Sharing Clinical Data: A New Approach

Health information exchange (HIE) technology offers an intriguing new alternative for data sharing and coordination of care both within your organization and the greater healthcare community.

Introduction

One of the greatest challenges facing healthcare today is the need to share clinical data more effectively among providers. Better sharing of clinical data across the healthcare continuum improves care coordination, care quality, and patient safety, while also promoting more efficient delivery of services and reducing redundant procedures and tests.

In addition to the clinical value delivered by more efficient and effective access to clinical data, there is a financial impetus as well. The ability to easily access, share and input clinical data is an important qualifier for meaningful use and other federal health incentives. It also supports the hospital's desire to gain, or at least maintain, market share by more closely aligning with physician practices. Perhaps most important, widespread access to clinical information will likely form the foundation for proposed new pay-for-performance initiatives, such as accountable care organizations (ACOs).

In this brave new world of healthcare, clinical data sharing is not limited just to the physician's office, the hospital or the hospital network. Local health clinics, group health homes, long-term care facilities and individual patients make up extended regional, state and multi-state health communities that also need to be included. While the need is clear, the strategy for getting there is anything but. Given that most hospitals have severe capital constraints, finances will play an important role in deciding future direction. In order to survive and thrive, healthcare organizations must look for IT solutions that are not only future ready but also affordable, leveraging existing infrastructure where possible.

A Look at the Alternatives

While all agree that enhanced data sharing and the establishment of an easily accessible longitudinal patient record compose the goal, there are differing views as to the best path to get there. There are many factors to consider, including the size of your hospital or healthcare network, the systems you currently have in place, and the status of your community-wide healthcare programs.

Any analysis of alternatives must also include the following considerations:

• Financial constraints

• Continuously changing healthcare regulations and policies

• Uncertainties surrounding future financial reimbursement models

Fundamentally, there are two viable architectures for health information data integration. The first is a ***single platform*** that offers one set of technologies across the enterprise. In this model all applications, such as emergency department (ED), surgery, acute care laboratory, pharmacy, etc., are provided by the same system and vendor. The second option is an ***integrated platform***, which leverages open standards architectures to integrate disparate hospital departments and applications. This model lets hospitals take advantage of the unique capabilities of specialized systems that tend to be more advanced than those applications provided by a single vendor.

The Case for a Single-Platform Solution

Single-platform solutions have grown in popularity in recent years, especially with larger hospitals and healthcare systems. Spanning the enterprise with a single-vendor IT platform offers the following benefits:

- Simplified data integration within the hospital

- A single source for system management and problem resolution

- Reduced maintenance and interface costs

At first glance, a single-platform solution appears to be a winning strategy. However, closer inspection reveals that it is not a panacea. Drawbacks can include:

- **Costs:** It can be very expensive. The top vendors insist that you replace existing technology with their own integrated applications for each functional area.

- **Extended implementations:** Multi-month or multi-year installations are not uncommon.

- **Compromised functionality:** Integration often trumps functionality. It is nearly impossible for a single system/vendor to deliver the functionality required to effectively automate the more than 140 vertical applications in a typical hospital environment.

- **Closed system architecture:** Most single-platform systems are not standards based. This makes it difficult and expensive to integrate new technologies or applications and to effectively communicate with outside users, such as physician practice systems and HIEs.

The Case for an Integrated-Platform Solution

A new technical approach has recently emerged that makes the integrated platform much more viable. The new model is the connection of applications and clinical data through use of a private health information exchange.

Based on open standards, HIEs facilitate seamless integration between disparate systems. A private HIE acts as a facilitator, sending information back and forth between systems within the hospital such as the ED, perioperative systems, anesthesiology, critical care, electronic medical records (EMR) and other hospital applications. Equally important, an open-standards HIE also makes it easier to connect to systems outside the healthcare network such as:

- Public HIEs, state databases and, in the future, a nationwide health information network

- "Closed" single platform hospital solutions

- And most important, physician practice management systems and physician EMRs— which are vital for effective care coordination and currently underserved or excluded by single-platform solutions

An integrated clinical network built on an HIE architecture offers several advantages:

- **It's affordable and scalable.** Many HIEs use cloud-based technical architectures and offer as-a-service delivery models. This "pay as you go" pricing model increases agility and lowers capital investment and ongoing operating expenses. You can start with a

limited number of applications and users and then easily expand as needed without a significant investment in IT infrastructure. Furthermore, implementation time is truncated.

- **It leverages your existing investment in technology.** Adopting an integrated platform means that there is no need to "rip and replace" your existing applications. You now have the option of using your proven applications in an integrated fashion. This increases user satisfaction by allowing specialty areas to keep systems that are built to accommodate their unique needs and that have been further customized for specific use. It also yields a hidden return on investment, since it ensures adoption and eliminates the training costs that would be required if new applications were implemented.

- **It takes advantage of best-of-breed systems.** Specialty best-of-breed systems typically offer better workflow, content and functionality, since they are intensely focused on the needs of the department or discipline that they address. This is especially important in critical and specialized areas of the hospital—such as ED, OR and ICU—where "good enough is not good enough." Systems designed specifically to meet the needs of these unique and challenging environments deliver the means to provide better, safer care.

This was highlighted in a report by KLAS, an organization that independently monitors vendor performance through active participation of thousands of healthcare organizations. The KLAS report stated that ED customers of enterprise HIS vendors have "some of the highest levels of buyer's remorse." This "underscores the challenge many CIOs face in choosing between an ED solution that's an extension of the EMR versus a product more tailored to the needs of clinicians."[1]

- **It contributes to the bottom line.** Best-of-breed systems can maximize a departments' contribution to the healthcare system's bottom line. For example, the ED is typically the hospital's largest source of admissions and often its largest outpatient area. A specialized ED system helps accelerates patient throughput, improve performance and efficiently manage the higher volume of ED patients expected from ACO and other pay-for-performance initiatives.

- **It's future ready.** An HIE-based architecture provides the framework to meet future healthcare reform requirements in a financially prudent way. With its standards-based integration, an HIE architecture not only promotes better information sharing and better coordination of care but also sets a foundation for innovation.
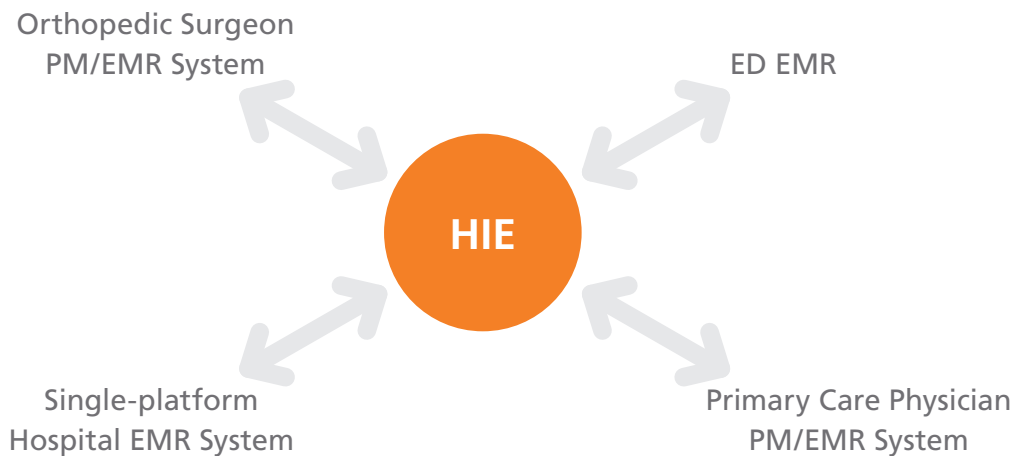
In a recent article in the New England Journal of Medicine, Kenneth Mandl and Isaac Kohane of Harvard Medical School pointed to the necessity of an open system approach in meeting future challenges. "As the health care system… ties reimbursements to performance metrics and health information exchanges require greater interoperability between organizations and their various EHR systems, the need for innovation becomes critical."[2]

The article went on to state, "We believe that EHR vendors propagate the myth that health IT is qualitatively different from industrial and consumer products in order to protect their prices and market share and block new entrants. In reality, diverse functionality needn't reside within single electronic health record systems, and there's a clear path toward better, safer, cheaper, and nimbler tools for managing health care's complex tasks."[3]

An Integrated Clinical Network in Action

HIEs exist to share patient health information among providers, both within communities and across communities. Implemented correctly, an HIE-centered clinical network provides continuity throughout the continuum of care.

What a truly integrated platform will do can be better understood by tracking a patient through an episode of care that begins in the ED. In this scenario, the facility is using a private HIE to manage information sharing between a best-of-breed emergency department electronic medical record (ED EMR), a physician practice management/physician EMR (PM/EMR) system and relevant external systems.

Orthopedic Surgeon
PM/EMR System

ED EMR

HIE

Single-platform
Hospital EMR System

Primary Care Physician
PM/EMR System

John has a car accident and is unconscious when first responders arrive. As he is being transported to the hospital, John's patient summary is retrieved by ambulance personnel via the HIE.

John arrives in the emergency department and the ED physician views his medical history via the ED EMR. The information was accessed from the Continuity of Care Document (CCD) residing in the HIE. The CCD includes medications and allergies, which, since the patient is incommunicative, are vital when considering treatment options.

The ED physician uses the ED EMR to manage all orders, tests, medications and clinical documentation. During the course of treatment, interaction checking of the medication order by the ED EMR shows a potential adverse interaction with a home medication shown on John's CCD medical/allergy list. Based on the notification, the ED physician orders an alternate medication.

John will require inpatient surgery. Upon admission to the hospital, his primary care physician is electronically notified of his admission through his practice's PM/EMR system via the HIE.

The surgeon in the hospital requests a consultation with an orthopedic surgeon. That consulting surgeon, whose practice uses a different PM/EMR system, is able to review John's labs and images via the HIE.

After surgery is performed, John's primary care physician is notified of "new data" on the patient via the HIE.

After discharge, John's primary care physician and his orthopedist can manage his care more efficiently by exchanging information, such as referrals, scheduling and patient summary data, via the HIE and their respective PM/EMR systems.

As this scenario demonstrates, an HIE-centered integrated platform solution combines:

- Information—including access to important patient and medical information in case of an emergency

- Communication—allows seamless communication between first responders, emergency care providers, inpatient specialists and primary care physicians

- Coordination—facilitates informed care delivery, even when previous treatment locations are unknown, and allows providers to create orders and operate in multiple clinical information systems

Open to the Future

The future of healthcare is in flux; the only certainty is that major changes are inevitable. In order to deal effectively with change, healthcare organizations need a technical platform that is both agile and adaptable. With its open standards and scalable architecture, an HIE-based integrated platform is more capable of quickly and cost-effectively responding to change than is a closed, single-platform solution.

With an open system, you can select solutions and technologies from a wide number of sources. With a closed system, you are almost completely reliant on one vendor to ensure that your applications, systems, and technology are up to date and meet new and changing requirements. Three key areas where an open integrated platform could prove particularly well suited to dealing with the changing healthcare landscape are reimbursements, analytics and emerging technologies.

Reimbursements: Healthcare reimbursements will change dramatically in the future. Fee-for-service will be replaced by pay-for-performance models that are based on the ability to better manage patient diseases and conditions. As the healthcare system ties reimbursements to performance metrics, there will be a far greater need for interoperability among organizations and their various EHR systems. With its ability to provide connectivity to other systems and "external" clinical data, an HIE-based architecture is designed to deliver the diverse clinical data needed to help track,

"As a doctor, I have many times wanted access to data that I knew were buried in the computers or paper records of another health system across town. … Information exchange must cross institutional and business boundaries. Because that is what patients need. Exchange within business groups will not be sufficient—the goal is to have information flow seamlessly and effortlessly to every nook and cranny of our health system, when and where it is needed."

— David Blumenthal, MD Chairman of the Office of the National Coordinator for Health Information Technology, 2009-2011

analyze and manage patient populations, which is key for pay-for-performance reimbursement.

Additionally, under this model, efficiency is paramount. Procedures and tests performed redundantly or unnecessarily will not be reimbursed. Sharing information between providers allows for better decision making, and ultimately better outcomes.

Analytics: Accountable care will bring with it new demands for clinical data sharing and advanced analytics. Providers will need to understand and analyze patient populations in order to find ways to improve care. The key to effective analytics is to have all relevant patient data available. That way, healthcare organizations can transform disparate data—including health records, claims data, population analytics and evidence-based care guidelines—into actionable intelligence that can be used to measure quality, costs and risk. A closed platform limits you to data from within the four walls of the hospital and its affiliated providers. An open platform lets you more easily capture data from the wide variety of sources external to the enterprise, including primary care physicians, other hospitals, specialists, home-based healthcare, etc.

Emerging technologies: Emerging technologies have the ability to transform the delivery of healthcare. From smartphone applications that help patients take increased responsibility for managing their care to new technology-enabled treatments to the innovative adaptation of commercial technologies and applications, emerging technologies will be key to delivering better healthcare and stemming rising costs. An open-source system is agnostic when it comes to integrating other vendor solutions/technologies and offers a cost-effective path to the future.

Conclusion

Sharing of clinical data across the healthcare continuum is one of the greatest challenges facing healthcare today. It is essential for improved patient care and better financial performance and will be a key driver in new healthcare reforms. While many hospitals are turning to a single system from a single vendor to integrate and share data throughout their enterprise, there are significant drawbacks to this model, including expense, implementation time, limitations of important applications and a closed technical architecture.

A new solution has recently emerged as an alternative to the single-platform solution: an integrated platform using a private HIE to centrally manage clinical data. More affordable and flexible than a single-platform solution, an integrated clinical network built on an HIE architecture is scalable, leverages existing technologies and lets hospitals use best-of-breed specialty systems in an integrated manner. It can also improve clinical data sharing not only within an enterprise but also with the healthcare community as a whole.

With its open-system architecture, an integrated platform has the flexibility and agility to economically address current needs as well as future requirements such as pay-for-performance models, new regulations, new technologies and expanded data-sharing requirements.

References

1. KLAS, "Emergency Department Information Systems: Is Best of Breed Still the Best Approach?" 12/15/09).

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3. Ibid.

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