

Healthcare & Patient Data 2020

How America's Top Healthcare Data Leaders Are Enhancing Patient Care and Experiences





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Executive Summary

Integrating AI and data-driven insights into Electronic Health Records is fueling a revolution in the US healthcare system.

This exclusive report highlights how new technologies are already starting to transform patient care, with commentary from four data leaders who will speak at the 2020 *Patient Data Summit*.

Marshfield Clinic Health System CDAO Greg Robinson outlines why “interoperability” is currently the word on every healthcare data leader’s lips and stresses the need for shared data standards.

Morgan Templar, VP Data Management at HM Health Solutions, reveals where she believes healthcare providers should be investing to optimize patient experiences in 2020.

Tim Carey, Director of Data and Performance Analytics at Bane Care Management, argues that healthcare organizations must prioritize data literacy to unlock the value of patient data.

What’s more, MercyFirst CDO Besa Bauta explores why AI technologies must play a central role in the future of healthcare. ■

Contributors



Besa Bauta,
CDO, MercyFirst



Greg Robinson,
CDAO, Marshfield
Clinic Health System



Morgan Templar,
VP Data Management,
HM Health Solutions



Tim Carey,
Director of Data and
Performance Analytics,
Bane Care Management



Healthcare Data Leaders Racing to Achieve ‘Interoperability’

Closing gaps that prevent information exchange is essential for providing patients with quality care

When patient data gets delayed, lost or trapped in healthcare IT systems, bad things tend to happen.

Tests get repeated, driving costs up and exposing patients to unnecessary discomfort or radiation. It can also take longer to share information between departments or hospitals. As a result, doctors may not have access to vital, timely insights that would affect their patients’ treatment.

Nearly a third of patients in the US report having had at least one negative experience over the past 12 months due

to gaps in data capture or exchange in their healthcare providers’ systems. That’s why ‘interoperability’ is the word on every healthcare data leader’s lips moving into 2020.

“The Medicare sectors are definitely beset with rampant amounts of data,” says Marshfield Clinic Health System CDAO Greg Robinson. “But it’s been hampered by the lack of interoperability of those data.”

One man who’s all too familiar with the consequences of these ‘data gaps’ is Tim Carey, Director of Data and Performance

Analytics at nursing home operator Bane Care Management.

He’s seen these data gaps lead to one patient being admitted to multiple hospitals at least 42 times in three and a half years.

“That is insane,” he says. “That should never happen, but it does. There’s probably thousands of cases like this floating around in healthcare.”

“What can we do to improve quality of care and patient experience by using all this data and connecting all these siloed data files?” he asks. “There’s work being

done on this currently, but there's still work that needs to happen before all this data will actually be accurate and actionable."

"Medication changes don't always flow to the next care setting," he adds. "So, the transition of care isn't as smooth as it could be. If we had a standardized way to have all EHRs [Electronic Health Records] feed specific data to the next care setting, that would help."

"Each time you go to a hospital or the doctor you have to fill out sheets of the same information, right?" continues Besa Bauta, CDO at social-service agency MercyFirst. "The process of interoperability is that the caregiver gets consent, then the hospital A can send the information to hospital B."

"Therefore, they have all the information necessary to provide care, so there are no gaps in services," she explains. "That's why it's really critical for systems to be able to talk to each other and share information."

The Road to Healthcare Data Interoperability

Achieving interoperability requires healthcare providers and vendor companies to cooperate and use shared data standards.

As such, international standards organization Health Level Seven has played a key role in pushing for interoperability. Its HL7 standards are widely used enable data sharing across Patient Administration Systems, EHRs and Laboratory Information Systems.

The US government has also weighed in on the issue, with several federal health agencies promoting the use of the latest FHIR (Fast Healthcare Interoperability Resources) EHR systems.

"We're undertaking a bold mission," says Morgan Templar, VP Data Management at HM Health Solutions. "If we can get to standards, hold our vendors to a single standard and each use the same standard, we'll have the ability to

share data appropriately."

"Within the healthcare industry there have been standards, but a lot of those standards have primarily been based around the need to generate bills or adjust billing data," adds Robinson. "So, really around the financial side of things and less so around clinical outcomes."

The Healthcare Information and Management Systems Society (HIMSS) notes that creating a world where data can be shared seamlessly across and between healthcare organizations is a huge undertaking.

In addition to the basic requirements needed for systems or applications to speak to another, data formats, syntax, definitions, governance, usage rules, regulations and legislation must all be taken into consideration.

Templar says there have been significant efforts in moving towards standardization over the past 12 months. But despite the progress that's been made, there's still much work to be done.

How Incompatible Healthcare Systems Affect Patients

Have to re-do tests or procedures

5%

Have to provide their medical history again

5%

Feel their results take an unreasonable amount of time to arrive

14%

Have to bring a test result to an appointment

19%

Have to do at least one of the above

32%

“It needs to be a consolidated strategy,” she argues. “I’ll tell you from experience that until the Feds truly mandate it, until it becomes an actual ‘This is the regulation and you must comply’ rule, it doesn’t happen.”

“You don’t fund voluntary activities at the same urgency level as you fund Federal mandates,” she concludes.

There’s little doubt that new legislations would force organizations to act quickly to achieve interoperability. But the industry’s data leaders are intent on forging on at pace with or without a regulatory catalyst.

The benefits of closing the gaps in healthcare IT systems are clear. Achieving this goal is seen by all as a key step towards providing efficient, personalized care for every patient. ■

“A lot of the cost of healthcare is in the waste of translating data from one format and one system to the other”

Morgan Templar

VP Data Management, HM Health Solutions



Data Literacy: A Huge Opportunity for the Healthcare Industry

With Electronic Health Record adoption surging in the US, ensuring data-driven technologies are used properly looks set to become a key priority for healthcare data leaders

It's easy to get excited about the many ways AI and advanced analytics will shape the future of healthcare. But the industry has a way to go before these technologies begin having a significant impact on the health of ordinary Americans.

In the meantime, there's a great deal that health organizations can be doing today to deliver better quality care with data.

"Everyone's talking about AI, but if people were just doing the basics really well, we'd see bigger changes in the accuracy of data," argues Tim Carey, Director of Data and Performance Analytics at Bane Care Management.

Electronic Health Record (EHR) adoption has more than doubled in the US since 2008. More than 85% of health providers now use EHRs, and data literacy will become a key priority as this figure continues to rise.

Why Healthcare Organizations Should Prioritize Data Literacy

At the start of a digital transformation, companies typically focus on hiring data professionals, developing data



management frameworks and building the infrastructure they need to work well with data.

This groundwork is essential. But it means the question of how to equip staff with the skills to harness these new capabilities is often neglected. As a result, Gartner predicts that half of all organizations will lack sufficient AI and data literacy skills to drive business value by 2020.

"What I see a lot in the healthcare industry is, you have a lot of senior level leadership in analytics," says Carey. "But your nurse manager, your nurse supervisor, even your ED physicians at the hospital, they don't really comprehend the data and what to do with it."

"What we have found to be really successful is sharing [data] in simple ways, so that all levels of staff can comprehend it"

Tim Carey

Director of Data and Performance Analytics,
Bane Care Management

“We’re studying the impact of all this data on people and about three out of four people are overwhelmed by what they’re being asked to do,” agrees Jordan Morrow, Global Head of Data Literacy at data platform Qlik. “Our job as leaders is to ensure that the right initiatives are in place.”

The challenge for healthcare organizations is that clinical staff aren’t typically taught about analytics when they go to college or medical school. So, many enter the workforce without the basic skills they need to read, work with, analyze and argue with data.

Carey concludes: “You could have all the data under the sun, but that may not trickle down to your nurse manager or unit coordinator who’s trying to use analytics in real-time to prevent harm or improve quality of care.”

How to Empower Staff and Patients to Use Data-Driven Insights

Data literacy means different things to different stakeholder groups within an organization. A medical researcher will need a different set of skills to a care

home nurse or a CEO in order to work effectively with data-driven tools. The things they each do with data will be very different.

As such, data leaders must develop bespoke data literacy programs for different stakeholder groups to account for the different ways the capabilities they develop will be used.

“Awareness at every single level is important,” says Besa Bauta, CDO at MercyFirst. “People do not understand a lot of the diagnostic categories that are included when a physician gives them a discharge summary. Even some of the caretakers do not understand a lot of that information.”

Of course, creating an entire workforce of data scientists is an impossible goal. So, it’s equally important for data leaders to consider best the ways to present the relevant data to each group.

Effective data literacy initiatives are then delivered dynamically over time. Healthcare organizations must consider how they’ll train new staff, provide refresher courses to maintain knowledge levels and upskill existing staff to handle newly developed capabilities.

“This is not a ‘one and done’ training session,” says Carey. “It’s a constant, always-evolving culture.”

“What we have found to be really successful is sharing [data] in simple ways, so that all levels of staff can comprehend it,” he recommends. “You’re breaking it down to a level that’s very simple to digest, so you can look at it for five seconds and you know exactly what’s going on.”

Once the healthcare industry has established interoperability standards so that data systems can communicate with each other, data quality will quickly become the top challenge facing the industry.

Data leaders who take steps to build strong data literacy programs now will be in the best position to lead their organizations into this new phase of the data journey. ■

“About three out of four people are overwhelmed by what they’re being asked to do”

Jordan Morrow

Global Head of Data Literacy, Qlik



Four Ways to Improve Patient Experiences in 2020

Three healthcare industry data leaders reveal where they believe the biggest opportunities to optimize patient experiences will be over the next 12 months

Healthcare outcomes may be steadily improving, but patient perceptions of the quality of care they're receiving aren't. In fact, most Americans believe the quality of US healthcare is worse now than it was 20 years ago.

Despite the significant investments companies have made to address this disconnect in recent years, many patients still come away from experiences feeling that the healthcare system is confusing and expensive.

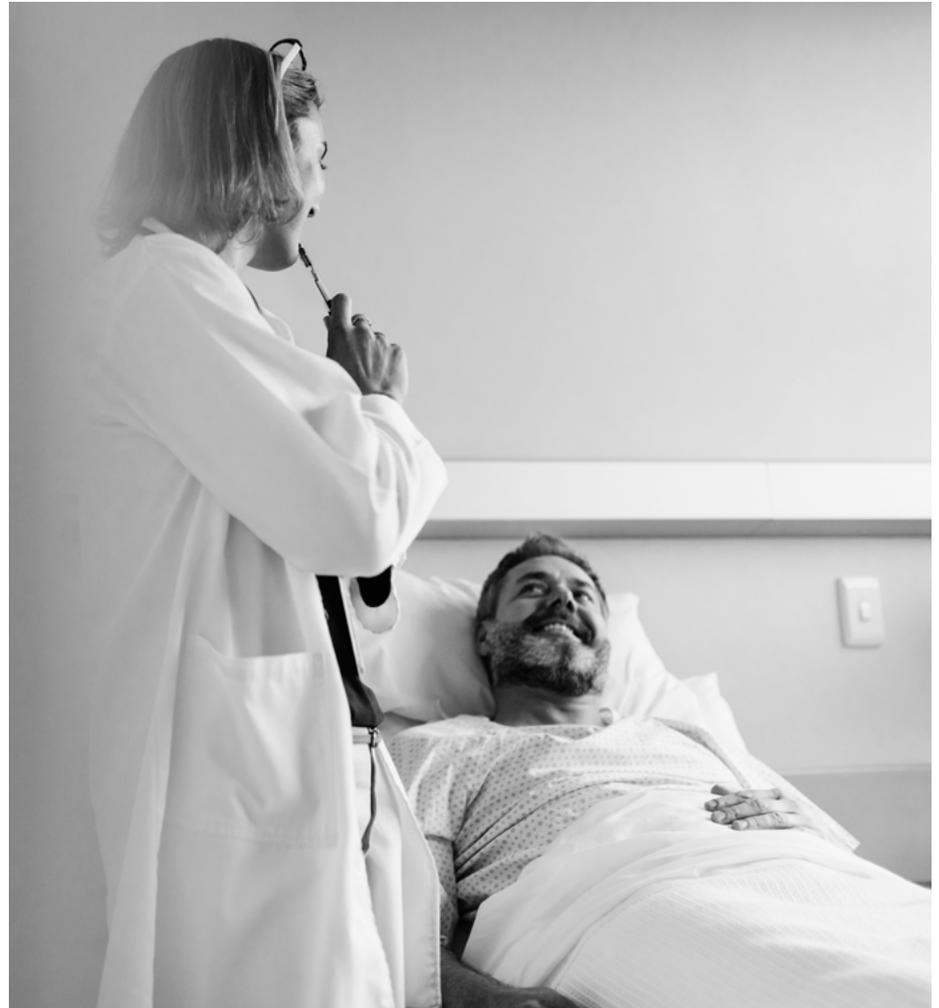
PwC reports that 49% of healthcare executives list improving patient experiences as one of their top priorities. But more needs to be done.

"Overall, the health of Americans has gotten better, but the perception of the health of Americans has continued to fall," says Morgan Templar, VP Data Management at HM Health Solutions. "Managing perceptions in the next 12 months is going to be the thing that we spend a lot of time on."

To discover where the biggest opportunities to optimize patient experiences are in 2020, we interviewed three of the industry leaders who will speak at this year's Patient Data Summit in Boston, MA.

Continue to Improve Electronic Health Records

There's still a great deal of work to be done before Electronic Health Records (EHRs) can achieve their full potential.



For Tim Carey, Director of Data and Performance Analytics at Bane Care Management, improving these systems is a "low hanging fruit" when it comes to streamlining processes and optimizing patient experiences.

"Even in our own EHR, we have an integrated referral platform, but not all the data elements flow to the core EHR," he explains. "Furthermore, the EHR doesn't consistently flag duplicate entries."

"That's a repeat patient," he continues. "How are our staff able to create a duplicate medical record with a different medical record number for the same exact patient that was already at their facility? How do the EHRs not

"No one wants to feel like they're just another click in your system. They really want to feel like their care is personalized"

Morgan Templar
VP Data Management,
HM Health Solutions



have flagging systems to stop that immediately?”

Greg Robinson, CDAO at Marshfield Clinic Health System, argues that issues like this will become a key focus for the industry’s data and analytics leaders in the years ahead.

He says: “The proof is going to be in the pudding of how data generators are able to deal with issues of data quality, which will probably be the next the next big boom after some of the ‘higher order’ interoperability challenges are solved for.”

Build Data-Driven Quality Assurance Programs

Many healthcare organizations already use patient satisfaction surveys and other techniques to identify ways to optimize patient experiences.

Tracking readmission rates, average length of stay and patient satisfaction is essential for understanding the quality

of care any health facility provides. Data leaders can then look for ways to improve these metrics.

“We’re always driving to improve the patient’s experience,” says Carey. “Having accurate data and reports is extremely important to us.”

When an opportunity for improvement is identified, be sure to involve frontline staff in discussions about how to implement it. Then, agree measurable KPIs for these staff members to improve the processes in question incrementally.

Unfortunately, not all organizations define commonly used metrics the same way. This is something data leaders must always remember when comparing their facilities to the industry at large.

“We’re seeing a major gap in our industry, especially in the EHRs themselves,” Carey explains. “You have these organizations reporting up to hospitals saying, ‘Here’s our

readmission rate’, when actually it’s just a rehospitalization rate. They’re similar, but it’s not apples to apples.”

Fix Confusing Healthcare Billing Practices

In recent years, healthcare providers have created online portals and digitized billing processes to simplify admin tasks for patients.

However, it’s still common for patients to receive multiple bills for different services provided during a single hospital visit. This results in experiences that can be frustrating and can make it hard for patients to verify that they’re being charged the right amounts.

“Getting control of billing practices will be really critical,” says Templar. “You can’t have a bill by 17 different pieces of mail from five different facilities, all from one visit to a hospital.”

“It needs to be consolidated through

a clearing house,” she adds. “So, you’d get your explanation from the insurance company that says, ‘We’ve done all the work. We’ve already got the claim. We’ve identified what you owe and applied your benefits, and this is your ‘out of pocket’ that you need to pay.’”

Develop Sophisticated Personalization Programs

Over the past two years, online healthcare portals have become more than just tools patients can use to pay their bills. It’s now common for these

portals to promote initiatives designed to change patient behaviors.

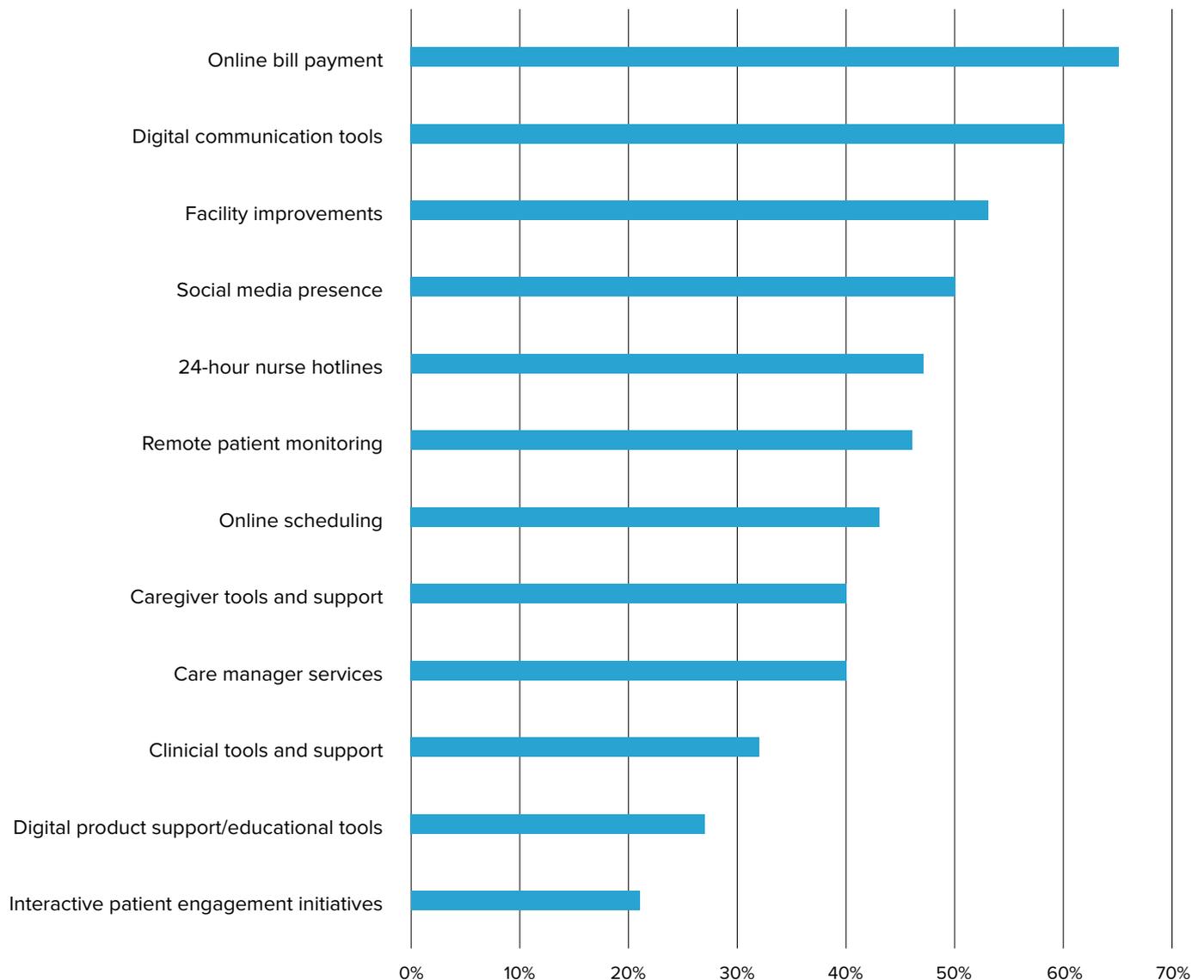
“It’s been an interesting transition,” says Templar. “We, universally across health plans, have begun to offer services like, ‘What’s your health age versus your actual age? What’s your health score? What is your activity level?’”

“I think we’ll see more personalized experiences in our interactions in our portals,” she continues. “Positive reinforcement for those good habits is how [patients] will feel that we care and that we are engaged with them.”

Building on these initiatives could transform the way people interact with and feel about healthcare companies. But to truly unlock the potential of personalized healthcare, healthcare companies will need to identify the best patient segments to engage with these techniques.

AI will no doubt play a role here. But data leaders will also need to embrace a culture of experimentation to continually discover new and better ways to engage the people they’re trying to help. ■

How Healthcare Providers Are Enhancing Patient Experiences



The Dawn of AI-Powered Healthcare

Google Health's mammogram-reading AI vividly illustrates how the technology will one day save lives. But this diagnostic tool is just one of the ways the AI will transform healthcare

If there was ever any doubt that AI will revolutionize the healthcare industry, Google Health dispelled it with its latest research paper. Nature reports that the company has developed an AI program that's better at spotting breast cancer in mammograms than expert radiologists.

Google's AI analyzes mammograms in three distinct ways to produce an overall cancer risk score. When tested on 28,000 historic scans, the program resulted in 5.7% fewer false positives and 9.4% fewer false negatives than when the same scans were reviewed by a radiologist.

There's still a way to go before the technology can be deployed in hospitals. But these results clearly illustrate how AI will one day save lives and improve healthcare outcomes across the globe.

"You're going to see much more development in that arena," says Besa Bauta, CDO at MercyFirst. "Both for risk modeling and prescriptive types of applications and decision aids for our physicians."

"Having Google at this level is a very good thing," adds Dr Constance Lehman, director of breast imaging at the Massachusetts General Hospital in Boston, who was not involved in the study. "This paper will help move things along quite a bit."

The next big test for Google Health's AI will come when it's trialed under real-world conditions and with data from multiple mammogram systems.

With rival companies including GE Healthcare using image recognition technology to develop similar diagnostic aids, research in this area looks set to accelerate rapidly in the years ahead.

But this is just one of many ways that AI will soon transform healthcare provision. As the industry continues its digital transformation, the technology will play a key role in helping organizations extract maximum value from a vast ocean of data.

"We will use artificial intelligence and we will use machine learning to cut through the mass of data and we'll be able to show better outcomes"

Morgan Templar

VP Data Management, HM Health Solutions





“You have this massive amount of information and there’s no really good way to get value from that information”

Besa Bauta
CDO, MercyFirst

Why AI is the Future of Healthcare

Patient Administration Systems, Electronic Health Records (EHRs) and Laboratory Information Systems generate such vast quantities of data that it’s impossible to uncover all the most valuable insights manually.

“You have this massive amount of information and there’s no really good way to get value from that information,” Dr Bauta explains. “That’s why we’re leaning more towards incorporating different types of applications like machine learning, artificial intelligence and deep learning.”

“The cost of the wrangling of the data is going up,” agrees Morgan Templar, VP Data Management at HM Health Solutions. “So, we will use artificial intelligence and we will use machine learning to cut through the mass of

data, and we’ll be able to show better outcomes.”

At the same time, it’s possible that requiring staff to input too much data into IT systems by hand could affect the quality of the care they provide.

“We implemented a lot of these tracking systems without really looking at the unintended consequences related to caregiving,” says Dr Bauta. “A lot of the physicians are kind of overburdened by entering data into the EHR.”

As we see with Google Health’s research, the promise of AI is that it can perform highly complex tasks better and more efficiently than humans can.

Data holds the key to meeting the healthcare demands of America’s aging population. But in its raw form, healthcare data is unwieldy and overwhelming. It’s only with help from intelligent machines that the most exciting potential uses for patient data will become a reality.

AI is Already Transforming Healthcare

The World Economic Forum predicts that AI will be widely used to reveal currently unknown patterns in disease, treatment and care by 2030.

As a result, healthcare systems will be able to predict an individual's risk of developing certain conditions and suggest preventative measures. Meanwhile, healthcare facilities will deploy AI programs to reduce patient waiting times and improve the efficiency of hospitals.

Some of these applications for AI are obviously closer to fruition than others. But others are already being baked into healthcare IT systems.

"I see [AI] augmenting our approach to treatment, rather than replacing it," says Dr Bauta. "Once you get those insights, the next step is that, 'Yes, this does show promise. But where does this fit into overall clinical decision-making or clinical processes?'"

"The next big thing will be making data available," predicts Templar. "That will be through artificial intelligence, without a doubt."

Simplifying the processes of collecting patient data and retrieving it from EHRs looks set to be a priority for healthcare data leaders in the medium-term. AI technologies such as voice recognition or natural language processing will play a key role in achieving this goal.

At the same time, AI will prove an invaluable tool for identifying patient segments that may benefit from personalized healthcare initiatives, much like it has for other types of personalization.

The AI-powered future the World Economic Forum envisions may be some way off. But the healthcare industry's data pioneers are laying the groundwork for it right now.

With CB Insights singling out healthcare as the hottest niche within AI investment today, it will be fascinating to watch as the technology begins to transform the industry in the years ahead. ■

\$6.62 bn

The predicted market for AI in healthcare by 2021





Your Chance to Network with America's Top Healthcare Data Leaders

Corinium's 2020 **Patient Data Summit** arrives in Boston on April 14 for two days of networking and top-level discussion.

Featuring more than 30 expert speakers from healthcare organizations including Stamford Health, Marshfield Clinic Health System, Highmark Health Services and many more, this event provides an unrivalled opportunity to network and collaborate with your industry peers.

With an agenda designed with networking at its heart, our unique discussion groups facilitate the sharing of ideas and experiences.

Meanwhile, a packed agenda of keynote presentations, panel discussions and masterclasses will provide actionable insights to help you stay at the cutting edge of healthcare data and analytics.

About the Editor



Solomon Radley
Global Content Strategist,
Corinium Intelligence

Solomon Radley is an experienced editor and reporter with a proven record of helping brands grow their industry expertise and thought leadership credentials.

He works with data and analytics, learning and development and customer experience leaders to champion new innovations and highlight how the world's most forward-thinking brands are using data to fuel their digital transformations.

To share your data story or enquire about appearing in a Corinium report, blog post or digital event, contact him directly at solomon.radley@coriniumgroup.com.



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