Title Page

**Exploring Social Determinants of Health Assessments and Community Relationships Among Western Pennsylvania Hospitals**

by

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**Abstract**

Over the past several decades, the United States have been at the frontline of medical innovation to combat complex health problems. However, the current healthcare system results in several gaps within the arena of population health, such as high cases of preventable deaths, dramatic disparities in illness between different racial populations, and steep out of pocket costs. One method of combating these problems is through an increased focus on social determinants of health (SDoH) - such as housing, transportation, and nutrition - and cross-sector relationships. While traditional health systems have not concentrated on SDoH, many have launched interventions to assess broader public health factors. However, there is limited research on these interventions and what data hospital systems collect.

The current study, therefore, uses a mixed-methods approach to explore social needs assessments and community partnerships in Western Pennsylvania hospitals. An online survey (via Qualtrics) was sent to Chief Nursing Officers at regional hospitals. The survey focused on nine determinants of health, such as transportation, education, and interpersonal violence. Based on survey responses, follow-up interviews were completed to examine relationships between hospitals and community organizations that connect patients to essential services.

Results from 17 respondents displayed that the majority of hospitals have social determinants screenings as part of standard or needs-based procedures. Interviews further indicated that of hospitals referring patients to community services, most have collaborative interventions with organizations that incorporate social determinants of health. Many hospitals, however, do not track outcomes once patients access community services. Future studies should therefore research barriers hospitals encounter when tracking patients, and if health outcomes improve once patients gain social needs services.

**Public Health Significance:** Providing SDoH programs in hospitals not only helps patients access essential social needs, but it also allows providers to understand larger population health problems and disparities that occur in the community.  As a result, patients can be supplied with effective treatment plans, and improve their health status. If this concept were applied to large populations, broader public health objectives can be reached. This includes achieving health equity and reducing disparities among vulnerable populations.

**Key words:** Social determinants of health, hospitals, social needs, community organizations, partnerships

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# Background

Over the past several decades, the United States has been at the frontline of medical innovation to combat complex health problems. Ranging from minimally invasive surgeries to advancements in pharmaceuticals, hospitals and providers have pushed American medical care to be one of the best in the world1. These improvements in health care and practice have extended life expectancy by seven years since the later half of the 21st century1. Gains in life years are primarily due to improved care for premature infants, and individuals with cardiovascular disease1. The widespread use of medical technology has prevented countless deaths (both American and international), as well as saved hospitals time and money.

Although medical innovation has bolstered the field of health care and treatment, a major drawback has formed in the United States in recent years: exorbitant out-of-pocket health-related expenditures for declining health outcomes2. In 2017, the average cost for health care per person in the United States was over $10,000 per year3. And even though Americans spend almost twice as much on their health care than any other developed country, the United States has the lowest life expectancy out of all of them4. Decline in life expectancy is primarily due to the high number of preventable deaths from chronic diseases, including diabetes, hypertensive diseases, and certain cancers2. Further analysis indicates that life expectancy and disease prevalence greatly varies between different racial groups3. While these trends are due to several factors - such as increases in pharmaceutical drugs and costly administrative fees - one of the most prominent drivers is because 95% of U.S. healthcare dollars on providing medical care with limited attention to addressing the broader determinants of health5.

These determinants, also known as social determinants of health (SDoH), are the social and physical environments individuals work, live, play, and eat in6. Examples of SDoH include transportation, employment, income, and housing. Social determinants of health also have a substantial impact on overall population health and wellness. In fact, they can be responsible for 80% of health outcomes, which is greatly superior to the 20% of outcomes impacted by hospital initiatives7. Gaps in SDoH can additionally be attributed to premature deaths. Several studies have indicated that almost half of all deaths in the United States are attributed to behavioral causes, which are influenced by social factors such as income, education, and employment8. In a Kaiser Family Foundation meta-analysis of over 50 research studies, over one third of deaths were caused by social factors, including education, racial segregation, social supports, and poverty24. Furthermore, if health systems were to create SDoH and nonmedical care initiatives, overall health and health disparities would improve among communities9. This is especially applicable for socially disadvantaged populations, who commonly face unmet social services25.

Although health systems in the United States have a history of solely focusing patient care in clinical settings, hospitals began to assess broader health needs after the passage of the Patient Protection and Affordable Care Act (ACA) in 201010. The federal legislation, also known as Obamacare, mandated all nonprofit hospitals to conduct community health needs assessments (CHNA) every three years and implement tactics to identify priority needs11. CHNAs often include determining common illnesses in the region, evaluating health outcomes, and prioritizing community needs. As more hospitals conducted CHNAs, they started to engage community organizations and services to collect population health information12. These relationships helped hospitals discover regional social needs services for patients. Clinical-community relationships, as a result, became a fantastic method of bridging populations to essential programs that involve social determinants of health, such as food banks, housing programs, and employment opportunities.

## Literature Review

Over the past several years, large managed care organizations and regional community-based hospitals alike developed social needs initiatives to combat health disparities, and connect patients with necessary services. They have incorporated various determinants, such as housing, food insecurity, employment, and transportation. For instance, Kaiser Permanente - the country’s largest integrated health system - created a Thriving Communities Fund, which provided affordable housing for more than 500 low-income adults in Oakland, California13. Similarly, Nationwide Children’s Hospital in Cincinnati, Ohio has collaborated with a nonprofit housing organization to revitalize neglected neighborhoods surrounding the city14. Both programs allow low-income residents to dedicate resources to essentials other than rent, such as medication, food, and transportation. There is also ample evidence that displays hospital housing initiatives greatly promotes health and wellbeing15. Another globally recognized health system, Cleveland Clinic, has targeted employment rates to improve income levels and health within the community16. Specifically, they partnered with local cooperatives to create over 100 jobs for residents16.

 Although hospitals have formed community relationships and programs that focus on SDoH, there have been few national or systematic reviews of their initiatives. The limited body of literature displays that numerous hospitals address at least one SDoH, but majority do not evaluate more than one SDoH during patient intake. To begin with, in a 2017-2018 cross-sectional study from the Journal of the American Medical Association (JAMA) that analyzed over 2000 U.S. physician practices and hospitals SDoH screenings, results displayed that while most hospitals collect information on at least one social need, only 24% of hospitals and 16% of physician practices had screenings in place for all five outlined SDoH (food insecurity, housing instability, utility needs, transportation needs, and interpersonal violence)17. When authors asked about barriers to screening patients for social needs, physician practices and hospitals said that a lack of financial resources, time, and incentives were key drivers17. In another analysis of outpatient SDoH assessments in four children’s hospitals, authors found that 97% of hospitalists and 65% of nurses reported that they do not use a specific screening tool to measure SDoH18. However, 29% of hospitalists and 41% of nurses indicated screening for at least one SDoH frequently or with every hospitalized patient18.

 Aside from formal research, the United States has used a multiplicity of national and local programs that advocate for the incorporation of SDoH into everyday health care. On a national level, the United States Department of Health and Human Services launched the Health People 2020 initiative, which strives to improve population health and wellness by focusing on public health objectives23. One of these objectives outlines social determinants of health, and how health care stakeholders (i.e. providers, hospitals, public health organizations) can incorporate determinants into health delivery, and eventually achieve health equity25. The Centers for Medicare and Medicaid Services (CMS) is another executive agency that has campaigned for increased use of SDoH in hospitals, particularly in Medicaid Managed Organizations. CMS has promoted the use of health technology and electronic health records to use a data-driven approach for increasing health outcomes26.

 On a regional level, individual states have taken steps to incorporate SDoH into care delivery, although they primarily pertain to Medicaid organizations. Oregon and Rhode Island, for example, mandate Medicaid Managed Care Organizations (MCOs) to screen for social needs through contracts with state agencies27. Similarly, New York requires Medicaid MCOs to partner with local community organizations to implement and evaluate SDoH interventions27. Regional agencies, such as county or local health departments (LHD) also highlight the importance of SDoH, and create community-level interventions to integrate determinants in everyday life. In Pittsburgh, the Allegheny County Health Department (ACHD) has authored innovative techniques to improve population health through a comprehensive strategy titled “Plan for a Healthier Allegheny”28. This plan comprises of partnerships between various stakeholders to elevate community health and stresses SDoH28.

## Center for Public Health Practice

 The present study began through the Center for Public Health Practice, Research, Law, and Policy (commonly called Center for Public Health Practice) at the University of Pittsburgh, Graduate School of Public Health. The center researches laws and policies that impact population health, and collaborates with community organizations involved in public health. The current study involves a faculty member in the Department of Health Policy and Management, Dr. Wendy Braund, as well as the Healthcare Council of Western Pennsylvania (HCWP), which is an oversight board of hospitals in the region.

Through this collaboration, researchers and faculty administered an online survey that assess SDoH initiatives in western Pennsylvania hospitals. After the survey was sent out, I was chosen to analyze results with Dr. Braund. Together, we developed a final report for the HCWP on SDoH objectives in regional hospitals. This allowed HCWP to understand if and how hospitals within the western Pennsylvania region are addressing population health problems and outcomes by focusing on SDoH. Once the report was finalized, I chose to develop it into the focus of my master’s essay. In order to gain more insight into SDoH priorities and objectives, I decided to conduct interviews with respondents that indicated having active relationships and partnerships with community social service organizations. The purpose of these interviews was to understand how hospitals work with local organizations in bringing essential SDoH to patients. This includes direct interventions, joint coalitions, or established programs that center around assessing unmet needs.

# Methods

 The current study uses surveys to assess current SDoH initiatives in Western Pennsylvania hospitals and health systems. After receiving results and analyzing responses, select interviews were conducted to learn more about hospital relationships with community organizations, and joint interventions that were established for patient social needs.

## Social Needs Survey

 When faculty at the Center for Public Health Practice developed the Social Needs Assessment survey (located in Appendix), they created a variety of questions that revolve around which procedures, referrals, and specific needs are addressed in hospitals. The survey consists of nine determinants of health: housing, homelessness/instability, food insecurity, transportation, education, utilities, interpersonal violence, family and social support, employment/income. These categories were derived from a similar study conducted by Deloitte, which examined SDoH screenings from over 300 hospitals across the United States19. In addition, survey authors purposely used the phrase “social needs” to refer to social determinants of health because hospitalists and nurses may be unfamiliar with the term “social determinants of health”. The survey further asked CNOs specific questions regarding the frequency of social needs screenings, populations screened, and investments dedicated to evaluating SDoHs. Information on referrals to community organizations, outcomes, and administrative structure was also collected.

After the survey was created, it was delivered through Qualtrics, which is an online platform compatible with most electronic devices, such as desktops, laptops, mobile devices, and tablets. The survey was sent to 50 hospitals and health systems throughout the western Pennsylvania region, including facilities in Allegheny, Butler, Armstrong, Clarion, and Washington County. Out of the 50 surveys disseminated to hospitals, 22 responses were recorded. Of the 22 answers, however, only 18 were fully completed. This creates a response rate of 36% (18/50).

## Interviews with Chief Nursing Officers

Interviews were selected to examine how hospitals and community organizations work together to collect patient social needs information. Establishing cross-sector partnerships with local organizations creates a collaborative and holistic approach to addressing complex SDoH, and increases available staff and resources. Therefore, CNOs that responded having formal relationships and interventions with community based providers as a capability to support social needs related activities were chosen for these interviews.

Out of the 18 hospital respondents, nine indicated having formal relationships with community providers. After contacting the nine CNOs, however, two indicated that they no longer work for the same hospitals. Of the remaining seven candidates, only four respondents were able to be contacted. As a result, four successful interviews were completed. The following flow chart summarizes the interview selection process:



Figure 1 Interview Selection Flowchart

In combination with the Social Needs Assessment survey, the interviews serve as a qualitative measure to analyze how hospitals are tackling SDoH objectives. Together, the surveys and interviews create a mixed-methods approach to evaluating present social needs screenings, and which relationships hospitals are forming with community stakeholders.

# Results

## Social Needs Survey

### Focused Social Needs

Initial results from the survey indicate that 94.4% (17/18) of responding hospitals have initiatives developing or already in place to assess patient and community social needs (Figure 2). Patient screening for each of the nine social needs varied by hospital. Transportation was the highest social need screened, with all seventeen hospitals reporting procedures in place (Figure 6). Housing, instability/homelessness, interpersonal violence, and family and social support were the next most common social needs screened, with 88.2% (15/17) of hospitals responding to initiatives for these determinants (Figure 6). 41.2% (7/17) of hospitals indicated assessing utility needs, making it the least common social need screened (Figure 6). Furthermore, across the seventeen hospitals that have social needs procedures, 17.6% (3/17) of hospitals reported screening for all nine of the social determinants of health outlined in the survey (Figure 7). Another 17.6% (3/17) of hospitals indicated having initiatives in place to address eight out of the nine specified determinants (Figure 7). The lowest amount of social needs screened by one hospital was three out of the nine determinants listed in the survey (Figure 7). Aside from the nine social needs enclosed in the survey, some hospitals also reported screening for drug and alcohol dependency, literacy levels, affordability of medication, and insurance coverage.

### Assessment Procedure

Of the seventeen hospitals with social needs initiatives, 94.1% (16/17) screen for at least one social need on a systematic basis (Figure 3). One hospital out of the seventeen reported screening patients on an occasional basis. In terms of how hospitals assess patient social needs, 64.7% (11/17) use a formal screening tool, such as questionnaires or surveys (Figure 5). Other methods of gathering patient social needs information included interviews, admission assessments, and nurse or case management assessments. Hospitals also indicated having specific capabilities to address patient social needs. Sixteen out of seventeen hospitals, or 94.1%, reported having a process in place to connect people to social needs resources, making it the most common capability (Figure 4). To the opposite extent, using measurement tools to assess results from social needs activities was the least common capability, with 41.2% (7/17) of hospitals indicating this competency (Figure 4).

### Referral to Community Providers

The survey additionally measured how frequently hospitals made referrals to community organizations for each of the nine social determinants. A five option scale was used to grade varying frequencies: standard operating procedure, needs basis and not standard procedure, currently not actively referring but have plans to actively refer patients in the future, currently not referring and have no plans to actively refer patients in the future, and I do not know.

Transportation and family and social support needs were the two most common referrals made as part of hospitals standard operating procedure, with 47.1% (8/17) of respondents indicating this procedure (Figure 10). Seven out of seventeen hospitals, or 41.2%, reported community referrals for interpersonal violence, making it the next most commonly screened social need as part of standard operating procedure (Figure 10). Only one hospital responded having referrals for employment/income needs, making it the least frequently screened need as part of the standard operating procedure (Figure 10).

Instability/homelessness was the most frequent social need screened as part of hospitals needs basis procedure; 70.5% (12/17) of respondents recorded having this capability (Figure 10). The second most frequently screened social needs were utility and housing, with 64.7% (11/17) of hospitals reporting screening on a needs basis (Figure 10). Finally, income was the least referred determinant on a needs basis, with only 17.6% (3/17) of hospitals reporting screening initiatives (Figure 10).

While social needs referral processes varied by hospital, social services and case managers were almost always involved in the procedure. In some cases, community stakeholders (such as food banks, vocational schools, and local non-profits) also participated in the referral process. One respondent, however, reported directly involving patients in each referral - the patient has the freedom to choose a provider regarding the corresponding social need.

### Populations Screened

 When asked which groups hospitals target for social needs-related activities, the majority of hospitals (82.4% or 14/17) reported focusing on patients treating at that respective hospital (Figure 8). The second most common population that has social needs screenings in place are patients who are high utilizers of hospital systems (Figure 8). To contrast, the least targeted population for social needs screenings was the community of patients and non-patients, with 23.5% (4/17) of hospitals reporting this screening (Figure 8). The survey further focused on which populations were targeted depending on the social need involved. Across all nine social determinants, Medicaid patients and all patients in the hospital were the most focused populations.

 Aside from patients and utilizers of healthcare facilities, the survey also included social needs initiatives among hospital employees. Approximately 11.8% (2/17) of hospitals screen their employees at least annually (Figure 9). 23.5% (4/17) hospitals reported that they do not currently screen their workforce for social needs, and have no future plans to (Figure 9). The majority of hospitals - 64.7% (11/17) - reported that they do not know if their hospital screens employees for social needs information (Figure 9).

### Administrative Structure

The final questions of the survey pertained to hospital infrastructure and current staff to address patient social needs information. Out of the all the respondents, 41.1% (7/17) indicated having a full time employee (FTE) responsible for patient social needs activities (Figure 11). The remaining hospitals either have no current or future plans to include a FTE for social needs-related screenings, or are not aware of any FTEs available in their respective hospital (Figure 11). Moreover, in terms of the staff members involved in patient social needs assessment, social workers were responsible for these processes across all hospital respondents (Figure 12). Nurses and case managers were also commonly used in social needs intake, with 82.4% (14/17) of hospitals reporting this (Figure 12). Health IT staff were the least commonly used, with only one hospital reporting their roles being involved in the process (Figure 12).

### Outcomes, Investments, and Funding

 When asked if investments in social needs were reflected in hospital’s community benefit spending, the majority of respondents (70.6% or 12/17) reported not knowing the answer (Figure 14). The survey further asked if hospitals have social needs-related business practices that invest in local communities. 29.4% (5/17) of hospitals report hiring and training local communities, 17.6% (3/17) participate in supply chain procurement policies, and 17.6% (3/17) have investment portfolios (Figure 15).

Moreover, hospitals indicated which outcomes they track related to patient social needs activities. The most prevalent outcome tracked was overall hospital readmission rates, with 70.6% (12/17) of respondents indicating this capability (Figure 16). The least frequent outcomes tracked were cost benefit attributed to social needs activity (11.8% or 2/17) and number of individuals enrolled in social needs related activities (17.6% or 3/17). Another 11.8% (2/17) of hospitals reported not measuring any results related to patient social needs activities (Figure 16).

 The final questions of the survey regarded funding sources for hospital social needs initiatives. Results indicated that about one third of hospitals (35.3% or 6/17) do not receive funding through grants, private investors, or local organizations (Figure 13). 23.5% (4/17) of hospitals accept federal grants or programs, 11.8% (2/17) receive state grants, and 5.9% (1/17) secure external funds (i.e. private/non-governmental investments).

## Interviews with Chief Nursing Officers

Once survey responses were collected, interviews were conducted among hospitals that indicated having formal relationships and defined sets of interventions with community-based providers. Out of the nine respondents indicating this capability, two respondents indicated they no longer work at the same hospital, and three respondents did not respond to outreach efforts. As a result, four CNOs were able to be successfully interviewed. The interview questions (seen in Appendix) asked respondents to describe social needs intake processes, formal relationships made with community providers, and outcomes tracked once patients enter social needs services.

### Social Needs Intake Process

Out of the four respondents interviewed, three CNOs indicated that their hospital screens every patient for social needs as part of the standard procedure. Triage nurses and administrative staff are the main individuals involved in the initial assessment process. Depending on what needs are not being met, social workers get involved to further assess patients. In one hospital, a social worker is always present for in-house evaluation, while other respondents indicated having social workers on-call. Furthermore, one of the four CNOs indicated that the hospital has a formal outpatient program, known as the Community Care Network, which manages all high-risk patients. During the interview, she explained:

“the Community Care Network is an outpatient branch of the hospital, which has been around for three years. We review patients every day by looking at their charts, and look for high-risk diagnoses, such as frequent visits to the emergency department, or for chronic conditions like chronic obstructive pulmonary disease (COPD). A lot of what we do is also waiver services. We get patients linked up to community services.”

During these assessments, the CNO stated that social workers specifically utilize the Protocol for Responding to and Assessing Patients’ Assets, Risks, and Experiences (PRAPARE) tool. This tool is a SDoH model supported by national public health organizations, such as the National Association of Community Health Centers (NACHC) and the National Academy of Medicine20. The purpose of the PREPARE tool is to provide health care organizations with evidence-based and multidisciplinary approaches when measuring SDoH among patient populations21.

### Relationships with Community Stakeholders

 All four of the interview respondents reported having relationships with community providers and organizations to address patient social needs. The CNOs indicated that relationships were developed over time, and after frequent referrals to organizations. Majority of the community organizations were within each hospital’s respective county. These organizations include interfaith nonprofits, food banks, county agencies (i.e. Department of Drug and Alcohol, Department of Behavioral Health), and specialized health facilities (such as long term care, nursing homes). In two hospitals, CNOs reported regular meetings with community stakeholders, either on a weekly or monthly basis. In one of these two hospitals, the CNO stated:

“There is a community collaborative that serves as a continuity of care panel, and meets every quarter. And every social determinant agency in the county is present at that table. So all the experts from mental health, drug and alcohol, waiver programs, programs for children all come together.”

 Interviews also indicated that some hospitals have both formal and informal relationships with community providers and organizations. Two out of the four CNOs said that their health facility has formal agreements with community organizations, which involves signed contracts between the two entities. These contracts allow resources and staff members from both organizations to collaborate and address patient social needs. The contracts also limit the collaboration for a certain number of years. Informal relationships, on the other hand, do not involve contracts or restrict the timeline of partnerships. CNOs reported that these relationships are primarily formed through continuous communication and interaction with organizations, either through referrals or routine meetings.

### Activities and Interventions

 While all interview respondents indicated having relationships with community organizations, only two out of the four indicated that they develop interventions to combat unmet patient social needs. CNOs that responded not having interventions were due to lack of funding or staff. Of the two hospitals that reported developing interventions for patients, both reported creating action plans within the hospital and via collaboration with local organizations. These CNOs described that if a patient's social need is straight forward, such as lack of transportation, the hospital will assume the cost and responsibility of connecting that individual to appropriate care. However, for more complex needs - which respondents indicated as being the majority of cases - more collaboration and resources are required. One CNO said that in these situations, “more staff and outside-the-box thinking is needed to decide on how to use available resources”.

In the hospital with the Community Care Network, the CNO indicated that when the program started, hospitalists and social workers “built a binder of all community resources. Now, [we] developed that into a PowerPoint and share it with physician practices, churches, and nurses in the area”. In parallel to the binder repository, staff members at the Community Care Network use an open data source, known as Aunt Bertha, to help create and implement interventions for at-risk patients. For high-risk patients, nurses and social workers will go into the patient’s home, assess personal and family factors that might impact overall health, and create tailored interventions. This hospital’s CNO reported the tactic as being extremely helpful and effective at connecting patients to essential services, and increased patient retention to their doctor’s treatment plan.

### Outcomes Tracked

 Two hospitals out of the four reported routine follow-up calls with patients once they have been referred to community services. These are either done by hospital administrators, nurses, or social workers. One of the two CNOs stated that their hospital had “success in reaching out to patients and creating updates afterwards”. Another CNO said that during follow-up calls, hospital staff also ensure patients have information regarding community services and resources available in their area.

While the remaining two hospitals do not perform follow-up calls, they do track patient readmission rates. Specifically, if a patient returned to the hospital’s emergency department, select staff members and social workers will be notified. In one interview, the CNO explained a streamlined system of communication between the emergency department and SDoH staff that monitors re-admitted patients. She said that “once staff members identify patients that come back within 30 days of their discharge, social workers are contacted. They then will perform the initial intake assessment again and ask patients what problems they had when making or traveling to appointments.” Furthermore, all four CNOs that were interviewed reported that they do not track patient health outcomes, or if their health status has improved after accessing essential services.

### Best Practices for Social Needs Activities

 Across all the CNOs that were interviewed, every respondent said that continuous communication and collaboration are vital in assessing patient social needs. CNOs reported that hospitals need to partner with local agencies to ensure solutions are effective and address underlying causes for sickness. Respondents that have regular meetings with organizations said that these relationships and conversations pave sustainable paths for addressing unmet social needs.

 Moreover, while most CNOs said that their hospital does not have the capability to conduct field work, they did reiterate that physical integration into communities is the best approach to understand and create successful interventions. In other words, when health workers go into communities and follow patients as they navigate through community resources, higher patient retention is achieved. One CNO reported having this capability, and ever since the practice was implemented, patients were able to gain appropriate resources to maintain their health. Specifically, she said that “until hospitals have something like the Community Care Network, it’s very difficult to connect patients to agencies and for patients to stick to their treatment plan. You need to follow up, see them in their home, and walk them through the process” .

### Barriers to Social Needs Activities

 During all four interviews, CNOs indicated several struggles they faced when addressing SDoH and referring patients to community services. The most common barriers reported include lack of stable funding, staff, and time to support social needs procedures. While CNOs mentioned that they have various capabilities when combating unmet SDoH, they said that having more resources and staff would allow hospitals to keep a better track of patients, especially as they navigate through community services. This would, in turn, assist with evaluating outcomes due to SDoH activities, and help determine return on investments.

# Discussion

## Survey Responses

 After collecting survey results, hospitals - for the most part - seem to have adequate initiatives in place to collect and assess patient social needs information. Almost all hospitals regularly or systematically collect information on at least one social need. The majority of hospitals address at least half of the nine social determinants included in the survey; they primarily focus on transportation, interpersonal violence, family and social support, housing, and homelessness. On the other hand, there is a significant lack of focus on some social needs, such as income, utility, and education, which are all key determinants of an individual’s health. In addition, only a small portion of hospitals collect information on all nine social needs listed. Therefore, the degree to which data is gathered on patient social needs greatly varies by hospital. Some hospitals, however, have gone beyond the extent of the survey, and collect information on other important determinants of health, including literacy levels, drug and alcohol use, and mental health status.

 Results further indicated that hospital systems use a variety of methods to collect patient-level social needs information, ranging from social work assessments to interviews. In these assessments, however, social workers and case managers were almost always responsible for social needs intake. While varying data collection methods are beneficial because hospitals adapt their capabilities to meet available resources, using a non-standardized approach makes further analysis more difficult, especially if the same patients go to different hospitals in the region. Nevertheless, almost all hospitals reported having processes in place to connect patients to social needs resources, which is the end goal of patient screenings.

 When assessing community referrals, hospital respondents had more referrals completed on a needs basis, rather than part of their standard operating procedure. As part of the standard operating procedure, hospitals heavily focused on transportation and family and social support, but severely lacked referrals for employment/income, utility needs, and education. Even for the most referred social needs (transportation and family and social support), less than half of hospital respondents indicated this capability. For needs basis referrals, however, many hospitals had community referrals for utility needs, which was opposite to the trend seen in referrals made as part of standard operating procedures.

The most common community referrals that were created (as part of both standard operating procedure and needs basis) were for the needs that were most frequently screened - transportation, family and social support, housing, and instability/homelessness. In a similar respect, the lowest number of community referrals were for the social needs screened the least, which were utility needs and employment/income. Assessment of employment/income needs was particularly poor because a significant number of respondents were not aware or did not know of referrals for these determinants.

In terms of populations screened, the majority of hospitals reported screening for patients in their respective healthcare system. There was a substantial absence of screening among workforce employees and the community at large (which includes patients and non patients). Many hospitals were additionally not aware of workforce screenings for social needs information. Sub-populations targeted for community referrals slightly varied between hospital systems. Of the majority of respondents that do complete community referrals, they almost always screen all the patients in their system.

Although all survey respondents indicated that social workers are mainly involved in social needs activities, less than half of respondents have a full-time employee to manage patient social needs. In addition to the lack of funding a significant portion of hospitals face, many health systems do not have the infrastructure or manpower to concentrate on social determinants of health. This idea is further supported by hospital respondents indicating that cost and staff experiences were the primary barriers to assessing patient social needs information.

Information related to patient outcomes is additionally limited across hospital respondents. While more than half of respondents assessed overall readmission rates, only a small percentage measured more specific metrics, such as cost benefit analysis, number of patients enrolled in social needs activities, and health outcomes after social services were gained. Even though some of these metrics are difficult to collect, they are vital when assessing the impact of social needs activities.

## Interview Responses

 Interview responses indicated that forming relationships and interventions with community providers is a complex and collaborative task. Regardless of the formality of the relationship, CNOs stated that partnerships with community organizations is not only beneficial for connecting individuals to essential resources, but also for developing innovative tasks to address complicated health needs. Effective communication was another commonly reported driver of successful social needs initiatives. Some of the respondents indicated using internal databases and clear lines of communication helped convey social needs information to relevant stakeholders.

Regular meetings with community participants, such as local nonprofits and county-level government agencies, was shown as another helpful tactic to combat multifaceted patient problems. Community coalitions involving social service organizations provide hospitals with ample opportunities to form beneficial relationships. As CNOs indicated in interviews, most hospital-community relations began through this method, or via continuous referrals to organizations.

 Out of all the social needs practices hospitals are involved in, CNOs stressed that physical integration into communities and patient surroundings was the best way to remedy underlying health determinants. For instance, in the Community Care Network, nurses and social workers that were able to visit patients at home were more successful at connecting them to resources, and improved patient retention. This field work additionally helped hospital staff better understand barriers patients face when accessing care and social services. Finally, interviews with CNOs agreed with previous research that proves community collaboration can successfully connect patients with social needs22.

 While formal relationships and interventions with community organizations were proven successful, CNOs nevertheless reported gaps in their continuum of care. All four CNOs indicated that they do not track health outcomes of patients, particularly after they receive services from community organizations. Without knowing if health status has improved after patients gain social services, hospitals cannot validate social needs processes, or if they even have their intended impact.

## Comparison to Current Literature

Compared to existing literature on SDoH screenings in hospitals, the current study produces similar results17,18. First off, most of the determinants in the literature (including previous research studies and national programs, such as Healthy People 2020) overlap with the needs incorporated in this study. This includes transportation, housing, food insecurity, housing, and education. Study results also indicate that many hospitals have developed social needs initiatives and objectives, similar to the national, regional, and local SDoH waves explained in the literature. Interview responses continue to corroborate current recommendations that state community collaborations and cross-sector relationships is extremely vital when addressing patient social needs. Specifically, CNOs agree that partnerships with local organizations help hospitals better understand barriers to accessing care, as well as how to mitigate these problems.

 Results from both survey responses and interviews additionally pointed out struggles hospitals in western Pennsylvania face that are similar to current literature. First off, only a small percentage of hospitals have assessments in place that evaluate all areas of social needs as part of their standard procedure. And although the majority of hospitals have initiatives to assess at least one SDoH, these assessments are not performed for every patient, and rather on a needs basis. Another barrier that hospitals faced when addressing patient SDoH was a general lack of resources and trained workforce. This was also similar to the JAMA study that evaluated SDoH screening in physician practices and hospitals across the United States.

 While the current study agrees with previous literature revolving around SDoH initiatives, it does produce some unique findings. First of all, analysis of policies about SDoH objectives indicate that hospitals focus on Medicaid populations or low-income individuals. However, the hospitals in western Pennsylvania seem to have SDoH procedures in place for most patients or utilizers of health services, in addition to Medicaid enrollees. Another distinction in this study is that it focuses not only on hospital SDoH screening, but also frequency of community referrals, outcomes collected, and individuals involved in SDoH processes. Very limited literature or previous research has been done to incorporate all of these areas into one study.

# Conclusion

Hospitals across western Pennsylvania are taking initial steps towards addressing population health problems and unmet patient social needs. While screening varies by healthcare facility and frequency, important social determinants of health, such as transportation, interpersonal violence, and housing, are assessed on a systematic or needs-based level. In addition, hospitals have formed stable relationships with community providers and organizations to facilitate collaborative solutions. With almost all hospitals tracking readmission rates, they have additionally shown some capability of assessing social needs related activities.

 Even though healthcare systems throughout the region have displayed competencies in social needs practices, there remain a multiplicity of gaps in care. First off, only half of the outlined social determinants of health are regularly screened. Specifically, hospitals do not sufficiently focus on employment/income, utility, and education needs among patients. Most of the screening is also performed on a needs-basis, rather than as part of the standard operating procedure. This adds to current gaps in the healthcare system, and can prevent many individuals from receiving necessary care. Furthermore, populations that are screened are limited to patients at the respective hospital system. Restricted screening means that essential needs of hospital employees and community members are not addressed, which could further worsen their health. This can be especially dangerous among hospital staff, because a sick workforce decreases productivity and is very costly to the health system.

 Other severe shortages in hospital social needs activities are the limited outcomes and investments measured. Although readmission rates are a fundamental metric of evaluation, hospital systems need to collect more specific information related to social needs. This includes retention of community services, maintaining doctor’s appointments, cost benefit analyses, and patient health outcomes. By measuring these factors, hospitals can not only prove that social needs programs are beneficial to population health, but also know which areas to improve.

## Public Health Implications

Providing SDoH programs in hospitals not only helps patients access essential social needs, but it also allows providers to understand larger population health problems and disparities that occur in the community. This foundational understanding allows for broader public health objectives to be reached, such as health equity and reduction in health disparities among populations. By focusing on unmet patient social needs, hospital utilizers can not only receive necessary social services, but they can also better maintain and adhere to treatment plans19. This, in turn, has the potential for numerous benefits on health systems, including reduction in emergency room visits and decreased medical resource utilization29. Finally, when patients and community members are equipped with necessities to survive and manage their health, the chance of developing chronic and expensive conditions (e.g. heart disease, diabetes, hypertension) dramatically declines30. Therefore, if hospitals were to establish and continue SDoH programs, they would directly help create healthier communities.

## Future Studies

In conclusion, while this study displayed major strides hospitals have taken to address broader health problems, much work needs to be done to effectively mitigate underlying health factors. It is important to note that this study had a low survey participation rate, and results may be skewed due to the small sample size. Future studies should therefore assess social determinants of health programs in a larger number of hospitals. Studies should also focus on how staff members can work with limited resources to measure patient social needs, and which metrics can be helpful to evaluate hospital initiatives.

* + - * 1. Current Social Needs Screening Procedures



Figure 2 Hospitals with Initiatives to Address Patient/Community Social Needs

94.4% of hospitals responded “Yes” (17/18)

5.6% of hospitals responded “No” (1/18)

\*for the remaining figures, one hospital respondent was not included because they do not have social needs initiatives in place

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Figure 3 Percent of Hospitals that Currently Screen Patients for Social Needs

94.1% of hospitals responded, “Yes, screening occurs on systematic basis” (16/17)

5.9% of hospitals responded, “Yes, screening occurs occasionally” (1/17)

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Figure 4 Hospitals Capabilities to Support Social Needs-Related Activities (By Percentage)

52.9% of hospitals use “Formal relation with community-based providers” (9/17)

76.5% of hospitals use “Assigned teams for community-based resource connection” (13/17)

76.5% of hospitals use “Designated leadership position during clinical care” (13/17)

47.1% of hospitals use “Integrated social needs in EHR” (8/17)

41.2% of hospitals use “Measurement tool(s) to assess social needs activity results” (7/17)

94.1% of hospitals “Connect people to social needs resources” (16/17)

70.5% of hospitals use “Database of community providers to address social needs” (12/17)

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Figure 5 Percentage of Hospitals That Use Formal Screening Tool\* for Social Needs

64.7% of hospitals responded “Yes” (11/17)

35.3% of hospitals responded “No” (6/17)

\*Formal screening tools include questionnaires, surveys, etc.



Figure 6 Types of Social Needs Screened in Hospitals

88.2% of hospitals responded “housing” (15/17)

88.2% of hospitals responded “instability/homelessness” (15/17)

76.5% of hospitals responded “food insecurity” (13/17)

100% of hospitals responded “transportation” (17/17)

52.9% of hospitals responded “education” (9/17)

41.2% of hospitals responded “utility needs” (7/17)

88.2% of hospitals responded “interpersonal violence” (15/17)

88.2% of hospitals responded “family and social support” (15/17)

47.1% of hospitals responded “employment and income” (8/17)

35.3% of hospitals responded “other” (6/17)



Figure 7 Number of Social Needs Screened in Hospitals

17.6% of hospitals screen for all 9 social needs (3/17)

17.6% of hospitals screen for 8 social needs (3/17)

17/6% of hospitals screen for 7 social needs (3/17)

29.4% of hospitals screen for 6 social needs (5/17)

5.9% of hospitals screen for 5 social needs (1/17)

5.9% of hospitals screen for 4 social needs (1/17)

5.9% of hospitals screen for 3 social needs (1/17)

* + - * 1. Populations Targeted for Social Needs Screenings

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Figure 8 Percentage of Populations Targeted for Social Needs Screening

82.4% of hospitals targeted the “Patients who are treated at your hospital” population (14/17)

58.8% of hospitals targeted the “Patients who are high utilizers of your facility” population (10/17)

52.9% of hospitals targeted the “Patients treated at hospital affiliated outpatient and ambulatory care departments” population (9/17)

47.1% of hospitals targeted the “patients receiving care coordination or care management services regardless of location” population (8/17)

23.5% of hospitals targeted the “community of patients and non-patients” (4/17)

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Figure 9 Workforce Screening of Social Needs

11.8% of hospitals responded “Yes, all employees are screening at least annually” (2/17)

0% of hospitals responded “Yes, all employees and contractors are screening at least annually” (0/17)

0% of hospitals responded “Currently not screening, but have plans to screen in the future” (0/17)

23.5% of hospitals responded “Currently not screening, and have no plans to screen in the future” (4/17)

64.7% of hospitals responded “I don’t know” (11/17)

* + - * 1. Frequency of Hospital Referral to Community Services

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Figure 10 Frequency of Hospital Referral to Community Services by Social Need Categroy

The social needs categories specified in the survey include housing, instability/homelessness, food insecurity, transportation, education, utility, interpersonal violence (IPV), support, and income.

Survey respondents were also asked how frequently these needs were screened for referral. The choices included on a “needs basis”, part of the hospital’s “standard procedure”, “currently not referring and have no future plans”, and “currently not referring but have future plans”. Respondents that were unsure of the answer selected the “I don’t know” option.

* + - * 1. Administrative Structure for Assessing Social Needs

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Figure 11 Percentage of Hospitals with Full Time Employees for Social Needs Assessment

41.2% of hospitals responded “Yes” (7/17)

5.9% of hospitals responded “Currently no, but have future plans” (1/17)

35.3% of hospitals responded “Currently no, and no future plans” (6/17)

17.7% of hospitals responded “I don’t know” (3/17)

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Figure 12 Types of Staff Involved in Social Needs Activities

11.8% of hospitals responded “Health IT staff” (2/17)

23.5% of hospitals responded “Front office administrative staff” (4/17)

29.4% of hospitals responded “Quality improvement staff” (5/17)

23.5% of hospitals responded “Patient experience officers” (4/17)

64.7% of hospitals responded “Behavioral health providers” (11/17)

82.3% of hospitals responded “Case or case managers” (14/17)

17.6% of hospitals responded “Translators/health literacy staff” (3/17)

47.1% of hospitals responded “Health coaches or educators” (8/17)

100% of hospitals responded “Social workers” (17/17)

82.3% of hospitals responded “Nurses” (14/17)

70.6% of hospitals responded “Physicians” (12/17)

29.4% of hospitals responded “Community health workers” (5/17)

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Figure 13 Sources of Funding for Social Needs Activities

11.8% of hospitals responded “State grants” (2/17)

23.5% of hospitals responded “Federal grants” (4/17)

5.9% of hospitals responded “Private investors” (1/17)

35.3% of hospitals responded “None of the above” (6/17)

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Figure 14 Investments Reflected in Community Benefit Spending

5.9% of hospitals responded “Yes” (1/17)

17.7% of hospitals responded “Yes, partially” (3/17)

5.9% of hospitals responded “No” (1/17)

0% of hospitals responded “Does not apply” (0/17)

70.6% of hospitals responded “I don’t know” (12/17)



Figure 15 Social Needs-Related Business Practices

17.6% of hospitals responded “supply chain procurement policies” (3/17)

 29.4% of hospitals responded “hiring and training local communities” (5/17)

17.6% of hospitals responded “investment portfolios” (3/17)

11.8% of hospitals responded “other” (2/17)

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Figure 16 Types of Outcomes Tracked Related to Social Needs Screening

11.8% of hospitals responded “No results or outcomes tracked” (2/17)

5.9% of hospitals responded “Other” (1/17)

29.4% of hospitals responded “Readmission rates in patients involved in hospital social needs-related activities” (5/17)

70.6% of hospitals responded “Overall readmission rates” (12/17)

11.8% of hospitals responded “Cost-benefit attributed to social needs-related activities” (2/17)

29.4% of hospitals responded “Health outcomes associated with social needs-related activities” (5/17)

35.3% of hospitals responded “Number of individuals or patients screening for social needs” (6/17)

29.4% of hospitals responded “Number of referrals given for social needs” (5/17)

17.6% of hospitals responded “Number of individuals or patients enrolled in social needs-related activities” (3/17)

* + - * 1. Interview with Chief Nursing Officers

Social Determinants of Health Interview

Thank you for participating in this interview conducted by the Center for Public Health Practice at the University of Pittsburgh Graduate School of Public Health and the Healthcare Council of Western Pennsylvania. You were selected among respondents after completing the Social Determinants of Health Survey to further explore relationships between hospitals and community services. Please consider the following questions:

1. Can you describe your intake process of social needs information when a new patient is admitted?
2. Can you discuss what formal relations you or your health system has with community services when evaluating patient social needs?
3. What defined activities or interventions do you develop with community services to address unmet patient social needs?
4. Once you refer a patient to community services, do you keep track of them? If so, what kinds of outcomes do you track?
5. From your experience, what are some of the best practices hospitals can do to connect patients to social needs-related services?

You will start your main text at this level. You should apply the Normal style to any text sections in your document. To show how paragraphs and sections will style, we have inserted standard Lorem ipsum text as a placeholder.

To insert a new subsection, press Return to start a new line and then select the Heading 2 style from the Style menu. To start a new main section press Return and select the Heading 1 style.

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