

# INNOVATIONS IN HEALTHCARE TECHNOLOGY EBOOK

DIGITAL SOLUTIONS, CYBERSECURITY,  
AI, & THE ROAD AHEAD



## INTRODUCTION

Technology innovations in the healthcare industry are moving at a rapid pace. According to the KPMG Healthcare Industry Technology Insights Report, healthcare leaders are more likely to be proactive in their digital strategy than leaders in other industries. Medical facilities must adapt as the patient experience becomes more digitized, AI plays a larger role, and virtual threats become more sophisticated. In this eBook, we look at what technology is being leveraged today in the industry as well as what we can expect innovations to look like in the near future.

# DIGITAL HEALTHCARE

The healthcare industry has seen rapid evolution in many areas, but none quite as drastic as the switch to all things digital. Experiences like waiting on hold to schedule appointments or difficulty accessing medical records have been transformed by patient portals, mobile applications, telehealth, and wearable devices. The result? A sharp increase in patient satisfaction, streamlined backend processes, and access to a wealth of data and information. We are seeing more and more healthcare organizations meeting patients where they are—on the digital channels in which they prefer to communicate and receive and give information.

## **Patient Portals**

According to the Office of the National Coordinator for Health Information Technology, 3 out of 5 individuals gained access to and utilized online medical records or patient portals in 2022. The use of these portals is becoming the norm for medical offices and healthcare organizations. Appointment scheduling and reminders, access to test results, visibility into visit summaries, and paperless billing can now be housed under one platform that patients can access at will. The convenience and overall patient satisfaction these portals provide cannot be ignored. Furthermore, with staff spending less time on the phone with patients, the impact on efficiency in medical offices is insurmountable.

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## **Telehealth**

The COVID-19 pandemic fast-tracked the adoption of telehealth options for both patients and medical facilities. As the industry is projected to grow from \$94.44 billion in 2023 to \$286.22 billion by 2030, telehealth will only become more common. With the undeniable benefits telehealth provides, it's easy to understand this growth. Virtual health appointments have opened up access like never before, allowing patients to conveniently and easily speak with a medical professional within minutes. The result is healthcare access for underserved populations, reduced illness exposure for sensitive groups, and more consistent care for chronic conditions. In turn, healthcare organizations save on labor and facility costs, experience better patient outcomes, and see an uptick in the ability to collaborate with other medical professionals.

### ***Wearable Devices & Remote Monitoring***

The use of remote monitoring continues to grow and evolve with the help of innovative wearable devices. MarketsandMarkets says that the global market for wearable healthcare devices will approach \$70 billion by 2028. FDA-approved medical-grade devices like blood pressure, glucose, and heart monitors allow doctors to monitor their patients' health issues remotely. Using the data that these devices provide, AI and ML can be leveraged to provide recommendations and early risk detection. This technology opens up an entirely new world of convenience for the patient as well as peace of mind and invaluable data for their doctors. Consumer-grade devices like smartwatches, rings, and even clothing unveil a wealth of information about a person's well-being in terms of sleep, exercise, and more. Access to this data allows people to create healthier habits, better manage chronic health conditions, and feel empowered with the right information to bring to their doctors.

### ***Online Pharmacy Fulfillment & Management***

*The pharmaceutical and ecommerce industries have collided with the rise of online pharmacies. The e-pharmacy industry is expected to grow to a value of \$574 billion by 2034, up from \$85 billion in 2024. From cost savings to basic convenience, consumers stand to gain a lot from the digitization of prescription fulfillment. From ordering prescriptions to be delivered to your front door to scheduling virtual consultations with pharmacists, more and more consumers are leaning in. As more e-pharmacy platforms enter the market, consumers are afforded the ability to compare prices from the comfort of their own home. Sites like Cost Plus Drugs and Good Rx aim to offer more affordable drugs either by cutting out the middleman or allowing consumers to compare prices across pharmacies on one integrated platform. The result is more access and better outcomes for healthcare patients.*



## Supply Chain Management

The rise of digital solutions in healthcare is also impacting business-to-business relationships between medical facilities and their suppliers. Healthcare organizations and medical offices rely on a healthy inventory of necessary medical equipment and supplies to serve their patients. The industry is moving away from the processes of the past which have included placing orders over the phone or email and having zero to little visibility into tracking and inventory levels. Today, digital platforms, automation, and even robotics are changing the supply management game. Our client, Slick List, aims to transform supply chain management for dental clinics. Xcelacore experts built an innovative and integrated platform that leverages automation and enables supplier integration, order management, and inventory management. Features of the platform include visibility into low stock items, the ability to set reorder thresholds, and the ability to compare costs of multiple distributors. Platforms like Slick List's are dramatically cutting costs for medical facilities while making sure that necessary medical care is never delayed due to lack of supplies.

## THE FUTURE OF DIGITAL HEALTHCARE

Digital healthcare technology will continue to evolve, grow, and thrive as healthcare organizations expand virtual care programs, adopt digital healthcare ecosystems, and increase investments in an effort to continue a patient-first approach. With the vast amount of data made available by digital footprints and technology like wearable devices, AI and ML will continue to be leveraged to inform care, analyze patterns, and make predictions. The patient experience will only become more personalized while collaboration and innovation amongst the medical professional community will flourish. With the expansion of digital healthcare and increase in shared data, organizations will also become more vulnerable to cybersecurity threats. In many ways the future of digital healthcare brings new challenges and a call for innovation in cybersecurity technology and precautions.

# CYBERSECURITY

An impenetrable and top of the line cybersecurity strategy is quickly becoming a business essential. However, many industries are still failing to adapt to the changing landscape. Having suffered public cybersecurity breaches that endanger patients and expose confidential data, the healthcare industry is no stranger to the risks involved. According to the findings in the [KPMG Healthcare Industry Technology Insights Report](#), 52% of healthcare organizations surveyed admitted that their cybersecurity strategy is not where it needs to be.

## AN INDUSTRY UNDER ATTACK

Cybersecurity breaches and ransomware attacks in hospitals and other healthcare organizations are commonly found in news headlines these days. According to [The HIPAA Journal](#), healthcare organizations reported 725 large security breaches in 2023. These breaches and attacks have become so egregious and sophisticated that governments like New York State have mandated that hospitals comply with new cybersecurity regulations and requirements to further prevent such attacks. Aside from risking the safety of patients and their personal data, these data breaches and attacks are costly. The [Cost of Data Breach Report](#) says that cybersecurity breaches cost healthcare organizations an average of \$10.1 million per incident in 2022, up

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9.4% from 2021. These losses call for renewed investment in and prioritization of stronger cybersecurity measures and technology.

## TODAY'S CYBERSECURITY TECHNOLOGY

### *Identity And Asset Management*

In an industry where employees are interacting with sensitive information, it is crucial to exercise careful and secure [Identify and Access Management \(IAM\) practices](#). In short, it's important to make sure only authorized individuals are accessing the appropriate data in the right systems and that unauthorized users are blocked from access. This is where a zero trust architecture comes into play, a framework that assumes no trust by default. Along with zero trust comes strict password policies, phishing-resistant multifactor authorization, and utilizing automation to constantly monitor all logins.

### ***Ransomware Prevention***

Ransomware attacks consist of hackers gaining entry into a system via phishing emails or exploiting other system weaknesses to take over a system or specific data and hold it hostage. While prevention starts at the most basic level of cybersecurity measures like penetration testing and vulnerability assessments, anti-ransomware software is a necessary tool in prevention. Ransomware protection software leverages the latest technology like AI-powered malware detection and automatic cloud backups to act as a last line of defense.

### ***Responsive Cyber Threat Landscape***

An effective cybersecurity strategy is both proactive and immediately reactive. Running penetration tests and vulnerability assessments on a near constant cadence is a necessary component to fortifying systems and applications against attacks. So too is preparing your system to react quickly and effectively to a weakness or attack. AI algorithms can be leveraged to identify the problem and then act to remedy the situation. For example, AI's capabilities range from identifying and changing weak passwords to isolating vulnerable devices or blocking suspicious IP addresses.

## **THE FUTURE OF CYBERSECURITY IN HEALTHCARE**

Our 2024 State of Business-Driven Technology Report uncovered that 73% of respondents plan to invest more or the same budgetary dollars for cybersecurity services in 2024. While experts predict that the healthcare industry is the most likely future target for hackers, it is also predicted that healthcare organizations will invest more in cybersecurity measures than ever before. The use of AI (artificial intelligence) and ML (machine learning) to identify weaknesses and respond in realtime will become more prevalent and sophisticated as IT ecosystems amongst healthcare organizations become more complex.

# ARTIFICIAL INTELLIGENCE (AI)

According to a survey conducted by Berkeley Research Group, three quarters of healthcare professionals believe AI technologies will see widespread implementation across the industry within the next three years. From the simplification of communication to complex predictive modeling, the capabilities that AI brings to the healthcare industry are endless. While we've only just begun to scratch the surface, AI technology is quickly changing the healthcare landscape for the better.

## ***Generative AI and Natural Language Processing (NLP)***

At the most basic and, arguably, most important level, AI is transforming the doctor-patient relationship by streamlining medical interactions. By recording medical appointments, Generative AI can be used to automatically generate appointment reports and summaries, allowing medical professionals to turn their undivided attention to the patient. NLP can be leveraged to scrub complicated data sets and documents littered with medical jargon to inform and update patients' medical records. While AI improves records and reports, doctors and other medical professionals have more time and resources for the patients they serve.

## ***Machine Learning***

Innovation in technology leads to a vast amount of data. Machine Learning

is a powerful tool for organizing, understanding, and acting on large and complex data sets. Machine learning algorithms can detect patterns and draw conclusions in real-time. This innovative technology can be leveraged for everything from identifying hard-to-diagnose diseases and ailments to aiding medical research by honing in on the ideal clinical trial participants to even discovering new drug treatments.

## ***Predictive Modeling***

AI is so intelligent it can even predict the future. Predictive Modeling combines data analytics and statistical algorithms to forecast future events. This technology can be used to predict patient preferences, behavior, outcomes, and health risks, allowing medical professionals to avoid hospital readmittance or even offer preventative care for specific diseases. By implementing predictive modeling, both healthcare organizations and their patients can save on costs and reap the benefits of a more personalized experience.

**75%**

of healthcare professionals believe AI technologies will be widely implemented across the healthcare industry within the next 3 years

## THE FUTURE OF AI IN HEALTHCARE

An increase in investments in AI technology will lead to happier patients, streamlined processes, and money saved. The National Bureau of Economic Research predicts that AI adoption within the healthcare industry could save billions in healthcare costs within the next five years. Future innovations in AI technology could include everything from streamlining the health insurance contracting process to automating less invasive surgeries and procedures. The opportunity for innovation in AI is limitless, and the healthcare industry stands to benefit greatly.





# CONCLUSION

One theme remains clear as we look at the state of technology in the healthcare industry today—we are just scratching the surface. The emergence of new technologies and innovations will continue to improve patient satisfaction, accessibility for underserved groups, backend workflow efficiency, and the frequency of medical breakthroughs in research and diagnostics. That being said, the rise of these technological advancements is not without its challenges. The healthcare industry is unique in that it is highly regulated. As more data becomes available and as technology like AI plays a more significant role, data security and protecting patient privacy are essential concerns. HIPAA ([Health Insurance Portability and Accountability Act of 1996](#)) sets strict standards and requirements for protecting patients' sensitive medical information. Staying compliant with these standards while leveraging the full power and capabilities of new technologies will require a delicate balance that may include de-identifying patient data where needed and even redefining these standards to better fit this modern age. Evolution is inevitable and the future remains incredibly bright for healthtech.

***From building integrated digital platforms and applications to enlisting top-of-the-line cybersecurity testing and measures, Xcelacore's team of seasoned experts is prepared to tackle your healthcare organization's technology projects. [Contact us](#) today to schedule a free consultation.***