



OLDER ADULTS AND IN-HOME SAFETY

OCTOBER 2017



MEALS on WHEELS
AMERICA



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This project has been sponsored by Meals on Wheels America, and has been made possible by a grant from the Home Depot Foundation. Thanks to Meals on Wheels America senior leaders, particularly Doyle Delph and Lucy Theilheimer, who were instrumental in this project's collaboration and thought leadership.

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EXECUTIVE SUMMARY

More than 10,000 people a day are turning 65 in America.¹ But as old age edges closer, unbidden, our bodies and our homes are often not ready for that new stage. How can we ensure more healthy older people are living well in healthy homes? It is a huge quality of life issue. It is a major dollar cost issue too, for society and for individuals and families.

Most people over 50 live independently within their communities, and that actually is true even for people over 80—more than 75 percent live in their own homes.² That's how most of them want it, too, according to surveys from AARP.³

While aging in place may be their preference, it's not always easy. Housing costs keep rising. The aging U.S. housing stock, combined with costs to repair and modify, creates another obstacle. And some houses just may not easily be modified (no way to create single-floor living and avoid stairs, for instance). On the human side, our aging bodies begin to show their vulnerabilities, too. By age 85, more than two-thirds of individuals have some type of disability no matter what our income or race/ethnicity.⁴

All these factors make it more likely that older people fall. Falls are the leading cause of injury-related death in older adults, and most falls occur at home.⁵

On average, an older adult falls every second of every day. That totals 29 million falls, with more than 7 million older adults requiring medical treatment or restricted activity.⁶ And since many older adults do not talk to their doctors about their falls, the problem is likely even larger and more complex than current statistics reveal.

Falls at home continue to increase, despite increased attention over the past decade to aging in place, age-friendly communities and home safety. The problem is particularly urgent because the older population is growing at such a fast clip.

In North Carolina alone, for example, there will be more people over 65 next year than there will be 17 and younger. Many older adults also will live longer than previous generations did. One in four adults now 65 is projected to live into his 90s. Those extra years can add enjoyment of life and family, yet they also add to the challenge of not outliving one's assets. And for those who have still not recovered from the recession of 2008-09, or who are struggling with chronic disease such as diabetes or heart disease, the burdens and risk can multiply quickly.

What is being done? On the encouraging side, programs abound to create safer, healthier homes and prevent falls. Non-profit groups like Rebuilding Together focus on low-income homeowners, many of them veterans, whose critical home repairs often include building a ramp or installing grab bars, which can reduce the risk of falls. Some state governments including Maine and Virginia have passed tax credits to help homeowners make modifications like curbless showers, which can make homes safer and more accessible. Corporations and foundations such as Kresge, Wells Fargo Housing Foundation, Home Depot and Lowe's lend financial and human muscle to support efforts across the country to help older adults live more safely and comfortably at home.

Reducing the risk of falls in the first place is the starting place for many programs, such as supervised balance and exercise classes like Otago. Programs such as STEADI work from the physician angle to identify at-risk patients, risk factors that can be modified, and clinical and consumer fall-prevention strategies.

A research study called CAPABLE (Community Aging in Place, Advancing Better Living for Elders) teams a registered nurse, occupational therapist and handyman to help older people live more comfortably and safely in their homes. The National Council on Aging (NCOA) and multiple state agencies and partnerships tackle fall prevention with an emphasis on evidence-based programs.

This collective effort is heartening for health professionals, the aging services community, government, non-profits, businesses and thousands of individuals who see the need firsthand. Yet there is still a mismatch between overwhelming need and muted response. Unless preventive measures take hold more swiftly and pervasively, the human and dollar costs of treating falls will keep burgeoning.

TRENDS. A few trends are helping to illuminate potential solutions:

- **THE CONNECTION BETWEEN HEALTH AND HOUSING IS EMERGING MORE STRONGLY.** Rather than being an “either-or,” fixing a housing problem can be viewed as addressing a health problem at the same time. Meanwhile some organizations are widening their work from “fixing homes” to revitalizing a specific neighborhood, knitting together wider partnerships with residents for safety, walkability, health and other concerns.
- **LEADERS AND PLANNERS ARE USING DATA STRATEGICALLY.** Layering and applying data is getting more refined. Using GIS (geographic information system) helps layer data such as emergency room reports on falls with the location of people 65+, low-income populations, community revitalization efforts, service providers and walkability features. Local leaders add on-the-ground expertise to help pinpoint targets.
- **FUNDERS AND PROGRAM LEADERS ARE INSISTING ON MORE UP-FRONT ACCOUNTABILITY AND EVIDENCE-BASED EFFORTS.** Cost-effectiveness is emphasized; new models for repayment-for-services are being explored.
- **OPENNESS TO NEW MODELS IS COMING.** Value-based payment, integrated care, and sustainability have begun to influence the approaches that some health care and service providers are testing.
- **TECHNOLOGY CAN HELP.** In-home monitoring devices for older adults have been around for a while, like sensors on a couch that detect if a person has not moved in several hours. But designers have also been working on things like a thin, wearable “air bag” for hips, which could activate to cushion impact in case of a fall.⁷ There’s also an electronic, in-home version of the Otago exercise program, with a large screen TV and software that alerts monitors to pain or missed sessions.

NEXT STEPS. Those interested in intensifying efforts in fall-prevention may want to explore several questions.

WHAT ADDITIONAL RESEARCH NEEDS TO BE DONE? Though quite a bit of research has been done on fall-prevention and evidence-based interventions, even more could help zero in on the most effective interventions for low-income vulnerable adults 60+ or for locations with particular characteristics. And, given the large number of older people who do not report falls, it might be worthwhile to explore more ways to overcome a common reason they give, “I did not want to be sent to a nursing home.”

WHAT IS THE GREATEST FELT NEED AMONG PARTNERS AND EXPERTS WHO ARE IN THE THICK OF FALL-PREVENTION EFFORTS? Besides money, is there a missing ingredient that a new investment or new player could provide to markedly accelerate effort in preventing falls?

At a higher strategic level, the question for Meals on Wheels America is “How do we identify the most affordable, accessible and scalable solutions for vulnerable older adults at-home? Which aspect of the problem are we going to tackle?” The resources to go both “wide and deep” are not at hand, so leaders must make hard and far-sighted choices up front.

- **Where in the fall-prevention continuum is the most effective place to increase impact?** To help the most needy and the most at-risk? Among low-income vulnerable adults 60+, are there characteristics that could indicate a segment where it would be most effective to concentrate? Or might tying the work into a broader community revitalization effort energize more participants and partners?
- **To help low-income adults living at home, what is the best model** that enables necessary home modifications as well as improves balance, mobility and health status?
- **What is the optimal funding source for such a model?** How scalable is such a model? If such a model does not exist, how could it be created and tested without chewing up years of debate and political discussion?

At times the deck seems stacked against a solution, given the large number of at-risk older adults, their growing percentage of the population, America’s older housing stock, and the huge costs of treating falls. Undaunted, Meals on Wheels America offers this paper to jumpstart just such an ambitious exchange of ideas and search for solutions.



1. THE PROBLEM AND OPPORTUNITY

AGING IN PLACE IS THE GOAL, BUT IN-HOME ACCIDENTS ARE GROWING, AND COSTLY

The vast majority of older adults want to remain in their homes as long as they can. Nearly 90 percent of people over age 65 want to stay put for as long as possible.⁸ Yet two forces converge and conspire to make that difficult.

MANY HOMES AREN'T BUILT TO ACCOMMODATE AGING IN PLACE. Envision making slow daily trips up and down the stairs with aging knees and hips, maneuvering around a small kitchen using a walker, or trying to hoist an 80-year-old body from a slippery tub. Today, only 1 percent of America's housing stock offers zero-step entrances, single-floor living, wide halls and doorways, electrical controls reachable from wheelchairs, and lever-style handles on faucets and doors.⁹ The cost of making even small modifications, like improved lighting or an entry ramp, also may be out of reach for low-income homeowners.

ON THE HUMAN SIDE, MORE DISABILITIES BEGIN SHOWING UP AS WE AGE. Among Americans 65 and older, almost 39 percent experience some type of disability.¹⁰ And the rate goes up the older people get. Disability is one of the strongest predictors of nursing home admission, so the increase in the aging population's disabilities means society is likely to spend more and more money for long-term care services.^{11,12} Therefore forestalling disabilities is a priority.

Given homes that are not quite suitable and bodies that are not still young, the most effective programs for aging safely at home will need to increase an individual's capacity and decrease a home's demands.

FALLS ARE RAMPANT, DANGEROUS AND COSTLY. The CDC (Centers for Disease Control and Prevention) has calculated that every year, one in four older adults falls, resulting in about 2.8 million emergency room visits and 800,000 hospitalizations.¹³ Falls often cause serious harm such as broken bones or a head injury, so costs from falls among older adults are huge—more than \$31 billion a year in Medicare costs.¹⁴

THE NUMBER OF OLDER AMERICANS AT RISK IS SIGNIFICANT

Knowing that falls are so prevalent is troubling enough. Disabilities are on the rise as well, and a significant number of them are with mobility—difficulty walking, climbing a flight of stairs or getting into and out of bed. Of the projected 31.2 million older adult households with a disability in 2035, 17 million will have at least one person with a mobility disability.¹⁵

Now add to that mix another statistic: As the baby boomers keep aging, America's older population is surging. While one in seven individuals today is 65 or older, by 2030, that will be one in every five persons.¹⁶ Combine the higher percentage of older people with the rise of disabilities, and solving the problem of falls becomes even more urgent.

VETERANS ESPECIALLY VULNERABLE. About 14.2 million veterans are age 55 or older,¹⁷ and they make up the largest segment of the U.S. veteran population. Older veterans are more likely to have a disability—35 percent vs 28 percent of older civilians¹⁸—that may require home modifications and other supportive services.

Female veterans in particular face economic and housing challenges and are more vulnerable to housing cost burdens compared with the overall veteran population.¹⁹

“We see the need is huge,” says Dale Beatty, vice president of Purple Heart Homes, which helps disabled, low-income veterans renovate their homes. *“It is not always just home modifications, but sometimes there is an emotional connection as well, have they been treated with compassion?”* He notes that seems especially true for Vietnam-era veterans, *“who were treated differently by the public, and many then sort of isolated themselves.”* Beatty lost both legs when he was wounded in Iraq, and he and a military buddy who was also wounded, John Gallina, founded Purple Heart Homes with a personal understanding of the needs.

RURAL AMERICA. As the large number of baby boomers continues to age, their needs will reshape small towns and rural communities as well as larger cities. Rural America tilts “older,” with 16 percent of its residents over the age of 65, compared to 13 percent for the U.S. overall. Older people living in rural areas face challenges with housing affordability to begin with, so finding the resources to improve housing conditions will be challenging. This speaks to the need for a range of housing options and cost-efficient rehabilitation and repair programs.²⁰

OLDER AMERICANS FIND HOME MODIFICATIONS CHALLENGING

Most American homes are poorly suited to help manage the disabilities that come later in life, making it hard to navigate narrow hallways with a walker or wheelchair, or slowly go up and down stairs just to take a bath or do laundry.

While home modifications are an important part of reducing the risk of falls, many older Americans find that doing them is not easy or affordable. About three in ten Americans age 45 and over say they are very or somewhat concerned about:²¹

- Being able to afford home modifications that will enable them to remain at home (30%)
- Finding reliable contractors or handymen, should they need to modify their home (28%) and
- Being forced to move to a nursing home because they have trouble getting around their own home (31%)

When asked why they have not modified their home, or have not modified it as much as they would have liked, respondents most often say not being able to do it themselves (37%) and not being able to afford it (36%). Other reasons include not trusting contractors (29%), not knowing how to make the changes (25%), not having anyone to do it for them (23%), and not knowing how to find a good contractor (22%). More than half of Americans age 45 and over (52%) express interest in receiving information about staying in their own homes as they get older.²²

Persons more in need of a home modification are more likely to be older; widowed; non-Hispanic Black; in the lowest income and asset quartiles; with less than a high school education; renters; and to have Medicare, Medicare disability insurance, and Medicaid coverage.²³

Understandably,

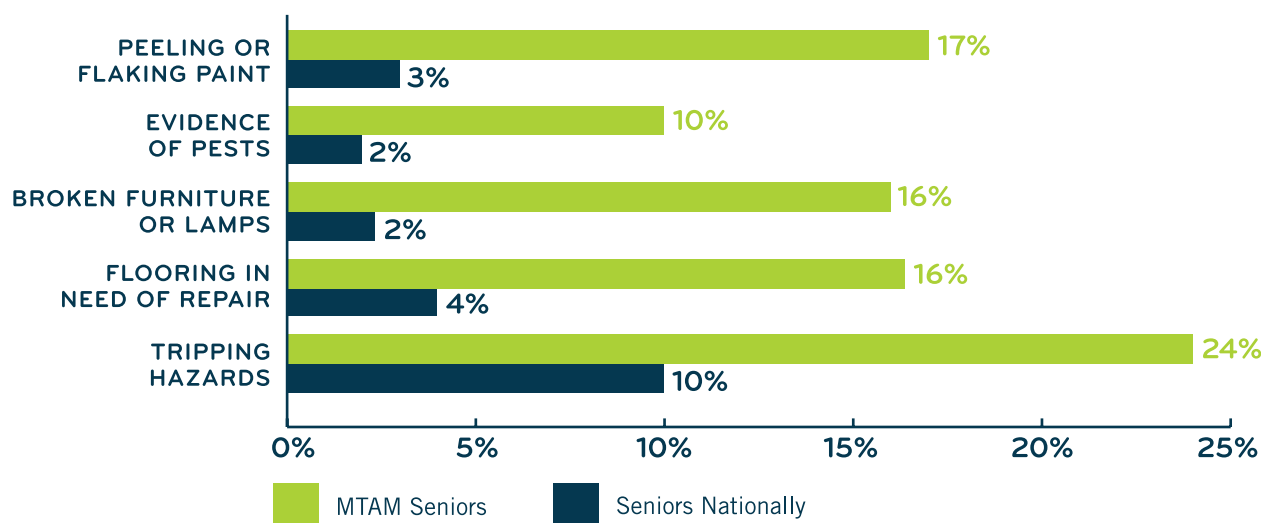
“There has been a lot of focus on the most vulnerable, but there are middle-class people who may fall into being vulnerable if they don’t do something [on home modification and aging-in-place] now.”
-Louis Tenenbaum, president of Homes Renewed, a grassroots advocacy coalition

HOME SAFETY AND MEALS ON WHEELS AMERICA

Meals on Wheels volunteers visit older vulnerable adults in their homes every day. The organization has a unique vantage point to see how home settings—and the need for home modifications—can intersect with health and living safely at home.

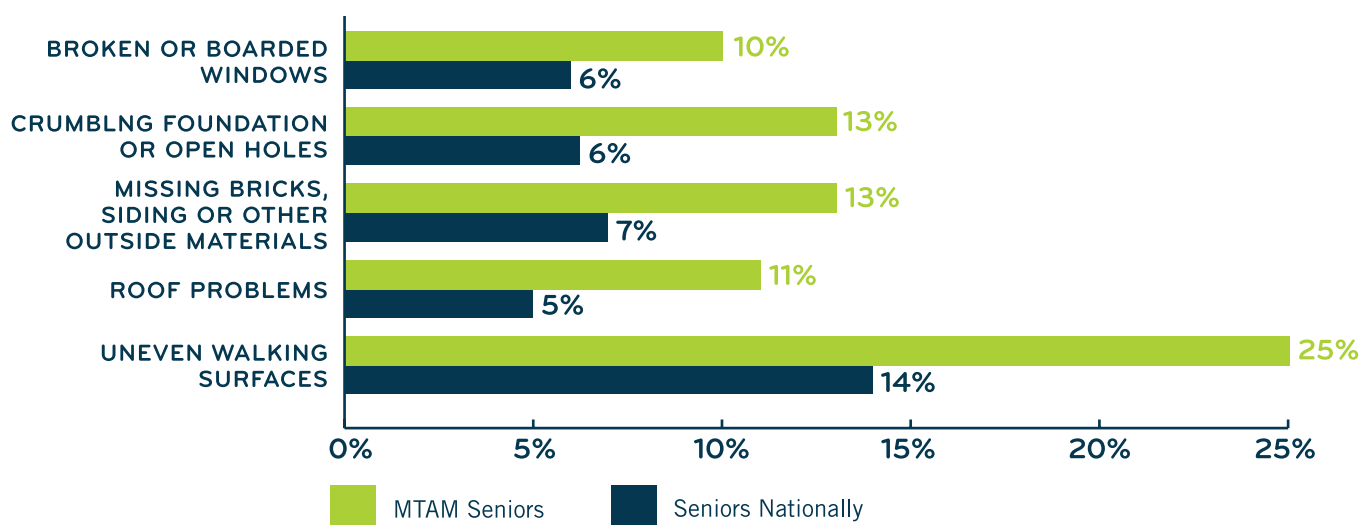
MORE THAN A MEAL SURVEY. A 2014 survey of older adults on the waiting list for Meals on Wheels found troubling insights into their home environments. According to interviewers' observations, older adults on the waiting list for Meals on Wheels have more hazards inside and outside the home than do older adults nationally. Tripping hazards were notable.

Figure 5. Differences in Rates of Hazards Inside the Home for the Sample of Waiting Lists and the Population of Older Adults



Note: Differences between groups for each question are significant at the $p < 0.001$ level; MTAM, More Than a Meal

Figure 6. Differences in Rates of Hazards Outside the Home for the Sample on Waiting Lists and the Population of Older Adults



Note: Differences between groups for each question are significant at the $p < 0.001$ level; MTAM, More Than a Meal

In a different survey, the 2016 Home Repair Research Survey, 80 percent of Meals on Wheels clients agreed or strongly agreed that Meals on Wheels keeps them in their homes for longer, but 70 percent of respondents had at least some anxiety about staying in their homes without some repairs to help them do so. Some fairly basic home repair would keep them in their homes for another five years, said 57 percent of clients. Two-thirds of Meals on Wheels clients own their home, so there is potential for impact in this area.²⁵

More than half of Meals on Wheels clients said they have trouble getting in and out of the shower, getting in and out of the house, and going up and down stairs inside the house.²⁶

	A LOT	SOME	A LITTLE	TOTAL
Getting in & out of shower	19%	21%	18%	58%
Getting in & out of the house	18%	25%	15%	58%
Tripping	11%	18%	25%	55%
Moving around house	10%	20%	23%	52%
Getting up/down stairs inside	21%	17%	13%	51%
Reaching cabinets, shelving	14%	17%	17%	48%
Getting on/off toilet	11%	19%	17%	46%
Reaching counters or appliances	11%	14%	19%	44%

Clients said they needed help in these areas:

- Bathroom (52%)
- Kitchen (40%)
- Main living areas (31%)
- Outside the home (52%)

Clients also expressed needing help at every step in making modifications:

- Identifying needs (modifications, repairs, etc.) to stay in home (43%)
- Identifying quality contractors to make modifications (50%)
- Paying for repairs/modifications (74%)

The survey also noted that:

“Most local [Meals-on-Wheels] programs are stretched incredibly thin and have relatively little bandwidth with which to extend their current offerings,” and “That said, what they lack in bandwidth, they clearly make up for in passion and commitment.”

“Moving forward, it’s important to understand that any initiative that extends the offering also stretches the capacity. To the point of almost breaking. To be successful, it’s not just a matter of additional programming, it’s also a matter of additional staffing.”²⁷

2. SOLUTION STRATEGIES



To improve home safety and livability for older adults, the literature and discussion with experts point toward four areas:

- 1. In-home safety assessment and modification to remedy hazards**
- 2. In-home occupational therapy services; medical assessment of balance, medications, etc.; eye exams**
- 3. Interventions such as CAPABLE (Community Aging in Place, Advancing Better Living for Elders) and STEADI (Stopping Elderly Accidents, Deaths and Injuries)**
- 4. Technology**

A number of players are working to find solutions: health care providers, non-profit organizations that build and repair homes like Rebuilding Together and Habitat for Humanity, professional organizations such as the American Occupational Therapy Association (AOTA), government agencies (CDC, Administration for Community Living), foundations (Wells Fargo Housing Foundation, Kresge, Home Depot Foundation, Lowe's), groups that raise awareness and inform consumers (AARP, NCOA) and innovators, researchers and product designers.

HOME MODIFICATION

Home hazards make older people more likely to fall.²⁸ Here is an extensive but not exhaustive list for reducing home hazards.^{29,30}

ENSURE THE HOME'S ENTRY IS SAFE AND THE FIRST FLOOR IS ACCESSIBLE

- Create a zero-step access that has adequate light and coverage above the door from the weather
- Add or repair railings at the entrance
- If possible, add/adapt so the first floor contains a full bath, bedroom and laundry

CREATE CLEAR, STURDY PATHWAYS

- Fix loose or uneven steps
- Fix loose handrails and make sure there are handrails on both sides of the stairs
- Widen doorways and hallways
- Remove throw rugs
- Pick up objects on the floor
- Coil cords or affix them to the wall

REDUCE CHANCES OF SLIPPING IN THE BATHROOM

- Install grab bars in the tub, shower and next to the toilet
- Install a comfort-height toilet
- Install a curbless, walk-in shower with grab bars and a bench (can be fold-up)
- Put a non-slip rubber mat in the tub or shower

MAKE THE KITCHEN ACCESSIBLE

- Move the most-often used items within easy reach
- If renovating, consider an under-counter microwave, a refrigerator with the freezer at the bottom, pull-out cabinets and at least one counter that is lower
- Ensure a non-slip floor
- Use lever-style faucets and door handles and “D-shaped” drawer handles

IMPROVE LIGHTING AND ELECTRICAL

- Install a light above the stairway
- Have an electrician install light switches so there are switches at the top and bottom of the stairs. Install light switches that glow in the dark.
- Install motion sensors so light comes on when a person enters the room
- Place a lamp close to the bed
- Install a light for the path from the bed to the bathroom
- Make sure all hallways, stairs and paths are well lit and clear of books, shoes, etc.
- Install a smoke detector and replace the battery twice a year
- Make sure there is a carbon monoxide detector near all bedrooms

ORGANIZE

- Keep emergency numbers handy (911, poison control, family member or friend to call in emergency, healthcare provider's office)
- Put a phone near the floor in case you fall and can't get up
- Get a steady stepstool
- Cluster the often-used items in lower cabinets

A 2008 study concluded that the most common assistive home features were railings at the home entrance (36.2%), grab bars in the shower/tub (30.3%) and a seat for the shower/tub (27.3%).³¹

More broadly, however, adapting a home goes beyond grab bars and improves quality of life. In 2016, AARP showed how by sponsoring a nationwide competition called Redefining Home: Home Today, Home Tomorrow. The winning architect remodeled a modest home in Raleigh, NC, that featured lots of light and a no-step entry to be sure, but also a wraparound porch and raised box gardens to encourage interaction with neighbors. Moveable walls offered flexibility as needs may change over time.

The retrofitted home was donated to an Army veteran and his family, including his 77-year-old mother, who uses a walker and a wheelchair. The home is now one of the 1 percent of all houses in the U.S. that are adequate for people to age in place. Sponsors of the competition included the Home Depot Foundation, Dwell magazine, AARP and AARP Foundation, the Wells Fargo Housing Foundation, and Home Matters, a Washington, DC non-profit.

IN-HOME PHYSICAL THERAPY SERVICES

Many people who fall also become afraid of falling again. This fear may cause a person to cut down on his everyday activities. Yet becoming less active also makes a person weaker—and this increases his chances of falling.³² So improving one's strength, balance and mobility is a first line of defense against falls.

OTAGO EXERCISE PROGRAM (OEP). OEP is a muscle-strengthening program delivered at home by a trained physical therapy instructor. It works on the risk factors for falls that are the most readily modified—muscle strength, flexibility, balance and reaction time.

Studies have shown that OEP has reduced falls, improved participants' strength and balance, and maintained their confidence in carrying out everyday activities without falling. OEP was effective when delivered by a research physiotherapist and by trained nurses from a community home health service and primary healthcare practices.³³

SELECTED INTERVENTIONS

Many studies are underway regarding fall prevention; this paper details two illustrative examples. CAPABLE (Community Aging in Place, Advancing Better Living for Elders) combines the skills of an occupational therapist (OT), registered nurse and handyman to provide in-home support that an older adult identifies as important. STEADI (Stopping Elderly Accidents, Deaths and Injuries) aims to identify people at risk for a fall, identify risk factors that can be modified, and deploy effective clinical and community strategies. Addressing the problem from the health care provider's side, STEADI's goals are to screen, assess and intervene.

CAPABLE

Several years ago, nurse practitioner Sarah Szanton was making house calls to homebound, low-income elderly people in Baltimore. She observed that their home environment seemed just as stressful as their health problems. That experience helped lead to the design of a program called CAPABLE. Now as a professor at Johns Hopkins University School of Nursing, Szanton continues evaluating the program's effectiveness.

CAPABLE also was influenced by a 2006 study that suggested that an intervention with several components reduces mortality risk for vulnerable older people. The trial included strategies to increase control over daily life by modifying behavior, cognitive strategies and the physical environment.³⁴

CAPABLE involves about 10 home sessions, each 60-90 minutes, over a 5-month period.³⁵ It also applies structured interviewing to engage a client's motivation to change behavior.

Here are the results from a CAPABLE trial during 2012-15:³⁶

- The number of ADLs (activities of daily living) for which participants were having difficulty was reduced by almost half
- CAPABLE tripled the percentage of people who reported no difficulty with walking
- Home hazards decreased by half
- Depressive symptoms were reduced to a clinically significant extent

In the CAPABLE team model, the roles of the OT, handyman and RN intertwine.

REGISTERED NURSE. The RN first interviews the participant to prioritize functional goals. For instance, if a participant wanted to walk upstairs to sleep in bed instead of on the couch, the RN might implement exercises to improve the participant's strength while also focusing on pain management. In the next three sessions, the RN and participant review problem-solving and the RN reinforces strategies. In the final session, the RN helps apply the participant's strategies to future challenges.³⁷

OCCUPATIONAL THERAPIST. The OT and participant work on functional goals such as getting upstairs to sleep. The OT evaluates the participant's performance for safety, efficiency, difficulty and environmental barriers. For example, if the participant says it is difficult to get into the bathtub, the OT may find that he is holding onto an unstable towel rack. The OT also assesses the home for factors like poor lighting. Early on, the OT and participant discuss possible home modifications and the OT prepares them in a work order for the handyman.³⁸

HANDYMAN. The handyman measures, prepares and completes the work order items. The seven most common repairs are:³⁹

1. Install railings in stairwells
2. Install or tighten railings at home entrances
3. Install grab bars in tub area
4. Install nonskid safety treads for tub or shower floor or supply rubber bath mats
5. Improve lighting (repairs, motion sensor lights, bulbs)
6. Repair holes, broken tiles, or tears in linoleum flooring
7. Install raised toilet seats

To further explore the effectiveness of the CAPABLE model, a follow-on research study is underway in four cities.

STEADI

In addition to providing valuable research, program evaluations, statistics and data insights, the Centers for Disease Control and Prevention (CDC) promotes public awareness and works closely with health care professionals to solve national health problems. The CDC has been involved in one approach to preventing falls, called STEADI.

A first hurdle is often just getting patients to become more forthcoming about falls or fear of falling. The CDC reports that fewer than half of the Medicare beneficiaries who fell in the previous year talked to their healthcare provider about it.⁴⁰

So STEADI carries on energetic consumer education that stresses talking openly with one's doctor about risks and prevention of falls, including reviewing medication and getting eye exams. STEADI tries to tap into older people's motivation—such as “If I were to fall and break a bone, I wouldn't be able to play with my grandkids”—and desire for independence. STEADI emphasizes that falls are preventable and that speaking up is a good first step, paired with activities that strengthen balance and leg muscles, keeping the home safe (handrails and lights on stairways, etc.). STEADI provides a simple home checklist, including photos, on how consumers can spot and fix home hazards that could lead to falls.⁴¹

For doctors, STEADI has developed a simple algorithm⁴² that assesses patient's risk and a tool kit with case studies, standardized gait and balance assessment tests, and instructional videos.

Most falls are caused by the interaction of multiple risk factors, says the CDC. The more risk factors, the greater a person's chances of falling. Healthcare providers can lower an individual's risk by reducing his risk factors. They advise focusing first on these modifiable risk factors:

- Lower body weakness
- Poor vision
- Difficulties with gait and balance
- Postural dizziness
- Problems with feet and/or shoes
- Use of psychoactive medications
- Home hazards

STEADI is also tackling the problem by working with pharmacists. Pharmacists can help in identifying risk factors for falls, preventing medication-related falls, and discussing strategies to improve patient care coordination.⁴³

Another promising approach: incorporating STEADI into a health system's electronic health record system, which could help providers proactively identify high-risk patients, screen them for falls and take steps to prevent injuries. For instance in 2011, Oregon Health and Science University (OHSU) partnered with the Oregon Health Authority to integrate STEADI into a primary care clinic. The clinic added a clinical alert to the medical chart of all patients 65 and older. This tool enabled doctors to assess risk and make recommendations, and enabled healthcare professionals to assign falls-related medical codes to each patient's chart based on his risk of falling. Staff could more easily collect data on falls-related quality measures.⁴⁴

TECHNOLOGY

In-home monitoring devices for older adults have been around for a while, like sensors on a couch that detect if a person has not moved in several hours. Lately designers also have been working on a thin, wearable “air bag” for hips, which could activate to cushion impact in case of a fall. There’s also an electronic, in-home version of the Otago exercise program, with a large screen TV and software that alerts monitors to pain or missed sessions.

Wearable devices can monitor a person’s vital signs and send alerts to family members or emergency personnel if something is wrong. Some smart homes have cameras that allow family members to view live video on their smartphone of the home and its occupants. Older people with vision or mobility issues can decrease the risk of a fall by installing motion-sensor lights that come on when a person enters a room or hallway.

Remote monitoring (telehealth) enables professional caregivers to monitor and measure a patient’s health conditions from a distance. Such systems can monitor an electrocardiogram (ECG), pulse, vital signs, weight and blood sugar. There are also apps that assess blood pressure, evaluate for depression, remind users to take pills and provide physical therapy instruction.

However for low-income homeowners, such technology comes with a cost that is a more significant barrier than privacy or other concerns. If funding were available to pair technology devices with remote monitoring from healthcare providers, this might solve a piece of the fall-prevention puzzle.

When healthcare providers can easily review data from patients with chronic diseases such as congestive heart failure, hypertension, diabetes and asthma, they also can make real-time changes to a patient’s behavior or diet, and monitor the patient’s physical reactions.⁴⁵ If the funding issue can be solved, remote monitoring systems may play an ever larger role in providing care for older persons to enable them to remain at home.

WEBSITES. AARP’s *HomeFit Guide*⁴⁶ is a comprehensive toolkit filled with practical solutions, from do-it-yourself fixes to improvements that require skilled expertise. Its simple drawings, suggestions and checklists can guide homeowners on a room-by-room review.

Other websites also provide checklists, tips and safety advice for older people and their caregivers, including caring.com, aarp.org/caregiving, and ageinplacetechnology.com.

ANALYSIS AND AWARENESS. In addition to devices and information, technology also hold great power to increase public awareness and strengthen accountability. Anthony Santiago of the National League of Cities says, *“Technology and data are some of the ways city leaders can be made more aware of the needs and develop strategies. We can use technology to monitor and facilitate, to show costs and impact of a change, to better target interventions.”*

Technology, home modification and in-home physical and occupational therapy all can help improve the likelihood of older adults staying healthy in their own homes. And some evidence suggests that bundling several interventions together makes an even greater impact.

Sarah Norman is director of Healthy Homes and Communities for NeighborWorks, which provides grants, technical assistance and Success Measures data and evaluation tools to non-profit organizations doing community development. She observes that, *“To be successful, we have found it helps to layer in several strategies, because you are affecting the whole person.”*

3. IMPROVING HOME SAFETY AND LIVABILITY: WHO'S DOING WHAT?

How to make homes more livable and reduce the risk that vulnerable older adults face from falls? Strategic thinkers, health care professionals, innovative designers, remodeling contractors, advocates, allies and volunteers are all applying their skills to the problem. They are getting better at partnering to maximize their power, and at evaluating which strategies are most effective. Still, the need and demand are greatly outstripping the response.

BIPARTISAN POLICY CENTER

An important first step is to more tightly link older adults' health and housing, both in the public eye and in the approach of policy, professionals and programs. *"Rather than operating in isolation, those working in the housing and health care fields must move out of their separate silos and find ways to foster greater collaboration,"* said the Bipartisan Policy Center in its 2016 report, *Healthy Aging Begins at Home*. *"This collaborative approach must become the rule rather than the exception it is today."*⁴⁷

That is particularly true when it comes to preventing falls, since about one in four older adults falls each year, primarily at home. A greater focus on preventing falls has a clear upside—better health outcomes and lower healthcare costs.

The Bipartisan Policy Center formed its Senior Health and Housing Task Force to draw public attention to the synergies between health care and housing, and to offer solutions. Among the task force's recommendations:⁴⁸

- The administration should ensure Medicare and other federal programs and policies support substantially reducing the number of older adult falls and their associated financial impacts.
- Congress should authorize a new Modification Assistance Initiative (MAI) to coordinate federal resources available for home modifications to support aging with options. Numerous federal programs provide resources and expertise for home assessments and modifications, yet there is little coordination and public awareness of them is limited. The MAI, administered by the Administration for Community Living within the U.S. Department of Health and Human Services, would aim to rectify these shortcomings.
- States and municipalities should establish and expand programs to assist low-income seniors with home modifications through property tax credits, grants or forgivable loans.

NATIONAL CENTER FOR HEALTHY HOUSING

The National Center for Healthy Housing (NCHH) has been a leader in defining a healthy home standard, assessing evidence-based interventions, and giving professionals and the public tools to use data and do evaluations. It also aims to influence policy and funding changes that could improve housing quality and health outcomes.

As part of its work with other leaders to enact changes, NCHH also has partnered with Rebuilding Together, for instance. *“Rebuilding Together has a great example of focusing on older adults as they also sharpen their focus on home modifications—not just in building, but in accomplishing the intended health impact,”* says Amanda Reddy, NCHH executive director. *“They’re doubling down on that now.”*

HEALTHY HOUSING STANDARD.⁴⁹ The American Public Health Association and NCHH jointly developed the National Healthy Housing Standard to inform housing policy that reflects the connections between housing conditions and health.

The intersection between health and housing may be getting tighter than in the past.

“Increasingly we are finding that it’s not so much explaining the need for healthy housing, but people need to be convinced of the solution,” says Reddy.

Toward that end, work is happening to scientifically examine which interventions pay off the most. In terms of fall prevention, that could mean making structural changes (better lighting, etc.) or adding exercise programs and skilled occupational therapists to a team that works with at-risk older persons.

ASSESSING EVIDENCE-BASED INTERVENTIONS. An NCHH research review in 2009 found that larger field evaluations are needed to identify the interventions likely to be consistently successful in reducing falls and fall injuries for those with and without a history of falling. The NCHH review found three methods appear promising: 1) home assessment followed by recommendations for modifications, 2) multi-faceted interventions that encompass home modification and other strategies such as exercise, medication review, nutritional supplements or mobility aids, and 3) community-based, coordinated, multi-strategy initiatives that include home hazard reduction.⁵⁰

USING DATA, FORGING PARTNERSHIPS. Doing a strategic analysis of data may help to identify areas in a community where health and housing concerns intersect.⁵¹ For instance, looking at housing code violations and enforcement actions helps to pinpoint poor quality housing. Overlaying that with health data may uncover concentrations of chronic respiratory diseases or falls. Adding data on residents’ age and income levels could help zero in on a target area.

Yet each local site is different. *“We’re often asked about policy changes, funding models,”* says Reddy.

“The reality is that it’s hard to get these changes and interventions paid for, and what matters more is that there’s not just one funding model or policy change.”

There can be many entry points, from tax code benefits to making sure a health care system is set up for reimbursements.

NCHH offers help for professionals and providers in constructing a business case and message tailored to their particular audience. *“It’s pretty important not to go just hat in hand, especially with health care providers, but to explain what you are bringing to the table,”* says Reddy. For example, that could be more participants, professional expertise, access into many homes, or a program proven to save money on health care costs.

HABITAT FOR HUMANITY

Habitat for Humanity has long been a successful model for building new, safe, attractive homes for low-income families who have gone through a rigorous application process. Across the country thousands of volunteers, hammers in hand, join forces with these future homeowners who are putting in the required sweat equity to build their new homes.

While Habitat's well-known new construction model remains strong, it also is expanding operations to serve more families and attract more volunteers and sponsors. Two directions are of note, Habitat's work with veterans, and its newer holistic neighborhood approach.

VETERANS. Habitat runs two programs to help veterans, Repair Corps and Veterans Build.

REPAIR CORPS. Veterans whose service dates back to World War II have benefitted from Habitat's Repair Corps. Volunteers undertake critical repairs such as a new ramp, replacement windows, insulation and new electrical or plumbing work. Habitat defines "critical repairs" as interior or exterior work to alleviate critical health, life or safety issues or code violations, including reconfiguration of space; a modification for accessibility; a change to or repair of materials; or installation or extension of plumbing, mechanical or electrical systems. The Home Depot Foundation has funded critical repairs of veterans' homes since 2011 through Repair Corps.⁵²

The Repair Corps program is open to military veterans who received an honorable or general discharge. The Department of Veterans Affairs helps to publicize.

VETERANS BUILD. Through this Habitat program, Veterans Build collaborates with veterans support organizations to provide new, affordable homes for low-income veterans.

NEIGHBORHOOD REVITALIZATION. About five years ago, Habitat began to link its work to more holistic neighborhood revitalization efforts that also involved other groups. Local affiliates serve more families through an extended array of services, products and partnerships.

The new approach means zeroing in on a particular neighborhood, listening carefully to its residents' needs and wants, cobbling together partnerships to respond—and staying in that neighborhood for 3 to 5 years. As a piece of neighborhood revitalization, Habitat's Critical Home Repairs program has the most applicability to older, low-income residents who are affected by age, disability or family circumstances and who face challenges in maintaining their homes. Eligible improvements include handicap accessibility modifications (wheelchair ramps, handrails, etc.); plumbing, HVAC, and electrical work; roofing, flooring and minor structural repairs; and other health and safety issues or code violations.

To determine eligibility, Habitat assesses income, demonstrated need, the willingness of the family to partner with Habitat, and the family's ability to pay. Work must be repaid in part by the homeowner, based on income and affordability.

In these broader community revitalization efforts, a decent place to live means more than a solid roof and four walls. The neighborhood context brings in good schools, transportation, grocery stores and more. Partnerships are key, from Goodwill and the United Way to city governments, AARP Foundation, Lowe's, Home Depot, Wells Fargo Housing Foundation and numerous volunteer groups. In FY2015, Habitat affiliates participated in more than 3,000 projects, an increase of more than 60 percent in two years.⁵³

Those in the vanguard of community revitalization and aging in place have pooled their knowledge and experience to help others who are interested. For instance in 2015, AARP Foundation's grant of \$125,000 helped Habitat for Humanity develop aging in place learning exchanges.⁵⁴ Five Habitat affiliates with experience working with older adults hosted the events. Each exchange featured an expert on aging in place and enabled Habitat affiliates to network and collaborate with local and regional partners that work with older adults.

Collaboration is an essential ingredient of Habitat's work with residents and other community stakeholders, and listening to what residents want is a first step. With a vision and plan in hand, the staying power of working year after year in the same place has a powerful effect.

In the Kountze Park neighborhood of Omaha, Nebraska, for instance, Habitat has torn down 26 condemned houses, built or renovated 46 homes, provided 55 repairs/beautification projects and helped to revive the neighborhood association over the past three years. More than 20,000 community volunteers have been involved.

Habitat's neighborhood focus now accounts for about 60 percent of all families served by Habitat in the U.S.⁵⁵ Surveys of residents' quality of life have found increases in a sense of safety, civic engagement and social capital. (The surveys were developed through tools from Success Works at NeighborWorks America).

Since the need is so overwhelming across the nation, creating even greater scale is a hot topic. What can get community leaders and more partners invigorated and involved in renovating houses that help older, low-income people?

What's happening at Habitat Memphis may offer a clue. For several years, Habitat Memphis worked on community revitalization in the Uptown neighborhood, where the vast majority of recipients were 65+. Then in 2015, Habitat Memphis developed an Aging in Place program, a new work that homed in on older adults and repairs such as roofs as well as installing ramps, comfort-height toilets and other accessibility features. *"We are moving quickly toward the intersection of health and housing,"* says Dwayne Spencer, president of Habitat Memphis.

As the work expanded, *"We placed emphasis on success measures and we talked about how people's lives have changed."* They pulled together qualitative and quantitative results—such as local economic impact, reduction in crime and transiency, and even energy savings—into simple, striking infographics. Spencer used these as he applied for grants and talked to government leaders and health care providers in Memphis, Nashville and Washington, DC.

"One of the things they get excited about immediately is tax dollars saved," he says. *"So if there's a grant to prevent falls and we can also show how Medicare and Medicaid could save money."*

In a partnership with Methodist Hospital, Habitat Memphis has applied for a grant to apply the CAPABLE model to ZIP code 38109, an area of southwest Memphis that hugs the Mississippi state line. The aim is to reduce emergency room visits from falls. If that grant comes through and results warrant, Spencer hopes that later, a compelling larger case could be made to TennCare, Tennessee's state Medicaid program. To help make the case for sustainability, Habitat has worked with the Green and Healthy Homes organization on assessment.

REBUILDING TOGETHER AMERICA

Another well-known national program, Rebuilding Together brings together volunteers and communities to improve the homes and lives of low-income homeowners. Its signature effort rolls out hundreds of projects each April such as installing sturdy railings or better lighting. Roughly 90,000 volunteers each year join forces with a national network of local affiliates, corporate and individual donors, skilled trade individuals and associations.

There is a growing need for such home renovations, especially among low-income households. An aging population contributes to the urgency of the situation.

🔗 *One of the biggest challenges is that the aging population is growing, and we have an aging housing stock. This is a housing epidemic that many people don't see,"* —John White, senior vice president of business strategy, Rebuilding Together.

Marquee events, such as an annual Super Bowl-sanctioned Kickoff to Rebuild in February, raise visibility of the need. In places like Oklahoma City, a women-led initiative called She Builds sparks community interest and involvement. In 2016, 73 percent of the homes repaired by Rebuilding Together OKC were owned by women.

Rebuilding Together also has broadened its scope with an initiative called Building a Healthy Neighborhood, concentrating its efforts in a tighter geographic location. *“One of the big changes in Rebuilding Together is focusing on impact at the neighborhood level, where before, it was sort of scatter shot,”* says White. *“That was a strategic decision made a couple of years ago in refinement of our business strategy.”* This new approach weaves together housing as well as safety, jobs, arts and culture, education and more in a broader community redevelopment—trying to change the nature of entire blocks.

For instance, Rebuilding Together Pittsburgh (RTP) has been working in the Hazelwood neighborhood for the past six years. RTP COO Alan Sisco says, *“Instead of looking at ourselves as a service provider, we now look at ourselves as bringing deeper impact.”*

“You can say, we did x number of repairs, and that’s fine, but we now look at broader quality measures, like a change in home values, and perceived quality of the housing stock getting better.” He says with the neighborhood focus, RTP can more easily garner resources to do sizable home modifications, like \$15-20,000. *“That’s large in the non-profit world.”*

“Now instead of waiting for people to come to us, we go out to them to tell us where they need help.” He says that by the end of 2018, *“We will have served all the people who have expressed a need for our services [in Hazelwood].”* That’s about 300 homes.

Targeting particular neighborhoods has the advantage of having access to existing partners already working there, Sisco says, and a broader range. He estimates Pittsburgh now does 70% neighborhood focus and 30% through its Safe and Healthy Homes, critical improvements for vulnerable older people, veterans and people with disabilities.

With a tagline of the “only national nonprofit solely dedicated to preserving affordable homeownership through safety and health-focused home rehabilitation,” Rebuilding Together says it has given back nearly \$2.5 million in market value nationwide, to date. In 2016, Rebuilding Together gathered 18,437 volunteers (skilled) and 71,311 (general), and repaired 9,127 homes. Of these, 67% were homes with people 62 and older, 13% were homes with veterans, and 52% were homes with minorities. The median household income was \$20,968. Rebuilding Together has affiliates in 39 states and DC.⁵⁶

While such quantifying of results is standard, White has seen a trend in strengthening the evidence and impact of various efforts.

 *So if I install a grab bar, we all feel intuitively that that helps to prevent a fall, but what evidence is there that we did indeed prevent a fall?”*

While it’s not a simple answer, scientists, experts and organizations are trying. Overall, the link between health and housing is getting stronger, and standards and evaluations are sharpening.

PURPLE HEART HOMES

Purple Heart Homes (PHH) concentrates on renovating homes owned by disabled veterans, most of them older, lower-income persons. *“We want to make sure the veteran can get into the home safely, and use the kitchen and bathroom safely,”* says Dale Beatty, a PHH co-founder and now vice-president for development.

“Many vets are older, and injury and age make it harder to keep up with home maintenance,” says Beatty. *“But it’s not too late to give these veterans a safe haven, and to say, ‘Your service matters.’”* Volunteers often add accessibility features such as stairway railings or a roll-in shower.

In 2016, PHH began Operation: Veteran Home Renovation, a collaboration with mayors and the National League of Cities, Home Depot Foundation and local credit unions. It concentrates on six cities (Fayetteville, NC; Hattiesburg, MS; Mobile, AL; Tacoma, WA; Winston-Salem, NC; and Colorado Springs, CO).

Purple Heart Homes has recruited credit unions to help, such as the Defense Credit Union Council; the Southeastern Credit Union League (298 credit unions in Florida and Alabama); Georgia Credit Union Affiliates (121 credit unions); and the Cornerstone Credit Union League (about 500 credit unions in Oklahoma, Texas and Arkansas).

The credit unions help raise funds by engaging the community. For instance Oklahoma City’s Tinker Federal Credit Union recently raised more than \$26,000 to renovate four veterans’ homes. Because the credit union serves many military personnel from nearby Tinker Air Force Base, it is particularly attuned to veterans’ needs.

Credit union staff also volunteer on the renovations, which cost an average of \$5,000 and usually take two days. Other volunteers, such as those from Home Depot or local builders’ groups, often pitch in and also assess and plan the needed repairs.

John Gallina and Dale Beatty, cofounders of Purple Heart Homes, are veterans who were wounded in combat in Iraq. They started the non-profit in 2008 to help older veterans more comfortably age in place, and saw it as filling a gap in providing safe, livable housing.

The U.S. Veterans Administration does have grants for veterans who have service-connected disabilities but some veterans do not apply or the amounts available may not cover the cost.

- **VA Specially Adapted Housing Grant.** Disabled veterans may be entitled to a grant (subject to program eligibility) to provide a barrier-free environment that affords independent living he or she may not otherwise enjoy. Modifying an existing home or constructing an adapted home can both count.
- **VA Special Housing Adaptation Grant.** This is a similar program for veterans with service-connected disabilities, but the disability requirements are more stringent than the Specially Adapted Housing Grant.⁵⁷

Local VA medical centers also may have resources available, depending on their individual budgeting.

CAPS CERTIFICATION, NATIONAL HOME BUILDERS ASSOCIATION

Acknowledging the growing need for homes that could make it easier to age in place, the National Home Builders Association (NHBA) began in 2001 a certification called CAPS (certified aging-in-place specialist). Both AARP and AOTA (American Occupational Therapy Association) endorse CAPS.

A typical class attracts builders, remodelers, occupational therapists, architects, designers and planners. While the projects are not directed at low-income older adults, the model and the trends seen are still instructive.

Many consumers see an advantage in having a CAPS-trained occupational therapist and remodeler working on their renovations. They appreciate not having to research the solutions themselves. And a home assessment from an objective, qualified source often relieves family members from having to make choices about which modifications would be most effective.

Michael Menn, CAPS expert, architect and also president of the Home Builders Association of Chicago, says he often asks clients, “How long do you plan to stay in this house?” Depending on the answer, and perhaps noticing narrow doorways or problematic bathtubs, he may do a physical demonstration. Actually folding himself into a bathtub, he might ask, “In a few years, how will you pull yourself out of here?” Today’s grab bars are “beautiful,” he says, “decorative and not institutional like they used to be.” He also does a lot of work with caregivers and those making a transition from hospital to home.

In a 2016 survey of its members,⁵⁸ NAHB found that 80 percent of respondents were involved in home modifications related to aging in place, a jump of 20 percent in the past 10 years. The Midwest had the greatest percentage, while the Northeast, the lowest. Not surprisingly, most work was done for homeowners 55 and older. The most common projects were installing grab bars, higher toilets, and curbless showers. In the next tier were widening doorways, adding lighting, and installing ramps or lower thresholds. When asked the reasons customers undertook the work, respondents said they most often heard “planning ahead for future needs,” but “acute age-related disabilities” and “living with older parents” were mentioned almost half the time. Interest in CAPS certification is growing, despite a hefty fee and time investment; sessions last several full days.



OCCUPATIONAL THERAPISTS

Occupational therapists (OTs) are skilled experts in daily activities and home modification. **In doing an in-home evaluation, they watch a person moving around the house, assess his skills and abilities in doing the things he wants to do, and recommend changes to increase safety and ease.**

Suggestions may include adding equipment such as grab bars, lowering counter heights, adding railings, replacing door knobs with lever handles or other changes to reduce the risk of falls.

The American Occupational Therapy Association (AOTA) partners with several national organizations in planning home modifications:

- *AARP*: Occupational therapists deliver AARP's HomeFit presentations at the state level.
- *National Association of Home Builders*: AOTA endorses NAHB's Certified Aging in Place Specialist (CAPS) designation and OTs often participate in CAPS classes.
- *Rebuilding Together*: AOTA and Rebuilding Together have partnered and OTs often provide their expertise in home safety and accessibility assessments and recommendations.

AOTA also has worked with the CDC to make recommendations for improving the policy response and Medicare coverage for fall prevention and intervention.⁵⁹

WELLS FARGO HOUSING FOUNDATION

Since 1993, the Wells Fargo Housing Foundation (WFHF) has invested more than \$190 million to build and rehabilitate housing for low- to moderate income households and build stronger communities through neighborhood revitalization. Older people, veterans and under-served families are a focus. So far, working with other non-profit organizations like Habitat, WFHF has built and rehabilitated 7,100+ homes, contributing both money and muscle.⁶⁰ Its team member volunteer program is one of its most successful initiatives, and “energizes our employees,” says Jeff Chavannes of WFHF. WFHF channels some of its funds to community revitalization efforts.

Through a program called Veteran WINS, WFHF gives six grants a year to build new homes, rehabilitate existing ones or provide supportive services to veterans. WFHF has concentrated its efforts through a partnership with the U.S. Conference of Mayors to “end veteran homelessness” and thus aging-in-place modifications for existing homes have not been a focus.

Over the past few years WFHF has intensified its evaluation of success. It recently partnered with NeighborWorks, a congressionally chartered non-profit that provides technical assistance and measurement tools to judge impact. NeighborWorks' network includes more than 245 nonprofit organizations, many of which deal with housing, health and community development.

Yet even with grants, volunteers and good will from housing- and health-related non-profit organizations, the waiting line for low-income older homeowners to get low-cost or free home modifications remains very long.

STATE TAX CREDITS FOR HOME MODIFICATIONS

When older people need home modifications to age in place and stay independent—and those changes can help forestall human suffering or higher health care costs for society down the road—where does the money come from? What could an appropriate role for government look like?

One approach is to provide modest state tax credits to defray the cost of qualified changes such as creating a zero-step entry, or installing a zero-threshold shower. Maine recently began such a program, targeting it only to low-income. Virginia's program, begun in 2008, is available to all taxpayers. These two states show how such initiatives play out in different ways:

	MAXIMUM TAX CREDIT; OVERALL CAP	ELIGIBILITY	QUALIFIED EXPENSES	PROOF REQUIRED
MAINE⁶¹ AccessAble Home Tax Credit (started in 2017)	Up to \$9,000; a sliding scale of eligible percentage is based on income Cap: \$1 million	--Low-income home-owners earning \$55,000 or less; uses a scaling scale --Licensed contractors	Modifications that make home accessible for a person with a physical disability or physical hardship who lives or will live at the residence. Ex: changes in flooring to mitigate tripping hazards, installation of grab bars and access ramps, and widening of doorways	Demonstration that work meets suitability standards for the individual with a disability or physical hardship General consistency with American National Standards Institute (ANSI) ICC A117.1-2009 standards and applicable building codes.
VIRGINIA⁶² Livable Home Tax Credit (LHTC) (started in 2008)	Up to \$5,000 for new home; up to 50% for retrofitting existing units, not to exceed \$5,000. Cap: \$1 million	--Any home-owner --Licensed contractors	New units: must include at least three features of the universal visitability standards or of accessibility features. Existing units: must include at least one accessibility or visitability feature. Ex: zero-step entrance, hallways at least 36", accessible bathroom and kitchen	Must conform with Virginia's Uniform Statewide Building Code. Scope of work, work specifications, construction contracts, cancelled checks.

MAINE. In Maine, the Multiple Sclerosis Society became interested in such a tax credit because Maine has one of the highest rates of MS in the country, and also has one of the oldest populations and oldest housing stock. The MS Society partnered with AARP Maine, which helped to quantify the need and advocate for the measure with state legislators, and which worked with the Maine State Housing Authority during rulemaking and promotion.

What does success look like? Maine's program only started in 2017, so it's too early to tell long-term effectiveness. The answer also is complicated because of confidentiality and access to the information. But even a modest tax credit seems likely to solve a piece of the puzzle in making it easier to age-in-place safely.

In terms of the program's workability, there are lingering questions. For instance since paying for the renovations is done up front, many low-income homeowners would not have enough funds to even start and get the tax credit later. Experts acknowledge that a tax credit doesn't help everyone, either. (Some low-income homeowners do not have a tax burden.)

Maine residents hear about the program through an easy-to-follow website and palm cards that are distributed to tax preparers like H&R Block and AARP Tax Aide; Lowe's, Home Depot and local hardware stores; home health agencies; and even hairdressers ("Often the first to know about the need!" says Amy Gallant, associate state director for advocacy, AARP Maine.).

VIRGINIA. In Virginia, credits have been given to 1,310 homeowners and 472 contractors from 2008-16. For the 2016 tax year, recipients got an average credit of \$3,594.⁶³ No evaluation of the program's effectiveness has been done.

OTHER EFFORTS. Kansas⁶⁴, Missouri⁶⁵ and Georgia⁶⁶ provide tax credits for homeowners who retrofit homes for persons with a disability. Other states also have considered tax credits to enable age-in-place home modifications. Under Ohio's proposed Livable Homes program, for instance, credits of up to \$5,000 would go to homeowners adding accessibility features to new or existing homes. So far the legislation has not passed.⁶⁷

COST IS ALWAYS AN ISSUE. So is long-term cost-effectiveness. Ending up in a nursing facility ultimately could cost a state much *more* money in Medicaid spending.

A few states offer grants or low-interest loans for accessibility improvements in the homes of older adults. The District of Columbia's Safe at Home Program helps older adults and disabled residents age in place by giving home accessibility adaptation grants of up to \$10,000. Participants receive an in-home assessment from occupational therapists to identify problem areas and develop a list of modifications.⁶⁸ Some states may also use Medicaid Home- and Community-Based Waivers.

Looking long-term to improve America's overall housing stock, a few states and communities have changed building standards or zoning laws to encourage developers to build homes using features such as no-step entry and wider doorways. Such provisions often only apply to housing built with public funds. And while builders' associations embrace aging-in-place, they generally resist having mandatory policies imposed.

NATIONAL COUNCIL ON AGING

As part of its Center for Healthy Aging, the National Council on Aging (NCOA) leads the National Falls Prevention Resource Center. This effort supports awareness and education about falls and promotes evidence-based fall prevention programs across the country.

Cities and states are often on the frontlines in raising awareness and trying to increase prevention. The state and local work often connects to what other organizations, universities and agencies are doing. For example, **The Falls Free Initiative is part of NCOA's work and includes a coalition of more than 70 national organizations. Members share proven fall-prevention programs, advocate for funding, and educate older adults on reducing their risk.** The initiative also includes a 43-member State Coalition on Falls Prevention.⁶⁹

Fall-prevention work in states has developed a menu of services. For instance, a state may start with a few CDSME programs (Chronic Disease Self-Management Education) through one grant; then increase partnerships and funding; perhaps later expand the evidence-based programs and their leaders; then perhaps layer in additional programs such as Otago, a supervised exercise program to strengthen balance and leg muscles.

As work progressed in Iowa, for example, a later grant incorporated the use of the STEADI toolkit and more screening in inpatient and outpatient settings. Now the Iowa coalition will partner with Iowa SIM (State Innovation Model) to pilot the overall strategy in targeted communities.⁷⁰ The aim is a sustainable evidence-based prevention network.

Leaders in Georgia recounted getting a CDSME grant in 2015, then moving to a Fall Prevention Grant in 2016, involving Area Agency on the Aging partners, caregiver tools, A Matter of Balance program, hospital transitions, Tai Chi for health, Otago exercise program, and many partnerships. They later contracted with the Georgia Health Policy Center (GHPC) at Georgia State University to help sustain evidence-based programs and provide technical assistance.⁷¹

Maine is aiming to build a state-wide, integrated network that offers increased options for fall-prevention programs.⁷² Their target audience is adults 60+ who have a positive fall risk and characteristics such as:

- Low-Income Subsidy (LIS) recipients and/or Medicare and Medicaid Dual-Eligible (DE)
- High risk, high utilizer
- At risk of losing function and independence

Funding comes through a 2016 grant for evidence-based fall prevention from the Administration for Community Living (ACL), part of the Department of Health and Human Services. ACL aims to “maximize the independence, well-being and health of older adults, people with disabilities across the lifespan, and their families and caregivers.”

A MATTER OF BALANCE. Many older adults fear falling and so may limit their activity, leaving muscles weaker and increasing the risk of falling instead. A program called A Matter of Balance acknowledges the risk of falling but emphasizes practical coping strategies to reduce the fear and increase activity. A Matter of Balance is approved by NCOA and AoA.

In an 8-week structured group, participants learn to think of falls and fear of falling as controllable. They set realistic goals to increase activity, change their environment to reduce risk factors, and exercise to increase strength and balance. The program uses lay coaches and a master trainer who teaches the coaches.

The target population is 60 and older, ambulatory, concerned about falls, and interested in improving strength and balance. Pre- and post-surveys among participants indicated increased confidence in their ability to manage the risk of falling.⁷³

STEPPING ON. Stepping On is a community fall-prevention program active in about 20 states. It lasts 7 weeks with 2-hour sessions, and includes strength and balance exercises, vision checks, medication management, and solving home and community hazards.



4. TRENDS AND NEXT STEPS

TRENDS

A few trends are helping to illuminate the discussion on potential strategies for in-home safety that could be brought to scale among older, vulnerable adults:

THE CONNECTION BETWEEN HEALTH AND HOUSING IS MORE CLEARLY SEEN. Rather than being an “either-or,” fixing a housing problem is coming to be seen as addressing a health problem. Meanwhile some organizations are widening their work from “fixing homes” to revitalizing a specific neighborhood, knitting together wider partnerships with residents for safety, walkability, health and other concerns.

LEADERS AND PLANNERS ARE USING DATA STRATEGICALLY. Layering and applying data is getting more refined. Using GIS (graphic information system) helps layer data such as emergency room reports on falls with the location of people 65+, low-income populations, community revitalization efforts, service providers and walkability features. Local leaders add boots-on-the-ground expertise to help pinpoint targets.

FUNDERS AND PROGRAM LEADERS ARE INSISTING ON MORE UP-FRONT ACCOUNTABILITY AND EVIDENCE-BASED EFFORTS. Cost-effectiveness is emphasized; new models for repayment-for-services are being explored.

OPENNESS TO NEW MODELS IS COMING. Value-based payment, integrated care, and sustainability have begun to change the approaches that some health care and service providers are testing.

NEXT STEPS AND RESEARCH GAPS

MOST EFFECTIVE INTERVENTIONS. Research has been done to measure effectiveness of various interventions and programs. Meta reviews could update evaluations that were done several years ago on which programs work best for which populations.

And still more data compilation on home modification could help zero in on target audiences. For instance, a 2008 study on assistive home features showed that while there is a potential large role for them, not enough information has been available on who has these features, who uses them, and who potentially needs them.⁷⁴

TARGET POPULATIONS AND MOTIVATION. More research could help zero in on where best to focus to help low-income vulnerable adults 60+. To concentrate on the most needy, the most at-risk or the home-bound? Or to work in broader community development efforts where preventing falls among vulnerable would be a component of a larger effort that perhaps would draw more partners and funding.

Additional work could be done on how to motivate older people to talk to health care professionals about reporting a fall or fear of falling. And, given the large number of older people who do not report falls, it might be worthwhile to explore more ways to overcome a common answer as to why, “I did not want to be sent to a nursing home.”

ATTRITION AND SUSTAINABILITY. Work could be done on how to sustain effective programs, how to motivate participants, and how best to keep them engaged.

FUNDING. *“Finding the money for these programs is a question of incentive and intervention,”* says Louis Tenenbaum, president of Homes Renewed, a grassroots advocacy coalition. “How can we influence people to do this kind of work?” For some families, state tax credits might help. There are ideas for credits at the national level, such as the ones for energy-saving materials and devices in the home, but that cost to the federal government is prohibitive. There are innovative ideas like using direct RMDs (required minimum distributions) from 401(k)s and IRAs—though many older people would be using those for day-to-day expenses, if they indeed had such accounts to begin with.

EMERGING QUESTIONS. How does in-home safety for vulnerable older adults intersect with aging-in-place in broader society? More and more boomers are dealing with empty nests and homes that may not be suited for aging-in-place. Might the increased overall public attention on America’s housing stock and home modifications have a spillover effect on work for low-income older adults?

POTENTIAL IDEAS AND STRATEGIC DECISIONS FOR MEALS ON WHEELS AMERICA

Meals on Wheels volunteers interact with older adults at their homes frequently, so they might have important opportunities to apply some of the promising strategies. Here are a few ideas.

FALL-PREVENTION AWARENESS. Meals on Wheels volunteers could raise awareness of the risk of falls. For instance, Meals on Wheels America could explore partnerships with AOTA, AARP and others in delivering the HomeFit educational sessions, in part to raise awareness among caregivers and to connect with younger adults whose parents might be at-risk of falls.

Depending on legal constraints, Meals on Wheels also might intersect with programs like STEADI, a CDC fall-prevention program.

HOME MODIFICATION CHECKS AND REFERRALS. Meals on Wheels might include screening questions within intake interviews. As “eyes and ears” with a unique vantage point, Meals on Wheels volunteers with appropriate training could offer to scan clients’ homes for hazards and connect the client with an OT and/or reputable contractor. Meals on Wheels America could increase its referral program with Rebuilding Together to bring greater scale.

EXERCISE PROGRAMS, MEDICAL REFERRALS. Meals on Wheels volunteers also might be in a position to suggest referrals to health care providers who could help the older adult in medication reviews, evaluations of gait and balance, etc. Meals on Wheels volunteers also might scout and refer potential CAPABLE participants. To the extent that they are qualified, Meals on Wheels volunteers could support clients with implementing Otago, such as reminding them to exercise while providing moral support or common sense troubleshooting.

TECHNICAL SUPPORT. Older adults stand to benefit from remote monitoring, smartphone apps, websites and smart home technology, yet those might be difficult for some older adults to access. Tech-savvy Meals on Wheels volunteers could help them install, use and troubleshoot these tools.

ADVOCACY, POLICY AND FUNDING SUPPORT. Meals on Wheels America might consider supporting states and cities that offer or expand tax credits and low-cost loans for home modifications for low-income older adults. Funding remains critical, so it may be that making an intensive effort with CMS (Centers for Medicare and Medicaid Services) could yield productive, cost-effective options for coverage. Including health-care providers in such efforts would be essential.

STRATEGIC DECISIONS. On a broader scale, Meals on Wheels America is trying to answer: “How do we join forces with the most affordable, accessible and scalable solutions for vulnerable adults at home? In which aspect of the problem are we going to help intervene?” Here are a few avenues to explore:

1. Where in the falls-prevention continuum is the most effective place to increase impact?

To help the most needy and the most at-risk? Within the population of low-income vulnerable adults 60+, which characteristics indicate where it would be most effective to concentrate? Or might tying into a broader ongoing community revitalization effort energize more partners?

For instance, would it make more sense to scale proven interventions such as CAPABLE? To expand partnerships with Rebuilding Together, Habitat or other home modification partners? To partner selectively in a few locations where overall community redevelopment is moving forward and where older at-risk people also live? To work on policy or funding issues that currently stymie more intensive work?

The resources to go both “wide and deep” are not at hand, so leaders must make strategic choices up front.

2. What is the strongest need felt among partners and experts who are already in the thick of fall-prevention efforts?

Besides money, is there a missing ingredient that a new investment, new player, or innovation could provide to markedly accelerate effort in preventing falls? What would be the most effective way to interject technology or other innovations into the mix?

One leader at the local level adds, “There is a great need for coordination of all this [effort on fall-prevention and home modification]. We don’t have enough resources, true, but we also lack efficient coordination of the services we do have.”

3. What can be done to reduce healthcare costs caused by falls?

Most states⁷⁵ offer Medicaid programs that cover home modifications to enable older or disabled individuals to remain living at home. If a person has sufficiently low income, a state “Medicaid waiver”⁷⁶ could cover the costs of home modifications, which saves health care costs because it forestalls moving into a nursing home. Some waivers pay for physical modifications to the home such as wheelchair ramps, walk-in bathtubs and showers or the widening of internal spaces such as landings or doorways. However each state’s program is different, and waiver programs may have limited enrollments and waiting lists for services.⁷⁷

4. How can leaders, policy experts and health care providers get home modifications and interventions to be a covered service for vulnerable older people?

Perhaps a team of innovators, providers, funders and policy heavyweights could re-explore the most promising ideas, coming up with a preferred set of funding options and programs that serve the most older people cost-effectively.

Because so many of the low-income at-risk population are served by Medicare and/or Medicaid, it may be that making a new, concerted effort with CMS (Centers for Medicare and Medicaid Services) could yield productive strategies that could be applied nationwide.

CLOSING. A daunting set of circumstances makes solving in-home safety for older adults—particularly fall-prevention—more urgent than ever. The U.S. today has more older people, more people with disabilities and chronic disease and more people living longer lives. The percentage of people older than 65 is growing faster than the rest of the population.

The immense challenges of solving in-home safety for older Americans can be summed up in a sobering litany—reduce healthcare costs caused by falls, prevent falls in the first place, scale the proven programs that work, and get more funding for home modifications and cost-effective programs.

It is now time to confront a huge national problem with a forceful and farsighted response.



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TERMINOLOGY

Key Words: Aging in Place, Falls, Fall Prevention, Disability, Home Modification, Activities of Daily Living

Relevant Terms:

- **Aging in Place (AIP):** the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level.
- **Activities of Daily Living (ADL):** bathing, dressing, toileting, transferring, continence and feeding
- **Instrumental Activities of Daily Living (IADL):** grocery shopping, housekeeping, preparing meals, managing finances, administering and supervising medications, transportation, and arranging and/or supervising paid services.
- **Community-dwelling older adults:** Older adults who are not living in a long-term care institution.
- **Certified Aging in Place Specialist (CAPS):** a training designation for remodelers and contractors from the National Association of Home Builders in conjunction with AARP.

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