Codifying Social Determinants of Health: a Gap in the ICD-10-CM

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If you have ever found yourself experiencing R45.4 (irritability and anger) in response to scrolling through endless rows of diagnosis codes, you are not alone: navigating medical billing and coding can be equal parts frustrating and mystifying. The sheer number of International Classification of Diseases, Clinical Modification (ICD-CM) diagnosis codes—which approaches 70,000 as of the tenth revision¹—can feel overwhelming. Some codes, like V91.07 (burn due to water-skis on fire), are so absurdly specific it is hard to imagine them ever being used in clinical practice. Meanwhile, social determinants of health (SDOH), which are major contributors to quality of life and disparities in health outcomes, are glaringly underrepresented in this plethoric catalog.

The first comprehensive system for classification of diseases was adopted in 1983, originally known as the International List of Causes of Death.² Over time, it was transformed by the World Health Organization (WHO) into the ICD, which contains a list of codes defining various diseases and health-related conditions. Currently in its tenth revision (ICD-10), an eleventh edition is set for release in 2022. Further modifications are made each year by the National Center for Health Statistics (NCHS), the federal agency responsible for adapting the system for clinical practice in the United States.

One of the major criticisms of the ICD system, particularly in its tenth revision, is that it is far too complex to be practical. This is perhaps best illustrated by any number of amusing diagnosis codes available for clinical use. For example, ornithologists and herpetologists alike can rest assured that their workplace-related injuries will be accounted for, with such codes as W61.5 (contact with goose); W61.11 (bitten by macaw); W59.22 (struck by turtle); and T63.81 (toxic effect of venomous frog). For extreme thrill seekers, codes for sports-related injuries are also available, like V97.33 (sucked

into jet engine); X52 (prolonged stay in weightless environment); and V94.810 (civilian watercraft involved in water transport accident with military watercraft). And for those who maintain somewhat tamer hobbies, there is always Y93.D (activities involving arts and handcrafts).

While the above examples are laughable, if nothing else, we can take solace in the fact that the ICD-10-CM classification system offers a degree of specificity that allows us to fully represent the diversity of illnesses and conditions impacting our patients, which makes the undervaluing of SDOH among this comprehensive list even more profound. The WHO defines SDOH as “the conditions in which people are born, grow, live, work, and age”.³ They are the non-medical factors that influence both quality and quantity of life, such as finance, nutritious food, safe work and living environments, sustainable housing, transportation, education, community resources, and social support. There is a subsection within the ICD-10-CM known as Z codes, which represent various reasons for healthcare encounters, with categories Z55–Z65 used to designate “health hazards related to socioeconomic and psychosocial circumstances”.¹ This is where codes for SDOH are currently housed; however, accounting for less than 1% of the nearly 70,000 codes in the ICD-10-CM, they are grossly underrepresented proportional to their significant impact on health outcomes.

SDOH have pervasive effects on health and wellbeing.³ In the United States, more than 1 in 10 live in poverty. The same number lack health insurance and an even greater proportion are underinsured. In 2016, 12.3% of Americans suffered from inadequate access to food; of those in low-income households, nearly a third were food insecure. Chronic homelessness affects more than half a million annually, while millions of households are severely cost burdened. These social determinants, among numerous others, have significant adverse impacts on health, both directly and indirectly. In fact, while the provision of medical care makes up the vast majority of healthcare expenditures in the United States, it is estimated to contribute less than 20% to the modifiable impact on health outcomes; meanwhile, social and economic factors, personal behaviors, and physical environment collectively account for more than 80%.⁴ Moreover, SDOH are a major contributor to health disparities, with certain groups suffering from disproportionately higher rates of social and economic burdens. This is a consequence of generations of systemic racism, exclusion, and limitations in access and opportunities based on race and

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ethnicity, sexual orientation, gender identity, socioeconomic status, physical and mental ability, and even geography.⁵ Addressing SDOH would lead to a more equitable provision of healthcare in our country; the first step in doing so involves recognizing and cataloguing the extent of the problem.

SDOH are one of the five core measures of the Healthy People 2030 initiative, a nationwide health promotion and disease prevention program.³ Yet they are all but missing from the ICD-10-CM, the global standard for cataloging statistics on morbidity and mortality and the system responsible for reimbursement and resource allocation of nearly three-quarters of the world's healthcare expenditures.² Increasing the number and granularity of diagnosis codes would not only allow for better identification and tracking of inequities and outcomes relating to SDOH, it would also improve our ability to address these issues via referrals to appropriate social/governmental services. Many of the existing codes for SDOH are far too generic, such as Z59.8 (low income), which encompasses a wide array of financial issues, each requiring a distinct solution. Others, like Z59.9 (living rough), are simply unhelpful. Several organizations—including the American Medical Association, UnitedHealthcare, and the American Hospital Association—have petitioned to expand Z codes to capture a broader range of SDOH and with greater specificity (Table 1).⁶

But the problem goes beyond just a paucity of codes: due to lack of standardized screening tools as well as inconsistent reimbursement, Z codes are also rarely used. A 2017 study of nearly 34 million Medicare Fee-for-Service beneficiaries found that only 1.4% had claims using Z codes.⁷ When you consider the breadth of issues these codes are meant to capture, it is clear they are not only lacking in abundance and specificity but also being vastly underutilized. Fortunately, Z codes can be assigned using documentation from *any* clinician on the healthcare team, or even based solely on patients' self-reported social needs.¹ This makes Z codes more accessible than typical ICD codes, but we need to implement standardized assessment tools and train our interprofessional healthcare teams to use them. Moreover, clear reimbursement guidelines must be established to ensure consistent utilization.

In a classification system so extensive that turtle-related injuries and combustible water-skis have found a home, there is no excuse for SDOH—the largest contributor to modifiable health outcomes—to be delegated to a tiny, underutilized subsection of an otherwise massive catalog. If the concern is size and complexity, then perhaps rather than codifying injuries from every subspecies of exotic bird and reptile, we should instead use that space for the social factors that are disproportionately and unjustly impacting the health of minorities and vulnerable groups. While the ICD-11 has already been finalized, ICD-CM is updated annually, so there is ample opportunity to make changes—if we lend support to organizations spearheading them. And although increasing the quantity, granularity, and utilization of Z codes for SDOH will not ultimately fix a healthcare system rife with inequity, it is a

Table 1 Selection of Existing and Proposed Z Codes for Various Categories of Social Determinants of Health

ICD-10-CM Z code categories	Sample of existing Z codes	Proposed Z codes*
Z55 Education and literacy	Illiteracy/low-level literacy School unavailable/unattainable Underachievement in school	Less than a high school degree Limited English proficiency Low health literacy
Z56 Employment	Unemployment Threat of job loss Stressful work schedule	Unemployed, seeking work Unemployed, not seeking work Employed part time or temporary On permanent disability
Z57 Occupational exposures	Noise Tobacco smoke Toxic agents	Ergonomic/physical stress Repetitive motion
Z59 Housing and economic	Homelessness Inadequate housing Discord with neighbors/landlord Residential institution problems Lack of adequate food/water Inadequate welfare support Extreme poverty Low income Insufficient welfare support	Unsafe neighborhood / housing Food insecurity Living in food desert Inadequate nutritious food choices Inadequate drinking water supply Lack of physical activity opportunities Extensive debt At risk of bankruptcy Unable to afford: Prescriptions; Medical expenses; Phone; Utilities; Transportation; Clothing; Childcare Unable to deal with stress Feeling unsafe in social environment Can hardly count on family/friends Inadequate social interaction
Z60 Social environment	Acculturation difficulty Social exclusion Target of adverse discrimination	
Z62 Upbringing	Inadequate parental supervision Parental abuse or neglect	
Z63 Support group / family	Family conflict Death of a family member Addiction in family Dependent relative needing care	Chronic social/environmental stressors Inadequate caregiver needs Providing fulltime care for loved one Providing hospice care for loved one
Z64 Psychosocial circumstances	Unwanted pregnancy Discord with counselors	
Z65 Other psychosocial	Imprisonment/ Incarceration Conviction of crime Victim of crime	Victim of interpersonal violence Trauma relating to refugee status

*Several of these are adapted from proposals at the March 5–6, 2019, ICD-10 Coordination and Maintenance Committee Meeting (pages 45–46 and 21–22),⁶ while others are the author's own suggestions

critical first step toward acknowledging the enormous impact that social factors have on health and toward monitoring our progress in addressing these disparities.

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Declarations:

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