Market Forces and Competitive Concerns in the Development of the Healthcare Information Technology Marketplace

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The Healthcare Information Technology (HIT) market in the United States has grown significantly in the past 10 years as the penetration of electronic health records (EHR) has risen from single digits to well over 50 percent of all physicians and hospitals.[2] Last March, the Federal Trade Commission's Healthcare Competition Workshop highlighted the significant effects of government, non-profit, and other market forces on the development of the HIT market.

To date, the U.S. government has spent over $24 billion[3] to incentivize providers to adopt EHR in order to increase healthcare quality and efficiency.[4] Historically, unique marketplace challenges, including displaced incentives, market fragmentation, and the unique regulatory burdens of healthcare, have served as obstacles to HIT growth, causing the U.S. to lag behind its industrialized competitors. In recent years, however, renewed efforts have resulted in significant growth. In the pharmaceutical retail space, industry players have joined together to gain efficiencies from an integrated electronic system that enables the sharing of prescription data. In the health care provider space, government promotion of EHR use through standard setting and economic incentives is contributing to growth; nonetheless, interoperability amongst competing providers remains a concern.

The HIT Market Faces Unique Challenges

The HIT market faces unique challenges, including misaligned incentives, market fragmentation, distortion from regulatory effects, and legacy technology costs. Mis-

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[2] Tripathi, Micky, "Advancements in Healthcare Technology: Industry Overview" *Examining Health Care Competition Workshop*, March 20, 2014, at.5, available at:
http://www.ftc.gov/system/files/documents/videos/examining-health-care-competition-workshop-part-3/ftc_examining_health_care_competition_workshop_-_transcript_segment_3.pdf.

[3] This does not include an additional $16 billion in investment from Medicaid. DeSalvo, Karen "Advancements in Healthcare Technology: The Importance of Competition to Federal Health IT Programs," *Examining Health Care Competition Workshop*, March 20, 2014, at 11.

[4] DeSalvo, Karen "Advancements in Healthcare Technology: The Importance of Competition to Federal Health IT Programs," *Examining Health Care Competition Workshop*, March 20, 2014, at.11.

aligned economic incentives create the classic public goods problem, where there is something that is rational from a societal perspective for individual actors to invest in, but no individual actor feels it is in its interest to make the investment. This problem is complicated by health care's unusual payment structures so that it is not in the interest of any one actor to invest in technologies for the benefit of others in the system.

The public goods problem is exacerbated in health care because there is fragmentation on both the supply and demand side of these transactions. On the supply side, there are numerous, unrelated specialists and providers. Healthcare demand is further fragmented because of the unique role that health insurance plays as a consumer in the economic exchange, rendering patients and payers both consumers of health care services, but with sometimes divergent interests. The healthcare marketplace therefore lacks unity of interest among market participants, which makes it difficult for all sides to benefit from public goods.

More specifically, medical providers, while repositories of medical records and thus best suited to computerize medical records, do not necessarily enjoy direct benefits from implementation of EHR. Rather, it is the patients and payers who most directly benefit from EHR. Individual payers could incentivize medical providers, but then they would potentially face the problem of free riding from competitors, who must also be allowed access to medical records.

The significant regulatory burden and potential liability from HIPAA,[5] as well as federal and state consumer protection laws, further inhibit

HIT market development as these cost concerns create additional barriers to entry. Healthcare data is particularly sensitive, and its leakage gives rise to substantial liability under HIPAA and state consumer protection laws. Vendors with a demonstrated record of data security or information flow thus gain market power through their entrenchment. As the free flow of information directly impacts quality of care, the enhanced consumer protection issues in the healthcare space will have to be balanced against anticompetitive concerns.[6]

Finally, as pointed out by Prof. Curtis L. Cole, MD, FACP, Chief Information Officer & Associate Professor of Clinical Medicine and Public Health at Weill Cornell Medical College, the groupthink in HIT has only recently moved towards a cloud-based delivery model to replace older legacy technologies. Traditional HIT systems skewed towards an enterprise software model, which is antiquated in the contemporary information technology space.[7] Enterprise models carry greater up front infrastructure costs for providers that must be amortized over many years, exacerbating lock-in effects. In contrast, most other industries are moving towards service oriented, cloud-based platforms, which do not come with the same switching costs.[8]

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[5] The Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104–191, 110 Stat. 1936 (1996).

[6] *See* Remarks by Jodi Daniel, JD, MPH, Director Office of Policy & Planning Office of the National Coordinator for Health Information Technology, *Examining Health Care Competition Workshop*, March 20, 2014, at 21.

[7] Remarks by Curtis L. Cole, MD, Health Information Technology, *Examining Health Care Competition Workshop*, March 20, 2014, at 14.

[8] Remarks by Dan Haley, *Examining Health Care Competition Workshop*, March 20, 2014, at 25-26.

The Healthcare Information Exchange Marketplace and Interoperability Issues

Because there are numerous EHR systems, market issues arose as these systems competed or attempted to share information through healthcare information exchanges (HIEs). HIEs allow distinct EHR systems to securely share information with each other. Thus, the ability of EHR to effectively operate internally, as well as for EHR to communicate through HIEs raises issues of interoperability. In fact, according to Jodi Daniel, Director at the Office of the National Coordinator for Health Information Technology (ONC), "[f]rom ONC's current perspective, the key challenge we're really focused on right now is making sure the information follows the patient, focusing on interoperability, and exchange of health information."[9]

Interoperability in the Healthcare Information Exchange Marketplace

There are two types of interoperability: 1) vertical interoperability refers to the ability to coordinate the various components of a healthcare transaction, including e-prescribing, lab integration, and radiology system integration; whereas 2) horizontal interoperability refers to competitors inter-operating with each other. For EHR to be realized, it must be viewed by multiple parties through HIEs. While vendors have been successful in creating systems with effective vertical interoperability of HIEs, effective horizontal interoperability has lagged.

Lack of Market Demand Challenges Development of Horizontally Interoperability

The biggest problem facing the development of horizontally interoperable EHR systems is that they have not been embraced by providers. In fact, to the extent that these systems attempt to standardize processes and workflow, providers have found them invasive and burdensome to each provider's unique internal processes.

Further, Jodi Daniel at the ONC emphasized: "the goals of market competition and health IT are mutually reinforcing. So if you have a truly interoperable health IT infrastructure, that can enhance competition by allowing data to flow more freely in the health care market, it can help competition in the health care market."[10] Daniel went on to say that: "On the other side, competition is really central to our health IT goals. And . . . if you have a competitive market for the technology itself, you're going to end up having better systems. Folks can vote with their feet and switch systems more easily if, in fact, there's better product on the market, and that you're going to have more innovation and technological progress."[11]

However, Dr. Steven J. Stack, Past Chair of the Board of Trustees of the American Medical Association (AMA), argues that the HIT marketplace is so immature that vendors are still working out technological and regulatory issues. Dr. Stack argues that it is these issues that pose the greatest challenge to data flow at the present time, and that "competitors [are] trying to box each other out," is "not anywhere on [his] top-50 list" of "reasons [ ] why data is not flowing."[12]

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[10] *Id.* at 15.

[11] *Id*.

[12] Remarks by Steven J. Stack," *Examining Health Care Competition Workshop*, March 20, 2014, at 19-20.

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[9] Remarks by Jodi Daniel, *Examining Health Care Competition Workshop*, March 20, 2014, at 14.

Initial Failures of HIE Development Have Led to Evolution

The idea of a HIE was first conceived as a centralized repository where information could be collected and accessed. This has had some success in states like Rhode Island, Indiana, Vermont, and Ohio.

Later generations of HIE have focused on exchange not as an institution but as an action. Instead of storing EHR in a centralized repository, different EHR vendors may now exchange health information directly. This movement reflects patients' concerns over potential data at a centralized repository of health records. Ultimately, use of direct-based push messaging has been endorsed by CMS as meaningful use, effectively making it a functional requirement for all EHR systems. New Hampshire and Massachusetts are leveraging these federal HIE standards to enable HIE services in their states. This will allow the systems to share information without breaking down their individual, proprietary nature.

Surescripts, An Example of a Horizontal Interoperable HIE System

The most successful example of a competitive, horizontally interoperable HIE is Surescripts, an HIE for electronic pharmaceutical prescriptions. Surescripts was developed in tandem through two separate approaches: the direct cooperation of private industry players, and the leadership and coordination of industry trade associations.

First, in 2001, CVS Caremark Corporation, Express Scripts, Inc., and Medco Health Solutions, Inc., the three largest pharmacy benefit managers (PBM) in the United States,

used their resources to found RxHub.[13] Around the same time, the National Association of Chain Drug Stores (NACDS), the industry trade association for the chain community pharmacy industry, and the National Community Pharmacists Association (NCPA), the industry trade association for community pharmacists, collaborated to create Surescripts. These two systems (Surescripts and RxHub) served the same purpose and eventually merged in 2008.

The development of Surescripts addressed the market forces that typically inhibit the development of horizontally interoperable systems. First, PBMs incentivized cost-sharing and collaboration by making cost-sharing proportionate to market share. Second, the coordinating efforts of industry-wide trade associations provided a different, but also effective, path to coordinating competing market players in order to share costs and benefits.

In contrast, the lack of concentration in the laboratory space has made it difficult for laboratories to use collective action to solve the HIE gap.[14]

Network Effect and Government Policy May Incentivize Poor Horizontal Interoperability

A network effect occurs where the more users a service has, the more valuable it is to its users. Dan Haley, Vice President of Government and Regulatory Affairs at Athena Health, has expressed concern that the network effect has led to vertically integrated entities are distinct from each other and thus not horizontally interoperable. According to Mr. Haley, due to

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[13] *See* http://surescripts.com/about-us/our-history.

[14] The largest labs, Qwest and LabCorp, represent only 20-25% of the market. Much of the laboratory market is made up of individual hospital networks.

HIT's concerns over security and the ability to communicate a full transaction, independent "silos" have developed, which are vertically integrated, but not horizontally integrated. HIEs can be used "to create closed data networks and, essentially, trap providers and patients into proprietary networks."[15] The network effect exacerbates this problem as these independent silos maintain market power by their very existence, and have no incentive to become interoperable. As observed by Dr**.** Stack, formerly of the AMA, whether you're in a solo or a group practice, or in hospital, the fear is that you will purchase something that will quickly become irrelevant—for example, the vendor will go out of business or become subsumed.[16]

Haley also argues that government policy exacerbates this phenomenon by certifying HIE systems that do not facilitate horizontal interoperability. "When the government comes with a check and subsidizes the purchase of a system that deliberately does not inter-operate, does not communicate with other vendors, the government is effectively perpetuating and supporting that phenomenon. When the government comes and says, we will issue blanket antitrust scrutiny waivers for entities that create ACOs, and we will put on the blinders as those entities purchase and implement closed system technologies in an effort to make their networks 'sticky' and consolidate market share, government is perpetuating this problem."[17]

However, this concern may be unfounded. In the example of Surescripts, the positive result of

network effects drove growth and consolidation, and the HIE actually broke down market barriers. However, this is only possible where the free flow of information is facilitated and not inhibited. For this reason, the ONC continues to monitor competitive concerns that could limit the free flow of electronic health information. ONC monitors pricing structures, as well as "any kind of practices that may lead to lock-in of information or siloing of that information, as well as transparency with respect to the products, the usability of the products, the services, et cetera."[18]

Through a Combination of Standard Setting and Economic Incentives, the Affordable Care Act Drives Hospital HIT Development

In the context of hospital-maintained HIT, the government, through the CMS and the ONC, has attempted to financially incentivize healthcare providers to go electronic. For example, the Hospital Value-based Purchasing Program (HVBP), as required by Affordable Care Act of 2010 (ACA),[19] "rewards acute-care hospitals with incentive payments for the quality of care they provide to people with Medicare."[20] In doing so, it financially incentivizes private actors to implement HIT, in order to increase supply chain efficiencies and establish best practices.

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[15] Remarks of Dan Haley," *Examining Health Care Competition Workshop*, March 20, 2014, at 16.

[16] Remarks of Steven J. Stack," *Examining Health Care Competition Workshop*, March 20, 2014, at 19.

[17] Remarks of Dan Haley," *Examining Health Care Competition Workshop*, March 20, 2014, at 17.

[18] Remarks of Jodi Daniel," *Examining Health Care Competition Workshop*, March 20, 2014, at 16.

[19] *See* "Frequently Asked Questions Hospital Value-Based Purchasing Program," http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/hospital-value-based-purchasing/Downloads/FY-2013-Program-Frequently-Asked-Questions-about-Hospital-VBP-3-9-12.pdf (last visited Wednesday, April 9, 2014).

[20] *Id*.

Standard-Setting Through Meaningful Use "Solves" The Public Goods Problem

CMS requires that providers certify that they are "meaningfully using" EHR by meeting thresholds for a number of objectives.[21] The "meaningful use" ONC certification requirement, although limited to those dealing with CMS, gives payers and providers a minimum expectation of the value of EHR. This combination of standard-setting and financial incentives has driven market development, increasing the number of EHR suppliers.[22] Thus, the HVBP solved HIT's public goods problem because it incentivized payers and providers to participate. Moreover, standard-setting solved another substantial concern in the HIT: "trust and confidence through privacy, security, and safety" in the system.[23]

CMS's push, however, caused demand for EHR services to explode beyond the capacity of existing suppliers. As a result, the initial years of the HVBP lead to an explosion of new suppliers into the marketplace, driving further fragmentation. Simultaneously, government regulation changed the landscape of the marketplace as homegrown EHR systems became too expensive to operate. According to Dr. Curtis Cole, the regulatory burden imposed by CMS and ONC lead to the demise of numerous homegrown systems, as a company "ha[s] to have very deep pockets" to succeed.[24]

As a result, "meaningful use [] essentially wiped out all the homegrown systems."

The ONC is sensitive to the pro-competitive effects that can be achieved through standard-setting. According to Jodi Daniel, the ONC is "exploring how open standards and architectures can lower entry and switching costs and looking at governance for health information exchange."[25] In fact, according to Dr. Farzad Mostashari, Visiting Fellow at the Engelberg Center for Health Care Reform at The Brookings Institution, the ONC has already utilized standard-setting for numerous pro-competitive purposes, including to "decrease switching costs and trying to provide transparency, to try to provide standards, to enable modular certification, to enable batch transloads, to urge the Vendor Association to come up with a code of conduct around this, to ask for requests for information on what we could do around furthering the business case around health information exchange. . . ."[26]

As a result of these market forces, the EHR vendor market has become fairly concentrated. Based on the vendors listed in HVBP "meaningful use" certifications, between 50 and 60 percent of the market appears to be served by only four vendors. An additional 366 inpatient systems[27] have been registered, each of which possesses a much smaller share of the market.[28] The industry has also seen a massive consolidation in the ambulatory EHR space.

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[21] *See* http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Meaningful_Use.html

[22] *Id*. at 6.

[23] Remarks by Jodi Daniel, *Examining Health Care Competition Workshop*, March 20, 2014, at 15.

[24] Remarks of Curtis Cole, *Examining Health Care Competition Workshop*, March 20, 2014, at 15.

[25] Remarks by Jodi Daniel, *Examining Health Care Competition Workshop*, March 20, 2014, at 15.

[26] Remarks by Farzad Mostashari, MD, *Examining Health Care Competition Workshop*, March 20, 2014, at 17.

[27] There are 2,000 fully certified ambulatory systems. Tripathi, Micky, "Advancements in Healthcare Technology: Industry Overview, *Examining Health Care Competition Workshop*, March 20, 2014, at 6.

[28] *Id*.

Although there were 2,000 fully certified ambulatory systems in 2011, it is estimated that no more than 200 remain today.[29]

HIT As An Anti-competitive Tool

In addition to interoperability concerns, there is also substantial concern that HIT may be used as an effective tool for other anticompetitive conduct by healthcare providers, such as steering, price fixing, and bundling. As pointed out by Dr. Mostashari, HIT may be used by large providers to "limit[] the ability of other smaller provider groups from referring to where they want to refer to and having their patients seek care wherever they choose to and using health IT as a way to enforce those referral relationships."[30] Similarly, there are concerns that hospitals will use the claims data from their HIT to prevent "leakage," i.e. to limit the hospitals' independent, affiliated physicians from "refer[ring] their high value, or high cost procedures and surgeries, and so forth to other facilities."[31] Further, according to Dr. Mostashari, the increasing dominance of HIE providers in the provider space leads to the danger that other, different third-party competitors may not be able to break into the HIT space, as HIE providers increasingly bundle new services with their existing, dominant services. Such conduct prevents the rise of competitors, and prevents existing customers from switching.

As Dr. Stack points out, medical providers also face the anticompetitive effects of "data lock-in."[32] In data lock-in, customers cannot switch to other vendors as the cost of porting their data is prohibitive. Dr. Stack further points out that as HIT is a new and developing space, providers are unable to predict such costs when selecting their initial vendor. Often vendor contracts are not transparent as to what these costs will be.[33] According to Dr. Stack, "as many as one-in-six [physicians] were [considering] changing to a new software provider" in the past 12 months.[34]

Conclusion

Although the HIT marketplace is still developing, much headway has been made in solving market problems. In the private pharmaceutical prescription space, pro-competitive coordination among large industry participants, working in parallel with the coordinating efforts of industry trade associations, have demonstrated one way to overcome these problems. At the same time, government subsidies have helped address the problem of displaced incentives in the fragmented space of EHR. Yet, the threat of HIT being used as an anticompetitive tool will remain as long as the EMR market continues to be highly fragmented with various incompatible HIE systems.

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[29] Remarks by Janet Campbell, *Examining Health Care Competition Workshop*, March 20, 2014, at 14.

[30] Remarks of Jodi Daniel, *Examining Health Care Competition Workshop*, March 20, 2014, at 17.

[31] *Id*.

[32] Remarks of Steven J. Stack, *Examining Health Care Competition Workshop*, March 20, 2014, at 19.

[33] *Id*.

[34] *Id*.