EHR interoperability: The new medical 'mine'

Physician input is critical in achieving systems that can interact and provide a complete data picture of our patients

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HIGHLIGHT

▸▸ **Despite the initial dissatisfaction between the patients and the providers with shared screen time, there is an impetus to unify record across EHR systems.**

The electronic health record (EHR) system was envisioned to be a patient-centric modality to increase access to patient health information across concrete boundaries in a secure manner. It increased the conscientious patient's access to personal health information through secure patient portals. It enabled providers to have remote access to patient data.

Despite the technological revolution, it has left providers and patients equally dissatisfied. Patients now share their face time with providers with a documentation screen. Providers are caught in a cloud-based web between EHR documentation, electronic pre-certifications, prescription faxes and endless static across telephone lines with automated callers.

The Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted as part of the American Recovery and Reinvestment Act of 2009, was signed into law Feb. 17, 2009. The technology revolution in patient health information has also brought the formidable challenges of data security, transfer and ownership.

Healthcare is at a very interesting juncture that we are calling "mining is the new medicine." A medical mining consult for a patient is in the foreseeable future. This is given the conglomeration of all patient data points and its interpretation, which requires the recognition of infinite patterns. The pattern recognitions then require further interpretation in the context of current guidelines and risk-to-benefit ratios. The operational success with medical mining rests in the ability to sift through all relevant patient data, which might be at the current time securely resting across multiple healthcare systems and non-affiliated Institutions as individual data silos.

A BRIEF HISTORY

The 2015 Edition Health IT Certification for EHR technology must be met under the MACRA proposed rule. JASON, founded in 1960 provides independent consulting services to the U. S. government on defense science and technology. It is a scientific advisory group that made recommendations to embark on Stage 3 of Meaningful Use, focused on a functional interoperable EHR system.

The JASON report and subsequent briefings, reviewed the shortcomings with two of the world's largest EHR systems, the Veterans Administration Vista and the DOD system using the Armed Forces Health Longitudinal Technology Application (AHLTA). Several private commercial EHR systems

have also thrived in the past decade. The JASON study process involved an expert panel from the academic, industry, and government sectors.

In addition to interoperability, the report identified setbacks in the health infrastructure. JASON has emphasized the importance of standardization and data security between the shared data systems and data ownership.

JASON briefings have several recommendations, including unbiased third-party certifications through organized "code-a-thons."

The buzzword in health IT is "interoperability." We have progressed from an era of EHR implementation and adoption to open data exchange between providers in healthcare and patients. Despite the initial dissatisfaction between the patients and the providers with shared screen time, there is an impetus to unify record across systems and make the patient in charge of sharing relevant health data with providers.

EMERGING STANDARDS

An Application Programming Interface (API) is a protocol allowing data sharing between software applications. This interface bridges two applications, allowing data flow regardless of the original inception or design. The API task force has systematically investigated security concerns and the potential risks. Data breach associated with HIPAA approved APIs versus the non-HIPAA regulated fitness trackers. An API that has gained notice by the Centers for Medicare & Medicaid Services (CMS) is Fast Healthcare Interoperability Resources (FHIR).

Grahame Grieve is the architect-developer of FHIR (pronounced "fire.") It remains a draft standard and application programming interface and is currently in FHIR Release 3 (STU) - FHIR v3.0.1. Health Level Seven International (HL7) is a nonprofit, ANSI-accredited standard-developing organization that has an oversight on FHIR. The FHIR platform is currently being tested by different organizations.

The next crucial and sensitive operation to be tackled is data security. Currently the applications OAuth 2.0 and OpenID are being used for security and authorization. CMS and ONC have requested public feedback as part of the proposed rule for MAC-RA implementation and Health IT certifica-

tion respectively for the FHIR v3.0.1.

INTEROPERABILITY TRENDS

The Argonaut Project, launched by HL7 in 2014, is a privately funded initiative to further interoperability standards. The Argonaut sponsors consist of vendors and healthcare provider sites: Accenture, athenahealth, Cerner, Epic, McKesson, Meditech, Surescripts, The Advisory Board Company, Beth Israel Deaconess, Intermountain, Mayo Clinic, Partners HealthCare and Boston Children's Hospital.

A previous version of FHIR was used by Regenstrief Institute to test data transferability between the Epic EHR and the open, epic API. The Indiana Network for Patient Care (INPC) was able to authenticate proof of work and data integration. The MIT Media Lab has used the Ethereum blockchain Application platform to generate a "MedRec" prototype equipped with smart contracts. MedRec team has been industriously exploring options to integrate the interoperability with systems like Epic and Cerner.

THE FUTURE

Future developments should allow interpretation of healthcare data from a vast distribution ledger, to decipher patient relevant clinical insights.

Such a development can be expected from blockchain technologies. This will enable cost effective evidence based medicine practices across nonaffiliated healthcare systems. As patient-related data is entered into this unified EHR and as transactions occur from multiple sources of origin, the question would be, what is the clinical relevance? Each transaction, with its unique numeric code, creates a distinctive node in the audit trail.

Some important questions remain, including, "can a patient also enter a transaction?" Physicians are important stakeholders in the clinical data by their deductive reasoning with clinical decision making. Another question: Who will own the data when the data resides in multiple interoperable EHRs: the physician, the patient, or the hospitals?

Physician input will go a long way in making interoperability a success. As responsible physicians, can we accept and excel with the new wave of "the medical mine"? ◻

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