients, physicians, and payers."

Healthcare technology is attracting the most innovative and successful technology companies in the world, including Apple, Google, Samsung, Oracle, and IBM among others. The global market is predicted to top $30.2 billion in 2018, according to several analyst reports.

While the majority of mHealth devices are aimed at connecting with consumers, the real breakthrough will come when these devices connect clinicians and healthcare consumers, relevant data are shared, and health behaviors are reinforced, says Lynn O'Connor Vos, CEO, ghg.

"It is not about data or technology alone, it is more about leveraging technology to forge better partnerships with clinicians and patients, fine-tuning communications that will drive health engagement and improved outcomes," she says.

Next-generation telemedicine technologies, such Doctor on Demand, for instance, are picking up traction and can be expected to evolve beyond the current solutions powering diagnostics, disease management, and ongoing monitoring.

"The future of on-the-go healthcare will be integrated into everyday technologies where people live, work, and play — the smart TV, the smart refrigerator, the smart car — detecting and alerting people of situational and environmental factors that impact their health," says Sandy Szlachtianchyn, strategic account planner at PulseCX. "If this is the way of the future, pharma companies need to help get doctors on board to capitalize on this movement."

Ms. Szlachtianchyn suggests that due to privacy, security, and liability concerns, fewer than one in 10 doctors report widespread use of IM and videoconferencing. To increase physicians' adoption and receptivity to the point-of-care everywhere trend, marketers can help establish legally safe environments for out-of-office physician-patient interactions, as well as help physicians navigate the use of this new environment to achieve EHR meaningful use expectations.

The most important factor about connected health is, of course, connections — and those connections expand beyond the physician-patient relationship.

"Mobile technology can improve process and communications for the salesforce, increase patient adherence, and make a healthier lifestyle more attainable, ultimately selling products," says Ash Kuchel, global group president, Publicis Healthcare Communications Group. "Mobile has been lauded as a cost-effective solution that can improve business outcomes, but can benefit patients' outcome as well."

Communicating in the healthcare space connects people around a dialogue about health; connecting patients, caregivers, and doctors to information; and ultimately fostering connections between consumers and brands. Connected health opens a platform for the patient voice, and offers an opportunity for brands to connect directly with patients.

According to Bonnie Brescia, founding principal, BBK Worldwide, connecting directly with patients and addressing their needs is one of the most exciting outcomes of connected health.

"Understanding the importance of patient-centricity, the clinical research industry has only just begun to direct its focus on patient needs, wants, insights, abilities, and knowledge," Ms. Brescia says. "From sensors and

Challenges Hinder Progress of Connected Health

When it comes to the adoption of connected health, according to a recent report by Accenture, there are four major categories of obstacles:

1. **Systems and policies** — including a lack of clear strategies linking healthcare IT investment to health outcomes, poor financial incentives, fragmented healthcare delivery, and a lack of interoperability standards.

2. **Organization and management** — including financial constraints on investment, a lack of credible business cases, high costs, poor collaboration between organizations, technical limitations, and substandard project management.

3. **Clinicians and end users** — including physician resistance to technology and practices that slow their productivity, increase overhead costs, introduce information with no clinical benefit or raise legal liability.

4. **Patients and the public** — including concerns over privacy and data security, lack of regulatory oversight and the need to encourage people to play a bigger role in managing their own health.

Source: Accenture.
For more information, visit accenture.com.

> "Clinical trials can become virtual and a part of the healthcare ecosystem with the use of digital technologies."
>
> **DR. STUART SOWDER** / Pfizer

> "The industry has long acknowledged the need for greater efficiency, and connected health provides a key opportunity for this."
>
> **GLEN DE VRIES**
> Medidata Solutions

wearable technologies, to sophisticated mobile apps and social communities, this new world of connectivity ensures that the patient voice is heard at every turn."

Ms. Brescia also expects connected health to impact the development of new gold standards of measuring outcomes.

"Before sensors enabled the collection of a regular, real-time stream of physiological data, researchers and practitioners relied on patient-reported information, which was often subjective and sometimes unreliable," she says.

Nagaraja Srivatsan, senior VP, venture partner, at Cognizant, believes that an integrated high-tech and high-touch model for connected health will better enable companies to influence patient behaviors to positively influence outcomes to the benefit of the patient. As wireless on-body and in-body sensors become more capable of interoperation and interconnection, healthcare stakeholders will be able to build a much more comprehensive, holistic picture of the patient's health journey over time. That, coupled with predictive analytics capabilities and algorithms, will enable stakeholders to better understand the needs of the patient.

"We strongly believe that digital and wireless technologies coupled with high-touch services can be used to create opportunities for better adherence, wellness management, and other activities that improve health in the patient journey," he says. "To make this model for connected health a reality, companies need to really look at how they operationalize several processes, including patient data collection, transmission, evaluation, as well as patient engagement and intervention models."

Improving Clinical Trials through Connected Health

Many people see the need for blurring the barriers between clinical trials and healthcare and connected health enables this. A patient can wear a blood pressure cuff or temperature monitor and have that data flow through to the clinical trial database continuously, so safety issues or efficacy data is detected and analyzed in real time.

"This will provide data that provide an insight into real-world efficacy and safety," says Simon Wilson, pharmacology head, clinical program management and training at ArisGlobal, says. "However, this requires a paradigm shift in the way that studies are designed and managed."

Connected health is changing — and improving — patient care, and in clinical trials, the benefits include real-time access to high-quality data with improved completion rates. Collectively, connected health overcomes costly duplication of effort, obviates transcription errors, eliminates delays, and reduces the volume of missing data.

"We no longer need to rely on site staff transcribing data that, by its very nature, is already delayed and full of holes," Mr. Wilson says. "There is a guarantee — unless someone else is wearing the device — that the data being collected are reliable."

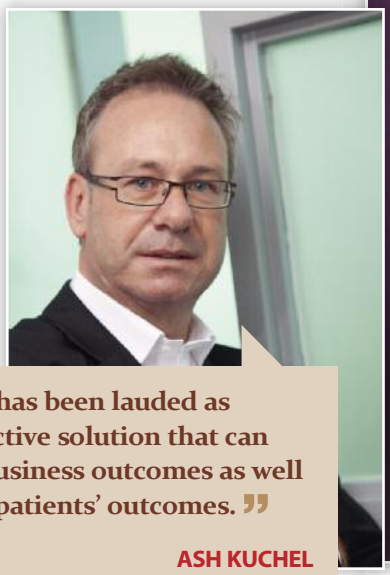
Connected health technologies used during clinical trials can help speed up the rate of innovation and get early signals of imbalances in the risk/benefit profile of a treatment, Dr. Sowder from Pfizer says.

"Clinical trials can become virtual and a part of the healthcare ecosystem with the use of digital technologies, thereby moving toward the 'healthcare everywhere' stage," he says. "Digital technologies can help identify potential subjects for a clinical trial in real time, such as through electronic medical records, making clinical trial information available to potential participants, and having the information readily available to healthcare providers seeking treatments for their patients."

R&D organizations can use digital technologies to improve clinical trials by maturing several key capabilities, such as crowd sourcing techniques for patient recruitment/selection, data visualization techniques to enable genotype matching for tailored therapeutics, and "plug and play" architectures to securely collaborate with investigators during the trial process that will ultimately reduce their overall clinical trial cycle time, says Gurpreet Singh, principal and management consulting leader for PwC's Health Industries practice.

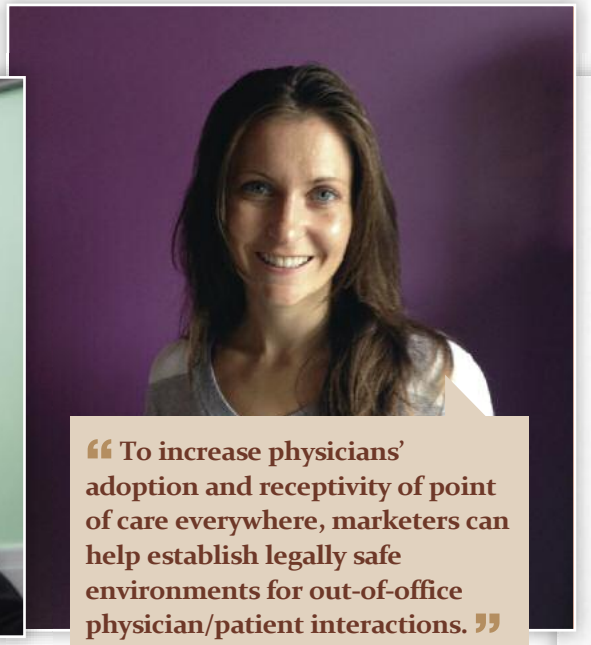
"Staying connected with patients beyond the pill is an effective way to remain relevant and also drive a more positive ROI," he says.

One way to effectively manage patient data is by creating what Mr. Singh calls a "digital patient ecosystem," using mobile applications that help with proper dosing levels, automated



"Mobile has been lauded as a cost-effective solution that can improve business outcomes as well as benefit patients' outcomes."

ASH KUCHEL
Publicis Healthcare Communications Group

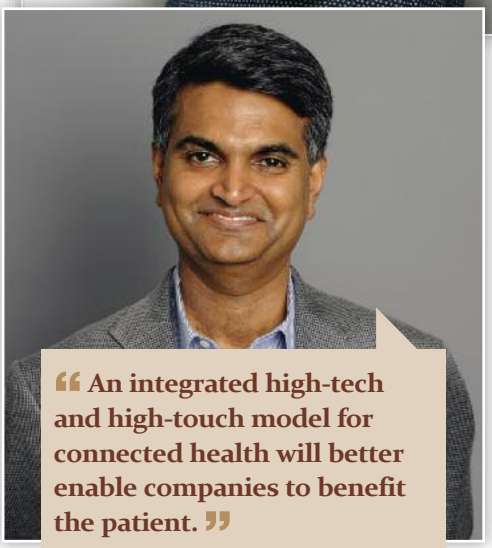


"To increase physicians' adoption and receptivity of point of care everywhere, marketers can help establish legally safe environments for out-of-office physician/patient interactions."

SANDY SZLACHTIANCHYN / PulseCX

"Careful selection of strategic, technology, and integration partners is crucial to successfully building a solution for connected health."

JESSE PEASE / Triple Threat Communications



"An integrated high-tech and high-touch model for connected health will better enable companies to benefit the patient."

NAGARAJA SRIVATSAN / Cognizant

notifications, and a stronger connection back to the physician.

"Turning data into information requires a close collaboration between functional experts, data scientists, and IT," he says. "Therefore, leading firms will develop sophisticated capabilities to enable teams across the value chain to ask meaningful questions of big data sets and to generate actionable insights."

Exco InTouch has noticed that digital technologies are having an increasing influence on improving the patient experience in clinical trials, mainly through recognizing patient needs and better engaging with patients over the duration of the trials, as well as through delivering more timely content in a more commercial interface, and, where possible, bringing in additional elements such as goals, rewards, and tasks.

"Using digital technologies in clinical trials allows for a timely collection of patient data and, using these data, to run the trials comprehensively, as well as for real-time interventions if necessary," says Tim Davis, CEO and founder, Exco InTouch.

Tracking patient behavior and physiological changes through sensors eliminates the need for self-reporting and has the potential to radically change the way trials are conducted. This moves risk-based monitoring beyond the site to the patient level, where the use of technology can centralize data collection, improve patient safety, and guarantee data integrity. Currently, clinical trials collect a mix of self-reported data, often unreliable, or periodic bioassays that give a limited snapshot of the patient's behavior and response to the drug.

"Sensors allow for a much more detailed and objective understanding of the patient," says Adam Hanina, CEO at AiCure. "Since patients can be effectively monitored from home, trials can be virtualized thereby increasing recruitment and retention rates."

Devices and monitoring technology that can connect with participants' existing mobile phones will significantly further these efforts by allowing patients to interact with technology with which they are already familiar. For life-sciences companies, the time to begin incorporating connected biosensors into their trials is now, says Glen de Vries, president, Medidata Solutions.

"While the technologies aren't perfect, it's critical to begin working through the operational, technical, and regulatory implications of connected device use," he says. "The industry has an enormous amount to learn, and it won't always be easy to incorporate new technologies, but connected health devices provide the opportunity for objective indicators of health status and disease progression.

"At Medidata, we believe incorporating digital technologies in clinical trials will result in better data, enhanced patient experiences, and more efficient trials," Mr. de Vries continues. "Life-sciences companies are often frustrated with the limited data they have available to understand disease trajectory and response to therapy. As mHealth matures, companies will have the data they need to better understand whether a drug is safe and effective, as well as whether it is impacting a patient's quality of life."

Enhancing the Patient Journey with Digital Technologies

Digital technologies can greatly enhance the patient journey, our experts say. For example, Dr. Sowder at Pfizer outlines how connected health can improve several steps of the healthcare process.

Digital technologies can help track relevant personal and family health information more seamlessly and easily for family and medical histories, he says. After diagnosis, patients may do their own research online and come prepared to ask questions of their physicians. When patients are in an acute or crisis care situation, all of their medical information could be up to date and available to doctors, 24/7, everywhere. By sharing options in real time through digital technologies, as well as by understanding patient preferences, shared decision making is improved in the physician office by providing access to important medical information in real time. Mobile, telehealth, apps, etc. all help patients and caregivers monitor health status, maintain adherence to med-

> "The real breakthrough will come when these devices connect clinicians and healthcare consumers, relevant data are shared, and health behaviors are reinforced."
>
> **LYNN O'CONNOR VOS** / ghg

> "Many people see the need for blurring the barriers between clinical trials and healthcare, and connected health enables this."
>
> **SIMON WILSON** / ArisGlobal

ical treatments, and share their data with their healthcare team.

UCB has recently partnered with electronics company MC10 Inc. to explore how wearable sensing technology can be used to benefit patients. Data collected from digital sensors helps broaden understanding beyond interpreting individual progression to identifying larger trends, UCB's Mr. Zackheim says.

"Personalized monitoring technology can be used at every step of the patient journey — from diagnosis via symptom tracking, to monitoring chronic conditions, to alerting healthcare professionals of serious medical incidents," he says.

Molecular diagnostic company Myriad Genetics has developed an app — myRA — to help people living with rheumatoid arthritis track their symptoms. Scott Gleason, head of investor relations, at Myriad says this app is a good example of how digital tools can help patients through their journey.

> "Providing customized tools, discounts, real-time connections, and other interactions are key to driving engagement and optimizing the customer experience."
>
> **DAVID ZARITSKY** / PulseCX

"By tracking and logging their symptoms in an easy-to-use digital journal, they can better communicate the progression of their disease to their physician over time," he says. "This can allow a rheumatologist to recognize warning signs at an earlier stage, and have a better understanding of where the patients are in the disease continuum."

Connected health is changing the landscape of healthcare, and the future will look much different across all stakeholders. Today, systems that combine health data capture with software algorithms to assess current health and prescribe future behavior are already as powerful as the drugs manufactured in labs, says Fabio Gratton, chief innovation catalyst, Sonic Health.

"In a world where wearable sensors interface directly with Watson-like systems with dizzying computational horsepower, future doctors are likely to look more like today's IT personnel: they will be responsible for procuring the most appropriate hardware and software for the human health enterprise, and then helping to configure and maintain it until it's time for an upgrade," he says.

To effectively use digital technologies throughout the patient journey, companies will want to design for mobile first, as patients and caregivers are predominantly using smartphones and tablets and they want an experience that is available at the tap of a screen, where and when they want it. Providing customized tools and discounts — through copay card for Rx products and loyalty programs for durable medical equipment, personalized support, real-time connections to peer mentors/coaches, and other interactions — is key to driving engagement and optimizing the customer experience, says David Zaritsky, president, PulseCX.

"Architecting a technology platform enables patients and their healthcare providers to access relevant tools and support aligned to the precise point in time in their treatment journey," he says.

> "Data collection is the advantage of quantified health, but the challenge is using all that data in a way that realizes its full value."
>
> **JEFF BAKER** / Noble

Mr. Zaritsky outlines what should be available on this platform. Patients new to therapy should receive prominent co-pay offers, motivational videos, and conversation coaches designed to get them through their first refill. Experienced patients should be targeted with content and tools designed to keep them on therapy.

He says connections to peer mentors need to be enabled, giving patients the opportunity to share positive experiences, as well as their struggles, and coping tools that may help them through the tough times. Crowdsourcing surveys give them the opportunity to suggest future content and tools that can better serve patients new to therapy — based on their collective early experience — as well as the content and wrap-around services they need to remain engaged and motivated to continue their journey.

Digital technologies have great potential to deliver to patients what they need when they need it. But providers of these wearables need to recognize that there is no one-size-fits-all approach, says Alyson Connor, president, partner, at MicroMass.

"As patients progress along their journey, they acquire additional knowledge and skills," she says. "Digital technologies are a great way to adapt to the changing patients' needs that occur along the way. By streamlining disease management or therapy, these technologies should provide custom solutions that decrease the treatment burden. In reality, however, they often provide limited value that is driven more by the technology than by the true needs of patients or providers." PV

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• • •

TIM DAVIS
CEO and Founder
Exco InTouch

There is a tendency for companies to collect excessive amounts of data, which often results in information overload. We need to identify where the most interesting parts of this data are and find the key touch points. A good quality subset of data can give us information of not only what the patients are doing, but also how they are doing. Therefore, as an industry we need to focus on analyzing the clinical data to create comprehensive summaries that provide relevant overviews of patient information for each stakeholder.

• • •

ASH KUCHEL
Global Group President
Publicis Healthcare Communications Group

Mobile has the added benefit of data tracking — the excess amount of data can become insurmountable to read and analyze. Identifying the right analytics that show insights into which programs are working, how people are connecting and receiving their healthcare information, and where brands can have the most impact will help marketers understand where to best allocate their resources. The real-time data can help marketers course-correct if needed or revisit ideas for impact.

• • •

JESSE PEASE
Head of Digital
Triple Threat Communications

Many companies and marketing organizations fall into the trap of trying to consume and measure everything available to them. But big data requires being selective. Don't try to collect, measure, analyze, and solve everything at once. Start by identifying a very targeted, specific set of KPIs that are really at the heart of the business challenge you're trying to address. This is very hard to do, and requires a tremendous amount of discipline, as the temptation is to try and address every need at once, especially with increasing budget and time restrictions. When that temptation comes around, always validate it against your original goals and set of KPIs. If it doesn't fit, save it for the next iteration. It's much easier to start small and grow data consumption slowly over time as capabilities grow.

• • •

STUART SOWDER, PHARM.D.
VP, External Medical Communications
Pfizer Inc.

Prioritize and identify what is important and what isn't. Systems can be built to surface the key bits of information that are actionable or informative. Also, when collecting information ensure that the data collection process is built with an end in mind, and certainly apply the 80/20 rule. All that said, we will have a period of time when we balance the novelty of almost unlimited information with the reality of information overload. Just as we managed the office information revolution and the Internet information revolution, we will find ways to manage the revolution in healthcare information." PV

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