



Interoperability Standards: A Step Towards Understanding Healthy Outcomes and a Learning System

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policy makers alike. Healthy outcomes are the main goal of any health care service. It is fitting then that the theme of the 2011 eHealth Interoperability Showcase is Enabling Healthy Outcomes: Seamless care through seamless systems, because it demonstrates how interoperable systems support patients, providers and policy makers in their pursuit of healthier outcomes. If you're not familiar with the Interoperability Showcase it is essentially:

"... a demonstration of market ready healthcare applications using common standards to exchange information. Clinical scenarios are used to guide attendees through a tour of interoperable systems allowing participants to play the role of the patient and see how pertinent information is shared between collaborating systems to support new and different models of care." For more information please visit <http://www.e-healthconference.com/present-learn/interoperability-showcase/>

What is a healthy outcome?

There are many definitions but essentially an outcome is:

"A change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status."¹

The desire for better outcomes in health care delivery is a battle cry that unites patients, providers and **Healthy** outcomes are changes in health status which we would all generally deem as desirable. A key point is that a healthy outcome is not just the disappearance of symptoms but rather the return to a target measure of function. For example, a person who had surgery to repair a torn rotator cuff, could have the tear healed and the pain abating, but still not have the full range of motion that would allow them to, say, play baseball again.

Why don't we have information on whether or not we're achieving healthy outcomes?

There are several challenges with facilitating providers', researchers' and policy makers' ability to access patient data from across the continuum of care (in a secure and privacy sensitive manner) to understand the complexities of outcomes.

The first challenge is the need for interoperable systems that can share data from across the continuum of care (e.g. from acute care to primary care). For example, data about a person's surgery would be contained in the hospital record (e.g. anterior cruciate ligament (ACL) reconstruction), but the data pertaining to a patient's full rehabilitative journey might be captured by their family physician in his or her EMR several months after the surgery or, worse, is not captured by any system. The second challenge is the need for interoperability and clinical content standards that facilitate the meaningful movement of data between systems by allowing data to be captured and expressed in a common way. The third challenge is to connect the data from these Point of Care Systems to the research community so that promise of a learning, evidence-based health system

can be reached.

Canada has made excellent progress in establishing EHR architecture and interoperability standards that can guide the sharing of clinically relevant information among providers, between providers and their patients, as well as across the clinical and research divide. However, anyone who has worked with the interoperability standards knows that we still have considerable work to do in areas related to standardizing the actual clinical content, particularly for the data required to report and measure outcomes.

Understanding outcomes requires data on everything about the patient's health profile and the particular health issue(s) that were treated, the treatment that was considered, the treatment that was ultimately delivered, the status of the health issue(s) after the treatment, and the measures of health and wellness that would constitute a healthy outcome (e.g. mobility, ability to complete daily living tasks, return to work, etc.).

The problem is that concepts like "health profile" and "treatment" are incredibly broad. For example a treatment could include a range of sub-categories from procedures (e.g. surgery) to medications (e.g. a prescription for amoxicillin) to something as simple as an order for bed rest. Each of these sub-categories often has multiple ways of being captured through a variety of terminology and classification standards.

What types of standardized data are need to better understand outcomes?

A comprehensive list of the data required to understand outcomes is well beyond the scope of this article, but the following

list of data categories illustrates several ‘categories’ of health care from which data is required:

- Patient identification data to associate data from various systems in the EHR with the correct patient;
- Health condition data (e.g. diagnoses, signs, symptoms, lab results, assessments, vital signs, risk factors, etc.);
- Treatment data (e.g. procedures, services, prescriptions, lab orders, medical devices, etc.);
- Treatment indication data to link the treatment provided to the reason for the treatment;
- Treatment compliance data to know if the patient followed through with treatments for which they were in control (e.g. rest, diet, medication use, etc.); and
- Outcome objectives data to understand if the goal of the treatment was met (improved mobility, reduced tumor size, etc.).

If a person has a “healthy” outcome, is that enough?

Simply put, no. Patients, tax payers, and policy makers want to know if there were alternative treatments that could have led to healthier outcomes or the same outcomes but with less cost, time, pain, and/or inconvenience to the patient.

The preceding question is central to evaluating the therapeutic effectiveness of treatments, which is a key reason why stakeholders of the health care system are united in their desire to better understand outcomes and, more importantly, the connection between those outcomes and the care journey that preceded them.

Evaluating the therapeutic effectiveness of various treatments inherits and magnifies the challenges of the previous outcome data issues because it requires a considerable amount of patient anonymized data (i.e. covering a wide enough population over a long enough period of time) to be available to researchers and policy makers. Ultimately the interoperability mechanisms and underlying data content standards have to respond to the needs of the nested learning loops of the health system and the connection between individual care and evidence based research that is so critical to driving “healthy” outcomes.

How will a standards-based interoperable EHR enable “healthy” outcomes?

The EHR as defined by Canada Health Infoway will provide a:

“...private, lifetime record of an individual’s key health history and care, providing authorized healthcare professionals with real-time access to patients’ test results, past treatments and medication profiles.”

In essence, the EHR will enable providers to have a more complete picture of their patient’s health history to help inform decisions regarding optimal treatment. In addition, EHR data – when coupled with other data sources such as National Health Expenditures – has the potential to provide researchers and policy makers with the data they need to evaluate the therapeutic effectiveness of everything from emerging medical technologies to routine surgical interventions.

eHealth Interoperability Showcase: Seamless Care through Seamless Systems

eHealth Conference attendees interested in healthy outcomes should drop by the Interoperability Showcase for a tour to see how market ready applications are capable of sharing data using pan-Canadian EHR standards to ultimately achieve better outcomes. The Interoperability Showcase clinical scenarios will demonstrate patient and provider uses of a wide range of technology such as Personal Health Records, Telehealth, Personal Medical Devices, and EMRs that interact with the EHR to support better outcomes for patients with Chronic Diseases.

¹ World Health Organization, Health Glossary, accessed from http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf on April 20, 2011.

