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The Emergency Department Sickle Cell Assessment of Needs and Strengths (ED-SCANS): Reliability and Validity

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Background

Sickle cell disease (SCD) affects 90,000–100,000 individuals in the U.S. (Centers for Disease Control and Prevention, 2012) and shortens normal lifespan by approximately 30 years (Platt *et al*, 1994; Powars *et al*, 2005; Hamideh, 2012). Complications related to ischemic and hemorrhagic stroke, acute chest syndrome, sepsis, and multi-system organ failure trigger multiple emergency department (ED) visits and hospitalizations (Platt *et al*, 1994), but pain associated with vaso-occlusive crisis is the most common complaint of SCD patients seeking ED care (Benjamin *et al*, 2001).

Clinicians (physicians and nurses) report frustration with management and care of SCD patients in the ED; they attribute the primary motivation for ED visits to opioid addiction, rather than relief of pain from a severe vaso-occlusive crisis (VOC) (Pack-Mabien *et al*, 2001; Shapiro *et al*; 1997). Hesitance to administer parenteral high dose opioids results in

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inadequate treatment of severe VOC episodes in the ED setting (Pack-Mabien *et al*, 2001) and inordinate delays in receipt of analgesics (Tanabe *et al*, 2010; Lazio *et al*, 2010). A second source of frustration among ED providers caring for persons with SCD is the high utilization of the ED by a small fraction of patients with SCD. Between 15–30% of patients with sickle cell disease have three or more ED visits per year (Brousseau *et al*, 2010; Tanabe *et al*, 2010; Aisiku *et al*, 2009), and 14% of patients had 10 or more visits over a two year period, with a few patients logging over 100 visits in that period (Tanabe *et al*, 2010). Providing this level of care can challenge ED providers and begs the question of what services EDs should provide. What do patients with such frequent ED visits really need? How is it possible to provide the highest quality care to persons with SCD who suffer from life-threatening complications and severe painful VOCs? And, finally, how is it possible to improve the care for adults with SCD when providers perceive many patients as addicted to opioids? The Emergency Department Sickle Cell Assessment of Needs and Strengths (ED-SCANS) was developed to answer these questions and help guide EDs in how to address the complex care needs of persons with SCD.

The Emergency Department Sickle Cell Assessment of Needs and Strengths (ED-SCANS) was developed by observing field experience in expert centers as well as a series of focus groups with ED nurses, physicians, and adults with SCD. (Tanabe *et al*, 2010). The Emergency Department Sickle Cell Assessment of Needs and Strengths (ED-SCANS) is a research-based decision support and quality improvement tool to guide management of individual patients with sickle cell disease (SCD). It can also be used to guide the development of emergency department protocols and other quality improvement initiatives for this population. Its seven decision algorithms include: (1) triage, (2) analgesic management, (3) diagnostic evaluation, (4) identification of the high risk (severe disease) or high user (ED or hospitalizations), (5) disposition, (6) need for an analgesic prescription (if discharged home), and (7) need for referrals, physician, or psycho-social services (if discharged home) (Tanabe *et al*, 2010).

If the tool was found to be useful to emergency nurses and physicians, it could be used to guide care of the individual patient and guide emergency departments in quality improvement initiatives to design changes in processes and practices. Advanced practice nurses can play a crucial role in guiding these efforts. If the end users, ED physicians and nurses, did not find it to be relevant or easy to use, then the ED-SCANS would have limited utility. The current study investigated the measurement properties of the ED-SCANS when applied to clinical decision-making and patient assessment. Specific aims of the project reported in this paper were to:

1. Measure inter-rater reliability and face and utility validity by assessing clinicians' ability to apply the ED-SCANS accurately to decision-making in hypothetical case scenarios.
2. Measure construct validity of the need for either a 'psychiatric or social service referral' (Decision 7) by assessing patients' experience of anxiety, depression, and social service needs.

Methods

Phase 1: Inter-rater reliability and face and utility validity of the ED-SCANS

Sample—A repeated measures study assessed clinician applications of the ED-SCANS to case scenarios. The setting was an urban hospital ED with an annual census of 85,000 ED visits that included 1–3 visits/day for patients with SCD. The study team (a pain and health services researcher and ED nurse [PI], two ED pain physicians, one adult hematologist with a specialty in SCD, one psychiatrist with expertise in communimetric measurement development, and one ED Clinical Nurse Specialist) determined that 10 clinicians would represent a sufficient sample size to assess initial feasibility of the tool use in the ED; five ED physicians and five ED nurses were recruited for participation. Eligibility criterion was a minimum of one year experience taking care of adult SCD patients in an ED setting. Exclusion criterion was previous involvement in the tool development project or knowledge of the ED-SCANS. Both Phases 1 and 2 of the project were approved by the IRB, and all subjects (clinicians and patients) signed informed written consent prior to participation.

Procedures and Measurements—Clinicians attended an initial (Time 1) and follow-up (Time 2) workshop 2–4 months later. At Time 1, subjects attended a two-hour workshop, led by the author, who presented the ED-SCANS. After completing a brief demographic survey, clinicians together as a group applied the ED-SCANS to the three cases scenarios, each of which contained all elements necessary to make the required decisions. Following the group exercise, clinicians independently applied the ED-SCANS to three new cases. Each case had seven questions to answer (1 for each of 7 decisions in the ED-SCANS), for a total of 21 questions tested for inter-rater reliability. All case scenarios were developed by the study team, and each case had one clearly agreed upon answer for each of the seven questions.

Clinicians then assessed face and utility validity of each decision and each element of the algorithm by answering the following questions: “Is this decision and each decision support element clear, relevant or important, and easy to use and understand?” (yes/no responses). Clinicians also rated the overall ease of use for the ED-SCANS using a 1–5 scale, with 1 indicating not easy and 5 indicating very easy to use. They further assessed the utility validity of each algorithm by answering: “Would this decision influence your practice?” At the conclusion of the initial workshop, participants were provided with a gift card.

Based on the Time 1 workshop, minor, clarifying changes were made in the case scenarios, test questions, and algorithms. Most of the changes were very minor and involved clarification of wording, not content. At Time 2, the same clinicians attended a one-hour workshop and re-assessed the three revised test cases.

Data analysis—Inter-rater reliability (agreement on scoring) was calculated using Cohen’s generalized kappa statistic; overall percent correct for each question and each case scenario was also calculated. Descriptive statistics measured the responses of participants to the face and utility validity questions.

Phase 2: Construct validity of Decision 7 depression, anxiety and psycho-social referral needs

Design and sample—A cross-sectional study recruited adult patients with SCD (n=30) during an ED visit, in-patient hospitalization, or hematologist clinic visit at the same hospital as Phase 1 or from the community by means of flyers mailed to members of the Sickle Cell Disease Association of Illinois. Exclusion criteria included sickle cell trait and age < 18. Potential subjects provided contact information to the project coordinator and, if eligible to participate, were contacted to schedule an interview in the emergency medicine research offices at a future time. A sample size calculation was performed to determine a sufficient sample size (Hulley *et al*, 2001). The study team determined a difference of 15 points (effect size) in Spielberger total anxiety scores between patients who scored positive on the screening questions for the ED-SCANS would be clinically meaningful. The same effect size was used to estimate a difference in the Center for Epidemiologic Studies –Depression measure (CES-D) scores. Using an alpha of 0.05 and a beta of 0.2, only seven patients in each group would be necessary, resulting in a total sample size of 14. The study team however determined this would not provide adequate patient experience with using the ED-SCANS and doubled the sample size to 30.

Measures and procedures—Patient participants reported seven socio-demographic (age, gender, race, ethnicity, income, education, employment) and three clinical characteristics (genotype, complications, health care utilization). Only Decision 7 was assessed for construct validity because this decision was the only one that referenced three defined constructs: anxiety, depression, and social service need, which are appropriate for formal construct validity assessment. As previously discussed, the ED-SCANS is a communimetric measure, which means it assesses multiple different types of constructs and is designed to be useful in guiding the identification and delivery of health care services. Four questions from Decision 7 of on the ED-SCANS assessed the need for a psychiatric referral: (1) Do you generally feel anxious, (2) During the last week have you felt depressed, (3) Do you use any illicit drugs other than marijuana, and (4) Do you have any other complicating psychiatric issues? Marijuana was not considered illicit for study purposes because it is now legal in several states in the United States. Nine questions from Decision 7 assessed the need for a social service referral. Participants responded yes or no to the following characteristics: an unstable living/residential situations, teen pregnancy, family problems, homelessness, lack of heat/water or electricity, gangs, lack of social support, employment or student status, or other complicating social factors. On a scale of 0–9, a score of 1+ was a sufficient screen to indicate the need for a social service referral. Patient participants were also asked, “Do you feel the need for social service assistance?”

Construct validity of the Decision 7 screening items was assessed with three scales of known validity and reliability. Construct validity assesses whether a measure actually measures what it intends to measure. For example, when measuring pain, we do not want to be measuring depression. To assess construct validity, responses on the “new measure” are compared with responses on a previously validated measure. In the current study we used previously validated measures of anxiety and depression, and social roles and function to compare participant responses to those questions on the ED-SCANS. For the depression

screen, the Center for Epidemiologic Studies –Depression (CES-D) measure is scored from 0–60 with a score of 16 or higher indicating depression (Radloff, 1977). For the anxiety screen, the Spielberger Trait Anxiety Scale is scored from 20–80 with a higher score indicating a higher level of anxiety (Spielberger, 1983). For the social service referral needs screen, the Patient Reported Outcome Measurement Information System’s (PROMIS) Social Roles and Social Activities scales (PROMIS Health Organization and PROMIS Cooperative Group, 2008; PROMIS Healthcare Organization and PROMIS Cooperative Group, 2008) each measure seven items, each of which is scored from 1–5, for a total score range of 7–35; higher scores indicate higher satisfaction with ones’ social roles (e.g. *I am satisfied with my ability to do things for my family*) and activities (e.g. *I am satisfied with my ability to do things for my friends*). At the conclusion of the interview, each participant was provided with a gift card.

Statistical Analysis—Descriptive statistics demonstrated the demographic characteristics of patient participants and estimated the prevalence of positive ED-SCANS screens for anxiety, depression and social service needs and scores on the associated construct measures. T-tests estimated significant differences in depression and anxiety scores between patients who screened positive versus negative for either condition using the ED-SCANS. The sensitivity, specificity, and area under the curve of the ED-SCANS screening questions for depression and anxiety were calculated. A Pearson Correlation coefficient estimated the association between the ED-SCANS’ total screening score for social service referral and the PROMIS’ total score on measures of social roles and activities.

RESULTS

Phase 1: Inter-rater reliability and face and utility of the ED-SCANS

The clinician participants were 80% male with a mean age of 39 years (SD,13) (untabled). Physicians reported practicing as an ED physician between 4 and 36 years [mean (SD) = 17 (15)], and nurses reported practicing as an ED nurse between 1 and 18 years [(mean (SD) = 7 (7)]. At Time 1, the overall percent correct answers for the 21 case study questions was 78%, and the chance-corrected agreement between clinicians (kappa) = 0.64. At Time 2, the overall percent correct was 77%, and kappa = 0.69. Table 1 presents clinicians’ ratings of the face and utility validity of each of seven ED-SCANS decisions. Of the ten raters, eight or more scored each decision item as clear, relevant, and easy to use. Between 56–89% of clinicians reported that the respective decision item would influence their practice. The mean (SD) overall ease of use for the entire ED-SCANS was rated 4 (1) on a scale of 5 (untabled).

Phase 2: Construct validity of Decision 7 depression, anxiety, and psycho-social referral needs

Demographic and clinical characteristics of patient participants—Table 2 presents the patients’ (n=30) demographic and clinical characteristics and number of self-reported hospitalizations and ED visits over the past 12 months. In addition to indicators of disease severity listed in Table 2, respondents reported complications such as acute chest syndrome, acute coronary syndrome, congestive heart failure, pancreatic stones, iron

overload and priapism. The most frequent “other” complication was gallstones (n=17). Individual patients reported the total number of complications they experienced throughout their life. Eleven patients reported no complications included in the list in Table 2 (7 reported gall bladder complications), eight patients reported 1 complication, 5 patients reported 2 complications, 5 patients reported 3 complications, and 1 patient reported 4 complications.

Anxiety—The 11 patients (37%) who screened positive on the ED-SCANS Question 7 scored a mean (SD) of 50 (11) on the Spielberger anxiety scale, compared with a Spielberger score of 35 (10) for those who responded negatively to the ED-SCANS anxiety screen (n=19). The mean difference (95% CI) in Spielberger anxiety scores between positive and negative screened patients was 15 (6, 24). The sensitivity, specificity, and area under the curve for the ED-SCANS anxiety screen were 0.64, 0.88, and 0.78, respectively, indicating that 64% of sample who screened positive on ED-SCANS also screened positive on Spielberger Anxiety Scale (true positives) and 88% of sample who screened negative on ED-SCANS also screened negative on the Spielberger Anxiety Scale (true negatives).

Depression—The 13 patients (43%) who screened positive on the ED-SCANS Question 7 scored a mean (SD) of 27 (10) on the CES-D scale, compared with a mean CES-D score of 9 (5) for those who responded negatively to the ED-SCANS depression screen (n=17). The mean difference (95% CI) in CES-D scores between positive and negative screened patients was 19 (12, 25). The sensitivity, specificity, and area under the curve of the ED-SCANS depression screen were 0.85, 0.88, and 0.86, respectively. Of the two additional items on Question 7, no patients reported using illicit drugs, and two patients reported a history of being “bipolar”.

Social service needs—Table 3 presents the prevalence of social service needs reported in response to the ED-SCANS screen. Thirteen (43%) patients screened positive for at least one social service need, and some screened positive for multiple needs. A common “other” need was assistance with medical insurance. Mean (SD, range) social service needs was 2.5 (2, 0–7), indicating a relatively high level of social service needs among patients. Mean (SD) Social Roles and Social Activities scores were 25 (7) and 24 (7), respectively, indicating moderately high satisfaction with their social roles and activities. There was no significant correlation between scores for the ED-SCANS social service referral screening questions and the Social Roles ($r=-.218$) and Activities measures ($r=-.027$). Ten patients (33%) responded they felt the need for social service assistance when directly asked.

DISCUSSION

In this paper we report results of the measurement properties of a unique decision support tool and quality improvement framework, the ED-SCANS. The ED-SCANS is classified as a communimetric measure. Whereas a clinimetric tool measures a single construct (e.g. the Apgar score which rates neonate physiologic stability) and is utilized in real time, a communimetric measure simultaneously assesses and integrates multiple constructs in order to identify health service needs of individual patients, a process that was necessary to address the complex needs of adults with SCD presenting to an ED for care (Lyons, 2009).

ED nurses and physicians were able to apply the ED-SCANS to paper case scenarios. Excellent face and utility validity are the most important measurement properties of a communimetric measure (Lyons, 2009) because clinicians will not use a tool unless it is recognized as having immediate value. If emergency nurses and physicians do not find the instrument practical and useful, its impact on care will be negligible. A high proportion of clinician participants rated decisions of the ED-SCANS as clear, relevant, and easy to use. However, they reported a somewhat lower likelihood that the ED-SCANS would influence their practice.

Follow-up conversations with clinicians revealed lower scores were related to the lack of current ED hospital policies and procedures that would allow for implementation of best practices suggested by the ED-SCANS algorithms in their ED. For example, Decision 5 (disposition) of the ED-SCANS suggests transferring patients who have had several doses of analgesic in the ED and obtained some pain relief, but were not yet ready to go home, to an observation area of the hospital. Clinicians reported this was not presently such an option in their setting; in the United States, only 30% of EDs have observation areas (Graf, 2009). Transferring SCD patients who are obtaining some relief after initial doses of analgesics to an observation area would provide additional time to resolve the VOC, open a bed in the overcrowded ED (Institute of Medicine of the National Academies, 2006), maximize the possibility of avoiding a hospital admission for pain control, and may minimize potential re-admissions for the same diagnosis within 30 days, an important indicator in the United States (Centers for Medicare and Medicaid Services, 2012). The decision to recommend ED observation transfer by the ED-SCANS was based upon the Day Hospital model (Benjamin *et al*, 2000), which has shown successful discharge home rates of 84% and 81% respectfully in the U.S. and United Kingdom (Wright *et al*, 2004; Benjamin *et al*, 2000). This is a good example of how the advanced practice nurse could guide quality improvement (QI) initiatives using the ED-SCANS. The Clinical Nurse Specialist could lead a QI team with an outcome of decreasing the number of patients who require admission to the hospital for uncontrolled pain. Frequently in the ED, there is an urgency to either admit or discharge patients with SCD after several doses of opioids within a few hours. Evidence from the day hospital setting demonstrates a longer period of pain management may result in the need for fewer hospital admissions.

Providers also expressed limited ability to influence practice when discussing the recommendation for a social service referral (Decision 7). While current hospital policies or services recommended by the ED-SCANS may not currently exist, this could be another focus of a QI team led by a Clinical Nurse Specialist or Nurse Practitioner. Most hospitals now focus on efforts to decrease utilization for patients with frequent visits. The small proportion of SCD with frequent visits may indeed have unmet psycho-social needs that would benefit from appropriate referrals. ED processes may require re-design to allow for the provision of these services. A QI initiative focused on screening and referral for psychosocial needs may lead to a decreased number of ED visits for this small sub-set of the SCD population.

Inter-rater reliability (agreement) between clinicians applying the ED-SCANS to three hypothetical case scenarios was modest at Time 2 after slight modification in some of the

case scenario questions and cases. Inter-rater reliability and % correct were excellent, with the exception of Decision 3 (diagnostic evaluation), among all case scenarios. The algorithm which supports Decision 3 recommends diagnostic testing and management (e.g. when to begin an evaluation for possible sepsis, when to transfuse) for common high risk complications. We believe agreement on application of the ED-SCANS to cases for this decision may have been lower because the algorithm lacks specificity, as noted by clinicians during the workshop. The algorithm was intentionally left broad to avoid the perception that Decision 3 is “evidence based”, and its recommendations use language such as “suggest” and “consider”. Decision 3 is meant to heighten awareness among ED clinicians that some conditions require a more thorough diagnostic evaluation of SCD patients. For example, the first diamond in the algorithm assesses for the presence of symptoms of stroke, acute chest syndrome, drops in hemoglobin or hematocrit, pallor, fatigue, listlessness, or recent viral illness. If present, the algorithm suggests consultation with a SCD expert if considering transfusion. ED clinicians may not fully appreciate the complexity of transfusion in the SCD population; thus the ED-SCANS suggests consultation. Many patients have severe antibodies, and over-transfusion can result in thrombosis. Finally, inter-rater reliability and accuracy may have been only modest because ED clinicians may have not picked up the subtle but relevant patient data presented in the case scenarios. Overall, the accuracy of responses supported the utility of the ED-SCANS in the ED setting was good.

Construct validity of the ED-SCANS screening questions to identify anxiety and depression was moderately high, especially for depression. In our study, approximately four of every 10 patients screened positive for either anxiety or depression. Similar to our findings, in a study of 232 SCD patients who completed a diary, 27% and 7% reported symptoms of depression and anxiety, respectively (Levenson *et al*, 2008). The ED-SCANS anxiety screen may have missed up to 1/3 of patients with anxiety. Future adaptations to the screening questions for anxiety and depression may be required. These data re-affirm the need to include screening for unmet psycho-social needs.

Decision 7 of the ED-SCANS also identified a large proportion of patients who had unmet social needs and could benefit from a social service referral. Difficulties with insurance and housing were the most common social service needs identified. Decision 4 (high risk of severe disease/high ED or hospital user) and Decision 7 (referrals) were designed to complement one another, in that some of the patients with high ED utilization may be experiencing co-existing psychiatric diagnoses or socially challenging situations amenable to social service intervention. Formal mechanisms for referrals will require a coordinated effort between emergency department providers and hematology and sickle cell experts, and can be led by APN's in the ED.

Construct validity of the social service needs screening questions of the ED-SCANS was poor. This suggests the social service needs screening questions of ED-SCANS and the PROMIS parameters are not measuring the same construct. The ED-SCANS identified needs such as housing and health insurance. The PROMIS measures identified how patients felt about their social role and functioning in life. These data suggest that while many persons with SCD have unmet needs such as housing and health insurance, they may be very satisfied with their social role in life. Indeed, these are different constructs and the PROMIS

measures were not appropriate comparison measures. No alternative, validated tool was found to assess ED-SCANS construct validity of social service referral needs. Future research should explore other ways to insure the construct validity of the items intended to measure the need for a social service referral. It is also possible that simplifying the ED-SCANS social service screening question (e.g., “Do you have any situation about which it might help to talk to a social worker today?”) might provide a more reliable measure of need.

Limitations

Reliability and validity assessments were conducted at one center that did not specialize in the care of SCD patients, such that results may not be generalizable to physicians and nurses or SCD patients in EDs with specialized care structures. However, results are generalizable to most EDs across the country, which lack such targeted programs. Only 10 clinicians were selected to pilot test this tool. A larger sample size may have resulted in changes to the results, however, this was felt to be a sufficient sample to report pilot test results. Paper case scenarios were used to assess how an individual clinician would apply the ED-SCANS to a scenario. This may or may not reflect actual practice. While construct validity was conducted with a relatively small sample, patients were recruited from both the hospital and community.

Implications for Research

Evaluation of the ED-SCANS ability to guide practice changes and resulting improvements in the quality of care is needed. This work is currently being conducted in two emergency departments in North Carolina. Each center has a large multi-disciplinary team that is focusing initiatives on improving the triage process, analgesic management, identification of high-risk, high user patients, and increasing the number of referrals for those patients that screen positive for psycho-social needs.

CONCLUSIONS

The ED-SCANS is a new tool which may be useful to improve the care of an individual patient with SCD, or within an individual ED. ED nurses and physicians found the ED-SCANS and its’ supporting algorithms easy to use and relevant to practice. In order to influence practice, EDs will need to develop supporting resources, policies, and procedures to allow clinicians to apply the ED-SCANS effectively. The ED-SCANS can be used as a framework to guide EDs in developing new policies, procedures, and protocols to ensure best practice standards. APN’s can help lead the way to re-design the processes and practices of providing care to the adult patient with SCD in the ED.

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Table I

ED-SCANS Face and Utility Validity (N=10)

Algorithm Item	Clear	Relevant	Easy to use	Influence practice
	% Yes	% Yes	% Yes	% Yes
D1: Triage	100	90	90	78
D2: Analgesic Management	100	100	100	78
D3: Diagnostic Evaluation	80	80	80	67
D4: High risk – high user	90	90	100	75
D5: Disposition	90	89	100	56
D6: Need for analgesic prescription (if discharged home)	100	90	100	78
D7: Referrals (medical)	88	88	89	78
D7: Referral (psychosocial)	100	89	100	89

Table II

Patient Demographic Characteristics (Construct Validity) (N=30)

Characteristic	N (%), mean (SD), or median; intra-quartile range
Age	41 (11)
Sex (male)	15 (50)
Race	
Black	29 (97)
Missing	1 (3)
Ethnicity (Hispanic/Latino)	3 (10)
Genotype	
SS	17 (57)
SC	6 (20)
SB ⁰	1 (3)
Unsure	6 (20)
Disease Severity (complications, self-report history, n (%) reflects the number of subjects that reported each complication)	5 (16.7)
Pulmonary hypertension	11 (36.7)
Avascular necrosis of hips or shoulders	5 (16.7)
Stroke	4 (13.3)
Seizures	1 (3.3)
Transient ischemic attack	3 (10)
Kidney dysfunction, proteinuria 1+ on urinalysis	3 (10)
Kidney dysfunction, creatinine 1.0 ng/ml	5 (16.7)
Leg ulcers	Multiple (see text)
Others	
Highest education achieved	
Grade 9–11	2 (6.7)
Grade 12 or GED	2 (6.7)
College (1–3 years)	13 (43.3)
College (4 years)	8 (26.7)
Graduate degree	5 (16.7)
Work/School	
Full time work	7 (23.3)
Part time work	2 (6.7)
Full time school	3 (10)
Unemployed	13 (43.3)
Full time work and part time school	1 (3.3)
Part time work and part time school	2 (6.7)

Characteristic	N (%), mean (SD), or median; intra-quartile range
Retired	2 (6.7)
Income (Median, IQR)	\$20,000; \$11,750, \$46,375
Insurance	
Medicaid	9 (30)
Medicare	3 (10)
Private	8 (26.7)
Medicare and Medicaid	5 (16.7)
Public and private	2 (6.7)
None	3 (10)
Self-reported healthcare visits over past 1 year	
Hospitalizations	3; 0,7
ED visits	1; 3, 10

Table 3

ED-SCANS Screening Questions for the Need for a Social Service Referral

D7: ED-SCANS Screening Question	Yes, n (%)
Unstable living situation	10 (33)
Teen pregnancy	0
Family problems	6 (20)
Gangs	0
Lack of heat, electricity or water	0
Homeless	1
Lack of social support	9 (30)
Unemployed and not in school (retired =1)	13 (43)
Other complicating social factors	12 (40)