implementing social determinants of health data collection in a large urban pediatric hospital setting

Stormee Williams, M.D., MBA, FAAP
Vice President and Chief Health Equity Officer
Children's Health System of Texas, Dallas, Texas, USA
Email: **stormee.williams@childrens.com**

Barry Owen, MBA, BSN, RN, NEA-BC
Vice President and Ambulatory Chief Nursing Officer
Children's Health System of Texas, Dallas, Texas, USA
Email: **barry.owen@childrens.com**

Forest Melton, M.S., MHA
Health Equity Program Manager
Children's Health System of Texas, Dallas, Texas, USA
Email: **forest.melton@childrens.com**

Kristina Hill, MPH, MIS
Health Equity Scientist
Children's Health System of Texas, Dallas, Texas, USA
Email: **kristina.hill@childrens.com**

children's health®

background

Social determinants of health (SDOH) – the conditions in the environments where people reside that influence, either directly or indirectly, their health and well-being – are consistently important to pediatric health outcomes. Disparities manifesting in pediatric health care outcomes may be exacerbated by challenges faced in the social, economic and relational environments in which pediatric patients and their families live and work. Pediatric health outcomes where disparities may exist include, among others, hospital readmissions, length of hospital-visit stay, costs and mortality.[1,2] They occur in a variety of settings, including emergency, inpatient and outpatient settings.

Children's Health System of Texas (CHST) in Dallas, Texas, is among the largest pediatric health care providers in the United States. The system has approximately 430,000 outpatient visits, 20,000 inpatient admissions and 170,000 Emergency Department visits per year, as well as dozens of specialty ambulatory clinics providing services to a racially, ethnically and socioeconomically diverse patient population. In 2022, the demographic breakdown of patients at CHST was approximately 50% Hispanic, 25% Non-Hispanic White and 20% Non-Hispanic Black, with 5% represented by other racial and ethnic backgrounds. Over half of patients are users of public insurance.

objectives

To stay informed about pediatric patient families' social and economic situations and well-being and to better serve the unique needs of patient families, in July of 2022, the Ambulatory Clinical Practice at CHST deployed an electronic SDOH screening tool to be completed by the patient's caregiver prior to their scheduled outpatient visits. Clinical staff use the results of the SDOH survey completed by the patient parent or guardian to provide system and community resources to families, and more generally, to inform clinical decisions pertinent to the patient. Referrals to relevant internal or community-based resources (e.g., food banks, transportation services or other resources applicable to the reported social need) are provided to the parent and/or guardian following the completion of the survey in the event of a positive score for any SDOH domain(s). In addition to directly informing patient care, SDOH data are also used in aggregate by the health system to identify disparities in social determinants of health among different racial/ethnic, language and socioeconomic patient groups, informing collective initiatives to address patient families' social needs, and thus support our patients' health and well-being. During the 10-month period from August 1, 2022, to May 31, 2023, the SDOH survey was completed electronically by over 40,000 patient families.

In the first 10 months, the SDOH survey **was completed by**

over 40,000

patient families.

sdoh screening tool

The SDOH screening tool triggers automatically in the electronic health record (EHR) to enable families to complete it in the electronic patient portal prior to the patient's appointment or on a tablet provided by registration staff upon visit check-in. In a limited number of clinics, patient parents/guardians may be asked the questions directly by staff for direct entry into the EHR by the staff person. It captures information on several domains: food insecurity, housing insecurity, transportation insecurity, digital insecurity, utilities insecurity, health literacy, social support, and tobacco exposure and use. The tool consists of 12 brief, three-point Likert scale questions arranged on a single, easily readable page with an opt-out feature available for parents and guardians who may choose not to answer the questions. User testing has confirmed the questionnaire requires, on average, three to five minutes or less to complete.

In 2019, CHST piloted an initial version of the screening tool as part of a quality improvement (QI) project in select pediatric care settings.

An internal task force led by the CHST Health Equity team and relevant stakeholders developed the SDOH screening tool. The task force selected validated questions for use in the survey where applicable and tailored others to apply specifically to SDOH most impactful to the families of the pediatric population. In 2019, CHST piloted an initial version of the screening tool as part of a quality improvement (QI) project in select pediatric care settings. Details of the pilot project results have previously been published.[3] After the end of the pilot project, the task force collected feedback and results, finalized the SDOH screening tool and took the next steps to roll out the questionnaire across the rest of the organization. After various delays due to the COVID-19 pandemic, the first clinic go-live took place at the end of July 2022.

electronic rollout

The task force identified the Ambulatory Clinical Practice area as the initial area for the electronic rollout to begin due to a unified EHR system workflow across those clinics and buy-in from leadership. The leadership identified an ambulatory champion to lead the effort to ensure buy-in to the process changes across the clinical areas. The CHST Learning and Development Institute created training for all staff in conjunction with the Health Equity team and Ambulatory Clinical leadership. As the rollout progressed, various trainings occurred in person by leadership in a variety of forums. The electronic go-live process occurred clinic by clinic on a rolling basis as determined by ambulatory leadership. With each go-live, the questionnaire became accessible and available to patient families in the relevant clinic(s). Tablets and relevant training were also provided to staff in those clinics where this hardware had not been used as part of the clinical workflow previously. In addition to organization-wide training provided electronically, staff training occurred in person ahead of each clinical go-live.

workflows and procedures

Screening

The screening tool is electronically assigned to each patient every six months (180 days). The survey is assigned on a per-patient basis. When the SDOH survey is assigned, it appears in the pre-visit workflow for the parent or guardian to complete during electronic check-in using the patient electronic web portal. If the survey has not been completed at the time of arrival to the clinic visit, registration staff see an indicator showing this in the EHR and provide the parent or guardian a tablet for completion of the SDOH survey, as well as any other relevant clinical questionnaires (varying by clinic). If for any reason the parent or guardian is unable to complete the questionnaire prior to the visit, the registration staff can view this upon checkout and provide the tablet to the parent or guardian at that time.

Upon completion of the SDOH screening, the responses populate in the EHR. Clinic staff can review the parent or guardian's responses quickly using a graphical representation available on the EHR's main page for the patient. If the patient family scores positive (at risk) for any of the SDOH domains, the staff follow a subsequent workflow to ensure the family receives relevant community resources, making use of the printed notes document that is provided to every patient family after a clinical encounter at CHST. The notes document contains all information pertinent to the visit, including the diagnosis information, medication directives and follow-up treatment plan.

Data Tracking and Feedback

To track the completions of SDOH surveys, responses by the parents/guardians (including positive scores indicating at-risk status for a particular SDOH) and assignment of community resources in the electronic workflows, the CHST Advanced Analytics team has created a reporting system that directly draws data from the EHR.

The report shows completion rates of SDOH screening by clinic, so Ambulatory Clinical leadership can follow up with their staff for retraining purposes where needed. In addition, it shows rates of community resources assignments by clinic for parents/guardians who score positive for any SDOH question. The reporting suite allows for the stratification of parent/guardian responses to SDOH questions by race, ethnicity, preferred language, insurance type (public vs. private) and the medium by which the parent or guardian completed the questionnaire (i.e., via the electronic patient portal or via the tablet in clinic).

The SDOH survey includes questions under the domains of food insecurity, housing insecurity, transportation insecurity, digital insecurity, financial insecurity, health literacy, social support, and tobacco exposure and use. From the inception of the electronic rollout, the most prevalent positive screens have been in three domains: social support, food insecurity and digital insecurity. Specifically, almost 25% of patient families have consistently reported a lack of social support. Approximately 15% of patient families have consistently reported they worry about food insecurity, while over 10% of families have reported they have run out of food recently in the household. Almost 15% of patient families have consistently reported lack of internet access.

In addition, demographic disparities have been identified in the prevalence of at-risk status for almost all the screening domains. Specifically, Hispanic and Non-Hispanic Black patient families had higher prevalence of positive screenings for almost every

Most prevalent needs reported:

almost
25%
of patient families have consistently reported a **lack of social support**

approximately
15%
of patient families have consistently reported **they worry about food insecurity**

almost
15%
of patient families have consistently reported a **lack of internet access in their home**

SDOH category than their Non-Hispanic White counterparts, except for tobacco exposure and use. Similarly, non-English speakers had higher prevalence of positive screenings than English speakers for every category, also excepting tobacco exposure and use. Public/self-pay insurance holders had higher prevalence of scoring positive for every SDOH category than private insurance users, including tobacco exposure. Identification of these disparities allows CHST to provide targeted interventions for the families who are most in need of assistance and support in achieving maximal health outcomes.

Community Resource and Social Work Referrals

When a positive response populates in the EHR, the clinic staff is tasked with providing relevant community resources for that patient family from a list populated within the EHR. Once resources are selected by staff, the resource name, contact information and description is printed in the After Visit Summary that is provided to the family at the conclusion of the visit. This information is also electronically available to the family at any time in the electronic patient portal. This enables the provision of resource information directly to patient families after a positive screen on the SDOH survey.

In addition to the community resource referrals that are made for all patients who screen positive for any SDOH domain, there are high-risk SDOH questions for which a positive response automatically triggers a referral to the CHST Social Work team. Food, housing and utilities insecurity are among these more severe SDOH domains that require immediate follow-up from the Social Work team. Designated Social Work staff members follow up on these referrals to ensure patient families with more dire needs receive more tailored support and logistical assistance that they may need. This serves to further the goal of securing better health outcomes for the patient and family through a targeted response by the organization.

operational challenges

As with any project of this scope, there have been programmatic and technological obstacles to overcome. Several clinics did not utilize tablets at registration prior to the rollout of SDOH and therefore required the provision of hardware for their clinics. Financial investment was therefore required to allow for electronic completion of SDOH in these clinics. Other clinics already utilize various patient surveys to populate the EHR with vital health history and symptoms information for review by the clinical teams. There was concern among these clinics that adding the SDOH questionnaire would contribute to parent/guardian survey fatigue when arriving at clinic visits. The internal task force anticipated this possibility, and input was obtained from stakeholders to ensure the questionnaire is brief, only requested moderately frequently (twice a year) and incorporated into the existing workflow at the clinic to minimize parent/guardian burden.

Another challenge noted by the SDOH implementation group was the awareness and utilization of the proposed workflows and purpose of screening for SDOH. We utilized an ongoing, multifaceted approach to raise awareness of SDOH prior to roll out. These efforts included features in e-newsletters to all staff, special presentations in town halls and to hospital leadership and physicians, and direct presentations during staff meetings. A short video was created with the help of the CHST Learning and Leadership Institute to further the message of the importance of screening for SDOH.

Perhaps the most complicated obstacle to address has been the training for each clinic's staff, as there were slightly different electronic, registration and clinical workflows utilized by each clinic. Incorporation of SDOH into each clinic's workflow requires understanding of these workflows and targeted training. The Ambulatory Clinical leadership have therefore mobilized their staff to train and operationalize the SDOH workflow in each clinic, to raise awareness of the new processes and to ensure uptake of the screening and community resource assignment processes.

conclusion

Ongoing Process Improvements

CHST puts prominent emphasis on continuous process evaluation and improvement. The Ambulatory Clinical Practice has set staggered goals of 75%, 80% and 85% screening rates in every clinic. Therefore, visibility of screening and community resource referral data to all staff directly and indirectly involved in the workflow is vital to the continued success of the SDOH screening program. Data analysis conducted on an ongoing basis informs additional staff training and improvements to the electronic workflow. Process improvements have included the development of internal data dashboards visible to Ambulatory Clinic leadership and staff to allow easy viewing of aggregate SDOH screening completion rates and community resource referrals in real time. These dashboards also allow clinic leadership and staff to view screening data by clinic and address any department-level training gaps that may arise with the hiring of new staff. In addition to visibility of data, automation of electronic workflows wherever possible is a top priority for clinics, given their already-busy schedules and the other important tasks they need to complete daily to serve patients effectively. Therefore, while the targeted referral to community resources is still possible in the EHR, provision of a select list of high-level community resources has been automated such that any patient family who scores positive for any SDOH domain receives this list printed in their post-visit notes, along with their medications and other relevant resources. An additional automated workflow provides this community resource list via text message, a medium that is often more accessible for many patient families. With each change to clinic workflows, the impact on screening rates and community resource referral rates are tracked to evaluate process improvement. A large-scale evaluation of these process improvements will be conducted by September 2023, enabling the teams to further identify and address any additional changes that should be incorporated into training or workflows.

Next Steps

CHST is one of the largest and first urban pediatric health systems in the United States to roll out a large-scale SDOH electronic screening program to a significant proportion of its patient families. This multi-year, multi-stage implementation process required constant communication between and within teams to identify roadblocks and create solutions. An evidenced-based, iterative and collaborative cycle of continuous improvement allowed the internal task force to set and meet development and operational milestones. This continued throughout the process of rolling out the screening tool and is ongoing as the team sets benchmarks for screening and provision of community resources post-rollout. An endeavor of this nature could not rely solely upon top-down delegation but also through in-person contact with staff. Leadership and the implementation group conducted regularly rounding in clinics to ensure buy-in from and understanding of staff members and to get information on pain points.

Next steps for the SDOH rollout process include incorporating the SDOH tool into the inpatient and Emergency Department areas of the hospital. These areas involve different clinical workflows that will require their own approvals, training and stakeholder involvement. While further expansion is explored, process improvement of the current screening program will continue to evolve and inform future work. Aggregate data is regularly reviewed, and opportunities for exploring and reducing disparities using SDOH results are being planned. Follow-up with patient families on their experience of using the SDOH screening tool and the resources received are planned in a future process improvement project. Other future projects involve diversification of community resources provided to patients and further automation of electronic workflows to improve ease and utility of the process for staff and patient families.

As awareness of the importance of SDOH to pediatric patient health continues to rise in health care facilities across the county, the experience of CHST with this screening program may prove valuable to other pediatric facilities seeking to serve similar populations of patient families.

sources cited

1. Howell E, Decker S, Hogan S, et al. Declining Child Mortality and Continuing Racial Disparities in the Era of the Medicaid and SCHIP Insurance Coverage Expansions. *Am J Public Health*. 2010;100(12):2500–2506.
2. Rees CA, Monuteaux MC, Raphael JL, et al. Disparities in Pediatric Mortality by Neighborhood Income in United States Emergency Departments. *J Pediatr.* 2020;219:209–215.e3.
3. Jetelina K, Rodriguez P, Oke O, et al. Factors Influencing the Implementation of Social Determinants of Health Screening and Referral Processes in Pediatric Settings Serving Medically Complex Patients. *J Appl Res Child.* 2020;11(1).

CHST230717_20011