



## Theory

# Closing the Gap: A Research Agenda to Accelerate the Adoption and Effective Use of Proven Older Adult Fall Prevention Strategies<sup>☆</sup>

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## ABSTRACT

**Introduction:** To make an impact on the public's health, evidence-based interventions must be disseminated broadly, supported by training and technical assistance, adopted widely, and implemented as designed. Many effective older adult fall prevention interventions have been identified, but too few have gained wide community acceptance and little is known about the best ways to encourage their broader use. Therefore, as in many other fields, fall prevention suffers from a wide gap between scientific discoveries and their everyday use. **Method:** This article articulates the key activities embedded in Step 4 of the public health model—specifically translation and dissemination to ensure widespread adoption and use—in order to illuminate critical research needs in older adult fall prevention. **Conclusions:** These needs, if addressed, will help close the gap between research and practice.

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## 1. Background

The National Center for Injury Prevention and Control (NCIPC) at the U.S. Centers for Disease Control and Prevention (CDC) has made older adult fall prevention research a central priority (NCIPC, 2009). NCIPC is addressing falls by using the public health model, which has been used to address other public health problems (Mercy, Rosenberg, Powell, Broome, & Roper, 1993). This systematic approach describes the problem, identifies risk and protective factors, develops and tests prevention interventions, and translates effective interventions into community-based programs to ensure widespread adoption. This method incorporates the continuum of research from basic and descriptive research; to risk factor research; intervention development and testing; and translation, dissemination, adoption and implementation research. The goal of this approach, theoretically, is to stimulate the movement from research into practice by sequentially following these four steps. Although much has been learned using this model to address fall prevention, gaps in our knowledge remain (Sleet, Moffett, & Stevens, 2008).

This article articulates the key activities embedded in Step 4 of the public health model—specifically translation and dissemination to ensure widespread adoption and use—in order to illuminate critical

research needs in older adult fall prevention (Fig. 1). These needs, if addressed, will help close the gap between research and practice.

## 2. The Importance of Moving from Research to Practice in Fall Prevention

To make an impact on the public's health, evidence-based interventions must be disseminated broadly, supported by training and technical assistance, adopted widely, and implemented as designed. Many effective fall prevention interventions have been identified (Gillespie et al., 2003; Gillespie et al., 2009; Stevens & Sogolow, 2008), but too few have gained wide community acceptance and little is known about the best ways to encourage their broader use. This situation is similar to developing a life-saving drug but not telling doctors about it, not packaging it for easy use by consumers, not giving it to pharmacists to dispense, and not helping people use it properly. This gap between research and practice, between discovery and delivery, is large and continues to impede our progress in preventing falls and fall-related injuries.

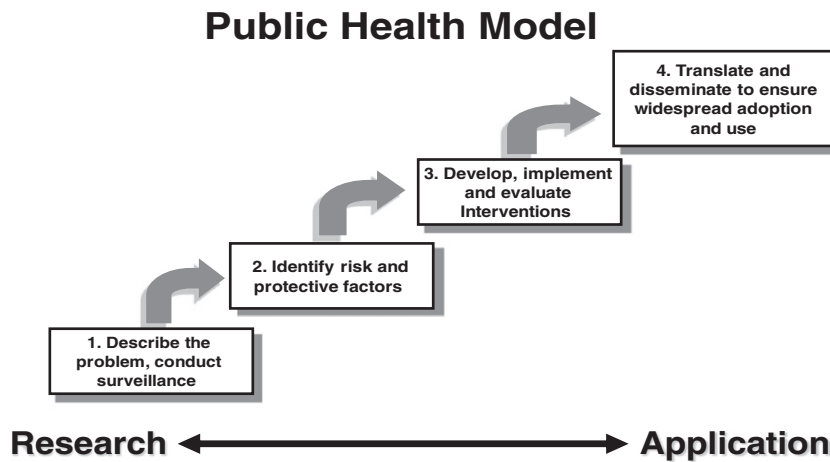
Only a handful of empirical research studies have focused on testing optimal methods of moving older adult fall prevention from research to practice (Li, Harmer, Glasgow, et al., 2008; Li, Harmer, Mack, et al., 2008). The field of “translation research” (sometimes called “dissemination/implementation research”) in injury prevention generally is still very young (Sogolow, Sleet, & Saul, 2007; Wandersman et al., 2008).

Moving research into practice requires four steps: (a) translating an efficacious intervention into a practical prevention program; (b) building capacity to promote dissemination and use; (c) pursuing strategies to support successful adoption and implementation; and

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**Fig. 1. Step 1. Describe the Problem and Conduct Surveillance.** The first step characterizes the extent of the problem using surveillance to determine the incidence of falls, describes the demographic characteristics of the persons involved, identifies temporal and geographic characteristics of fall events, and estimates the severity and cost of fall injuries. This step includes monitoring and tracking trends and disseminating data to decision makers. **Step 2. Identify Risk and Protective Factors.** The second step considers why falls occur. It involves conducting research to determine the causes and correlates of falls, the factors that increase or decrease fall risk, and those risk factors that may be modifiable through interventions. **Step 3. Develop, Implement and Evaluate Interventions.** The third step uses the information obtained in Steps 1 and 2 to develop fall interventions. These are tested using randomized controlled trials and experimental and control group designs, to determine efficacy and effectiveness. **Step 4. Translate and Disseminate to Ensure Widespread Adoption and Use.** The fourth step involves translating evidence-based fall interventions into community-based programs and disseminating these programs to ensure broad adoption and implementation. Research at this step includes studies that focus on methods, structures and processes to encourage communities and policymakers to adopt evidence-based programs; on policies and laws that reduce falls; and factors that increase organizational and community capacity for tailoring, implementing, and sustaining interventions.\* Figure adapted from Mercy et al. (1993). Public health policy for preventing violence. *Health Affairs*, 12, 7–29.

(d) disseminating widely based on known properties of the delivery channels and the intervention users or intended recipients.

### 3. Translation Research Needs

Interventions that have been shown to be effective using randomized controlled trials often require additional work before they can be implemented in community or clinical settings (Close, 2005). Many interventions lack training materials, user manuals, and identified delivery channels to encourage adoption; others require modifications in order to reach new audiences or gain acceptance in implementation settings. For example, effective older adult fall interventions from around the world have been identified (Stevens & Sogolow, 2008). However, given our U.S. health care delivery and reimbursement systems, most require modification before they can be implemented. Similarly, programs that are appropriate for people aged 65 may need tailoring for people aged 75 or 80. Programs that have been used almost exclusively with one population (e.g., European white women) may need to be translated and tailored specifically for other groups (e.g., American Indian/Alaskan Native women).

Research is needed on approaches that could accelerate the translation of proven efficacious interventions into effective programs. For example, using a participatory research model (Linnan et al., 2005), the role of coalitions could be studied to assess their effectiveness in encouraging the uptake and spread of effective programs (Butterfoss, 2007). Another important area is determining how best to match efficacious interventions with delivery systems and implementers. Questions that need to be addressed include, “Which interventions require minimal translation for effective implementation?” “How can a program best be translated so it can be effectively incorporated into the infrastructure and/or delivery system?” and “Can hospital-based fall clinics used in other countries be an effective approach in the U.S.?”

A key issue in moving from effective programs to widespread use is how to package fall prevention programs to maximize adoption and use by organizations (e.g., senior centers and health care practices) as well as by older adults. Li, Harmer, Glasgow, et al. (2008) found that using a RE-AIM framework (which stands for Reach, Effectiveness, Adoption, Implementation, Maintenance) to translate an

effective Tai Chi intervention into a community-based fall prevention program in six community centers resulted in 100% adoption rate and 87% reach into the target older adult population. Research should address the effectiveness of communication approaches, marketing strategies, and tailored messages to reach potential adopting organizations. A national fall prevention education program for health care professionals and community organizations could be mounted using theory-based health communications strategies (Backer, Rogers, & Sopory, 1992; Corcoran, 2007). Important questions include, “What program format is most appealing to senior centers?” “How can fall prevention be incorporated into clinical practice?” “What resources or tools are needed to help physicians incorporate fall assessment and referral into their clinical practices?” and “How can evidence-based programs be adapted to facilitate their dissemination and implementation in community settings?”

Research is needed to learn how to effectively communicate fall prevention information to older adults in a way that encourages behavior change (Yardley, Donovan-Hall, Francis, & Todd, 2006). Many older adults do not consider themselves to be at risk for falling, some erroneously believe it is an inevitable part of aging, and many fear that admitting to falls will lead to a loss of independence (Braun, 1998). Future studies should clarify the best methods for increasing older adults’ knowledge about falls and the importance of adopting effective prevention strategies such as talking to their doctors about past falls (Horne, Skelton, Speed, & Todd, 2010), having a health care provider review their medications, and enrolling in fall prevention programs (Horne, Speed, Skelton, & Todd, 2009). Older adults’ fear of losing their independence as a result of disclosing a past fall to healthcare providers should be researched more thoroughly.

Whitehead, Wundke, and Crotty (2006) discovered that people who were treated in a hospital emergency department for falls were more willing to take osteoporosis medication than to adopt behavioral strategies such as participating in exercise classes, stopping the use of psychoactive medications, or having a home safety assessment. Research questions that need to be addressed are, “Can fall prevention messages that resonate with one demographic group of older adults be effective with other groups?” “What approaches will encourage older adults to talk about falls with their health care provider?” and

“What are the most effective ways to encourage older adults to adopt fall prevention behaviors?”

#### 4. Capacity Building Research Needs

Translated programs need an appropriate infrastructure or delivery system in order to be adopted and used effectively. For successful dissemination of fall prevention strategies, it is important to develop institutional capacities to understand and use new innovations. This means that adopting organizations (e.g., senior centers) may need additional training or technical assistance in order to incorporate falls programs into their on-going services. In addition, individuals must be trained on how to use new programs or strategies. For example, a local Tai Chi instructor may need additional training or certification before s/he can offer a specific class to prevent falls among older adults, such as *Tai Chi: Moving for Better Balance*.

To facilitate the development of institutional and individual capacity building, a systematic approach is needed to enable organizations and individuals to effectively use “best practices” and to provide the training and resources needed to succeed. Research is needed to determine the capacities required by individuals, organizations, and systems to deliver a fall prevention program effectively (i.e., with fidelity to the core programmatic and implementation components). In this area, research questions include, “What resources are needed to implement a program and how can such capacities be developed most efficiently?” and “How much training, technical assistance, and monitoring is required for a particular health care sector or professional group to effectively implement a program?” “How sustainable are efforts to build capacity and retain trained staff?”

#### 5. Adoption and Implementation Research Needs

Adoption and implementation research can help us learn what the necessary determinants of adoption and implementation are before we disseminate. Research suggests that the adoption and use of innovations are explained by a variety of factors ranging from individual preferences to organizational practices. Klein and Sorra (1996) condensed these factors into two related sets of variables: (1) *innovation fit*, which refers to the antecedents that capture the extent to which an innovation is likely to fit well with the current needs and preferences of an organization; and (2) *climate for implementation*, which refers to the organizational culture, administrative support, training, and other reinforcements for implementing that innovation in the organization. Finch, Day, Donaldson, Segal, and Harrison (2009) suggested ways in which researchers and policy makers might join together to develop formats for utilizing knowledge so that the evidence coming from fall prevention research can be presented most effectively in policy arenas.

Falls research should investigate methods to maximize both the fit of effective programs as well as the *climate* for implementing them. Such questions would include, “What can be done to increase the fit of fall risk assessment, treatment, and referral into health care settings?” “How can we increase leadership support for incorporating effective fall prevention programs in sectors such as public health, health care, and aging services?” “How can policies (or enabling legislation) that encourages widespread use of effective strategies best be facilitated?” and “What factors influence the long-term sustainability of fall prevention programs in particular settings?”

Finally, research should address the balance between program fidelity (the degree to which a program is implemented as it was originally designed) and adaptation (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Research questions include, “What are the core or critical components that must be included to maintain program effectiveness and what elements can be changed?” and “What factors encourage implementation with fidelity of the core components?”

#### 6. Dissemination Research Needs

Once the determinants of adoption and implementation are known and a feasible delivery system is established, dissemination can be accelerated by involving service providers. For example, some programs have used occupational therapists and physical therapists to deliver fall prevention services to seniors (Peterson & Clemson, 2008). A range of service providers such as physicians, allied health professionals, health departments, and aging services should be studied to determine which ones are effective, efficient, and sustainable channels for disseminating fall prevention programs.

Dissemination studies of community-based programs need to include assessments of reach, adoption, feasibility, fidelity, acceptability, and adaptability. Questions to address are, “What dissemination factors influence a community-based organization’s ability to involve older adults in fall prevention programs?” “Is it feasible to take a community program developed for one setting and implement it in another?” and “What are the costs of delivering various community programs and how can these costs be minimized?”

There is a growing interest in disseminating fall prevention information directly to older adults through mass media (e.g., campaigns or community-based TV programming), as well as using innovative technologies such as videogame formats (Woelfel, 2010). Research should address the conditions under which these various dissemination strategies may be effective, for whom and for how long. Some of the research questions to answer are: “What are the best formats and channels for delivering interventions?” and “How do older adults perceive messages about fall risks and fall prevention?”

#### 7. Conclusion

Older adult falls remain a significant public health problem. Despite the progress research has made in describing this issue, identifying important risk factors, developing efficacious interventions, and promoting evidence-based programs, much work remains to be done before these strategies are widely adopted and used effectively. Public health impact depends on large numbers of health care professionals, senior service providers, and older adults adopting the best fall prevention practices over time. By articulating the key activities embedded within Stage 4 of the public health model—translation, capacity building, adoption and implementation, and dissemination—we highlighted the critical research needs that, if addressed, can help close the gap between research and practice in older adult fall prevention.

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