

# Extending the Medical Home Into the Community: A Newborn Home Visitation Program for Pediatric Residents

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## ABSTRACT

**OBJECTIVE:** To describe the Health Begins at Home (HBH) intervention and examine pediatric resident change in knowledge, attitudes, and self-reported behaviors after the HBH intervention.

**METHODS:** A prospective mixed-methods cohort study was conducted in 2 outpatient clinics at an urban academic pediatric residency program. Residents serving as primary care providers ( $n = 50$ ) of newborn infants participated in HBH, an educational home visit intervention. Study outcomes included resident pre- and post-home visit surveys and an end-of-residency survey assessing knowledge of community, attitudes, and self-reported practice behaviors. Qualitative comments from surveys and small group post-home visit debriefing sessions were coded and themes identified.

**RESULTS:** After intervention, residents demonstrated a significant positive change (all  $P < .05$ ) in the following: adequacy of medical knowledge, understanding of home and community, excitement about home visits, and less concern about personal

safety in the community. These changes were sustained in an end-of-residency survey administered 14 to 22 months after the intervention. Sixty-two percent reported a change in how they treated patients, and 94% indicated home visits should be part of the permanent curriculum.

**CONCLUSIONS:** Conducting home visits was associated with residents' improved understanding of the community and home environment of their patients, which was sustained throughout the remainder of training. Residents reported that home visits provide an important educational experience and should be part of the permanent curriculum. Training programs should consider incorporating home visiting programs into curricula to improve resident knowledge of family home, community, and social determinants of health.

**KEYWORDS:** cultural sensitivity; graduate medical education; home visiting; medical home; primary care

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## WHAT'S NEW

Home visitation by pediatric residents who serve as primary care providers is a powerful educational experience. The intervention resulted in significant and longitudinally sustained positive changes in knowledge, attitudes, and self-reported behaviors of residents who work with an underserved population.

THE INSTITUTE OF Medicine,<sup>1</sup> the Future of Pediatric Education II (FOPE II) statement,<sup>2</sup> and the American Academy of Pediatrics (AAP) in its medical home model of care<sup>3,4</sup> have stressed the importance of future pediatricians developing new ways to relate to patients and address children in the context of the family and community. To fully address the health and well-being of children and their families, especially in at-risk vulnerable communities, pediatricians must move the center of care beyond the office-based setting and integrate with the home and community in a culturally sensitive manner.<sup>5</sup>

However, there currently are few pediatric residency curricula that train future pediatricians to meet these changing needs.

Previous research has advocated home visits as a way to extend the medical home into the community.<sup>6</sup> Although home visits by pediatricians were once a standard of medical care and education,<sup>3,7</sup> they have declined as a common practice in the United States. Yet recent research has identified home visitation by paraprofessionals as a successful means to address the underavailability and underutilization of preventive health services, especially in lower-income urban and isolated rural populations.<sup>6,8</sup> It may be time to reexamine the benefits of primary care providers making home visits.

How we train residents is critically important because studies demonstrate that physicians treat patients as they were trained to do so during residency and fellowship.<sup>9,10</sup> There has been only one small study of pediatric residents' participation in home visits. Steinkuller's study<sup>11</sup> focused on 14 homebound, medically complex, and rural patients. The qualitative evaluation of outcomes from resident

narratives found that residents thought the home visits were worthwhile. Family medicine residents have found home visits to be a valuable component of their education, providing deeper insight into the health of their patients, better physician–patient relationships, and increased resident comfort with the medical home care model.<sup>12,13</sup> However, the majority of these studies have concentrated on adult patients, particularly elderly patients, after acute hospitalizations.

To our knowledge, no prior studies have examined the effects of pediatric resident home visits with children followed longitudinally in primary care. We hypothesize that a pediatric resident home visit intervention will change self-reported resident knowledge, attitudes, and behaviors toward the patients, families, and communities they serve.

## PATIENTS AND METHODS

### PARTICIPANTS

This prospective mixed-methods cohort study included pediatric resident physicians who served as primary care providers in 2 urban academic outpatient clinics. Both clinic sites were located in defined health professional shortage areas (HPSA) in Baltimore, Maryland. Eighty percent of the residents in the program provide primary care at a clinic for an at-risk urban population of 8500 children, which is 80% African American and 95% publicly insured, and the remaining 20% of residents have their continuity clinic at a practice whose patients are 60% Hispanic and 95% publicly insured. Although neither of these clinics has completed the medical home certification process, both sites are comprehensive primary care clinics with a multidisciplinary practice model that encompass the attributes of the medical home by providing care that is accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective.<sup>3</sup>

Between September 2008 and June 2010, all postgraduate year (PGY)-1 and PGY-2 pediatric residents at Johns Hopkins Hospital were eligible to participate in the Health Begins at Home (HBH) intervention.

Mother–infant dyads were recruited from the nursery at an urban academic center or 2 outpatient clinic sites described previously. Inclusion criteria included: English- or Spanish-speaking mother, infant gestational age >35 weeks, less than a 4-hour neonatal intensive care unit stay, and the mother requesting primary care at 1 of the 2 clinic sites.

Institutional review board approval was obtained for this project from the Johns Hopkins School of Medicine. Informed consent was obtained from all residents and mother–infant dyads before study participation.

### HBH INTERVENTION

The HBH intervention included a 1-hour educational module, a home visit, and a post–home visit debriefing. Before the home visit, residents completed an educational module developed by the principal investigator (MMT) and based in the theoretical framework of social learning theory and the health belief model.<sup>14</sup> Components of the module included discussion of the process of home visita-

tion and social determinants of health using the communities surrounding the 2 clinic sites as illustrative examples. The residents could participate in person or view the module video online. Before the visit, the residents reviewed demographic data for the census tract of the home they would visit, and during the visit, they completed a windshield survey<sup>15</sup> of the area surrounding the home of the mother–infant dyad.

The PGY-1 or PGY-2 residents assigned as the infant's primary care provider conducted a home visit with a mother–infant dyad within the first 30 days of the infant's life. This time period was selected because it is an important time for bonding between the mother and pediatrician. Residents utilized a standardized template for the visit (Online Appendix). Suggested questions covered the medical, social, and environmental context of the child and family.

The resident was accompanied by either an experienced home nurse or a PGY-3 resident (with assignment determined by availability) who served as a supervisor to enhance the educational experience and to ensure safety. PGY-3 residents were used as supervisors during the visit as a method to sustain the program past the initial funding cycle. The visits were performed in the primary language of the family visited (English or Spanish). If the primary language was Spanish, a medical translator accompanied the resident.

Residents attended a small group (6 to 8 residents) post–home visit debriefing session led by a facilitator (MMT). This 1-hour semistructured group discussion was designed to facilitate self-insight and reflection on the home visit experience. Debriefing sessions were held within 60 days of the visit. Figure 1 details the timeline of interventions and data collection. Further details of the intervention are provided in the Online Appendix.

### OUTCOMES

All PGY-1 and PGY-2 residents completed a pre–home visit survey within the 30 days before the educational module assessing their knowledge about home visits, the surrounding community, and socioeconomic determinants of health. The survey also assessed attitudes toward the community and self-reported practice behaviors. Residents who participated in the HBH intervention completed a post–home visit survey that included the same assessment as the pre–home visit survey and further assessment of practice behaviors, whether the home visit changed their behaviors, and their perceived quality of the doctor–patient relationship. The post–home visit survey was completed within 7 to 14 days after the visit. All surveys were administered via SurveyMonkey (<http://www.surveymonkey.com>) and the results deidentified.

Primary outcomes included change in pre and post Likert scores in resident self-report of knowledge, attitudes, and practice behaviors. The 5-point Likert scores ranged from 1 (strongly disagree) to 5 (strongly agree).

To obtain baseline pre-HBH intervention outcomes, the end-of-residency survey was completed by the graduating PGY-3 residents in June 2008 before the start of the HBH intervention. In subsequent years, an end-of-residency

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