

Measurement Considerations in Clinical Screening and Medical Records

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Who Is This Guy?

Clinician



Experience with Health System SDOH Screening Implementation



Social Drivers of Health (SDOH) Researcher

siren

Social Interventions Research
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Social Informatics Researcher



We Know Social Connection Is Related to Health Outcomes



Health Effects of Social Isolation and Loneliness

For Everyone
MAY 15, 2024

KEY POINTS

- Social isolation is not having relationships, contact with, or support from others.
- Loneliness is the feeling of being alone, disconnected, or not close to others.
- Social isolation and loneliness put a person at risk of developing serious mental and physical health conditions.



Overview

Social isolation and loneliness are widespread problems in the U.S., posing a serious threat to our mental and physical health.

- About 1 in 3 adults in the U.S. report feeling lonely. [\[A\]](#) [\[1\]](#)
- About 1 in 4 U.S. adults report not having social and emotional support. [\[A\]](#) [\[1\]](#)

ON THIS PAGE

Overview

[Risk factors for individuals and groups](#)

[Health impacts](#)

Health impacts

Social isolation and loneliness can increase a person's risk for:

- Heart disease and stroke.
- Type 2 diabetes.
- Depression and anxiety.
- Suicidality and self-harm.
- Dementia.
- Earlier death.

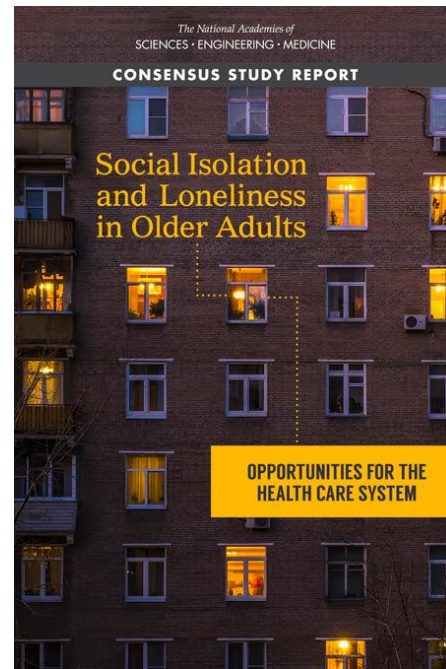
Professional Organizations Support Assessing Social Connection in Clinical Settings

- National Academy of Medicine, 2014
- Goal of endorsing social and behavioral measures to capture in electronic health records (EHRs)
- Domain selection criteria included:
 - Strength of association with health
 - Usefulness for decision making, monitoring, and research
 - Availability of (brief) standardized measures
 - Feasibility of use in clinical settings
 - Sensitivity of personal information
 - Accessibility of data from other sources
- Endorsed capturing social connection using 5 items from Berkman – Syme Social Network Index (SNI)



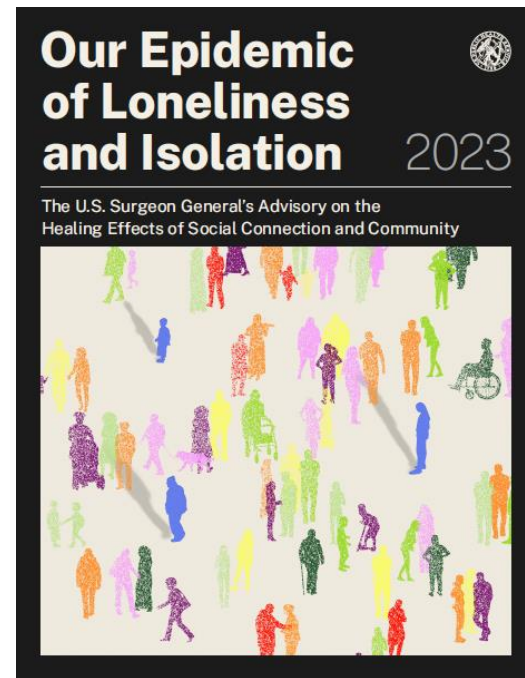
Professional Organizations Support Assessing Social Connection in Clinical Settings

- National Academies of Sciences, Engineering, and Medicine (NASEM), 2020
- Recommendations to enhance the role of the health care sector in addressing the impacts of social isolation and loneliness (SIL) in older adults
- Endorsed healthcare systems periodically assessing SIL
 - Endorsed NAM's recommendation about capturing social connection in EHRs
 - Identified SNI and UCLA Loneliness Scale (3-item) as promising tools



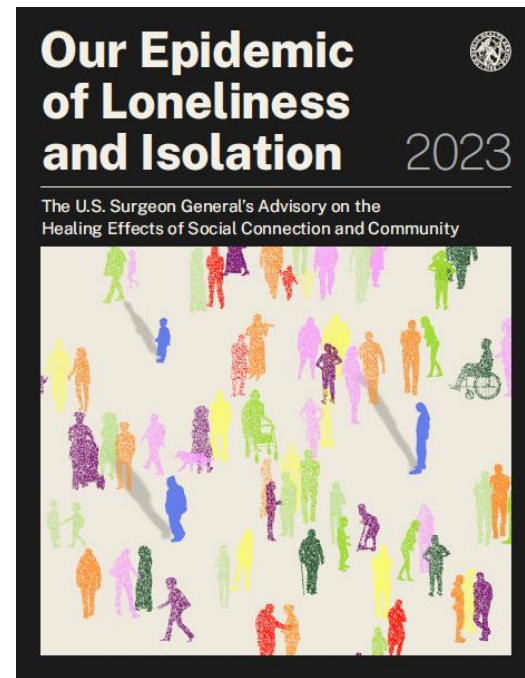
Professional Organizations Support Assessing Social Connection in Clinical Settings

- US Surgeon General Advisory, 2023
- Called attention to the epidemic of loneliness and social isolation as an urgent public health issue
- Provided recommendations to promote social connection
- Recommended integrating social connection into patient care



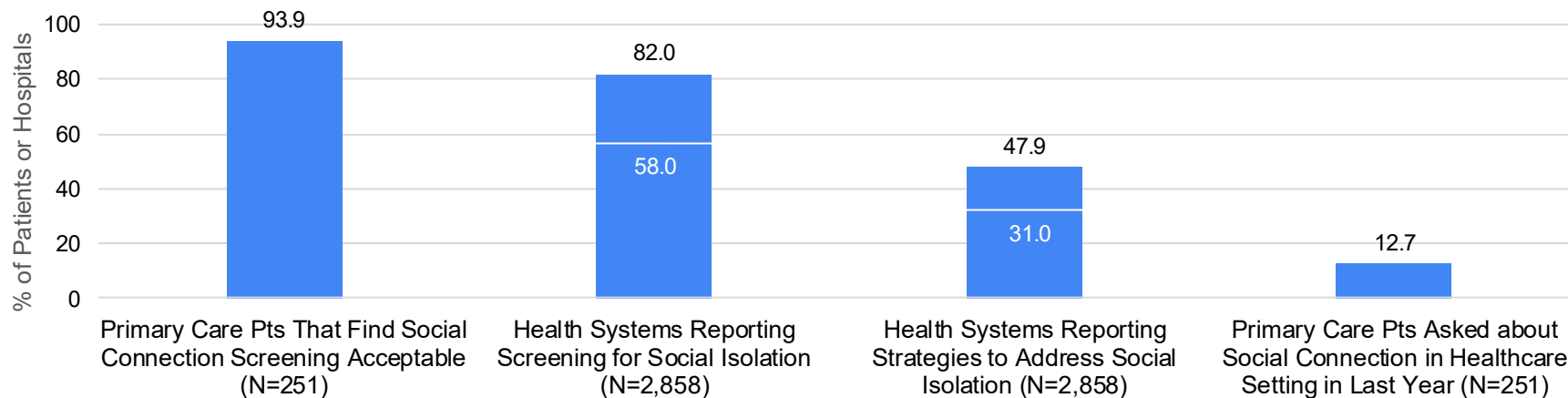
Professional Organizations Support Assessing Social Connection in Clinical Settings

- US Surgeon General Advisory, 2023
- Recommendations:
 - Actively assess patients' level of social connection to identify those at risk and evaluate supports
 - Educate patients about benefits of social connection and risk factors for disconnection
 - Leverage interventions that provide psychosocial support to patients



Social Connection Identification and Referral Experience among Patients and Hospitals

- Primary care patients generally find being asked about social connection acceptable
- Most *hospitals* report screening patients, but most *patients* report not being screened



Tung et al., 2021; Ashe et al., 2023; De Marchis et al., 2022; Deloitte Center for Health Solutions, 2021

Barriers and Facilitators of Social Connection Screening in Clinical Settings

Barriers

Staff and Health System

- Time / competing priorities
- Uncertainty about who should perform screening
- Uncertainty about how to respond
- Incentives

Patients

- Perception that social connection is not related to medical care
- Concern about lack of clinician training on how to respond
- Fear of judgment

Facilitators

Staff and Health System

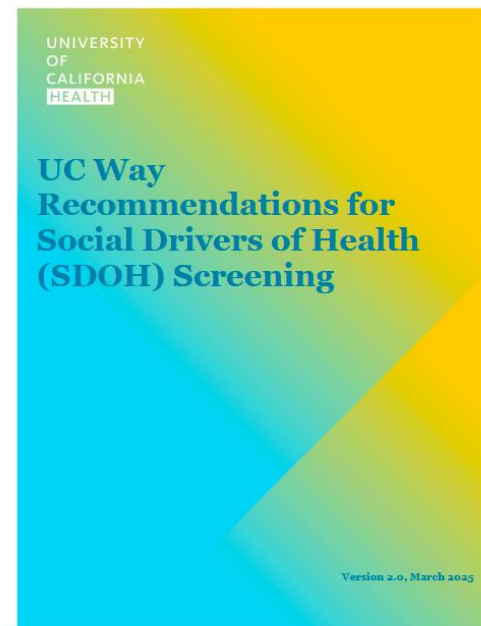
- Supportive workflows
- Continuous quality improvement interventions
- Education about screening
- Using standardized tools

Patients

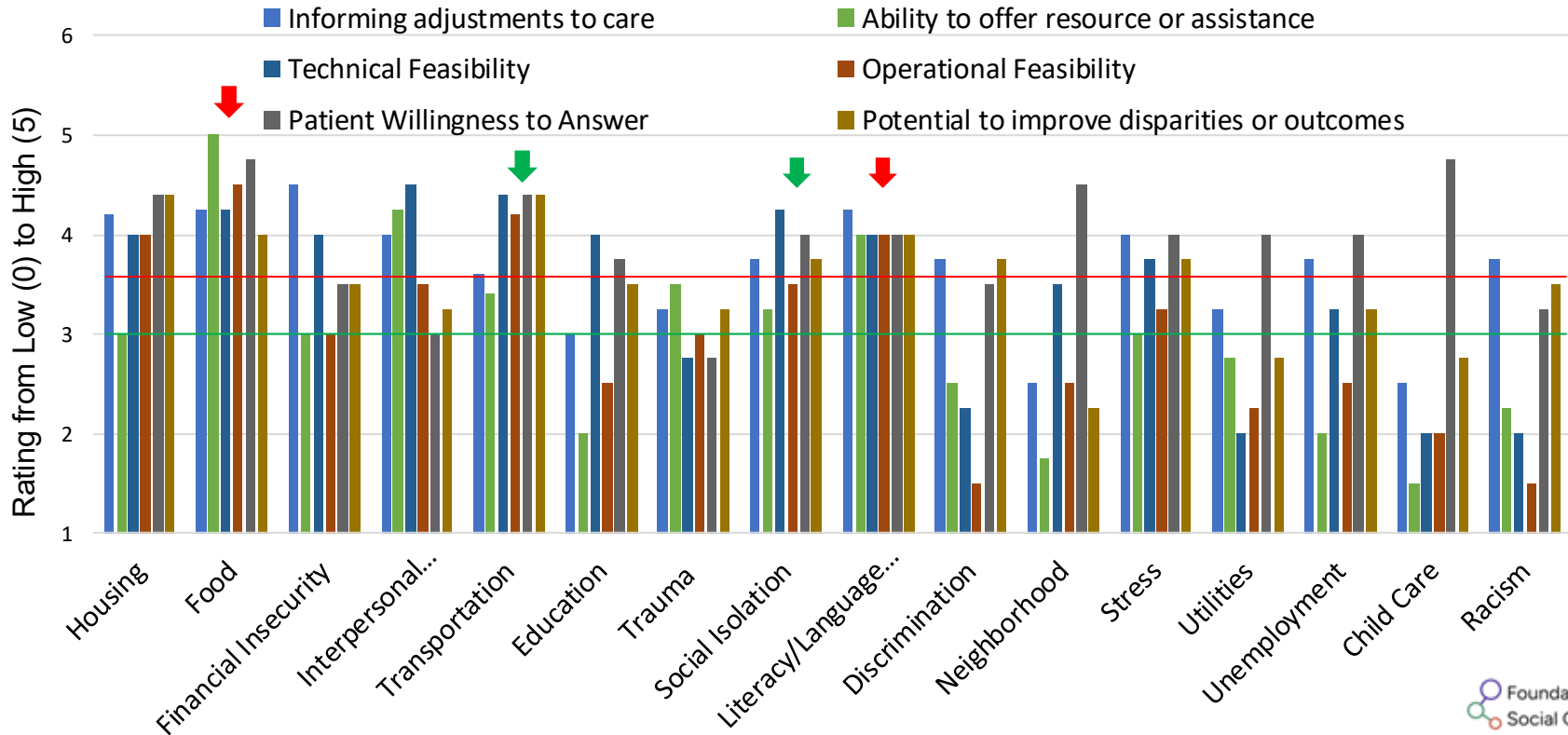
- Trust in clinician
- Understanding of screening rationale

Example of Implementing SIL Screening: University of California Office of the President (UCOP)

- UC Health SDOH Workgroup
 - Part of UC Population Health
 - Overseen by UCOP
 - Endorses SDOH screening domains
 - Offers guidance on implementing screening questions and reporting to standards setting organizations
- Enthusiasm and eventual endorsement of SIL screening
 - Strength of association with health
 - Endorsement by Surgeon General and other organizations



Example of Implementing SIL Screening: University of California Office of the President (UCOP)



Example of Implementing SIL Screening: University of California Office of the President (UCOP)

Implementation Challenges

- SDOH endorsements also include food (2 items), housing (3), transportation (2), utilities (1), and financial strain (2) screening
 - Many clinical settings too overwhelmed to implement all
- Social isolation measure is 4 items
 - Workgroup wanted a “tiered approach” recommendation – screen for one, and if positive, screen for others
- EHRs do not have many built-in screening measures → takes time and effort
 - Loneliness 3-item scale using built-in question vs. 1-item scale requiring build
- “What’s the cutoff?” – clinicians and health systems love dichotomies

Social Connection Documentation in Medical Records

- Clinical data is captured in one of two forms:
 - **Structured** – data with discrete values (e.g., age, diagnosis codes, insurance status)
 - **Unstructured** – freeform text (e.g., notes)

Structured

The screenshot displays a medical record interface with a sidebar on the left and a main content area. The sidebar includes categories like GENERAL (Medical, Surgical, Family), SOCIAL DETERMINANTS (Utilities, Employment, Substance & Sex..., Socioeconomic, Lifestyle, Relationships), SOCIAL DOCUMENTA..., and SPECIALTY (Birth). The 'Relationships' section is highlighted in purple. Underneath, 'Social Connections' is selected, showing a 'Patient refused all' button. Below this, several questions are listed with corresponding radio button options: 'In a typical week, how many times do you talk on the phone with family, friends, or neighbors?' (Never, Once a week, Twice a week, Three times a week, More than three times a week, Patient refused); 'How often do you get together with friends or relatives?' (Never, Once a week, Twice a week, Three times a week, More than three times a week, Patient refused); 'How often do you attend church or religious services?' (Never, 1 to 4 times per year, More than 4 times per year, Patient refused); 'Do you belong to any clubs or organizations such as church groups, unions, fraternal or athletic groups, or school groups?' (Yes, No, Patient refused); 'How often do you attend meetings of the clubs or organizations you belong to?' (Never, 1 to 4 times per year, More than 4 times per year, Patient refused); and 'Are you now married, widowed, divorced, separated, never married or living with a partner?' (Married, Widowed, Divorced, Separated, Never married, Living with partner, Patient refused).

Unstructured

“Ms. Johnson has lived alone since her husband died two years ago. She gets together with friends in-person or over Zoom 3-4 times each week. She says she is generally not lonely, except during holidays.”

Tradeoffs of Documenting Social Connection Data with Structured vs. Unstructured Data

Structured

Pros

- Easily extractable
- Comparable across systems
- Good for research, advocacy, and population health

Cons

- Customization is limited
- Limited standardization across systems
- Nuance may be lost

Unstructured

Pros

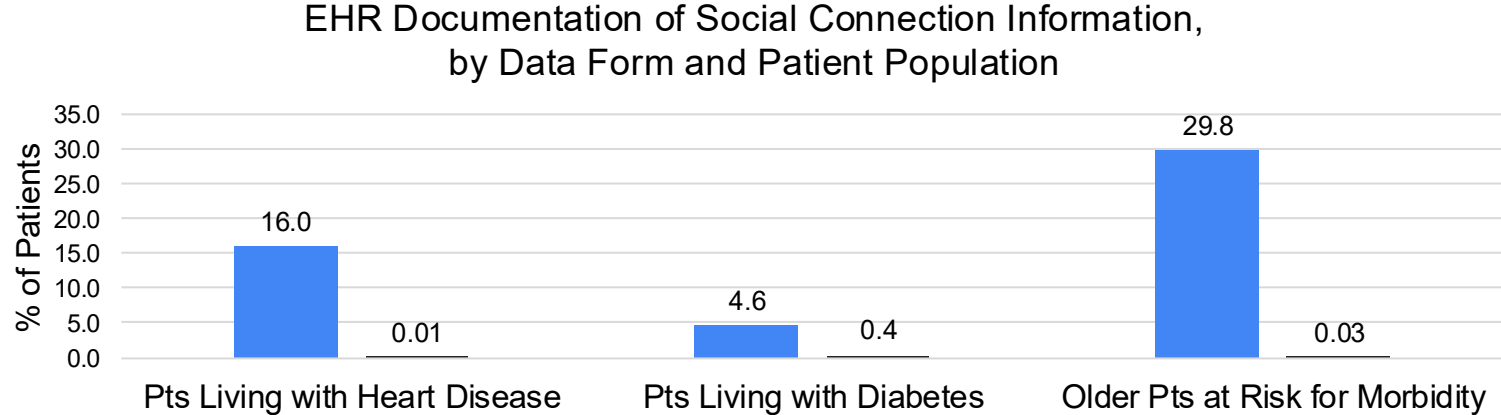
- Can provide detail and nuance; not limited to the options presented
- Less training needed (just type!)
- Good for capturing an individual's story

Cons

- Hard to extract (although getting easier with large language models)
- Comparability is limited

Social Connection Documentation among Patients

- Clinical data is captured in one of two forms:
 - **Structured** – data with discrete values (e.g., age, diagnosis codes, insurance status)
 - **Unstructured** – freeform text (e.g., notes)
- Social connection documentation varies by both setting and form, but is more frequently documented in unstructured forms



Structured Social Connection Data: Coding Systems

- Healthcare uses multiple coding systems to document and represent health conditions
- **ICD** (International Classification of Diseases)
 - Aims to standardize diagnoses for things like billing, claims, and global disease tracking
 - Codes what is tracked and billed
 - Overseen by World Health Organization (CDC locally)
 - They are generally specific, but not sensitive
 - Most involve denoting the presence, not absence, of unhealthy conditions → risks, not strengths
- ICD codes for social drivers of health are termed “Z codes”
- There are several Z codes for social connection, but they are not exhaustive:
 - Z60.4 Social exclusion and rejection
 - Z60.2 Problems related to living alone
 - Z63.9 Problem related to primary support group, unspecified
 - Z63.8 Other specified problems related to primary support group

Structured Social Connection Data: Coding Systems

- **LOINC** (Logical Observation Identifiers, Names and Codes)
 - Aims to make measurements comparable across systems
 - Codes for what is asked or measured
 - Overseen by Regenstrief Institute, a nonprofit (Indiana University affiliation)
- **SNOMED CT** (Systematized Nomenclature of Medicine - Clinical Terms)
 - Aims to represent clinical meaning with precision
 - Codes for the clinical result or interpretation, including specifics like severity and context
 - Overseen by SNOMED International, a nonprofit
- Think of LOINC, SNOMED, and ICD codes as a documentation/data pipeline

Structured Social Connection Data: Coding Systems

	LOINC <i>Question being asked</i>	SNOMED CT <i>Clinical interpretation and details</i>	ICD <i>Diagnosis for billing and tracking</i>
Example #1	How often do you feel left out?	(Prior question + answer of “often” =) Very lonely	Social exclusion and rejection
Example #2	How often do you feel that you lack companionship?	(Prior question + answer of “hardly ever” =) Not lonely	Problems related to living alone ?
Method to Add Codes to Medical Record	EHR system codes this based on structured data entry		Added by clinicians and/or medical coders; sometimes automated
Visibility	Not readily viewable to clinicians in EHR; data must be extracted by analysts		Relatively easy to see and extract

Structured Social Connection Data: Coding Systems

- The Gravity Project is a public collaborative that develops consensus-based SDOH data standards to improve social care interoperability
- Advocates for new codes



The UCLA Loneliness Scale should be used

An answer of "often" should indicate someone is very lonely

This ICD code should be seen as related to social connection, and there should be another ICD code created to indicate loneliness

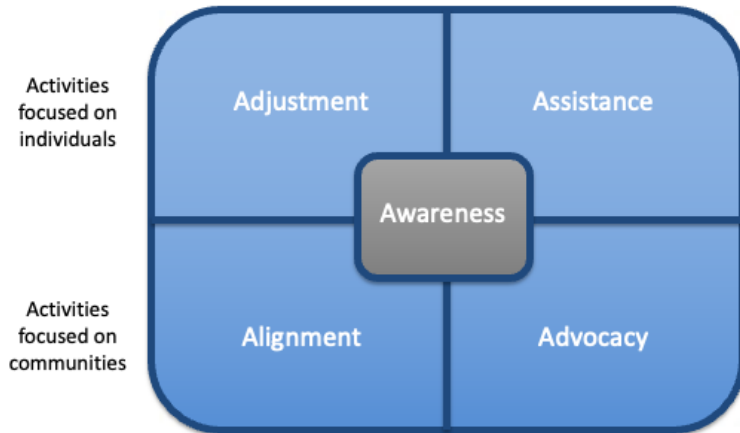
LOINC <i>Question being asked</i>	SNOMED CT <i>Clinical interpretation and details</i>	ICD <i>Diagnosis for billing and tracking</i>
How often do you feel left out?	(Prior question + answer of "often" =) Very lonely	Social exclusion and rejection

Measurement Considerations: The 5 As Framework

- NASEM, 2019
- Provides recommendations to guide practice and policy discussions surrounding integrating social and medical care

The 5 As Framework

Healthcare System Activities That Strengthen Social Care



NASEM, 2019



Measurement Considerations: The 5 As Framework

Activity	Application
Awareness	Activities that identify the social risks and assets of defined patients and populations
Adjustment	Activities that focus on altering clinical care to accommodate identified social barriers
Assistance	Activities that reduce social risk by providing assistance in connecting patients with relevant social care resources
Alignment	Activities undertaken by healthcare systems to understand existing social care assets in the community, organize them to facilitate synergies, and invest in and deploy them to positively affect health outcomes
Advocacy	Activities in which healthcare organizations work with partner social care organizations to promote policies that facilitate the creation and redeployment of assets or resources to address health and social needs

Measurement Considerations: The 5 As Framework

Activity	Application
Awareness	Screening patients for social isolation, loneliness, and social connection
Adjustment	Providing home health referral or frequent phone follow-up for a patient living alone without social support and difficulty managing medications who was just discharged from the hospital with multiple new meds
Assistance	Referring patients to support social connection (e.g., community groups, friendship line, group-based care sessions)
Alignment	Providing funding support and partnering with the local Meals on Wheels to help expand the infrastructure to serve the community in which patients live
Advocacy	Using population-level data to advocate for policies that promote social connection in socially disconnected areas (e.g., building community centers in hotspots of social isolation and loneliness; supporting reimbursement for community-based organizations addressing social isolation and loneliness)

Measurement Considerations: The EAR Framework

- Julianne Holt-Lunstad and Carla Perissinotto developed the EAR framework to guide clinicians attending to social isolation and loneliness

EAR Framework for Addressing Social Isolation and Loneliness.

E	Educate	Social connection is part of a healthy lifestyle. Social connection, isolation, and loneliness affect risks for illness and death. Social connections help patients maintain their health, manage existing medical conditions, and adhere to medical regimens.
A	Assess	Document social support, isolation, and loneliness in the electronic health record. Identify patients at risk with the use of validated measures of social isolation and loneliness. Track risk and progress over time.
R	Respond	Reinforce the need for social connection alongside other health risks and protective factors. Integrate psychosocial support from all members of the care team (e.g., clinicians, volunteers, family or care-givers) into patients' treatment. Offer referrals tailored to patients' needs and partner with local community resources. Reassess patients regularly for changing circumstances and needs and respond accordingly.

Measurement Considerations in Clinical Screening and Medical Records

Clinical Settings

- To promote adoption, patients, clinicians, and health systems want to know why
 - Use the 5As and EAR Frameworks
- Consider your end goal with asking
 - If patients want resources who screen negative for SIL, should you just ask about resources?
- Few items is good; one item is better
 - Consider multiple opportunities to screen
 - Risk- or tier-based screening?
- Clinicians and health systems often think in dichotomies

Medical Records

- There is a tension between customization and standardization
 - Structured data → standardization
 - Unstructured data → nuance
- Large language models may make unstructured data more accessible
 - Even more reason to promote measurement standards
- Promote measurement alignment through coding standards
 - Gravity Project

Priority Questions to Help Us Better Understand Social Connection

- Given the hats I wear, I think about questions related to . . .

Assistance

Which interventions are effective at promoting social connection and lessening social disconnection for which populations?

Technology

What are the best ways to leverage technology to promote social connection while protecting against harms?

Youth

What are the key elements to promoting social connection among youth (especially considering technology)?

Key Measurement Challenges

Population Measures

Identifying measures of social connection that reflect differences by age and cohort

Measures of Change

Identifying measures of change to detect the effects of interventions to improve social connection (stay tuned for Matthew's talk!)

Technology Measures

Identifying measures of social connection that incorporate technology-facilitated social interactions

- Ideally, these measures should be standardized, validated, and scalable

References

Ashe JJ, Baker MC, Alvarado CS, Alberti PM. Screening for Health-Related Social Needs and Collaboration With External Partners Among US Hospitals. *JAMA Netw Open*. 2023 Aug 1;6(8):e2330228. doi: 10.1001/jamanetworkopen.2023.30228. PMID: 37610754; PMCID: PMC10448297.

Centers for Disease Control and Prevention (CDC). Health Effects of Social Isolation and Loneliness. MAY 15, 2024. Accessed 3/21/26: <https://www.cdc.gov/social-connectedness/risk-factors/index.html>

Deloitte Center for Health Solutions. Drivers of Health Survey. Deloitte Center for Health Solutions; 2021. Accessed March 14, 2026. <https://www2.deloitte.com/us/en/insights/industry/health-care/drivers-of-health-equity-survey.html>

De Marchis EH, Brown E, Aceves B, et al. State of the Science of Screening in Healthcare Settings. Social Interventions Research & Evaluation Network, 2022. Accessed March 14, 2026. <https://sirennetwork.ucsf.edu/sites/default/files/2022-06/final%20SCREEN%20State-of-Science-Report%5B55%5D.pdf>

Iott BE, Rivas S, Gottlieb LM, Adler-Milstein J, Pantell MS. Structured and unstructured social risk factor documentation in the electronic health record underestimates patients' self-reported risks. *J Am Med Inform Assoc*. 2024 Feb 16;31(3):714-719. doi: 10.1093/jamia/ocad261. PMID: 38216127; PMCID: PMC10873825.

Kharrazi H, Anzaldi LJ, Hernandez L, Davison A, Boyd CM, Leff B, Kimura J, Weiner JP. The Value of Unstructured Electronic Health Record Data in Geriatric Syndrome Case Identification. *J Am Geriatr Soc*. 2018 Aug;66(8):1499-1507. doi: 10.1111/jgs.15411. Epub 2018 Jul 4. PMID: 29972595.

Mehta S, Lyles CR, Rubinsky AD, Kemper KE, Auerbach J, Sarkar U, Gottlieb L, Brown III W. Social Determinants of Health Documentation in Structured and Unstructured Clinical Data of Patients With Diabetes: Comparative Analysis. *JMIR Med Inform*. 2023;11:e46159

Molina MF, Pantell MS, Gottlieb LM. Social Risk Factor Documentation in Emergency Departments. *Ann Emerg Med*. 2023 Jan;81(1):38-46. doi: 10.1016/j.annemergmed.2022.07.027. Epub 2022 Oct 7. PMID: 36210245.

National Academies of Sciences, Engineering, and Medicine (NASEM) 2020. Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25663>

References

National Academy of Medicine (NAM; formerly the Institute of Medicine). 2014. Capturing social and behavioral domains and measures in electronic health records: Phase 2. Washington, DC: The National Academies Press.

Navathe AS, Zhong F, Lei VJ, Chang FY, Sordo M, Topaz M, Navathe SB, Rocha RA, Zhou L. Hospital Readmission and Social Risk Factors Identified from Physician Notes. *Health Serv Res.* 2018 Apr;53(2):1110-1136. doi: 10.1111/1475-6773.12670. Epub 2017 Mar 13. PMID: 28295260; PMCID: PMC5867172.

National Academies of Sciences, Engineering, and Medicine. *Integrating Social Care Into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health.* Washington, DC: National Academies Press; 2019.

Office of the Surgeon General. Publications and Reports of the Surgeon General. *Our Epidemic of Loneliness and Isolation: The US Surgeon General's Advisory on the Healing Effects of Social Connection and Community.* US Department of Health and Human Services; 2023.

Pantell MS, Kaiser SV, Torres JM, Gottlieb LM, Adler NE. Associations Between Social Factor Documentation and Hospital Length of Stay and Readmission Among Children. *Hosp Pediatr.* 2020 Jan;10(1):12-19. doi: 10.1542/hpeds.2019-0123. PMID: 31888952.

Pantell MS, De Marchis E, Fornell I, Yang N, Gottlieb LM. Implementing Social Drivers of Health Screening and Referral Protocols in UCSF Health: Findings from 11 Pilot Sites. In preparation.

Pollak C, Winter J, Drury L, George C, Ehrlich AR, Verghese J, Blumen HM. Implementation of a Loneliness Screening and Referral Program in Primary Care: A Mixed Methods Pilot Study. *Res Gerontol Nurs.* 2025 Mar-Apr;18(2):69-80. doi: 10.3928/19404921-20250219-02. Epub 2025 Mar 1. PMID: 40116462; PMCID: PMC12452791.

Saulnier KG, Lapidus A, Jagusch J, Garland S, Harrod M, Pfeiffer PN. Patient perspectives on loneliness interventions in primary care: A qualitative study. *Psychol Serv.* 2025 Dec 1:10.1037/ser0001005. doi: 10.1037/ser0001005. Epub ahead of print. PMID: 41325152; PMCID: PMC12671921.

Tung EL, De Marchis EH, Gottlieb LM, Lindau ST, Pantell MS. Patient Experiences with Screening and Assistance for Social Isolation in Primary Care Settings. *J Gen Intern Med.* 2021 Jul;36(7):1951-1957. doi: 10.1007/s11606-020-06484-9. Epub 2021 Feb 2. PMID: 33532968; PMCID: PMC7853707.

Thank you for your time!



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The Center for Health
and Community



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