Reporting of Social Determinants of Health Among Hospitals in Rhode Island, 2023–2024

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INTRODUCTION

Social determinants of health (SDoH) refer to the broad ranges of social, economic, neighborhood and environmental factors that affect health and quality-of-life outcomes and risks.[1] Literature reviews show that SDoH, though not direct indicators of individual illnesses or injuries, are estimated to influence more than 60–80% of health outcomes and are recognized as important predictors of risk for developing conditions such as heart disease, diabetes, obesity, and mental health disorders.[1,2,3] There has been an increasing global recognition of these factors, which has driven a shift from solely treating symptoms and conditions to integrating the patients' social needs and risk factors in disease prevention and care management.

There are specific *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) codes known as the "Z-codes" that were introduced in 2015 and have since been used to measure and classify SDoH.[4] However, clinical documentation of these codes has been low, likely due to practice-level complexities such as limited provider awareness of the codes, time constrains during patient encounters, and a lack of systemic process for screening for and addressing social needs.[5,6] As of fiscal year (FY) 2024, the Centers for Medicare and Medicaid Services (CMS) requires the hospitals that report to the Inpatient Quality Reporting (IQR) program to submit the SDoH measurements.[7] The goals of the new measures are: (1) to establish a screening for all admitted patients (aged 18 years and older) for health-related social risk factors and needs and (2) to provide a rate of the inpatient population who were identified as having one or more of these social risk factors and needs.[7] After a voluntary reporting, the reporting of the SDoH measures changed to be mandatory for patients who were admitted and discharged in 2024.[7]

The objectives of this report are to: (a) to compare the documentation of SDoH using the Z-codes for inpatient stays in Rhode Island (RI) hospitals, before and after the regulatory change by expected primary payer and hospital size and type, (b) to categorize the reported SDoH, (c), to identify the common reasons/diagnoses for inpatient stays by SDoH and, (d) discuss opportunities and future initiatives for improvement in Z-code documentation and addressing identified social needs.

METHODOLOGY

The data for this study were obtained from the RI Hospital Discharge Data (HDD).[8] All hospitals licensed by the RI Department of Health (RIDOH) are required to report financial and discharge data on a quarterly basis, using a statewide uniform reporting system. Data on inpatient admissions and ED encounters are currently submitted by 12 RI non-federal acute-care and specialty hospitals. The analytic dataset included hospitalization records from these 12 hospitals, covering discharges between January 1, 2023, and December 31, 2024.

The ICD-10-CM Z codes, 'Z55' through 'Z65', that were reported as "comorbidities" along with a principal diagnosis (main reason for a hospitalization) were used to define and measure the SDoH of screened patients (**Table 1**). To evaluate patterns of Z-code utilization in the study period, we summarized the overall rates of SDoH reporting among inpatient stays and stratified by expected payer and hospital size and type. We assessed the frequency of categorized SDoH. Additionally, we presented the most common Major Diagnostic Categories (MDCs) associated with each SDoH measurement. Descriptive and analytic statistics were computed using SAS® v9.4.

RESULTS

Figure 1 presents the percentages of inpatient encounters with at least one SDoH-related Z-code documented before and after the regulatory change. Following the implementation of the CMS mandate, SDoH documentations notably increased from the first quarter of 2024 and continuously went up throughout the year. In the fourth quarter in 2023, 8% of inpatient stays recorded at least one SDoH and the rate doubled by end of the year 2024 (16%). Increases of SDoH reporting were observed across all payer groups. However, the uptakes were different by payer. By the end of 2024, approximately, one in three encounters that were expectedly paid by Medicaid or un(der) insured patients (coded as "self-pay") had SDoH reporting. Meanwhile, only about 10% of the hospitalizations with Medicare or commercial insurance as primary payer reported SDoH.

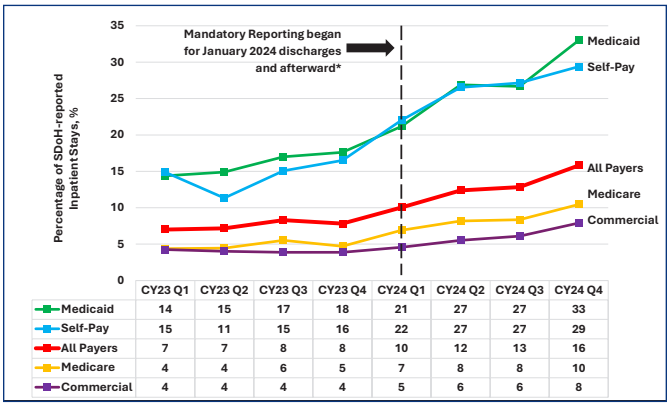
Figure 2 displays the percentages of inpatient stays where SDoH-related Z codes were reported, stratified by hospital bed capacity from 2023 through 2024. Over the study period,

Table 1. SDoH-related ICD-10-CM Z Codes and Descriptions*

ICD-10-CM Code	Category	Problems/Risk Factors Included
Z55	Education & Literacy	Illiteracy, low education, no general equivalence degree (GED), educational discord
Z56	Employment & Unemployment	Job loss/threat of job loss, work stress, job discord, sexual harassment, military deployment
Z57	Occupational Exposure	Occupational exposure to noise, radiation, tobacco smoke, dust, toxins, extreme temperature, vibration
Z58	Physical Environment	Unsafe or inadequate drinking water
Z59	Housing & Economic Circumstances	Homelessness, inadequate housing, food insecurity, transportation insecurity, poverty, low income, welfare issues
Z60	Social Environment	Isolation, acculturation issues, discrimination, social rejection
Z62	Upbringing	Childhood neglect, abuse, poor parental supervision, institutional upbringing, family conflict
Z63	Family/Primary Support Group Issues	Disruption of family by divorce, death of a family member, stressful events affecting family/household, Alcohol/Drug addiction in family
Z64	Psychosocial Circumstances (Certain Types)	Unwanted pregnancy, multiparity, conflict with counselors
Z65	Other Psychosocial Circumstances	Legal issues, imprisonment, exposure to disaster, victim of terrorism and crime

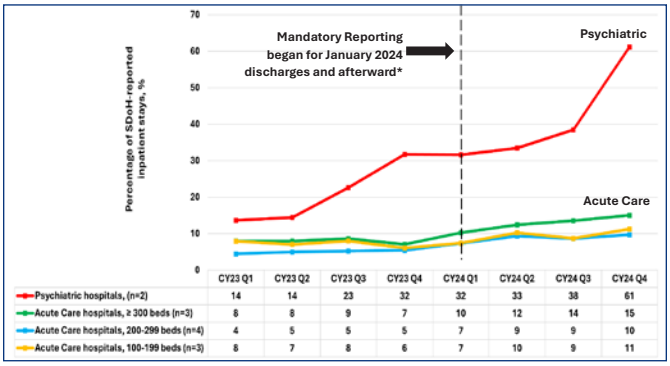
ICD-10-CM: International Classification of Diseases (ICD), 10th Revision, Clinical Modification (ICD-10-CM)
* Source: Center for Medicare and Medicaid Services[4]

Figure 1. Percentage of SDoH-reported Inpatient Stays, by Primary Payer‡, Among Adults Aged ≥18 years, RI HDD 2023 & 2024 (Total = 187,107 records)



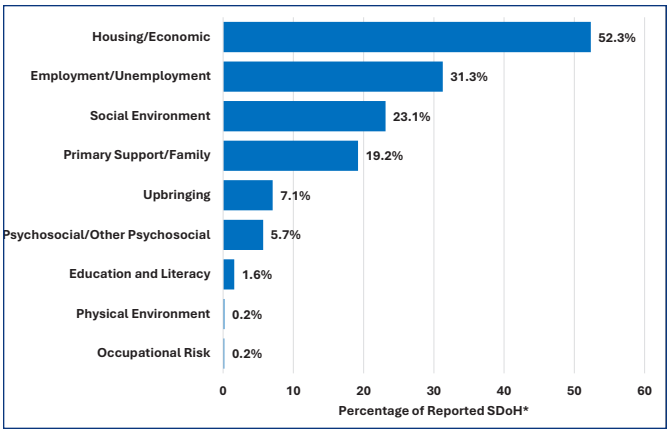
Note: CY=Calendar Year; 23=2023; 24=2024; Q=Quarter.
‡Primary Payer: Expected primary source of payment identified in hospital's discharge records.
*As of FY 2024, CMS requires hospitals that report to the Inpatient Quality Reporting (IQR) program to submit the SDoH measurements[7].

Figure 2. Percentage of SDoH-reported Inpatient Stays by Hospital Type and Size‡, Among Adults Aged ≥18 years, RI HDD 2023 & 2024 (Total = 187,107 records)



‡ RIDOH Center for Health Facilities Regulation, April 2025.
*As of FY 2024, CMS requires hospitals that report to the Inpatient Quality Reporting (IQR) program to submit the SDoH measurements[7].

Figure 3. Reported SDoH Among Admitted Patients with SDoH Z-Code, Adults Aged ≥18 years, RI HDD 2024 (Total = 11,657 Unique Patients)

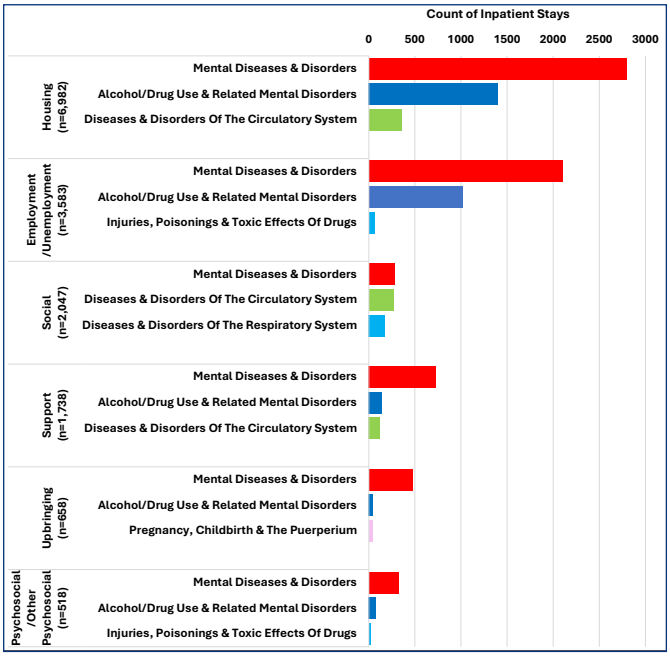


* Some patients were represented in multiple SDoH categories, as they reported more than one SDoH.

the percentage of inpatient stays with documented SDoH-related Z-codes increased across all hospital type and bed capacity. Psychiatric hospitals in RI distinctively showed an earlier uptake to adopt the SDoH screening than acute care hospitals, and their SDoH-related Z-code reporting substantially increased from January to December 2024 (from 32% to 61% of inpatient stays), Compared with psychiatric hospitals, changes were in a slower pace in acute care hospitals where only 10–15% of the claims had SDoH. Acute care hospitals with larger capacities (≥300 beds) showed slightly higher reporting rates than smaller community hospitals in the State during 2024.

Figure 3 displays the broad SDoH categories by reporting frequency in 2024. Out of 11,657 unique patients whose hospitalization records identified at least one SDoH, the most common SDoH Z-code categories were: *Problems related to housing and economic circumstances (Z59; 52%), followed*

Figure 4. Common Major Diagnostic Categories (MDCs)* by SDoH Among Admitted Patients with SDoH Z-Code, Adults Aged ≥18 years, RI HDD 2024



*MDCs are used in healthcare to group hospital inpatient diagnoses into broader categories, based on the primary reason for hospitalization. The MDCs are based on the Medicare Severity-Diagnosis Related Group (MS-DRG), which divides possible diagnoses into 25 mutually exclusive MDCs[9].

by, Problems related to employment and unemployment (Z56; 31%), Problems related to social environment (Z60; 23%), Other problems related to primary support group, including family circumstances (Z63; 19%), and Problems related to upbringing (Z62; 7%).

'Mental Diseases and Disorders (MDC 19)' were predominantly associated with all SDoH categories (**Figure 4**). Hospitalizations attributed to mental diseases and disorders, reported social needs such as housing challenges, employment issues, lack of social and family/primary support, problems related with upbringing, and psychosocial circumstances. Moreover, with the exception of 'Problems Related to Social Environment', the 'Alcohol/Drug Use and Alcohol/Drug Induced Organic Mental Disorders (MDC 20)' was also frequently reported along with these social needs.

DISCUSSION

Our study examines the reporting of SDoH Z-codes among adults aged 18 years and older in 2023 and 2024. Following the implementation of the CMS mandate in January 2024 requiring hospitals to capture SDoH using Z-codes, the percentage of inpatient stays with at least one documented SDoH Z-code rose notably throughout 2024, demonstrating the early impact of the mandatory reporting. Stratified analysis by expected payer type showed approximately a twofold increase in SDoH Z-code reporting across all payer groups. However, a substantial gap in SDoH reporting exists between payer groups, with Medicaid and un(der) insured patients starting with higher baseline documentation levels in 2023, suggesting earlier adoption and greater uptake of SDoH screening compared to Medicare and Commercial payer groups. Although a continuous increase in SDoH reporting in 2025 can be predicted, according to the trend lines, uneven pace of reporting highlights the need for targeted efforts to ensure consistent implementation of reporting across all systems.

Trends were also apparent when stratifying hospitalizations by hospital type and size. Psychiatric hospitals consistently reported higher rates compared to acute care hospitals with larger bed capacities. This variation may reflect differences in hospital workflows, patient populations, or prioritization of social needs screening efforts. Analysis of the specific SDoH categories reported in 2024 showed that housing instability, employment challenges, social environment issues, problems with the family/primary support group and upbringing-related concerns were amongst the most frequently reported needs. These findings are consistent with broader evidence indicating that housing instability, employment barriers, and family/social support challenges are prevalent social risk factors among hospitalized populations.[2]

Furthermore, among inpatient stays with at least one documented SDoH Z-code, mental health conditions and alcohol/drug use-related mental health disorders were the most common diagnostic categories. This finding aligns with existing literature which shows that individuals with serious mental illness often experience multiple unmet social needs – including unemployment, unstable housing, and social isolation – which can negatively impact health outcomes and further complicate disease management.[10] The strong intersection between mental health and adverse social determinants highlights the needs for addressing both clinical and social needs in this population.

Although the CMS mandate has likely improved SDoH screening rates, it remains unclear to what extent the identified social needs are consistently documented, shared across care teams, or acted upon in clinical workflows. Our study contributes to the emerging body of literature demonstrating the early effects of regulatory changes on improving SDoH documentation practices; however, further research is needed to ensure that screening translates to meaningful care coordination and interventions that address patients' social needs. Future initiatives should focus on integrating social needs screening into routine clinical workflows with clear referral pathways to community resources. Strategies such as provider/staff training on the documentation of Z-codes, integrating SDoH screening fields into electronic health records with clinical decision support tools and referral platforms, and developing partnerships with community organizations may help ensure that documented needs

translate into actionable interventions.[11] Continued efforts to standardize SDoH screening practices across hospitals of all sizes and types will be important to advance equity and improve health outcomes for vulnerable patient populations.

Limitations

Patients who refused or opted out of SDoH screening, those medically unable to respond, or those without a legal guardian or caregiver to respond on their behalf during their inpatient stay, were not captured in this report. This may contribute to the underestimation of the true prevalence of social needs among the inpatient population. Furthermore, because only those with documented SDoH Z-codes were systematically identified, patients without these codes cannot reliably be assumed to have no social needs – they may simply have been missed due to lack of screening or documentation. As a result, we were unable to draw accurate comparisons between patients with and without identified social needs at this stage.

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