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The Case for Workflow Interoperability

Health Catalyst is an analytics and interoperability (HIE) company focused on improving the outcomes (cost, quality, and satisfaction) of defined populations. As I read this draft and reflected on our work with care providers in all settings of care, I would like to make the following observations and comments.

**Content Harmonization**

This section of the draft reveals that the focus of this current effort and previous ONC HIT efforts have been on data (patient, provider, content, etc.) interoperability and not on process automation or workflow interoperability.

Solutions based on data interoperability presume that all data is located in a single system or is harmonized and available for access by a presumed single system accessed by a member of the health care team, including and most specifically physicians and other providers at the point of care. This makes sense with the flawed perception that a single system is the only way to improve usability. Unfortunately, in the marketplace today, EMR suppliers (see below as to why current systems are not true EHRs) have virtually locked down the user experience with claims of proprietary IP and violations of system warranties and support, effectively forcing organizations to accept this false pretense.

It is our experience using FHIR and custom code that care provider usability (measured by keyboard or mouse clicks) can be significantly improved by enabling process automation / workflow interoperability via the user interface. By enabling different HIT systems to interoperate and exchange data as part of the user interface workflow, efficiency and user satisfaction can be greatly improved. These improvements benefit all users of HIT systems. For example:

* Integrating the Epic EMR with third-party revenue cycle analytics at one organization reduced initial claims denials by $14.99 million per year. https://www.healthcatalyst.com/success\_stories/denial-management-multicare
* Integrating the EMR with a patient registry for predicting COPD Readmissions reduced one organization’s care managers’ keyboard and mouse interactions from 10 clicks per patient to four. This may not seem like much but performed hundreds of times a day, this efficiency can add up to significant improvement in care and satisfaction.
* At another organization, the physicians wished to send follow-up letters to patients at risk of diabetes (identified via a predictive model developed using machine learning—a capability today’s EMRs lack). Using the EMR system by itself required five clicks per-patient per-letter; for a cohort of 50 patients this would be 250 clicks. Using workflow automation techniques, the effort was reduced to six clicks for the *entire* cohort of 50 patients—a reduction of 244 clicks.

The HIT and, specifically, the EMR systems of today make creating and enabling process automation or workflow interoperability extremely difficult for third-parties’ external to the EMR supplier. HL7 FHIR provides some, but not all, technology needed to accomplish workflow interoperability. FHIR enables user authentication and access, a critical component, but the efficiencies gained are really at the data level not at the workflow level. To accomplish the successful examples cited above by simply exchanging data or pushing data into the EMR will would still require extensive changes in the EMR data structures and user interface process flow.

Health Catalyst believes that a single HIT system for a user is *not* the answer to usability problems. Rather, integration of multiple HIT systems is critical for addressing these issues. This approach is not only is less costly than a monolithic EMR, but it is faster to implement and evolve, and it enables greater innovation in the areas of clinical analytics at the point of decision making through machine learning, artificial intelligence, and other advanced analytic capabilities.

**Comment Regarding EMR versus EHR**

An Electronic Health Record (EHR) in concept should contain complete information about a patient (medical, behavioral, mental, wellness, etc.). This requires data from across the entire patient-specific continuum of care. This true EHR system does not exist today in the United States. The HIT systems sold as EHRs are actually Electronic Medical Records (EMRs), typically for a single care organization and, at best, a few connected points of medical care (generally not behavioral or wellness) in a given geographic area. This is a connected medical record (EMR), not a health record (EHR) as promoted. To truly be an EHR, the HIT system must be able to combine data from a large number and type of sources beyond clinical and medical encounter data. The digital patient eco-system should also include: claims, genomics, genetics, patient-reported outcomes, 7x24 biometrics, consumer wearables, and social data. Most clinicians strongly advocate, and studies have borne out (https://nam.edu/social-determinants-of-health-101-for-health-care-five-plus-five/), that social determinants of health (SDoH) have a greater impact on outcomes for chronic diseases than our current, traditional scope of practice for medical care. True EHRs will be able to use the entire patient picture, including SDoH data, to improve outcomes—a capability out of scope for the currently available EMRs.