Multi Domain Social Determinants of Health ICD-10-CM Application
The Gravity Project: Consensus Driven Standards on Social Determinants of Health
December 4th, 2020

Background

Over the last decades a growing literature has clarified the health, and health cost impacts of the social determinants of health. This has sparked initiation and dissemination of national recommendations and projects. However, as we advance to collectively gain insight into social risks and social interventions, the terminology we use to represent these concepts lags behind. In 2017 national experts and thought leaders gathered in Washington, D.C. and identified a three-step process to address terminology needs: collate existing terminology, assess the fitness of existing terms and collaboratively fill and address gaps, and craft a path for data standards to ground this work. Out of this, the Gravity Project was born.

The Gravity Project, convened in 2019, is a national, public, consensus-based community charged with developing data elements, and data standards for the social determinants of health by leveraging the insights of subject matter experts and key stakeholders across the medical and social care community (patients, providers, payers, community-based organizations, vendors, and government). The Project’s terminology recommendations span all U.S. applicable coding systems: ICD-10-CM, SNOMED CT, LOINC, and CPT®/HCPCS when appropriate. (For review of the Gravity Project’s process, principles, members, and full deliverables, please follow the link in “Resources” below.)

In order to frame its work, the Gravity Project conceptualizes concentric rings of determinants. At the center are concerns driven by a person’s own economic resources, or personal and social history. Next come risks of neighborhood resources and characteristics, including utilities, groceries, and neighborhood safety. The initial phase of Gravity’s work focused principally on the risk imparted by lack of personal resources: food insecurity, homelessness, housing instability, inadequate housing, transportation insecurity, and general financial insecurity. However, concerns of less than high school education and veterans were also addressed. In early 2021, the Gravity Project will focus on social connection and domains of interpersonal violence. In later 2021, the Project will focus on elements of digital equity and neighborhood/environmental factors.

The following presents the Gravity Project’s first ICD-10-CM submission. This submission integrates the requests of two previous social risk submissions to the committee from American Medical Association/UnitedHealthcare (AMA/UHC) (multi-domain) and BlueCross BlueShield of Vermont (BCBS VT) (food insecurity), because elements of each have been considered as the Gravity Project progressed.
ICD-10-CM Approach

In every recommendation for using ICD-10-CM to capture the agreed upon data elements the Gravity community has carefully considered the degree of risk associated with each domain, its subdomains, and calculations of domain severity (mild – severe) as presented in the peer-reviewed literature. The reason for this is threefold.

- First, to aid on the ground workers in triaging resources to those most in need, anticipating the aim of analyzing the effects of interventions.
- Second, to anticipate the use of claims data to predict person-level risk within value-based health care and risk adjustment.
- Third, to align with development and dissemination of national social risk quality metrics and Healthy People 2030 Objectives.

Driven by the strong representation of ground level providers and organizations in the Gravity community, and collaboration with colleagues at the American Health Information Management Association (AHIMA) and the American Hospital Association (AHA), the Gravity Project takes care to recommend revisions to the classification that are easily operationalized. All ICD-10-CM recommendations are aligned with standardized screening questions and answers such as PRAPARE, the Accountable Health Screening Tool, or the Health Leads Screening Tools.

Furthermore, it is crucial to highlight that within the evidenced-based distinction between personal and neighborhood or environmental risk, the Gravity Project recommends that the Z58 category for classifying problems related to physical environment, be added in order to form the logical root of neighborhood and environmental domains. The Committee will see this initially in our recommendations for “Inadequate drinking water supply” resulting from the splitting of current Z59.4 “Lack of adequate food and safe drinking water.” Although this is the first domain we recommend aligned with this root, we can anticipate more as we work on other neighborhood domains in 2021.

Lastly, this submission is comprehensive, including new subcategories (example: Food insecurity and Housing instability) and subclassifications (example: Severe food insecurity and “Housing instability, housed, homelessness in past 12 months” respectively). This aligns with the peer-reviewed literature and reflects broad stakeholder requests.

We are grounded in the criticality of having codes for the missing core domains to be able to capture the data at the highest level of specificity. However, should it be the wish of the Committee to start with the subcategory level, then test, evaluate, and revisit, the Gravity Project, supported by federal partners, has a committed forum for this work with its broad coalition of pilot sites. Additionally, we are working with our SNOMED CT partners to build these concepts and further subdomains into SNOMED CT terminology.
Gaps, Recommendations, and Rationales

Education (Less than a high school degree)- although current ICD-10-CM contains general concepts of literacy and underachievement there is, at present no way to distinctly represent the known risk imparted by inability to attain a high school diploma or equivalent, independent of literacy.

Homelessness- although current ICD-10-CM contains a code for homelessness, there is no distinction between sheltered and unsheltered homelessness. COVID discharge planning has given us a critical use case on why this distinction is necessary from both a treatment plan and risk perspective.

Housing Instability- there is a vast literature representing the health risks of economically driven housing instability for individuals and families. Yet, there are no specific codes to define this broad risk nor the specific risk of subtypes of housing instability that segue into homelessness.

Food insecurity- as stated in the previous VT BCBS submission, the health risks and health costs associated with food insecurity are vast. Furthermore, as evidenced by the research of the USDA, risk increases as severity of food insecurity increases. Yet, there is no specific code for food insecurity or its strata of severity. Furthermore, we recommend revising the description of Z59.4 from “Lack of adequate food” into “Food insecurity”. Lack of adequate food could represent both food insecurity (lack of food because of limited economic resources) and neighborhood food access concerns (lack of food because of no groceries in neighborhood). We will recommend a term for neighborhood food access in 2021.

Inadequate drinking water supply- as mentioned above, by suggesting a necessary split of Z59.4, the Gravity Project needed to address the placement of “Inadequate drinking water supply.” This could be placed within Z59 as originally suggested in the VT BCBS submission. However, this is not the most logical placement. In WHO’s ICD-10 this concept is within Z58. The Gravity Project recommends adding Z58 to ICD-10-CM in order to be the base for Inadequate drinking water supply and future neighborhood and environment domains.

Transportation Insecurity- this domain represents both health risks and management complexities as systems consider transportation barriers to care. The Gravity Project proposes an ICD-10-CM code for transportation insecurity.

Financial Insecurity and Material Hardship- Currently ICD-10-CM contains terminology for low income and poverty. However, the health risks driven by limited financial resources are not limited to low income or impoverished individuals. Financial Insecurity (“A subjective evaluation of one's current financial situation that includes perceived inadequacy of financial resources and financial concerns or worries, including expectations regarding one's future economic situation.”) and the more severe Material Hardship (“unable to obtain basic needs”) can be considered broad terms that identify all economic driven social risk. A clear outcome of Gravity’s work was the understanding that there is a need for a general concept for financial insecurity and material hardship as the health risks and management needs of each are clear in
the peer-reviewed literature and excluded from the individual domains such as food insecurity, housing instability, or transportation insecurity. Furthermore, it is critical to define risk beyond low income and poverty thresholds. These two concepts also streamline the granular recommendations of the UHC/AMA submission. Akin to transportation insecurity, we recommend two codes only.

**Socioeconomic Risk Counseling** - we highlight the need for a specific counseling code to represent the effort of assessing and patient centered goal setting required to address socioeconomic risks.

**Non-compliance and financial hardship** - based on existing Z91.120 Patient’s intentional underdosing of medication regimen due to financial hardship, we recommend correlating codes within the “dietary” and “other medication treatment and regimen” roots. Use cases for these include the inability to follow diabetes nutrition recommendations (the risk of this is well documented in the peer-reviewed literature) and the rationing of office visits and orders because of underinsurance.

**Veterans** - There is no ICD-10-CM code to represent veteran status. The existing code Z91.82, personal history of military deployment, is often incorrectly applied (one can be a veteran and never be deployed). The need for an ICD-10-CM code to capture the data element, personal history of military service, is accentuated by dissemination of community care of Veterans through the “Veterans Choice Program.” If accepted a map from the existing SNOMED CT “Served in armed forces” concept to the new code would be possible.

**TABULAR MODIFICATION**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z55</td>
<td>Problems related to education and literacy</td>
</tr>
<tr>
<td>Z55.5</td>
<td>Less than a high school diploma</td>
</tr>
<tr>
<td></td>
<td>Excludes1: disorder of psychological development (F80-F89)</td>
</tr>
<tr>
<td></td>
<td>Add No high school equivalency (GED)</td>
</tr>
<tr>
<td></td>
<td>Add Did not graduate high school</td>
</tr>
<tr>
<td></td>
<td>Add Less than high school graduate (LTHSG)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z58</td>
<td>Problems related to physical environment</td>
</tr>
<tr>
<td>Z58.6</td>
<td>Inadequate drinking-water supply</td>
</tr>
<tr>
<td></td>
<td>Excludes1: effects of thirst (T73.1)</td>
</tr>
<tr>
<td></td>
<td>Lack of safe drinking water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z59</td>
<td>Problems related to housing and economic circumstances</td>
</tr>
<tr>
<td>Z59.0</td>
<td>Homelessness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excludes2: problems related to upbringing (Z62.-)</td>
</tr>
</tbody>
</table>
New code Z59.01 Sheltered homelessness
Add Living in a shelter (motel, temporary or transitional living situation, scattered site housing)
Add Doubled up

New code Z59.02 Unsheltered homelessness
Add Residing in place not meant for human habitation (cars, parks, sidewalk, abandoned buildings)
Add Residing on the street

New code Z59.09 Homelessness unspecified

Revise Z59.4 Lack of adequate food and safe drinking water
Delete Inadequate drinking water supply
Excludes 1: effects of hunger (T73.0)
inappropriate diet or eating habits (Z72.4)
malnutrition (E40-E46)

New code Z59.41 Mild food insecurity
New code Z59.42 Moderate food insecurity
New code Z59.43 Severe food insecurity
New code Z59.49 Food insecurity, unspecified

Z59.8 Other problems related to housing and economic circumstances
Delete Foreclosure on loan
Delete Isolated dwelling
Delete Problems with creditors

New subcategory Z59.81 Housing instability, housed
Add Behind on rent or mortgage
Add Unwanted multiple moves in the last 12 months

New code Z59.811 Housing instability, housed, with risk of homelessness
Add Imminent risk of homelessness

New code Z59.812 Housing instability, housed, homelessness in past 12 months

New code Z59.819 Housing instability, housed unspecified

New code Z59.82 Transportation insecurity
Add Excessive transportation time
Add Inaccessible transportation
Add Inadequate transportation
Add Lack of transportation
Add Unaffordable transportation
Add Unreliable transportation
Add Unsafe transportation

New code Z59.86 Financial insecurity, not elsewhere classified
Add Bankruptcy
Add Burdensome debt
Add Economic strain
Add Economic stress
Add Financial strain
Add Financial stress
Add Foreclosure on loan
Add Medical cost burden
Add Money problems
Add Problem with creditors
Add Running out of money
Add Unable to make ends meet
Add Excludes2: material hardship, not elsewhere classified

New code Z59.87 Material hardship, not elsewhere classified
Add Material deprivation
Add Unable to obtain adequate clothing
Add Unable to obtain adequate utilities
Add Unable to obtain adequate childcare
Add Unable to obtain basic needs
Add Excludes2: financial insecurity, not elsewhere classified (Z59.86)

Z59.88 Other problems related to housing and economic circumstances
Add Isolated dwelling

Z71 Persons encountering health services for other counseling and medical advice, not elsewhere classified
Excludes2: contraceptive or procreation counseling (Z30-Z31)
Sex counseling (Z70.-)

Z71.8 Other specified counseling
New code Z71.85 Encounter for counseling for socioeconomic factors

Z91 Personal risk factors, not elsewhere classified
Excludes2: contact with and (suspected) exposures hazardous to health (Z77.-)  
exposure to pollution and other problems related to physical environment (Z77.1-)  
female genital mutilation status (N90.81-)  
personal history of physical injury and trauma (Z87.81, Z87.82-)  
occupational exposure to risk factors (Z57.-)  

Z91.1 Patient’s noncompliance with medical treatment and regimen  
  Z91.11 Patient’s noncompliance with dietary regimen  
    New code  
    Z91.110 Patient’s noncompliance with dietary regimen due to financial hardship  
    New code  
    Z91.118 Patient’s noncompliance with dietary regimen for other reason  
    New code  
    Z91.119 Patient’s noncompliance with dietary regimen due to unspecified reason  
  Z91.19 Patient’s noncompliance with other medical treatment and regimen  
    Nonadherence to medical treatment  
    New code  
    Z91.190 Patient’s noncompliance with other medical treatment and regimen due to financial hardship  
    New code  
    Z91.198 Patient’s noncompliance with other medical treatment and regimen for other reason  
    New code  
    Z91.199 Patient’s noncompliance with other medical treatment and regimen due to unspecified reason  

New code  
Add  
Z91.85 Personal history of military service  
Excludes2: Personal history of military deployment (Z91.82)
Resources:

General-
- Screening Tools:
  - Health Leads, "Health Leads Screening Toolkit" - [https://healthleadsusa.org/resources/the-health-leads-screening-toolkit/](https://healthleadsusa.org/resources/the-health-leads-screening-toolkit/)

Education-

Homelessness-

Housing Instability –

Food Insecurity-

Transportation Insecurity-

• AHA “Social Determinants of Health Series: Transportation and the Role of Hospitals”

**Financial Strain-**


**Material Hardship-**


**Veterans-**