201934 Standardizing Capture of Social Determinants of Health

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Summary

Standardizing capture and analysis of social determinants of health requires collaboration between standards developers and industry to avoid duplication and bias, and align standards with industry need and work flows.

Audience

Clinical, Policy/administration, Research/academic, Technical

Learning Objectives

1. Use case-based approach to standardizing a new domain
2. Collaborative efforts to align international standards for U.S. use cases
3. Best practices for avoiding duplication in capture and analysis of SDoH

Abstract

Introduction. The American Medical Association's Integrated Health Model Initiative (IHMI) is a collaborative effort that supports a continuous learning environment to enable interoperable technology solutions and care models that evolve with real-world use and feedback. IHMI is focused on improving the accuracy and clinical relevance of health data, with a focus on information generated outside of the clinic, including social determinants of health. Developing actionable global standards to support local use cases requires careful analysis of real-world workflows and collaboration between standard developers.

Challenge. Market demand for social determinants of health data is increasing due to a wide recognition that their use can deliver improved clinical and economic outcomes for patients and the health care delivery system. Social determinants data standards are currently available; some concepts have been coded in terminology standards like LOINC, SNOMED CT and ICD-10, but those codes were added by independent, non-coordinated efforts. Payers and others are using (and have the opportunity to use) these data for a number of use cases including optimizing the performance and use of referral services for chronic disease management.

When payers seek to improve clinical and economic outcomes in chronic disease management, they often launch programs or initiatives that examine member patient and provider populations looking for clues about performance that could be improved with the appropriate attention and support. In addition to administrative claims and clinical data that these efforts may collect from members, payers can use such data to flag patients who may be more likely to benefit from social support services, care intensification and similar interventions. Geographic location, family and social connectedness, financial and housing security, level of education, access to transportation and other similar characteristics can be used to enhance risk prediction. Those interventions can then be targeted more precisely at patients more likely to benefit from them, increasing effectiveness.

Due to this and other use cases, health informatics and interoperability stakeholders have begun to populate existing standards with social determinants information categories and concepts. ICD-10 and its United States edition ICD-10-CM contains a large number of social determinants categories and concepts in its Z codes1. LOINC, a terminology standard focused on the identification of health measurements and observations, contains numerous social determinants concepts as well as validated instruments used to obtain social determinants information from

patients2. SNOMED CT, a general health care terminology standard, contains concepts related to residence, living situation and living conditions3.

HL7 FHIR is becoming the de facto standard for organizing health care data. A scan of available FHIR resources, profiles, implementation guides and related initiatives conducted in March 2019 did not find any FHIR resources or profiles specific to social determinants data. To the extent that those concepts were modeled in FHIR, the content was distributed among multiple resources and profiles considered part of the base FHIR specification, with a small amount of additional relevant content in profiles from implementation guides published by HL7 or its affiliates including the FHIR Foundation.

Lack of coordination between standards and initiatives and thus the content in the various standards have and are being developed and maintained in an uncoordinated manner. This has resulted in a lack of consistency in the use of categories, concept and value set definitions and other details that differ among examples of current social determinants standards work. FHIR in its current form is not usable for specifically organizing social determinants data, but an effort to encapsulate the best of current predicate work into one standard will help set the stage as FHIR is adopted for the increased use of standard definitions and structures for social determinants content in health care.

Proposal. A diversity of SDoH assessment tools and terminologies to capture results have been developed over the last ten years. Standardizing both assessments and data capture for improved ability to analyze data across systems and populations will require a collaborative approach, sourcing use cases and work flows from industry, and aligning efforts of standards developers in the terminology and information modeling spaces.

To that end, AMA IHMI will contribute the resources and expertise of the American Medical Association to key organizations leading SDoH standardization.

Through the Gravity Project4, IHMI is leveraging:

1.its collection of industry collaborators to develop use cases and understand work flows,

2.staff terminology experts to analyze standards, identify duplication/gaps, and propose solutions, and

3.clinicians and health equity experts to ensure the clinical relevance of selected terminologies, and vet assessment tools for bias.

Through HL7 and FHIR Acclerator5, IHMI is leveraging:

1.staff clinical informatics experts to develop semantically consistent FHIR profiles, resources and implementation guides,

2.clinicians and health equity experts to ensure the clinical relevance of terminology value sets and information models, and vet information structures and analytic tools for bias, and

3.Its collection of industry collaborators to pilot SDoH FHIR profiles in real-world settings, conduct research on the efficacy of their use, and iterate to ensure accuracy and keep pace with rapidly evolving medical practice.

Appendix.

Sample SDoH Use Case:

A patient with multiple co-morbidities is admitted to the hospital due to heart failure. As part of the routine assessment he is evaluated for SDOH using the PRAPARE screening tool. The patient is identified as being unable to access food and in particular follow a low-sodium diet which is necessary to help control heart failure. This data is sent to the health plan, in particular the association between the food insecurity and the exacerbation of the medical condition. This triggers an alert that the patient is eligible for a nutrition consult and a social work consult. These two consults document the patient's condition including the SDOH associated with the exacerbation of heart failure. These codes are included in their notes and he patient is determined to be eligible for a program that delivers meals to the home with the appropriate specifications set by the nutritionist. The food delivery program is able to submit the codes that demonstrate the service the patient is receiving. This data is fed to the health plans systems which are available in a provider portal. The patient's primary care physician can access the portal and confirm that the patient is able to access food that is appropriate for his medical condition.

 Sample Set of Existing Terminology to Capture Access to Food6

DomainScreening

Question panel name LOINC codes for question panelsSNOMED codes for question panelsSNOMED screening procedure codes

FoodBRFSS

AHC/SEEK (Hunger Vital Sign)

PhenX-Healthy food environments (Perceived Availability of Healthy Foods Scale) 77234-3

88121-9

63024-4 709478004 Assessment of food supply (procedure)

DomainAssessment/Diagnosis

ICD-10-CM (Domain-specific codes only--please see Table 2 for additional mapped ICD-10-CM codes)SNOMED

ICD-10-CM Parent Code AXX.XICD-10-CM Child Codes AXX.XX, AXX.XXXSNOMED Parent codes (if also a domain-specific assessment/diagnosis)SNOMED Child codes

FoodE63.9 Nutritional deficiency, unspecified

Z59.4 Lack of adequate food and safe drinking water445281000124101 Nutrition impaired due to limited access to healthful foods

286441005 Able to obtain food

286443008 Does obtain food

733423003 Food Insecurity

706875005 Insufficient Food Supply

286442003 Unable to obtain food

286445001 Difficulty Obtaining Food

286444002 Does not obtain food

DomainTreatment/Intervention

Referral codesCounseling/Education codesProvision of Services/Orders codes

SNOMED codesCPT codesSNOMEDCPT codesSNOMED CPT

Food713109004 Referral to community meals service

384811003 Meals on wheels program management410293007 Food education, guidance and counseling

385767005 Meals on wheels provision education

385766001 Meals on wheels provision assessment 410388007 Food surveillance

710925007 Provision of food

183681001 Arrange meals on wheels

Reference Documentation

1. Centers for Disease Control and Prevention. International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM). [Online] 2019. https://www.cdc.gov/nchs/icd/icd10cm.htm.

2. Regenstrief Institute. Social Determinants of Health. LOINC. 2019. [Online] https://loinc.org/sdh/.

3. Representing Residence, Living Situation, and Living Conditions: An Evaluation of Terminologies, Standards, Guidelines, and Measures/Surveys. Winden, Tamara J., Chen, Elizabeth S. and Melton, Genevieve B. s.l. : AMIA Annual Symposium Proceedings, 2016.

4. University of California, San Francisco. Gravity Project. SIREN 2019. [Online] https://sirenetwork.ucsf.edu/TheGravityProject.

5. HL7 International. FHIR Accelerator. 2019. [Online] http://www.hl7.org/about/fhiraccelerator/.

6. University of California, San Francisco. Gravity Project. Compendium of Medical Terminology Codes for Social Risk Factors. A. Arons, S. DeSilvey, C. Fichtenberg, & L. Gottlieb. 2018. [Online] https://sirenetwork.ucsf.edu/tools-resources/mmi/compendium-medical-terminology-codes-social-risk-factors.