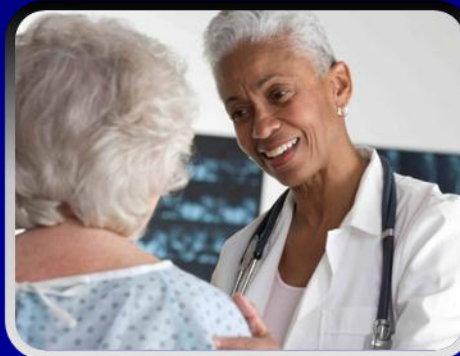


Older Adult Fall Prevention: Moving Research into Practice

Judy A. Stevens, Ph.D.

National Center for Injury Prevention & Control
Centers for Disease Control & Prevention



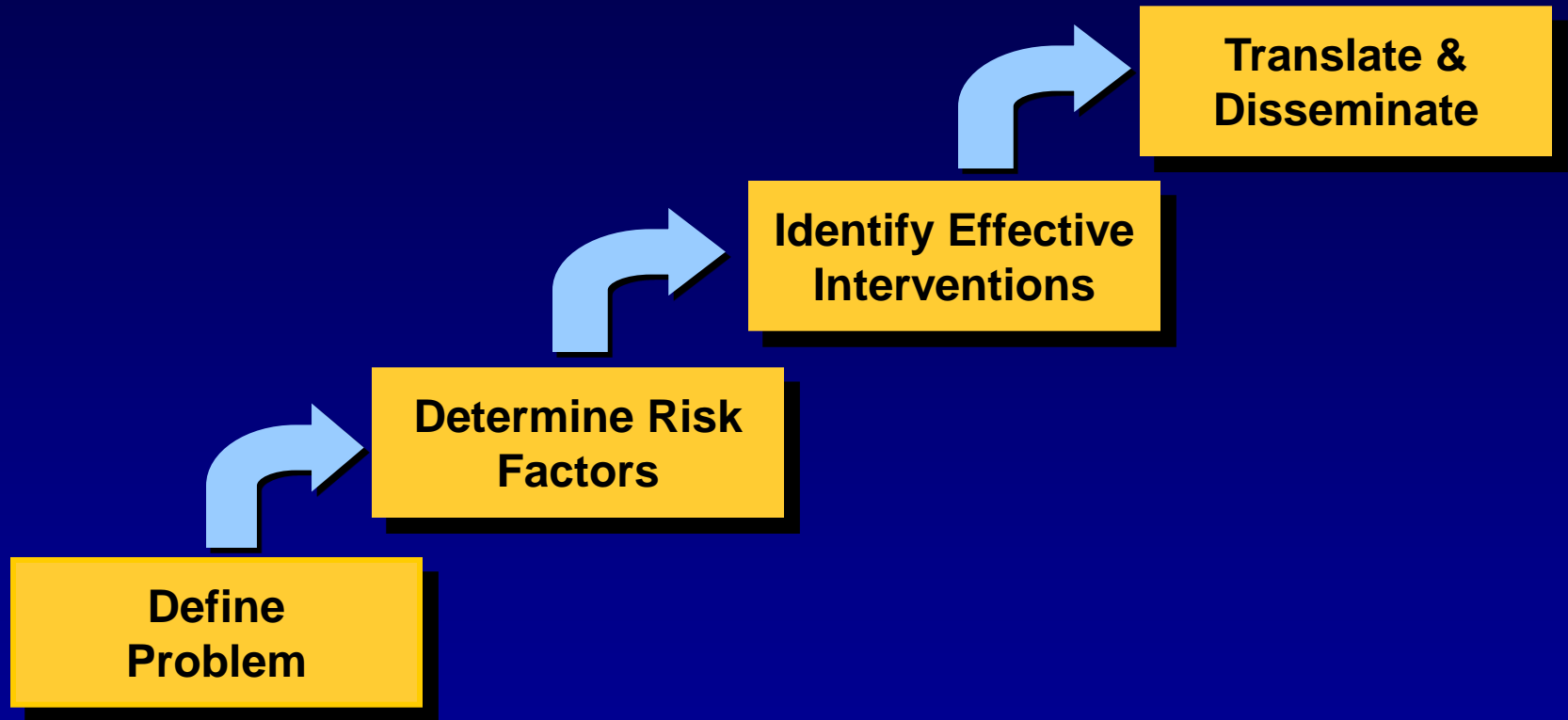
National Center for Injury Prevention and Control
Division of Unintentional Injury Prevention



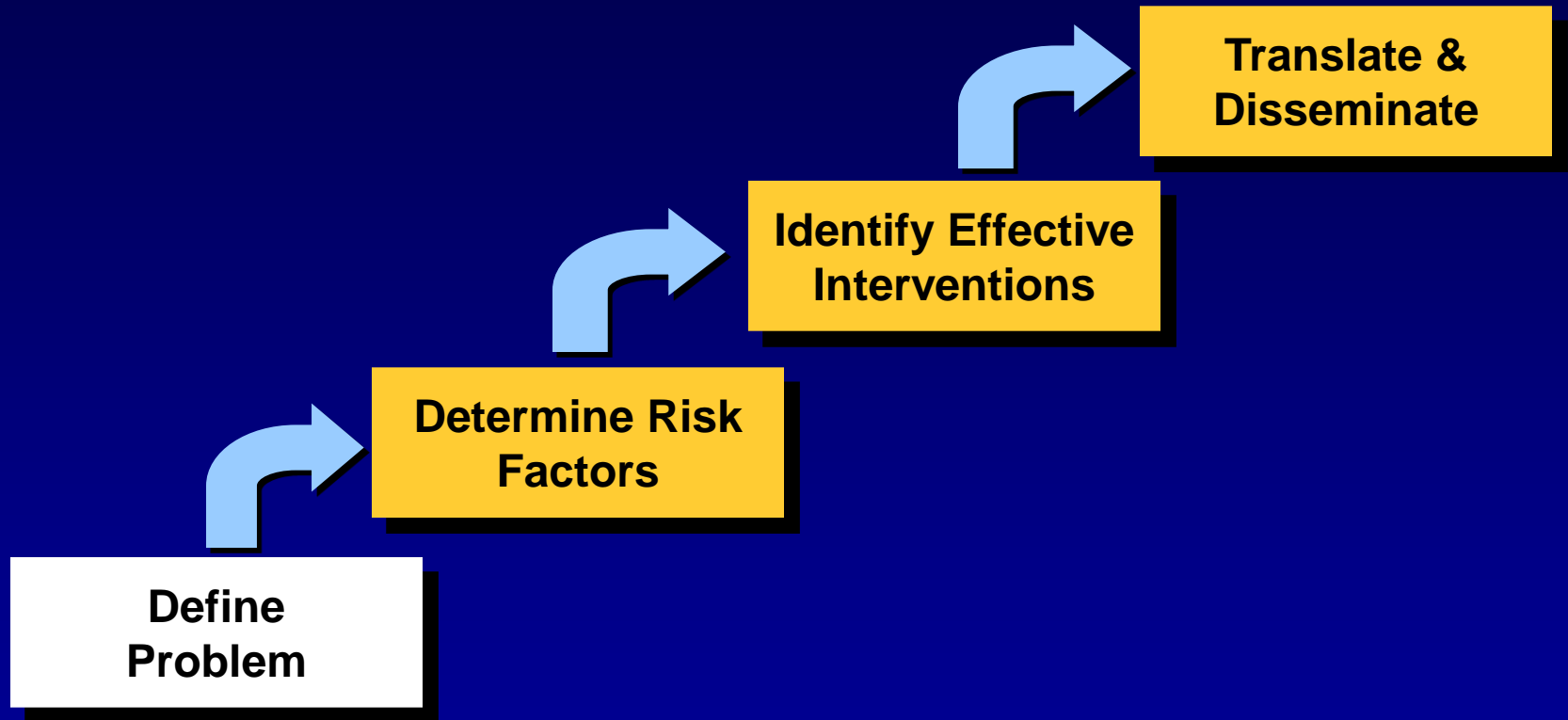
Overview

- The public health model applied to older adult falls
- **STEADI**: An example of moving research into practice
- Pilot testing implementation process

Public Health Model



Public Health Model



Burden

- For people 65+, falls are the leading cause of both fatal & nonfatal injuries
- In 2010, there were 2.3 million older people treated in EDs for falls
- One-third of people 65+ fall each year¹
- 1 in 5 falls causes a serious injury²

1. Tromp, *J Clinical Epi*, 2001.

2. Sterling, *J Trauma-Inj Infection & Critical Care*, 2001

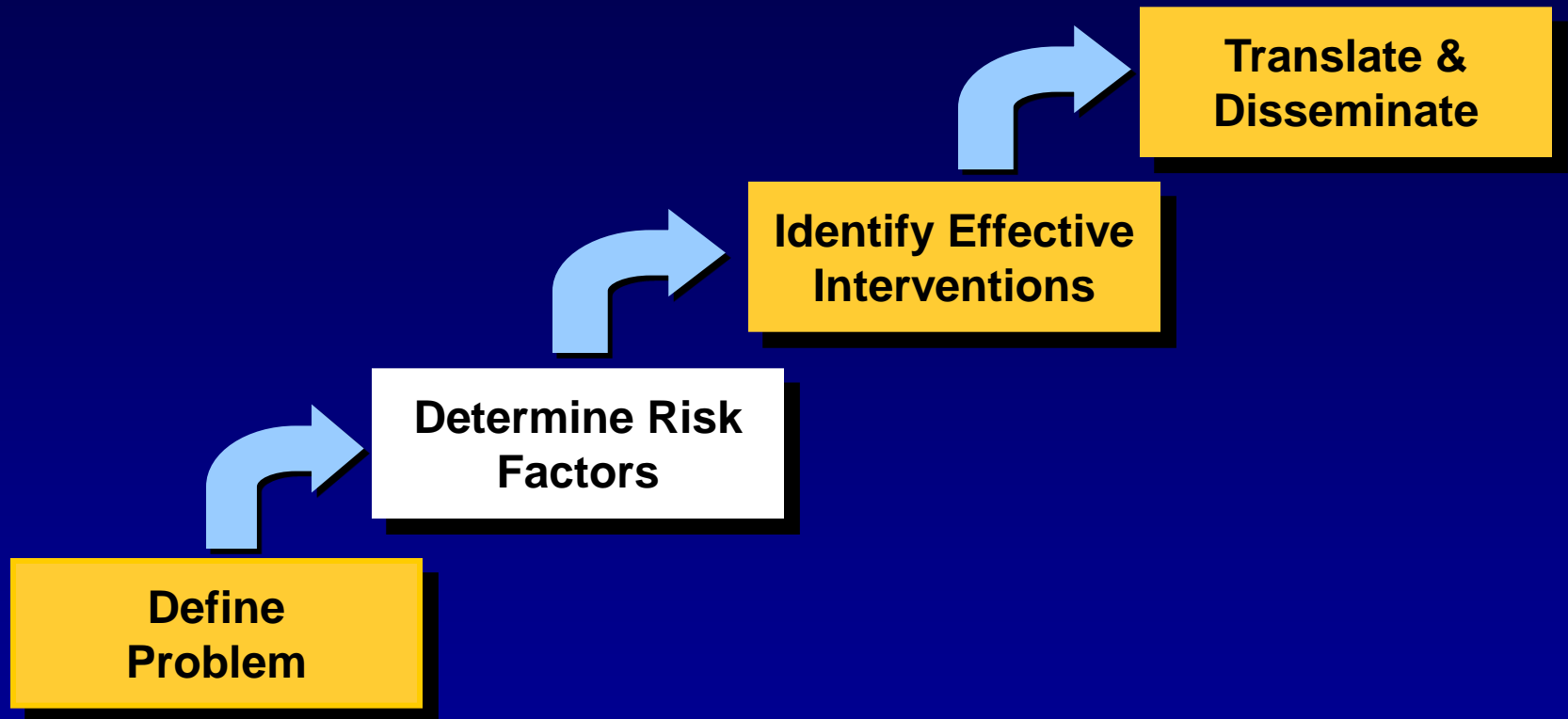
Impact



- Quality of life
 - ▶ Limited mobility
 - ▶ Fear of falling¹
- Economic impact
 - ▶ \$30 billion²

1. Scheffer, *Age & Ageing*, 2008
2. Stevens, *Injury Prev*, 2006

Public Health Model



Fall Risk Factors

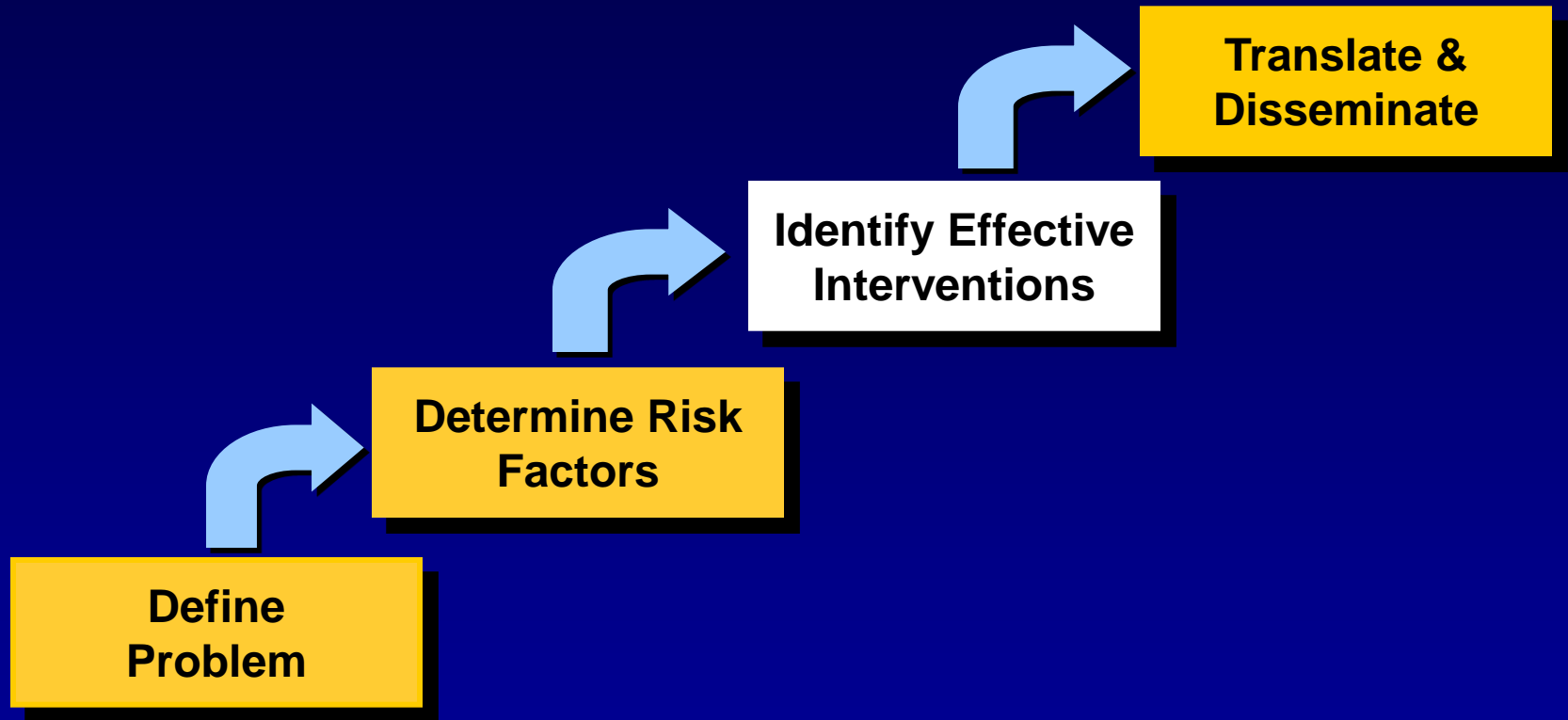


- Biological
- Behavioral
- Environmental

Leading Fall Risk Factors

Risk Factor	Relative Risk
Muscle weakness	4.9
Balance problems	3.2
Gait problems	3.0
Poor vision	2.8
Limited mobility	2.5
Cognitive impairment	2.4
Functional limitations	2.0
Postural hypotension	1.9

Public Health Model

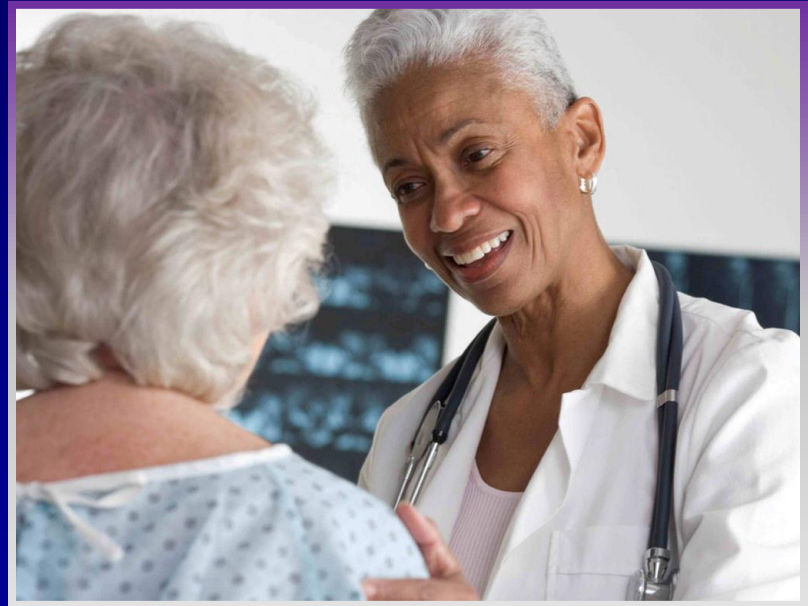


Evidence for Clinical Interventions

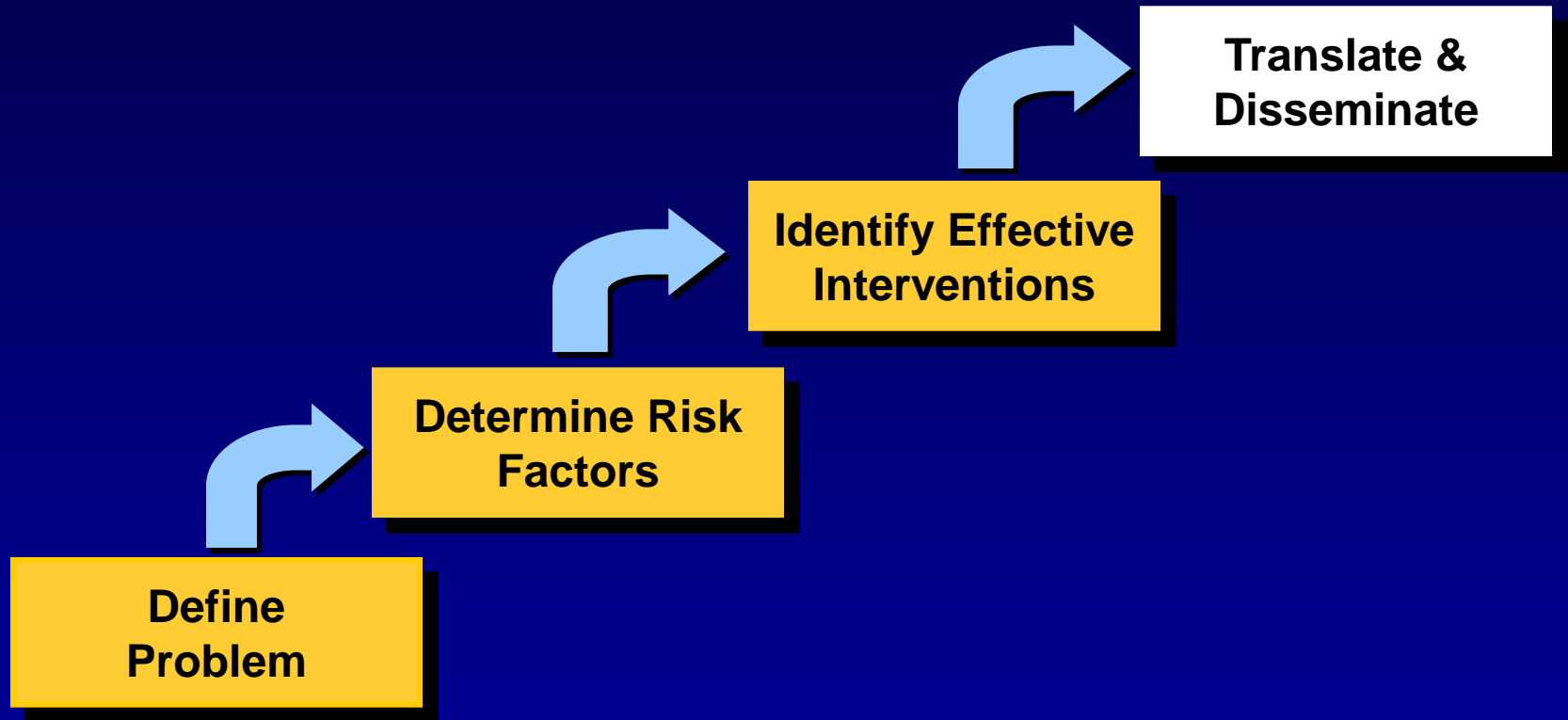
- **Chang et al., British Medical Journal, 2004**
- **Gillespie et al., Cochrane Database of Systematic Reviews, 2012**
- **Moyer, U.S. Preventive Services Task Force, Annals of Internal Medicine, 2012**

Clinical Approach

Clinical assessment, treatment,
referral & follow-up



Public Health Model





**STopping Elderly Accidents,
Deaths & Injuries**

Literature Review

- Few asked about falls¹
- Did not identify falls & gait disorders or evaluate patients who reported falling²
- Most not familiar with AGS clinical guideline
- Many interested in learning about fall risk assessment & risk reduction³

1. Chou, *J Gen Intern Med*, 2005

2. Rubenstein, *J Am Geriatr Soc*, 2004

3. Robinson, *J Am Geriatr Soc*, 2001

Initial Interviews

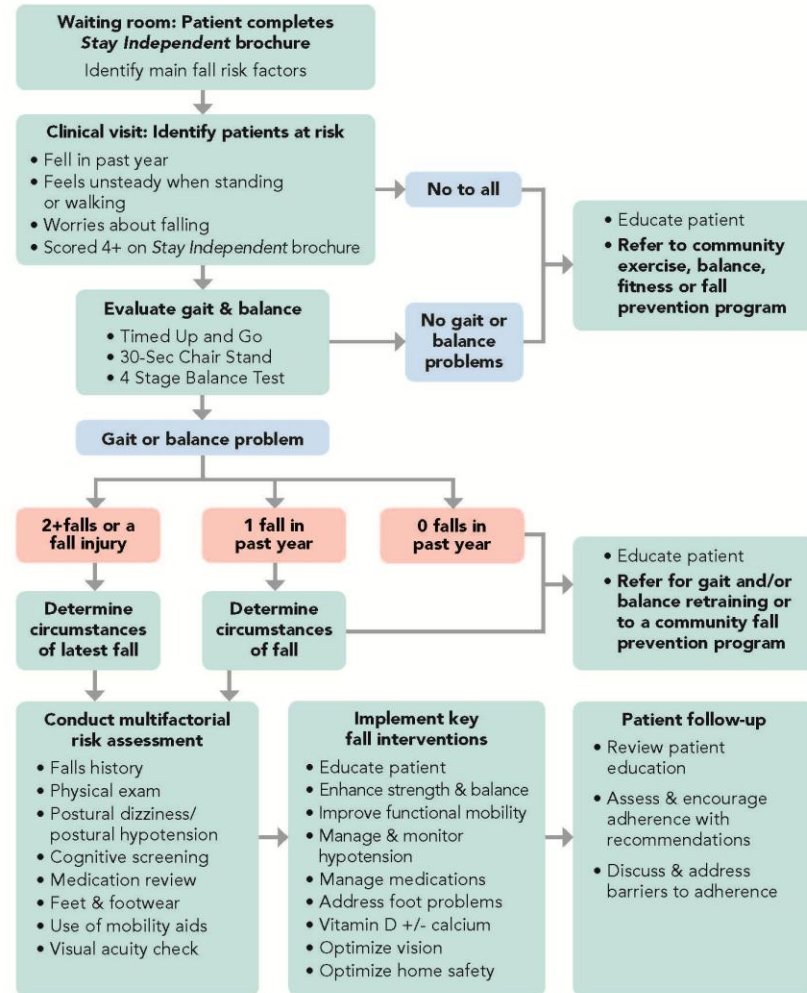
90 min interviews with 18 providers

Interview Results

- **Recognized falls as a threat for their older patients**
- **Lacked information on standardized assessment methods & evidence-based prevention strategies**
- **Asked for materials -- direct, concise & easy to read**
- **Preferred checklists, one-pagers & on-line information**

Flow Chart Algorithm

Algorithm for Fall Risk Assessment & Interventions

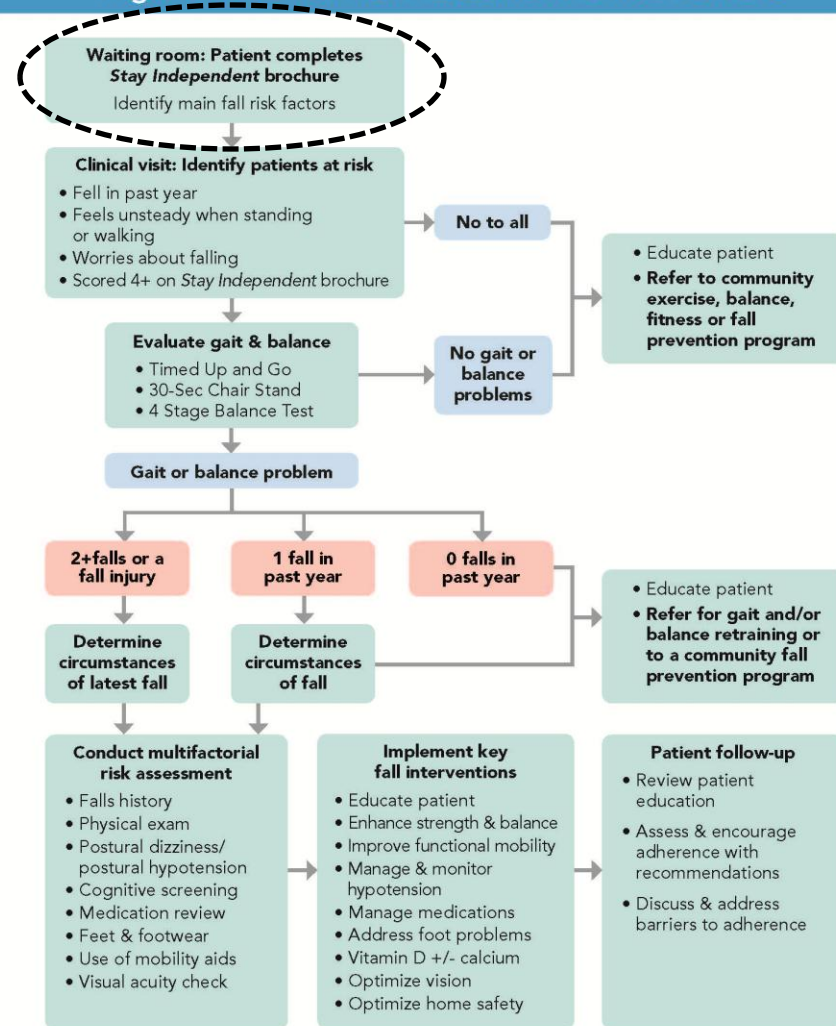


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Flow Chart Algorithm

Algorithm for Fall Risk Assessment & Interventions



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Stay Independent

A self-risk assessment brochure

Check Your Risk for Falling

Please circle "Yes" or "No" for each statement below.		Why it matters	
Yes (2)	No (0)	I have fallen in the last 6 months.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.
Total _____		Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.	

This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. *J Safety Res*; 2011;42(6):493-499). Adapted with permission of the authors.

Your doctor

- Having other health conditions
- Changing medications
- Consulting with your doctor
- Seeing a physical therapist
- Attending a fall prevention program



Stay Independent

Falls are the main reason why older people lose their independence.

Are you at risk?



Some Provider Resources

Gait & Balance Assessment Tools

Patient: _____ Date: _____

The 30-Second Chair Stand Test

Purpose: To test leg strength and endurance.

Equipment:

- A chair with a straight back with armrests
- A stopwatch

Instructions to the patient:

1. Sit in the middle of the chair.
2. Place your hands on the opposite sides of the chair with your shoulders crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and your arms against your chair.
5. On "Go," rise to a full standing position and then sit back down.
6. Repeat this for 30 seconds.

On "Go," begin timing.

If the patient must use his/her arms to rise, Record "0" for the number and score.

Count the number of times the patient stands in 30 seconds.

If the patient is over halfway to a stand when 30 seconds have elapsed, count it as a stand.

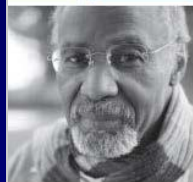
Record the number of times the patient stands.

Number: _____ **Score:** _____

A below average score indicates a high risk of falling.

Notes: _____

For relevant articles, go to: www.cdc.gov/injury



Patient: _____ Date: _____

The 4-Stage Balance Test

Purpose: To assess static balance.

Equipment: A stopwatch

Directions: There are four progressively more difficult positions. Patients should not use an assistive walker) and keep their eyes open.

Describe and demonstrate each position. Stand behind the patient and hold his/her arm and help them assume the correct position.

When the patient is steady, let go, but remain ready to catch the patient if he/she should lose their balance.

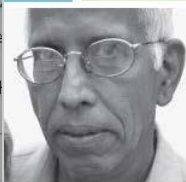
If the patient can hold a position for 10 seconds without using his/her feet or needing support, go on to the next position. If not, stop the test.

Instructions to the patient: I'm going to show you four positions. Try to stand in each position for 10 seconds with your arms out or move your body to help keep your balance. Don't move your feet. Hold this position until I say "stop."

For each stage, say "Ready, begin" and begin timing. After 10 seconds, say "Stop."

See back page for detailed patient instructions and illustrations of the four positions.

For relevant articles, go to: www.cdc.gov/injury



Patient: _____ Date: _____ Time: _____ AM/PM

The Timed Up and Go (TUG) Test

Purpose: To assess mobility.

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters or 10 feet away on the floor.

Instructions to the patient:

When I say "Go," I want you to:

1. Stand up from the chair
2. Walk to the line on the floor at your normal pace
3. Turn
4. Walk back to the chair at your normal pace
5. Sit down again

On the word "Go" begin timing.

Stop timing after patient has sat back down and record.

Time: _____ seconds

An older adult age <80 who takes >12 seconds or age 80+ who takes >15 seconds to complete the TUG is at high risk for falling.

Observe the patient's postural stability, gait, stride length, and sway.

Circle all that apply: Slow tentative pace ■ Loss of balance ■ Short strides ■ Little or no arm swing ■ Steady self on walls ■ Shuffling ■ En bloc turning ■ Not using assistive device properly

Notes: _____

For relevant articles, go to: www.cdc.gov/injury/STEADI



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STEADI



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STEADI *Staying Elderly Active, Durable & Independent*

Talking with Patients Based on Stages of Change

Talking about Fall Prevention with Your Patients



Many fall prevention strategies call for patients to change their behaviors by:

- Attending a fall prevention program
- Doing prescribed exercises at home
- Changing their home environment

We know that behavior change is difficult. Traditional advice and patient education often does not work.

The Stages of Change model is used to assess an individual's readiness to act on a new, healthier behavior. Research on the change process depicts patients as always being in one of the five "stages" of change.

Behavior change is seen as a dynamic process involving both cognition and behavior, that moves a patient from being uninterested, unaware or unwilling to make a change (precontemplation); to considering a change (contemplation); to deciding and preparing to make a change (preparation); to changing behavior in the short term (action); and to continuing the new behavior for at least 6 months (maintenance).

The Stages of Change model has been validated and applied to a variety of behaviors including:

- Exercise behavior
- Contraceptive use
- Smoking cessation
- Dietary behavior

Stages of Change model	
Stage of change	Patient cognition and behavior
Precontemplation	Does not think about change, is resigned or fatalistic Does not believe in or downplays personal susceptibility
Contemplation	Weighs benefits vs. costs of proposed behavior change
Preparation	Experiments with small changes
Action	Takes definitive action to change
Maintenance	Maintains new behavior over time

From: Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am J Health Promot* 1997;12(1):38-48.

When talking with a patient, applying the Stages of Change model can help you match your advice about fall prevention to your patient's stage of readiness.

The following sections give examples of patient-provider exchanges for each of the first four stages and offer possible responses to help move the patient from one stage to another. The maintenance stage is not included because older adults are most often in the early stages of behavior change for fall prevention.

Examples of Conversations about Fall Prevention

Precontemplation stage	Patient says:	Provider says:
<p>The patient doesn't view him or herself as being at risk of falling.</p> <p>Goal: The patient will begin thinking about change.</p> <p>To move the patient to the contemplation stage, provide information and explain the reasons for making changes.</p>	Falls just happen when you get old.	It's true that falling is very common. About a third of all seniors fall each year.
	Falling is just a matter of bad luck.	As we age, falls are more likely for many reasons, including changes in our balance and how we walk.
	I just slipped. That could have happened to anybody.	Taking steps to prevent yourself from falling sooner rather than later can help you stay independent.
	My 92 year old mother is the one I'm worried about, not myself.	Being careful is always a good idea but it's usually not enough to keep you from falling. There are many things that you can do to reduce your risk of falling.
	It was an accident. It won't happen again because I'm being more careful.	Maybe you'd enjoy taking a balance class instead.
I took a Tai Chi class but it was too hard to remember the forms.		



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Fall Risk Checklist

Patient: _____ Date: _____ Time: _____ AM/PM

Fall Risk Factor Identified	Factor Present?	Notes
Falls History		
Any falls in past year?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Worries about falling or feels unsteady when standing or walking?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Medical Conditions		
Problems with heart rate and/or rhythm	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Cognitive impairment	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Incontinence	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Depression	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Foot problems	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Other medical conditions (Specify)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Medications		
Any psychoactive medications, medications with anticholinergic side effects, and/or sedating OTCs? (e.g., Benadryl, Tylenol PM)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Gait, Balance & Strength		
Timed Up and Go (TUG) Test >14 seconds	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4-Stage Balance Test Full tandem stance <10 seconds	<input type="checkbox"/> Yes <input type="checkbox"/> No	
30-Second Chair Stand Test Below average score (See table on back)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Vision		
Acuity <20/40 OR no eye exam in >1 year	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Postural Hypotension		
A decrease in systolic BP \geq 20 mm Hg or a diastolic bp of \geq 10 mm Hg or lightheadedness or dizziness from lying to standing?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Other Risk Factors (Specify)		
	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Patient's fall risk factors at a glance



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STEADI Stopping Elderly
Accidents, Deaths & Injuries

Tri-fold Pocket Guide



Preventing Falls in Older Patients Pocket Guide

Key Facts about Falls:

- 1/3 of older adults (age 65 plus) fall each year.
- Many patients who have fallen do not talk about it.
- Falls cause >19,000 deaths & cost >\$22 billion.

RITUAL:

Review self-assessment brochure

Identify risk factors

Test gait & balance

Undertake multifactorial assessment

Apply interventions

Later, follow-up

STEADI Stopping Elderly Accidents, Deaths & Injuries

Steps for Fall Prevention

Proactive—ask all patients 65+ if they've fallen in the past year.

Identify & address fall risk factors:

- Over body weakness
- Gait and balance problems
- Polypharmacy (multiple medications)
- Postural dizziness
- Poor vision

Address problems with feet and/or shoes

Enhance home safety

Referrals as needed to specialists or community resources.

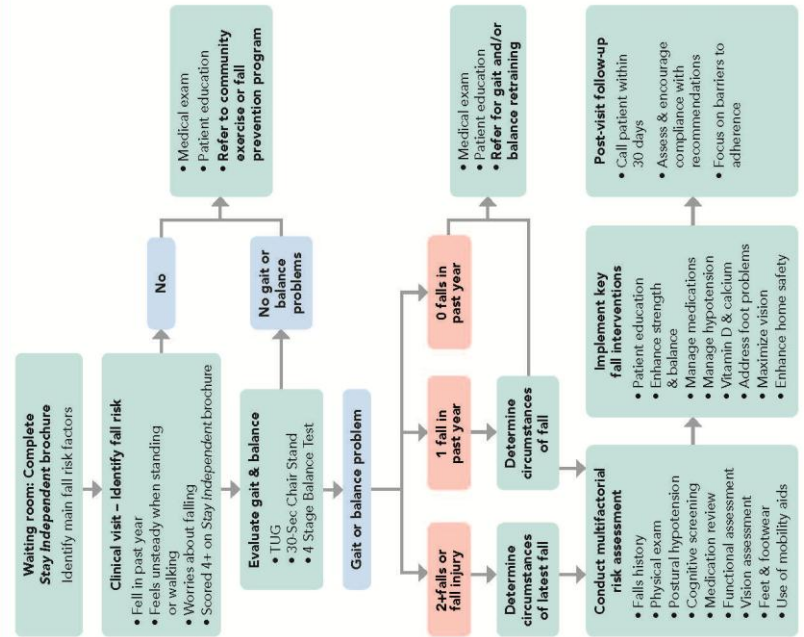
Follow-up with patient within 30 days.

Key Interventions

- Patient education
- Exercise strength & balance
- Review medications
- Manage hypotension
- Supplement vitamin D & calcium

- Address foot problems
- Maximize vision
- Enhance home safety

Overview of Falls Risk Assessment & Interventions



Referral Forms

Specialists

Fall Prevention Patient Referral Form

Healthcare Provider Organization
Street
City, State, Zip

Patient:	Referred to:
Sex: DOB:	
Address:	Address:
Phone:	Phone:
Email:	Email:
Diagnosis:	
Type of Referral	
Type of specialist (See back of form):	
Exercise or fall prevention program (See nurse for options):	
Reason for Referral	
Gait or mobility problems	Medication review & consultation
Balance difficulties	Inadequate or improper footwear
Lower body weakness	Foot abnormalities
Postural hypotension	Vision <20/40 in R L Both
Suspected neurological condition (e.g., Parkinson's disease, dementia)	Home safety evaluation
Other reason:	
Other relevant information:	
Referrer signature:	Date:



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Fall Prevention Programs

Recommended Fall Prevention Programs

Healthcare Provider Organization
Street
City, State, Zip

Programs	Location	Day & Time	Cost

Notes:

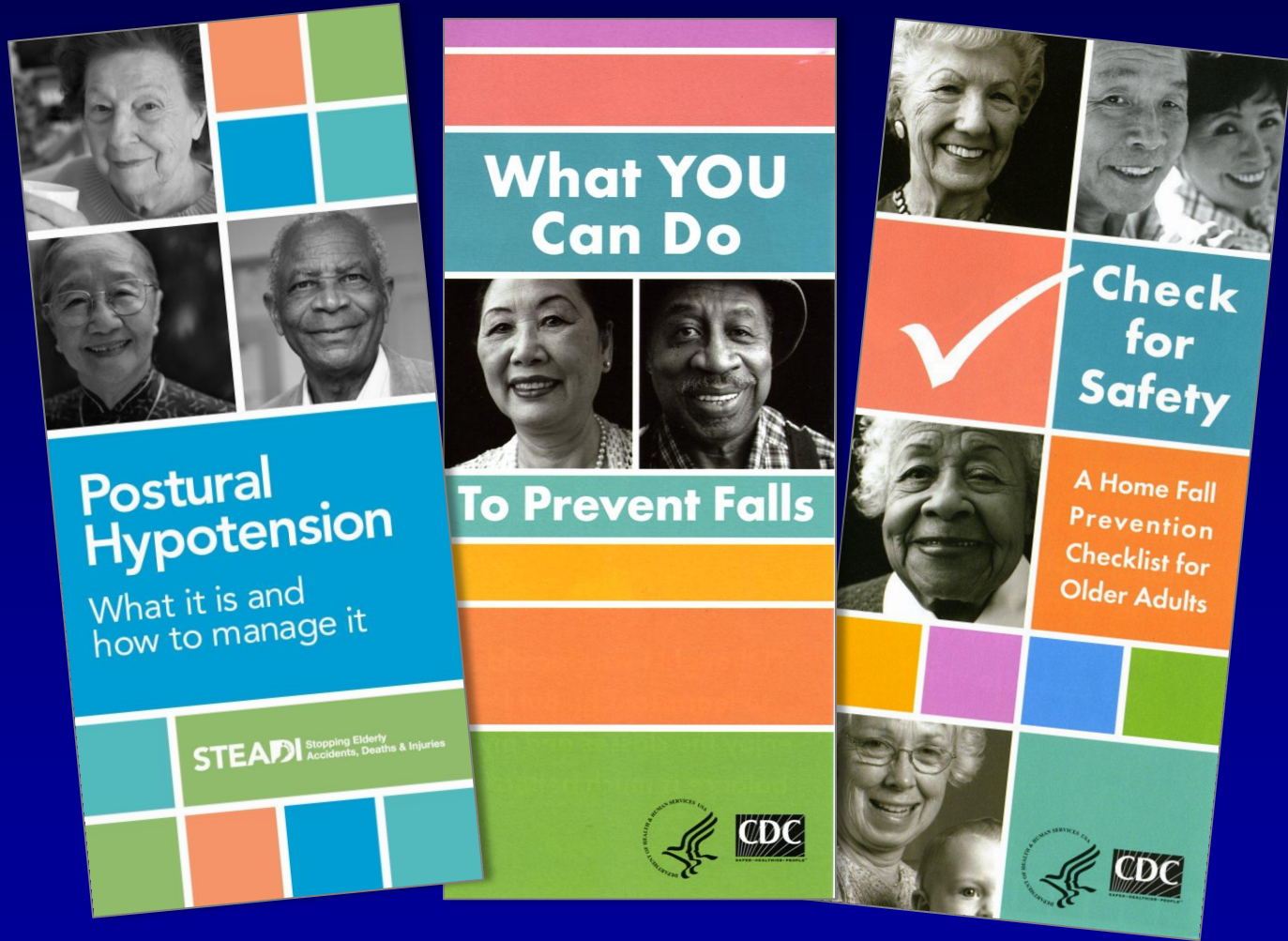
Research shows that to reduce falls, exercises MUST focus on improving balance and strength, be progressive (get more challenging over time) and be practiced for at least 50 hours. This means, for example, taking a 1-hour class 3 times a week for 4 months, or a 1-hour class 2 times a week for 6 months.

The National Institute on Aging has created an exercise guide for healthy older adults to use at home. You can order this free book by going to:
www.nia.nih.gov/HealthInformation/Publications/ExerciseGuide.



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Patient Education Materials



More Information

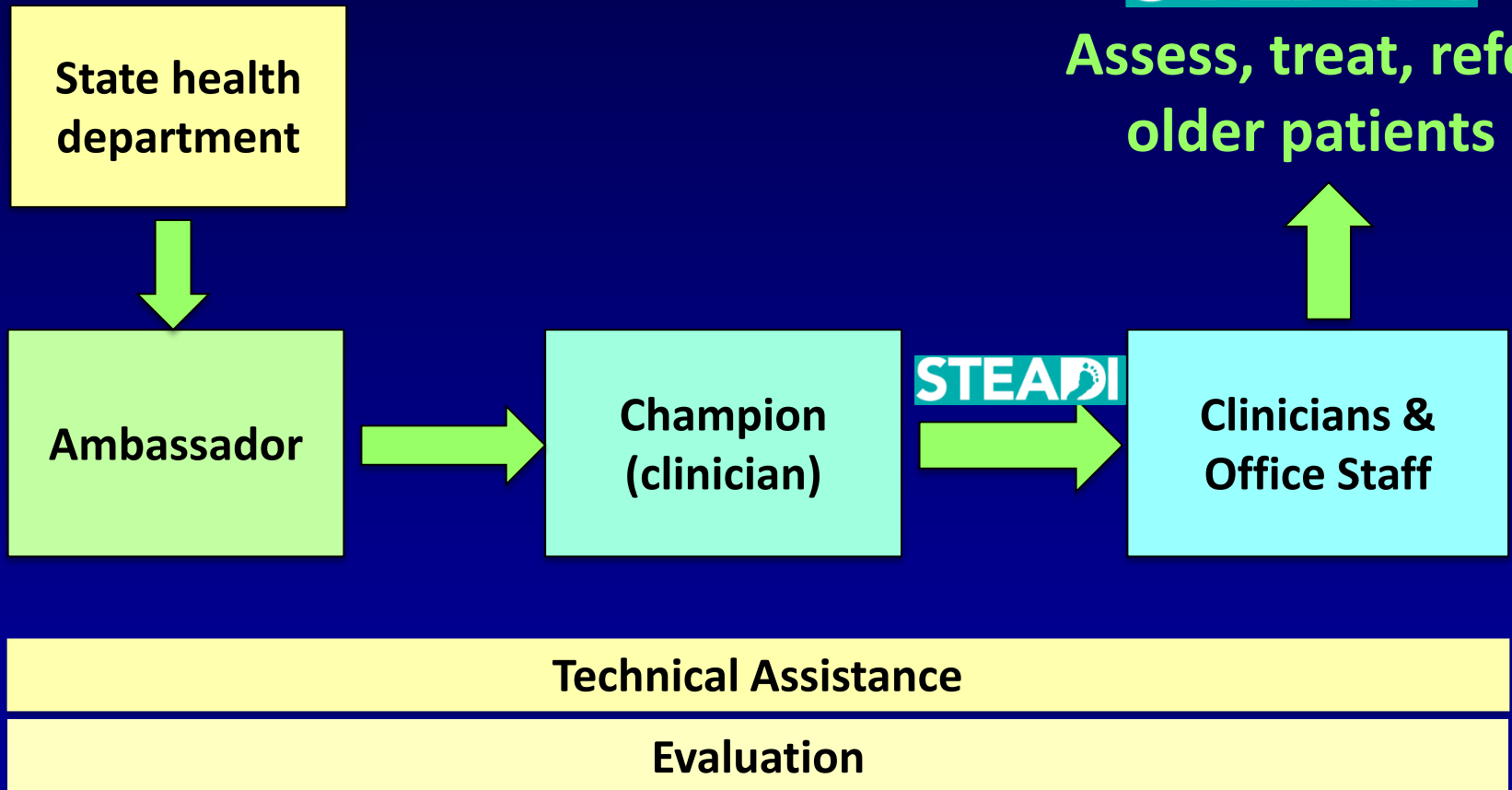
All STEADI tool kit materials are available to view, download & print at:

www.cdc.gov/injury/STEADI

Pilot Implementation Process

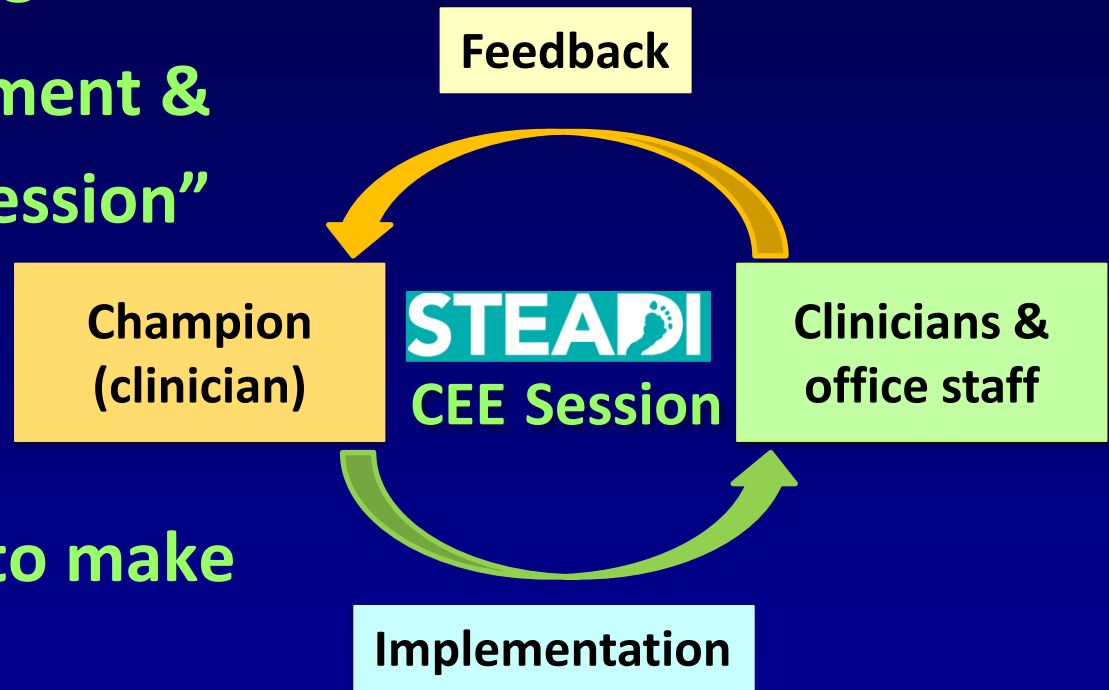


Assess, treat, refer
older patients



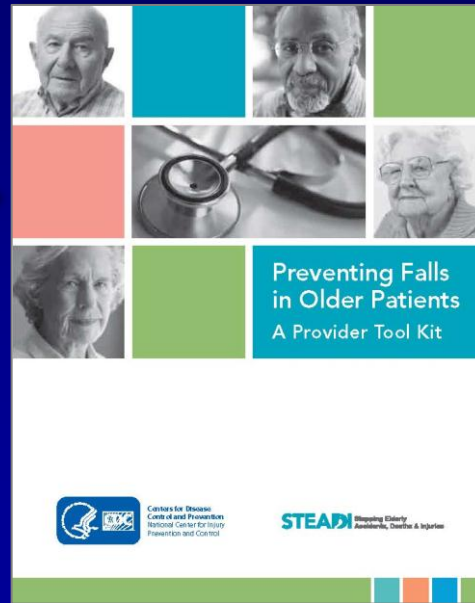
Key Features of Implementation

- Academic detailing
“Clinician Engagement & Education (CEE) Session”
- Engages practice to make changes
- Evaluate process at baseline & follow-up



Use **STEADI** to Link Clinical Practice with Community Programs

Change
clinical practice



Community fall
prevention or
exercise programs

Next Steps

- **Assess changes in clinical practice**
- **Evaluate connections with community programs**
- **Measure effectiveness of this integrated approach to reduce fall injuries at the county level**



Thank You!

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Disclaimer: The findings and conclusions in this presentation are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention