Using FHIR to Support a Peer Messaging Architecture for Continuity of Care

Concept

To enable payers to use HL7 and CDA elements to support the capture of relevant clinical and administrative data to gain collective perspective on the total cost of care for a medical condition. By examining the total information of a care cycle through transitions in care settings, opportunities arise to identify benchmarks, practice improvements, and standardizations that lead to reduced costs and improvements in quality of care.

Technical Innovation

Twitter is a global peer-based messaging network. While Twitter is not an appropriate technology for moving medical records, the underlying, open-source technology it runs on (Apache Storm) is a robust message management architecture that would support the integration of encryption, role and institution based HIPAA rules, and identity management. This opens the potential for a peer-based messaging approach for health data interoperability, enabled by FHIR, allowing for an inherently more flexible, scalable and low-cost interoperability solution.

A Twitter Oriented Transaction Model for Automated Transitions in Care, Using HL7 CDA as a standard interchange and a messaging-based architecture.

<table>
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<th>Payer Systems</th>
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<td>Coverage Information</td>
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<td>Clinical Care Guidelines</td>
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<td>Risk Based Authorizations</td>
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<td>Case Management</td>
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FHIR/HL7 Aligned TCP IP Messaging Bus

Beneficiary has a fall and is taken to the ED. Patient is referred to a SNF. Acute care EHR forwards record to SNF and to payer systems so appropriate authorizations are concurrent. Case details logged.

SNF EHR interacts with payer systems to retrieve clinical care guidelines, patient is then referred to Outpatient PT and PCP. Information forwarded to EHRs and payer authorization and case management systems.

Outpatient PT EHR interacts dynamically with care guidelines, risk based authorizations, and case management as patient progresses. Information is updated in PCP HER.

PCP EHR interacts dynamically with care guidelines and case management as patient progresses.
**Examples**
Peer-based, distributed information messaging networks are not novel. However, they are classically very closed, very proprietary, and very expensive to build. New technologies, such as Apache Storm and PKI, and new methodologies, such as FHIR, enable these types of networks to be built securely and inexpensively. Examples of existing, similar networks (albeit with more expensive technology) include payment processing networks such as Paypal, the PKI Certificate and PGP key networks for managing trusted identities, and information sharing in the national defense agencies under IC ITE.

**Business Value**
Payers can easily navigate timely clinical and administrative data using technologies that enable interoperability. Doing so informs decision-making with accurate data and enables standardization in clinical and administrative processes across providers and settings to reduce variance in claims and in care.

**Primary Capabilities**
- Exchange of clinical and administrative data to enable solutions in medical management of chronic conditions across the continuum of care
- Automated transitions in care using HL7 and CDA elements as a standard interchange and messaging-based architecture
- Tools that diminish the administrative burden and improve efficiency for providers and payers
- Enables perspective on work flows and quality improvement that is informed by comprehensive data
- Data “follows” the patient through the continuum (institution, provider, payer) instead of being pushed from provider to provider

**Benefits**
- Interoperability becomes “automatic”, making for a more complete picture of relevant information
- Payers leverage their position with data that reflects the totality of the cost of care, rather than point of service costs
- Providers become more cost conscientious as data supports tiered provider copay elevations, bundled payments and episode-based care
- Patients become engaged and motivated to seek out low-priced providers with reputation for high quality care