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STEADI: CDC's approach to make older adult fall prevention part of every primary care practice

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Abstract

Introduction: Primary care providers play a critical role in protecting older adult patients from one of the biggest threats to their health and independence—falls. A fall among an older adult patient cannot only be fatal or cause a devastating injury, but can also lead to problems that can effect a patient's overall quality of life.

Methods: In response, the Centers for Disease Control and Prevention (CDC) developed the STEADI initiative to give health care providers the tools they need to help reduce their older adult patient's risk of a fall.

Results: CDC's STEADI resources have been distributed widely and include practical materials and tools for health care providers and their patients that are designed to be integrated into every primary care practice.

Conclusion: As the population ages, the need for fall prevention efforts, such as CDC's STEADI, will become increasingly critical to safeguard the health of Americans.

Practical applications: STEADI's electronic health records (EHRs), online trainings, assessment tools, and patient education materials are available at no-cost and can be downloaded online at www.cdc.gov/STEADI. Health care providers should look for opportunities to integrate STEADI materials into their practice, using a team-based approach, to help protect their older patients.

Keywords

Aging; Fall; Injury; Prevention; Senior

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The Journal of Safety Research has partnered with the Office of the Associate Director for Science, Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control at the CDC in Atlanta, Georgia, USA, to briefly report on some of the latest findings in the research community. This report is the 48th in a series of "From the CDC" articles on injury prevention.

1. Introduction

One of the biggest threats to the health and independence of older adult patients is falls. Each year, an estimated 29 million adults 65 and older fall (Bergen, Stevens, & Burns, 2016). This constitutes an older adult falling every second of every day. Falls can lead to injuries that can affect overall health, as well as a person's quality of life (reduced mobility, fewer social interactions, and decreased physical fitness). In addition, treating fall-related injuries is costly to the health care system. Medicare spends roughly \$31 billion on fall injuries each year, an amount similar to what is spent to treat cancer (Burns, Stevens, & Lee, 2016; Stockdale & Guillory, 2013).

Multiple factors increase an older adult's risk for falling. Examples of these include: use of psychoactive medications; vitamin D deficiency, vision impairment, weakness and/or unsteady gait; and environmental hazards (e.g., clutter in walkways, stairs without railings) (Masud & Morris, 2001; Rubenstein & Josephson, 2006). However, having more than one risk factor can increase that individual's chances of falling, such as when an older adult with poor balance and/or impaired vision encounters an obstacle in his or her walking path (Rubenstein, 2006).

Clinical interventions aimed at assessing and mitigating an individual patient's fall risk factors can reduce the incidence of falls among older patients (Gillespie et al., 2012). However, integration of fall prevention in primary care practices is low (Fortinsky et al., 2004; Rubenstein, Solomon, & Roth, 2004). In addition, some health care providers report they do not feel confident about assessing fall risk or do not have adequate knowledge about fall prevention (Chou, Tinetti, King, Irwin, & Fortinsky, 2006; Fortinsky et al., 2004).

To support widespread clinical interventions that can protect older adults from falls and their potentially devastating effects, the Centers for Disease Control and Prevention (CDC) developed the STEADI (Stopping Elderly Accidents, Deaths & Injuries) initiative (www.cdc.gov/STEADI) (Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, n.d.; Stevens & Phelan, 2013). Launched in 2012, STEADI gives health care providers the tools and resources they need to integrate fall prevention into their clinical practice. STEADI helps providers identify patients at risk for a fall; identify modifiable risk factors; and implement effective strategies to treat or reduce risk. It also provides tools health care providers can use to link patients to evidence-based community fall prevention programs, a critical link between medicine and public health.

Through STEADI, CDC aims to: (a) implement clinical fall prevention interventions on a large-scale; and (b) integrate fall prevention into health systems. This report describes CDC's efforts to date to disseminate and expand outreach of STEADI to primary care providers and discusses approaches providers can take to make STEADI part of every primary care practice.

2. Methodology

Development of CDC's STEADI initiative followed a step-by-step process based in best practices in health communication (Stevens & Phelan, 2013). In addition, two conceptual

models informed STEADI's approach: the "Chronic Disease Care Model" in recognizing falls as a chronic condition and the "Transtheoretical Stages of Change Model" for assessing patients' readiness to engage in fall prevention interventions, as well as processes to move patients from one stage of readiness to the next (Prochaska & Velicer, 1997; Stevens & Phelan, 2013; Wagner, 1998).

2.1. Content development and testing

Content in STEADI is adapted from the individualized approach to fall risk assessment outlined in the American and British Geriatrics Societies' (AGS/BGS) clinical practice guidelines (American Geriatrics Society, 2010). To initiate development of STEADI, CDC conducted a literature review to assess the current knowledge and use of fall prevention strategies in clinical care settings. CDC also engaged internal and external content experts to review and provide feedback to ensure accuracy and credibility of the content and design. Expert reviewers brought a deep understanding of the target audiences, as well as practical insights about the contexts in which the materials could be used.

CDC conducted formative testing through focus groups and structured interviews to learn about the target audience's specific information needs and preferences for content, format, design, and distribution channels. All formative testing included geographically and ethnically diverse groups of primary care providers or geriatricians. Participants in the formative testing were provided with copies of the draft STEADI materials prior to participating in a focus group or interview. All focus groups and structured interviews were led by a professional moderator who used a detailed discussion guide developed by CDC. Results from the formative testing for each audience were used by CDC to revise the design and content of the STEADI materials prior to release and to inform the distribution of STEADI materials.

3. Results

The STEADI initiative includes materials in a variety of formats for health care providers and older adult patients. One of the key materials available through STEADI is a clinical algorithm for healthcare providers (Fig. 1). The algorithm provides information on different ways to screen for fall risk. For example, screening can be done using three questions: (1) Have you fallen in the past year? (2) Do you feel unsteady when standing or walking?, and (3) Do you worry about falling? Patients who answer *yes* to any of these questions are considered at increased risk of falling and further assessment is recommended. The algorithm includes assessments to identify specific fall risk factors among those who screen at increased fall risk (e.g., detailed falls history, medication review and reconciliation, gait, strength, and balance tests, assessment of mobility aid use, visual acuity check, orthostatic blood pressure, examination of feet and footwear, Vitamin D intake, review of home hazards, and assessment of cognition). Lastly, the algorithm describes evidence-based treatment strategies that can reduce the patient's identified fall risk. These include: ways to manage medications; vitamin D supplementation; and referral forms for strength and balance programs. These interventions have been shown to reduce falls among community-dwelling older adults (Stevens & Burns, 2015). A systematic review of the literature reports

that conducting an individual risk assessment and addressing multiple risk factors can reduce the rate of falls by 24% (Gillespie et al., 2012).

Patient educational materials available through STEADI can be given directly to patients during routine visits and/or distributed in waiting rooms or other settings such as pharmacies. These materials include tools such as a self-assessment that an individual can use to determine their level of risk for a fall, as well as information on the most important steps they can take to reduce their risk for a fall (exercise, vision check, etc.).

3.1. Dissemination

CDC's STEADI is one of the first large-scale educational efforts designed to help health care providers protect older patients from falls. Since the launch of the STEADI initiative, CDC has distributed more than 2.5 million print resources nationwide. STEADI resources are distributed and promoted through a range of channels, including the CDC website, partner organizations' websites, email lists, newsletters, events, conferences, and various social media platforms. The most popular STEADI print materials include two patient education materials: *What YOU Can Do to Prevent Falls, and Check for Safety*. Combined, over 1.8 million of these two print materials have been distributed (940,183 brochures and 932,444 checklists, respectively) since the launch of STEADI (Fig. 2). Webpage downloads for STEADI materials exceeded 177,000 in 2016 alone. Based on interest from partners, CDC also created STEADI materials that can be customized with an organization or medical practice logo and name (Fig. 3).

Dissemination of STEADI materials is also supported through partnerships with medical and health organizations. For example, the Oregon Health and Science University (OHSU) partnered with the Oregon Health Authority to integrate STEADI into their academic internal medicine clinic. OHSU successfully implemented STEADI into their clinical practice by: (a) developing a workflow that aligned with (and did not disrupt) their usual clinic flow; (b) integrating the STEADI algorithm within Epic, their electronic health record (EHR) system; (c) pilot testing the workflow and EHR tools before encouraging others clinics to adopt STEADI; and (d) by conducting a 60 minute in-person training sessions to educate health care providers and medical assistants on fall burden, fall risk assessments, and how to use the workflow and EHR tools.(Casey et al., 2016) Within 18 months, the OHSU screened over 870 patients, 45% of its eligible older adult patients (Casey et al., 2016).

4. Discussion

As the U.S. population ages, it is critical for primary care and other health care providers to take steps to integrate fall prevention into routine medical care (See Fig. 4.). Given that 90% of older adults seek medical care once a year, primary care medicine providers are well-positioned to identify patients at high risk for a fall and offer effective interventions. CDC's STEADI was designed with input from health care providers using the latest evidence on effective strategies to prevent falls. Using a practical approach to meet the needs of primary care providers, standardized clinical fall prevention strategies, such as STEADI, can help reduce practice variability and improve patient care.

To date, CDC's efforts to disseminate STEADI have led to its adoption by select health care provider offices and health systems across the United States. However, more needs to be done to ensure all health care providers are prepared to address falls among one of America's fastest growing populations.

To expand our reach and to help support family medicine and other providers, CDC has created or worked with partners to offer new STEADI tools and resources and identified approaches that can be tailored to your family medicine practice. Three examples include:

1. Creation of the Screen, Assess, Formulate, and Educate (SAFE) Medication Review Framework.
2. Development of EHR clinical decision support modules.
3. Expansion of online education and training opportunities for health care team members.

Below is a brief discussion of each of these new tools and resources.

4.1. SAFE medication review framework

While primary care providers are trained on how to review and manage older adult patients' medications, research shows that some health care providers lack a framework on how to do so and therefore may implement medication reviews inconsistently (Tarn, Paterniti, Kravitz, Fein, & Wenger, 2009). To assist primary care providers in conducting a systematic and comprehensive medication review, CDC developed the SAFE method as part of the STEADI resources for health care providers. You can access the SAFE resources at www.cdc.gov/STEADI. SAFE highlights four essential steps in conducting a medication review. The steps include: (a) screening for medications that increase fall risk, (b) assessing the patient's health and health conditions, (c) formulating a patient medication action plan that emphasizes how to stop, switch, or reduce medication when medically indicated, and (d) educating the patient and caregivers about medication changes and fall prevention strategies. These steps are adapted from two reputable pharmacist practice tools, the pharmacist's medication therapy management and patient care processes, and encourage collaboration with a pharmacist (American Pharmacists Association, National Association of Chain Drug Stores Foundation, 2008; JCoP Practitioners, 2014).

4.2. EHR clinical decision support modules

The use of EHRs among primary care providers has increased dramatically over the last few years. Recent reports suggest that primary care providers have the highest rate of adoption of certified EHRs at 79% (Hsiao, Hing, & Ashman, 2014). Building on this, CDC is working to integrate STEADI into EHRs. To date, CDC has worked with health systems and EHR vendors (Epic and GE Centricity) to develop STEADI modules that others using these systems can implement. At OHSU providers worked with their health IT staff to establish a health maintenance modifier. A health maintenance modifier is an EHR clinical alert that can be added to a patient's medical chart to help health care providers identify and implement necessary health screenings (Casey et al., 2016). The STEADI EHR tool also allowed health care providers to assign falls-related medical codes to each patient's chart

based on their risk of falling. This medical coding was an important element that allowed staff to collect data on falls-related quality measures. The success at OHSU, led to a larger role out by Epic. In December 2015, Epic released “Preventing Falls in Primary Care Using STEADI,” a clinical program that provides instructions on how to incorporate STEADI into any health system using the Epic EHR system. CDC aims to develop additional STEADI EHR tools in the future that can be used with other EHR systems.

4.3. Expansion of education and training opportunities

Adopting a whole care team-based approach—distributing work among physicians, medical assistants, nurses, front desk staff—can also facilitate integration of STEADI into primary care and other practices. CDC currently offers two free STEADI training modules. Each offers a variety of continuing education opportunities upon completion. One training is a 60-minute overview titled, *STEADI: Older Adult Fall Prevention*. The training highlights the STEADI algorithm and the STEADI tools and resources. Three case studies are presented which mirror realistic clinical scenarios. Each scenario is designed to help demonstrate how best to initiate conversations with older patients about falls. The second course is a shorter tutorial on how to begin using STEADI. This training highlights three things primary care providers can do to start reducing your older patient’s falls risk: (a) screen for fall risk, (b) review and manage medications, and (c) recommend vitamin D.

5. Conclusion

Primary care and other health care providers can help prevent falls among older patients by applying the evidence-based strategies and interventions provided through STEADI. CDC’s STEADI was designed to help health care providers integrate fall prevention into primary care practices and includes new practical tools and strategies, such as the *STEADI SAFE Medication Review Framework*, EHR modules and specifications, and online trainings. By using STEADI in your practice, primary care providers will help prevent falls among older patients—one of the biggest threats to their health and independence.

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Biography

Kelly Sarmiento, MPH, serves as a health communications specialist in the Centers for Disease Control and Prevention’s (CDC) Division of Unintentional Injury Prevention. She is responsible for leading the HEADS UP campaign, which is a series of educational initiatives that all have a common goal: to help protect people of all ages, especially children and teens, from concussions and other serious brain injuries and their potentially devastating effects.

She began her career at CDC in the National Center for Injury Prevention and Control’s Division of Injury Response. In this role, she served as the health communications team lead where she directed educational campaigns on traumatic brain injury and emergency response, and provided strategic direction regarding health communication for the division’s

state injury programs. Ms. Sarmiento received her Bachelor of Arts degree in Anthropology and Spanish from the University of California, Santa Barbara, and her masters of public health degree from Yale University School of Epidemiology and Public Health.

She has developed more than 60 educational products and tools, as well as authored over 20 presentations, abstracts, and chapters. She has received many awards for her work in public health and innovation in health communication.

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Health Care Provider Materials:	Patient Education Materials:
<ul style="list-style-type: none"> • STEADI Algorithm: Clinical tool that helps providers assess a patient's fall risk and select appropriate treatment strategies. • Integrating Fall Prevention into Practice: A wall chart for medical practices to specify each health care team member's role in preventing falls. • STEADI Pocket Guide: Fall prevention algorithm and prevention strategies to share with patients. • Fact sheets: <ul style="list-style-type: none"> ○ Information about medications linked to falls, ○ Tips for talking with patients about fall prevention, and ○ Instructions on measuring orthostatic blood pressure. • Case studies: Illustrating patients with low, moderate and high fall risk. • Functional assessment tests: Instructions and video guidance on how to conduct the <ul style="list-style-type: none"> ○ <i>Timed Up and Go (TUG)</i> test for patient mobility ○ <i>30-Second Chair Stand</i> test for leg strength and endurance ○ <i>4-Stage Balance</i> test for balance • Risk at a Glance: Checklist allows health care providers to summarize an older patient's fall risk. • STEADI Referral form: A form providers can use to recommend their patients see a specialist and participate in an evidence-based fall prevention class. 	<ul style="list-style-type: none"> • Stay Independent: Patient self-assessment checklist to check for risk of falling. • What YOU Can Do to Prevent Falls: Brochure to help patients learn how to reduce their chances of falling. • Check for Safety: Checklist that patients can use to help identify and eliminate fall hazards in their home. • Postural Hypotension: What It Is & How to Manage It: Brochure health care providers can use to teach patients how to manage postural hypotension, a risk factor for falling. • Chair Rise exercise: A one-page guide on how patients can strengthen the muscles in their thighs and buttocks to prevent a fall.

Fig. 1.
CDC STEADI materials for health care providers and patients.

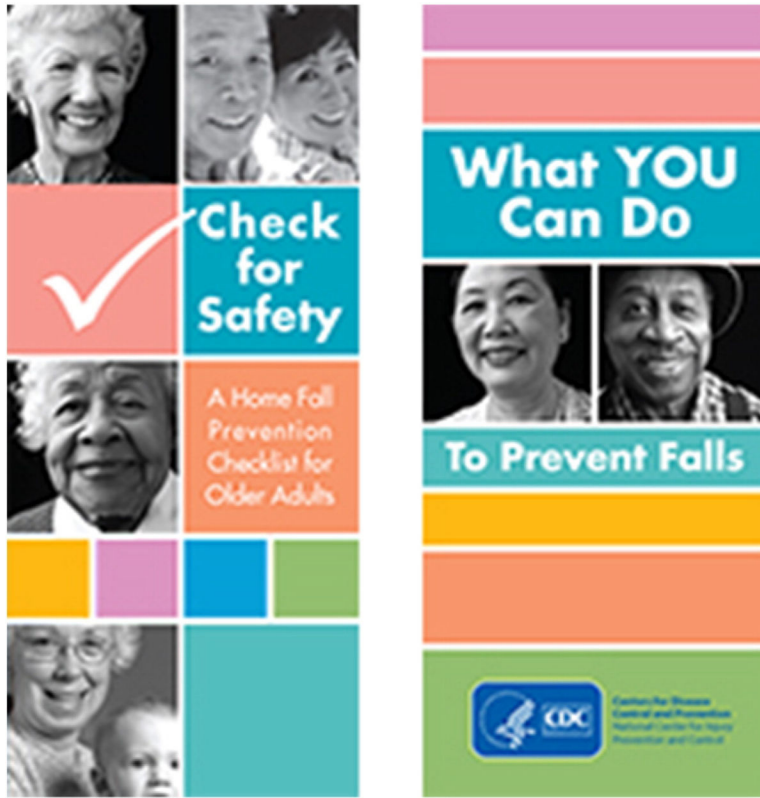


Fig. 2.
Image caption: Patient education materials: *What YOU Can Do to Prevent Fall and Check for Safety.*



Fig. 3.
Image caption: Examples of STEADI Social media and web-based graphics.

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Approaches to Making STEADI Part of Your Medical Practice:

- Learn more by taking the [free STEADI online trainings](#) with a continuing education opportunity.
- Review the free online STEADI [materials for health care providers, patients, and caregivers](#).
- Talk to your practice's health IT staff about adding STEADI modules on fall risk screening, assessment, and management to your EHR system (useable modules may already exist for your system).
- [Conduct a training](#) session for your staff and identify who within your practice will screen, assess, and talk to patients about falls.
- [Customize STEADI materials](#) with the name of your practice and logo. You can make materials available in your waiting room or provide copies of the materials as you talk with your patients, or embed within your EHR.
- Include fall prevention messages in your regular communication with patients (such as through discharge materials or appointment reminders).
- Set [obtainable goals](#) and evaluate success overtime.

Fig. 4.

Tips for health care providers on implementing CDC STEADI.