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# The STEADI Tool Kit: A Fall Prevention Resource for Health Care Providers

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## Background

Among people aged 65 years and older, falls are a serious and growing public health problem. Falls are the leading cause of injury-related deaths and emergency department visits[1] and account for over $30 billion in direct medical costs.[2] For older persons, the consequences of falls can be devastating, including reduced mobility, functional decline, and loss of independence.[3] With our aging population, it will become increasingly important to find ways to reduce falls among our vulnerable elders.

Falls are the leading cause of injury deaths among older adults, regardless of race or ethnicity. While the trend in fall death rates is similar for Native Americans and the US population as a whole, there are differences (Figure 1). Fall death rates begin to rise around age 65 and increase with age.[1] However, around age 75, the US rate begins to surpass the Native American rate and, by age 85, exceeds the Native American rate by about 35%. The likelihood of falling increases with age, and the average life expectancy is lower for Native Americans (75.1 years) than for the US population (78.6 years).[4] The longest-lived Native Americans may be healthier than older adults in the US population or, more likely, they may be dying from competing causes, such as diabetes, alcohol-related diseases, and motor vehicle crashes[1,5,6], rather than fall injuries.

Epidemiologic studies have identified numerous fall risk factors.[7] These can be classified as either intrinsic (i.e., originating within the person, such as age, female gender, leg weakness, and balance disorders) or extrinsic (i.e., originating outside the body, such as environmental hazards). In an early study of older adults living in the community, Tinetti and colleagues found that the likelihood of falling increased linearly with the increasing number of fall risk factors.[8]

Research shows that reducing fall risk factors can prevent falls. The Cochrane Collaboration conducted a meta-analysis of randomized controlled trials of fall interventions. They concluded that, in the clinical setting, assessing and addressing an older person's fall risk factors, in addition to identifying and treating symptoms of chronic conditions, can reduce falls.[9] More recently, the United States Preventive Services Task Force (USPSTF)

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conducted a systematic review of fall interventions.[10] They also found that interventions delivered through primary care, including exercise or physical therapy, reduced older adult falls.

An individualized clinical approach for reducing falls among older adults is recommended by the American and British Geriatrics Societies (AGS/BGS) and outlined in their clinical practice guideline.[11] However, primary care physicians have been slow to put this guideline into practice. Many report they do not know how to conduct fall risk assessments or do not have sufficient knowledge about fall prevention.[12–14] Providers also report that they have limited time to spend with each patient. The new Medicare annual wellness visit offers providers the opportunity to incorporate (and potentially to be reimbursed for) fall risk assessment and treatment.

## STEADI Tool Kit

To address these implementation barriers, scientists at CDC's Injury Center developed the STEADI (Stop Elderly Accidents, Deaths, and Injuries) tool kit. The tool kit is based in theory[15] and on research evidence, and incorporates input from a variety of health care providers. The development process for the STEADI tool kit has been described previously.[16]

The STEADI tool kit resources are designed to help health care providers incorporate fall risk assessment, treatment, and referral into clinical practice, and to facilitate patient referrals to community-based fall prevention programs. These resources were designed for clinicians in primary care settings, including physicians, physician assistants, nurses, and nurse practitioners. Specific items also can be used by pharmacists, physical therapists, and occupational therapists.

The STEADI tool kit translates the fall risk assessment and treatment process into specific activities that can fit into a variety of clinical settings, including IHS and tribal clinical settings. As shown in Figure 2, the STEADI tool kit algorithm can be used to assess and treat patients with all levels of fall risk. Although this algorithm largely follows the AGS/BGS clinical guideline, it also incorporates primary fall prevention. For example, low-risk older patients (those who have not fallen and/or do not have gait or balance problems) would be educated about how to prevent falls and referred to a community-based exercise program for older adults that emphasized strength and balance. Such programs may be offered through tribal senior centers or the IHS Community Health Representative Program.

Following the algorithm, a fall risk assessment begins with a patient completing the *Stay Independent* self-risk assessment brochure, either at home or in the waiting room. This instrument, developed by Rubinstein and colleagues, incorporated input from older adults and has been scientifically validated.[17] The brochure contains 12 questions that focus on the leading fall risk factors. A positive answer to each question is worth one or two points, and a score of four or more indicates an increased risk of falling. The answers to specific questions, along with the score, enable providers to identify that patient's key fall risk factors.

## Provider Resources

The tool kit contains a number of provider resources designed to support various types of fall prevention activities. Although these materials were designed for clinicians in primary care, certain items can be used by health care professionals in other settings.

Background information about falls is provided by three fact sheets on topics suggested by clinicians: an overview of the burden of falls, medications associated with falls, and a table of the most important modifiable fall risk factors. There are also three case studies illustrating patients with low, medium, and high fall risk.

Both clinicians[14] and patients[18] often find it difficult and uncomfortable to discuss falls. To address this challenge, we developed the resource, *Talking about Fall Prevention with Your Patient*, which incorporates Prochaska's Stages of Change Model.[19] Because fall prevention requires a person to change their behavior, this model is a good fit. It depicts change as a "process involving progress through a series of stages." For each stage, this resource provides a brief statement about how to move the patient to the next stage, (i.e., "To move the patient to the preparation stage, make specific suggestions, be encouraging, and enlist support from the family.") It also provides everyday examples of patient-provider conversations for each stage, and offers some responses to frequently heard statements. These conversations could be easily tailored for tribal elders.

Poor balance and limited leg strength are key fall risk factors. The STEADI tool kit includes directions for conducting three brief, standardized, and validated gait, strength, and balance assessments: the Timed Up and Go test,[20] the 30-sec chair stand,[21,22] and the 4-stage balance test.[23] It also includes directions for measuring orthostatic blood pressure because postural hypotension is a frequent cause of older adult falls.[24] As a companion piece, we developed an educational brochure, *Postural Hypotension—What It Is and How to Manage It*, that can be helpful for providers when discussing this condition with a patient.

Based on feedback from health care providers, we designed a form summarizing the results of various fall risk factor assessments. It includes the results of the three gait and balance tests as well as other medical conditions that can increase fall risk. Not all items need to be completed during a single visit. This form can be included in the patient's chart or it can be scanned or entered into an electronic medical record. We also include a tri-fold pocket guide that contains the risk assessment algorithm and other key information that providers would want at their fingertips. And there is an 11″ × 17″ laminated wall chart that can be used to help providers in different types of practices tailor fall prevention activities to fit their practice setting.

Finally, the tool kit contains two referral forms that providers can customize for their practice. One is a referral to specialists such as physical therapists, neurologists, and podiatrists. The other is a referral to community fall prevention programs. Older adults are much more likely to follow through if their health care provider recommends that they take an exercise class.[25] With this form, providers can direct their patients to specific evidence-based programs in their community. This is an important way to link clinical fall risk assessment and treatment with community programs.

## Patient materials

The tool kit also contains several items designed for older adults or their caregivers. There are two popular CDC brochures, *What YOU Can Do to Prevent Falls* and the home safety checklist, *Check for Safety*. There is also a one-page handout that describes the Chair Rise exercise. This is a simple leg strengthening exercise that patients at low risk of falling can begin doing immediately, before beginning a community exercise or fall prevention program.

## Summary

The STEADI tool kit is a broad, evidence-based resource that is intended to help health care providers incorporate fall risk assessment and individualized fall interventions into their clinical practice. In addition, it can be used to link clinical fall risk assessment with community exercise or fall prevention programs. All the STEADI materials can be seen and downloaded at www.CDC.gov/injury/STEADI.

Falls among older adults are a huge public health problem and one that will increase as our population ages. The STEADI tool kit offers health care providers a variety of resources that can simplify and systematize the process of incorporating fall prevention into clinical care. By reducing their patients' risk of falls, providers will enable older adults to remain healthy and independent as long as possible.

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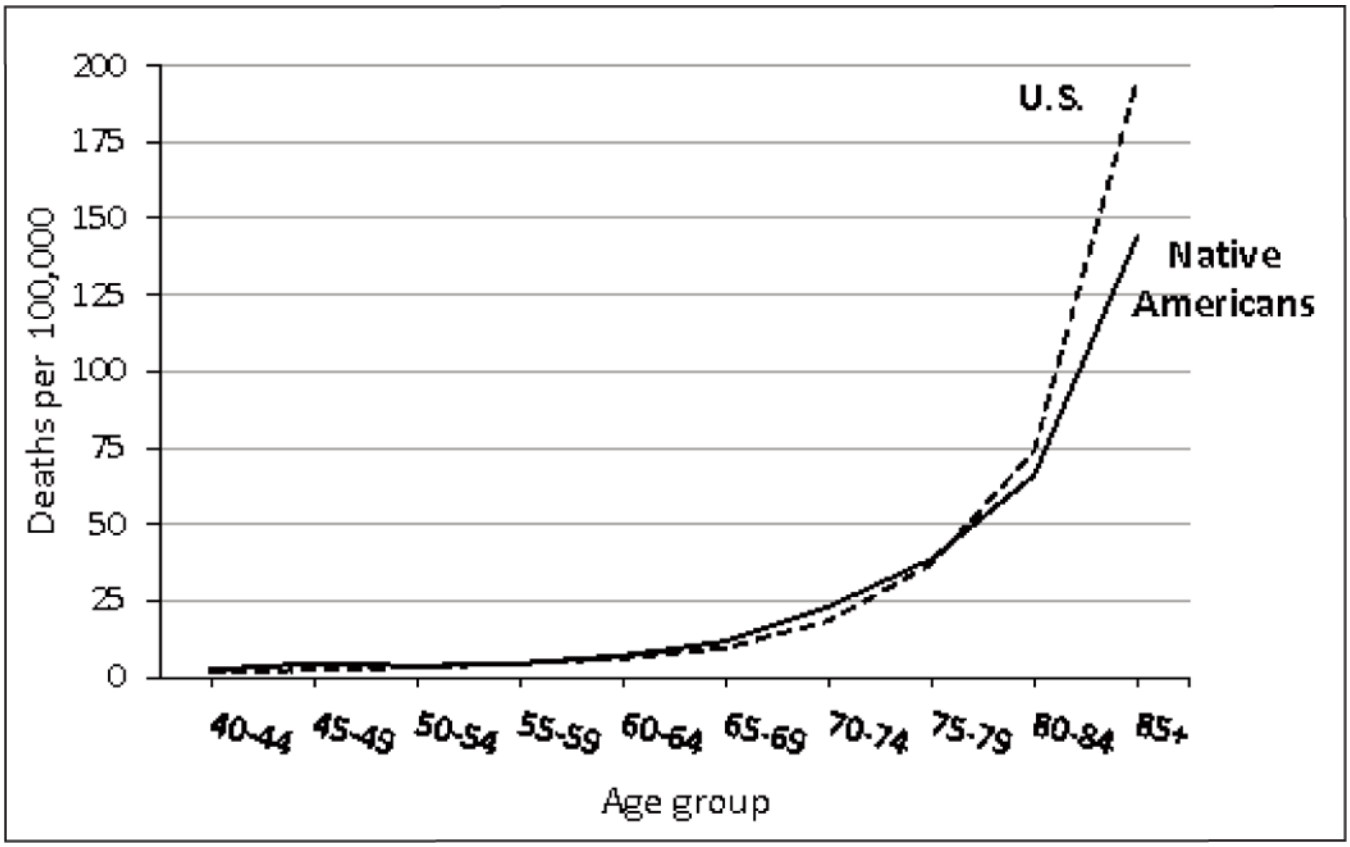


**Figure 1.**
Fall death rates among US and Native American adults, 2007 – 2010.

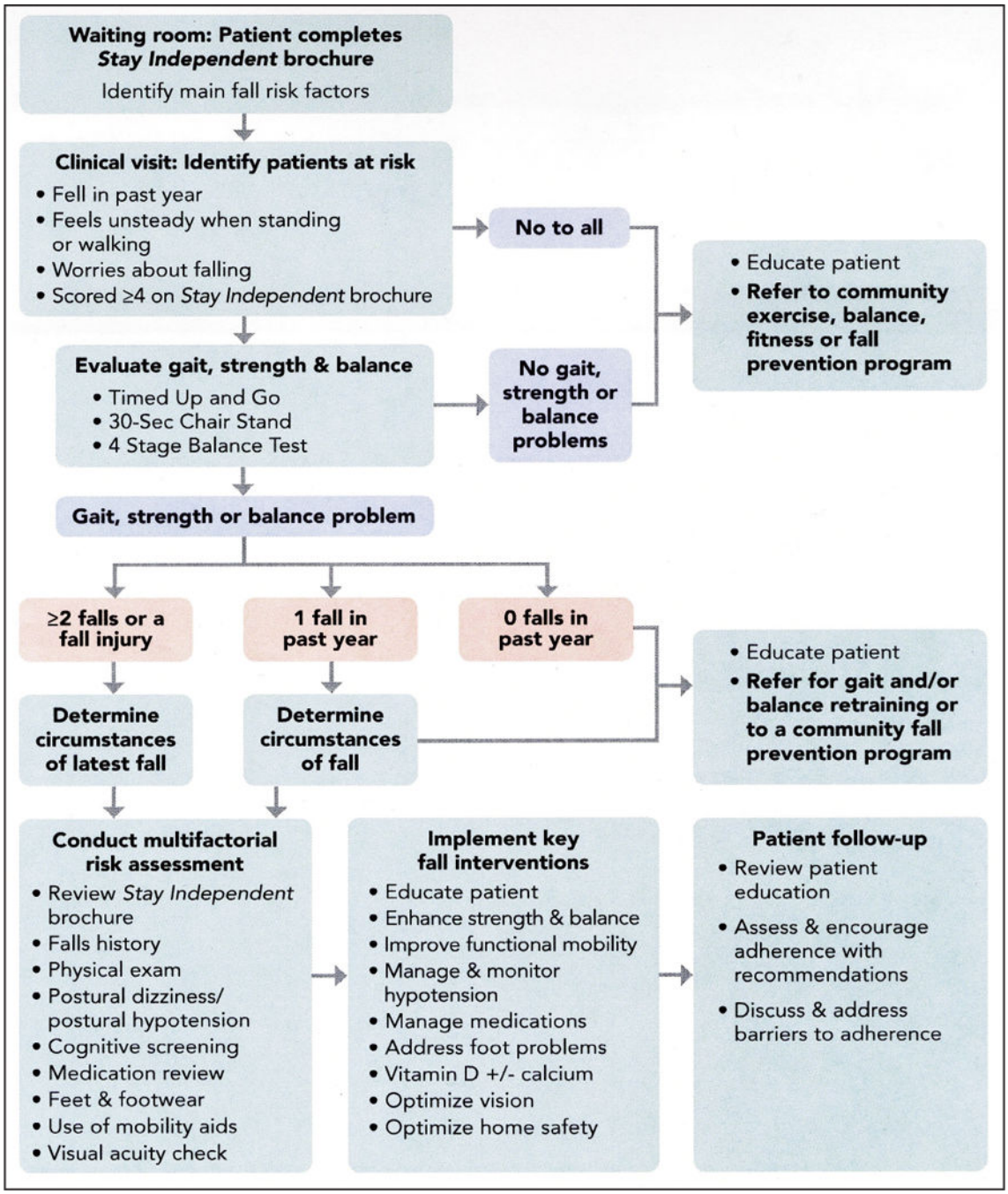


**Figure 2.**
Algorithm for fall risk assessment and interventions.