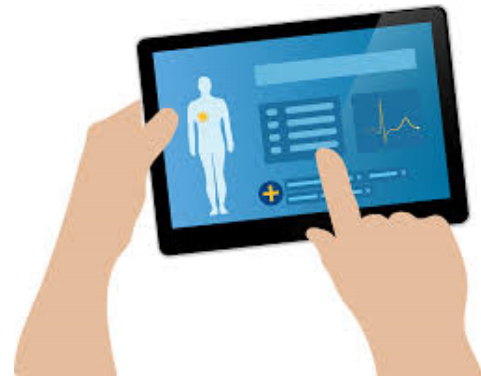# TheZetemaProject

Electronic Health Records: Potential, Reality, and Alternative Futures

Discussion Questions

1. What makes healthcare different from industries like banking that have managed to achieve interoperability?
2. Experts often cite missing standards as causing some of the challenges with interoperability. Should the federal government be responsible for creating standards?
3. Most EHRs are designed primarily to document for reimbursements instead of clinical care. Is this why physicians struggle with the systems? How could they be improved?
4. Increasing interoperability might allow big health systems to share their applications with smaller organizations. Would they be willing to do so if the possibility existed?
5. Has vendor concentration in the health technology market stalled disruption and innovation?
6. Experts say EHRs offer numerous opportunities to improve public health. How could that be accomplished?

Key Takeaways
The potential of electronic health records has been widely touted for more than a decade. EHR adoption is high, particularly by hospitals and health systems, but providers are consistently unhappy with their products and results. Providers consider them to be inefficient, difficult to use and not worth the cost; still, some systems have had success with them. EHRs have been estimated to improve healthcare delivery through reduced duplication of testing, increased prescription safety and cost reduction. If interoperability and technology improve, EHRs also have promise in improving clinical trials, public health, and more.

EHR adoption is high

More than 40 years since the first electronic health record was created, 85% of physician offices and over 90% of all hospitals use EHRs.[1] Since then, a major driver of adoption was the carrot-and-stick funding by the federal government. Meaningful Use regulations offered incentives for EHR investment; Medicare payments were adjusted downward for providers not adopting systems.

The federal government injected money into EHR adoption because of the potential technology has to change healthcare. HealthIT.gov lists a litany of ways EHRs can improve care including:

- Providing patient data that is up-to-date and complete,
- Enabling quick access to health data,
- Allowing providers to more easily share information with patients and doctors,
- Reducing errors and more effectively diagnosing patients through decision support tools,
- Increasing prescription safety and helping with medication tracking and adherence,
- Improving security of patient health information,
- Improving physician productivity.[2]

Why have EHRs stalled?
Most experts agree that progress with EHRs is drastically – maybe decades – behind where it should be. Depending upon whom you ask, there are different explanations for the painfully slow progress. Most likely, the IT logjam is an amalgam of different factors.

Other sectors, like banking and commerce, have managed to embrace technology and work between vendors and customers nearly seamlessly. In a recent interview in Harvard Business Review, John Glaser, senior vice president of population health at Cerner, pointed to three factors that have stymied healthcare's adoption.[3]

First, unlike in banking, healthcare has a lack of standards for sharing information. Second, the prevailing idea among providers is that patient data is a competitive commodity to be guarded. And finally, healthcare has a reimbursement system that doesn't create a business case for interoperability. These seem to be just the beginning of a list of reasons why healthcare has

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[1] The Office of the National Coordinator of Health Information Technology. Health IT Dashboard: Quick Stats. 2017. https://dashboard.healthit.gov/quickstats/quickstats.php

[2] The Office of the National Coordinator of Health Information Technology. What are the advantages of electronic health records? 16 May 2019. https://www.healthit.gov/faq/what-are-advantages-electronic-health-records

[3] Glaser, J. Harvard Business Review. What Banking Can Teach Healthcare About Handling Consumer Data. 14 October 2019. https://hbr.org/2019/10/what-banking-can-teach-health-care-about-handling-customer-data

lagged behind other industries when it comes to the move toward the adoption of relevant technology.

Providers don't actually like EHRs

For as much data as there is showing how EHRs will revolutionize patient care, there is an equal amount showing that healthcare providers loathe their systems.

A report provided to the Agency for Healthcare Research and Quality (AHRQ) looked at 26 primary care practices that adopted EHR systems between 2006 and 2008. They found that within six months of implementation, providers' productivity dropped by about 8%, but went back up by half by the end of the year. The volume of visits dropped by the same percentage but recovered slightly by 12 months. Net income per physician dropped by 16.5% during the first six months of EHR usage but rebounded to pre-implementation levels after a year. It took about 600 hours to implement EHRs and cost a five-physician practice $162,000 with $85,000 in maintenance the first year.[4]
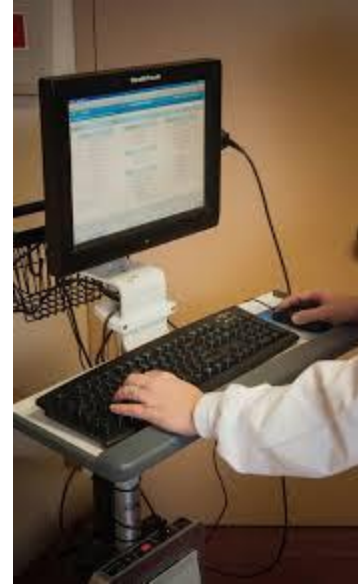
A 2016 article in Nursing found that 92% of nurses surveyed were unhappy with their EHR, because using it is "time-consuming and takes time away from their patients." [5]

In a 2018 issue of the journal Perspectives, a survey by the American College of Physicians found that about one-third of doctors polled said their EHRs were difficult to use, didn't reduce their workload and made them less productive overall. The authors also noted that nearly half of all providers thought the systems were too expensive and 65% reported financial losses due to EHR implementation. [6]

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[4] Fleming N, Aponte P, Ballard D, et al. The Agency for Healthcare Research and Quality. Exploring Financial and Non-Financial Costs and Benefits of Health Information Technology: The Impact of an Ambulatory Electronic Health Record on Financial and Workflow in Primary Care Practices and Costs of Implementation. 2011. https://healthit.ahrq.gov/sites/default/files/docs/publication/R03HS018220-01Flemingfinalreport2011.pdf

[5] Hoover, R. Nursing 2020. July 2016. https://journals.lww.com/nursing/Fulltext/2016/07000/Benefits_of_using_an_electronic_health_record.6.aspx

[6] Coustasse A, Andresen P, Schussler M, et al. American Health Information Management Association. Perspectives in Health Information Management. Why Physicians Switch Electronic Health Record Vendors. 2018. https://perspectives.ahima.org/whyphysiciansswitchehrs/

A study performed at a Korean hospital found that EHRs created a positive net value to their system. But it took more than six years to show the benefit, realized through cost reductions and added revenue.[7] An Advisory Board report found that 80% of providers surveyed didn't think EHRs were worth the expense.[8]

Other blockades

1. **The rush to succeed.** The government began mandating interoperability without a good plan of how to manage it. Lack of infrastructure and few standards created a patchwork system where technologies don't communicate. Hospitals created their own products, vendors created others and states built information exchanges.

2. **Innovation standstill.** The industry is packed with vendors, but a handful have such a large market share that it has kept outside innovators from entering the marketplace. In 2018, Epic held 28 percent of the market share of 5,447 acute care hospitals in the U.S.; Cerner held 26 percent of the market share; and MEDITECH held 16 percent. Instead of creative destruction shuffling things, most vendors spend their energy building on old technologies.

3. **Lack of a business case for providers to share information.** Hospitals make money through testing and lab work. If a patients' data can be transferred between hospitals, that would reduce redundancy – and also income. It also would make it easier for patients to use other hospitals and physician practices.

4. **Information blocking by vendors.** It's not necessarily in a vendor's best financial interest to allow providers to share information. Some charge per click for data sent outside of a system (though proposed legislation may soon end this practice).

5. **Privacy.** Patients are rightfully concerned about having health information shared between providers. Providers, too, worry about litigation or HIPAA fines if protected health information is released.

There is clearly a challenge that occurs after an organization adopts EHRs. But any new technology causes disruptions. It's rare that a new system goes into any workplace without glitches, added training or redesign of workflow. The question with EHRs is whether their usability will eventually improve, creating better quality of care and more satisfaction among providers.

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[7] Alpert, J. Digital Medicine 103(2). The electronic medical record in 2016: Advantages and disadvantages. 2016. http://www.digitmedicine.com/article.asp?issn=2226-8561;year=2016;volume=2;issue=2;spage=48;epage=51;aulast=Alpert

[8] Hudec, W. Advisory Board. Spotlight on IT: Nearly 80% of physicians say EMR is not worth the cost. 18 November 2014 https://www.advisory.com/research/medical-group-strategy-council/practice-notes/2014/november/doctors-emr-investments

The promise and potential

Even some highly integrated health systems that plug time and money into their EHRs haven't perfected the technology. Interoperability has proven a challenge for Intermountain Healthcare, according to Stan Huff, the system's chief medical informatics officer.

The organization set up its EHRs with a focus on clinical support in 2013. Over time, they realized the system would be a challenge to sustain should the core set of people who created it move to other organizations. The other problem with a self-made EHR is that any research and data could only be used within their system. They brought Cerner on to create a more interoperable, sustainable system.

This is where Huff hopes to see movement in the coming years. If organizations can increase interoperability, health systems can not only share data but applications they create to improve care.

Research has found that 250,000 people die each year of preventable medical errors in the United States.[9] Huff said technology, if operating correctly, can be part of the solution for this problem.

Intermountain has created clinical decision-making programs aimed at reducing medical errors that help physicians determine optimal rules for when a woman can be safely induced for labor, wean patients off a ventilator, and decide the optimal antibiotics for a patient.

> *Public health departments currently rely primarily on voluntary, anonymous telephone surveys to assess chronic disease and health behavior patterns.*
>
> *The Harvard Center of Excellence in Public Health Informatics' Electronic Medical Record Support for Public Health (ESP) can provide comprehensive surveillance on large numbers of patients with detailed data on patient demographics, clinical traits, patterns of care, health outcomes and complications. This can help health departments identify disparities in health status, care patterns, and outcomes and create more targeted interventions for vulnerable populations.*

Public Health

Many experts say prevention and population health is where interoperability holds the most promise. Major aims in healthcare – identifying high-risk populations, keeping well patients healthy and guiding patients to the lowest-cost, best quality providers – could all benefit from interoperability.

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[9] Sipherd, R. CNBC. The third-leading cause of death in US most doctors don't want you to know about. 22 February 2018. https://www.cnbc.com/2018/02/22/medical-errors-third-leading-cause-of-death-in-america.html

Government regulations and technology acquisitions are moving in this direction. If disruptive and innovative healthcare companies could someday communicate patient information with local hospitals, have the data analyzed and offer treatment protocols, that could dramatically change the way care is provided.

Patient data also could be moved outside of the healthcare realm. Data shared with community organizations like Head Start for a child being treated for asthma, or a women's shelter for someone undergoing mental health therapy, could better allow healthcare entities to treat the whole person across a range of services.

The Harvard Center of Excellence in Public Health Informatics has created a platform for this kind of work. Their Electronic Medical Record Support for Public Health (ESP) is a surveillance mechanism that organizes, maps and analyzes data from any EHR system and electronically transmits it to public health agencies. ESP can look for some infectious diseases, analyze for flu symptoms and surveil for chronic diseases like diabetes.[10]

The Center of Excellence conceded that creating a platform like ESP is sophisticated, time-consuming work. It's a challenge to tease out the pertinent information from EHRs. But the program can provide information on many patients, care patterns and health outcomes. This mass of data can assist health departments in finding and creating interventions for high-risk populations.

Clinical trials
Another way EHRs may be extremely useful is in recruiting and running clinical trials. The Veteran's Administration (VA) has made advancements in this space using "point-of-care research." This uses treatment information to inform clinical trials, i.e., comparing different, equivalent diagnostic techniques to determine which would produce better outcomes. Because the VA has such a vast reach, the system culls from patient data at more than 140 medical centers and 1,200 outpatient clinics nationwide.[11]

If EHRs fulfill their promise of interoperability, they could solve a number of challenges in clinical trials. They could help recruit patients, aggregate and analyze data and enable researchers to follow up with patients to gain information on long-term safety and efficacy of

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[10] Klompas M, Murphy M, Platt R, et al. Online Journal of Public Health Informatics 3(3). Harnessing Electronic Health Records for Public Health Surveillance. 22 December 2011.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3615793/

[11] Velarde K, Romesser J, Huang G, et al. Contemporary Clinical Trials Communications. September 2018.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6052195/

treatments. Some observers speculate that fully interoperable EHRs could bring down the cost of drug development by replacing Phase III trials with real-world experience, perhaps during a time-limited test period. This would require changes in FDA regulations and trading the rigor of controlled trials for the insights generated from far larger populations and more realistic care practices. Whether or not this vision is realized, it demonstrates the far-reaching possibilities better clinical EHRs with true interoperability.

Conclusion

EHRs were encouraged, and then mandated, by the federal government without the full realization of their potential disruption to health care providers. The technology was put in place quickly, leaving providers roundly dissatisfied with their systems. Interoperability has also been stymied by lack of regulation, standards and reticence by vendors and providers to share data. But experts see hope on the horizon. With some disruption in the industry, interoperable EHRs can improve population health in a range of ways and overhaul the way in which clinical trials are run.

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http://www.digitmedicine.com/article.asp?issn=2226-8561;year=2016;volume=2;issue=2;spage=48;epage=51;aulast=Alpert

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https://www.advisory.com/research/medical-group-strategy-council/practice-notes/2014/november/doctors-emr-investments

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https://www.cnbc.com/2018/02/22/medical-errors-third-leading-cause-of-death-in-america.html

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