

BMJ Open Quality Improving social needs screening in general paediatrics through project SEEK

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ABSTRACT

Unmet social needs in paediatric patients contribute to poor health outcomes and increased healthcare utilisation. In order to identify unmet social needs, we aimed to improve social determinant of health (SDoH) screening of children admitted to the general paediatrics teams at our institution. Between September 2021 and September 2024, we conducted a quality improvement project by a multidisciplinary stakeholder team to improve identification of unmet social needs at our institution.

We set two aims: (1) develop a screening process acceptable to families and (2) increase the percentage of children admitted to general paediatrics with SDoH screening documented across four domains, including food insecurity, transportation barriers, housing insecurity and financial strain from 0% to 60%. During the project period, 4229 patients were eligible for screening. Screening was found to be acceptable by a pilot group of patients and their families (n=22). Rates of screening improved from 0% to 56.7% after various interventions, including nursing education and feedback, providing meal trays from the cafeteria to families in need, and integration of the screening questionnaire into the electronic health record. Food insecurity screening positively correlated with SDoH screening across all four domains. This multidisciplinary quality improvement project implemented SDoH screening on general paediatrics which was found acceptable by patients, and rates of screening improved by addressing identified needs. Tangible resources, such as providing meal trays during the hospitalisation, were a unique aspect of this project that helped families and alleviated distress of the screeners.

PROBLEM

Social determinants of health (SDoH) are non-medical conditions that affect one's health. These include education, income, access to food, housing and social inclusion.¹ Many families in the USA experience social conditions that negatively influence their health. For example, almost half of families with young children live in poverty and more than 13% experience food insecurity.^{2,3} Social needs such as financial strain, housing instability and food insecurity are associated with poor health outcomes in children, including increased acute care utilisation, decreased

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ While the American Academy of Pediatrics recommends screening for food insecurity (FI) and other social determinants of health (SDoH), few studies have examined the feasibility of SDoH screening strategies in paediatric inpatient units within adult hospitals, or evaluated the impact of providing immediate interventions when social needs are identified.

WHAT THIS STUDY ADDS

⇒ We share the methodology and results of our SDoH screening improvement initiative on inpatient paediatric units within an adult hospital. While prior studies primarily focus on FI screening, our results support that addressing barriers to screening makes it feasible to screen for other potential social needs. Additionally, partnering with institutional resources, such as meal trays provided by the cafeteria, addressed specific screening barriers and immediately served patients' needs.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Success of broad social needs screening will better help paediatricians identify barriers to care and consider immediate resource delivery, which is often the missing and crucial link in addressing social needs.

preventive care, higher inpatient costs and increased mortality.⁴⁻⁶

Our project team suspected that our paediatric hospitalised patients were at risk of having unmet social needs due to the high prevalence of social needs being found in a cohort of hospitalised young adults at our institution.⁷ Prior to 2021, we had not measured the prevalence of SDoH in hospitalised children at our institution, and there was no standardisation in SDoH screening among general paediatric patients.

We performed this quality improvement project at a large, academic, quaternary-care medical centre within the southeastern USA. The hospital has a catchment area of the

state and surrounding states and has 202 paediatric beds. The hospital discharges approximately 7000 paediatric patients annually. An estimated 13.3% of people in the state live below the poverty level, and 14% experience food insecurity.^{8 9}

Our interventions focused on patients admitted to the three general paediatrics teams (two general paediatrics teams and one complex care team). The general paediatrics teams discharge approximately 2000 patients annually. We began our project about 1.5 years after the start of the COVID-19 pandemic when general paediatrics patient volume had returned to slightly higher than the pre-pandemic baseline.

We formed a multidisciplinary quality improvement (QI) team to develop an acceptable, reliable and standardised process for SDoH screening of patients admitted to general paediatrics services. We aimed to increase screening of hospitalised general paediatric patients for food insecurity, financial strain, transportation barriers and housing insecurity from 0% to 60% over 12 months beginning in September 2021. We used Standards for Quality Improvement Reporting Excellence 2.0 Guidelines to report our findings.¹⁰

BACKGROUND

A 2016 American Academy of Pediatrics policy statement urges paediatricians to assess the social needs of families in order to link them with resources, and therefore recommends caregiver screening for unmet social needs during all patient interactions.²

A key setting for SDoH screening includes the hospital, where social risks are highly prevalent among hospitalised children.^{11 12} SDoH screening of caregivers of hospitalised children is both feasible and acceptable, yet screening prevalence remains low.^{11 13–16} Barriers to effective screening include a lack of standardisation in screening tools, inconsistent reporting to primary care doctors, provider discomfort in asking about social needs, the inability to provide resources to families who screen positive and the need to prioritise other urgent medical needs.^{17 18}

At our institution, previous work to address SDoH centred on outpatient screening. The general paediatrics team did not conduct routine screening. Care teams could consult clinical social work for ‘barriers to care’ which often related to unmet SDoH; however, this was not tied to a standardised screening process. Given the need for improvement, we initiated our project in August 2021 through an internal QI course in the paediatric department which offered performance data, coaching, administrative support and quality improvement didactics. Our institution considered this project QI, not human subjects research, and therefore the institutional review board deemed the study exempt.

MEASUREMENT

Our global aim was to improve patient acceptability and engagement of SDoH screening for children admitted to

general paediatrics at our hospital. Outcome measures included patient acceptability and comfort with screening measured through a printed survey (phase 1), and the screening rate of patients admitted to the general paediatrics services with all four social driver domains screened for during admission, including food insecurity, financial strain, transportation and housing (phase 2). We defined successful screening across these domains as having at least five of the eight questions in those domains with responses. This served as a proxy that at least three of the four social driver domains were screened. We measured rates of successful screening of all general paediatric patients admitted to the two specified units each week. The interventions made by social work (such as referrals and resource allocation) were tracked through qualitative feedback from the social worker. Weekly screening of one or both questions on food insecurity served as a process measure. Balancing measures included the number of social work consults per week for ‘barriers to care’ to ensure social work was not overburdened with increased volume of consults, and nurse satisfaction with the screening process. Nurse satisfaction with the screening process was measured through feedback directly from nurses and nurse managers and through an anonymous survey conducted in September 2022, approximately 9 months after the initiation of screening on both units.

The data engineer on the team built a project database within a secure dashboard website which included inpatient discharges for patients admitted to our hospital and the documentation of SDoH screens starting in December 2021. Baseline data were obtained for 7 weeks (1 November 2021–19 December 2021) prior to the first intervention. The process measure was tracked monthly using statistical process control charts. Data were plotted on a c-type statistical process control chart by using established rules and practices.¹⁹

DESIGN

We formed a multidisciplinary team called SEEK: Social driver of health Evaluation and Engagement in Kids. Clinical social workers, general paediatrics unit nurses, nurse managers, attending physicians, resident physicians, a data engineer, a health equity expert and multiple patient-family advisors comprised team SEEK. We first set out to understand the current landscape by observing the patient admission steps by nurses followed by the creation of a process map. We also surveyed the general paediatrics nurses on screening for SDoH which illuminated two main barriers: feeling uncomfortable asking about SDoH and feeling helpless when SDoH were detected (online supplemental figure 1). We developed a key driver diagram to consider all potential drivers (figure 1). The patient family advisors were valuable members of the team, offering their perspective on how screening can be perceived by patients and families. The success of our project hinged not only on improving screening but also

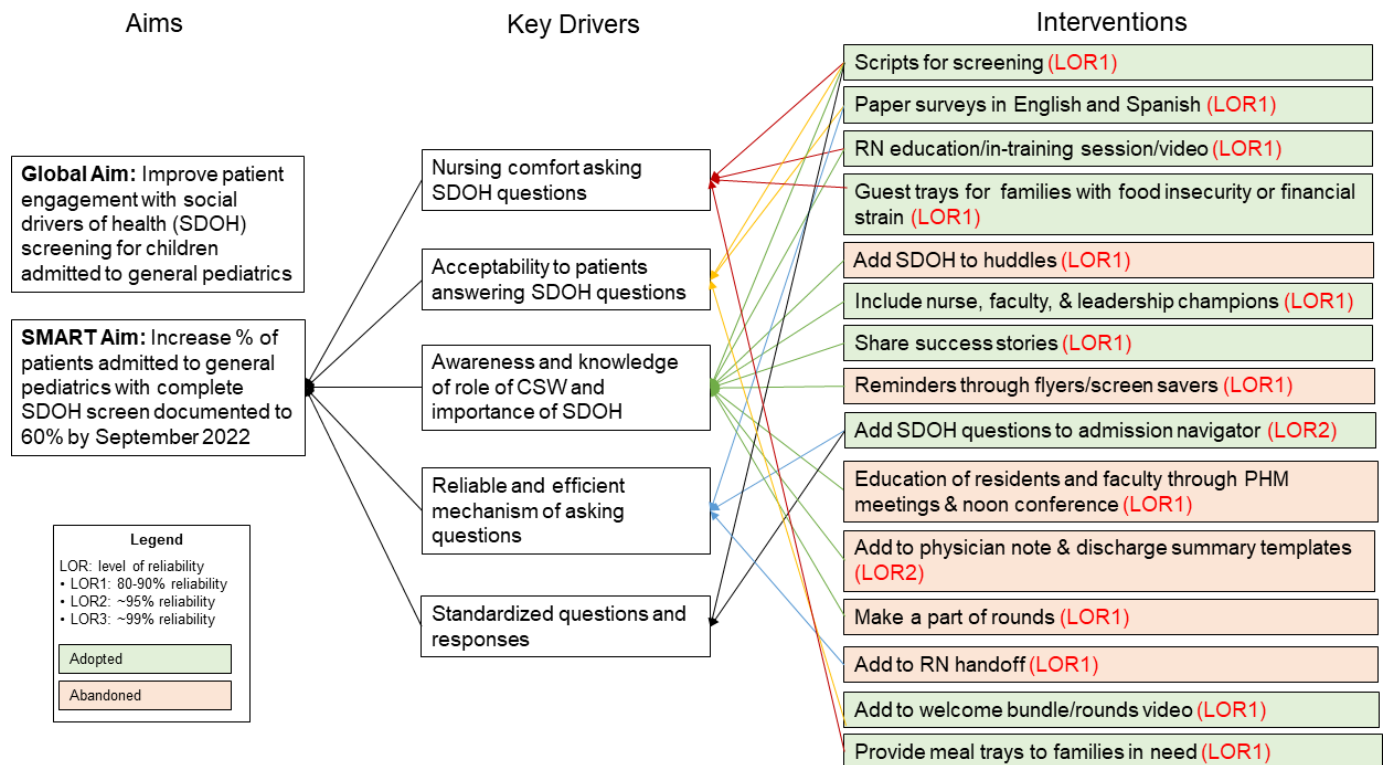


Figure 1 Key driver diagram. CSW, clinical social work; LOR, level of reliability.

on making it a positive experience for patients and families.

STRATEGY

We created a screening questionnaire composed of eight questions across four domains: food insecurity, financial strain, transportation barriers and housing instability. We used questions as suggested by the state's department of health and human services.²⁰ These questions were also located in the electronic health record (EHR) within a separate tab. The nurse performing the screen could either document a completed paper screen in the EHR, or ask questions directly from the computer during the admission process. The paper version allowed the patient to privately complete the screening, however required the nurse to subsequently transcribe results into the EHR. The hospital's interpreter services translated the paper screening questions into Spanish. We printed copies with questions in English on one side and Spanish on the other. Phase 1 of interventions was focused on developing an acceptable script by patients and their caregivers. Phase 2 of interventions centred on increasing SDOH screening rates of the general paediatrics patients. As a means to assess equitable delivery of the screening, we measured the distribution of race, ethnicity, gender, payor status and language of patients screened after approximately 20 months of the study. This analysis ensured that the distribution of patients screened proportionally represented our patient population. Among race

and ethnicity, approximately 30% of patients screened at that point identified as Black or African American, 46% as Caucasian or White, 6% as other and 5% as Hispanic/Latino. There was a near even split in gender, and 89% of patients preferred English as their primary language. This was generally consistent with our patient population.

Interventions

Phase 1: script development and patient acceptability (weeks 8–20)

To improve comfort with screening, we created a script for nurse screeners. The script included asking permission to inquire about SDOH and explaining why the medical team is interested in understanding their needs beyond their medical issues. Once the screening was done, we provided phrasing for how to offer help through on-hand resources or a consult with the hospital-based paediatric clinical social worker. Team members tested the script on 26 English-speaking and Spanish-speaking patients and asked them for immediate feedback on acceptability and understanding of the reason for the screening. The screening was also translated into Spanish by interpreter services (online supplemental figure 2). The script was found to be acceptable; therefore, the screening was rolled out to the unit after a nursing education session led by the project leader and clinical social worker. A brief patient/caregiver survey was conducted after the unit-wide roll-out to English-speaking and Spanish-speaking patients. The

survey asked about comfort with answering questions, understanding of why the medical team was asking the questions and belief that answering the questions could help them. Results supported general acceptability and understanding of the screening.

Phase 2: Plan-Do-Study-Act 1—nursing education and feedback (weeks 21–80)

Approximately 9 weeks following the roll-out on the first unit with good patient acceptability, the educational session was repeated on the second general paediatrics unit which then initiated screening. For 9 weeks, the project team provided weekly feedback to nursing and nurse managers through email and their whiteboards used at daily huddles. Repeat nursing education was performed to help reach new nurses and troubleshoot any issues or concerns, and award prizes to nurses who had performed the greatest number of screens on each unit.

Phase 2: Plan-Do-Study-Act 2—meal tray provision (weeks 81–110)

In response to the nurse screeners desiring more immediate resources available to offer families, we developed a meal tray programme in collaboration with our hospital's cafeteria. Prior to this collaboration, meal passes, or cafeteria vouchers, for families were extremely limited, so providing a meal directly from the hospital was a more cost-effective way to provide a full meal to families. We secured an internal grant and purchased 2000 meal trays from the cafeteria in May 2023. We provided the trays to families who screened positive for food insecurity or financial strain, providing up to three meals/day directly to the bedside. To avoid wasting trays when families were not present at bedside, we developed a two-step process so the family would order the meal only when they were present. This also allowed them to customise their meals to their preferences. Ongoing funding has sustained the meal tray programme. We surveyed families at the time of discharge about their experience receiving meal trays.

Phase 2: Plan-Do-Study-Act 3—electronic health record integration (weeks 111–119)

Finally, the team worked with informatics to integrate the SDoH screening questions into the Admission Navigator questions of our EHR, Epic. The same SDoH questions used in our original screening tool were used in the EHR, and it did not require additional nurse training. This shifted the screening to be part of the standard work of nursing, instead of in addition to their normal workflow. It took approximately 2 years to integrate screening into the EHR, which went live in December 2023. Following this intervention, the project entered the sustainability phase from weeks 120 to 150.

RESULTS

During the project period, 4229 patients were admitted to the general paediatrics teams on the two units. An

average of 28 patients per week was eligible for screening. The script development and testing phase ran for approximately 20 weeks until it was officially implemented on one unit and subsequently rolled out on the other unit about 12 weeks later. During this phase, we surveyed 22 families on the acceptability of the screening. All (100%) agreed or completely agreed that they felt comfortable answering the questions and understood why we were asking the questions. Most families (91%) believed the screening could help them and two families (9%) were unsure.

Once we implemented the screening process on both paediatric units, screening across all domains improved from 0% to 12.8% (figure 2). Paper screens were phased out as uptake of the electronic screening process was preferred in order to not duplicate work. We provided weekly feedback to units on their screening rates, performed re-education through staff meetings and emails and awarded prizes to top screeners. There was no change in screening with incentive prizes, so this intervention was not continued. While variability in screening did decrease during this phase, there was not an increase in screening. Nursing colleagues were surveyed on barriers to screening during this phase, about 10 months after implementation, with 34 responses. All nurses agreed that SDoH impacted their patients' health, and 97% felt that it was important to evaluate the presence of SDoH in their patients. The script had variable uptake and 35% felt uncomfortable or extremely uncomfortable screening for SDoH. The major barriers identified were time and lack of integration into their current workflow.

Introduction of meal trays to families screening positive for financial strain or food insecurity in week 81 led to an increase in screening to 25.6% which was sustained for nearly 30 weeks. Finally, in week 111, integration of screening questions into the required Admission Navigator led to an increase of screening to 56.7%. The process measure of food insecurity screening mirrored the results of SDoH screening across multiple domains (figure 3). The number of eligible patients was collected through the electronic health record and likely highly accurate. However, the screening rate is at risk of missing data due to unaccounted screening which was completed but not recorded in the patient's chart, especially when paper screens were used frequently earlier in the project.

Our balancing measure, rates of social work referrals for 'barriers to care', remained stable at a median number of two consults per week throughout the study period (online supplemental figure 3). We only accounted for referrals to social work for 'barriers to care' whereas referrals for social needs may have been submitted as an alternative reason.

LESSONS AND LIMITATIONS

We developed a new process for inpatient SDoH screening which was found to be acceptable to patients and improved nursing comfort with the screening. After

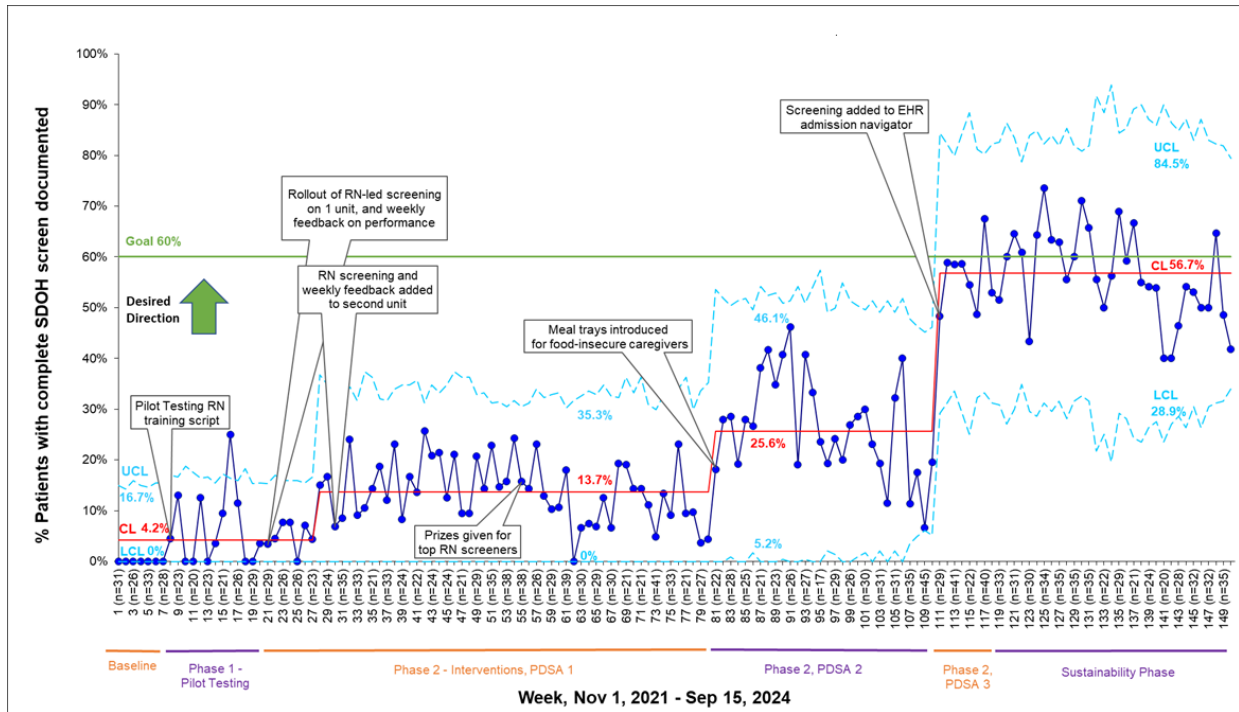


Figure 2 General paediatrics social drivers of health screening rate. CL, center or control line; EHR, electronic health record; LCL, lower control limit; PDSA, Plan-Do-Study-Act; RN, registered nurse; SDOH, social determinant of health.

various interventions including education, providing resources in response to positive screens (meal trays) and EHR integration, we successfully improved the rates of SDOH screening across four domains to 56.7% of all patients admitted to the general paediatrics teams. We believe that the improvement in screening is related to

designing interventions targeted at nursing-identified barriers to screening: (1) increasing comfort, (2) creating a means to deliver immediate resources for positive screens and (3) incorporating screening into standard work. A similar approach may be taken at other institutions once they understand the barriers of the various

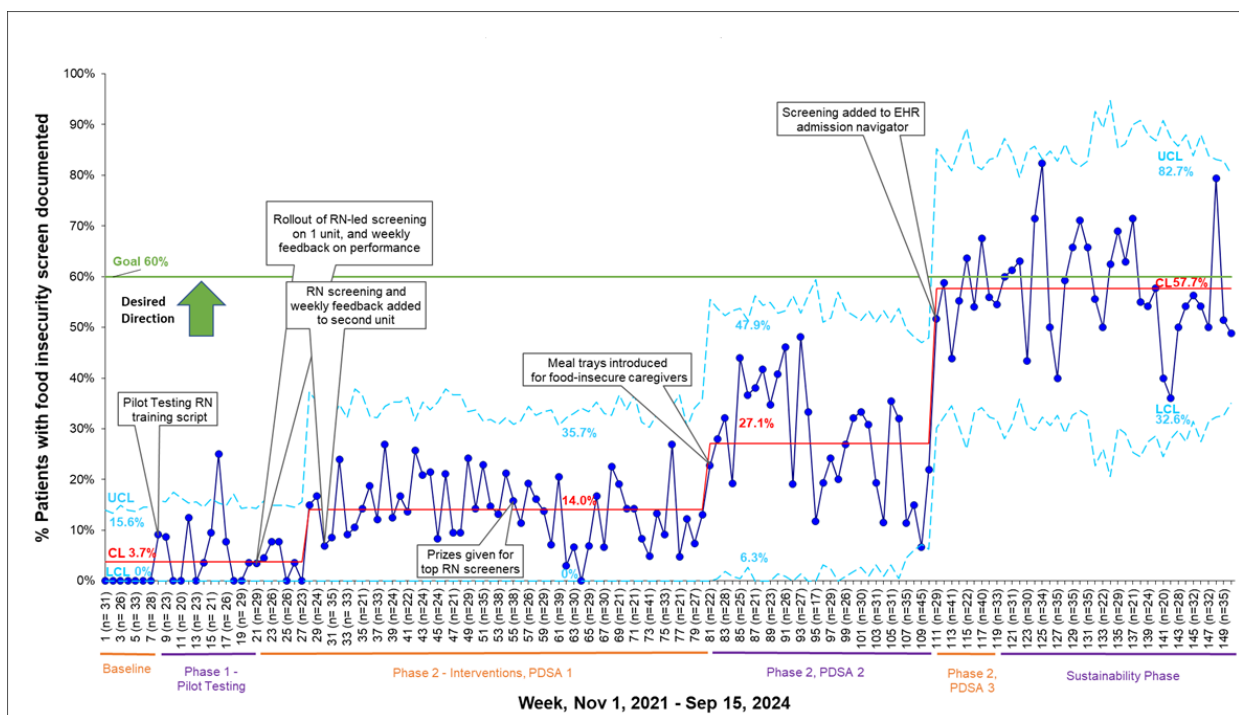


Figure 3 General paediatrics food insecurity screening rate. CL, center or control line; EHR, electronic health record; LCL, lower control limit; PDSA, Plan-Do-Study-Act; RN, registered nurse; UCL, upper control limit.



stakeholders. Additionally, this project had rapid success in ensuring patient acceptability largely due to the various perspectives of team members on the project, including nursing, clinical social work, and patient and family advisors.

The acceptability of SDoH screening by families in our study reflects previous studies demonstrating caregiver comfort in food insecurity screening in the inpatient and outpatient settings.^{13 14 21} The fact that both our process measure of food insecurity screening and our outcome measure of all SDoH domains screened improved with similar interventions suggests that programmes with existing food insecurity screening could expand their screening to other social needs. The overall stability in social work consults despite increasing screening rates was unexpected compared with other studies showing marked increase in social work utilisation in screened populations,²² and may reflect an opportunity to streamline the step between positive screens and social work consultation.

Connection to social needs resources for families who have positive screens is infrequently completed,^{3 23} yet more successfully done with automated processes.²⁴ The provision of resources immediately during the hospitalisation has been done through a food pantry;²⁵ however, the use of hot meal trays from the cafeteria is not previously described and had a major impact on our screening rates, potentially because staff were more motivated to screen when they could provide a resource. Providing food directly to the family was much more effective at improving screening rates than directly incentivising nurses with gift cards. In fact, prizes for nurses who had the most screens led to no change, and therefore was not continued. In addition to meal trays leading to higher screening rates, it also is a tangible way to immediately address unmet social needs and helps mitigate the increased rates of food insecurity that occurs among hospitalised caregivers.¹²

Providing meal trays has been received very positively by patients. Patient satisfaction surveys at the time of discharge of general paediatrics patients found that the provision of meal trays led to caregivers' perception that they were able to stay at the bedside with their child more and provided food when they otherwise would have gone hungry. As we plan next steps for extending screening to other units within our own hospital, patient and family feedback highlights that it is critical that screening be paired with the expansion of resources. While SDoH screening is not costly, providing resources is. Our findings suggest that screening may be most successful when there is investment in resources to be offered to those in need. We also found that having multidisciplinary stakeholder involvement and an evaluation of satisfaction is crucial to building sustainable and acceptable processes.

Our study is limited by its single-centre design of patients only admitted to the general paediatrics services. It is plausible that the screening of patients on other services may need to be done differently based on their

unique needs. Other services may have their own dedicated clinical social worker who has increased capacity for screening and providing resources simultaneously. We also had limitations in terms of our measures. Missing data due to paper screens not being transcribed into the EHR is a limitation and may underestimate success of early screening; however, the long-term vision was to complete solely electronic screening. Therefore, we continued with the measure being based on electronic charting. Our survey measuring patient acceptability has not been previously validated. In addition, we created a dot phrase in the EHR to track interventions made by the social worker (ie, referrals made, resources provided), but it had low use, and therefore this measure was largely through qualitative feedback from the social worker. Additionally, we measured social work consults for SDoH as those entered under the broader reason of 'barriers to care' but this may have been done inconsistently, so our balancing measure may underestimate the number of consults and workload placed on social work. Finally, there may have also been benefit in measuring patient satisfaction after the screening process was automated into the admission navigator. As nurses are now required to complete the screening during the sometimes very busy initial intake, it is at risk of being rushed or not following the script originally designed.

The sustainability of the project is limited by ensuring the provision of meal trays as this was a key intervention. Fortunately, our institution has supported the project and will be adding the trays to the operational budget. However, expansion broadly across other units has been limited due to funding, and external sources are still being pursued. Other medical systems in our region have had success at addressing food insecurity through partnerships with corporations, such as grocery stores. We have also pursued donations from private donors or other entities with philanthropic missions. Changing financial climates remain a risk to the institutional support of the trays and to possible external partnerships.

We are now expanding to other units which will ideally allow for improved screening rates for all admitted children, not just those directly admitted to the general paediatrics teams. Additionally, we are considering changing electronic screening to be done by the patient independently without nursing engagement as this may lead to more reporting of needs.²⁶ While it is unclear if there is a true difference in social need disclosure between self-completion versus assisted completion of screening,²⁷ self-screening may additionally reduce burden on staff who have competing priorities during the admission time period.

CONCLUSION

We have found success in a multidisciplinary team to develop a SDoH screening process that is acceptable to patients and now completed for a majority of our general paediatrics patients. While our measures were appropriate

to track our focused aim of improving SDoH screening, identifying methods to measure families' connection with resources outside of the hospital would strengthen this project in reaching its global goal of helping to address unmet social needs. Additional analysis of patient satisfaction, particularly as screening rates increased across units, would also be beneficial. Finally, we did not measure equity of screening throughout the study period. Future studies should more rigorously collect and monitor demographics throughout project implementation.

Further work in identifying more comprehensive and sustainable resource allocation is needed, with potential mechanisms through an existing state-wide electronic referral system to community resources. Additionally, SDoH screening is rooted in health equity which warrants tracking disparities in resource provision to ensure our efforts close health gaps rather than widen them.

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