



OHDSI on FHIR Platform Development with OMOP CDM Mapping to FHIR Resources

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Background

Fast Healthcare Interoperability Resources (FHIR) is a rapidly growing health information exchange standard that defines a specification of API based exchange of health information content in a standard, simplified data model to facilitate information sharing among health information systems and tools such as EHRs, PHRs, payer systems, personal medical devices, etc.

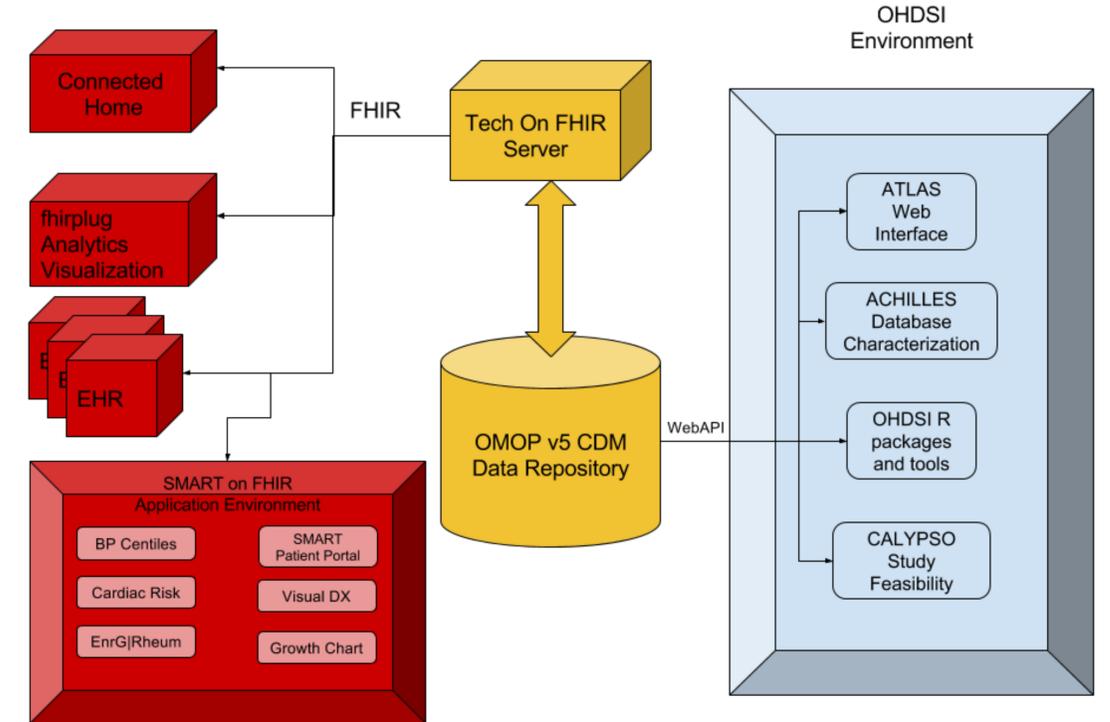
Observational Medical Outcomes Partnership (OMOP) provides similar capabilities for the sharing of health research data using a common data model for relational databases.

Each technology has been developed to serve different needs. By combining the two environments, we create a research and development platform that supports both data science and application development research.

This poster presents our mapping of OMOP CDM to FHIR resources and our construction of a platform to serve end-to-end needs from data science to patient care.

System Architecture

OHDSI on FHIR Platform v1.0



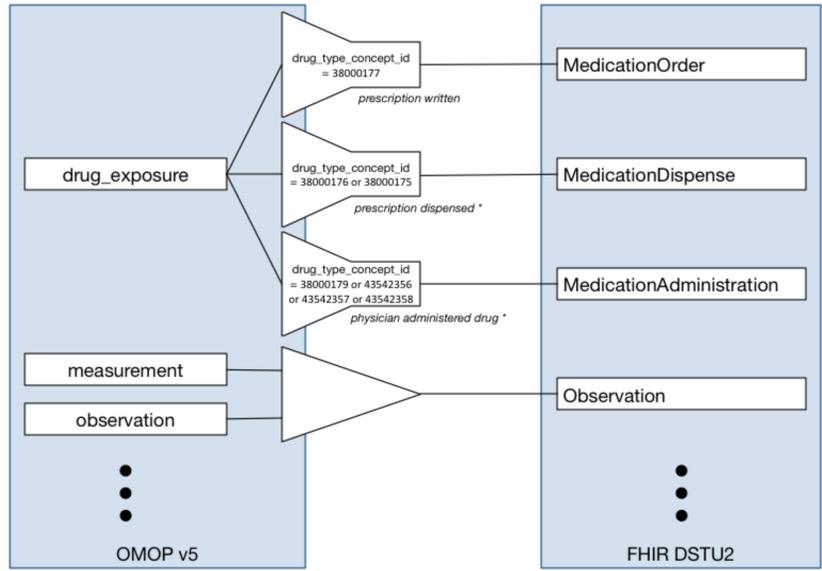
Methods

OMOP v5 to FHIR: Tables considered for mapping are *care site, concept, condition_occurrence, drug_exposure, measurement, observation, person, procedure_occurrence, provider, visit_occurrence, device_exposure*.

FHIR to OMOP v5: Resources considered for mapping are *Location, Medication, Condition, MedicationOrder, MedicationDispense, MedicationAdministration, Observation, Patient, Procedure, Practitioner, Encounter, Device*

Mapping requires decomposition or merging of tables.

FHIR contains other information, such as workflows and processes, which is ignored for the current version of mapping.



Conclusions

While we could not populate all the FHIR data elements from OMOP v5, the data elements that we have mapped from the OMOP CDM were sufficient to provide meaningful clinical data to application developers. A few challenges left to be resolved are:

- Mapping condition or observation information to AllergyIntolerance resource. We have decided to use RxNORM codes to identify allergy information but there is no guarantee that we can retrieve complete allergy-related information.
- Decomposition of FHIR observation resources to the OMOP Observation and Measurement table. FHIR considers both observable and measurement data elements as observation resources.
- Vocabulary differences between FHIR and OMOP v5. We believe that we can make a more efficient mapping if we can further reconcile these differences. For example, some FHIR applications incorporate the coding system URI to recognize which coding system is defined in the FHIR resource. Similar URI information is available in the OMOP vocabulary reference. However, these are different. Using the same URI could be helpful for application development.

Our future work is to continuously enhance our mapping strategy and improve the OHDSI on FHIR platform. Furthermore, we will further identify any data mapping gaps and work with both working groups to close them.