The Individual Health Record and the Health Care Custodian: This Missing Key for Health I.T. Driven Industry Transformation

Benefits Demonstrated in Actual Deployment

The US health care system suffers from fundamental challenges:

(1) high degrees of inefficiency leading to needless high cost and lack of access,
(2) under-utilization of proven, evidence-based interventions leading to lower quality, and
(3) excessive mistakes leading to poor safety
(4) payment methodologies which insufficiently reward high quality care

These challenges can be addressed through a health care system that supports ideal health care management decisions by the patient and the doctor. Patients can be motivated to make ideal care management decisions via consumer-directed benefit plans. These plans financially motivate citizens to manage wellness, disease and health care costs. These plans require transparency as to the cost and quality of health care services so that these motivated citizens will make high value choices. And physicians can then be rewarded for efficient, evidence-based care through pay for performance reimbursement which rewards ideal care management. What has not been available is a foundational infrastructure to help physicians and patients make these ideal decisions in routine care delivery. This infrastructure is known as Health Information Technology—an electronic infrastructure that uses comprehensive, electronic clinical and financial data, quality algorithms derived from the evidence base and business algorithms derived from health plan benefit rules.

Substantial progress has been made in building the foundation for broad scale Health Information Technology deployment. Data standards have been tightened (HITSP), certification of applications such as EMRs and E-Prescribing is operational (CCHIT) and innovations have been launched in creating financial incentives to drive physician adoption (AHIC). However, the required integration and synthesis of clinical data through Regional Health Information Organizations (RHIOS) and Health Information Exchanges (HIEs) has not been successful. We propose replacing the RHIO/Health Information Exchange infrastructure vision with a new role known as the Health Care Custodian. The Health Care Custodian is an organization providing a service to patients which retains and manages their clinical information much like a financial custodian manages an individual's retirement funds. The Health Care Custodian gathers the clinical and administrative information on an individual's health, keeps it private and secure and under the patient's direct control, and provides it both to the individual and to physicians or other care givers that the individual designates. Typical health care custodians include hospitals, health plans, or other sponsoring entities in the health care industry. They must be HIPAA compliant.

The Health Care Custodial infrastructure has been operational in Dayton, Ohio (DaytonHealthKonnect) for two years via a comprehensive patient-centric, patient-controlled record known as the Individual Health Record (IHR). The IHR uses a single record to provide a

view for patients (a "PHR"), a view for doctors (an "EHR") and E-Prescribing. Further, it provides for Health Information Exchange functionality packaged into a physical appliance for ease of deployment. The data architecture allows virtually all data in the IHR to be completely *understood*, enabling a rules engine to apply clinical and business rules at a patient-specific level on a real-time basis. These rules are commonly known as clinical decision support. They are designed to apply the knowledge derived from clinical research to each patient uniquely. By doing this, physician care decisions and patient compliance are grounded in research and are as effective as they can possibly be. The algorithms can be developed in a few weeks – resolving the up to 17 year delay from clinical research advance into common clinical practice. These rules also allow money-saving benefit plans to be administered without the headaches physicians typically have when benefit plans become more restrictive.

The Health Care Custodian/IHR model has shown itself to be superior to other models in extensive validation and testing in Dayton. The IHR is:

- Easier, faster, and cheaper to deploy – An IHR deployment across 30 physician users requires approximately 30 kinds of interactions among systems. An HIE-EMR approach would require 900 kinds of interactions. An IHR deployment can begin with any information: widely available electronic claims data, or billing data, or any clinical data and evolve over time. Other approaches require endless work before any useful information (other than distributing lab results) is available. Deployment costs are approximately $4000/physician – well below current Health I.T. spending targets proposed by the Obama administration.

- A superior foundation for care – The IHR creates a single, persistent record of each patient's health, health care, and care management strategies. Efficiency gains are immediately realized by avoidance of duplicate and conflicting therapies. These duplications amount to anywhere from 3%-5% (radiology) to 10% or more (labs) of all procedures ordered. Approaches that do not create a single record, do not have persistent per-patient information, and do not fully integrate claims and clinical information do not provide this foundation.

- A superior foundation for saving money – The IHR's persistent and comprehensive patient record is the foundation upon which individual rules are applied. This visibly improves patient and provider involvement and compliance with best-care standards. The execution of these rules on a real-time basis on each individual piece of data allows care to be influenced as it is occurring and allows users to self-correct their health when not involved in a care encounter. *Analytics from Dayton show patients used the IHR at a compelling rate (over 40% of users accessed the IHR 6 times or more, and 70% of those eligible to use the IHR have used it at least once). Use of evidence-based medicine and preventive measures increased. IHR users' medical trend was 10% lower compared to non users. In fact, year-over-year inpatient costs for IHR users have decreased, and total costs have risen at one-third the rate of non-IHR users.*