Overview of Use of HL7 CDS Hooks for Pharmacogenetics (PGx)

In seeking to enable genomic medicine at scale while ensuring equitable implementation, a promising approach that can be adopted by the Genomics-Enabled Learning Health Systems (**gLHS**) Network is to strategically leverage interoperability standards. The premise is that even if much of the gLHS Network's activities are conducted within academic health systems that use high-end EHR systems, lower-resourced care settings could still benefit if we use standards-based interoperability frameworks that currently are, or will likely be, widely adopted across the healthcare ecosystem. While technology will never be a silver bullet for addressing health inequities, its judicious use is one of the critical factors to help mitigate the problem. The University of Utah (UU) has deep expertise in standards-based interoperability. As such, this will be a key area of contribution for the UU and its Genomics Learning in the Utah Ecosystem (**GLUE**) Center.

Of particular interest are interoperability standards that the U.S. Office of the National Coordinator for Health IT (**ONC**) requires all certified EHR systems to follow. These mandated standards include the Health Level Seven International (**HL7**) Fast Healthcare Interoperability Resources (**FHIR**) standard for data exchange; the HL7 Substitutable Medical Applications Reusable Technologies (**SMART**) standard for app integration into the clinical workflow; the concurrent use of FHIR and SMART known as SMART on FHIR, which must be supported for both provider-facing and patient-facing digital tools; and the US Core Data for Interoperability (**USCDI**), which defines the minimum set of FHIR data that must be supported by EHR systems.[1] In addition, the FHIR-based HL7 Clinical Decision Support (**CDS**) Hooks standard, which enables integration of externally curated alerts and reminders into the EHR,[1] was proposed by the ONC in April 2023 as a requirement for certified EHR systems.[2] Anticipating a regulatory mandate, major EHR vendors including Epic and Allscripts have already introduced CDS Hooks into their products, and many other EHR vendors including Cerner, NextGen, and eClinicalWorks are actively working to support CDS Hooks.[2] The GLUE team is actively engaged as national leaders in the development and implementation of these standards.

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