



Location, Location, Location: Teaching About Neighborhoods in Pediatrics

Francis J. Real, MD; Catherine D. Michelson, MD, MMSc; Andrew F. Beck, MD, MPH; Melissa D. Klein, MD, MEd

From the Division of General and Community Pediatrics (Drs Real, Beck, and Klein), Division of Hospital Medicine (Drs Beck and Klein), Cincinnati Children's Hospital Medical Center, Ohio; and Division of General Pediatrics, Boston Medical Center (Dr Michelson), Mass. The authors have no conflicts of interest to disclose. Address correspondence to Francis J. Real, MD, 3333 Burnet Ave, MLC 2011, Cincinnati, OH 45229 (e-mail: francis.real@cchmc.org).

ACADEMIC PEDIATRICS 2017;17:228–232

POVERTY IS WIDESPREAD in the United States, and it negatively affects child health across the life course.^{1,2} Likewise, one's neighborhood has been shown to shape multiple health outcomes including life expectancy.^{3,4} Pediatric residency training on the social determinants of health (SDH) currently focuses on understanding the effect of poverty on child health with less attention to neighborhood location and the relevant, available resources that reside within local communities. Previous curricula examining the disparities that exist across local neighborhoods have primarily taken the form of short-term windshield surveys or asset mapping.^{5,6} We sought to challenge this instructive paradigm by educating residents on local neighborhoods through development of a carefully constructed innovative, longitudinal curriculum.

The Pediatric Residency Review Committee of the Accreditation Council for Graduate Medical Education requires a minimum of 2 educational units of ambulatory experiences that include elements of community pediatrics and child advocacy for all residency programs.⁷ As a novel approach to meet this requirement at Cincinnati Children's Hospital Medical Center, we describe the development of a neighborhood-based spiral curriculum ("Geomedicine Curriculum"). A spiral curriculum is one in which there is purposeful revisiting of topics throughout a course with the goal of deepening understanding of a topic with each reiteration.⁸ The goal of the "Geomedicine Curriculum" is to provide residents with a framework (ie, neighborhood location and associated risks and assets) that they can use to more specifically assess factors relevant to the SDH and intervene within their clinical practice to mitigate the effects.⁹ In this article, we describe how we developed the "Geomedicine Curriculum" using Kern's 6-step approach to curriculum development.⁹

STEP 1: PROBLEM IDENTIFICATION AND GENERAL NEEDS ASSESSMENT

At many residency training programs, residents often serve as primary care physicians for high-risk populations

despite being unfamiliar with the local neighborhoods.^{10,11} Although many residency programs have implemented curricula aimed at training residents to consider general risks related to poverty through brief activities such as windshield surveys, few programs have implemented longitudinal curricula aimed at training residents to deepen their appreciation of local neighborhoods and to consider specific neighborhood-based risks and assets. This can leave residents uninformed of challenges that families are likely to face solely on the basis of where they live.^{12,13} Lack of neighborhood awareness on the part of clinicians might explain why disadvantaged families frequently report dissatisfaction regarding physician-administered advice.¹⁴ Additionally, there is limited time for trainees to intervene on the SDH during primary care visits because average appointment duration is 20 minutes.¹⁵ It is important, therefore, for residents to develop a framework by which anticipatory guidance might be administered efficiently and specifically in ways that are meaningful and actionable for the local families they serve.

One's neighborhood affects inpatient practice as well and has been linked to admission rates for asthma, bronchiolitis, and pneumonia.³ Understanding unique neighborhood risk factors and being able to utilize available neighborhood resources might help to reduce admission rates and health care costs. The need for residents to understand complex systems and navigate them with patients is at the core of the system-based practice competency domain (Fig. 1).¹⁶

Because of this, we conducted a needs assessment to determine how frequently residents considered neighborhood location during continuity clinic. A survey of 44 pediatric residents showed that 39% reported rarely or never asking families about their neighborhood during routine primary care. Most residents (75%) could not identify a single online resource that they could use to learn about a child's neighborhood (eg, location of a grocery store or pharmacy, information about local parks or recreation centers). These findings emphasize that despite increasing

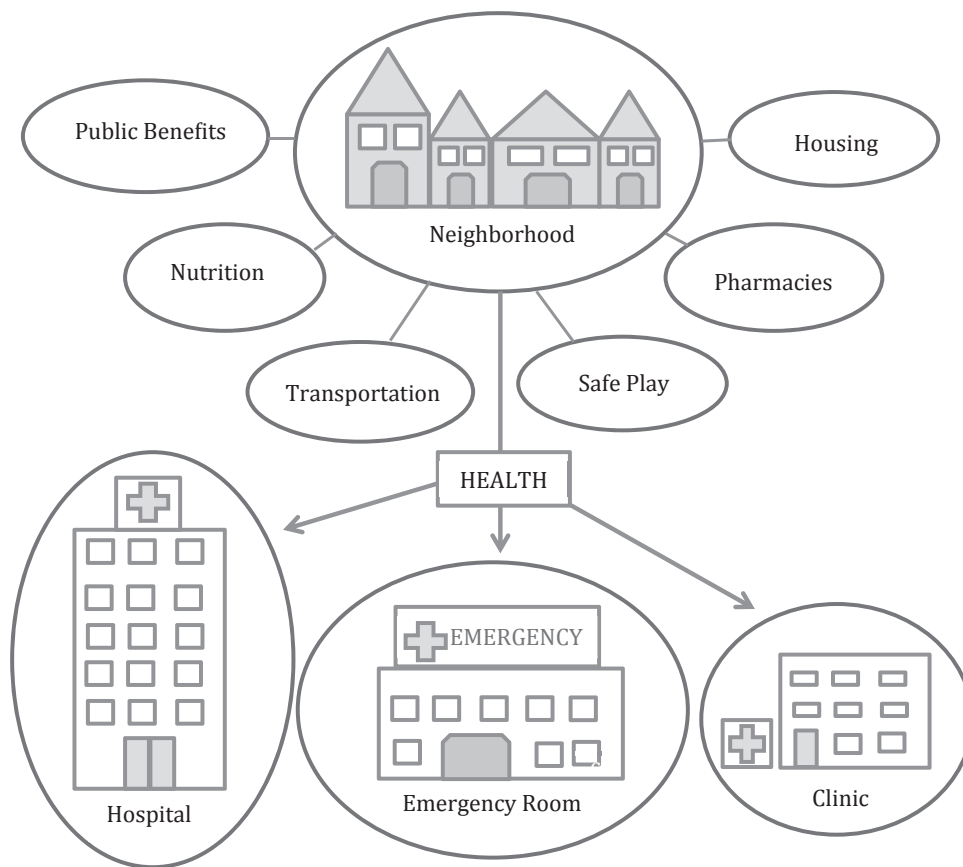


Figure 1. Neighborhood location affects health and social risks and subsequent health care utilization.

interest in helping families manage poverty-related risks through action in the primary care setting, accurately and efficiently assessing for SDH and referring to local resources remains difficult.¹⁷

STEP 2: TARGETED NEEDS ASSESSMENT

To determine the content for the “Geomedicine Curriculum,” we first reviewed previous studies regarding SDH at our location. A 2013 survey of caregivers receiving primary care at the Cincinnati Children’s Hospital Medical Center Pediatric Primary Care Center indicated high rates of food insecurity. Approximately 33% of families were food insecure and 93% received food-related government assistance.¹⁸ Additionally, we assessed referrals to our medical-legal partnership (Child HeLP) and found that housing problems, benefit disputes, and education concerns were the most common referral indications.¹⁹ As a final step in content determination for our longitudinal curriculum, we surveyed caregivers (n = 120) regarding what topics they were most interested in receiving advice about from their child’s pediatrician. Caregivers revealed that they were most interested in advice regarding safe play, nutrition, transportation, pharmacies, and school support.

STEP 3: GOALS AND OBJECTIVES

The overarching goal of the “Geomedicine Curriculum” was that pediatric residents would develop the knowledge,

skills, and attitudes to care for impoverished families through attention to their patients’ neighborhoods. The specific objectives of the curriculum were that residents would be able to: 1) explore firsthand the specific risks and assets of an impoverished neighborhood, 2) identify and utilize neighborhood-specific resources aimed at mitigating the effects of poverty for families, and 3) show the ability to provide neighborhood-specific anticipatory guidance through case-based simulation scenarios using curricular resources (Fig. 2).

STEP 4: EDUCATIONAL STRATEGIES

FIRST YEAR RESIDENTS

The “Geomedicine Curriculum” was designed to introduce first year residents to the daily experiences of families living in impoverished neighborhoods (objective 1). These combined experiential and didactic experiences occurred during a required 2-week advocacy rotation. First, residents were provided an overview that painted a detailed picture of poverty in Cincinnati. This segment started with an immersive experience at our region’s largest food bank, followed by observing families applying for public benefits at the county’s public benefit agency. Next, residents participated in a multidisciplinary didactic session facilitated by physicians, social workers, lawyers, and a paralegal who emphasized families’ rights, and community collaborators. After providing these background concepts

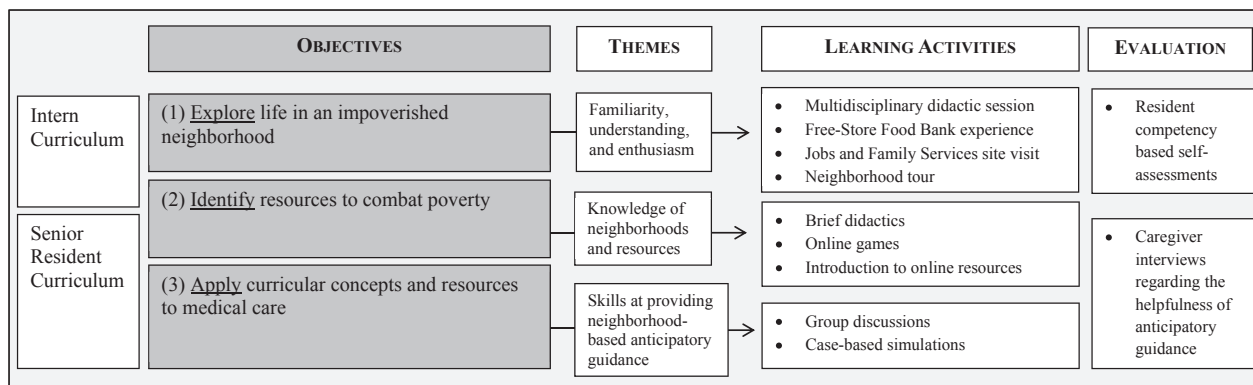


Figure 2. Overview of the “Geomedicine Curriculum.”

related to the SDH, the curriculum focused specifically on the effect of neighborhood on childhood health. As a first exposure to this notion, residents underwent a self-guided tour of an impoverished neighborhood. The neighborhood they toured was selected because of its close proximity to the medical center’s primary care center and its high rate of poverty. Sites visited during the tour included a family’s apartment building, local elementary school, pharmacy, corner grocery store, outdoor playground, and recreation center. Specifically arranged experiences included a meeting with the school principal, a pharmacist, and staff at the recreation center. A faculty-facilitated debriefing occurred after completion of the tour.

SENIOR RESIDENTS

For senior residents, the “Geomedicine Curriculum” built upon concepts learned during the first year with more intensive discussion of risks and resources as well as clinical applications. As mentioned, addressing social needs in the medical setting within time constraints can be overwhelming for residents, so we built the curriculum around a neighborhood framework that included introduction to readily available online resources (eg, Head Start, United Way). The neighborhood-based curriculum, developed de novo, included three 30-minute small group teaching modules that occurred just before the start of a continuity clinic with no more than 6 residents undergoing education at the same time. Each teaching module focused on a specific subset of neighborhood-specific risks and assets identified by our targeted needs assessment (eg, housing problems, obtaining healthy food, locating safe places to play, locating pharmacies, and accessing public transportation). Each resident actively engaged in learning through a shared interactive presentation using personal computer stations with facilitated group discussions. Each module consisted of an online game, brief didactic, introduction to readily available online resources, group discussion, and case-based simulations. For example, one module was focused on management of obesity. It started with an online game that required residents to indicate locations of local neighborhoods on a map of Cincinnati. This was followed by a discussion of best-practice clinical approaches to obesity management. A map of a local impoverished neighborhood with a key indicating park and

grocery store locations was used to discuss barriers to care. Residents were then introduced to local resources including food pantries, community gardens, and low-cost recreation centers through familiarization with websites that were searchable using zip code or neighborhood location. Finally, residents were provided a clinical case of an obese patient and worked in small groups to develop a plan of care that was tailored on the basis of this patient’s neighborhood location. After each module, online resources were made readily available on the residency training homepage to be used real-time in continuity clinic.

STEP 5: IMPLEMENTATION

By incorporating the “Geomedicine Curriculum” into a preexisting, mandatory rotation during the first year, we experienced minimal barriers to implementation for first-year residents. The senior resident curriculum was more difficult to implement because of the competing demands for upper level residents’ attention. We therefore scheduled the senior resident curriculum to occur at a time and place that was convenient for residents, which meant often conducting the education in inpatient workrooms. Because the senior resident curriculum required physician facilitation, after initial piloting, we incorporated it into the regular pre-continuity clinic teaching to improve sustainability. Funding support for the development of the senior resident curriculum was provided by the Academic Pediatric Association Resident Investigator Award.

STEP 6: EVALUATION AND FEEDBACK

Curriculum evaluation is critical to measure effectiveness of teaching strategies and to direct next steps. As reported by us, first year residents reported an enhanced understanding of neighborhood resources and contextual hardships after the neighborhood tour.²⁰ After the neighborhood-based curriculum for senior residents, 74% of residents agreed that the concepts were important for clinical practice. In addition, more than 90% of residents were able to name at least 1 website to determine information about a patient’s neighborhood after the curriculum. When residents were asked what they used the websites for, they reported a range of activities including providing neighborhood-specific information on food pantries,

pharmacies, Head Start programs, parks, and recreation activities (eg, swimming lessons). Residents used the resources to provide families information on how to travel to health-related locations such as pharmacies and recreation centers. Residents also reported using city resources to identify whether specific patient addresses were the site of reported housing code violations, an activity that has proven relevant to future referrals to on-site social workers and legal advocates.

As an additional outcome measure, we assessed the helpfulness of residents' advice to families during the post-curricular period. As previously described by us, most families believed that residents' advice on curricular topics was helpful after the neighborhood-based curriculum although topics were not consistently addressed during clinic visits.²¹

LIMITATIONS AND NEXT STEPS

The "Geomedicine Curriculum" described in this report was not without limitations. First, it occurred at a single institution thereby limiting its generalizability. Second, evaluation metrics were primarily perception-dependent and did not assess actual change in resident practice. Finally, our curriculum addressed only a subset of what is meant by the SDH. The SDH additionally encompass cultural biases, race and ethnicity, and health care literacy among other characteristics that were not directly addressed by this curriculum.

The consideration of neighborhood effect on health is not exclusive to Cincinnati. The Boston Combined Residency Program at Boston Medical Center/Boston Children's Hospital has also implemented a neighborhood-based advocacy curriculum. The curriculum involves a community tour and assessment, a multidisciplinary session related to food and housing insecurity, and self-directed activities aimed at deeper exploration of neighborhood resources related to the SDH. Additionally, websites such as the United Way (www.unitedway.org) and Cap4Kids (www.cap4kids.org) are excellent resources regarding neighborhood assets²² that might be used as teaching tools. As a next step, further research and collaboration is needed to determine the best strategies for teaching trainees and faculty how to identify health and social risk factors in busy medical settings and additionally how to provide tailored interventions specific to patients' neighborhoods.

CONCLUSIONS

Kern's 6-step method can be an effective approach to curriculum development.⁹ Through this rigorous approach, we were able to critically evaluate our curricula and disseminate findings through peer-reviewed publications.^{20,21} Our "Geomedicine Curriculum" led to improved awareness of contextual hardships related to poverty and increased awareness of online resources to provide neighborhood-based anticipatory guidance. Because we organized our curriculum as a spiral curriculum, in each reiteration more challenging learning objectives were presented to trainees

with the ultimate goal of affecting clinical care. This curriculum is well aligned with the American Academy of Pediatrics' recently released policy statement recommending screening for the SDH and collaborating with community organizations to help families address unmet needs.²³ Instruction provided within the context of neighborhood location such as the "Geomedicine Curriculum" might be an effective way in which pediatric residents could be taught about specific and contextualized social risks related to poverty in the neighborhoods where they practice. Additionally, such curricula can give trainees skills in partnering with families to overcome challenges through use of neighborhood-specific resources. We anticipate increased emphasis on neighborhood location, and associated risks and assets, in educational strategies related to the SDH. This will be increasingly important as greater focus is placed on the relevance of neighborhood-based social factors to child health and well-being.

ACKNOWLEDGMENTS

This work was partly supported through the Academic Pediatric Association Resident Investigator Award (PI: Real).

REFERENCES

1. DeNavas-Walt C, Proctor B, Smith J. *Income, Poverty, and Health Insurance in the United States: 2012*. Washington, DC: U.S. Census Bureau; 2013.
2. Cutts DB, Meyers AF, Black MM, et al. US Housing insecurity and the health of very young children. *Am J Public Health*. 2011;101:1508–1514.
3. Beck AF, Florin TA, Campanella S, et al. Geographic variation in hospitalization for lower respiratory tract infections across one county. *JAMA Pediatr*. 2015;169:846–854.
4. Robert Wood Johnson Foundation. City Maps. Available at: <http://www.rwjf.org/en/library/articles-and-news/2015/09/city-maps.html>. Accessed December 28, 2016.
5. OHSU Pediatric Residency Program. CACH Windshield Survey & Asset Map. Available at: <https://sites.google.com/site/ohsupedsres/home/Rotation-Information/cach-i/community-assessment-activities/cach-windshield-survey-asset-map>. Accessed September 7, 2016.
6. Callan LB. Adapting the windshield survey model to community health education. *HSMHA Health Rep*. 1971;86:202–203.
7. Accreditation Council for Graduate Medical Education. *The ACGME Program Requirements for Graduate Medical Education in Pediatrics*. Available at: http://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/320_pediatrics_2016.pdf; 2015. Accessed September 7, 2016.
8. Harden RM. What is a spiral curriculum? *Med Teach*. 1999;21:141–143.
9. Kern DE, Thomas PA, Hughes MT. *Curriculum Development for Medical Education: A Six-Step Approach*. 2nd ed. Baltimore, Md: Johns Hopkins University Press; 2009.
10. Northrip KD, Bush HM, Li HF, et al. Pediatric residents' knowledge of the community. *Acad Pediatr*. 2012;12:350–356.
11. Krugman SD, Racine A, Dabrow S, et al. Measuring primary care of children in pediatric resident continuity practices: a Continuity Research Network study. *Pediatrics*. 2007;120:e262–e271.
12. Weitzman CC, Freudigman K, Schonfeld DJ, et al. Care to underserved children: Residents' attitudes and experiences. *Pediatrics*. 2000;106:1022–1027.
13. Weissman JS, Campbell EG, Gokhale M, et al. Residents' preferences and preparation for caring for underserved populations. *J Urban Health*. 2001;78:535–549.
14. Coker TR, Chung PJ, Cowgill BO, et al. Low-income parents' views on the redesign of well-child care. *Pediatrics*. 2009;124:194–204.

15. Norlin C, Crawford MA, Bell CT, et al. Delivery of well-child care: a look inside the door. *Acad Pediatr*. 2011;11:18–26.
16. Guralnick S, Ludwig S, Englander R. Domain of competence: systems-based practice. *Acad Pediatr*. 2014;14(2 suppl):S70–S79.
17. Garg A, Toy S, Tripodis Y, et al. Addressing social determinants of health at well child care visits: a cluster RCT. *Pediatrics*. 2015;135:e296–e304.
18. DeMartini TL, Beck AF, Kahn RS, et al. Food insecure families: description of access and barriers to food from one pediatric primary care center. *J Community Health*. 2013;38:1182–1187.
19. Klein MD, Beck AF, Henize AW, et al. Doctors and lawyers collaborating to HeLP children—outcomes from a successful partnership between professions. *J Health Care Poor Underserved*. 2013;24:1063–1073.
20. Real F, Walmsley A, Beck A, et al. A self-guided tour of an impoverished neighborhood changes pediatric residents' perspectives. *Med Sci Educ*. 2015;25:393–395.
21. Real FJ, Beck AF, Spaulding JR, et al. Impact of a neighborhood-based curriculum on the helpfulness of pediatric residents' anticipatory guidance to impoverished families. *Matern Child Health J*. 2016;20:2261–2267.
22. Taylor DR, Aligne CA. Pediatrics in the community: Cap4Kids.org: connecting pediatricians to the community at the speed of light. *Pediatr Rev*. 2007;28:386–387.
23. Council on Community Pediatrics. Poverty and child health in the United States. *Pediatrics*. 2016;137 <http://dx.doi.org/10.1542/peds.2016-0339>.