Looking Ahead to Healthcare Trends in 2020 & Beyond

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Introduction

All sectors and markets around the world—especially the healthcare industry—are reeling from the impact of COVID-19. The global community's response and ability to control the spread of the virus will underscore all healthcare-related news for the foreseeable future. In what could potentially be a decade-defining moment, the American healthcare system looks to manage an overwhelming strain on their facilities, resources and supplies amid challenges that were already complex before the outbreak.

These challenges highlight the growing importance technology plays in the daily operations of hospitals, insurance companies and the lives of patients. In 2020 and beyond, five key pressures will drive the need for, and proliferation of, greater digitalization across the entire healthcare ecosystem:

1. Addressing the transmission of COVID-19 and patient treatment will require the need to share and analyze real-time data now more than ever before to understand patterns, risk stratification and the impact of public health decisions.

2. The country will feel the impact of regulatory actions and a potential presidential administration change as a result of the U.S. 2020 presidential election.

3. Competition in the market will continue to grow, propelling existing incumbents to innovate to maintain viability.

4. These new competitors will put pressure on traditional healthcare companies to lower costs.

5. Patients will continue to voice demands for personalization and convenience.

The acceleration of digital transformation in healthcare is hugely consequential. As the healthcare system addresses the defining moment of a generation and patients look to innovative digital tools offered by new entrants to the market, all members of the healthcare ecosystem need to be agile – whether in making needed technological investments, finding ways to mitigate costs or exploring partnerships to address the challenges ahead.

Addressing the Unprecedented Challenges of COVID-19

The COVID-19 outbreak continues to spread around the world, posing unparalleled challenges and creating a crisis the effects of which are already being felt by the healthcare industry and the global economy at large.

Over the past two decades, the world has experienced four humanitarian challenges related to the spread of infectious diseases – the SARS outbreak in 2003, the flu pandemic of 2009, the Western African Ebola epidemic in 2013 and now COVID-19. Each of these past outbreaks served as opportunities to learn and prepare for future crises; however, COVID-19 is yet another important wake-up call for the healthcare industry.

COVID-19 has exposed critical vulnerabilities in the U.S. healthcare delivery system. Once the situation stabilizes, healthcare organizations need to develop comprehensive crises response plans and implement preparedness measures using technology to accelerate and expand access to healthcare services, including detection, prevention, diagnosis and treatment. Considering that advances in digital health innovation continue to grow and many emerging technologies are quickly moving from concept to commercialization, organizations should assess and implement these technologies to benefit from these capabilities at scale.

SYSTEM VULNERABILITIES IN HEALTHCARE

At the time this whitepaper was published, COVID-19 had impacted more than one million people worldwide with a significant and growing number of confirmed deaths. The nation's healthcare system is already facing challenges related to organizational readiness, capacity and supply chains, and we can expect these issues will only increase as the disease continues to spread.

> **MOST RECENTLY, THERE HAS BEEN A SPIKE IN DEMAND FOR PERSONAL PROTECTIVE EQUIPMENT (PPE), RESULTING IN SUPPLY CHAIN DISRUPTION AS MANY PPE COMES FROM CHINA, THE EPICENTER OF THE COVID-19 OUTBREAK. IN EARLY MARCH 2020, THE WORLD HEALTHCARE ORGANIZATION CALLED ON INDUSTRIES TO INCREASE MANUFACTURING OF PPE BY 40% TO MEET RISING GLOBAL DEMAND.[1] TO ADDRESS THIS CHALLENGE, EPAM CONTINUUM INTRODUCED THE GENTL MASK, A COVID-19 OPEN SOURCE SOLUTION DESIGNED TO HELP LOCAL MANUFACTURERS MEET THIS DEMAND.**

Out of all of these concerns, it's the hospital systems' lack of capacity that stands out the most. The United States currently only has 2.8 beds per 1,000 people, compared to Italy (3.2), China (4.3) and South Korea (12.3), all of whom faced significant challenges in curbing the pandemic despite having more capacity.[2] These figures only further highlight a major vulnerability and challenge the healthcare system the country is facing – meeting the increase in demand.

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[1] https://www.who.int/news-room/detail/03-03-2020-shortage-of-personal-protective-equipment-endangering-health-workers-worldwide
[2] https://www.nytimes.com/2020/03/12/upshot/coronavirus-biggest-worry-hospital-capacity.html

Addressing the Unprecedented Challenges of COVID-19 (Cont.)

Despite the challenges that have emerged from the crisis, we remain optimistic about the future. Our goal is to provide a set of perspectives and actionable recommendations that organizations can leverage to make sustainable change. Telemedicine and remote patient monitoring are two major technologies that healthcare organizations should implement in the short term to overcome the current challenges while also improving the response and preparedness for future pandemics.

EXPANSION OF VIRTUAL CARE & TELEHEALTH CAPABILITIES

As the number of confirmed COVID-19 cases continues to rise, many healthcare systems and independent physician group practices are looking for innovative ways to continue providing care for their patients while also protecting themselves and fighting the spread of the virus. Telehealth offers a unique tool to amplify clinician capacity, screen for potential symptoms, provide treatment information for patients and serve as a way to safely treat patients with other health needs that would otherwise need an in-person visit.

On March 6, 2020, Congress signed the Coronavirus Preparedness and Response Supplemental Appropriations Act, which gives the Secretary of Health and Human Services (HHS) the power "to waive certain Medicare telehealth restrictions during the coronavirus public health emergency" including allowing doctors and medical professionals to practice across state lines to meet the needs of hospitals that may arise in adjoining areas.[3] While there are some operational challenges in implementation, this is a significant step in the right direction and an attempt to pave the way for widespread adoption of telehealth as an efficient vehicle for delivering necessary health services.

In a particular use case, Butterfly Network is trying to "systematically integrate portable ultrasound imaging in the community and leverage telemedicine guidance when necessary to facilitate early detection of imaging features typical of COVID-19, informing clinicians' decisions around isolation and quarantine of early/asymptomatic cases."[4] This use case illustrates the value of telemedicine in helping inform clinical care during epidemics.

> **IN ANOTHER EXAMPLE, EPAM RECENTLY PARTNERED WITH CUROGRAM TO HELP HEALTHCARE SYSTEMS IMPLEMENT A SIMPLIFIED COVID-19 CRISIS RESPONSE PLATFORM. THE TELEMEDICINE SOLUTION PROVIDES EFFICIENT SCREENING SCHEDULING, SETS APPOINTMENT REMINDERS AND ENABLES VIDEO CHAT FUNCTIONALITY – ALL THROUGH THE PATIENT'S SMART PHONE.**

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[3] **Appropriations House** | https://appropriations.house.gov/sites/democrats.appropriations.house.gov/files/Coronavirus%20Supp%20 Summary%203.4.20.pdf
[4] https://www.butterflynetwork.com/covid-19

Addressing the Unprecedented Challenges of COVID-19 (Cont.)

Going forward, it's imperative for healthcare organizations to build and scale their telehealth capabilities to extend care to their patients beyond the physical walls of a hospital while also improving operational efficiency and strengthening the patient-provider relationship (more on this later). At the macro level, providers, insurers and governments need to better collaborate and push for greater adoption of telemedicine as a countermeasure to addressing epidemics. Recently, we have seen some payors waiving telemedicine costs to encourage the use of this tool during the crisis.[5] Despite recent policy efforts, telemedicine is still largely constrained by limiting licensing and reimbursement roadblocks, but we expect those requirements to change favorably for providers and payors in the near future because of the crisis.

REMOTE PATIENT MONITORING

The ability to gather and analyze data in real-time and share insights is at the heart of any outbreak response. According to expert predictions, the number of connected devices worldwide will increase to nearly 48 billion by 2021, and Bluetooth 5.0 is the connection standard that will enable these devices to communicate.[6] As the adoption of activity trackers and other connected devices continues to increase, healthcare organizations should consider how these tools can be leveraged for remote patient monitoring. Additionally, providers and payors can create programs that allow patients to securely transmit data, such as daily heart rate and temperature measurements, to their providers for routine and preventative care during outbreaks, as well as a central repository with embedded analytics. In one particular case, UCSF Medical Center started a campaign to ask approximately 150,000 users wearing Oura Rings, a sleep and activity tracker, to share their medical data to allow researchers to develop algorithms that could help with early detection of the symptoms associated with COVID-19.[7]

As we will discuss later, there are many opportunities in the IoT space for mutually-beneficial collaboration between established healthcare organizations and digital health startups as it relates to remote patient monitoring. In a particular case study, Propeller Health, a digital health company focused on managing chronic respiratory disease, uses Bluetooth-enabled asthma inhalers to inform clinical care and is also partnering with other health systems to use connected devices for disease management.[8] Companies like Propeller are well positioned to collaborate with health systems in a variety of ways, including chronic condition management and medication adherence. Considering that people with asthma may be at higher risk of getting extremely sick from COVID-19, since the illness is believed to affect the respiratory tract, solutions like the one developed by Propeller Health are particularly important.[9]

Amid the uncertainty of COVID-19, it is important that healthcare organizations establish the necessary mechanisms to address the challenges that lay ahead and implement technology to coordinate their response to a major crisis. Ultimately, the management and prevention of future outbreaks will largely depend on multi-sector collaboration, surveillance, monitoring, research and development of medical countermeasures.

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[5] **M Health Intelligence** | https://mhealthintelligence.com/news/bcbs-network-waives-cost-sharing-for-members-telehealth-coverage

[6] https://www.statista.com/statistics/471264/iot-number-of-connected-devices-worldwide/

[7] **San Francisco Chronicle:** https://www.sfchronicle.com/bayarea/article/Predicting-coronavirus-SF-emergency-workers-wear-15149729.php

[8] https://signup.propellerhealth.com/

[9] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/asthma.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fasthma.html

Fighting America's Opioid Crisis with a Collaborative Approach

In addition to the COVID-19 pandemic wreaking havoc on the social fabric and economy of the international community, the United States is already in the midst of another devastating public health emergency – the opioid crisis. Every day, 130 people lose their lives as a result of an opioid overdose.[10] With less than 5% of the world's population, the U.S. consumes 80% of the world's opioids.[11] This usage rate is immensely destructive, affecting not only the lives of Americans but also the nation's social and economic welfare. Between 2015 and 2018, the opioid epidemic reportedly cost the U.S. economy $631 billion, and the price tag for 2019 alone is estimated to range from $172 billion to $214 billion – not accounting for the toll COVID-19 will take on the economy.[12] As greater public attention is drawn to determining the responsible party, Americans are demanding answers and, more importantly, solutions to combat the epidemic.

Addressing this incredibly complicated challenge requires large-scale, coordinated investment and effort from policymakers, providers, payors and the pharmaceutical industry. A public health crisis of this magnitude and complexity cannot be solved by an individual entity along the continuum of care – instead, it requires improved coordination and information sharing **by optimizing existing technologies,** and embracing (even mandating) protocols and tools to address this epidemic. Below are two of the most effective, yet imperfect, systems that are currently being used to combat the opioid epidemic.

ELECTRONIC PRESCRIBING OF CONTROLLED SUBSTANCES

Prescription fraud, the forging or alteration of a written authorization for medication, is a major contributor to the number of opioids subject to misuse.[13] Written (versus electronic) prescriptions are not only susceptible to manipulation, they are also difficult to track and monitor. This opens the door for patients to "doctor shop" or obtain multiple prescriptions from multiple physicians. Without an electronic record of a patient's prescription history (when the order was placed, how much, who the prescribing physician is and the reason for medication), providers and pharmacists are less capable of detecting illegal drug-seeking behaviors. Ultimately, the use of written prescriptions leads to an unwarranted availability of opioids in circulation.

Placing tighter restriction and safeguards around the means in which opioids are obtained is a crucial element to addressing the epidemic. Electronic Prescribing of Controlled Substances (EPCS) tackles fraud and pharmacy-shopping by electronically sending Schedule II-V controlled substance prescriptions directly to a pharmacy from the point of care.

> **THE PROBLEM? EPCS IS NOT MANDATORY. THIS ALLOWS FOR CONTINUED FRAUD, INCOMPLETE PATIENT HISTORIES AND A LESS INFORMED MEDICAL WORKFORCE, LIMITING THEIR ABILITY TO IDENTIFY RED FLAGS (DOCTOR-SHOPPING, OVER-PRESCRIBING, INCONSISTENT OR EARLY REFILLS) AND TAKE NECESSARY ACTION.**

[10] https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis
[11] https://www.ncbi.nlm.nih.gov/pubmed/20859312
[12] https://www.soa.org/globalassets/assets/files/resources/research-report/2019/econ-impact-non-medical-opioid-use.pdf
[13] https://www.healthit.gov/playbook/opioid-epidemic-and-health-it/

Encouraging, and perhaps incentivizing, the EPCS practice for providers and pharmacies would help achieve two key goals in regulating the supply of opioids:

1. Eliminating the possibility of altering a written prescription or forging a medication order from a stolen prescription pad

2. Creating a digital record (collected in the state's Prescription Drug Monitoring Program [PDMP] database) of all prescribing and dispensing history, arming providers and pharmacists with greater information to analyze and identify concerning activity

Though many states, providers and pharmacies are utilizing and accepting electronic prescriptions, many paper prescriptions are written daily. The disparate adoption of EPCS systems means acquiring opioids through forgery will persist and providers will continue to operate at a disadvantage due to incomplete information.

PRESCRIPTION DRUG MONITORING PROGRAMS

PDMPs are state-run databases that collect and distribute data about the prescription and dispensing practices of controlled substances. These tools aim to aggregate a patient's complete prescription history to help healthcare providers make informed prescribing decisions. Making this information available allows providers to identify red flag situations, such as overprescribing, multiple provider visits, high dosage or drug interactions (like prescribing opioids and benzodiazepines concurrently).

Information sharing and availability using PDMPs is an effective, yet flawed, system as:

- Data is not always reported in real-time, meaning providers are making decisions based on dated information.

- They include incomplete patient history because systems like electronic prescribing are not mandatory or lack interoperability across state lines.

- A lack of integration in provider workflows makes referencing PDMPs inconvenient, reducing the likelihood of utilization.

- Few states have mandatory reference requirements into prescriber protocols.

Fighting America's Opioid Crisis with a Collaborative Approach (Cont.)

These imperfections have caused detractors to call into question the efficacy of PDMPs. With an understanding of the existing flaws, but recognizing the potential these systems possess, there are three strategies to improve this program:

	ACTION	BENEFITS
PRESCRIPTION PROTOCOLS	REQUIRE HEALTHCARE PROVIDERS TO REFERENCE PDMP DATABASES PRIOR TO PRESCRIBING ANY CONTROLLED SUBSTANCE	WITH EVERY ENCOUNTER, PROVIDERS HAVE COMPLETE PATIENT PRESCRIPTION HISTORY TO MAKE INFORMED PRESCRIBING DECISIONS AND MORE EFFECTIVELY IDENTIFY RED FLAG ACTIVITY
SEAMLESS INTEGRATION	STREAMLINE ACCESS TO INFORMATION WITHIN CLINICAL WORKFLOWS	IMPROVING THE AVAILABILITY OF INFORMATION WITHIN THE CLINICAL WORKFLOW WILL ENHANCE ADOPTION AND EFFECTIVENESS OF THE PDMP DATABASE
REAL-TIME AVAILABILITY	IMPROVE TIMELINESS OF PRESCRIBING AND DISPENSING ACTIVITY	TAKING STEPS TO INCREASE THE SPEED AT WHICH DATA IS AVAILABLE ENSURES PRESCRIPTION DECISION-MAKING IS DONE BASED ON A COMPLETE PICTURE OF PATIENT HISTORY

The fact is that no singular method of solving the opioid epidemic exists. It is a monumentally complex issue with numerous social and economic determinants that have contributed to the current state. However, with greater national attention, bold and innovative strategies that strive for continued improvement and a commitment to collaboration, there's an optimistic outlook of tackling this epidemic.

Leaning on Technology to Improve the Customer Experience & Stabilize the Bottom Line

In order to prepare for treating an influx of COVID-19 patients, many hospitals are cancelling profitable elective surgeries, increasing staffing ratios and driving up their supply inventory. With layoffs already in the millions, there is an anticipated growth in indigent patients over the coming months due to the loss of employer-sponsored insurance. The impact of provider preparedness and decision-making, coupled with greater unemployed, uninsured patient populations will be severe – so much so that Moody's and Fitch both changed their ratings for healthcare sectors from stable to negative as a result of decreasing revenue and cash flow as compared to 2019.[14]

As the healthcare landscape tries to rapidly adapt to the dynamics of the pandemic, new legislation, shrinking margins, flat revenue and increased competition, the need to identify and execute cost-saving measures is as critical as ever. According to the Centers for Medicare & Medicaid Services (CMS), U.S. healthcare spending increased by 4.6% to reach $3.6 trillion in 2018 – even faster than in 2017 when healthcare spending increased by 4.2%.[15] Furthermore, this number is expected to increase by an estimated 7.5% by 2020, making this year's growth alone an additional $750 billion.[16] These rising healthcare costs are squeezing the bottom line of many companies across the healthcare landscape. While process improvement methodologies, such as Six Sigma and Lean Management, are effective and widely practiced, maintaining these improvements requires a significant cultural change that can take a long time to achieve any material savings. Tasked with expediting savings realization, organizations are taking a deeper look at how technology can be leveraged to drive productivity and ultimately further improve financial performance.

The need for both payors and providers to identify ways to reduce cost isn't a new strategic objective but the need has been rapidly amplified primarily due to the ongoing COVID-19 crisis. The means in which companies can lower operating expenses is evolving as technology has proven itself as an effective way to enhance and stretch beyond the capabilities of the human workforce.

To both further support their members and improve financial performance, companies are leveraging many popular technologies, such as artificial intelligence (AI), machine learning, blockchain, robotic process automation (RPA) and application rationalization. If implemented properly, these solutions can have significant impact on individual bandwidth, as well as on a company's budget, by offering a way to mitigate both high labor costs and overarching current labor shortage. Furthermore, technology can address the need for humans to perform low-effort, repetitive or mundane work. With new-found capacity, employees can focus more attention on the aspects of their professions that are more motivating and require higher-level skills and expertise. Empowering the workforce can lead to greater throughput and opportunity to drive impactful organizational initiatives.

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[14] https://www.moodys.com/newsandevents/topics/Coronavirus-Credit-Effects-007054/reports
[15] https://www.cms.gov/files/document/highlights.pdf
[16] https://www.prnewswire.com/news-releases/digital-opportunities-increase-as-healthcare-plans-to-spend-additional-750-billion-by-2020-300935147.html

Leaning on Technology to Improve the Customer Experience & Stabilize the Bottom Line (Cont.)

IN 2020, THE COVID-19 CRISIS WILL FUEL RAPID ADOPTION OF TECHNOLOGY TO SUPPORT CUSTOMER SERVICE INITIATIVES, WHILE STRATEGICALLY IMPLEMENTING ROBOTIC PROCESS AUTOMATION AND APPLICATION RATIONALIZATION WILL REMAIN PRACTICAL WAYS TO LEVERAGE TECHNOLOGY FOR COST-CUTTING INITIATIVES.

CUSTOMER SUPPORT TECHNOLOGIES

Amid the current COVID-19 pandemic, call center operations are at the top of many payors' priority list – particularly when it comes to driving the need to find newer, innovative ways to support their members. As the impact of this crisis continues to be widely felt, companies are faced with not only higher call volume but also call center representative absenteeism, leading to significantly decreased call answer rates and skyrocketing average hold time. These metrics are important for any organization but are especially critical for Medicare Advantage plans as their call center metrics are mandated by CMS.

With this in mind, **organizations are leaning on technology** more than ever to balance support with demand. Some of the most highly-adopted solutions include:

- Introducing virtual assistants and chatbots to handle more of the rule-based, administrative tasks before needing to connect with a person on the phone

- Providing a more robust self-service portal for members to not only receive the information they need but also leverage web-to-case functionality in which a call center rep will call the member upon receiving that request

- Based on high volume call topic analysis, pushing specific training to call center reps to give them the answers they need at their fingertips and reduce overall call time

- Improving call routing and interactive voice response (IVR) capabilities so pointed questions go to corresponding subject matter experts for that specific topic to reduce call time

- Introducing the tools and processes necessary to support **work-from-home options** for call center representatives
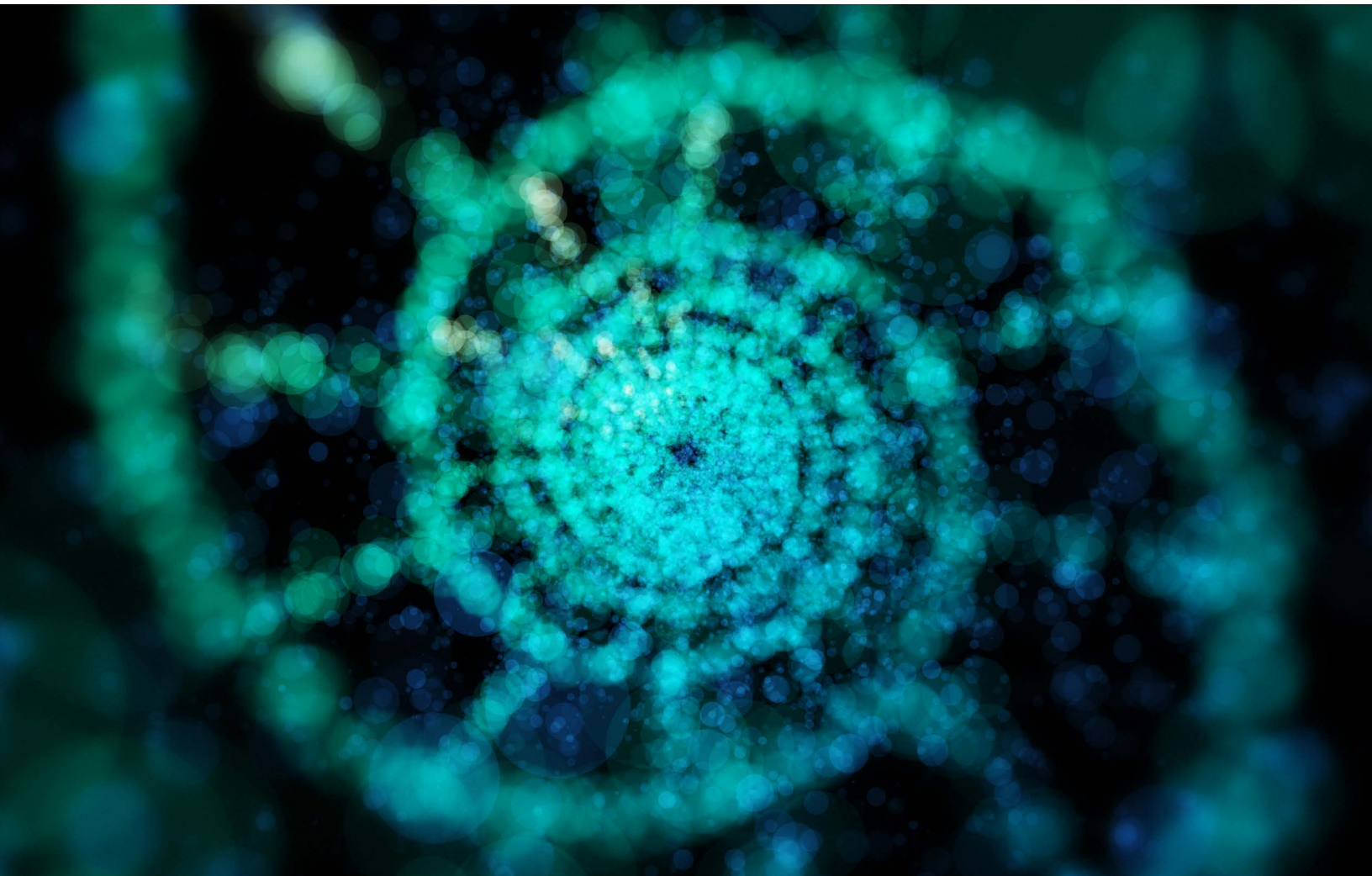
Leaning on Technology to Improve the Customer Experience & Stabilize the Bottom Line (Cont.)

ROBOTIC PROCESS AUTOMATION

According to leading RPA vendor UIPath, in almost all cases even when considering the cost of implementation (the tool, infrastructure, development and ongoing monitoring), RPA generates an impressive ROI within 18 months of deployment.[17] Looking forward, Gartner predicts that "by 2024, organizations will lower operational costs by 30% by combining hyperautomation technologies with redesigned operational processes."[18]

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[17] https://www.uipath.com/blog/rpa-and-the-roi-conundrum
[18] Gartner "Predicts 2020: RPA Renaissance Driven by Morphing Offerings and Zeal for Operational Excellence," Stephanie Stoudt-Hansen, et al, 10 December 2019. https://www.gartner.com/document/3976135 (Gartner subscription required)

Leaning on Technology to Improve the Bottom Line (Cont.)

Initially adopted by the banking and retail industries, **RPA has quickly spread within healthcare** due to the ability to mitigate the pressure of escalating cost by streamlining operations. Organizations are reaping the benefits of adoption as solutions mature and more high-impact use cases are identified:

WORKFORCE REBALANCING

By automating manually-intensive and repetitive tasks, employees can meet increased demands due to rising patient volumes and focus on work that helps drive business objectives.

INCREASED THROUGHPUT

As the volume of patients continues to grow, automating manual steps allows employees to focus on more cognitively challenging tasks and decisions.

CLAIMS ADMINISTRATION

Currently one of RPA's most common use cases, inputting, **adjusting and processing claims** can be greatly simplified by reducing errors, minimizing denials and improving time-to-payment.

CARE MANAGEMENT

RPA can be used across the care management lifecycle in assisting pre-authorizations, utilization management, care coordination, case management and even support patient monitoring.

WASTE ELIMINATION

Administrative complexity is the biggest contributor to overall healthcare waste in the U.S., responsible for an estimated $256.6 billion annually.[19] RPA can be used to minimize the number of systems and stationery needed for the daily operations of payors and providers.

IMPROVED QUALITY

Due to rules-based outcomes, RPA ultimately increases overall quality, leading to a reduction in complaints and higher customer satisfaction. Additionally, bots are tireless and able to process requests around the clock.

[19] https://jamanetwork.com/journals/jama/article-abstract/2752664

Leaning on Technology to Improve the Bottom Line (Cont.)

As RPA technology continues to mature and evolve, so too is the way in which these solutions are being implemented within organizations. Leveraging RPA effectively requires a culture shift towards one that welcomes automation, where the enterprise appreciates constant, incremental improvement and where employees don't feel their jobs are threatened.

In order to leverage this technology in a sustainable manner, it's imperative CIOs understand that RPA requires proper design, planning, process identification and ongoing governance to truly support the business. More and more companies are bringing in RPA experts to help define and stand up internal centers of excellence to drive the solution across their many portfolios.

APPLICATION RATIONALIZATION

As organizations mature and grow, they often shift between siloed and shared-service models, and in doing so, their technology ecosystems only continue to grow larger and more complex over time. Couple this with more than 90 merger and acquisition transactions in the healthcare marketplace, at an above average $278 million annual revenue per deal, and we're witnessing the increased need for organizations to rationalize applications across their IT portfolio more so now than ever.[20]

> **APPLICATION RATIONALIZATION EFFORTS CAN SAVE MILLIONS OF DOLLARS ANNUALLY THROUGH REDUCED SOFTWARE LICENSES, DECOMMISSIONING REDUNDANT OR SELDOM-USED APPLICATIONS AND INFRASTRUCTURE CONSOLIDATION.**

Existing legacy systems and complex application environments often consume most of organizational IT budgets, leaving little room for other initiatives. The combination of older and newer systems, legacy and modern applications, and the corresponding ever-growing integration of the two is further putting pressure on IT organizations to modernize duplicative, incompatible or outdated systems that are costly to maintain and update. Among the many benefits, healthcare organizations can improve efficiency, reduce complexity and ultimately lower the total cost of ownership to free up budget for new, strategic projects and fund innovative work.

Companies are taking a holistic look across the entire portfolio in hopes of finding ways to eliminate redundancies, optimize server and data storage, analyze and optimize software licenses and ultimately retire applications that are barely used or not needed. Additionally, companies are frequently adopting hybrid cloud and onsite hosting strategies to further reduce application maintenance expenses. As legacy systems continue to degrade and major portions of an organization's IT budget are spent on purely operating and managing applications, it's imperative that healthcare companies analyze and focus on their IT portfolio's current, near-term and long-term prospects.

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[20] https://www.kaufmanhall.com/sites/default/files/documents/2020-01/2019_mergers_and_acquisitions_report_kaufmanhall.pdf

Revitalizing the Provider-Patient Relationship

When strategizing for the future in an era of fierce competition among traditional players and new entrants alike—combined with the effects of COVID-19—it is critical that the most important variable in the healthcare ecosystem is kept at the center of all decision-making: the patient. Payors and providers often find themselves neglecting patient-centered technology and overlooking care management as a catalyst for strategic technology initiatives.

AT THE HEART OF IT IS DATA

As epidemiologists, data scientists and researchers across the world scramble to get their hands on the most up-to-date and robust data related to COVID-19, it is increasingly apparent that a gap has grown between the **data captured by an EHR** and the critical patient information generated outside the walls of a healthcare organization. This growing disconnect is in large part due to EHR deficiencies and historical interoperability barriers that impede best-in-class care management, which requires a deeper understanding of all factors that impact patient health. The need to understand patients more holistically and monitor symptoms remotely continues to grow while a myriad of data sources that can help achieve improved care coordination are being made more readily available. Below are a few of the contributing factors:

1 Many recognize that to save lives in the face of an overwhelmed healthcare system with significant strain on medical supplies, resources and providers, hospitals need better remote monitoring to risk-stratify, make informed clinical decisions and triage effectively.

2 The CMS Interoperability and Patient Access Proposed Rule laid out a timeline of policies to expand access to health information for patients, providers and payors across the entire continuum of care, which can help accelerate this transformation.

3 Regulatory mandates are intended to drive EHR adoption and provide the clinical and demographic data that is needed to understand the patient.

4 The digitization of insurance claims and physician notes are creating a deluge of new data to be leveraged in predictive analytics.

5 The proliferation of medical and remote patient monitoring devices is creating entirely new data sources with unprecedented specificity, enabling new insights into patient health.

Revitalizing the Provider-Patient Relationship (Cont.)

By integrating and analyzing sources of patient data—such as a patient's lifestyle, behavior patterns, diet, physical activity, social wellbeing and other meaningful health parameters—providers and payors can improve clinical outcomes and, consequently, their financial performance (or value-based care) by enabling encounter prediction, identifying risk factors and enhancing care management plans. More importantly, these data points could lead to a reduction in missed diagnoses and emergency visits.

> **NEW ENTRANTS, HAVING IDENTIFIED THIS LACK OF ANALYTICAL CAPABILITIES IN TODAY'S CARE COORDINATION PROCESSES, ARE DEVELOPING CLOUD-BASED TOOLS TO SUPPORT BOTH PROVIDERS AND PAYORS WITH IMPROVED CARE MANAGEMENT BY CAPTURING A COMPLETE 360° VIEW OF PATIENTS.**

Synchronizing this information is certainly not without its challenges. Although the CMS Interoperability and Patient Access Proposed Rule outlines "opportunities to make patient data more useful and transferable through open, secure, standardized and machine-readable formats," many uncertainties exist around feasibility.[21] In addition to concerns and vocal opposition from key stakeholders, one major roadblock is the lack of standardized data today across the industry.[22] Wary of the adoption curve and possible practice disruption, some providers are still hesitant to use EHRs. In addition, there are significant differences between EHR solutions in terms of their capabilities to support interoperability. As a result, healthcare organizations must pursue other third-party (or even home-grown) integration solutions to aggregate and optimize data for further analysis. Vital data is often captured as unstructured text from doctor's notes, medical journal findings or prescription histories. Beyond the limitations of turning volumes of text into analyzable data, there is often no standard semantic logic between various sources. For instance, a patient who suffered a heart attack may have "heart attack," "myocardial infarction" or just "MI" denoted in their EHRs, depending on the recording system or practitioner.

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[21] https://developer.cms.gov/interoperability-and-patient-access/
[22] https://www.beckershospitalreview.com/ehrs/epic-ceo-judy-faulkner-asks-hospitals-to-oppose-hhs-interoperability-rule.html

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Revitalizing the Provider-Patient Relationship (Cont.)

PATIENT-CENTRIC SOLUTIONS

It is often easier to maintain the status quo or criticize certain solutions than it is to **ideate, develop, test and implement meaningful solutions** that can have a lifesaving impact on patients. The push for the next generation of interoperability presents an inspiring opportunity to bring patients, providers, payors and technology solutions together to solve some of healthcare's biggest challenges.

> **TECHNOLOGY COMPANIES HAVE REALIZED THAT THE TRADITIONAL WAY OF INTERACTING WITH PATIENTS CAN ONLY PROVIDE A LIMITED AMOUNT OF BENEFITS TO PAYORS AND PROVIDERS. LEVERAGING DATA CAPTURED OUTSIDE OF THE CLINICAL SETTING PROVIDES SIGNIFICANTLY MORE INSIGHTS, WHICH CAN LEAD TO BETTER OVERALL PATIENT HEALTH WITH REDUCED INSTANCES OF IN-PATIENT CARE AND DOCTOR VISITS.**

Creating a 360° view of the patient via the collection of vital data generated outside a provider's physical boundaries, coupled with the technology and infrastructure to seamlessly share this information, can put us on a path toward a decade of unparalleled healthcare breakthroughs.

Revitalizing the Provider-Patient Relationship (Cont.)

Some industry use cases include:

Salesforce has expanded their suite of customer 360° products in the healthcare space by launching Salesforce Health Cloud, a collection of applications focused on gathering patient data and building a persona, leading hospitals and health insurance companies to make better predictions and recommendations for the patient. Their care management module provides the flexibility to connect various data sources and a platform for the enterprise to understand the patient more deeply.

Google has elevated their healthcare industry efforts by using their core business model of data gathering, acquiring FitBit and expanding Google Fit's application to better track users' physical lifestyles. What if Google released a business where other firms provided high-level data about population health in a certain region to help them make business decisions similar to Google's traditional business of AdWords? Just as Google builds a user's persona by tracking their online behavior, FitBit/Android Wear/ Google Fit would build a user's real world persona, which could be used by healthcare firms to make decisions about where to set up hospitals, what specialties to bring in and what the premium calculations and risk adjustment factors should be.

Amazon and Apple are jumping into healthcare by launching their payor and provider businesses. Both firms are relying on their core business model of customer data collection to run these healthcare business units in a way that differentiates them from traditional clinical entities and insurance carriers.

To keep patients at the center of healthcare, data must extend beyond the four walls of a doctor's office, especially in these unprecedented times. It's imperative that healthcare organizations have a holistic view of patients to deliver meaningful and impactful care.

SPOTLIGHT ON EPAM CONTINUUM

EPAM Continuum has worked across the healthcare and medical ecosystem to design devices, services and experiences that put patients at the center of their care.

The **Omnipod Insulin Delivery System**—comprised of a disposable insulin patch and remote Personal Diabetes Manager—was the world's first FDA-approved, wireless, tube-free insulin pump. Now covered by a broad range of health insurance plans, the Omnipod provides a diabetes management option that eliminates the discomfort and inconvenience of earlier therapies.

Based on customer research and smart data analytics, UnitedHealthcare's call center model **Advocate4Me** targets customers in specific health states to provide enhanced empathetic service and care.

Positioning Established Healthcare Organizations for Success

In recent years, the healthcare industry has seen an **increased number of new entrants** ranging from digital health startups, non-traditional healthcare organizations and tech giants. These new players are challenging conventional players by developing innovative business models, products and services while also leveraging technologies—such as cloud computing and AI—that are fundamentally changing the way healthcare has been traditionally delivered. As a result, these organizations are gaining greater acceptance from broader patient populations. This can be attributed to two key drivers:

1. **Digital Access and Literacy:** An increasing share of consumers have access to and proficiency with digital tools that offer considerable potential to enhance participation in ways that didn't exist before. As a result, consumers are more willing to try new and innovative health-related products and services that further integrate with other aspects of their lives.

2. **Changing Consumer Demands:** As consumers use a variety of digital tools in other aspects of their lives, there is an increased expectation for these digital capabilities when it comes to healthcare. Current incumbents have gradually addressed the demand with relatively slow implementation of these tools, giving way to new entrants who can address the technology gap in the industry.

The healthcare industry has been challenged to keep up with an unprecedented pace of innovation due in part to a reluctance to adapt, complex organizational bureaucracies and, at a broader level, the absence of a catalyst for change. Embracing the force of disruption presents opportunities for organizations to capitalize on the vast potential of a variety of digital tools while evolving to new consumer and market trends.

STRATEGIC PARTNERSHIPS BETWEEN DIGITAL HEALTH STARTUPS & PROVIDERS

Along with increased competition from nontraditional healthcare organizations and startups, a number of solutions have flooded the market—especially because of COVID-19—creating a burden on organizational resources when looking to evaluate opportunities. To alleviate these challenges, organizations should explore strategic partnerships to help them better meet the needs of their customers, implement the right technologies and create greater operational efficiency. Additionally, businesses can establish a set of internal systems and processes that allow them to properly evaluate each option while understanding larger organizational needs and strategic goals.

Partnerships between digital health startups and providers allow the provider organization to offer a differentiating factor to their patients while continuing to work with and support the startup to enhance and scale their offerings. To reap the benefits of these strategic partnerships, healthcare organizations can take practical steps toward enabling greater transparency and creating an internal structure to assess opportunities that stem from market dynamics and evolving consumer preferences.

ESTABLISHING MULTIDISCIPLINARY DIGITAL HEALTH COMMITTEES:

Multidisciplinary teams of individuals who are able to articulate organizational, clinical and customer-centered needs should ensure they are aligned with promising digital solutions amid the increasing number of requests from digital health startups. For this type of committee to be effective, CIOs and other functional leaders need to be actively involved to guide execution and inform decision-making.

FORMALIZING AN ENTERPRISE DIGITAL HEALTH PIPELINE:

Organizations should create a formal process for analyzing prospective partnerships. A key component of this process would include a mechanism to track and evaluate opportunities based on a defined, weighted criterion that would assess a given opportunity in critical areas, such as costs, expected benefits and duration. By having this process in place, organizations can optimize the value from a partnership with a digital health startup while also providing an opportunity to evaluate adoption and effectiveness in a more controlled way.

CREATING GREATER STRATEGIC TRANSPARENCY:

Healthcare organizations should also begin to socialize their strategy with a broader audience to articulate how they would like to evolve as an organization from a technology- and consumer-oriented approach and in which areas they are looking to make investments. This would give digital health leaders looking to collaborate with established healthcare organizations direction regarding how their product or service fits with the healthcare organization's strategy. This process can function as a filtering mechanism for digital health startups that would work similarly to a Request for Proposal process, creating greater transparency and focus on technologies that align with organizational strategy and existing technology infrastructure for integration purposes.

With the increasing number of startups interested in running Proof of Concepts or pilot projects at healthcare organizations, it is imperative that healthcare organizations establish a structured way for assessing and implementing these technologies to adapt to changing customer demands.

Conclusion

It's clear the healthcare industry is in for a tumultuous 2020. Fighting a deadly pandemic demands the full extent of the healthcare system's resources and capabilities. However, this comes among regulatory and political changes – like the CMS Interoperability, Patient Access Proposed Rule and the upcoming U.S. election, as well as the ongoing devastation caused by the opioid epidemic. To keep pace with the rapid changes and challenges ahead, all members of the healthcare ecosystem need to prepare for rapid adaptation, and frequently. By creating the agility to leverage real-time data analytics, adjust plans and strategies accordingly and collaborate with strategic partners, payors, providers and healthcare software vendors can tackle the monumental challenges ahead.

ABOUT EPAM SYSTEMS

Since 1993, EPAM Systems, Inc. (NYSE: EPAM) has leveraged its software engineering expertise to become a leading global product development, digital platform engineering, and top digital and product design agency. Through its 'Engineering DNA' and innovative strategy, consulting, and design capabilities, EPAM works in collaboration with its customers to deliver next-gen solutions that turn complex business challenges into real business outcomes. EPAM's global teams serve customers in over 25 countries across North America, Europe, Asia and Australia. EPAM is a recognized market leader in multiple categories among top global independent research agencies and was one of only four technology companies to appear on Forbes 25 Fastest Growing Public Tech Companies list every year of publication since 2013. Learn more at **http://www.epam.com/** and follow us on **Twitter @EPAMSYSTEMS** and **LinkedIn.**

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