Environments for Healthy Aging: Linking Prevention Research and Public Health Practice

Rebecca H. Hunter, MEd; Lynda A. Anderson, PhD; Basia Belza, PhD, RN; Kristin Bodiford, PhD, MBA; Steven P. Hooker, PhD; Chris S. Kochtitzky, MSP; David X. Marquez, PhD; William A. Satariano, PhD, MPH

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Abstract

Safe and well-designed community environments support healthful behaviors that help prevent chronic conditions and unintentional injuries and enable older adults to be active and engaged in community life for as long as possible. We describe the work of the Healthy Aging Research Network (HAN) and partners over the past decade to better understand place-based determinants of health and translate that knowledge to real-world practice, with a focus on environmental strategies. Using key components of the Knowledge to Action framework, we document the importance of a sustained, multidisciplinary, collaborative approach and ongoing interaction between researchers and communities. We share examples of practical tools and strategies designed to engage and support critical sectors with the potential to enhance the health and well-being of older adults and their communities. We conclude with a description of lessons learned in facilitating the translation of prevention research into practice.

Introduction and the Knowledge to Action Framework

Physical activity, social engagement, and a healthful diet help prevent chronic conditions and increase the longevity and quality of life of older adults (1–3). The importance of physical and social environments on human behavior and health is also well recognized. There are demonstrable cumulative environmental effects on the aging process and the health and functioning of older adults (4).

The United States will experience in the next 2 decades what has been described from a worldwide perspective as “one of the most daunting challenges of this century” — the unprecedented population growth, from 39 to 70 million, of people aged 65 or older (5). Corresponding growth in the number of older adults with disabling conditions can also be expected; in recent years, more than half of US adults aged 65 or older were reported to have 1 or more disabling conditions (6). Older adults vary in their susceptibility and exposure to unsafe or constraining environments, and those with chronic diseases or functional limitations may be more adversely affected than their peers by environmental problems (7).

Practices and policies that support safe, age-sensitive, and fully accessible environments help ensure the healthiest possible aging and enable older adults to remain actively engaged in their communities. However, serious concerns exist about our preparedness to meet the challenges of population aging. According to the National Association of Area Agencies on Aging (n4a), in many US communities, “advancements are nowhere near the level of progress that has to be made to ensure that communities are livable for people of all ages” (8). The need to address such challenges underscores the urgency to translate prevention research into action and to define and test effective ways to reach key communities of practice, not only in public health but also in disciplines such as city planning, engineering, and architecture.

The Centers for Disease Control and Prevention’s (CDC’s) Healthy Aging Research Network (HAN) (www.cdc.gov/aging/han/index.htm), which works to better understand place-based determinants of healthy aging...
and translate findings into practice and policy, is well-positioned for such work. It has member centers from 7 US academic institutions, other university affiliates, and community, state, and national partners working to advance science toward action and policy in support of healthy aging (www.cdc.gov/aging/han/map.htm). HAN conducts research, develops and evaluates initiatives promoting healthy aging, and translates and disseminates science into sustainable, evidence-based public health programs and system-level strategies. HAN focuses on communities and populations that have a disproportionate prevalence of illness (9); consistent with US law, HAN does not use federal funds to directly or indirectly influence federal, state, or local legislation. HAN recognizes the importance of environmental facilitators and barriers to healthful behaviors and community engagement in the healthy aging process (9). Its work, as depicted in a modified Knowledge to Action framework (Figure) (10), reflects a distinct pattern of transition from applied research to translation, with the goal of informing practice and policy.

![Figure. Healthy Aging Research Network Environmental Initiatives: Moving Knowledge to Practice. The HAN Environmental Initiatives Framework is based on the Knowledge to Action Framework (10), highlighting research, knowledge to products, dissemination, partner engagement, and practice effects. [A text description of this figure is also available.]](image)

In this article, we use the framework to present the activities and lessons learned from a series of environmental initiatives conducted over 10 years. We briefly describe the network, including our members and partners, and the supporting structures that fund and help sustain our work. We then describe the development of a research agenda and select applied research activities related to synthesis reviews, discovery studies, and implementation studies. We next discuss how research activities led from knowledge to products and describe dissemination and engagement activities. We note the critical role of partners, many of whom are stakeholders with a long-term focus on healthy environments. Finally, we describe the effects of this work on practice, the ongoing influence of practice-based discovery and evidence on further research and dissemination, and the implications for future work.

**Supporting Structures and Partnerships**

Being part of an ongoing network has several advantages. First, CDC’s Healthy Aging Program has provided core funding for HAN for more than a decade, allowing for member continuity and development of long-term working relationships. These factors undergird a shared longitudinal vision, support cross-site collaboration, and allow leveraging of resources. Second, network sites are widely distributed across the United States, from urban Seattle to rural South Carolina. These diverse locations represent a range of population groups and community characteristics. Moreover, HAN faculty and established partner organizations, such as the National Council on Aging and the National Association of Chronic Disease Directors, contribute interdisciplinary and cross-sector viewpoints essential for addressing environmental issues. Active community advisory boards anchor HAN sites, and their members provide real-world perspectives and ensure a strong connection to practice. Third, the network has an infrastructure for logistical support and communications through topical workgroups. Taken together, these provide continuity, strengthen capacity, and integrate accomplishments and lessons learned into new initiatives.
Engaging external partners that share an environmental focus (eg, the US Environmental Protection Agency, Easter Seals) is pivotal to moving knowledge into action. Such organizations help frame issues from a national perspective and identify where and how HAN can best contribute. These collaborations result in more influence and expanded reach than are achievable by a sole entity.

Research Phase

In the research phase of the Knowledge to Action cycle, HAN builds evidence by synthesizing reviews of research findings and conducting discovery and implementation studies. To understand the science of environmental influences and healthy aging, we began more than 10 years ago to examine the literature, focusing on research that investigated environmental determinants of physical activity and looking for knowledge gaps and weaknesses from a public health context. We found a paucity of environmental measures that account for factors relevant for older adults, data pertaining to environmental influences on older adult health, and environmental interventions. These findings led us to conduct research activities related to the environment and older adult physical activity.

In a cross-site discovery study, we surveyed 2,110 community-based organizations in 2002 to determine physical activity program offerings and usage (11). Findings from the 77% of organizations that responded indicated that only 6% of local older adults participated in programs on at least a weekly basis; moreover, some programs such as strength training were not broadly available. Findings made available to study communities immediately influenced practice and program development. A searchable online database tool, Active Options, was subsequently launched to provide access to information about available physical activity programs to older adults and service providers and to facilitate community planning.

Given the demonstrated need for an age- and disability-sensitive built environment measure, we developed the HAN Environmental Audit Tool in 2005 to assess the safety, walkability, and ease of navigation of the built environment for older pedestrians and to ascertain features of the built environment that are important to mobility (12). The Environmental Audit Tool is an adaptation of an existing instrument (13) that was developed on the basis of findings from a discovery study series of older adult interviews and community-based pilot studies across HAN sites. We continue to refine the tool based on new research findings and feedback from other researchers and community users.

The physical activity programs survey and HAN audit tool projects, conducted in geographically diverse HAN sites, showed differences in community environments, particularly between those that were rural and urban. These lessons led us to study types of communities through related initiatives including a review of the effects of the rural built environment on adult physical activity (14), a review on the food environment (15), and audit tool revisions to address rural environment features. We further committed to consider site diversity in subsequent HAN research.

The National Highway Traffic Safety Administration provided core funding to the University of North Carolina Highway Safety Research Center for Walk Wise, Drive Smart (www.walk-wise.org/), an implementation study conducted in cooperation with the City of Hendersonville, North Carolina. We assessed walking conditions in 10 neighborhoods using the HAN Environmental Audit Tool and resident feedback. These data indicated need for improvement of pedestrian facilities to reduce hazards and barriers to walking by older adults and the need for changes in driver behavior and walking programs tailored to adults with varying fitness levels. The intervention included community education, law enforcement, encouragement of walking, and environmental assessment and modification, including physical improvements to selected routes to improve safety and walkability. The effectiveness of public health professionals, city officials, and informed citizens in making needed environmental changes was a key lesson in the power of cross-sector collaboration.

Knowledge to Products and Practice Effects

Establishing relationships with communities during our research indicated the need for greater attention to change in environmental practice and policy to broadly affect public health. To move from knowledge to products and practice, we learned to seek out professionals from diverse disciplines who were leaders in environmental and policy change
For more than a decade, HAN has moved science to practice to promote environments for healthy aging. Our experience illustrates the potential of a network of strong member centers and an evolving network of partners with varying missions to achieve common goals. We look forward to continuing to address the challenges of an aging society, helping ensure that our work contributes to the healthiest possible society for all.
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Author Information

Corresponding Author: Rebecca H. Hunter, University of North Carolina, Center for Health Promotion and Disease Prevention, 228 Indian Trail Rd, Chapel Hill, NC 27514. Telephone: 919-260-0175. E-mail: Rebecca_Hunter@unc.edu.

Lynda A. Anderson, Centers for Disease Control and Prevention and Emory University, Atlanta, Georgia; Basia Belza, University of Washington, Seattle, Washington; Kristin Bodiford, Community Strengths, Alamo, California; Steven P. Hooker, Arizona State University, Phoenix, Arizona; Chris S. Kochtitzky, Centers for Disease Control and Prevention, Atlanta, Georgia; David X. Marquez, University of Illinois at Chicago, Chicago, Illinois; William A. Satariano, University of California, Berkeley, Berkeley, California.

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