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Healthcare Innovation NEWS

What Healthcare Could Learn From Amazon, Uber and the Movies

by Ted Tanner, Jr.

America spends more on healthcare[1] than any other nation in the world—nearly $3.8 trillion or close to 20%[2] of the United States' GDP. That number breaks down to more than $10,000 per person on average per year, more than twice what other developed nations spend per capita.

At the root of high spending are disparate technology systems that don't talk or work with one another. Picture walled gardens. Health insurance systems aren't seamlessly integrated with software programs at hospital systems; some hospital departments within the same building can't communicate digitally. Worst of all, patients are in the dark about much of it. The solution is simpler than one might think, and it's being done in retail, transportation and the movie business right this very second.

Enter the Web Application Programming Interface (API)

In tech speak, APIs are sets of protocols and tools for building software applications. They might be conceptualized as connectivity tunnels that easily fit into existing infrastructure to establish previously nonexistent lines of communication. They allow independent, stand-alone systems that were not built with any intention of connectivity to work together efficiently. It is like what The Moving Picture Experts Group (MPEG) did in the entertainment industry: enabled people to watch movies in a theatre or on a tablet. Why not usher in a true level of interoperability for the sake of society's health?

Consumers, who use a computer, have a smartphone or drive a car, experience APIs every day but might not even know it.

APIs got their start nearly 15 years ago pioneered by companies like Salesforce.com, eBay and Amazon. For example, Amazon made it possible[3] for developers to incorporate functionalities of Amazon's search and shopping experience onto their own websites. This ushered in a new era of ecommerce as consumers began to shop online. Now at least 15% of all retail spending is done online, and mobile commerce is growing 53% percent year over year.[4] APIs mean big business.

A decade ago, Google introduced a new twist to APIs when it allowed its maps to easily be embedded into external websites. Developers made their own mark, and location-based services entered the fold. Need to search for a nearby restaurant right now? Lost and need directions? APIs help users find a way to get from here to there, in the palm of their hands.

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Data Security in Healthcare: A Paradigm Shift

by Jack Plotkin

The recent series of breaches involving the medical information of millions of Americans underscore the criticality of data security in healthcare IT. The challenge is that many traditional electronic medical systems were originally designed and built in the pre-Internet world, where a security breach was represented by an employee printing patient files and physically removing them from the office, as opposed to a sophisticated group of hackers performing a digital break-in from 10,000 miles away. Transitioning systems from a desktop- to a cloud-based environment renders legacy systems vulnerable to attack, requiring an entirely new approach to cybersecurity.

Healthcare organizations and IT vendors must realize that simply moving a legacy infrastructure into the cloud-based world can and will result in vulnerabilities that can be exploited by a motivated and reasonably skilled attacker.

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Making a Case for Healthcare Innovation

A Selected Case Study in Healthcare Innovation and Transformation…

ClearChoiceMD Leverages Cloud Technologies to Improve Medical Services for Underserved Rural Regions

by Alex Fuchs

Program Objectives:

- Increase productivity, morale and sales, which were being negatively impacted by poor voice communications and data services, by choosing the correct cloud services vendor.
- Deliver technology resources in the cloud in order to leverage unlimited scalability, flexibility and innovation.
- Minimize the occurrence of delays, disruptions and poor quality of service that arise when urgent care centers are located in remote regions of the Northeast.

Program Description: Northern New England is beautiful but while the scenery is majestic, it isn't always easy for residents to get the care and medical treatment they need—especially during the winter months marked by road-closing snowfalls. ClearChoiceMD (CCMD) set out to change this by launching dozens of state-of-the-art, urgent care facilities that now serve thousands of patients in towns spanning St. Albans, Vermont; Belmont, New Hampshire; and Scarborough, Maine.

As a start-up company, CCMD began making the usual investments and evaluations around infrastructure, employees, technology and more. From day one, we knew that we wanted most, if not all, of our technology resources to be delivered in the cloud in order to leverage the well-known economies of unlimited scalability, flexibility and innovation.

For voice and data, CCMD initially worked with a provider that could not deliver the quality of service it demanded due to, in part, their reliance on public Internet delivery. Even with an additional failover system—used to ensure connectivity in case of a loss or slow down of the primary connector—through another provider, callers would experience significant delays, disruptions or get dropped altogether when there was any kind of Internet service interruption.

The quality of service suffered significantly, as did data speeds. Since the bulk of our computing infrastructure is centrally located, consistent bandwidth delivery is paramount to reliability. Conventional bonding and failover methodologies simply weren't compatible with the Internet service providers that serve our rural locales.

Evolve IP's recently launched Cloud Connect network bonding service offered hope. Evolve IP is a communications and cloud services company based in Wayne, Pa. Launched in January 2015, Cloud Connect brings all of a company's various network connections together in the cloud, while monitoring all traffic to ensure lines are healthy and uptime is optimized. Internet connections of all types, providers, speeds and latencies can be bonded.

Cloud Connect makes available the total combined bandwidth of all connections—DSL, cable, fiber, fixed or mobile wireless and T1 (an older form of connectivity that often is the only means for rural locations)—and compresses traffic to increase the aggregate throughput by up to five times. Customers can select the most appropriate and available bandwidth for each location rather than defaulting to an expensive T1, such as in hard-to-reach areas where many of CCMD's clinics are located.

After careful consideration, CCMD selected Evolve IP in 2014 for voice services at its clinics. The company offered a brilliant, unique solution to our problem with the Cloud Connect bonding service. Cloud Connect meshes all of our smaller ISP lines together to create one super, high-performance connection.

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Making a Case for Healthcare Innovation: Looking Beyond Fee for Service

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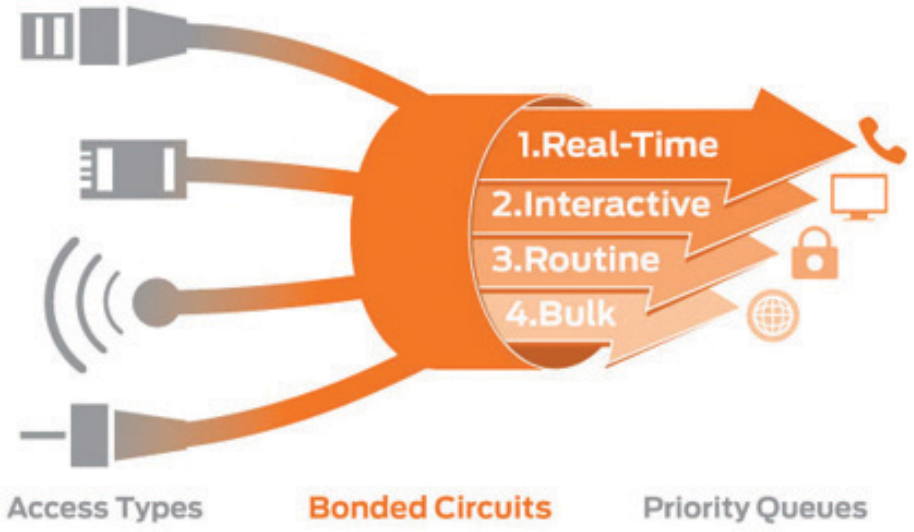
The solution also promised dramatically improved reliability on the data side, where we once had connectivity issues sending e-prescriptions direct to pharmacies, for example; now there are none.

Operating in the highly regulated industry of healthcare, we were also attracted to Evolve IP for its HIPAA-compliant data center because CCMD data would also be transmitted through Cloud Connect. HIPAA is the federal Health Insurance Portability and Accountability Act of 1996, and requires companies to protect the confidentiality and security of healthcare information. No other vendor offered this key attribute.



Evaluation Process: Traditionally, to ensure connectivity, companies have had to choose between slow, unreliable, inexpensive broadband Internet and costly leased lines. Neither option was perfect. With Evolve IP Cloud Connect, companies gain reliable voice service at a reasonable price without sacrificing quality.

CCMD began looking at Evolve IP's Cloud Connect solution, and we found that, packet by packet, the software streamed data without disruption by ensuring instantaneous stateful failover so if one line goes down, the other one knows the state of the sessions and can continue to run without having to restart or re-establish new connections. This is key for organizations like us. Unlike other network bonding mechanisms that stream data session by session, Cloud Connect streams data on the "packet" level—a finer, more diminutive breakdown—to detect a failed connection instantly and remove it from the bond. The installed Cloud Connect device intelligently selects new paths and immediately reroutes data when it identifies network degradation or outages. This means voice calls don't drop, virtual desktop sessions aren't interrupted and data backups remain current.

Even compared to enterprise-grade systems, Evolve IP provides the highest quality of service (QoS) by far, bar none. We have not experienced any issues concerning voice quality, which is in stark contrast with any other system we have used. All of the quality components contribute, but Cloud Connect brings them together to ensure voice quality.

Results: Just days after implementing Evolve IP's solution at a New Hampshire location, we unknowingly put the new tech to the test. There was a major car accident near our Portsmouth clinic and instantly, the Evolve IP device initiated failover. It was seamless. Staff remained on the phone the whole time, no one noticed a single blip and voice services remained steady.

Since the business launched, CCMD has been thrust into multiple business continuity situations. Due to snowstorms and ice, it had to close a few clinics, as they were impossible to access with two feet of snow on the ground; however, with Evolve IP's advanced unified communications services, CCMD is enacting strategic business continuity plans and leveraging Evolve features to set up automatic call rerouting and other contingencies in the event of a clinic closing unexpectedly.

After installing the new bonding device across all CCMD urgent care facilities, connectivity instantly went from frustratingly erratic to faultless. Prior, we experienced frequent outages, sometimes for four hours at a time. Now, we enjoy uninterrupted service. With Cloud Connect, we have eliminated intermittent phone and Internet service drops and increased the reliability of daily business tasks, such as transmitting X-rays from clinics to radiologists. We've even resolved printing issues. We have zero downtime now as a result of connectivity because we're always up and running.

> ***"With Cloud Connect, we have eliminated intermittent phone and Internet service drops and increased the reliability of daily business tasks, such as transmitting X-rays from clinics to radiologists. We've even resolved printing issues."***

Lessons Learned:

- The cloud allows companies to grow and scale quickly but without proper implementation and maintenance, its benefits cannot be fully reaped.
- Without the right plans in place, IT disasters can dramatically impact a business. This translates to lost revenue and loss of productivity.
- Disaster Recovery-as-a-Service (DRaaS) is an important element of data protection.
- Providing a high level of patient service is the ultimate key to future growth.

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Data Security in Healthcare: A Paradigm Shift

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Moreover, given the specialized nature of healthcare software products, many healthcare organizations rely on a cross-vendor patchwork of systems. Overall security protocols are cobbled together by in-house IT teams, whose expertise with cybersecurity may be limited, and contain carve-outs to accommodate legacy systems. Thus, the combination of inconsistent, outdated protocols and incredibly sensitive, high-value data have made healthcare organizations a particularly attractive target for cybercriminals and a potential data sieve for internal personnel.

Fortunately, healthcare organizations can take the following proactive steps to combat the threat of a data breach:

- Place a greater burden for cybersecurity on existing IT vendors, requiring compliance and transparency with regard to specific information security policies.
- Bolster in-house expertise and hands-on management related specifically to cybersecurity.
- Ensure that relevant best practices are consistently employed across all products and business lines.
- Put in place remediation plans for potential data breach scenarios and provide cybersecurity training to all personnel with access to systems containing protected health information.

Accepting Responsibility

When a data breach occurs, it is typically the healthcare organization rather than the vendor providing the breached system that receives the lion's share of the blame from victims, media and regulatory agencies. This results in something of a moral hazard in which the vendor, which has the actual ability to modify the security protocols for a system, has less incentive to make improvements than does the client organization, despite the client having limited to no ability to directly modify security protocols.

For this reason, it is incumbent on healthcare organizations to hold their vendors to a high and consistent standard with regard to cybersecurity. Organizations should request initial detailed security assessments, conduct regular audits, require immediate notice and timely remediation regarding discovered vulnerabilities and compel transparency for security protocols and policies. Cybersecurity is one area where the dictum of "what we don't know can't hurt us" absolutely and unequivocally does not apply.

In order to appropriately audit their vendors, as well as bolster their own internal information security protocols, healthcare organizations should seek to develop their in-house cybersecurity expertise. In many healthcare organizations, cybersecurity has been something of an afterthought, either contracted out to a general IT vendor or assigned to in-house IT staff with limited relevant experience.

The goal is often to simply check the HIPAA checkbox, which is a far lower bar to clear than a best practice level of cybersecurity. In a number of organizations, so-called "standard" practices, such as the requirement to change passwords every 90 days, masquerade under the guise of cybersecurity despite years-old research showing many of these "standard" practices to be drags on productivity with no appreciable security benefits. The solution is to bring on in-house cybersecurity subject matter experts and ensure that they are appropriately involved in all facets of the enterprise IT management process, both internally and externally.

Such subject matter experts can help healthcare organizations ensure that certain best practices are consistently employed across all products and business lines. Specifically, they can review and update policies and protocols for managing external connections, user accounts, information access and data encryption. A retrospective analysis of data breaches indicates that a vast majority of security attacks are preventable by having appropriate protocols in place.

Healthcare organizations should ensure that they are properly utilizing role-based access controls and audit trails and that they are regularly applying recommended security patches. Additionally, automated monitoring can be effectively utilized to detect the presence of unauthorized software, such as rootkits and backdoor attacks, and works particularly well in combination with intrusion detection systems.

With the appropriate security measures in place, healthcare organizations should then employ the services of a cybersecurity firm with specific expertise in the area of penetration testing. Such firms, known colloquially as "white hat" hackers, use a combination of technical and social engineering approaches to probe vulnerabilities and expose weaknesses in existing security systems. By shoring up their defenses in the identified areas, healthcare organizations can significantly improve their ability to thwart potential attackers.

Alongside protections against external threats, healthcare organizations must give equal consideration to internal vulnerabilities. It is important to have cybersecurity training in place for all personnel, including outside consultants and contractors, who have access to protected health information or other sensitive data. In particular, personnel must be trained on the appropriate ways to manage usernames and passwords, on what constitutes confidential or protected information and on how to work with both electronic and physical data that might be made available to them. Personnel must also learn what is considered a security incident and the escalation procedure for any actual or suspected incidents.

The Cybersecurity Roadmap

The approaches outlined here provide a roadmap for better cybersecurity, but keep in mind, no set of protocols and training are 100% foolproof. For this reason, it is critical to have in place remediation and response plans in case of breach. From a security perspective, the purpose of such a plan is twofold: 1) to diagnose and contain the breach, limiting the amount of protected information that is accessed by unauthorized parties, and 2) to investigate and remediate the breach, ensuring that all vulnerabilities and contributing factors are appropriately and rapidly addressed.

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Data Security in Healthcare: A Paradigm Shift*...continued from page 4*

Healthcare organizations with a clear remediation and response blueprint are generally able to react with greater expediency and clarity of purpose to any data breach scenarios.

For large healthcare organizations with extensive IT infrastructures and thousands of personnel across a variety of roles, the move to the prescribed level of cybersecurity represents a significant investment in both technological and organizational transformation. For smaller healthcare organizations with significant dependencies on legacy systems and high-powered vendors, the move can prove even more expensive on a proportionate basis. However, both ethical and financial considerations require such a move. From a cost/benefit perspective, the financial cost of hiring in-house experts, updating protocols and systems, engaging external consultants and training personnel is certainly far lower than the financial, regulatory and reputational risks associated with a significant data breach.

Just as physical security is necessary for a facility with expensive equipment and sensitive information on its premises, cybersecurity has become a necessity for any organization with protected data or confidential information in its data repositories. It is unthinkable that any healthcare organization would leave its corporate offices unlocked and unmonitored; yet, that same organization might be leaving its electronic stores unencrypted and unprotected. The recent breaches in the industry highlight the importance of a paradigm shift that requires healthcare organizations to make cybersecurity a key theme for the remainder of 2015 and beyond.

Jack Plotkin is chief technology officer for Virtual Health, a population health management platform.

What Healthcare Can Learn from Amazon, Uber and the Movies*...continued from page 1*

Hailing a town car through Uber relies on a more modern application of an API. As venture capitalist Maxwell Wessel explains,[5] "When you locate yourself and request a car, Google Maps helps Uber route drivers to your location (for now). When you receive a text message with a driver en-route, it's powered by Twilio's APIs. When your receipt appears in your inbox, it's SendGrid's transactional email system." Uber didn't do all the software development; it merely reorganized the way consumers engage with transportation—digitally. The same can be done in healthcare, and it's the first inning.

Imagine if the healthcare system committed to leveraging APIs to reorganize itself. How would that impact both the consumer experience and the bottom line? According to the Harvard Consulting Group, an API model has the potential to save the healthcare industry more than $320 billion in eligibility, claims, referrals and scheduling alone.[6] The group found going digital using APIs is 89% less expensive than the antiquated phone call, paperwork and manual intervention processes accepted as status quo.

> ***"According to the Harvard Consulting Group, an API model has the potential to save the healthcare industry more than $320 billion in eligibility, claims, referrals and scheduling alone. The group found going digital using APIs is 89% less expensive than the antiquated phone call, paperwork and manual intervention processes accepted as status quo."***

The truth is, many healthcare executives are encountering and learning the advantages of APIs for the first time. This industry doesn't have the luxury of time to replace or rebuild legacy infrastructure. Newly empowered consumers are demanding the speed, access to information and consumer experience they get in every other industry, and it can't be delivered by obsolete systems.

A Look Back at Technical Standards

In 1996, everyone made such a ruckus about the Health Insurance Portability & Accountability Act (HIPAA). It was intended to make the healthcare system in the United States "better," including making it more efficient by standardizing healthcare transactions such as eligibility verification and claims processing. This standard for electronic transmission of information is called HIPAA ASC X12 5010 and was required of all healthcare plans. Unfortunately, conventional approaches that support HIPAA ASC X12 5010 standards injected huge hidden costs within the infrastructure and still don't tackle critical issues, such as making the different systems involved in a healthcare transaction interoperable.

X12 can be ugly. Despite all these available standards, they are customizable, making compatibility issues worse.

Beyond HIPAA, there are HL7 standards, established by the non-profit organization founded in 1987 called Health Level Seven International. Its vision is to enable everyone to "securely access and use the right health data when and where they need it." Because HL7 can be customized to such a degree, different health IT systems can't recognize certain data and renders it inaccessible. This means someone who has just moved and is suffering from a chronic disease, such as diabetes, can't port his or her records over to a new health system electronically. It means another series of expensive, unnecessary tests and paperwork that must be manually uploaded yet again. Fast Healthcare Interoperability Resources7 FHIR(R),[7] created by HL7, is trying to tackle this but has a way to go.

APIs can be used to fetch, read and return health information that's been written and stored in a languages such as X12. To some, X12 is atrocious and written for mainframe computers built in the 1970s. The best APIs bring information back to consumers in a prettier, industry standard format called JSON, making it possible to put it to use for Web experiences expected by consumers today. While not perfect, the standardization of data and records has allowed APIs to come into play and work their magic.

Online All the Time and the Era of "Medley Medicine"

Now by law, all U.S. residents—more than 300 million people—are required to maintain health insurance. As a more affordable option, 22 million Americans were projected to enroll in high-deductible health plans (HDHPs) by 2025.[8]

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What Healthcare Could Learn from Amazon, Uber and the Movies

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Currently there are already more than 37 million people enrolled in such plans, a goal reached 10 years earlier than projected. Those with HDHPs covering their families could spend $12,900 out of pocket each year before insurance kicks in. This is driving a new wave of retail shopping behavior as consumers look for more convenient and cost-effective options, from retail clinics and to concierge care.

> ***"...22 million Americans were projected to enroll in high-deductible health plans (HDHPs) by 2025."***

Those most fiscally aware and responsible for medical costs are choosing to make big box retailers, such as Target, Rite Aid, CVS, Walgreens and Walmart, their first touch point rather than making their primary care doctor their first call. And they will serve as a junction between online and offline engagement in healthcare. Software will power information collection, access, storage and transaction processing. APIs incorporated into this process are integral to allowing the secure, seamless flow of clinical, insurance, financial and patient identity data within and outside the four walls of a health facility.

It is as simple as making sure claims are submitted to insurance carriers in an efficient, automated fashion or ensuring the care a patient receives in a retail setting is coordinated with care from a patient's primary physician or at a hospital or clinic during an earlier visit. It is about managing multiple healthcare records across multiple systems and locations. By using APIs to manage information flow, highly skilled (and expensive) employees, who have specialized training in claims processing, don't have to do the grunt work.

The rapid adoption and popularity of telemedicine for non-emergent conditions, ranging from colds, flus to upper respiratory infections, make telemedicine companies a popular choice for employers, health plans and consumers.

The methodologies that will allow these applications to scale are through platform approaches with APIs. These APIs allow developers to take advantage of a plethora of technologies without having to build the underlying core suite of technologies and infrastructures themselves. The global telemedicine technology market is expected to reach $43 billion in 2019,[9] paved in part by 22 states and the District of Columbia requiring private insurers to cover telehealth the same way they cover in-person healthcare services.

In the olden days of HMOs, primary care doctors were the gatekeepers, who had a 360-degree view of a patient and handled referrals to their preferred list of specialists. Now consumers who think they might have bronchitis could go online and consult a telemedicine doctor they have never met in the comfort of their homes. Or they might walk down to the corner drugstore, which now houses a clinic.

For every medical consultation, beyond capturing health history and personal information, there are threads of financial transactions, such as copayments, deductibles and out-of-pocket expenses. This information must be stored and processed digitally across heterogeneous systems and organizations—something that APIs make possible.

APIs are so critical to horizontal interoperability for patient interactions that will increasingly happen in different venues. Legacy systems can be easily retrofitted without "ripping and replacing" and provide a parallel development glide path.

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[3] "Amazon.com Launches Web Services; Developers Can Now Incorporate Amazon.com Content and Features Into Their Own Web Sites; Extends "Welcome Mat" for Developers." Amazon PR. July 16, 2002.
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Gaining Traction for New Health Technologies: Why Does it Matter Today?

by Travis Good, M.D., MBA, M.S.

The U.S. healthcare industry is substantially larger than the gross domestic product of most countries, ranking among the top 10 countries in the world in terms of GDP.[1] Because of that and concerns about return on investment (ROI), healthcare spending in the United States is being disparaged by both government and private sectors, including payers and self-insured employers.

New and existing vendors have created an explosion in healthcare technology, along with internal innovation groups at large enterprises, including payers, pharmaceutical manufacturers and providers. Vendors and in-house resources have built and deployed technologies that engage patients, empower collaborative care, increase financial transparency, extend the definition of care settings with telemedicine and collect new sources of data directly from consumers.

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Gaining Traction for New Health Technologies: Why Does it Matter Today?

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The transition from a traditional business model of compensation based on volume of care to one based on quality is driving this digital health explosion; however, health systems and digital health companies face huge challenges in pushing their products over the hurdles of integrating into the healthcare system. The first challenge is to prove the ROI on their technologies presently and in subsequent years.

Despite the prevalent and ever-growing need for new technology, vendors face significant problems in gaining adoption from providers and payers. In a recent blog[2] by Todd Dunn of Intermountain Health, one of the most progressive health systems in the country, he laid out seven reasons why healthcare technology ventures fail. Several of the mistakes he outlined can be summarized as barriers that healthcare technology companies must overcome to successfully pilot and scale new products: 1) security and compliance; 2) clinical adoption; and 3) justifying ROI for volume- and value-based care.

> ***"…the healthcare industry has been slow to adopt cloud-based technologies primarily based on perceptions about the security and compliance of hosted options…"***

Security and Compliance of New Technologies

Many new technologies come from SaaS vendors that offer subscription-based payments to organizations to house their technology and data in a cloud-hosted environment. Cloud-based options are revolutionizing healthcare with the ability to leverage on-demand technical infrastructure with redundant power, connectivity and physical security. However, the healthcare industry has been slow to adopt these technologies primarily based on perceptions about the security and compliance of hosted options and on oft-enormous financial penalties levied on breaches. Yet, in recent years, advancements in technology leave those security and compliance concerns unwarranted.

Most healthcare organizations, all the way down to some offices with dedicated server locations, manage and maintain their own physical technology infrastructure. To get technologies adopted by healthcare enterprises, it's important that vendors not only be in compliance but have proof of that compliance at hand.

Complying with HIPAA

At the center of HIPAA are covered entities, payers and providers that engage with vendors and partners or in HIPAA terms, "business associates."

The responsibility of ensuring that business associates are in compliance with HIPAA lies with the covered entities, explaining why security and compliance reviews, which can take months, are done prior to technology pilots by enterprises.

In order to comply with HIPAA, vendors must meet both administrative and technical requirements that could be an extensive and time-consuming process, but meeting these requirements might be the only way to secure a pilot. For example, if a vendor fails to perform a risk assessment, an enterprise would risk its own security, financial well-being or reputation by engaging with that partner. Increasingly, modern technology vendors are leveraging resources, such as third-party gap or internal risk assessments, that could help them comply with HIPAA: however, meeting the requirements matters more than the tools.

The most foolproof solution for compliance lies in an external audit of an enterprise, but this is expensive and takes time, especially for smaller vendors. Companies are more likely to succeed when they are transparent and proactive about compliance. As a result, vendors that focus on substantiated compliance proof as part of developing a relationship with a client could see quicker implementation.

Setting up a Pilot for Success

Securing a pilot with a healthcare system is just the first step. Scaling that pilot is crucial to success for healthcare technology vendors. The following explores some tips:

- **Determine what is part of a pilot and what is not**. Delineate the scale of the pilot to prevent diluting its objectives and potential ROI. It is a pilot, not a wide-scale rollout.
- **Establish the timeline for a pilot.** Planning for necessities, such as training and evaluation, will create a founded administrative infrastructure that will allow for completion within the timeframe and will make a widespread rollout more attractive.
- **Ensure ongoing communication and scheduled status reports on a pilot.** Large enterprise sales are about relationships that must be nurtured.
- **Define and agree on the metrics that stipulate "success" for a pilot.** Metrics could include establishing clinical outcomes, increasing revenue, reducing costs and improving user satisfaction.

The Time Is Now!

With cash infusions from the federal government and changing structures for how healthcare organizations are paid for services, the industry is on the cusp of reinventing itself. Despite the impending paradigm shifts and challenges, selling into healthcare is no simple feat. Maximizing chances of success can be done by developing compliance and integration plans early to secure pilots, followed by exhibiting patience and being laser-focused on efforts to develop them. In the end, it will be easier to bring pilots to scale and further secure referral clients in the process, accelerating the go-to-market timeline for new healthcare technologies.

[1] *Kane J. "Health Costs: How the U.S. Compares With Other Countries." PBS NewsHour. Oct. 22, 2012.
[2] Dunn T. "The 7 Deadly Healthcare Startup Sins." Steve Blank Blog. July 9, 2015.

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Thought Leaders' Corner

There was so much interest in this question initially posed in the August issue that *Healthcare Innovation News* is printing additional responses this month.

Q. What Are the Biggest Challenges for Deploying Innovation in a Healthcare Organization?

From complex regulatory constraints and outdated technical models and mindsets to interoperability issues and rapidly changing business models, healthcare is foundationally challenged to handle transformative innovations.

The U.S. healthcare industry is multifaceted with competing, sometimes misaligned interests and forces: consumers, payers, providers, suppliers, technology, policy and government. For consumers, the complexity of choices along with changing regulatory environments is often confusing to the point of paralysis. Further complicating the issue is that well-worn channels by which industry players and technology providers reach consumers simply do not exist. On the technology side, the issues of policy, regulation and funding are equally daunting for payers, providers and suppliers. Additionally, business models are under constant pressure as healthcare evolves from fee-for-service to outcome-based economic models.

These interests and forces conspire to make innovation more difficult to achieve in practice than it should be. One of the biggest problems is the varied nature of interests with nobody effectively playing the referee. This environment introduces risk in the form of delay, legal or policy hurdles and uncertain funding. However, it's clear these interests could benefit from innovation—not just in technology—but also with respect to how healthcare is consumed and funded.

It's in the industry's interest to foster innovation, but seemingly each innovator is left to find a uniquely successful path. Innovation needs to be addressed at the organizational level from a priority, process and accountability standpoint. Why not create a path for adoption of innovation across multiple dimensions: consumption, technical and business?

Chet Kolley
Senior Vice President/General Manager
Medical Technology & Healthcare
GlobalLogic
San Jose, Calif.

Physicians are well aware that the healthcare industry is evolving, in large part due to the digitization of health records, the Meaningful Use Incentive Program and the shift towards outcome-based reimbursement. These trends depend on the successful collection and interpretation of data to spur innovation.

The main challenges preventing organizations from embracing data's benefits are limitations of older technology, reliance on client-server systems that have no data liquidity and hardware that puts the burden of documentation on providers. Many healthcare professionals believe simply upgrading to electronic versions of their legacy tools is enough, but third-generation systems utilizing cloud and mobile technologies can provide more effective opportunities to improve operations and quality of care.

For instance, when physicians record patient information in legacy systems, it's often in narratives that aren't particularly useful because the data are not structured. It's essentially trapped in a word processor. Cloud-capable devices allow physicians to more easily access structured data that can be used to benefit specific patients and over time improve population health. Furthermore, physicians can draw insights related to a disease at high levels across a whole population at the point of care, providing outcome-based data that can be used by the larger community. Mobile devices designed for touch reduce keyboard entry input time, increasing the likelihood of collecting more data and saving physicians time.

By taking the time to understand the power of cloud and mobile technologies, medical professionals can embrace the innovation and focus on reaping benefits that could significantly impact their organizations and their patients' health.

Michael Sherling, M.D., MBA
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Boca Raton, Fla.

Thought Leaders' Corner

The core challenges are the same as they have always been—ensuring an organization has enough time, resources and budget to enable innovation. What is different is that the bulk of all three are focused on meeting the demands of regulations and mandates that have been imposed over the last few years. This leaves little room for innovation.

Everyone knows we need to deliver better healthcare for less cost to meet the goals of the Triple Aim; however, we are uncertain about exactly how to go about it. Is it population health management? Shared risk? Or a strategy that has yet to be conceived? There is experimentation going on currently, from CMS on down, but most organizations are currently focused on deriving ROI out of the millions of dollars they have already invested in electronic health records (EHRs) and other technologies, and on keeping their current infrastructure running smoothly. This too is hurting innovation.

Change fatigue among the staff is also a big factor. Clinicians have had all sorts of technologies and workflow changes pushed at them over the last decade, making them resistant when new changes are introduced. This is especially true for those who feel like they're waiting to see the benefits of the changes already implemented.

The stakes are higher, funds are tighter and risk of failure is greater than ever before. Organizations are looking for solutions with proven and sustainable results and a clear and clean ROI. Demonstrate an innovation delivering real improvement, and you'll have cracked the code.

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Healthcare technology is rapidly evolving to be better connected, more intuitive and more accessible than ever. This evolution opens the door for medical practices to innovate the way they approach care, interact with patients and manage their businesses. I've seen practices succeed and fail in implementing innovative technologies and have identified three factors to help ensure success:

- **Organizational acceptance of the coming changes and cross-practice understanding of how these new technologies, procedures or processes will impact practices' day-to-day jobs**. An effective transformation begins at the top; leadership must believe in the mission and have a plan for rollout. When installing a new technology, such as an EHR program, practices need to work with vendors to train staff and identify how changes could improve clinical outcomes for patients.
- **Identify the right timing for the change**. This decision can be difficult as it never feels like a good time to disrupt the practice. Leadership's rollout plan should include a detailed timeline created in partnership with vendors. This deployment timeline should allow adequate time to prepare and a systematic process to avoid major hurdles.
- **Avoid creating silos between your practice and new technologies**. When practices and health IT advances don't grow together in functionality, innovation gets lost in the disconnect. Organizations need to understand how tools such as EHRs and patient portals could be integrated into their workflow and ultimately enable patients to take a more active role in managing their healthcare.

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Thought Leaders' Corner

For many years, scientific and technology advances have dominated the healthcare change process. New surgical techniques; implants; CAT, MRI and PET scans; and pharmacology have dramatically improved outcomes. Less exciting opportunities for change, such as reductions in hospital-acquired infections that depended on hand washing and better care of surgical sites or introduction and effective use of EHRs, were all too often pushed to the side.

Change requires team commitment—independent physicians operating within a health facility but not employed by it nor consistently accountable to it can impede or veto change.

Nurses, other clinicians and administrative personnel serve two masters–physicians and hospitals. And while the hospital is generally the employer, physicians direct the core activity of a hospital.

Over the past five years, CMS leadership has been a major force for change, introducing quality measures, rewards and penalties focusing on "never events" and expanding the responsibilities of hospitals to include a safe return home (and no readmission). This same kind of leadership is needed to drive administrative simplification and transparency around both quality and price.

Tom Kelly
CEO
HealthSmart
Irving Tex.

The cost of healthcare in the United States is skyrocketing. According to the Centers for Medicare & Medicaid Services, our National Health Expenditure Data is projected to hit $3.207 trillion this year. The ability to embrace new solutions, methods, products, ideas and technologies—aka "innovation"—is the only way to ease and reverse this trend.

The challenges, and more precisely the barriers, to deploying innovation, include organizational inertia ("we don't do it that way") and the temptation to focus on the urgent, as opposed to the important ("we already have too much on our plate"), both of which foreclose the potential to explore and adopt innovation. They are the fulcrums of Clayton Christensen's *The Innovator's Dilemma*. The anthem of the status quo ("our customers are happy with the service we provide today; we are meeting their needs") drowns out the steady drumbeat of "we have to innovate to stay relevant."

Despite these barriers, new ideas and change will still find a way. Evolutionary and revolutionary innovation will be contemplated and discussed at least informally by the best and brightest employees, partners, suppliers and other stakeholders. But alas, the most significant challenge deploying innovation is the steep penalty for failure—the reputational cost for suggesting or trying something new even though it may be brilliant. The "what if this fails" is by far the greatest challenge to deploying innovation. It kills ideas we might suggest and buries initiatives we do not have the courage to try.

If we can change that—our tolerance for genuine failure in the good faith pursuit of innovation—healthcare organizations will catalyze progress and reclaim customer delight.

Paul Cioni
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You can sign up now at: https://www.linkedin.com/groups?home=&gid=6672382

Industry News

Prosper Women Entrepreneurs Announces 2015 Class for Entrepreneurial Women

ST. LOUIS, Mo.—Prosper Women Entrepreneurs, an organization aimed at identifying, coaching and advancing women-led companies, has chosen five women to participate in the Prosper Capital Fall Startup Accelerator program, helping women-led startups succeed.

Each of the five women-led businesses received a $50,000 capital investment and access to world-renowned mentors, resources, introductions and a tailored curriculum.

The chosen start-up companies are Bandura Systems, LLC, EDIS Solutions LLC, Janus Choice, LLC, SkyMedicus, Inc. and Tap.tl, whose offerings range from preventing cyber threats to improving the hospital discharge process.

Prosper Women Entrepreneurs…*continued*

These companies take part in a three-month program in St. Louis, concluding with a "Demo Day" on Nov. 11, 2015.

Capital BlueCross to Offer Teleheath

HARRISBURG, Pa.— (PR Newswire)—Starting next year, most Capital BlueCross plans will offer telehealth services. Using a computer, tablet or smartphone, members will be able to log on for telehealth appointments 24/7.

During these appointments, doctors can diagnose common conditions and prescribe medication available for pick-up at a member's pharmacy of choice.

Catching Up With… Robert Pearl…*continued from back page*

But for many physicians and medical groups, this evolution to outcomes-based payment will require a fundamental change in their practices. While the practice of medicine is indeed an art, it is based on a core of science, and accurate information is crucial for success.

Ultimately, physicians want to fulfill their calling in healthcare to heal, but they are increasingly frustrated by the challenges they face from insurance companies, drug manufacturers and increasing regulations. Through physician leadership and the data to measure and monitor the care they provide, physicians are poised to provide truly patient-centered, high-quality care.

This seismic shift in the way physicians practice will require physician leaders to create a culture willing to embrace the notion of accountability at all points of care. The cultural evolution requires the commitment of all players—from the front desk receptionist to the most senior executive leadership. These changes must be undertaken as a long-term commitment; otherwise, the initiative is likely to lose steam and die out before it achieves intended results.

Healthcare Innovation News: *How has the use of technology improved quality of care?*

Robert Pearl: Technology is essential to allow patients to receive the best quality of medical care in the most convenient ways. Data allow the physician to understand all of the care and testing the patient has obtained. Technology facilitates preventive care, medication management and avoidance of complications from chronic diseases such as diabetes. Tools such as secure email, digital photography and video allow a person to access medical advice without having to miss work or school. And often, they are able to obtain this care at night and on weekends. Ultimately, technology allows individuals to participate actively in their own care.

Healthcare technology allows more information to be available in a timely manner to all members of a healthcare team—a combination that is necessary to deliver the best care and achieve the best outcomes possible. As these technologies are adopted on a more widespread basis, the challenge and the imperative will be to marry the capability of EMRs to capture ALL data concerning a patient's healthcare treatment—no matter when or where it occurs.

Healthcare Innovation News: *CAPP promotes physician leadership in medical groups and health systems. What comprises that role and what affect will it have on the delivery of care?*

Robert Pearl: Healthcare today is far more complex than in the past. Success requires tremendous collaboration and coordination. Implementing the most efficient and effective approaches demands change. Physicians will follow colleagues whom they respect but are likely to resist the efforts of hospital administrators or other health industry influencers.

Doctors respect other doctors and the science of medicine. When physicians see medical data and see how other physicians are improving care, the pace of change will accelerate. Physician leadership is critical to changing practice and culture. A culture that fosters accountability to cost and quality outcomes is critical to success. For decades, CAPP physicians and groups have been developing physician leaders, and today those investments provide a strong competitive advantage. And together with a strong culture committed to achieving superior patient outcomes while providing personalized service, CAPP groups have become national healthcare leaders.

CAPP organizations, led by physicians, make clinical decisions based on science and a belief that we need to be stewards of our nation's healthcare resources. Our goal is to support other groups and physician practices to develop the same type of culture and leadership so that they too can deliver superior results to their patients.

[1] "Survey: the Value of Physician Leadership." Navigant Center for Healthcare Research and Policy Analysis and the American Association for Physician Leadership. Aug. 3, 2015.

Catching Up With ....

Robert Pearl, M.D., is the chairman of the Council of Accountable Physician Practices (CAPP), a coalition of medical group and health system leaders; executive director/CEO of The Permanente Medical Group (TPMG); and president/CEO of the Mid-Atlantic Permanente Medical Group (MAPMG).

- Regular Contributor, Forbes.com
- Author, medical journal articles
- Participant, Bipartisan Congressional Task Force on Delivery System Reform and Health IT
- Clinical Professor, plastic surgery, Stanford University Medical School
- Faculty Member, Stanford University School of Business
- B.A. degree, Tufts University
- M.D. degree, Yale University School of Medicine

***Healthcare Innovation News**: How do you rate the progress of physicians and medical groups nationwide in achieving many of the goals of the Council of Accountable Physician Practices (CAPP)—coordinating care delivery, integrating services, accessing electronic medical records and deploying technology? What are the major barriers?*

Robert Pearl: Although many physicians and medical groups have made great strides achieving one or two of the goals, rarely are all achieved outside of organized multispecialty groups.

To truly coordinate care by integrating services, physicians need two tools: 1) electronic medical records (EMRs) that facilitate communication among the entire care team, and 2) physician leadership for quality and service outcomes.

We have seen a large increase in physicians and medical groups adopting EMRs in recent years. However, many have adopted stand-alone systems focused on billing and claims, rather than on clinical improvements. In addition, these individual practice-based EMRs cannot easily share information with other practices, and the larger HIT systems—designed to link primary care, specialty services and medical facilities—are too expensive for smaller practices. Therefore, broad adoption of EMRs enabling true care coordination and integration is still lackluster.

Spurred by Medicare's commitment, momentum is growing to pay physicians based on patient outcomes rather than by volume of service. Tying reimbursement to outcomes promotes collaboration across the care continuum and reduces fragmentation in the system. A recent survey reported that 69% of physicians agree they should be accountable for costs, but many feel powerless to make the systemwide, operational improvements needed.[1]

Given that private insurers typically model payment mechanisms off of those used by Medicare, we are seeing a number of "accountable care" and "coordinated care" health plan contracting models emerging. So, expect the move to payment for performance and value to grow—but slowly.

***Healthcare Innovation News:** What do you foresee as the next reimbursement model for physicians? What are the main challenges in developing it?*

Robert Pearl: This is the question everyone is trying to answer. In some situations, bundled payments for procedures such as a total joint replacement can work. In others, capitation for entire populations has provided outstanding results. Unfortunately, moving from fragmentation to comprehensive integration is a difficult road to maneuver.

With the Affordable Care Act having expanded healthcare coverage, enabling millions of patients to have better access to care, we must focus on two interdependent factors: cost and quality. The best reimbursement systems encourage both high-efficiency, operational approaches, along with avoiding complications and redundancy. But how to measure and reward superior outcomes at the individual physician level is difficult.

The members of the Council of Accountable Physician Practices (CAPP) believe that the successful reimbursement model for the future is one that rewards outcomes and not volume. We understand that success won't come from a particular model, and our groups are doing this in different ways. Ultimately it will be the confluence of technology, integrated and coordinated care processes and a culture of accountability embraced by all providers that will lead to value for patients. Government payers are beginning the shift toward this type of model rewarding value and outcomes. We understand that the barrier to faster adoption of this model is simply the fact that overcoming the entrenched fee-for-service system will take time.

***Healthcare Innovation News:** What skills and tools will physicians need to prepare for payment reform?*

Robert Pearl: Physicians in the future will need a broader palette of skills both in operational improvement and leadership. To address the inevitable changes in payment, physicians will need quality measurement systems that provide real-time, actionable data; mechanisms that allow collaboration across the care continuum; and access to evidence-based, treatment protocols.

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