Healthcare Team Members’ Views on Social Determinants of Health Screening and Referral Practices in a Pediatric Emergency Department

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RESEARCH

Healthcare Team Members’ Views on Social Determinants of Health Screening and Referral Practices in a Pediatric Emergency Department

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ABSTRACT

We aimed to explore the healthcare team members’ (HTMs) views on social determinants of health (SDH) screening and referral processes in a pediatric emergency department (PED). We conducted a cross-sectional, mixed-methods study to explore PED HTMs’ views on social care practices at a quaternary-level children’s hospital. The survey was created using a goal identification framework. The survey gathered quantitative and qualitative data by assessing SDH screening practices, comfort and personal habits in screening, prioritization of SDH domains, workflows to perform screening, and perceived barriers to screening. Quantitative data were analyzed using descriptive statistics. Qualitative data were analyzed using thematic analysis and multiple reviewers to identify themes in free-text responses. There were 63 HTMs (48% response rate, Table 1), all of whom reported SDH screening efforts should continue in the PED (Fig. 1), yet 36% were unaware of the current SDH screening processes. Participants reported a median comfort level rate of 47.5 out of 100 when asking SDH-related questions (Fig. 1), and the highest reported barriers were “lack of knowledge/skill on resources” (77.3%), “lack of time” (68%), and “patient volume” (59%) (Fig. 2). Regarding the screening process, approximately half of the respondents suggested improvements in “integration of screening” and “variability of screening” (Fig. 4). This explorative analysis demonstrated that HTMs support continuing screening and referring patients for SDH-related needs. In addition, HTM survey respondents suggested improvements in screening and referral processes, opportunities for HTM training, and screening support to address social needs and ultimately improve patient health outcomes.

Keywords: Social determinants of health, Screening improvement, Health equity, Provider perspectives, Patient-centered screening, Social needs

Abbreviations

APP Advanced Practice Provider
ED Emergency Department
ED RN Emergency Department Registered Nurse
HTM Healthcare Team Member
NIH National Institutes of Health
PCP Primary Care Provider
PED Pediatric Emergency Department
PEM Pediatric Emergency Medicine
PCP Primary Care Provider
QR Quick Response
SDH Social Determinants of Health
SIREN Social Interventions Research & Evaluation Network

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1. Introduction

Social determinants of health (SDH) are a relatively new term for factors that drive a person’s overall health status. The U.S. Department of Health and Human Services defines this term as “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health functioning and quality-of-life outcomes and risks.”¹ It has been well established that SDH impact health outcomes, resulting in efforts to improve the identification of SDH in healthcare settings.²

While it has been established that SDH should be addressed in healthcare, data show that it is especially essential to address social needs in youth. Social factors present in early childhood have significant potential to leave long-term impacts on children. The impacts of SDH on childhood outcomes include food and housing stressors on mental health, access to early education on the trajectory in academic achievement and consequentially adult socioeconomic status, and an unhealthy living environment (i.e., air or water quality) on cognitive and physical health issues.¹,³⁻⁵ Health outcomes and SDH research have shown a relationship between income gradient and the likelihood of children having asthma, migraines, and ear infections.³ Given that SDH can shape the long-term health outcomes of children, healthcare settings must move toward patient-centered, quality care delivery by implementing SDH screening. Healthcare teams should inquire about social needs and provide resources/referrals for families with unmet social needs to help address health disparities and inequities that impact the health outcomes of children and their families.

Additionally, research has shown that emergency department (ED) use is associated with social needs and patient populations receiving less preventative care.⁴ This suggests the ED is an optimal environment to administer screenings for social needs to connect these patients with resources who may be in crisis. Because unmet social needs are associated with less preventative care use, centering the implementation of SDH screenings in clinics or environments with a primary care focus may exclude a portion of the population with unmet social needs. For example, one study found that 59% of the patients surveyed reported at least one social need, and annual ED visit rates were higher among patients with unaddressed housing security or safety concerns.⁵ Thus, pediatric EDs (PEDs) are ideal settings for reaching children and their families with higher rates of unmet social needs.

Screening for SDH in pediatrics can improve the patient and the family’s experience in healthcare.⁶ Anecdotally, a family may present to the PED with a child who has recurrent ear infections because they don’t have access to a primary care provider (PCP) or transportation to the pharmacy to pick up their prescription. While this family has unidentified social needs, such as lack of access and transportation, another round of unattainable antibiotics is prescribed, and no follow-up plan is established or discussed. However, with SDH screening in place, the same family would be identified as having needs (i.e., lack of a PCP and transportation and financial assistance) and consequently may be given a prescription voucher for the antibiotics, provided with PCP options within their insurance coverage or free clinic options, and given any additional community resources/referrals centered around assistance for their needs. The later patient and family experience is likely positively impacted by SDH screening processes.

There are copious amounts of literature outlining the implications of SDH; however, there is a gap in understanding healthcare team members’ (HTMs) perspectives and knowledge on SDH screenings. We believe understanding this gap is important to inform and support improved screening workflows for HTMs, adapt SDH screenings to patient needs, and facilitate community resource connections. Ultimately, understanding HTMs’ views can also identify barriers or challenges that may be present or occur when implementing SDH practices in healthcare settings. Further elucidating HTMs’ views on SDH screening and referral procedures can illuminate how best to implement these practices to improve the quality of care delivered and patients’ experiences within healthcare settings and the community where they seek care and live. This research explored HTMs’ views on SDH screening and referral practices in a PED to better understand and plan for universal SDH screening within one healthcare system.

2. Methods

2.1. Overview

This mixed-methods study was conducted to understand interdisciplinary healthcare providers’ perspectives at a quaternary level pediatric emergency department. The healthcare team in this setting comprises technicians, nurses, registration employees, social workers, pediatric emergency medicine fellows, medical students, residents, pediatric emergency medicine attendings, advanced practice providers, and various other physicians consulted for patient
care. The environment of this research is a level 1 pediatric trauma center with an annual census of approximately ~50,000 patients annually.

2.2. Description of current SDH screening and referral efforts

At the time of the survey collection, SDH screening in the PED was in place via a clinical study workflow described in a previous study by Tedford et al. The SDH screening was facilitated by undergraduate research assistants, Academic Associates (AcAs), working in the PED and tracking patient eligibility. AcAs then would provide an iPad for eligible patients/families to complete the electronic social needs screener.

The screening eligibility included all children 17 years and younger accompanied by an adult caregiver (parent/legal guardian) who was either English- or Spanish-speaking. The SDH screening was separate from the patient’s chart. The caregiver/legal guardian was first asked about their preferred language (English or Spanish), and subsequent consent for enrollment and survey questions were administered in their preferred language. Caregivers were then asked ten items regarding social needs and to provide patient demographic information. The SDH assessed includes access to healthcare, transportation, food insecurity, economic struggles, and housing stability. At the end of the survey, the participants were asked if they would like to be referred to a nonprofit social service organization (United Way Utah 211) to address their unmet social needs within 48 hours of their ED discharge. If a caregiver requested a referral to 211, the electronic surveys and contact information were shared with partners at 211 via a secure information-sharing platform. Our SDH team then tracked those who requested referrals and the community resources provided to help address reported unmet social needs. This workflow is part of an ongoing NIH-funded research project (1R01NR019944-01).

Additional individual, patient-specific SDH screening may occur at the provider-patient interaction level in the PED with the variability of what is asked, to whom it is asked, how it is documented in the patient’s chart, and the uncertainty of what community resources are given to patients and families and their follow up with those resources. In addition, social workers and care management team members may also perform SDH-type screening based on clinical provider requests with no standardized structure in workflow or documentation.

### Table 1. Healthcare team member demographics.

<table>
<thead>
<tr>
<th>Healthcare team member role</th>
<th>Total # in role</th>
<th># Surveys competed</th>
<th>% Surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEM fellows</td>
<td>6</td>
<td>6</td>
<td>100%</td>
</tr>
<tr>
<td>PEM attendings</td>
<td>26</td>
<td>19</td>
<td>73%</td>
</tr>
<tr>
<td>Gen peds attendings</td>
<td>7</td>
<td>4</td>
<td>57%</td>
</tr>
<tr>
<td>APPs</td>
<td>6</td>
<td>3</td>
<td>50%</td>
</tr>
<tr>
<td>Nurses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED RN</td>
<td>55</td>
<td>15</td>
<td>27%</td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED tech</td>
<td>16</td>
<td>6</td>
<td>38%</td>
</tr>
<tr>
<td>Registration staff</td>
<td>8</td>
<td>4</td>
<td>50%</td>
</tr>
<tr>
<td>Social work</td>
<td>6</td>
<td>6</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
<td>63</td>
<td>48%</td>
</tr>
</tbody>
</table>

Healthcare team member reported survey demographics

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Total #</th>
<th>Total %</th>
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</thead>
<tbody>
<tr>
<td>18–24</td>
<td>2</td>
<td>5.13%</td>
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<tr>
<td>25–34</td>
<td>8</td>
<td>20.51%</td>
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<tr>
<td>35–44</td>
<td>15</td>
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<tr>
<td>45–54</td>
<td>13</td>
<td>33.33%</td>
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<tr>
<td>55–64</td>
<td>1</td>
<td>2.56%</td>
</tr>
<tr>
<td>65+</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Personal identification

<table>
<thead>
<tr>
<th>Category</th>
<th>Total #</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>25</td>
<td>64.10%</td>
</tr>
<tr>
<td>Man</td>
<td>12</td>
<td>30.77%</td>
</tr>
<tr>
<td>Transgender</td>
<td>1</td>
<td>2.56%</td>
</tr>
<tr>
<td>Non-binary / nonconforming</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prefer not to respond</td>
<td>1</td>
<td>2.56%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Description: The top half of the table indicates the number of healthcare team members (HTM) in each role in the first column compared to the number of HTM in each role who completed the survey. The far column denotes the percentage of each HTM role who completed the survey. The bottom half of the table indicates the number of HTMs who responded to the survey and were willing to report their age and personal identification.

2.3. Research participant recruitment

A cross-sectional survey was administered to a multidisciplinary HTM population working at the PED, including physicians, advanced-practice providers, nurses, techs, social workers, and registration staff (Table 1). HTMs participated in the survey by accessing the electronic survey from the standardized email invitation sent via division and staff listservs or by scanning a “Quick Response” (QR) code on fliers about the study in the PED breakrooms. The link was sent to the listservs thrice from June to September 2022. Study investigators explained the survey’s goals in the standardized email and the study flier. If the electronic survey was accessed, the participant consented to the survey. No financial or other incentives were provided. We relied on the voluntary report from survey respondents for demographic information on participants, and no information on non-responders was obtainable for the investigation to compare to responders. The Independent Review
Boards (IRBs) assigned to this study did not consider the project human subject research. The IRB exempted the study from the formal review given its quality improvement study design, aimed to inform health system operations, and had minimal risk.

2.4. Survey development and design

We constructed our survey for HTMs utilizing the goal identification framework developed as part of the NIH-funded study (1R18DK114701) in “Guide to Implementing Social Risk Screening and Referral-making.” This resource was accessed and available through the University of California – San Francisco Social Interventions Research & Evaluation Network (SIREN) evidence and resource library. The survey was reviewed by another study team member (AK), who provided feedback on questions to capture the data of interest.

The study team created the survey through Qualtrics XM® that collected information anonymously and contained 26 questions (Appendix A). Three descriptive questions included age, gender identification, and healthcare role. In addition, the survey had 23 questions to capture perspectives on the collection and use of SDH during PED visits or clinical care.

Survey items asked HTMs the degree to which they agreed or disagreed with statements about their current practices screening for social needs, awareness of resources to address social needs, confidence in their ability to help patients address their social needs, barriers experienced to screening for social needs, and attitudes toward the potential usefulness of social needs information and whether social needs were beyond appropriate scope of care or ought to be integrated as the standard of care.

The design of questions varied depending on the topic being asked, though a majority were multiple choice with an option to choose “Other” and further specify their answer. Such questions included inquiring about social needs that influence healthcare recommendations during ED visits or discharge instructions and selecting which social needs the HTM routinely asked about. They could choose from access to healthcare, ability to pay for healthcare visits, ability to pay for medication costs, food insecurity, ability to pay for household items, ability to pay for utilities, housing insecurity, homelessness, unemployment/looking for work, childcare/eldercare access, and an “Other” option. Yes/no questions were asked when: if the PED should continue to create a process for screening, if they should track referrals, if they can access information regarding social needs, and whether the patient SDH information should be included in their chart. Respondents were also asked to scale their comfortability and percentage of patient encounters in which they asked about social needs and were provided a 0-100% scale. The full survey can be viewed in Appendix A: Full Social Needs Screening.

2.5. Qualitative data analysis

Qualitative data was collected from responses to the “Other” option and analyzed by thematic analysis. In this process, independent of the study, two research assistants (SA and ST) reviewed the answers to questions in which the respondent had provided additional text. They coded the data from the individual questions into themes separately. Next, the first author (JN) merged and organized the themes from the two research assistants. The research assistants who performed the initial coding then re-reviewed the codes and themes independently a second time. The entire research team conducted a final review round, in which themes were divided into subthemes to better represent the data collected.

2.6. Quantitative data analysis

Quantitative data was collected from each survey question. Data were analyzed using Microsoft® Excel version 16.72, and descriptive statistics included percentages, frequencies, means, and medians (depending on whether the variables were categorical or continuous). Participants were not required to answer all items, so questionnaires with missing items were excluded from the analysis based on items missing data. Responses with missing items were excluded from the analysis. Item responses were summarized using graphs and charts to illustrate results.

3. Results

3.1. Respondent demographics

A total of 63 HTMs (48% response rate, Table 1) participated in the survey and were primarily physicians (46%, n = 29), aged 35-44 (38.5%, n = 50), and women (64.1%, n = 25). Among the multidisciplinary participants, responses came from PEM fellows, PEM attendings, general pediatric attendings, APPs, ED RNs, ED technicians, social work, and registration staff. For social work and PEM Fellows, 100% of the population responded. Table 1 summarizes the complete HTM demographic information.
3.2. Screening support, comfort, and barriers

When asked whether participants believed SDH screening should continue in the PED, 100% of respondents answered “Yes” to continue the process (Fig. 1). When asked about their awareness of the current screening and referral process, 36% of HTMs (n = 16) responded that they were unaware of the current SDH screening process. Less than half of the participants recalled asking about SDH when conversing with patients. Participants reported a median comfort level rate of 47.5 out of 100 when asked to rate their comfort in asking SDH-related questions. Their highest reported factors that impact their comfortability were “lack of knowledge/skill on resources” (77.3%, n = 34), “lack of time” (68%, n = 30), and “patient volume” (59%, n = 26) (Fig. 2).

The thematic data supporting these findings included quotes, such as “Can we get funding to offer this screening 24/7?” – emphasizing the need for increased logistical and screening support. Quotes showcasing the unanimous support for continuing the screening included: “It is very important to the health of our children.” Congruent with the commonly reported barrier of time, a quote reiterated this concept: “It takes time to integrate into patient care.” The full collection of thematic data can be viewed in Appendix B: Full Thematic Analysis of Free Responses.

3.3. Screening process

Delivery of SDH screening was preferred by 83.3% to be performed/delivered by someone other than clinical HTMs (nurse, tech, provider) and by 66.7% to be delivered “during the PED visit” versus at triage, discharge, or other times (Fig. 3). Figure 3 further illustrates the results for who the screening should be delivered by, when it should be given, and in what form, and explores HTM’s thoughts on the primary purpose behind the screening. Regarding improvements to the screening process, approximately half of the respondents suggested improvements be made in the areas of “integration of screening” and “variability of screening” (Fig. 4).

Quotes from respondents supported the high preference rate for someone other than a clinical HTM delivering the screening. Respondents stated that this method is a “great use of students’ help,” with additional comments on the feasibility of teaching nurses how to administer the screening. Statements regarding the variability of screening revolved mainly around the limitation of the screening being offered in only Spanish and English, with quotes saying, “Certainly, bias is introduced by not including all patients/languages,” “We should be screening everyone,” and “Need to expand languages.” Therefore, language bias and the expansion of the survey to a
**Fig. 3.** The screening process who, when, how, and why.

**Fig. 4.** Screening process areas of improvement.
broader population were significant themes reported in the thematic data analysis.

### 3.4. Referrals and resources

When asked how the PED should refer patients with social needs and given multiple options, 45% chose the option of community health organizations (Fig. 5). However, when asked what resources are provided for families with unmet social needs, 64.4% reported referring to ED Care Management as a consult, and 2.2% referred to United Way Utah 211 as a community resource (Fig. 6).

Thematic data on referrals and resources focused on improving screening workflow and provider connection. For example, HTMs reported wanting “screening alerts sent to care managers” and “to be prompted to know when a patient has a need that hasn’t been addressed” so they can follow up on these social needs with the patient. Regarding resources, quotes supported increasing community resources and learning about available options.

### 4. Discussion

In surveying approximately half of the HTM population in a quaternary-level, trauma 1 pediatric emergency department, there was complete support for continuing the SDH screening and referral process. Options to provide individual thoughts on the screening are exemplified in the thematic data, which shows that HTMs viewed the SDH screening as valuable to patient care. However, less than half of the HTMs who responded were aware of the current screening processes in place. Along with thematic data suggesting increased support for the screening and clarification on some of the processes, there are implications for increased widespread education and support for the screening to raise awareness of the process in place.

Data from our survey found that, on average, HTMs rate their comfortability in addressing SDH with patients at less than half. This finding aligns closely with existing literature that noted lower provider comfort levels when addressing these topics. After exploring barriers that impact comfortability, the most significant obstacle was “lack of knowledge/skill on resources,” further supporting the implication for
increased education on the screening. This finding also indicates that educating on available community resources may be valuable in improving HTM comfort when addressing SDH with patients. With unanimous support for continued screening, improving HTM comfort in addressing SDH could promote better patient and family experiences with SDH screening and referral practices and the overall healthcare they receive in the PED.

Findings surrounding the SDH screening and referral workflow showed overall support for the continuation of someone other than an HTM distributing the survey to patients and continuing to provide the screening electronically. Screening integration and variability were notable areas for improving the screening and referral processes. Thematic data largely supported this finding of improving variability by HTMs, commenting on expanding the screening to include a more comprehensive selection of languages and screening around the clock to have a more representative patient population and reduce bias. The area of improvement of integration is primarily around whether the patients’ social needs can be seen or put in their charts. There were some discrepancies in these findings, as thematic data showed a portion of HTMs supporting the availability of these findings in patient charts so they could better follow up on social needs. However, additional data collected supported identified social needs to be kept separate from their chart. This perspective from HTMs, in addition to the patient and caregiver’s preference, would be important to consider before implementing healthcare system-level screening through the patient’s health record.

The results surrounding referral processes and resource availability showed general support for referring patients to the community rather than internal hospital resources. Most HTMs indicated a preference toward referring patients and families with unmet social needs to community-based organizations, which would connect patients/families to resources to address their unmet social needs. These findings are supported by existing literature that also supports referring patients with unmet social needs to community resources. Partnering with additional community resources for referral for patients with unmet social needs could be valuable for improving referral rates and patient health outcomes.

Limitations to this study include being a single-center study in a PED with a small sample population, meaning these results contribute to a broader body of research on this topic but are not generalizable to other environments. Because it was a single-center sample, the demographics of both the HTMs and patient population may differ from other areas. Due to this research being a survey, there is an inherent response bias, and HTM response rates vary by position. Additionally, no association testing was performed on quantitative data as this research aimed to explore perspectives rather than test hypotheses.

5. Conclusion

We found outstanding support at a quaternary-level PED to continue SDH screenings. Findings specific to screening barriers highlighted low comfortability and a lack of knowledge of resources, which aligns with previously published literature. Based on HTMs’ perspectives and suggestions, we identified the desire and need for integrating SDH screening in a PED setting and the continued development of the referral process. Further studies on patients’ and caregivers’ perspectives on implementing universal SDH screening and referral processes are needed to support an improved patient-centered workflow. We plan to educate HTMs about the current SDH screening processes, increase HTMs’ comfort with screening, decrease the screening variability by performing in additional languages and 24/7 screening, and partner with more community resources.

References


Appendix A

Survey for Healthcare Team Members’ Views on Social Determinants of Health Screening and Referral Practices in a Pediatric Emergency Department

Q1 Please select your role at the Pediatric Emergency Department (PED):

- PEM fellow physician trainee
- ED Nurse
- Advanced Practice Provider (APP)
- PEM physician
- General pediatrician
- ED tech
- Registration sta/uniFB00
- Other (please specify below): __________________________________________________

Q2 Please select ALL the social needs that influence your healthcare recommendations during a PED visit or discharge instructions for patients/families:

- Access to healthcare (i.e., transportation and/or PCP access)
- Ability to pay for healthcare visits
- Ability to pay for medication costs
- Food insecurity (i.e., ability to pay and/or access)
- Ability to pay for household items (i.e., furniture and/or clothing, etc.)
- Ability to pay for utilities
- Housing insecurity (i.e., ability to pay rent or mortgage)
- Homelessness (i.e., sleeping outside, in a shelter, in a car, or any place not meant for sleeping)
- Unemployment or looking for work
- Access/ability to have childcare/elder care
- Other (please specify below): ________________________________

Q3 Thinking back over your shifts from the last month and from the selected social needs you chose above, which do you routinely ask patients/families about? You may specify the various options further in the box if desired.

- Access to healthcare (i.e., transportation and/or PCP access) ________________
- Ability to pay for healthcare visits ________________________________
- Ability to pay for medication costs ________________________________
- Food insecurity (i.e., ability to pay and/or access) ________________________
- Ability to pay for household items (i.e., furniture and/or clothing, etc.) _______
- Ability to pay for utilities ________________________________
- Housing insecurity (i.e., ability to pay rent or mortgage) _________________
- Homelessness (i.e., sleeping outside, in a shelter, car, or any place not meant for sleeping) __
- Unemployment or looking for work _________________________________
- Access/ability to have childcare/elder care ______________________________
- Other (please specify below): ________________________________

Q4 On a scale of 0 to 100%, what percent of patient encounters do you ask patients/families about their social needs?

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please select % of patient encounters:</td>
<td>[Bar Graph]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Q5 What process or resources do you provide for patients/families when you become aware of their unmet social needs (a positive screen)?

- Asking about social needs is not part of my regular practice
- ED Care Management consult
- Non-profit Social Services Organization resource info
- Other (please specify below): __________________________________________________

Q6 On a scale of 0 to 100, how comfortable are you asking patients/families about their social needs?

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
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</tr>
</tbody>
</table>

Please rate your personal comfort: [Insert Scale]

Q7 What impacts your comfortability and/or practice regarding social needs screening of patients/families during a PED visit? Please select ALL that apply.

- Outside my scope of practice
- Lack of time
- Patient volume
- Lack of knowledge/skill in resources
- Stigma (if so, please provide more info below): ________________________________
- Other (please specify below): ________________________________________________

Q8 Are you aware of the current social needs screening taking place in the PED?

- Yes
- No

Description of Current Screening & Referral Process in the PED
The current social needs screening at the PED uses the Academic Associates Program and a REDCap survey. The screening eligibility includes ALL children 17 years and younger accompanied by an adult caregiver/legal guardian AND either English- or Spanish-speaking. Answers provided are separate from patient’s charts. The screening process is provided on tablets delivered by Academic Associates during the coverage hours of 6 am to midnight (with variability during non-semester times of the year). The caregiver/legal guardian is first asked their preferred language (English or Spanish) and subsequent consent for enrollment and survey questions are administered in their preferred language. Participants are then asked 10 items regarding social needs and to provide patient demographic information. At the end of the survey, the participants are asked if they would like to receive a referral to our community partners at United Way Utah 2-1-1 to further address their unmet social needs within 48 hours of their ED discharge. Our SDoH team is then able to track those who request referrals and the community resources provided to help address report social needs.

Q9 Regarding the current social needs screening at the PED, what additional thoughts on this process do you have? Please select all that apply, and feel free to specify more in the text box associated with any response[s] selected.

- Process of screening - i.e., related to being research and/or using Academic Associates, etc. _____
- Variability of screening - i.e., related to uncovered times in the ED and/or limited languages, etc. _____
- Format of screening - i.e., related to questions and/or delivery on a tablet, etc. __________
- Content of screening - i.e., related to being (ir)relevant to visit goals and/or scope of ED, etc. ________
- Integration of screening - i.e., related to being separate from the EHR and/or tracking not part of patient outcome data, etc. ____________________________________________
- Other (please specify any additional thoughts or concerns below): ________________
Q10 Should the PED continue creating a process for social needs screening during ED visits? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.

• Yes ______________________________________________________
• No _______________________________________________________

Q11 Please select the top 3 social needs you believe are reported by patients/families in the PED:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>#1</td>
<td>#2</td>
<td>#3</td>
</tr>
<tr>
<td>___ Access to healthcare (i.e., transportation and/or PCP access)</td>
<td>___ Access to healthcare (i.e., transportation and/or PCP access)</td>
<td>___ Access to healthcare (i.e., transportation and/or PCP access)</td>
</tr>
<tr>
<td>___ Ability to pay for healthcare visits</td>
<td>___ Ability to pay for healthcare visits</td>
<td>___ Ability to pay for healthcare visits</td>
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<tr>
<td>___ Ability to pay for medication costs</td>
<td>___ Ability to pay for medication costs</td>
<td>___ Ability to pay for medication costs</td>
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<tr>
<td>___ Food insecurity (i.e., ability to pay and/or access)</td>
<td>___ Food insecurity (i.e., ability to pay and/or access)</td>
<td>___ Food insecurity (i.e., ability to pay and/or access)</td>
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<tr>
<td>___ Ability to pay for household items (i.e., furniture and/or clothing, etc)</td>
<td>___ Ability to pay for household items (i.e., furniture and/or clothing, etc)</td>
<td>___ Ability to pay for household items (i.e., furniture and/or clothing, etc)</td>
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<tr>
<td>___ Ability to pay for utilities</td>
<td>___ Ability to pay for utilities</td>
<td>___ Ability to pay for utilities</td>
</tr>
<tr>
<td>___ Housing insecurity (i.e., ability to pay rent or mortgage)</td>
<td>___ Housing insecurity (i.e., ability to pay rent or mortgage)</td>
<td>___ Housing insecurity (i.e., ability to pay rent or mortgage)</td>
</tr>
<tr>
<td>___ Homelessness (i.e., sleeping outside, in a shelter, in a car, or any place not meant for sleeping)</td>
<td>___ Homelessness (i.e., sleeping outside, in a shelter, in a car, or any place not meant for sleeping)</td>
<td>___ Homelessness (i.e., sleeping outside, in a shelter, in a car, or any place not meant for sleeping)</td>
</tr>
<tr>
<td>___ Unemployment or looking for work</td>
<td>___ Unemployment or looking for work</td>
<td>___ Unemployment or looking for work</td>
</tr>
<tr>
<td>___ Access/ability to have childcare/elder care</td>
<td>___ Access/ability to have childcare/elder care</td>
<td>___ Access/ability to have childcare/elder care</td>
</tr>
<tr>
<td>___ Other (please specify below):</td>
<td>___ Other (please specify below):</td>
<td>___ Other (please specify below):</td>
</tr>
</tbody>
</table>

Q12 What social needs/risks should the PED screen patients/families for? Please select all that apply.

• Financial resource strain
• Housing insecurity/living situation
• Transportation insecurity
• Food insecurity
• Utility insecurity
• Relationship safety
• Stress
• Social isolation
• Health literacy
• Employment
• Education level
• Physical activity
• All the of above

Q13 When do you think screening for social needs should occur during an ED visit?

• At registration
• During the ED visit
• At discharge/transfer
• Not at all - not within the scope of practice
• Other (please specify below): __________________________________________________

Q14 How do you think social needs screening be administered to patients/families?

• Through a patient portal
• On tablets or using their phone to scan a QR code in the waiting room
• On tablets or using their phone to scan a QR code once roomed in the ED
• Directly into the EHR in the exam room through verbal administration (i.e., nursing or APPs/physicians)
• On tablets or using their phone to scan a QR code upon discharge/transfer out of the ED
• Screening should NOT be administered during ED visits
• Other (please specify below): _______________________________________________

Q15 Who should deliver the social needs screening?

• Continue with the current model - Academic Associates Program
• Registration - through text link or tablet delivery (same as current registration process)
• Nursing - during triage with the use of verbal delivery of a screener
• Nursing - during triage with directions for patients/families to complete the screener with a QR code on their phones
• Physicians/APPs - during visits with the use of verbal delivery of a screener
• Physicians/APPs - during visits with directions for patients/families to complete the screener with a QR code on their phones
• Nursing/APPs/Physicians - during discharge with directions for patients/families to complete the screener with a QR code on their phones
• Independent of ED care team - provide a QR code in the ED room for patients/families to complete
• Screening should NOT be administered during ED visits
• Other (please specify below): _______________________________________________

Q16 Should the PED integrate social needs screening results into the patient's chart on iCentra? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.

• Yes __________________________________________________
• No __________________________________________________

Q17 What should the goal of social needs screening be for the PED? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.

• ALL patients/families - goal should be 100% ______________________________________
• ONLY patients/families high acuity patients (i.e., ESI 1 or 2 AND traumas) __________
• ONLY patients/families presenting for urgent care type visits or are low acuity (i.e., ESI 3, 4, or 5)
• Prioritize certain populations or subsets of patients/families (please specify below which populations/subsets):
  • Screen as able with no set goal (please provide further details below): __________
• I don’t think the PED should screen for social needs ____________________________
• Other (please specify below): _______________________________________________

Q18 Why should the PED perform social screening for patients/families during ED visits? Please select ALL that apply.

• To provide contextual information that could impact individual patients’ treatment plans
• Inform treatment and care planning; know what is affecting patients (e.g.: Change a homeless patient’s prescription to one that doesn’t require refrigeration)
• Identify and make needed social service intervention referrals (e.g.: Refer a patient with diabetes who lacks healthy food to a food bank)
• To use in population health management / targeted outreach (“segmentation” of your patient population)
• Enable targeted outreach to vulnerable patients E.g.: Identify patients with transportation barriers (i.e., those in communities with little public transportation), and refer them to transportation assistance.
• Prioritize management of complex patients (e.g.: Community health worker identifies patients with social needs for care management program)
• To understand areas of need in ED and the community
• Support organizational changes - Identify needed staff, allocate resources E.g.: Ensure that a social worker is available to address patients’ experiences of relationship violence; use social risk data to decide where to locate a new community health worker staff position
• Support development and capacity building in the community - Provide data for advocacy E.g.: Inform local government about the need for housing resources
• Create new partnerships with new/other community agencies (e.g.: Use data on patients’ legal needs to create a medical-legal partnership with an organization in your community)
• To respond to external requirements
• Conduct screening as required by our health system, state, ACO, etc. (e.g.: Screen for housing needs as required by your CCO)

Q19 How should the PED refer patients with social risk needs?
• To Community Health Workers (internal referral)
• To Case Management Services (internal referral)
• To Community-Based Organizations (external referral - currently how screening is set up with referral to social service organization)
• By using Social Service Resource Locators to connect patients with services
• By using the AAFP Neighborhood Navigator Website to provide community resources for different social needs based on zip code https://navigator.aafp.org/
• Other (please specify below): ________________________________

Q20 Should the PED track referrals for patients/families with unmet social needs? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.
• Yes ________________________________
• No ________________________________

Q21 Should a patients/families responses to social needs screening be available to ED care team? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.
• Yes - but ONLY for the Physician/APP caring for the patient/family ________________
• Yes - fully visible to the whole ED care team (nurse, techs, physician/APP, etc.) ________________
• Yes - but ONLY for social work and/or care management ________________
• No - this should be protected and not visible to the ED care team or on the HER ________________
• Other (please specify below): ________________________________

Q22 Can you access information regarding the patient’s social needs in the EHR or via any other source? Any additional comment(s) are welcome and can be provided in the associated text box with your selected response.
• Yes (please provide any items you can view) ________________________________
• No (is there any information that you feel would influence patient care?) ________________

Q23 If the PED develops a clinical practice model for routine social needs screening of patients/families, how frequently would you want to be updated on this information for the ED?
• Never
• Annually
• Biannually
• Quarterly
• Monthly
• Other (please specify below): ________________________________
Q24 Please select your age within the following categories:

• 18–24
• 25–34
• 35–44
• 45–54
• 55–64
• 65+

Q25 How do you describe yourself?

• Woman
• Man
• Transgender
• Non-binary / Non-conforming
• Other
• Prefer not to respond

Q26 If you would be willing to share more thoughts or be contacted about your responses, please share your email below:

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**Appendix B: Full thematic analysis of free responses**

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducing bias and</td>
<td>Language expansion</td>
<td>- “Certainly, bias is introduced by not including all patients/languages”</td>
</tr>
<tr>
<td>improving inclusion of</td>
<td>Implicit biases</td>
<td>- “Need to expand languages”</td>
</tr>
<tr>
<td>patients</td>
<td></td>
<td>- “We should be screening everyone”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- “keep it on an iPad and give to patients in different languages.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- “screen in other languages”</td>
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<tr>
<td></td>
<td></td>
<td>- “Spanish-speaking parents to approach me with hesitation and questions specifically regarding survey. I don’t think it is always clear that goal is to assess needs to provide them with relevant resources rather than gather information for other purposes”</td>
</tr>
<tr>
<td>Improving screening</td>
<td>Time of screening</td>
<td>- “Takes time to integrate into patient care”</td>
</tr>
<tr>
<td>workflow and connection to</td>
<td>Addressing needs</td>
<td>- “should do at registration or discharge”</td>
</tr>
<tr>
<td>providers</td>
<td>Results access</td>
<td>- “having it separate from iCentra (EHR) provides you with more honest answers. Many people will answer the way they think you want them to if they know it’s going in the medical record.”</td>
</tr>
<tr>
<td></td>
<td>EHR separation</td>
<td>- “have the screening alerts sent to care managers and providers so that they become actionable items”</td>
</tr>
<tr>
<td></td>
<td>Prompts</td>
<td>- “nice to have as linked to chart”</td>
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<tr>
<td></td>
<td></td>
<td>- “like to be prompted to know when a patient has a need that hasn’t been addressed”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- “should be separate from iCentra (EHR)”</td>
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<tr>
<td></td>
<td></td>
<td>- “have access to the results so that as an EDCM or Crisis Worker, I am not duplicating work”</td>
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<tr>
<td></td>
<td></td>
<td>- “I like that this screening is being done, but the ED team has no idea if it has been done or what the results are. I think it would be helpful to actually know what people are answering so I can address issues that may relate to my plan. It just looks bad when a screening is being done in our ED but the MD team is essentially blinded to all results.”</td>
</tr>
<tr>
<td>Themes</td>
<td>Sub-themes</td>
<td>Quotes</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Support for screening and</td>
<td>Times offered</td>
<td>“Is there any way to include the caregivers if they answer that they need help with medical cost, medications, etc.?”</td>
</tr>
<tr>
<td>resources</td>
<td>Broader resources</td>
<td>“What times are even covered.”</td>
</tr>
<tr>
<td></td>
<td>Expanding efforts</td>
<td>“Can we get funding to offer this screening 24/7? or teach the nurses to give it?</td>
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<tr>
<td></td>
<td></td>
<td>“Is it just research or supported by the hospital/intermountain?”</td>
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<tr>
<td></td>
<td></td>
<td>“What are the resources available to patients via United Way?”</td>
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<tr>
<td></td>
<td></td>
<td>“need follow up to help our pts get access to social services.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Broadening resources offerings to families.”</td>
</tr>
<tr>
<td>Importance of screening</td>
<td>Time considerations</td>
<td>“feel like this is trendy right now, and worry that it will not be sustainable over time.”</td>
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<tr>
<td></td>
<td>Student help</td>
<td>“great use of students to help.”</td>
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<tr>
<td></td>
<td></td>
<td>“It takes time to integrate into patient care.”</td>
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<tr>
<td></td>
<td></td>
<td>“Easy. Like it.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It is very important to the health of our children.”</td>
</tr>
</tbody>
</table>