

Adding Social Determinants in the Electronic Health Record in Clinical Care in Hawai'i: Supporting Community-Clinical Linkages in Patient Care

Connie M. Trinacty PhD; Emiline LaWall PhD; Melinda Ashton MD; Deborah Taira ScD; Todd B. Seto MD; and Tetine Sentell PhD

Abstract

Social and behavioral determinants of health, such as poverty, homelessness, and limited social support, account for an estimated 40% of health burdens and predict critical health outcomes. Many clinical-community linkages specifically focus on addressing such challenges. Given its distinctive history, culture, and location, Hawai'i has unique social factors impacting population health. Local health systems are striving to address these issues to meet their patients' health needs. Yet the evidence on precisely how health care systems and communities may work together to achieve these goals are limited both generally and specifically in the Hawai'i context. This article describes real-world efforts by 3 local health care delivery systems that integrate the identification of social needs into clinical care using the electronic health record (EHR). One health care system collects and assesses social challenges and interpersonal needs to improve the care for its frail seniors (aged 65 and older). Another system added key data fields around social support and inpatient mobility in the EHR to identify whether patients needed additional help during hospitalization and post-discharge. A third added a social needs screening tool (eg, housing instability, food insecurity, transportation needs) to its EHR to ensure that patient-specific needs can be appropriately addressed by the care team. Successful integration of this information into the EHR can identify, direct, and support clinical-community linkages and integrate such relationships into the care team. Many lessons can be learned from the implementation of these programs, including the importance of clinical relevance and ensuring capacity for social work liaisons trained for this work to address identified needs.

Keywords

electronic health record, social factors, acute care, routine clinical care

Highlights

- Hawai'i health systems are integrating social needs into clinical care.
- The electronic health record (EHR) is one mechanism for these efforts.
- One health system identifies social and behavioral needs for critically ill seniors.
- Another system added data fields around social support and inpatient mobility.
- Another system added social needs to the EHR.
- Clinical relevance and institutional capacity to resolve identified social factors are important considerations.

Abbreviations

CMS = Centers for Medicare & Medicaid Services
ED = emergency department
EHR = electronic health record
HPH = Hawai'i Pacific Health
IOM = Institute of Medicine
KPH = Kaiser Permanente Hawai'i
NAM = National Academy of Medicine
QHS = The Queen's Health Systems
SBD = social behavioral domains
SDH = social determinants of health
SWITCH = Social Wellbeings' Impact to Care and Health

Introduction

Social and behavioral determinants of health, such as poverty, homelessness, and limited social support, account for 40% of health burdens¹ and predict health outcomes.²⁻⁹ Health care for high-need patients that does not consider social factors and behavioral health leads to poorer outcomes, less satisfaction, and the feeling that these patients are falling through the cracks.¹⁰⁻¹² Patients commonly report that social needs are critical barriers to optimal health and health care.¹²⁻¹⁵ Approximately 80% of all physicians and 95% of physicians who work in low-income settings believe that addressing patients' social needs is as important as addressing their medical needs.¹⁶ The routine integration of the identification of patient social needs into clinical care holds considerable promise for meeting the triple aims of lower cost, higher quality, and better population health,¹⁷ and reducing health disparities.^{14-15,18} Limited attention to social factors during the design of clinical interventions may help explain the failures of many health care quality improvement efforts.¹⁹

While the social factors of patients' lives have traditionally fallen outside the purview of hospitals and clinics,^{1-4,20} there are increasing efforts to include them as part of innovative health care system models (eg, accountable care organizations, patient-centered medical homes).²¹⁻²² In 2014, the National Academy of Medicine (NAM, previously the Institute of Medicine (IOM)) created standard social and behavioral domains for primary care settings highlighting the importance of capturing these domains in electronic health records (EHR).¹⁴⁻¹⁵ Many innovative efforts to integrate social factors into clinical care delivery are underway.^{13,18,22-25} Successful integration of social and behavioral health information into the EHR can identify, direct, and support needs for clinical-community linkages and integrate such relationships into the care team.

The goal of this article is to describe some of Hawaii's progress in addressing social needs during clinical care based on experiences in 3 large, distinct health care delivery systems in Hawai'i. We describe efforts in integrating these factors into the EHR after first providing national background to contextualize this information.

Background

Efforts to increase the collection of social factor information in health care are growing across many different systems in the United States, including the US Department of Veterans Affairs (VA), academic family medicine, and Kaiser Permanente.^{13,26-28} The VA has a universal assessment of homelessness risk in their

EHRs in all outpatient settings across the country.²⁹ University of New Mexico's primary care clinics are collecting data on patients' social determinants of health as assessed by medical assistants.³⁰ A study of family medicine practices found the process acceptable to patients and the linking of the social factor data with the patient's medical record to be both useful and feasible. They now include a modified survey of all patients.²⁷ In another study, pediatricians queried families about basic resource needs for a new social history section within their EHR.³¹ Numerous other programs are emerging with innovative methods or cross-sector support to improve population health by addressing social factors.³²⁻³⁴

Emerging evidence exists that routinely addressing the social determinants of health during clinical care can improve critical health outcomes.³⁵⁻³⁷ For example, a recently published evaluation of the innovative Health Leads program at 3 academic primary care practices reported that the use of trained volunteers to screen for unmet needs, followed by appropriate education or access to an advocate, improved blood pressure control and lipid profiles.³⁸ New models of care that tie payment to health outcomes while holding providers responsible for patients' health and health costs have created strong incentives for primary care teams to improve capacity to address patients' unmet social factor needs in order to improve their patients' health.²⁶ Social determinants of health have moved suddenly from an academic topic to an on-the-ground reality for providers, clinics, and health systems.^{13,39-44}

However, despite considerable promise and action on this topic, there is limited empirical evidence on how health care systems can most efficiently and effectively collect patient-level social and behavioral information and use it to optimize routine care delivery, including how to best partner with community organizations to resolve their patients' needs.^{13,18, 23-25} Needed evidence includes how to best collect data on social and behavioral health domains, how to use this information most efficiently and most effectively in routine primary care, and how health systems should plan and manage resources in order to address patient-level social issues.^{26,31,41-42}

These are important concerns from the perspective of health systems administration and leadership. Health-related social needs are often difficult for providers to address without support. Many health systems lack the infrastructure, workflows, and incentives to develop systematic screening and also often may not have referral protocols and relationships to connect patients with community service providers to address health-related social needs. This may be particularly true in the acute care setting. Hospitals wishing to collect these measures in their EHRs are faced with the logistical burden of creating custom implementations for their software.^{41,43} Several facilities began their efforts by creating a screening tool via static PDF, which defeated the end-goal of interoperability.⁴⁴ To better address this complexity and uncertainty, key stakeholders (eg, patients, families, health plans, policymakers) have called for more research on the topic of routinely integrating social and behavioral domains into care delivery.^{1-3,23-25}

There are also important questions to answer from the patient and provider perspectives. Patients must find the appropriate time to mention these social challenges in time-limited provider visits and overcome reluctance to share information they may perceive as bothersome to providers about these struggles.⁴⁵⁻⁴⁶ Providers express concern about not knowing how to ask the questions and may feel uncomfortable asking about social challenges, especially in the absence of a standard protocol to address them.^{14-15,24} Efforts to integrate questions of social factors into clinical care can leverage the growing utility of EHRs to potentially help remove the personal discomfort and idiosyncratic variation across patients and providers, while providing flexibility to address patients' unique social needs and to identify and track relevant community-clinical linkages.^{21, 39-41,47-48}

Finally, these are important issues for public payers as well. In October 2018, the Hawai'i Department of Human Services issued a request for information to learn how providers and health plans work to improve care for patients who receive Medicaid and also have social risk factors.⁴⁹ In 2016, the Center for Medicare & Medicaid Innovation initiated the Accountable Health Communities Model with a goal of reducing health care costs and utilization by addressing the critical gap between clinical care and community services with a plan to identify and address health-related social needs through screening, referral, and community navigation services.³¹ These issues are very relevant to our state. A recent study in Hawai'i found that one of the most commonly reported reasons for potentially preventable hospitalizations was extreme social vulnerability (eg, homelessness, poverty, low social support).⁵⁰ In Hawai'i, people who are homeless account for a significant share of emergency department visits.⁵¹

Federally qualified health centers (FQHCs) are on the front-line of a national effort to capture individual-level social factor information using the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE).⁵² By systematically collecting standardized questions through EHRs and patient portals, FQHCs can gain better insights into their patient population, target resources to those most in need, and develop population-level strategies for addressing social factors.⁵² Considerable variation can be seen in the social determinants that particular health centers check for, and how they choose to collect social data from their patients.^{44,53} Yet without consistent measures and measurement, the ability to systematically compare and monitor the impact of social factors on health outcomes, health care utilization, and costs across communities will be limited.

Hawai'i Context

Given its distinctive history, culture, and location, Hawai'i has unique social factors impacting population health. Local health systems strive to address these issues to meet patients' health needs. We describe 3 large health care systems in Hawai'i and their real-world efforts to integrate social needs into clinical care using EHR. Kaiser Permanente Hawai'i, Hawai'i Pacific Health, and The Queen's Health Systems represent structur-

ally and operationally distinct health systems; collectively, they serve the majority of the Hawai'i population. Each has developed and implemented programs to collect and address social needs based on resource availability (eg, health IT support) and institutional priorities. Table 1 provides a summary of these programs in the 3 systems.

Kaiser Permanente Hawai'i

Collecting information on social factors is a high priority in Kaiser Permanente; it enables the targeting of patients' unmet social needs as part of their overall health care.⁵⁴ Nationally, Kaiser Permanente is a nonprofit, integrated group-model health care delivery system providing care for nearly 11.3 million people in 8 geographically distinct regions, including Kaiser Permanente Hawai'i (KPH), which reaches more than 255,000 people in approximately 20 facilities and clinics throughout O'ahu, Maui, Hawai'i, and Kauai.⁵⁵ In 2004, KPH implemented a new integrated EHR system to automate its patient files and improve the efficiency and completeness of documentation.

As Hawaii's elderly population continues to grow rapidly, increasing 28% from 2010-2017, KPH continues to address social and behavioral health care needs to improve the care for its older adults (ages 65 and older) with complex chronic conditions who have reached the point of frailty and decline. As a system approach to provide coordinated, patient-centered care, KPH has begun to optimize its EHR to systematically assess social challenges and interpersonal needs of this highly vulnerable population. Built on theory⁵⁶ and evidence,⁵⁷ the SWITCH (Social Wellbeings' Impact to Care and Health) program represents a care delivery movement to prioritize individual member preferences in medical care delivery.⁵⁸⁻⁵⁹ SWITCH centers around "knowing the member first and treating them second." Specially trained, dedicated social work navigators are paired with frail seniors to learn about their priorities for care and what matters most to them. Social worker navigators facilitate and document in the EHR interdisciplinary team discussions with the patient's

primary care physician, nurse, pharmacist, and home health representatives to develop a comprehensive treatment care plan that supports social, interpersonal, and health care needs. This work also involves collaborating with community resources to transform the way health care partners within the community support member wellness.⁵⁹

Older adults with multiple comorbidities who have not reached frailty and decline comprise the vast majority of the US older adult population.⁶⁰ Although these high-needs adults are healthier than those who are frail, a small decline in their functional health status could potentially classify them as critically ill, leading to more extreme healthcare needs and greater expense. While assigning dedicated social workers for everyone with chronic care needs may not be necessary or desired to address social needs, integrating routine collection of social factors into usual clinical care is systematically pragmatic and promising. The distinct social and behavioral needs of critically ill and high-needs older adults and how to best address these needs are areas for future research.

Hawai'i Pacific Health

Hawai'i Pacific Health (HPH) is a nonprofit healthcare collaborative comprised of 4 acute care hospital facilities and more than 50 primary care clinics. HPH is considered an early adopter of EHR technology. In 2010, HPH became one of the first hospital systems in the nation to be awarded the Healthcare Information and Management Systems Society (HIMSS) Stage 7 Certification, attained by only 6.4% of health care systems.⁶¹ This certification is given to organizations that have a fully integrated EHR system that possesses data-mining capability for quality improvement purposes. In both 2012 and 2016, HPH won the Davies Enterprise Award which spotlighted the organization's population-health disease registries and data-driven quality improvement processes.

A recent area of focus for HPH's EHR optimization has been determining how to best incorporate social behavioral

Table 1. Summary of 3 Hawai'i Healthcare System Initiatives to Collect Social and Interpersonal Needs as Part of Clinical Care					
Care Delivery System	Initiative	Why	What	How	Desired Outcome
Kaiser Permanente Hawai'i (a nonprofit, integrated group-model healthcare delivery system)	Social Wellbeings' Impact to Care & Health (SWITCH) Program	To address the social needs of critically ill seniors	Added social determinants of health along with dedicated social workers to address needs	Extended to more clinics following pilot	Better patient health, better patient satisfaction, better provider satisfaction
Hawai'i Pacific Health (a nonprofit healthcare collaborative)	EHR optimization to best incorporate Social Behavioral Domains	To discretely report on SBD measures in order to study their relationship with common acute care outcomes (including Length of Stay and Readmissions).	Added a data fields as an integrated part of software upgrades and quality improvement efforts	Leveraged existing improvement efforts for minimal disruption to staff workflow	Provide actionable data to frontline staff for improved patient care
Queen's Health Systems (a nonprofit healthcare organization)	Implemented the Accountable Health Communities' Health-Related Social Needs Screening Tool, LACE Index, and an artificial intelligence-based prediction tool	To understand these 5 domains of social needs, and identify those patients who likely need additional healthcare services	Added screener and prediction tools to EHR, allowing the healthcare team to identify high risk patients and provide customized services	Integrated in the EHR and administered during primary care visits or during hospital or ED admissions.	Better patient health, better patient satisfaction, better provider satisfaction

domains (SBDs) into the inpatient setting.⁶² HPH wanted the ability to discretely report on SBD measures in order to study their relationship with common acute care outcomes (including length of stay and readmissions). As an organization, they have opted to opportunistically roll out SBD measures when they coincide with ongoing quality improvement measures. This way, the measures are documented in the EHR, included in quality improvement education, and consistently available for reporting purposes.

Two examples of SBD collected at HPH are social support and mobility. As part of a software upgrade in 2015, HPH added a data field for case managers to collect information on social support at home. This information is used to identify whether patients need additional help identifying a caregiver for post-discharge care, giving the data immediate, daily application. In 2016, one HPH hospital made EHR changes with the goal of increasing inpatient mobility. The staff began collecting several physical activity measures: 1) physical activity at home (the IOM recommendation), 2) baseline mobility upon hospital admission, 3) frequency of mobilizations per day while hospitalized, and 4) mobility at discharge. In addition, hospital operations managers developed physical activity education for providers (to encourage documentation) and patient families (to encourage continued activity post-hospitalization).

HPH continues to pursue ways to integrate SBD into acute care EHRs, including soliciting feedback from inpatient staff on barriers and facilitators to implementation. One major finding was that staff believe there are nuances within the inpatient, emergency department, and operating room that may impact when and how SBD is captured. Staff also felt it was easier to convey SBD in a free-text narrative, which suggests the need for continued feasibility research around using natural language processing for the capture of SBD.

The Queen's Health Systems

The Queen's Health Systems (QHS) is a nonprofit healthcare organization that provides health care services at more than 70 locations throughout the Pacific, including its 4 hospitals on 'Oahu, Molokai, and Hawai'i Island. Recognizing the importance of identifying specific populations in order to address health disparities, The Queen's Medical Center (QMC), part of QHS, standardized its registration process in 2008 and created a new EHR field that allowed the identification of Native Hawaiian patients with a high degree of sensitivity and specificity (unpublished data).

More recently, to identify patients with health-related social needs, QHS implemented the CMS Accountable Health Communities' Health-Related Social Needs Screening Tool, which is a 10-item survey that covers 5 domains of social needs: housing instability, food insecurity, transportation needs, utility needs, and interpersonal safety.⁶³ With plans to add supplemental questions that address additional health domains (eg, physical activity, social isolation), this survey is integrated in the EHR and administered at the primary care offices, emergency department visits, or during hospital admissions. Information on available

support services is available on a website created by a consortium of community partners (www.808communityresources.org). This ensures that patient-specific needs that may be difficult to identify can be appropriately addressed by the care team.

Three additional tools have been implemented to identify patients at risk for hospitalization. For patients admitted to the hospital, the LACE index,⁶⁴ which uses routinely collected clinical and administrative data to generate a readmission risk score, is automatically calculated and integrated into the EHR, and helps the transitional case management team identify patients who are at high-risk for rehospitalization. For outpatients, a tool that uses artificial intelligence and predictive modelling based on data from QHS's enterprise data warehouse (EDW) helps the primary care team reach out to patients who may need support services at home or in the office. In a project supported by the Hawai'i Department of Health, the EDW data is also used to identify patients in real-time with undiagnosed diabetes and hypertension, and who are past-due for diabetes screening tests, to help primary care teams work with patients before complications can develop. To further leverage this system, plans are underway to proactively direct patients to appropriate clinical-community resources (eg, physician appointments, case management, diabetes education, dietitian). Such novel partnerships between health care and public health have great potential for making important population-level impacts.⁶⁵

Discussion

Despite differences, these 3 healthcare systems share several key features that have facilitated their progress in addressing social needs: the availability or investment of an electronic data system, leadership vision and support, and a population in need. Other factors may contribute to motivating health care systems to invest in necessary resources. More research is needed to identify those institutional factors. While the health care systems highlighted in this article have adopted a government-certified EHR, not all health care systems have done so.⁶⁶⁻⁶⁷ In addition, hospital systems use different EHR vendors and have their own administrative, quality improvement, and research priorities. This makes it difficult to develop a standardized set of measures across the state. Even so, this article highlights areas in which health care systems in Hawai'i have succeeded in incorporating social and behavioral determinants of health into their EHRs in order to ensure that providers have comprehensive information necessary to make the best treatment decisions.

Since the 2014 NAM (IOM) report highlighting the importance of capturing social and behavioral domains in EHRs and providing practical guidance regarding the domains to consider, the body of evidence continues to grow. This evidence strongly supports a measurable health benefit from primary care teams addressing social determinants generally and specifically in high needs, chronically ill patients.^{10-11,68} Yet despite the evidence of effectiveness of routine social and behavioral data collection in health care, along with widespread (and rapidly proliferating) implementation of this practice, critical evidence is missing, especially in diverse, real-world practice settings.⁴²

More work is needed in Hawai'i with our unique patient populations.⁶⁹ Hawai'i has one of the longest life expectancies in the United States, making addressing the social factors among older adults in the state particularly critical.⁷⁰ Hawai'i also has been ranked one of the most racially/ethnically diverse states in the country with a majority minority racial/ethnic demographic composition.⁷¹ Native Hawaiians, Other Pacific Islanders, and some Asian American subgroups remain understudied yet represent the fastest growing populations in the US with significant health disparities.⁷²

Many lessons could be learned from the detailed implementation of these programs, including the importance of ensuring capacity and training for social work liaisons to address identified needs. Of note, there are still no standardized workflows across health systems for addressing social and behavioral domains among highly vulnerable populations (eg, individuals who visit only the ED).⁷³ Other important considerations include interoperability and plausibility to implement all recommended social and behavioral domains measures at once. Ongoing quality improvement programs and EHR system upgrades may provide opportunities to consider adding meaningful social factor data collection efforts to reach targeted institutional goals.

Practical Implications

Capturing and addressing social and behavioral domains within the context of clinical practice can improve health outcomes and patient satisfaction, while reducing health disparities.^{13,18} This article provides an overview of some efforts to address social and behavioral determinants in Hawai'i contextualized within examples and evidence gaps on the national level. Many clinical-community linkages specifically focus on addressing such social and behavioral health determinants. Successful integration of this information into the EHR in clinical care can identify, direct, and support needs for clinical-community linkages and integrate such relationships into the care team. Currently, the ICD-10 coding system includes social diagnostic codes (Z55-Z65), which can denote reasons for an encounter. These are increasing in use in these 3 health systems and show promise as a systematic approach to identify and target patients in greatest need.⁷⁴ Although these codes have not been widely adopted nor has their use for routine documentation of social factors been standardized, use has been increasing since February 2018 as documentation from any care team member not just the physician (who would not typically assess for social factors) can be used to assign these Z codes. This paper can help inform other health care systems in Hawai'i and elsewhere on potential practices and tested care models to capture social needs routinely during clinical care. Importantly, these programs in Hawai'i are serving one of the most ethnically/racially diverse populations in the country and one of the most geographically isolated populations in the world. We want to ensure that our programs are culturally sensitive and can meaningfully address existing health and health care disparities.

Conflict of Interest

None of the authors identify any conflict of interest.

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Authors' Affiliations:

- Kaiser Permanente Center for Health Research, Honolulu HI (CMT)
- Hawai'i Pacific Health, Honolulu HI (EL)
- Daniel K. Inouye College of Pharmacy, University of Hawai'i at Hilo, Hilo, HI (DT)
- The Queen's Medical Center, Honolulu, HI (TBS)
- Office of Public Health Studies, University of Hawai'i at Mānoa, Honolulu HI (TS)

Correspondence to:

Connie M. Trinacty PhD; Kaiser Permanente Center for Health Research, Hawai'i; 501 Alakawa Street, Suite 201, Honolulu, HI 96817; Email: connie.mah.trinacty@kp.org

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