THE UNIVERSITY OF UTAH'S INTERPROFESSIONAL STUDENT HOTSPOTTING COLLABORATIVE: AN INFORMAL PROGRAM ANALYSIS

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ABSTRACT

Hotspotting is a nationwide data-driven intervention that aims to reduce health care costs and improve health outcomes for vulnerable patient populations by addressing social determinants of health (Gawande, 2011). The Hotspotting model was implemented at the University of Utah in the year 2016. Previously the program recruited patients from one location, a housing facility, but in 2018, the program expanded to involve individuals from the Salt Lake City community. The present two-pronged study is an informal analysis of the University of Utah's 2018-2019 Hotspotting cohort. First, logbook entries completed weekly by each of the eight Hotspotting teams were used to extract common challenges, goals, and successes experienced by the participants. The second component of this study is an analysis of Hotspotting participant interviews conducted by a nurse practitioner graduate student, to analyze what participants found useful in the program, as well as what may have hindered progress on their health goals. A total of eleven patients participated in the 2019 Hotspotting cohort. These analyses will be used to highlight the current strengths and weaknesses of the program, and provide a basis for recommendations on how the program can develop moving forward. The most significant finding was that about 46% of the challenges faced by this cohort were social, mental,

and emotional, rather than clinical in nature. Strengths of the program include the ability of the teams to build rapport with the participants and motivate them to reach their goals, and ultimately feel cared for. Barriers to optimal functioning of the program included delay in consenting, stress about the limited timeline of the program, and major communication barriers between caseworkers and patients.

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INTRODUCTION

Male. Mid-50's. Overweight, pre-diabetes, high blood pressure. He's a smoker and has emphysema. Seizures. Struggles climbing stairs or walking long distances. Not monitoring diabetes, and blood sugar is wildly uncontrolled. Isn't sure how to manage prescriptions or diet, and needs assistance securing necessary durable medical equipment. 35 medications listed. Unemployed. No car. He lives alone. Limited family contact, few friends. But his dog, Diamond, is with him at all times. He loves his dog. In the last six months, he had visited the emergency room (ER) one to two times a month. (McLean, personal communication, 2018).

Surprisingly or not, this type story is common, especially for those termed "super-utilizers," or frequent fliers of the ER who also endure many inpatient hospital visits. These individuals tend to face a diverse spectrum of complex health and social problems in their day-to-day lives (Moe, et. al). This sector of the population contributes significantly to the cost of healthcare (Ostermeyer, et al., 2018). But even more concerning, with all of their contact with the healthcare industry, this population's health outcomes aren't improving. Their care lacks coordination, continuity, and most importantly someone to listen to their story.

"Super-utilizers" are individuals with chronic and complex health and social issues, who also over-utilize the ER, which contributes significantly to high healthcare costs. The Center for Healthcare Strategies (2013) offers a well-encompassing definition of super-utilizer as, "individuals whose complex physical, behavioral, and social needs are not well met through the current fragmented health system." Many of the individuals in this population experience complex social issues including lack of transportation, "a higher prevalence of chronic illness, psychiatric comorbidity, and lower socioeconomic status" (Moe, et. al, 2017). In addition, many experience addiction, are or have been homeless and sometimes have criminal histories (Hasselman, 2013). All of these can make continuity of care particularly challenging.

High cost and poor health outcomes currently characterize the U.S. health system (cite). Hotspotting is a data-driven intervention, which aims to reduce health care costs and improve health for vulnerable patient populations by addressing social determinants of health for these "super-utilizers". Social determinants of health are defined as "conditions of the places where people live, learn, work, and play." (See Figure 1 and 2 in Appendix)

This paper introduces the Hotspotting model and its recent implementation at the University of Utah. The overarching goal of this paper is to evaluate the effectiveness of this program using existing qualitative data. The Hotspotting logbooks and results of the guided participant interviews, will offer insight as to how a Hotspotting team working with complex patients to improve the quality of health and life can also affect the social determinants of health. This research provides insight into how Hotspotting could be a mechanism to improve the quality of health, and life, for complex patients in Utah, as well as the United States.

LITERATURE REVIEW

The cost of healthcare in the United States is higher than ever with healthcare expenditures reaching 17.9% of GDP in 2016 ("National Center for Health Statistics," 2017). Over half of U.S. healthcare costs are attributable to only five percent of the population (Brenner, Doyle, Finkelstein, Taubman, & Zhou, 2014). Compared to other high-income nations, the U.S. spends nearly double that of other nations on healthcare (Papanicolas, Woskie, & Jha, 2018). Given this extravagant investment, shouldn't Americans be the healthiest as well?

Existing literature asserts otherwise. In a 2018 study, Papanicolas et. al found that out of eleven OECD (Organization for Economic Co-operation and Development) countries, the United States scores lowest on significant measures of health including life expectancy and scored highest in overweight and obesity percentage, and infant mortality. This study also found that

although the U.S. spends about the same amount on social services as other states, it allocates much of its social spending budget on healthcare, instead of other social services. One argument that attempts to explain this disparity is that spending on healthcare services, administration, expensive equipment and higher doctor salaries isn't going to improve health outcomes, but investing in the social determinants of health will ("For the Public's Health," 2015). Perhaps directing this attention to social determinants of health can alleviate these adverse health outcomes in the US, while reducing the costs associated with frequent ER visits.

The importance of targeting and focusing on social determinants of health is growing (Butler, 2017; Adler, Glymour & Fielding, 2016). Social determinants of health are factors that profoundly affect health status and can produce health disparities, including education, employment, socioeconomic status, living environment, social support systems, access to healthy food, and access to health services (Artiga & Hinton, 2018). Evidence is growing indicating how these kinds of social factors can adversely impact health. For example, chronic stress can produce negative health outcomes for all ages (Artiga & Hinton, 2018). Health is much more than just physical health and being sick. In fact, the World Health Organization (1948) defines health as, "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity."

An additional barrier for this population is the difficulty associated with not having a "usual source of care" (USC) (Liaw, 2014). In a cross-sectional study conducted by Liaw et al., the findings revealed an association between insurance type and ER use. For nearly 22% of individuals enrolled in Medicaid and over 24% of uninsured individuals more than half of their medical visits took place at the ER (Liaw). The ER is required to treat individuals whether they are insured or not, creating a major financial burden, that could be prevented (All, 2010).

Repeated visits to the ER, and repeated inpatient stays reflect an inept health system that is not adequately tending to the health of these vulnerable patients.

Research on interventions to address social determinants of health and reduce healthcare costs is ample, but finding the most effective and efficient strategies is more difficult. According to a review of 31 studies on interventions used to address frequent use of the ER, it is well established that frequent ER users utilize more healthcare than others (Moe, Kirkland, Rawe, Ospina, Vandermeer, Campbelle, & Rowe, 2017). In addition, this review revealed that there are interventions that can successfully reduce the number of ER visits by super-utilizers. Over half of the studies reported a decrease in ER visits, and several studies reported that some interventions helped patients find stable housing, indicating program effectiveness at addressing social determinants of health.

It is estimated that approximately one-third of ER visits are preventable (Riley, Golde, & Kayam, 2017), making interventions diverting use of the ER to primary care especially valuable. Interventions that address both utilization and the underlying social determinants of health may be effective at driving down costs and improving quality of life. It is important to resolve unanswered questions regarding this patient population. For example, why are patients going to the ER? Why do they *keep* going to the ER? Questions like these require listening to individual patient stories and cannot only be analyzed quantitatively. Implementing a framework that puts the patient at the center, and prioritizes their unique story, has the potential to not only improve patient care and quality of life, but also may improve/impact how physicians care for their patients. The benefits of improving the quality of life for these complex patients, while simultaneously lowering healthcare expenditures, are enormous.

Background on Hotspotting

The Government Sustainability Office (2015) reports that about 5% of Medicaid patients consume half the costs of the program. According to the Agency for Healthcare Research and Quality, "the top 1 percent of persons ranked by their health care expenditures accounted for 22.8 percent of total health care expenditures" (Mitchell, 2014). In an effort to address the disorganized, inefficient and even "passive" use of the healthcare system, Dr. Jeffrey Brenner developed Hotspotting. His objective was to target this 20% of patients, called super-utilizers, and improve their quality of care.

Dr. Brenner discovered these discrepancies in Camden, New Jersey's healthcare system while working with a database he prepared for the Camden police department that detailed visits to the ER by crime victims ("A Revolutionary Approach," 2014). In working extensively with this data, Dr. Brenner mapped insurance claims to understand more about Camden's healthcare utilization. Dr. Brenner found that, "20% of the population were 90% of the costs," ("A Revolutionary Approach," 2014). This database was later adapted to incorporate data sharing from other healthcare institutions in the Camden region, and is now called the Camden Coalition Health Information Exchange.

Hotspotting Criteria

For a patient to qualify for the Hotspotting program, they must be a super-utilizer, as defined above, and have the following criteria (Brenner, Doyle, Finkelstein, Taubman, & Zhou, 2014):

1. At least two hospital admissions in the last six months
2. Have at least two chronic conditions (e.g., diabetes, heart disease)
3. Have at least five prescribed medications

In addition, the Camden Coalition's model of Hotspotting has three main components ("A Revolutionary Approach", 2014):

(1) *Database.* Access to data regarding emergency room visits, inpatient stays, and frequent utilizers is a necessary component of this model. This allows practitioners to identify those who have the highest need of the Hotspotting intervention as well as those will receive the most benefit from it as well.

(2) *Care Management Team.* In the context of Camden's original care management teams, they were designed to include health professionals from a variety of different backgrounds. This interprofessional team traditionally consists of a nurse, social worker, health coach or volunteer, and a community health worker. The team is trained with a curriculum created by the Camden Coalition.

(3) *Coordination of Care.* After a patient has been identified and consented to participate, the interprofessional care team makes frequent home visits to assist in coordinating the patient's care. The purpose of this team is to work with the patient on navigating the health system, help coordinate their care, communicate with their healthcare team, and establish continuity of care with a primary care physician. To graduate from the Hotspotting program, the end goal is that the team has successfully coached them on how to manage their health independently.

Along with these three components, Hotspotting utilizes a specific curriculum designed to equip health workers in the program with a strong skill set for interacting with Hotspotting participants. The curriculum is organized by the following themes: Motivational Interviewing, Programmatic Operations, Trauma Informed Care, "COACH", Harm Reduction, Safety, and Leadership. COACH is an acronym standing for ("Camden Coalition Hotspotting Curriculum," 2018):

C: Connect tasks with vision and priorities **O:** Observe the normal routine **A:** Assume a coaching style **C:** Create a backwards plan **H:** Highlight progress with data

The purposes of the COACH model are to aid Hotspotters in cultivating a genuine partnership with their participant and help them to set and meet their goals. Motivational interviewing, another component of the Hotspotting curriculum, is effective in guiding patient visits and avoiding "Yes/No" answers to questions.

Another component implemented in the 2018-2019 Hotspotting program at the University of Utah, is the use of the Connect2Health database. This database contains hundreds of local resources that patients can be connected with. For example, this database can help participants of the Hotspotting program find resources for consistent transportation, access to needed health equipment, etc.

METHODS

This study examined the Logbook entries of the eight teams participating in the University of Utah's Interprofessional Hotspotting Student Collaborative from September 2018 to April 2019. Most teams work with a single patient; a few teams were assigned to work with two patients. The logbooks are filled out by the students participating in the Hotspotting program about their experiences with their patient. The Logbooks utilize a specific framework asking the students to respond to the following prompts:

- Encounter dates, locations, and team members present
- Engagement with health or social services providers
- Progress toward patient goals and/or change in patient goals
- Hotspotting Curriculum Utilization: how are you applying your learning?
- Planning: what's next?
- Challenges: where are you stuck?

This year the program included a team from Arizona in the program. However, this analysis will only include the eight Utah teams, and their respective ten patients. A total of 112

logbooks were analyzed and information was extracted regarding challenges, successes, goals, and goals of the participants. In addition, mentions of features about the program that were effective or ineffective were also taken note of. The extracted data were organized into four spreadsheets, one for each of the following: challenges, successes, goals, and Hotspotting program functioning. The categories included in the first three spreadsheets are: Emotional/Mental, Social, Environmental, Physical Health, Medications, Appointments, Attitude toward healthcare system/ providers, Healthcare, and "Related to Hotspotting." In addition, since the original intention for Hotspotting was to reduce hospitalizations and ER visits, the number of ER visits/ hospitalizations that were recorded in the logbooks was also noted. The fourth spreadsheet details the Hotspotters' perspectives on their patient/ patient interactions, and the program challenges and successes that they identify.

For the patient interview components of this study, a graduate student in the nurse practitioner program conducted semi-structured interviews with the participants of Hotspotting. The aim of his research differs from the aim of this study. However, the questions are direct and ask the participants about their opinion of their Hotspotting experience. His questions include:

1. *How would you describe your overall physical and mental health in the past 30 days?*
   What is your expected level of health at this time?
   Ultimately, what is your preferred level of overall health?
2. *What interactions have you had with the Hotspotting team in the previous 30 days?*
   How did the interactions go?
3. *How does the Hotspotting team help you in achieving your overall health goals?*
4. *How does the Hotspotting team hinder you in achieving your overall health goals?*
5. *What are your expectations for the Hotspotting team in participating with your healthcare and personal needs?*

Cochrane's research is ongoing and will include more interviews, however for the purposes of this study, the interviews of eight patients will be analyzed.

The Logbooks

Logbook results reflect the categorical separation used for analysis. After reviewing 112 logbooks from eight teams, several themes have been identified. "Frequency" indicates number of teams that mentioned a particular challenge, success, or goal related to their participant. (See Appendix Figures 3-6)

Challenges. The overarching challenges experienced by patients include anxiety, depression, lack of hobbies/ friends, lack of transportation, unhealthy diet (high in fat and sugar), and feeling mistreated by their healthcare team. Thirteen different issues were reported falling under the Emotional/Mental category. Of these, anxiety and depression were the most common. However, loneliness and shame were the next most frequently reported as being participant challenges. Grief and "trouble caring for self," were issues for two participants in the program. (See Appendix Figure 3)

In the "Social" category, lack of hobbies and friends, was the most commonly mentioned issue, with separation from loved ones, caregiver burnout and "condition inhibiting participant from doing activities," following. Drug/tobacco use, communication, and not leaving their home (due to social isolation or social anxiety), were challenges experienced by two participants. While air quality, "living in an unsafe neighborhood," and insanitary living environment were some of the challenges listed in the Environmental category, the most significant challenge for this population was transportation- whether it be an explicit lack of transportation, or other issues regarding transportation.

"Physical health" is difficult to analyze without having access to participant electronic health records. However, based solely off the logbook entries, the most common physical health issue was diet, specifically a diet high in fat and sugar. Close behind this were weight and pain. Daily oxygen therapy, diabetes, and asthma are also common in at least two participants. Challenges related to prescriptions included that participants are either taking numerous medications, or they aren't taking their medications at all. A couple of teams reported that participants had been missing and canceling their appointments.

In the "Attitude toward healthcare system/ health workers," four logbooks mentioned that the participant feels they are being mistreated or treated unfairly by the health workers they have interacted with. Another trend is that many participants experienced challenges with their caseworkers - either the caseworker stopped communicating with them or left the job entirely.

Goals. According to the logbooks, a total of six patients expressed the goal of wanting to go back to school or get a job. As far as Social goals, five patients wanted to cultivate friendships and participate in or find new hobbies. Several patients wanted the Hotspotting team's help with organizing all of their health-related information into a central place. (See Appendix Figure 5)

The most common "Environmental" goals were moving into a different home and getting transportation. Creating a better diet and exercising more often were common goals in this cohort for ways they wanted to improve their physical health. As in the challenges section, anxiety and depression have resurfaced in the goals section: participants want to improve their anxiety and depression symptoms to improve their emotional and mental health.

The number one healthcare-related goal was establishing care with a new primary care physician, caseworker, and therapist. Getting help in making appointments was also a common goal.

Successes. Categories for this section included: Related to the Hotspotting Team, Emotional/Mental, Educational/Occupational, Social, Environmental, Physical Health, Medications, Appointments, and Attitude toward healthcare system/ providers. (See Appendix Figure 4)

The most prevalent success specifically noted in five logbooks was "building rapport with patient," with "good listening and communication skills," second. Transportation posed a huge barrier for many participants, however transportation is also cited as a success. Seven logbooks mentioned successful scheduling of appointments with participants' healthcare teams. Among other successes, gaining confidence, finding a job, and engaging in hobbies/social activities were some of the many small victories this cohort of Hotspotting participants experienced.

Hotspotting Program. This section details the Hotspotters' perspectives shared (sparsely) throughout the logbooks. There were many mentions of patient interactions from the students' perspective that are worth mentioning. Most frequently, students reported in their logbooks that their patients simply wanted someone to listen to their story. Other mentions related to patient interactions included the challenge of patients wanting to leave the program, as well as finding boundaries with the patients. (See Appendix Figure 6)

Program features that the Hotspotters found effective include the "COACH" curriculum, motivational interviewing, and use of the Connect2Health database. Additionally, using data to highlight patients' progress with their goals, a component of the "COACH" model, was deemed effective at empowering patients and improving their self-esteem.

Participant Interviews

The interviews with the participants that the teams interacted with help provide an understanding of what is working in the program and what isn't working- from the patients' perspective. This perspective is incredibly important moving forward in efforts to improve the program.

The patient experience. Overall, Hotspotting participants report nothing but great reviews of the Hotspotting teams themselves. The most common themes shared by participants about their experiences with the Hotspotting teams included that the teams were attentive and listened to the participant, had a nonjudgmental attitude, the teams were very supportive and did not in any way hinder them from reaching their goals. Several participants specifically noted that the Hotspotting team successfully helped the participants better navigate the healthcare system.

Participants valued that each team member was from a different specialty and could offer a slightly different perspective. In addition, a couple participants felt that their interactions with the Hotspotting team offered the structure of accountability, empowerment and confidence. Participants especially valued the fact that the teams had high energy and motivation, and that this program is mutually beneficial. Lastly, being surrounded by highly motivated individuals that genuinely wanted to help had a lasting impact on these individuals.

Barriers and challenges. The most common barrier experienced for the participants in the program (and the students) was difficulty with communication, especially when incorporating the caseworkers. Several participants also reported that they felt they needed to make progress on their goals so that they wouldn't disappoint the team, or that the Hotspotters wanted them to succeed more than the participants themselves wanted to succeed on their own behalf. "Bad timing" was also mentioned. Several patients expressed frustration in the delay in consenting causing them to have less time with their team. Confusion about what the Hotspotting team is for

also surfaced as a challenge. Lastly, scheduling visits and aligning schedules with the teams also posed a challenge for this cohort of patients.

Room for improvement and recommendations. One participant made the recommendation of providing participants with a Hotspotting team "roster" with the names, programs, and a photo of the Hotspotting team member. This recommendation is echoed by several of the patients mentioning that they had a difficult time remembering names as well as what each individual "specialized" in. Caregiver burnout surfaced as an issue twice in this cohort, and one participant recommended that the Hotspotting teams could also help to connect caregivers to resources for dealing with burnout.

Participants also expressed that they would like the Hotspotting teams to know more about the participants' medical histories. This is thought to better assist the teams in assisting the participants. A few participants wished that they could have taught the team something new in return for all of the help they received. Nearly all of the participants mentioned that communicating through case workers was ineffective and frustrating. Direct communication between the Hotspotting team and the participant was recommended.

Limitations

The small data set included in this study limits the generalizability of this data. All data used to analyze was extracted from the logbooks so this analysis is limited by the completion of the logbooks and how much information was provided in the logbooks. The logbook analysis is also limited in that students may not be as forthcoming about challenges they experienced in an assignment setting and they would be in something more informal that does not count for their grade. In addition, other challenges, goals, and successes may have occurred in this cohort of the program that were not represented in the logbooks, therefore further limiting this analysis.

Though participant perspectives are essential to include in a program analysis, there are a few limitations to this study's examination of the participants' interviews. First, due to recall bias, and second, this study is not longitudinal, so any changes in patient perspectives over time are not captured.

Evidence for Hotspotting's efficacy in reducing healthcare costs is not yet available as several effectiveness studies are still underway ("Camden Coalition hits enrollment," 2017). The fact that there is lacking research in this area of health care interventions reveals the importance of this study. Regardless of the aforementioned limitations, this research is crucial as this is the first year that logbooks have been utilized in the program and this study will provide insight into the pragmatism of the logbook entries. Additionally, this research provides invaluable insight into the participant and Hotspotter experiences and constitutes a case study to be utilized as a guide for future programs.

DISCUSSION

Though originally designed as a methodology for reducing costs and creating better health outcomes, Hotspotting could be one of many ways to bring back the human component of health by addressing the social determinants of health, and focusing on the patient's experience.

Analyzing how this intervention can do just that was the goal of this research. One major theme in the Logbook data set is that the most pressing goals and challenges that the Hotspotting particpants faced had less to do with their health, and more to do with all other aspects of their lives: the social determinants of health. About 46% of the challenges experienced by this cohort were not clinical and instead involved social, environmental, and emotional/mental challenges further emphasizing the importance of social determinants of health.

This was the first year that Logbooks were implemented, and this research proves that the entries can be useful in extracting the challenges that the super-utilizer population faces. Clearly, the logbook entries can provide invaluable information into the Hotspotting experience on behalf of both of the teams and the participants. From the logbooks, we can analyze the most common challenges experienced by this Hotspotting cohort, as well as extract recommendations for improvement. The participant interviews add another layer to the logbook analysis with the direct perspectives of the participants being presented.

Several themes revealed themselves in this analysis. In reference to the Hotspotting program itself, the COACH model, motivational interviewing, and the newly implemented Connect2Health database access all proved to improve the Hotspotting experience for the teams in effectively facilitating meaningful discussions with the participants, establishing goals, and connecting them to needed resources. A significant challenge experienced by two teams in this program was retaining their patient's participation. Reasons for participant resignation could include delay in time between consenting and meeting the team, or "bad timing," meaning that the team cannot effectively assist a participant who isn't ready to make changes yet.

The ability for the Hotspotting teams to build strong rapport with their participants is both important and one of the most common outcomes from the teams of this cohort. Instituting the Hotspotting curriculum into the program for any caregiving role could improve the patient-health worker relationship, and enhance both the caregiving and the care-receiving experiences.

This study has implications beyond the Hotspotting program. For example, several participants mention that they feel mistrust toward the healthcare system and their own healthcare team. This is a detail that cannot go unnoticed. For patients to heed the advice of their health practitioners, the need to maintain some kind of trust in them- this issue calls for more

attention and care in cultivating a healthy physician-patient relationship. Another trend was burnout among caregivers and caseworkers implicating the need to improve support services for caseworkers and provide resources for caregivers.

Recommendations for next year's program include: 1. Beginning the consenting process early and ensuring it is thorough and the participants are aware of what the program entails. 2. Distributing a "team roster" to each participant including the names, pictures, and specialties of each member on their team. 3. Streamlining the communication process, by supporting direct patient-team communication without having to rely on a caseworker to relay information back and forth.

In addition, incorporating participant interviews as a routine part of the program could allow for continual program improvement.

Future Research

Future research should entail effectiveness studies of the University of Utah's Interprofessional Hotspotting Program, as well as the programs at the Camden Coalition's other hubs. In addition, though it is well established that Hotspotting can help health practitioners and students, future qualitative research reflecting the patients' experiences in the Hotspotting program would be valuable.

One question remains: Is our healthcare system prepared to make this intervention widespread? This prospect looks unlikely, unless the U.S. health system can undergo a holistic shift in its delivery of care model. From one primarily focused on treatment, rather than prevention. One that is reactive, not proactive. But perhaps Hotspotting can be a mechanism to connect the elements of our fragmented, disorganized, and ineffective health system. Perhaps the Hotspotting program can reshape how prospective medical and healthcare professionals are

trained by revealing an area in health that should be looked into further as a mechanism for teaching the significance of the social determinants of health and compassion. And perhaps Hotspotting has the possibility to bring the importance of patient's stories to the forefront of caregiving.

CONCLUSION

Remember the anonymous patient information shared at the beginning of this paper? With help from this Hotspotting team at the University of Utah last year, he lost weight and lowered his hemoglobin A1C (a measurement of glucose in the plasma of blood). He obtained medical equipment he needed and learned how to better control his seizures with medication, which were two of his goals. But since the intervention, more is known about who he is and what he's like. He's lonely and quiet. Shy at first. But once he warms up, he's quite vivacious. Turns out he has a great sense of humor. He's very open about his "sugar addiction," and he loves chocolate. He loved to banter with his Hotspotting team. And of course, now he is more able to play with his dog, Rudy (McClean, personal communication, 2018).
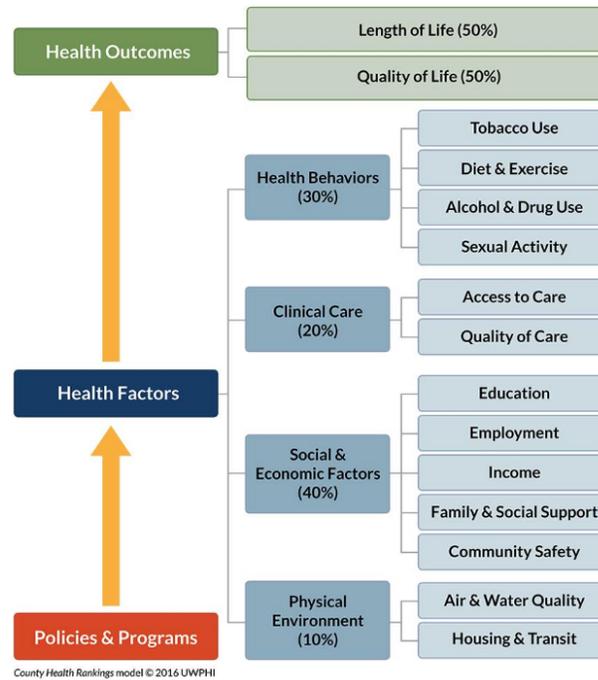
APPENDIX

Figure 1. University of Wisconsin Population Health Institute. (2014). County Health Rankings Model [Describes the social determinants of health]. Retrieved April 2, 2019, from http://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model
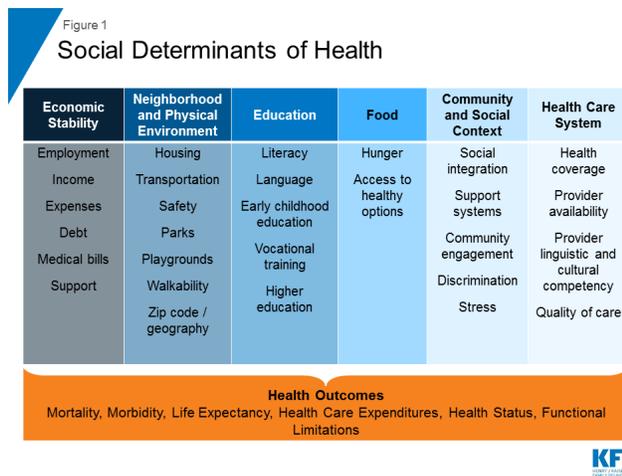

Figure 2. Henry J. Kaiser Family Foundation. (2018, May 10). Social Determinants of Health [Chart detailing what comprise social determinants of health]. Retrieved April 2, 2019, from https://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Challenge	Frequency
Scheduling conflicts	4
Anxiety	4
Depression	4
Lack of friends and hobbies	4
Lack of transportation	4
Diet	4
Mistreated by health care team	4
Confusion about what Hotspotting is	3
Shame/ Discomfort in public	3
Lonliness/ Isolation	3
Separation from loved ones	3
Family caregiver burnout	3
Condition prevents participation in activities	3
Pain	3
Caseworker communication issues	3
Weight	3
Taking multiple medications	2
Canceling appointments	2
High cost of healthcare	2
Complex healthcare system	2

Figure 3. Table listing the most commonly reported challenges in the Hotspotting logbooks.

Successes	Frequency
Building good rapport with patient	5
Coordinated transportation	3
Helped patient set up appointment	7
Good listening and communication	2
Patient engaged in hobbies	2
Patient established care with new PCP or therapist	2

Figure 4. Table listing the most commonly reported successes in the Hotspotting logbooks.

Goals	Frequency
Be more social, get friendships and hobbies	5
Get a job/ return to work	4
Improve diet	4
Exercise more frequently	4
Improve anxiety	4
Improve depression	4
"Fix" relationship with PCP	3
Organize all health-related information into central location	3
Go back to school	2
Move into different housing	2
Establish transportation	2
Find new PCP	2
Establish care with a therapist	2
Help making appointments	2

Figure 5. Table listing the most commonly reported goals in the Hotspotting logbooks.

Hotspotter Perspectives	Frequency (teams)
Patient	
"Just wanted to tell their story"	4
Patient left program/ did not respond to communication	2
Creating boundaries with patient	2
Program Challenges	
Concerns about length of program	4
Scheduling difficulties	2
Program Successes	
Use of curriculum	3
"Highlighting progress with data"	3
Use of Connect2Health	3

Figure 6. Table listing common themes from the Hotspotters' point of view as expressed in the logbooks.

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