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Profiles in Health Care Innovation provide a look at promising programs and models designed to improve outcomes and lower treatment costs for patients with complex health and social needs.

linkAges: Building Support Systems for Seniors Living Independently in the Community

Susan L. Hayes, Douglas McCarthy, and Sarah Klein

The COMMONWEALTH FUND

> "A lot of people seem to come and go here in California, and this has now become an issue for me as I get older. I was just thinking about all my friends the other day, and my goodness, they're either dying or they're moving far away! How am I going to meet people? I am so glad linkAges came in to my life. I feel useful and valued and have hope that my later years can be full: full of people, activities, and fun!
>
> *—Patricia Evans, Mountain View, Calif.*

ISSUE

Older Americans who describe themselves as lonely have a 45 percent greater risk of dying and a 60 percent greater risk of experiencing a decrease in their ability to perform common activities of daily living such as walking, stair climbing, lifting and carrying, as measured over a period of six years.[1] This hazard is magnified by the projected doubling of the over-65 population in the United States in the next 15 years. And it highlights the need to improve the quality of life of older Americans—both as a means of promoting healthy aging and constraining health care spending.

NEW MODEL

The community-based social support program linkAges is designed to help older adults continue to live independently and remain engaged in their communities. By leveraging technology and social interactions across generations, the program aims to combat loneliness and isolation and mitigate their adverse health effects.

The program's four related components can be implemented separately or combined:

TimeBank: A community-based network that allows members to exchange needed services, like cooking or driving, or engage in shared interests;

List: A collection of senior-friendly services and resources informed by community-generated reviews;

Personal Profile: Information about seniors' day-to-day lives, interests, needs, and goals that they would like their doctors to know about;

Connect: Passive in-home monitoring of utility usage to detect changes in seniors' physical and social health status.

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1 C. M. Perissinotto, I. Stijacic Cenzer, K. E. Covinsky, "Loneliness in Older Persons: A Predictor of Functional Decline and Death," *Archives of Internal Medicine,* July 2012 172(14):1078–84; published online June 18, 2012.

Developing Organization

The Palo Alto Medical Foundation's (PAMF) David Druker Center for Health Systems Innovation was founded in 2010 with a mission to identify unmet needs and improve the health and well-being of communities by inventing and deploying scalable solutions to population health challenges.

The center is led by Paul Tang, M.D., a practicing internist and vice president, chief innovation and technology officer at PAMF. The center's multidisciplinary staff has expertise in medical ethnography, community outreach and engagement, software development, data analytics, design, and communications.

Population Served

The linkAges program was designed to be adopted by communities throughout the United States and is currently being tested in the San Francisco Bay Area. The focus on communities, rather than living facilities or gathering places geared to seniors, is intentional. "We talk about successful aging not as aging-in-place but as aging-in-community because people not only want to live independently in their homes, but also want to continue to be part of their social circle," Tang says.

Components of the Model

Each of the four components is currently in a different phase of testing and deployment; the team's goal is to have a platform that integrates all the components by the end of 2015. An evaluation of each component's effect on loneliness, as well as quality of life for seniors and their caregivers, is due by the end of 2016.

TimeBank

What is it? Participants earn hours by providing "neighborly services" such as cooking, driving, teaching new skills, and sharing hobbies and interests. They can then use those hours to receive services, help, or instruction in return. Through these exchanges, members build community and social connections. One hour of a member's time is worth an hour of another member's time, but members also can donate hours into the TimeBank's Community Fund to address the needs of members experiencing episodic illness.

Why? The linkAges team thought the timebanking concept, used in other U.S. communities, held promise because it works to combat loneliness and isolation in an indirect way. "People may engage in an exchange because they think, 'Hey, there's a request I could volunteer for or some service I could use,'" Tang says. "They may look at the social connection of meeting someone new as a side benefit but it is actually our underlying agenda."

Status. Launched in April 2013 in Mountain View, Calif., a socioeconomically diverse community with a large senior population, TimeBank has now spread to 10 San Francisco Bay Area communities, as well as one in Los Angeles. Of the more than 425 members enrolled, 45 percent are at least 60 years old. These older enrollees scored significantly higher on standardized loneliness measures, indicating they experience more severe loneliness than the average American. "The linkAges TimeBank appears

to be reaching the very folks we hope to benefit," Tang says. He and his colleagues also are encouraged that TimeBank is attractive to adults of diverse ages, thus fulfilling the program's goal to "link across the generations."

List

What is it? The linkAges List is an online platform that combines content about senior-relevant services and resources from social service and community-based databases with reviews of those services generated by seniors and caregivers. Much like on Yelp or Angie's List, users may provide feedback or information that will be helpful to others. For instance, was the service senior-friendly? Was the wait too long? Was it quiet enough to hear conversations?

Why? The need for a compilation of resources and services specifically geared to seniors and their families emerged during an ethnographic study that the center conducted to better understand the day-to-day issues that seniors and their family caregivers face. "Everybody's general experience was that you get referrals from a social worker or a nonprofit database but you have no idea what actually still exists and how to figure out whether it's good or bad, or if it will work for you," says Vandana Pant, senior director of strategic initiatives at the center. Pant and the team imagined that the social service organizations responsible for the time-consuming task of maintaining and updating databases of resources also would benefit from regular automated updates and improved technology.

Status. The linkAges team is partnered with a technical service provider to build the platform and embarked on creating a pilot list and launching a demonstration in California's Santa Clara County in summer 2015. "We are generating content collaboratively by combining input from our local nonprofit organizations, county resources, and community health resource centers, as well as our own

medical professionals, and then the users and the consumers," Pant says. "We'll use everybody's input to figure out what the ideal feature set should look like."

Personal Profile

What is it? The linkAges Personal Profile contains information about seniors' day-to-day lives, interests, needs, and goals that they would like their doctors to know. The profile generates a Personal Snapshot that can be linked to a senior's health record, if he or she consents. This Snapshot contains a concise summary of the senior's responses to a detailed questionnaire, which includes standardized questions about loneliness. It can draw the provider's attention to issues that may be affecting physical or social health and well-being but that might not ordinarily come up during a typical office visit. Information from the Personal Profile also drives personalized recommendations from the TimeBank and the List to create a more meaningful experience for the user.

Why? The need for the Personal Profile was brought into stark relief by the experience of one Bay Area senior interviewed by the center for the ethnographic study. The patient, who was receiving follow-up care for breast cancer at PAMF, had missed three oncology appointments. The interview revealed why: she couldn't drive because of her eyesight; a cab ride to the appointment cost $75. "That's the kind of information you don't want to overlook but nowhere do you find this in the medical record," Tang says. "The ways in which seemingly nonmedical information about a patient affects her health care, I think, are a really big part of the gap between where we are and where we need to be in managing diseases," he adds.

Status. The Personal Profile is currently available as part of the TimeBank. It also has been integrated with the electronic health record system at PAMF. Physicians may invite individuals to fill it out as part of their health record.

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—Paul Tang, MD, MS
*Vice President, Chief Innovation and Technology Officer
Palo Alto Medical Foundation*

Connect

What is it? Connect uses passive in-home monitoring of utility usage (e.g., electricity and water) to proactively detect changes in seniors' physical and social health status that can be shared via the Web with caregivers. A daily spike in electrical usage at 7 a.m., for example, might be associated with cooking breakfast, while lack of activity may suggest a problem. The data is uploaded to a Web dashboard that a family member or caregiver can monitor from anywhere. Mechanisms for conveying alerts may be added in the future.

Why? One obstacle to living independently for some seniors is the fear that an adverse health event could take place at any time. To find a way to detect whether a person is following her typical routine—unobtrusively, without cameras or I.D. bracelets—the center hosted a "developer challenge." The winners came up with the idea of using wireless "smart meters" already installed by utility companies to monitor daily electrical use overall and use by individual high-wattage appliances in shorter time increments.

Status. The Robert Wood Johnson Foundation found the concept so promising that it awarded the center a three-year, $714,000 grant in 2014 to fund the development and evaluation of Connect. The linkAges team is currently conducting a beta test of Connect with 10 TimeBank members. Later in 2015, the team will launch a six-month pilot in 35 seniors' homes served by the City of Palo Alto Utilities and Pacific Gas & Electric.

FINDING SUPPORT

The innovation center has found it challenging to convince people that loneliness is a serious problem needing intervention. "It's easier to raise money for concepts around conquering cancer," Tang says. "Loneliness crosses all barriers—race, creed, and income—and yet we don't talk about it, and the current reimbursement model doesn't incentivize providers to address it."

That may be changing. The linkAges program has spread through partnerships with community organizations and local governments, but in recent months, Tang has received more inquiries from health care systems, with large, prominent systems in Arizona, Florida, Illinois,

Louisiana, Mississippi, New Mexico, New York, Pennsylvania, Virginia, and Washington, D.C., expressing interest in deploying linkAges in their service areas.

For health systems, linkAges may be a way to improve patient experience and potentially reduce unnecessary health service use. A study of members age 60 and older enrolled in a separate timebank program, the Community Connections TimeBank, sponsored by the Visiting Nurse Service of New York, found that 48 percent improved their self-reported health status.[2] Tang notes that even incremental gains in self-reported health— rating one's health as "fair" rather than "poor" for example—are associated with a decrease in rates of hospitalization and outpatient utilization.[3]

The cost of adopting the program is not yet determined and may be pivotal to its spread and impact on health spending. In the meantime, the linkAges team uses the experience of Santa Clara County, Calif., as a yardstick. The county, which has a population of about 1.9 million people, created three full-time equivalent (FTE) staff positions with financial support from PAMF to implement and run a pilot of the TimeBank and Personal Profile components among county residents. However, with the additional help of a playbook, toolkit, and deployment training, which will be provided to health systems that adopt linkAges going forward, the team envisions that 1.5 to 2.0 FTEs could launch and pilot the program over a two-year period. The Connect component is not yet developed enough to determine cost.

The success of the linkAges program also depends on community support because, unlike traditional disease management or prevention programs that typically are limited to active patients or health plan members, linkAges is designed to be extended to the entire community. The TimeBank component, in particular, relies on a attracting a critical mass of users. "The only way you can offer your patients a robust experience with something like this is if you are engaging the rest of community," Pant says. "It would not be an effective model if it were limited to a certain number of people."

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2 Visiting Nurse Service of New York, Community Connections TimeBank, "Impact of the TimeBank on Its Membership: Research Study Results—December 2009" (New York: VNSNY), http://preview.vnsny.org/community/in-the-community/community-connections-timebank/timebank-results/.

3 K. B. DeSalvo, V. S. Fan, M. B. McDonnell et al., "Predicting Mortality and Healthcare with a Single Question," *HSR: Health Services Research,* Aug. 2005 40(4):1234–46.

ABOUT THE AUTHORS

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