

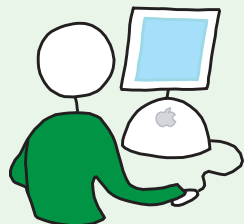
# Enhancing care and facilitating research through the use of translational medicine ontologies

The current health IT ecosystem has limited support for interoperability of electronic health records for purposes of translational medicine. These limitations may originate in organizational process issues, current data standards, vendor-specific EHR implementation approaches, or security and privacy considerations as well as from simple technical interoperability considerations. This issue limits the ability of researchers to utilize data from EHRs and the ability of physicians to locate and apply optimal treatment options which may benefit their patients and personalize therapy.

Community adoption of a standardized translational medicine ontology offers a solution. A shared ontology automates federation across health records, Linked Data, i.e. it offers a compatibility layer for existing systems, solves issues associated with heterogenous health record formats, and creates a “bank” of candidates/patients/ research subjects that are easily identified and classifiable/stratified in any way imaginable for allocation to trial or study relating to specific disease mechanism or trial pharmaceutical agent.

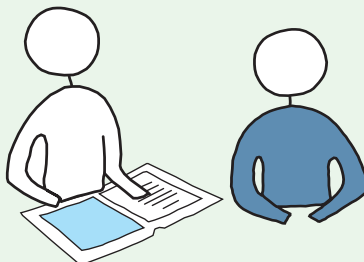
Process

1



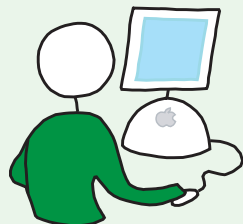
Individual researchers and research groups interested in patient characteristics, e.g. availability of specify “phenotype” for trial participation, real life data about co-morbidity (for epidemiology research), signal detection (pharmacosurveillance)

2



Physicians have the opportunity to view treatment options, “Linked Data” and available trials while interacting with the patient at the point of care. With patient permission, the physician may elect to submit the patient EHR for consideration for trials and treatments or communicate directly with researcher. This can be used to design personalized medicine, or support the advancement of knowledge with respect to disease/disorder in question.

3



Research groups access the federated collection of EHRs to identify sustainable design (inclusion/exclusion) criteria and candidates for a clinical study. They may search the existing set of available EHRs, recruit candidates from physicians based on researcher-defined criteria, or connect record sets to their trial management application.

4



Physicians improve the quality of care through timely access to treatment history and related information (Linked Data) through shared access to the ontology-driven translational medicine system.

Technology

Applications specifically designed for researchers enable interaction with the system, including tools to access the ontology, create or design study groups, EHR data and semantically Linked Data for the purposes of research into disease characterization and progression and prospective study relating to individual field.

Existing EHR systems would only need minor modifications to accommodate the additional interactive elements required to support the translational medicine ontology.

The researcher-oriented application would provide a single gateway to the federated set of EHRs based on the shared ontology and pre-defined security and privacy rules.

The Semantic Web-driven “backbone” of the system is designed to integrate into existing care systems and Linked Data.