10 THINGS

You Need To Know about the **Future of** Electronic Health Records

The use of paper charts to track patient health and demographic information (the first recorded versions of which date back to ancient Egyptian hieroglyphics and papyri between 3,000 and 1,600 B.C.) have all but been replaced in the last 30 years with electronic health records (EHRs). In technology terms, 30 years is a relatively long time. Three decades ago, we were accessing the internet through phone lines and getting CDs in the mail to try out AOL web browsers.

Despite that long history, EHRs have been slow to keep up with the pace of other technological advancements, but that is likely to change in the coming decade.

The slow adoption of electronic records

The early electronic versions of patient medical charts were used in academic medicine in the early 1990s as smaller and more compact computers, along with local area networks to connect computers to each other, became more prevalent. That decade was also the first-time consumers could access information from their computer that was not on a local hard drive. The introduction of the world wide web and browsers meant you could use one computer to access information on another computer or a server on the same network. This revolutionary technology quickly became a normal part of daily life as email became one of the primary methods of communication and consumers started shopping online for things like books.

Despite a technological revolution happening in other industries, the field of medicine remained largely traditional. Many doctors continued to practice medicine the same way they had for decades, largely ignoring or not understanding how software could advance their practices and improve patient care. Why the healthcare field is often slow to adopt technology is the subject of multiple studies over the years, but it often boils down to the individual acceptance or rejection of technology by medical providers and practitioners.

In 2004 the federal government stepped in as President George W. Bush created the Office of the National Coordinator for Health Information Technology (ONC). It was the first national effort to get healthcare providers to adopt technology to treat patients. At that time, only about 20% of healthcare providers were using electronic health records (EHRs). Many of those early EHRs were just an electronic version of a paper chart, so it was a costly implementation with limited upside. Growth between 2004 and 2011 only averaged 5% per year, getting a boost in 2012 as money became available to incentivize EHR use.

As of 2017 (the most recent year the ONC has data), 96% of hospitals and 86% of providers were using some type of EHR.

A rapid evolution is coming

Now that EHRs have definitively taken hold in the U.S. healthcare system, the natural next step is evolution and improvement. In industries like computer processing power, network bandwidth, and IT storage, you can see how quickly advancements accelerate as the technologies become more widely adopted. Many clinicians and providers initially resisted the use of computers, feeling overwhelmed by the administrative burden and concerned that it took time away from patient care. Today, however, several factors are coming together to accelerate the use of EHRs in medicine:

Capacity for gathering and storing data is increasing

Data security is improving

More clinicians feel comfortable using technology in patient care

Technological innovations are improving care outcomes

10 things you need to know about the future of the EHR

In order to succeed, providers and administrators need to understand the potential for EHR evolution and how it might change to be prepared for what is coming. Being ready for these changes can help you attract more new patients and remain compliant in an ever-changing regulatory landscape.

1: Cost are going down

Moore's Law says that computing power roughly doubles every two years, while the cost of the technology is cut in half. That is true in healthcare IT as well. With a significant portion of providers and healthcare facilities using EHRs regularly for patient care, this will continue to drive costs down as the computing power and features within the EHR improve.

2: More accessible cloud-based systems will be the norm

Legacy EHRs that were first built years (or decades) ago were designed to operate on a physical server or computer in a clinic. As the volume of data increases, and the network capabilities improve, more of our digital world is hosted 'in the cloud,' which has many advantages. EHRs that are designed and deployed in the cloud can be accessed securely from anywhere at any time and on any device. Doctors can use smartphones, tablets, laptops, and desktop computers to pull up patient information, share patient records, and access lab reports and medical histories.

Unfortunately, EHRs built as server-based systems don't always translate to the cloud. While these systems may promise cloud capabilities, they are often slow or full of bugs that make it harder to access your data. The EHRs built for a cloud computing environment will outpace server-based systems and will lead the way in EHR access.

3: Patients are demanding more information portability

Consumers increasingly use technology in their everyday lives, and everyone from retailers to restaurants have discovered ways to make people's lives easier with digital tools. One place where the digital revolution hasn't made life easier is in medicine—specifically, in the portability of patient information and data.

Most patients do not only see a single provider, and instead get healthcare from a patchwork of primary care providers, specialists, urgent care facilities, and hospital emergency room visits. Each organization (and providers) likely has an EHR with all the information about the patient's visit to that specific facility (and a history of past visits), but what about all the information they are missing from healthcare providers and facilities outside their network?

Right now the solution is for a patient to request information from one or more providers, which is usually sent via fax to the new clinic. It's an inefficient process that puts the burden of information exchange on the patient. Information obtained from other organizations is scanned into a patient's chart as PDF documents that are not integrated or searchable in the EHR.

As EHRs improve, so will the ability for patients to access and share information among all their providers, even if they are using different systems and work in different healthcare networks.

4: Integration throughout the patient journey is essential

The earliest EHRs were digital copies of the printed file doctors kept at their practice. On parallel tracks, digital solutions were also evolving for other parts of patient care: patient scheduling, billing and medical coding, imaging, and more. Many of these pieces of the overall patient journey puzzle remain separate or are only connected with an API, which leaves gaps in the level of integration you can achieve. The future of EHRs are completely interconnected and integrated systems that allow you and your patients to seamlessly move through every step of a patient journey. An integrated system includes modules for:

- Patient scheduling (including self-service online scheduling options)
- Appointment reminders
- Patient check-in
- Insurance verification
- Point of care (exam room)
- Telemedicine (telehealth/teletherapy)
- Medical coding and billing or managed billing services
- Online patient bill payment portals and automated payment reminders
- Patient portal
- Reporting and analytics

The systems poised for the future are those that have every component available without the need for a patchwork of APIs and other external data transfer methods.

5: Data sharing among healthcare organizations is critical

Another critical factor in the future of the EHR is interoperability, or the ability to share data among healthcare organizations. Patients increasingly see more than one provider, or receive fragmented care from various organizations throughout the healthcare landscape (hospitals, urgent care facilities, various doctors, mental health professionals, etc.). Without the full picture of a patient's health history, providers may not be able to make the best decisions regarding current and future care. Even advanced EHRs with features like artificial intelligence (AI) and predictive analytics often cannot search and use the information faxed and scanned into the patient's record.

As the push for interoperability gains steam, healthcare organizations need to be prepared to share data with EHRs that allow them to do so seamlessly and easily through health information exchanges (HIEs).

6: Virtual assistants and AI can improve outcomes without adding to provider burnout

Many industries are enamored with the idea of artificial intelligence, and medicine is no different. The Stanford Medicine Health Trends Report in 2020 found that "40% of physicians, students, and residents see the potential for AI to transform healthcare in the next five years." As of June 2019, the FDA had approved 46 algorithms for treating and diagnosing disease; for example, the iCAD system classifies breast density to detect breast cancer with the same level of accuracy as a radiologist.

As the field develops, AI will also be used to improve clinical workflows, track patients through treatment protocols, and incorporate predictive analytics to help physicians identify a person who might be at risk for developing chronic conditions based on their health history, lifestyle, family history, lab results, and more. A physician could theoretically put this all together without the use of AI and predictive tools, but since the average physician carries a patient load between 1,800 and 2,000 it would be impossible to provide all the care patients need while also taking time to analyze every patient's chart to make these predictions. That's where algorithms and AI can help.

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Virtual assistants within the EHR can also deliver information to the physician, either at the point of care, or before or after an appointment. For example, during her annual physical a virtual assistant can notify the doctor that Ms. Jones needs to get a mammogram starting at age 35 since she has a family history of breast cancer. These assistants can also be used to gather and search information in a patient's record to minimize the number of clicks and searches that the physician has to conduct manually.

7: Less time in the EHR, more efficiency in patient care

A survey by Harvard's malpractice insurer CRICO revealed that an average physician makes more than 4,000 keystrokes and mouse clicks in a 10-hour shift. Doctors report spending about 6 hours in their EHR every day, and 90 minutes or more of that is 'after hours.' More than one-third of MDs work over 60 hours a week (for comparison purposes, only 6% of the non-MD population works similar hours). It's no wonder that 78% of physicians are showing signs of burnout and a lot of it is related to the administrative burden of using an EHR. When a provider spends too much time looking at the computer screen during a visit, patient satisfaction scores also go down.

As EHRs evolve, one of the most promising changes is in the design of the software itself. Better EHRs will mirror clinical workflows so you can spend less time clicking around on the computer and more time face-to-face with your patients without losing the benefits of an electronic health record.

8: User experience (UX) will improve

Most EHRs were designed for transactional experiences – to record information about a patient's health and encounters with the healthcare system. But healthcare is about the relationships between doctors and patients, and while there are still transactions that will occur in medicine, an EHR must account for the humans that are using it – MDs, DOs, PAs, NPs, and clinical staff.

The digital world is lightyears ahead of medicine when it comes to user experience (UX). Amazon has been honing its user experience since it first launched in 1995, and products like the iPhone are the result of years of UX design innovations. The goal of user experience is to ensure that the interaction between software or technology and the human is seamless, that the product is designed to be consumed and used by a person.

Many of the most-used EHRs were designed over a decade ago, with minor updates since that time, but no design overhauls. For physicians and clinical staff who have learned (albeit grudgingly) to use the existing system, even a minor change can significantly disrupt the inefficient workflows they have created to navigate the inefficient system. That leaves everyone frustrated because the software doesn't work well, but the time and effort to revamp and relearn them is something neither the creators nor the users want to invest.

However, there is a lot of focus now on how inefficiencies and poor UX in EHR design are impacting physician burnout, clinical errors, and negative patient outcomes. A Mayo Clinic study found that "The usability of current EHR systems received a grade of F by physician users when evaluated using a standardized metric of technology usability." In the study, health record usability was directly linked to feelings of burnout among physicians. In 2018 the ONC solicited comments on its Strategy on Reducing Regulatory and Administrative Burden Relating to the Use of Health IT and EHRs, and in 2020 published a final report with recommendations to make health IT and EHRs easier to use.

As the entire healthcare industry—payors, providers, and vendors—recognize the need for better UX design in EHRs, and more new vendors enter the market, usability will improve.

9: EHRs can reduce medical errors

One of the great advantages of an EHR is the ability to use technology to reduce medical errors. More than 50% of malpractice cases include a diagnostic mistake, and the most common issue is "cognitive error," according to the CRICO study. Your EHR should provide you with easy access to information about a patient's health, medical history, current medications, allergies, surgical history, chronic conditions, and other important information that is essential in finding the correct diagnosis and prescribing the best treatment plan.

As EHRs evolve and improve, they can reduce the chances for medical errors in several ways:

- Clinical alerts and reminders
- Preventive care recommendations
- Diagnostic suggestions based on a more holistic view
- Evidence-based suggestions right at the point of care
- Safeguards that prevent errors, such as alerts when there is a potential medication interaction or a risk based on the patient's health history
- Better ability to monitor patients outside of your clinic with remote patient monitoring (RPM) and communication tools between providers and patients through patient portals

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10: You don't have to stick with an EHR you hate

Perhaps the most important thing for providers and administrators to know about the future of EHRs is that you don't need to stick it out with what you are using now. There are solutions available that are designed to meet your needs today and prepare you for the future as technology and medicine continue to converge.

Selecting the right EHR software vendor today can also help 'future-proof' your system to evolve as technology improves. It saves you the hassle of going through an RFP, vendor selection, and EHR implementation process every few years.

Find out more about how AdvancedMD is shaping the future of EHRs as part of its fully-unified medical office bundle and providing the tools that independent providers and small- and medium-size group practices need to thrive as EHR technology rapidly evolves in the next decade.

Select the right EHR software vendor today to help 'future-proof' your system to evolve.

Resources:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5171496/ | https://www.zdnet.com/article/technology-that-changed-us-the-1990s/ | https://www.theguardian.com/technology/2016/mar/07/email-ray-tomlinson-history | https://www.open.edu/openlearn/money-management/management/business-studies/history-online-retail | https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6299231/ | https://dashboard.healthit.gov/quickstats/pages/physician-ehr-adoption-trends.php | https://dashboard.healthit.gov/apps/health-information-technology-data-summaries.php?state=National&cat9=all+data&cat1=ehr+adoption#summary-data | https://www.intel.com/content/www/us/en/silicon-innovations/moores-law-technology.html | https://ehrintelligence.com/news/3-reasons-to-favor-cloud-based-ehrs-over-in-house-ehrs | https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2020/03/patients-seek-better-exchange-of-health-data-among-their-care-providers | https://www.sciencedirect.com/science/article/abs/pii/S2211883716300624 | https://med.stanford.edu/content/dam/sm/school/documents/Health-Trends-Report/Stanford Medicine Health Trends Report 2020.pdf | https://www.physicianleaders.org/news/how-many-patients-can-primary-care-physician-treat | https://www.rmf.harvard.edu/Clinician-Resources/Podcast/2019/Future-of-Electronic-Health-Records | https://www.merritthawkins.com/news-and-insights/blog/merritt-hawkins-news/new-national-survey-a-state-of-the-union-of-the-medical-profession/ | https://readwrite.com/2019/06/14/what-these-7-brands-can-teach-you-about-ux/ | https://www.healthit.gov/sites/default/files/page/2018-11/Draft%20Strategy%20on%20Reducing%20Regulatory%20and%20Administrative%20Burden%20Relating.pdf | https://www.healthcareitnews.com/news/mayo-clinic-study-links-ehr-usability-clinician-burnout | https://www.mayoclinicproceedings.org/article/S0025-6196(19)30836-5/fulltext | https://www.healthit.gov/topic/usability-and-provider-burden/strategy-reducing-burden-relating-use-health-it-and-ehrs | https://www.healthit.gov/buzz-blog/health-it/final-report-delivers-a-strategy-to-reduce-ehr-burden

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