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A Posthospitalization Home Visit Curriculum for Pediatric Patients

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Abstract

Introduction: Home visits allow physicians to develop a deeper understanding of patients' homes and community, enhance physician-patient connectedness, and improve physician treatment plans for patients. We describe a unique pediatric posthospitalization home visit curriculum to train residents about the social determinants of health (SDH). **Methods:** Residents participated in an interactive presentation that discussed the logistics of making home visits and a background detailing SDH. During subsequent home visits, residents got to know the family and neighborhood on a deeper level. After each home visit, residents participated in a reflection session and considered the impact of SDH. Surveys were completed to capture data about residents' knowledge and attitudes regarding SDH and connectedness with the families. Families' perspectives were captured by phone surveys. **Results:** Of residents, 23 of 31 (74%) were able to make at least one home visit. After participating in the curriculum, residents reported increased confidence in understanding SDH ($p = .048$) and increased consideration of SDH when developing treatment plans ($p = .007$). All residents who made home visits predicted they would feel more confident in understanding how SDH impact patients they will care for in the future. Ninety percent of residents felt they made a stronger connection with the family. Eight families were surveyed, and all stated that the home visit had positive effects. **Discussion:** This curriculum teaches SDH while improving connections between physicians and patients.

Keywords

Home Visits, House Calls, Discharge Plans, Postacute Care, Subacute Care, Posthospitalization, Social Determinants of Health, Community-Based Medicine, Cultural Competence, Patient Discharge, Diversity, Inclusion, Health Equity

Educational Objectives

By the end of the curriculum, learners will be able to:

1. Plan and complete successful home visits with patients.
2. Identify three social determinants of health (SDH) that affect patients for whom they provide care.
3. Apply knowledge about SDH when developing treatment plans for their patients.
4. Evaluate discharge plan adherence by inquiring about medication prescription filling, adherence with the medication, and correct use of medication.
5. Connect with patients during and after home visits.

Introduction

Physician visits to patients' homes can be powerfully beneficial experiences for all involved: patients, families, and physicians.[1-8]

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In prior studies of home visits, physicians and medical students have described enhanced, intangible connections and relationships with patients,[4,9] excitement for home visits,[1] and the development of a deeper understanding of their patients' homes and communities. Authors have also described improved confidence in counseling families about lifestyle changes.[4] Home visits by medical students enable students to meet many of the Council on Medical Student Education in Pediatrics competencies, including respect for patients, parents, and families.[8]

Prior studies have described visits to patients by primary care physicians.[1,4,5,7,10] There is less literature about home visits by hospital-based physicians. One such example of home visits made by hospital-based physicians is a study in which neonatology fellows made home visits to infants and families transitioning from the neonatal intensive care unit (NICU) to home.[11] This study described how the home visits affected future discharge planning by the fellows. An alternative model is for home visits by hospital physicians to patients after hospital discharge. One example, the Johns Hopkins Aliki curriculum,

is an internal medicine rotation designed to teach residents how to implement patient-centered care through improved understanding of patients as individuals.[12] The Aliki curriculum includes posthospitalization home visits by trainees to attain this competency.

Understanding the economic, environmental, and psychosocial needs of and challenges faced by patients is important for physicians to provide optimal care to patients.[13] There is growing interest in teaching social determinants of health (SDH) in residency programs and medical school, yet more research is needed on how best to implement this training.[14,15] We sought to train residents to consider SDH when developing treatment plans for patients. By considering each family's unique SDH, treatment plans will be individualized and therefore more optimal for each family. Based on the belief that SDH can be best learned through direct observation rather than through reading or didactic lecture, we considered that visiting patients and their families at home and directly observing neighborhood resources and challenges would allow residents to gain a deeper understanding of the SDH and how these factors influence child health and recovery after acute hospitalization. By getting to know each family's unique circumstances and SDH, there can be enhanced feelings of connectedness between families and residents. Patient-physician connectedness is an important relationship that improves patient care and physician empathy.[16,17]

We designed a home visit curriculum for pediatric and medicine-pediatric residents working at a community hospital inpatient service with the unique aim of teaching residents the impact of SDH in our patient population while promoting connectedness and trust between physicians, patients, and families. We sought to examine the challenges of implementing a home visit curriculum during an inpatient rotation with a relatively small team of second- and first-year residents.

Methods

We designed this curriculum while considering Kern's model of curriculum development.[18] Residency program leadership felt a general need to teach residents about SDH. Home visits had been conducted successfully in the past, and this venue felt natural and unique. Evaluation and feedback during the implementation helped shape the curriculum.

This curriculum was conducted at St. Agnes Hospital, a community hospital located in southwest Baltimore, Maryland. Residents from the Johns Hopkins University Pediatric and Medicine-Pediatric Residency Programs rotate at St. Agnes Hospital, caring for hospitalized children and adolescents for a 4-week rotation during their first and second years of training. Resident teams consisting of two supervising second-year residents and one or two interns staff the inpatient unit under the supervision of pediatric hospitalists.

Implementation

At the beginning of the 4-week inpatient rotation, we conducted an approximately 30-minute didactic session on the home visit curriculum with the resident team. We discussed SDH and the impact of SDH in Baltimore and Maryland. We reviewed benefits and challenges of home visits as well as procedures, logistics, and preparation for the home visits. The PowerPoint presentation titled Home Visits (Appendix A) provided the overview for this initial session. Resident questions and concerns were addressed.

We directed each resident to make two home visits to two different patients and families for whom the resident had provided care during the 4-week inpatient rotation. We instructed the residents to approach families, during hospitalization, with whom they felt comfortable and for whom they felt a visit would serve an educational benefit both for the patient and the resident. Appendix B outlined recommendations on how to ask families about home visits. Appendix C was included in patient rooms for families to refer to. Families involved in an active child protective services investigation were excluded. During the hospitalization, usually on the day of discharge, residents and attending physicians asked families if they would like to participate in the home visit program. Information provided to the family included educational and clinical goals of the visit. It was explained that the visit was not mandatory and was primarily for resident education.

To maximize safety issues for the residents, we instructed that home visits were to be scheduled only during daylight hours. Residents were instructed to make home visits only where they felt comfortable with the family, neighborhood, and situation. Residents made home visits in groups of two or three and were never alone. They were instructed to cancel at any time if they were not comfortable or if they felt unsafe.

On the day of the home visit, residents referred to the Day of the Home Visit form (Appendix D). Residents called the family on the morning of the visit as a reminder and a courtesy. Residents accessed Google Maps prior to the visit to get a street view and visualize the neighborhood, local schools, food sources, and open spaces, including parks. Residents drove together to the home while observing the neighborhood and surroundings, identifying neighborhood resources and challenges. Residents brainstormed and prepared both general and specific questions

to ask each family. The Day of the Home Visit form provided suggestions and examples of questions for review prior to the visit. Residents left the hospital typically from the hours of 12:00 pm to 5:00 pm, and clinical duties were covered by other residents or the attending.

We encouraged residents to make the home visits patient and family centered and to encourage patients/families to initiate the questions. While in the home, residents asked about the patient's recovery after hospitalization. They inquired about the treatment plan that had been given at discharge, assessing adherence to the discharge plan and obstacles for the family in obtaining medications and completing posthospitalization care as planned. Residents asked direct questions to explore SDH for the family. We encouraged residents to learn about who lived in the home, who had important roles in the child's life, and what the family valued. Residents were instructed to observe potential resources for and barriers to not only the child's acute recovery but also the child's continued health, including assessing safety in the home and community. Residents identified the location of and route to school, outdoor areas for play, local food sources, churches, and other resources, as well as challenges present in the patient's neighborhood, in order to better understand the life of the child and family.

After the home visit, residents spent time together reflecting on what they had learned about the patient and family. They reported what they had learned, with facilitation by the attending, to the inpatient team the following day before morning rounds.

At the end of the rotation, we participated in a reflection session with residents regarding what they had learned from the home visits. This reflection session included a discussion about how each family's unique situation influenced the child's health, as well as a description of each family's strengths and limitations.

Outcome Measures

Residents completed precurriculum surveys prior to enrolling in the curriculum and study of the curriculum (Appendix E). They completed a post-home visit survey after each home visit they made (Appendix F). They completed a postcurriculum survey at the end of the rotation and curriculum (Appendix G). Questions with Likert-scale answers were used, as well as questions that prompted free writing. Confidence in understanding SDH and the consideration of SDH were measured at two time points on 5-point Likert scales. The change over time was estimated as an average difference in pre- to postcurriculum Likert-scale scores, with significance determined by paired Student *t* tests, against a null hypothesis. Families were surveyed by phone after a home visit had been made, with at least two attempts to reach families (Appendix H). Questions that prompted discussion were used as well as the Trust in Physician Scale.[19] This study was approved by the Internal Review Boards at St. Agnes Hospital and Johns Hopkins Hospital.

Results

Thirty-one residents were enrolled in the home visit curriculum at our community hospital from February 2018 through March 2019. Table 1 depicts the results of the precurriculum survey. Twenty-nine of 31 enrolled residents completed a precurriculum survey, which included 14 first-year residents and 15 second-year residents. Of the responding residents, 22 of 29 (76%) stated they had had training on SDH prior to residency. Most residents (79%) stated this previous training was in the form of lectures or small-group discussions during medical school. Sixteen of the 29 (55%) had made home visits in the past, with the majority making fewer than four home visits. Twelve of the 16 (75%) residents who had made home visits in the past had also made home visits during medical school.

Twenty of the 31 (65%) residents completed postcurriculum surveys, summarized in Table 2. Eight of the 31 (26%) residents did not make any home visits and therefore did not complete a postcurriculum survey, while three residents made at least one home visit but did not complete a postcurriculum survey. Therefore, 23 of 31 (74%) enrolled residents made at least one

Table 1. Survey Results Among 31 Residents Receiving Training

Survey and Item	No. (%)
Precurriculum survey (n = 29)	
Resident year:	
First	14 (48%)
Second	15 (52%)
Training in social determinants of health prior to residency	22 (76%)
I feel confident understanding how social determinants of health affect the patients and families I work for.[a]	22 (76%)
I consider social determinants of health when developing treatment plans and recommendations for my patients.[a]	19 (66%)
Ever visited a patient in their home	16 (55%)
Postcurriculum survey (n = 20)	
Resident year:	
First	9 (45%)
Second	11 (55%)
I feel confident understanding how social determinants of health affect the patients and families I care for.[a]	19 (95%)
I consider social determinants of health when developing treatment plans and recommendations for my patients.[a]	19 (95%)
I will feel more confident with my ability to understand how social determinants of health impact patients I will care for in the future.[a]	20 (100%)
I will apply my knowledge of social determinants of health when developing treatment plans and recommendations for my patients and families in the future.[a]	20 (100%)

[a]Responded agree or strongly agree, as measured on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Table 2. Post-Home Visit Surveys: 29 Responses From 23 Participating Residents Conducting Home Visits With 17 Families

Variable	No. (%)
Resident year:	
First	17 (59%)
Second	12 (41%)
Number of interns who participated in the home visit:	
1	25 (83%)
2	5 (17%)
Number of second-year residents who participated in the home visit:	
0	3 (10%)
1	18 (60%)
2	9 (30%)
Interpreter included in home visit	3 (11%)
Family members present at home visit[a]:	
Mother	16 (62%)
Father	10 (38%)
Sibling(s)	9 (35%)
Other[b]	10 (39%
Type of housing:	
Town house	10 (34%)
Detached single house	15 (52%)
Apartment	1 (3%)
Other[c]	3 (10%)
Medications filled	18 (78%)
If medications filled: Is the child taking the medication correctly? (n = 18)	16 (89%)

[a]Median number of family members present = 2, range = 1-4.
[b]Included grandparents, great grandparents, foster parents, foster siblings, and case manager.
[c]Group homes for adolescents.

home visit. Obstacles to making home visits included inpatient care responsibilities, competing required weekly outpatient clinic time, obligatory night coverage by interns over the course of the rotation, coordinating a mutually beneficial time with families, and difficulty contacting families by phone once discharged. All residents either agreed or strongly agreed that by completing the curriculum, they felt more confident in understanding how SDH impacted patients for whom they provided care. All residents either agreed or strongly agreed that by completing the curriculum, they would apply knowledge of SDH when developing treatment plans and recommendations for future patients and families. Sixteen of 18 residents agreed they felt a stronger connection with the patients and families they visited in their homes, and 12 strongly agreed to an improved connection. Nineteen of 20 residents agreed (n = 6) or strongly agreed (n = 13) that the home visit curriculum was a positive experience, while one resident was neutral.

Eighteen of 29 (62%) residents responded to both pre- and postcurriculum surveys. From pre- to postcurriculum, these residents reported increased confidence in understanding SDH (median two-step increase in Likert-scale score, p = .007; Figure 1) as well as increased consideration for SDH when developing treatment plans for patients (median two-step

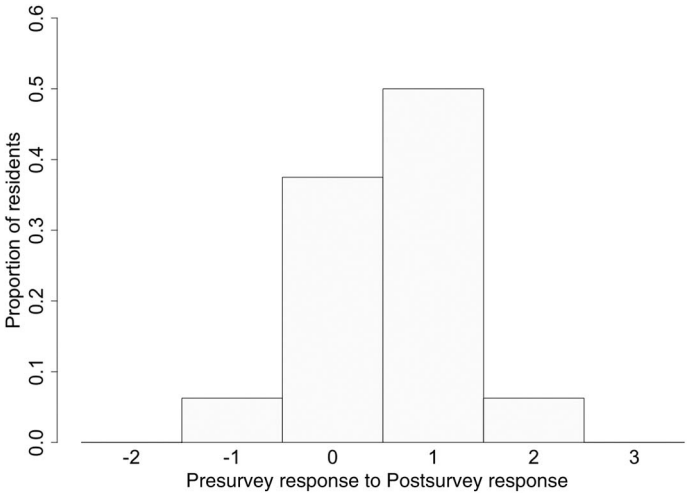

Figure 1. Change from pre- to postsurvey among 17 residents: confidence in understanding how social determinants of health affect patients cared for, measured at each time on a 5-point Likert scale (1 = *strongly disagree,* 5 = *strongly agree*). p = .007.

increase in Likert-scale score, p = .048; Figure 2). These figures display the distribution of the change in Likert-scale score for each statement from the pre- to postcurriculum surveys. For example, a resident who responded the same at each survey time would have a score of 0, while a resident who moved from agree to strongly agree or from disagree to neutral would be represented by a 1.

The results of the post-home visit surveys are described in Table 2. This table includes the number and type of residents involved in the home visit, the type of home visited as well as

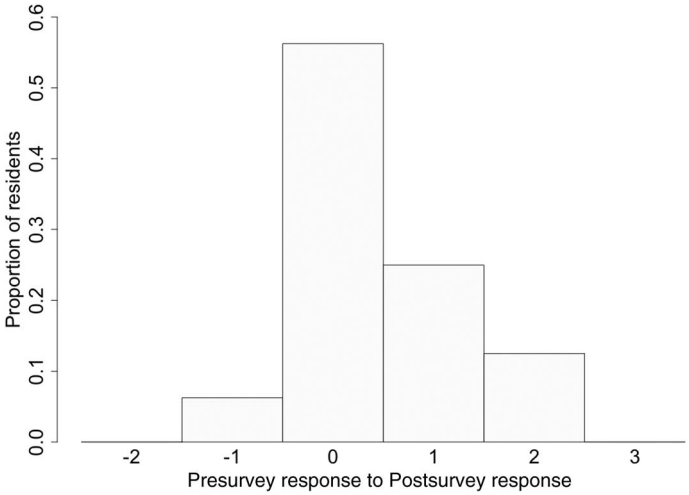

Figure 2. Change from pre- to postsurvey among 17 residents: consideration of social determinants of health when developing treatment plans and recommendations for patients, measured at each time on a 5-point Likert scale (1 = *strongly disagree,* 5 = *strongly agree*). p = .048.

family members present, whether an interpreter was utilized, and information about medications filled. Twenty-three residents submitted responses, and six residents completed two surveys each, for a total of 29 total postvisit survey responses. Most residents (78%) stated that families filled medications that were prescribed, but residents stated that 11% of the filled medications were being taking incorrectly.

Eight of 17 (47%) families were reached and answered survey questions over the phone. Eight families that could not be reached after two phone call attempts, and one family did not want to participate in a phone survey. All eight of the surveyed families stated that the home visit positively changed how they think or feel about doctors, that they would recommend a home visit program to others, and that they thought doctors should visit patients in the home more in the future. Seven of the eight families (88%) stated that the home visit allowed them to feel more connected to and have more trust in the doctors who visited them.

The total time to complete the curriculum for each resident was approximately 4 hours, if two home visits were made: specifically, a 30-minute orientation session at the beginning of the rotation, two approximately 1.5-hour home visits (including travel time), and an approximately 30-minute reflection session at the end of the rotation.

Discussion

This home visit curriculum resulted in benefits experienced by both families and resident physicians. Although resident physicians may feel that they have limited time to take on additional responsibilities, we believe that the 4 hours required for such a curriculum spent over the course of a 4-week inpatient rotation is justified.

Implementation of this curriculum allowed most residents (74%) to make home visits to their patients with the associated benefits described. Strategies to increase resident participation in home visits include making the home visit curriculum an integral part of the rotation, emphasizing the importance of home visits as a learning opportunity and means for community outreach, and ensuring coverage for residents who leave the hospital to participate in the home visits. Furthermore, families may be more inclined to respond to phone calls and to participate in the home visit program if given an information sheet explaining the goals of the program while they are still hospitalized.

The primary goal of our curriculum was for the residents to learn about SDH and how these affect the patients they care for by visiting those patients in their homes. Although 76% of residents stated that, while in medical school, they had had SDH training and 55% had previously made home visits, we believe that continued and perhaps increased exposure to these critically important topics during residency training with patients the residents care for will help solidify their commitment to looking at the patient as a person and adapting a patient-centered care methodology. This home visit curriculum allows residents to experience SDH firsthand by taking a metaphorical walk in their patients' shoes, offering insights into their homes, families, neighborhoods, streets, schools, grocery stores, and play spaces (or lack thereof), to provide a more practical understanding of what their daily life entails and how health care may be delivered at home.

Increasing resident awareness of the larger context of health care while providing optimal patient care is an important Accreditation Council for Graduate Medical Education (ACGME) requirement.[20] The ability of residents to communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds is an ACGME pediatric milestone central to competent, patient-centered care.[20] Many residency training programs are in cities with racially and socioeconomically diverse patient populations.[21,22] Families with a lower socioeconomic status face unique and substantial health care challenges.[23,24] By visiting patients' homes and viewing these children and families in the context of their own spaces and communities, residents experience how patients navigate the health care system posthospitalization and learn about their patients' individual situations. Visits to the homes of these families can be beneficial for residents to better understand socioeconomic and cultural differences amongst the families for whom they provide care and to promote consideration of each family's approach to health and health care. Visits to these homes can assist trainees in developing humility with respect to cultural competency.

The benefits of residents spending time connecting with patients and their families can be tremendous. The physician-patient relationship and feelings of connectedness are important components in developing empathy with patients.[17] Physician empathy is a protective factor against burnout in physicians and residents.[25,26] Eighty-nine percent of residents agreed or strongly agreed that they felt a stronger connection with patients and families they visited through this curriculum. A sense of connection could positively benefit future resident-patient relationships and subsequently enhance resident empathy with improved patient care.

The transition from hospital to home can be difficult for patients and physicians due to numerous environmental and personal

factors.[27-29] One pediatric study showed the prescription fill rate after hospital discharge in children with asthma was between 37% and 57%.[30] Our small study showed that the prescription fill rate was high (78%); however, 11% of patients were reportedly taking the medication incorrectly, which was addressed during the home visit. Resident mindfulness about this potential problem could foster improved discharge planning and patient-centric instructions.

This posthospitalization home visit curriculum offers families the opportunity to gain a greater appreciation of the interest physicians have in caring for patients comprehensively and not just in the hospital. Home visits by residents offer families additional time with their medical team for questions and a deeper discussion of issues of concern. Family perspectives on home visits were also examined for this curriculum given the importance of patient feedback and quality metrics. Just as we sought to examine a resident's feeling of connectedness to patient and family, we looked at families' feelings of trust and connectedness to their physician after a home visit. The great majority of families (88%) stated that they felt more connected to and had more trust in the doctors who visited them. All eight families surveyed would recommend home visits by doctors to others.

The limitations of our study include a relatively small sample size of residents and an even smaller sample size of families who completed phone surveys. Another limitation is that the study of this curriculum was completed at only one pediatric academic training program, so results may not be generalizable to all programs. We were not able to capture data from residents who had completed home visits but did not complete surveys, resulting in an incomplete data set.

Future implications of posthospitalization home visit programs could include residents making home visits to newborns posthospitalization. Newborns and their families are a unique population with unique social circumstances in which residents could enhance learning about SDH and connectedness.

Appendices

A. Home Visits.ppt

B. Asking Families About Home Visits.docx

C. Ask About Our Home Visit Program.docx

D. Day of the Home Visit.docx

E. Precurriculum Survey.docx

F. Post-Home Visit Survey.docx

G. Postcurriculum Survey.docx

H. Phone Survey for Families.docx

All appendices are peer reviewed as integral parts of the Original Publication.

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Disclosures

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Ethical Approval

The Institutional Review Boards at Johns Hopkins Hospital and St. Agnes Hospital approved this study.

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