

NIA study focuses on health disparities

By Robin Arnette

The NIEHS Office of Human Research Compliance ([OHRC](http://www.niehs.nih.gov/research/join/ohrc/index.cfm) (<http://www.niehs.nih.gov/research/join/ohrc/index.cfm>)) continued its seminar series Oct. 15 with a discussion of a study that experienced success in recruiting and retaining participants for clinical research.

Healthy Aging in Neighborhoods of Diversity Across the Life Span (HANDLS) is a 20-year population-based health disparities study of residents living in Baltimore, Maryland (see [side bar](#)). An unprecedented 91 percent of participants who signed up for the study took part in the second wave of medical evaluations that occurred a few years later.

Linked Video

[“View the medical evaluations participants undergo in this HANDLS video.” \(8:44\)](#)

HANDLS

(<http://handls.nih.gov/>)

is sponsored by the National Institute on Aging (NIA), and owes its existence to its two NIA creators — Deputy Scientific Director [Michele Evans, M.D.](#)

(<http://www.grc.nia.nih.gov/branches/irp/mevans.htm>)

, and lead researcher Alan Zonderman, Ph.D. Evans and HANDLS clinical study manager Jennifer Norbeck were invited to NIEHS to talk about the challenges of recruiting special populations and discuss study results.

Earning trust

Norbeck spoke first and described the barriers she and the team had to overcome to recruit and retain the target population — a socioeconomically diverse sample of young to middle-aged African-Americans and Caucasians in Baltimore. Based on scientific literature, the team identified several barriers to participation. Mistrust of government and research, and transportation issues prompted HANDLS staff to conduct the study off-site and develop community partnerships during the planning phase.

The first step in establishing a physical presence in the community was to follow the National Health and Nutrition Examination Survey ([NHANES](#)

(<http://www.cdc.gov/nchs/nhanes.htm>)

) model of mobile examination centers. The team designed and procured three medical research vehicles (MRVs) — a 56-foot semi-customized trailer with three testing areas, called MRV-1; a 40-foot self-propelled truck with three rooms for obtaining consent and cognitive testing, called MRV-2; and a third smaller vehicle used exclusively for specimen collection, called MRV-3.

After eliminating the need for residents to travel to a testing site, HANDLS staff had to earn the trust of people living in the area. Norbeck said the study was much better received by residents who had seen the MRVs in the neighborhood and had gotten a letter about participating.

The HANDLS protocol

HANDLS staff selected one or two individuals per household, using a computer-generated probability method, which yielded a representative sample from Baltimore. The study has several exclusion criteria, such as pregnancy or drug and alcohol abuse. To participate in the study, residents had to be 30 to 64 years old, be able to give informed consent, and have photo identification.

While compensation was important for some, flexible scheduling was critical during the first wave of the study. The team successfully recruited 3,720 participants.



Evans uses her skills as an internist and medical oncologist in her position as deputy scientific director at NIA. (Photo courtesy of Steve McCaw)

“We also posted flyers, attended community events, placed ads in local newspapers and community association newsletters, and created community advisory boards,” Norbeck said. “We did all this before we knocked on any doors.”

Searching for the cause of health disparities

Evans began her portion of the seminar by explaining the rationale for HANDLS. She said residents in some Baltimore neighborhoods have longer life expectancy than others. Affluent Roland Park has a life expectancy of 83 years, while Hollins Market, which has a majority of those with lower socioeconomic status, is 63 years. Evans said this surprisingly low number compares to life expectancy in the U.S. in 1940, or Bangladesh and Pakistan today. She and Zonderman wondered if there was biologic damage associated with the living conditions in selected neighborhoods in Baltimore.

“We wanted to know if environment, occupation, race, or lifestyle was driving these differences,” Evans said. “How do these social determinants of health cause health disparities?”

African-Americans in these neighborhoods had a higher incidence of chronic kidney disease, but since Caucasians also suffered with the disease, race was not a factor. HANDLS staff, along with Deidra Crews, M.D., of Johns Hopkins School of Medicine, found that poverty was an important risk factor only in African-Americans, suggesting that environmental factors associated with poverty posed a specific risk for chronic kidney disease among African-Americans.

Working with collaborators at Massachusetts General Hospital, the HANDLS team wanted to understand why African-Americans exhibited low vitamin D levels, but didn’t display symptoms of vitamin D deficiency. They found that some versions of the protein are more abundant in African-Americans than European-Americans and have different binding affinities for vitamin D (see [text box](#)).

HANDLS serves the community by providing comprehensive medical examination, clinical labs, and health education to those who otherwise could not afford them. It also contributes to the well-being of its participants, by sending lab results to them by mail and sharing the information with their doctors.



Norbeck has a master’s degree in social work. This training was exactly what Evans was looking for when she asked Norbeck to join the HANDLS team in 2003. (Photo courtesy of Steve McCaw)



NIEHS OHRC Director Joan Pakenham, Ph.D., presented Evans and Norbeck with a poster of the announcement for their seminar. (Photo courtesy of Steve McCaw)

Low vitamin D

Since physicians measure the amount of vitamin D bound to a binding protein, HANDLS researchers examined the genotype of vitamin D binding protein that binds 85-90 percent of total circulating 25-hydroxyvitamin D in African-American and Caucasian HANDLS participants.

The researchers found that low total 25-hydroxyvitamin D levels likely do not indicate true vitamin D deficiency when vitamin D binding protein levels are also low, as with many African-Americans. Estimated bioavailable 25-hydroxyvitamin D levels among African-Americans and Caucasians were comparable, suggesting that perhaps a new test for vitamin D deficiency should assess the amount of free or bioavailable vitamin D and assess the vitamin D binding genotype of individuals.

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