

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Tinetti ME, Baker DI, King M, et al. Effect of dissemination of evidence in reducing injuries from falls. *N Engl J Med* 2008;359:252-61.

APPENDIX for “*Effect of translating evidence into practice on rate of serious fall injuries*”

In this appendix, we provide additional information on the methods and materials used during the seven year Connecticut Collaboration for Fall Prevention project. If you have further questions, contact the corresponding author, Mary Tinetti M.D. (mary.tinetti@yale.edu).

The appendix includes the following sections:

1. Previous publications from Connecticut Collaboration for Fall Prevention
2. Additional information on the CCFP intervention
3. Examples of materials developed and disseminated (a sample of materials are included in this appendix). Additional materials are available as described in the project website (fallprevention.org).
4. Monthly newsletters (two examples are provided)

Section 1: Previous publications describing the methods and qualitative results of the Connecticut Collaboration for Fall Prevention.

These publications describe various aspects of the project. A link to each article is provided below the citation.

- Fortinsky R, Iannuzzi–Sucich M, Baker DI, Gottschalk M, King M, Brown CJ, Tinetti ME. Fall risk assessment and management in clinical practice: Views from health care providers. *Journal of the American Geriatrics Society* 52: 1522-1526, 2004.
 - In this article, we describe 33 clinicians' (ED physicians, hospital-based discharge planners or care coordinators, home health agency nurses, and office-based primary care physicians) self-reported adoption of evidence-based fall risk factor assessment and management after exposure to the CCFP intervention. We also present clinician-reported barriers encountered when these clinicians intervene with, or refer, older patients with identified fall-risk factors. Physicians were most likely to report referring older patients for gait and transfer impairments (85%) and balance disturbances (82%). Their lowest self-reported rates of direct intervention or referral were for foot or footwear problems (20%). Patient compliance was the most commonly reported barrier to successful direct intervention across several risk factors, whereas inadequate availability of other healthcare providers and lack of Medicare reimbursement were the most commonly reported barriers to successful patient referrals.

(link)

- Baker DI, King MB, Fortinsky R, Gottschalk, M, Graff LG, Acampora D, Brown CJ, Tinetti ME. Dissemination of an Evidence-based Multi-component Fall Risk Assessment and Management Strategy throughout a Geographic Area. *Journal of the American Geriatrics Society* 53: 675-680, 2005.
 - In this paper, we present the practice change strategies used in the project to increase the public's and the health care community's awareness of fall prevention and to encourage clinicians to incorporate evidence-based fall assessment and management into their practices. We list the fall risk assessments and interventions we encouraged the clinician groups (primary care, home care, outpatient rehabilitation) to adopt. We also describe the penetration of, and identified barriers to and facilitators for, efforts to incorporate evidence-based fall risk assessment and management into clinical practice throughout the intervention area.

(link)

- Brown CJ, Gottschalk M, VanNess P, Fortinsky R, Tinetti ME. Change in physical therapy providers' use of fall prevention strategies following a multi-component behavioral change intervention. *Physical Therapy* 85:394-403, 2005.

- This article describes the self-reported adoption of specific fall risk factor assessments and interventions among the physical and occupational therapists at the 130 participating outpatient rehabilitation facilities.

(link)

- Chou W, Fortinsky R, King M, Tinetti ME. Perceptions of physicians on the barriers and facilitators to integrating fall risk assessment and management into practice *Journal of General Internal Medicine* 21:117-122, 2006.

- This article describes semi-structured interviews with 18 primary care clinicians who had received at least one outreach visit by a CCFP physician. In this article, we present the barriers and facilitators to the implementation of fall risk management as reported by the primary care clinicians. Self-reported factors affecting willingness and ability to incorporating fall risk assessment and management into their practices included: awareness of falls as a health problem and availability of effective preventive strategies; competing risks; appropriateness of referrals to home care and rehabilitation; exposure to geriatrics during medical training; and tie into familiar activities. Logistical factors include availability of transportation, time requirements of immobile patients, reimbursement, scheduling, family involvement, and utilization of other health care providers.

(link)

- Baker DI, Gottschalk M, Bianco LM. Step by step: integrating evidence-based fall-risk management into senior centers. *Gerontologist* 47:548-54, 2007.

- This article presents the challenges encountered in attempting to embed fall prevention in the 41 senior centers in the CCFP intervention area, and discusses the strategies used to overcome these challenges. Senior centers were incorporated into the project in order to reach a large number of older adults to encourage them to adopt fall preventive behaviors and to encourage them to request fall risk assessment and management from their clinicians. Research on practice change has consistently shown that clinicians are more apt to adopt new practices if requested by their patients.

(link)

- Fortinsky RH, Baker DI, Gottschalk M, King M, Trella MA, Tinetti ME. Fall Risk Assessment and Management of Older Home Health Care Patients: Extent of Implementation of Evidence-Based Practices. *Journal of the American Geriatrics Society* 56:737-43, 2008.

- This article describes the self-reported adoption of specific fall risk factor assessments and interventions among the professional staff at the 26 participating home care agencies.

(link)

- Murphy TE, Allore HG, McKay LA, Tinetti ME. Use of hierarchical models to determine effectiveness in efforts to translate evidence into practice: Connecticut Collaboration for Fall Prevention. Contemporary Clinical Trials (in press).
 - This article describes the hierarchical models and geographic information systems used in the design and analysis of this project.

(link)

Section 2: Additional information on the CCFP intervention

- **Developmental tasks in CCFP prior to outreach efforts:**
 - **Form working groups**, comprised of interested representatives from the relevant clinician groups. These groups served as the primary forum for planning, implementation, and feedback. The decision to constitute working groups as a primary mechanism of decision-making and implementation was made for several reasons. First, individuals are more likely to adopt new strategies if they are part of the process of development. Second, providers in the intervention area are the individuals most familiar with local resources, expertise, barriers, and facilitators. Third, the magnitude of the tasks necessary to implement this fall risk assessment and management project are well beyond what could be accomplished by the core group alone.
 -
 - **Adapt and simplify Yale FICSIT protocols**: The multi-component assessment and management strategy was based on the NIA- funded Yale FICSIT protocols. These protocols were simplified by the core and working groups to increase the likelihood of adoption.
 - **Develop materials for providers: Work books** describe strategies for assessing and managing each risk factor and include patient handouts for balance exercises, footwear, safe walking, and safe medication use. Several thousand were eventually distributed have been distributed. **1-page assessment and management forms** were developed for outpatient rehabilitation, home care, and primary care providers, the 3 groups responsible for carrying out most fall risk management for community living elderly persons. These forms were also posted on the CCFP website (www.fallprevention.org). These materials are discussed in **Section 3** of the webonly appendix.
 - **Enhance referral patterns**: Fall risk assessment and management spans disciplines that may not be accustomed to referring to each other. Enhancing referral patterns was necessary to coordinate providers throughout the community. New or enhanced referral patterns established for this project, in accordance with Medicare regulations, include: 1) ED to home care, primary care provider, and/or outpatient rehabilitation; 2) hospital to home care, outpatient rehabilitation, and primary care provider; 3) home care to outpatient rehabilitation; 4) home care and outpatient rehabilitation to primary care provider for attention to medications and postural hypotension; and 5) primary care provider to home care or outpatient rehabilitation.
 - **Address reimbursement issues**: The core group met with relevant health policy groups (e.g. Medicare peer review organization, CMS, Medicare intermediaries and carriers) prior to, and during, implementation of the project. Based on these discussions, the core group, in collaboration with the working groups, identified the Medicare and or Medicaid payment and coverage policies relevant to fall risk factor assessment and management for health care providers in each of the targeted provider groups and settings. We worked with the medical carrier to identify reimbursable services with the appropriate diagnostic and procedure codes for primary care providers and

outpatient rehabilitation providers for the assessment and management services. The recommended codes were shared with the providers during outreach visits.

- **Enhance awareness of falls:** Enhancing awareness of the frequency, morbidity, and preventability of falls was a necessary initial step in persuading elderly persons and providers to adopt fall risk assessment and management. The multi-pronged approach used to heighten awareness include: 1) Media attention (e.g. TV, newspapers, radio, billboards) orchestrated through a public relations agency and provider groups; 2) Brochures and posters distributed throughout the intervention area; 3) Letters to providers from key organizations (e.g. county medical association); 4) Website (www.fallprevention.org); 5) Message on phone machines of participating providers; and 6) Continuing education (e.g. in-services, CME courses, grand rounds). Efforts to enhance awareness of falls continued as the project moved to direct outreach efforts.
 - **Identify activities for each targeted provider group in the intervention area** (see **Table**): Persons at risk for falling live, congregate, and receive care at many sites. To increase the chance that persons at risk will be exposed to risk factor assessment and management, we introduced assessment, referral, and management in as many relevant sites as possible. Based on expertise and resources likely to be available, the core and working groups determined fall-related practices and activities that are appropriate for each category of provider.
- **Groups targeted for CCFP and fall-related clinical activities encouraged**
 - **Primary groups:** The list of clinicians primarily targeted for this project is listed here, along with the specific fall-related practices recommended. These clinician groups were selected because they serve the largest number of at risk community elderly persons and/or are most likely to incorporate fall risk assessment, referral, or management into their practices. By focusing the bulk of our outreach efforts on these primary target groups, the vast majority of at risk community elders in the geographic area encountered CCFP efforts.

Targeted Clinicians with Designated Fall Risk Factor Assessment and Management Practices

Clinician/Facility Group †	Assess/Refer †	Risk Factor Management					
		Gait/balance	Medication adjustment	Postural hypotension	Vision/hearing	Feet	Environ. hazards
Emergency Departments	X						
Acute hospitals	X		X	X			
Outpatient rehabilitation	X	X				X	X
Home care agencies	X	X	X	X			X
Primary care	X	X	X	X	X	X	

† Clinicians either recommend to “at risk” older persons that they seek risk factor management through the appropriate providers or refer older persons to the appropriate providers.

- **Secondary groups:** Active CCFP outreach efforts were targeted at the primary group. We did, however, provide outreach and materials to other relevant groups when requested or encountered during outreach to the primary groups. Examples include specialty physicians (e.g. orthopedists, ophthalmologists, radiologists), podiatrists, subacute facilities, wellness centers, Meals on Wheels, and emergency medical services (EMS).
- **Strategies for Encouraging Fall Risk Assessment and Management Practices**

As has been well documented, behavioral change at the organizational or professional level is difficult to attain. Increasing knowledge and awareness is necessary but not sufficient. The literature suggests that multiple, simultaneous strategies are more effective than any individual strategy. Strategies used in CCFP to enhance adoption of fall risk assessment and management included:

- **Social marketing** (e.g. establishing credibility by addressing specific care issues, providing concise educational material, repeating key messages, and providing reinforcement through ongoing interactions);
- Obtaining "**organizational buy in**" from organizational leaders who then encouraged their members;
- Ensuring **local participation** in every stage of planning and implementation;
- Enlisting local **opinion leaders**;
- Focusing initial efforts on "**early adopters**" and making these **early adopters activities visible**;
- Identifying and disseminating **incentives**;
- Identifying and addressing **facilitators** and **barriers**;
- Activating older persons through **patient-mediated efforts/patient activation**;
- **Outreach visits** (also known as detailing); involved one-on-one contact between providers and the core/working group in providers' practice settings. While time and personnel intensive, this was a highly effective strategy. During **outreach visits**, which were made to all willing targeted providers, the core and working group members: 1) provided a rationale for why fall risk assessment and management should be incorporated into care of elderly persons; 2) articulated expected provider-specific activities; 3) disseminated information on incentives and methods for addressing barriers; 4) tied risk assessment and management to already performed activities; and 5) provided simple point of care fall risk assessment and management materials and discussed how they can be adapted to provider style, resources, and expertise. Office and professional staff were included in these outreach visits.

- **Repeated contacts** were necessary to facilitate adoption of new practice behaviors; each provider was contacted multiple times.
- **Retreats.** From 15-30 practicing clinicians within a specific category of provider (e.g. home care, outpatient rehabilitation, primary care) from throughout the intervention area came together to discuss progress, share successes and challenges, and suggest additional methods for encouraging the adoption of fall risk assessment and management within their discipline.

Section 3: Examples of materials developed and disseminated during the project

To facilitate the incorporation of fall risk factor assessment and management into practice, a suite of materials were developed for practicing clinicians (e.g. physicians, nurses, physical and occupational therapists) and for older adults themselves. These materials are meant to be used in the context of health care and were not intended for older adults to use on their own.

. Information for acquiring all the CCFP materials is available at the website (fallprevention.org). Here we provide a description of each item. In addition, examples of some of the materials are provided. The items included on this webappendix are noted in the description.

Materials for Clinicians

- **Workbook:**

The workbook was provided to clinicians during the outreach visits. It includes a summary of proven risk factors for falls and suggested interventions followed by checklists/worksheets to help clinicians focus their assessment and treatment. Because medications are so prevalent in the treatment of older adults, and often put them at increased risk for falls, we have included a detailed strategy for safe and effective medication use. There are also a number of information sheets for patients that can be used to educate older adults and family members about falls and the health problems. In addition are competency-based, progressive balance exercises that were developed for the National Institute on Aging funded Yale School of Medicine FICSIT clinical trial and found to be associated with fall reduction and improved balance.

Items in the workbook include:

- **Recognizing the Problem: A summary of Proven risk factors and suggested interventions (included in this appendix)**

This item lists the health conditions/risk factors for falls targeted in the CCFP. These factors/conditions have been identified in observational studies as increasing the risk of falling. Simple tests for screening and assessment of each risk factor/condition are provided. For each risk factor, interventions are listed that have been shown in the Yale FICSIT study, or other fall prevention trials, to decrease the risk factor and the risk of falling.

- **Fall Risk Assessment/Treatment Checklist for Primary Care Clinicians**
- **Fall Risk Assessment/Treatment Worksheet for Home Care Clinicians**
- **Fall Risk Assessment/Treatment Worksheet for Physical and Occupational Therapists**

These Assessment/Treatment Worksheets-Checklists present the known risk factors for falls and evidence-based treatment for each risk factor in a one-page format for ease of use in clinical practice.

- **Medication Reduction Strategy for Older Patients with Multiple Health Conditions: Safe and Effective Medication Decision-Making (included in this appendix)**

The Medication Reduction Strategy presents: 1) the rationale supporting the need for medication review and reduction in older patients with multiple health conditions receiving multiple medications; 2), the principles of safe prescribing for older adults; and 3) practical steps that can be followed to reduce the likelihood of adverse medication effects such as falling.

Materials that can be given to patients

(these items are meant to be given to older adults as part of their clinical care. They are not meant as stand alone materials for older adults)

- **Self- Checklist for Adults 70+ Years** (included in this appendix)

This one-page checklist helps the older adult learn about their own fall risk factors and about what they can do about the risk factors to decrease their chance of falling.

- **Brochures**

Trifold – *Tailored to older adults, this brochure contains very general information on falls. These are useful for waiting rooms at health care offices, senior centers, etc.*

Passbook – *This booklet is the size of a bank passbook. It contains the list of fall risk factors with recommended interventions, and is given to and reviewed with the older adult by a clinician. The passbooks, which include the risk factors linked with the recommended interventions, were developed to: 1) convey information among care providers given the lack of coordination; 2) help activate elderly persons request fall assessment and management from their care providers; and 3) lessen the time burden on care providers by focusing on who needs which components. Passbooks are distributed to providers throughout the intervention area who, in turn, are encouraged to guide elderly persons through the risk factors with specific suggestions on how to reduce each risk factor, including both patient behaviors and recommendations for treatments by health care providers.*

Individuals are encouraged to carry this personalized passbook to visits with their various health care providers; over 60,000 have been distributed.

Heads Up – *This brochure with pictures describes the common problem of postural hypotension, how to check for it, and how to treat it if found. This brochure describes the common problem of postural hypotension (blood pressure that drops too much when the person stands up) – what it is and why people should be concerned about it. The brochure tells how to be checked for postural hypotension and how it can be treated.*

Don't Let Your Medications Trip You Up – This brochure outlines steps to avoid possible adverse effects of medications and gives advice about talking to health care providers about medications.

- **1-2 page handouts for patients:**
 - **Postural Hypotension: The “Other Blood Pressure”** – *similar to the “Heads Up” brochure, but in a 1-page downloadable format without pictures*
 - **What You Can Do to Help Avoid Bad Effects of Medications** – *similar to the “Don't Let Your Medications Trip You Up” brochure, but in a 1-page downloadable format. Outlines steps to avoid possible bad effects of medications, such as a fall, and gives advice to older adults on talking to their clinicians about medications.*
 - **Getting Up From the Floor** – *pictures showing a safe and effective way to get up from the floor after a fall*
 - **Safe foot wear** *This page gives tips on selecting shoes that make it easier to maintain good balance and to walk safely and comfortably.*
- **Medication Record** *This page can be used by older adults to list all medications and times they are taken. It is large, so that it is easy to see. Older adults are advised to take a medication list to every provider at each visit and to keep it up to date.*
- **Balance Exercises Levels I-V (Level 1 is included in this appendix)**

These balance exercises, demonstrated in the Yale FICSIT study to improve balance and decrease risk for falls, are for older adults to do at home. The clinician, usually a physical or occupational therapist, should review the exercises with the older adult, and advance to the next level of difficulty when the previous level has been mastered. These home-based exercises are best used as a complement to home or outpatient balance and gait training by a physical or occupational therapist.

- **Home Safety Checklist**

The Home Safety checklist, intended for use by the older adult and/or her family, addresses aspects of each room in the house or apartment that may present a safety hazard, and lists recommendations to remove or correct hazards that are found.

Preventing Falls Among Older Adults

Falls are a common problem among older adults, often resulting in pain and disability. Fortunately, there are proven treatments that can decrease the chance of falling or suffering an injury. The information provided in this Supplementary Appendix was developed by researchers and clinicians involved in much of the original research that showed how frequent falls and injuries are among older adults. That research also showed that this frequency can be lowered by identifying and treating risk factors that lead to falls. The materials presented here were developed as part of a project known as the Connecticut Collaboration for Fall Prevention based at Yale University School of Medicine where clinicians in the greater Hartford, Connecticut area were encouraged to incorporate fall risk assessment and treatment into their care of older adults. The information and materials tested in that project are now available to clinicians everywhere in an effort to decrease the serious consequences of falls and fall injuries.

For more information, visit the website at www.fallprevention.org

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Disclaimer

The Connecticut Collaboration for Fall Prevention materials and tools are supplied to health care providers and older adults for use as a guide to implementing fall risk assessment and management strategies known to be effective in reducing falls. These materials do not replace the individualized, personal instruction that is necessary to ensure the effectiveness of the program and or safety of individuals. General guidance is provided, but does not address situations or medical conditions that may contraindicate certain recommendations. The Connecticut Collaboration for Fall Prevention assumes no responsibility for any injury or damage resulting from the use of these materials and information.

This material was created by the Connecticut Collaboration for Fall Prevention and graciously funded by the Patrick and Catherine Weldon Donaghue Medical Research Foundation.

Recognizing The Problem: A Summary of Proven Risk Factors for Falls and Suggested Interventions

Listed below are major risk factors and suggested interventions for reducing the risk of falls.

RISK



SUGGESTED INTERVENTION

IMPAIRMENTS IN MOBILITY

Gait: (observed on smooth and carpeted floors)

- uneven steps, shuffling feet and/or short step length
- momentary loss of control
- steadies by holding onto walls or furniture
- unsafe use of assistive device, or device in poor repair
- physical therapy evaluation and treatment to improve strength, balance, and gait, and recommendation of an appropriate assistive device
- reduce medications that impair gait
- regular inspection to keep walkers, canes, etc. in good repair

Transfers:

- difficulty moving from sitting to standing and reverse
- observe for “drop sitting” and/or landing too close to furniture edge
- requires momentum (more than two attempts) or human help to move from sitting to standing
- trunk posture off-center or to the side, front or back
- physical therapy intervention to improve strength, balance, and transfers
- environmental modifications to compensate for disability, such as obtaining chairs with firm cushions and arms, raising the height of seating or installing grab bars



DISTURBANCES OF STANDING BALANCE

- leans off center, side, front, or back
- loses balance when attempting to stand with feet together, on single leg or tiptoes, bending down or reaching up
- reduce or eliminate medications that affect balance
- check for postural hypotension
- physical therapy evaluation and progressive balance exercises
- environmental modifications to ensure daily routines do not require stooping or reaching overhead

RISK



SUGGESTED INTERVENTION

MULTIPLE MEDICATIONS

- taking four or more medications, including over-the-counter preparations
- use of sleeping pills for more than two weeks
- taking high-risk medications (e.g., antidepressants, anti-hypertensives, medications with anticholinergic activity)

Professionals:

- medication review: taper to lowest effective dose or discontinue; consider continued need for all medications before adding a new medication; change to drugs with intended action that are the least hazardous for older people
- teach patients signs and symptoms to monitor and when to report
- prescribe nonpharmacological treatments, such as exercise, for many chronic conditions and symptoms

Older patients/clients:

- get all prescriptions at one pharmacy to facilitate review
- carry an up-to-date list with the name and dose of every medication
- do not add over-the-counter medications without professional review



POSTURAL HYPOTENSION/DIZZINESS

- check blood pressure after five minutes supine, immediately after standing, and standing two minutes later (positive test if the person is symptomatic or systolic pressure drops 20 mm Hg)
- review medications and reduce those that may cause postural hypotension
- teach to change positions slowly and not to attempt walking while dizzy
- ensure adequate hydration particularly during febrile or gastrointestinal illnesses and hot weather



PERCEPTIVE/SENSORY DEFICITS

Vision:

- decreased depth perception, cataracts and slow adjustment

- test acuity and correct to extent possible
- ample but non-glaring light
- allow time for eyes to accommodate to changing levels of light
- do not walk while wearing reading glasses

Hearing:

- loss of acuity

- remove cerumen and retest
- recommend compensation with hearing aid and use of visual cues

Feet:

- decreased position sense

- use visual cues regarding appropriate foot placement, especially on stairs, curbs and uneven surfaces
- use supportive footwear with thin, firm soles

PERCEPTIVE/SENSORY DEFICITS (CONTINUED)**Decreased cognitive function, acute or chronic:**

- history or clinical evidence of disorientation or memory problems (score of 0-1 on three-item recall)
- medication review and adjustment
- simplify routines and medication regimen
- remove environmental hazards
- teach caregivers to anticipate and minimize risks

**PROBLEMS WITH FEET AND FOOTWEAR****Feet:**

- ulcers, bunions, hammertoes, calluses or nails that cause pain or gait disturbances
- regular foot care
- podiatry referral
- footwear to accommodate fixed foot deformities

Footwear:

- decreases circulation, sensation or stability
- recommend cotton socks and leather shoes that “breathe”
- tip should extend one inch beyond great toe and width to accept metatarsal heads without pressure areas
- arch support and conformed to enclose heel
- heel height less than 1.5 inches
- sole that is at least as wide as sole of foot, non-slippery and not so thick as to decrease sensory input or create trip hazard
- no marks should be apparent on skin after socks and shoes are removed

**ENVIRONMENTAL HAZARDS**

- objects that cause slipping or tripping
- remove anything that narrows path or makes walking surfaces uneven, such as cords, area rugs, clutter, or furniture, etc.
- secure toilet seat and raise, if needed
- light insufficient, uneven or glaring
- all walking paths well-lit day and night
- blinds that are easily adjusted to avoid glare
- daily routines requiring leaning off center
- move commonly used objects to avoid reaching overhead or lifting from floor
- stairs
- keep one hand free to use handrail
- install handrails on both sides
- do not obstruct view of feet
- do not carry bulky or heavy items up or down stairs
- climbing
- get help to change ceiling bulbs, curtains, smoke detector batteries, for roof work, etc.

Name _____

Date _____

Fall Risk Checklist For Persons Ages 70+ Years: Please answer all questions and bring this to the next visit with your health provider.

Questions	Y	N	Action (what you should do if YES)
1. Have you fallen in the past year <u>OR</u> do you have trouble getting out of a chair or feel unsteady when you walk?			Ask your health provider to check your: <ul style="list-style-type: none"> ○ Medications ○ Blood pressure lying <u>and</u> standing ○ Balance and walking ○ Refer you to physical therapy
2. Do you take four or more medications, including: <ul style="list-style-type: none"> • Prescriptions • Non-prescription <i>e.g. for sleep or allergies</i> • Herbals 			Bring all non-prescription, prescription and herbal medications to your visit with your health provider. *Ask if any medications can be reduced or stopped.
3. Do you feel dizzy when you get up from a bed or chair?			Ask your health provider to check your: <ul style="list-style-type: none"> ○ Medications ○ Blood pressure lying <u>and</u> standing ○ Balance and walking
4. Do you have any vision problems (like reading, driving)?			See your eye doctor if you have not within the last year.
5. Do you have problems with feet (like pain, numbness)?			See your foot doctor if you have not recently. Ask about the best footwear for you.
6. Do you have difficulty getting up from the floor without help?			Review Getting Up Techniques (see back) Ask about obtaining a Personal Emergency Response System. Ask your health provider to refer you to physical therapy.

*** Don't stop prescription drugs without asking your doctor**

For additional information visit: www.fallprevention.org

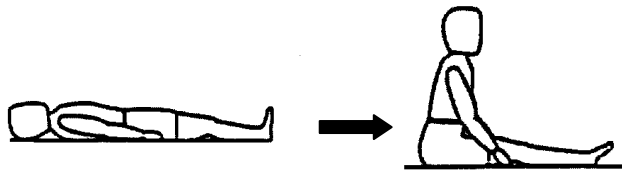
Getting Up From The Floor

(Don't try if you are dizzy, unsteady, or in a lot of pain)

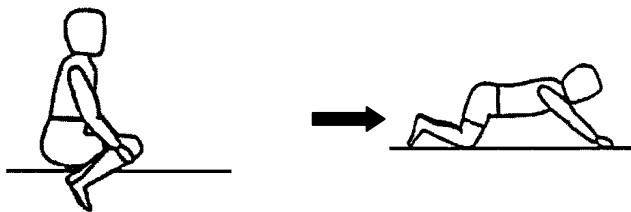
1. Move to a sitting position on the floor.

Take a few moments to regain composure.

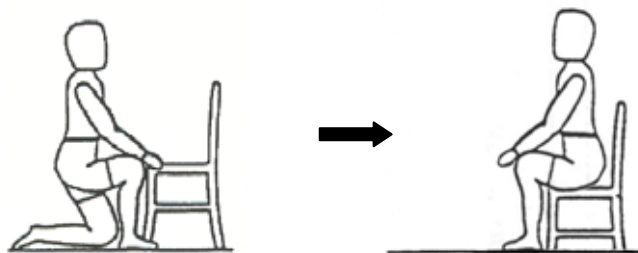
Locate the nearest sturdy chair (best) or other solid piece of furniture.



2. Roll over onto hands and knees. Crawl to the chair.



3. Put your strongest leg under you so that the foot of that leg is on the floor. Push up using your arms on the chair for support.



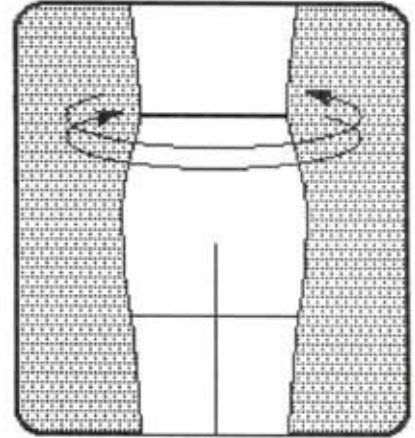
4. Sit until you feel safe to attempt walking.

Level I Balance Exercises

Once a day do the exercises marked by your therapist.

Sink Hip Circle I

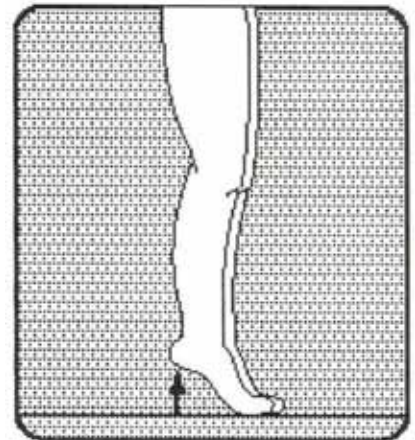
1. Stand facing kitchen sink
2. Hold on with both hands
3. Do not move shoulders or feet
4. Make a big circle to left with hips
5. Repeat 5 times
6. Make a big circle to right with hips
7. Repeat 5 times



(A)

Sink Toe Stand I

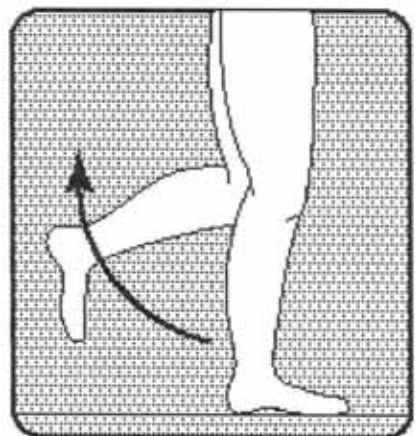
1. Stand facing kitchen sink
2. Hold on with both hands
3. Go up on your toes
4. Hold for count of 5
5. Then come down
6. Repeat 10 times



(B)

One Leg Sink Stand I

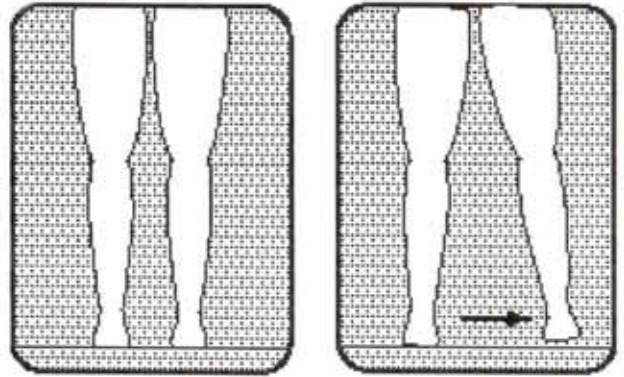
1. Stand facing kitchen sink
2. Hold on with both hands
3. Stand on your left leg for count of 5
4. Stand on your right leg for count of 5
5. Repeat 10 times



(C)

Sink Side Step I

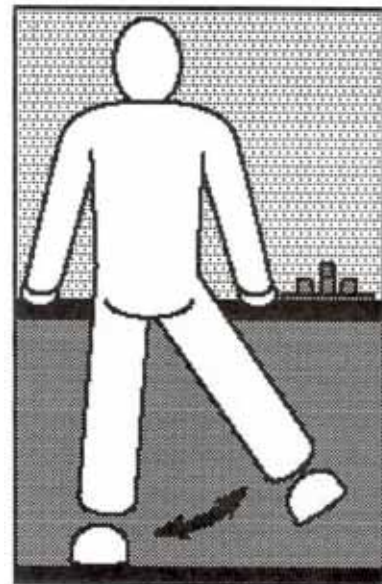
1. Stand facing kitchen sink
2. Hold on with both hands
3. Move hands along kitchen sink as you step left 5 steps
4. Step with both feet to right 5 steps
5. Repeat 5 times



(D)

Two Hand Alternate Leg Out and In I

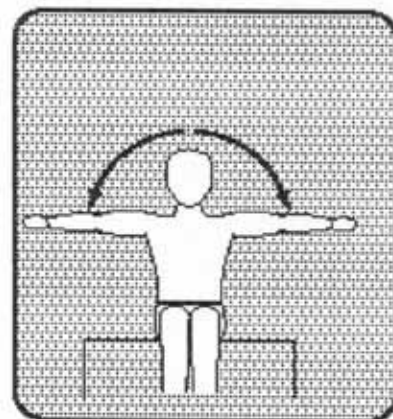
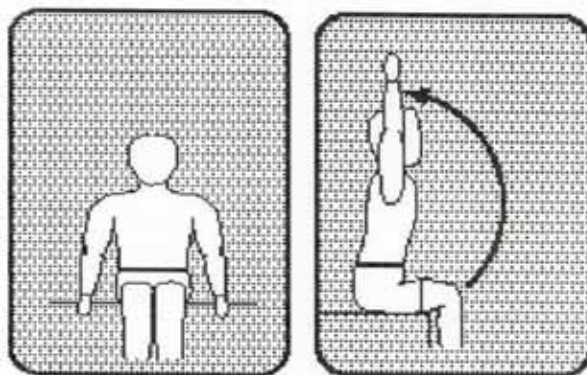
1. Stand facing kitchen sink
2. Hold on with both hands
3. Stand on your left leg and move right leg out to the side and back again
4. Repeat on opposite side
5. Continue to alternate each leg
6. Repeat 10 times



(E)

Sitting Arm Circles I

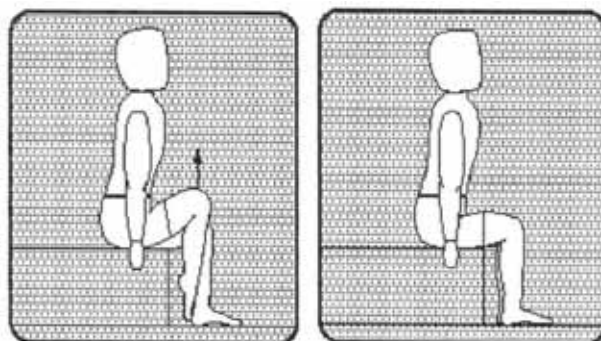
1. Sit up straight on bed or chair
2. If you sit in a chair, do not lean back
3. Arms by your side with palms facing inward
4. Raise both arms up overhead
5. Then arms out to side shoulder level
6. Then arms down
7. Maintain an erect posture during the exercise
8. Repeat 10 times



(F)

Sitting Knee Lifts I

1. Sit up straight on bed or chair
2. If you sit in a chair, do not lean back
3. Arms by your side
4. Lift left knee up towards ceiling
5. Lower left knee
6. Lift right knee up towards ceiling
7. Lower right knee
8. Repeat 10 times



(G)

Medication Reduction Strategy for Older Patients with Multiple Health Conditions: Safe and Effective Medication Decision-Making *

❖ The Clinical Dilemma

- **Increasing number of medications:** Older patients consume increasing numbers of prescription medications, over-the-counter medications, and supplements. The average 75 year old takes five medications; 20% take 10 or more. While medications improve outcomes of diseases and conditions, multiple medications compromise adherence and increase the likelihood of adverse medication effects.
- **Poor medication adherence:** Patients take, on average, only 1/2 of their prescribed medications. The more medications prescribed, the lower the adherence. This finding speaks to carefully considering the need for each medication as it may compromise adherence to other medications.
- **Increased risk of adverse medication effect:** The risk of adverse effect increases 10% with each additional medication, approaching 100% for persons receiving 10 or more medications.
- **The clinical dilemma:** How to balance disease and symptom prevention and management vs. the adverse effects of multiple medications. In the absence of an easy method for determining “net benefit vs. harm of a patient’s total medication regimen”, there are general principles and specific steps that can lessen the likelihood of adverse effects of multiple medications.

❖ Principles of Safe Prescribing for Older Patients:

- **Principle 1:** All medications have beneficial as well as harmful effects. Consider both the benefits and harms when adding a medication or increasing the dose:
 - Most adverse medication effects can be reduced or eliminated.
 - Most adverse medication effects result from appropriately prescribed medications and are unknown to the patient’s health care providers. Proactive and systematic assessment of possible adverse medication effects should therefore be a routine and standard part of care of older patients.
 - Consider both safety (adverse) endpoints as well as efficacy (benefit) endpoints in prescribing, and assessing the effect, of medications.

- **Principle 2:** Consider the effect of all medications in combination:
 - Patients get prescriptions from an average of 3 prescribers, have frequent dose or drug changes, and take over the counter medications and supplements. Health providers often are not aware of all the medications their patients are taking.
 - It is not always possible to determine if a single medication is responsible for an adverse effect.
 - The combination of multiple medications, rather than a single medication, may be responsible for adverse effects.
 - Medications in combination may have effects not anticipated (predicted) by the known effects of individual medications.

- **Principle 3:** Prescribe the lowest possible dose of the fewest possible medications:
 - Older patients are at increased risk of experiencing adverse medication effects because of their multiple health conditions + physiologic changes with aging that result in altered absorption, binding, metabolism, and excretion of drugs.
 - “Lower than usual” total medication dosing (number and dose of medications) may therefore provide the health benefits while reducing the risk of medication harm.
 - Many adverse effects are dose-related and can be addressed by reduced dosing.

- **Principle 4:** Some medications are inappropriate in older patients:
 - Some medications have been deemed inappropriate in older patients because of a high risk of adverse effect.
 - Inappropriate medications should be avoided unless there is a compelling medical reason and no alternative is available.

- **Principle 5:** Individualize prescribing based on a patient’s health priorities and tradeoffs:
 - Older patients with multiple health conditions vary in their health priorities (e.g. prevent specific events such as M.I. or stroke vs. maximize survival vs. maximize comfort vs. maximize physical or cognitive functioning).
 - Patients also vary in what they are willing to tradeoff (e.g. adverse medication effects) to achieve their health priorities.
 - Before starting or increasing the dose of a medication, consider whether:
1) therapeutic endpoints or desired outcomes have been agreed upon; 2) this medication, when added to other medications the patient is taking, will increase the chance that the agreed upon therapeutic endpoints/desired outcomes will be achieved; and 3) the possible adverse effects fit within the patient’s articulated tradeoffs.

- **Principle 6:** Assume symptoms and signs are adverse drug effects until proved otherwise:
 - Proactive “medication-related review of symptoms and signs” is the best way to identify possible adverse effects because:
 - ⤴ Neurological manifestations such as impaired attention, balance, dizziness, and falls; gastrointestinal manifestations such as anorexia, weight loss, nausea, and diarrhea; and cardiovascular manifestations such as orthostasis are the most common manifestations of adverse medication effect. Conversely, medication effects are among the most common causes of these symptoms and signs. If present, therefore, these symptoms and signs should therefore be assumed to be medication-related unless there is another clear and obvious cause.
 - ⤴ These adverse medication effects manifest as (mimic) symptoms and/or physical findings similar to those seen with many diseases and other health conditions and thus often are not recognized as adverse medication effects.
 - ⤴ Most adverse medication effects are unrecognized.

- **Principle 7:** Chronic conditions have periods of quiescence as well as exacerbation:
 - Medications are often instituted in response to an illness, symptom, or health condition but then continued when no longer needed or indicated.
 - As all medications have harmful as well as beneficial effects, reducing number and dose of medications during quiescent periods is an effective way to balance harms and benefits.

- **Principle 8:** Non-pharmacologic treatments often improve health conditions while lessening the need for medications.

❖ Steps Toward Reducing the Likelihood of Adverse Drug Effect

- The following steps represent a feasible strategy for operationalizing the above principles in prescribing for older patients. These steps are sequenced to first eliminate unnecessary or contraindicated medications and then to address the remaining medications. The more of the steps taken, the lower the likelihood that an older patient will experience the adverse effects of multiple medications.
- **Step 1:** Ascertain Total Medication Use [Principle 1, 2]
 - **How to ascertain accurate medication use:** While no single source is completely and consistently accurate, we suggest using the following hierarchy, based on evidence of completeness and accuracy:
 - ⤴ Use the lists provided by home care nurses (e.g. W10) when available as these are the most accurate lists.

➤ **Step 6:** Perform systematic “medication review of symptoms and signs”: [Principles 1, 2,3,6]

▪ **Medication review of symptoms:**

- ▲ **When to perform:** With each visit, ask about the medication-related symptoms listed below that are already commonly elicited as part of the review of systems. As medications are among the most common cause of these symptoms, the key is to consider medications at, or near the top, of the differential diagnosis list for these symptoms.
- ▲ **What symptoms to ascertain:** The most common medication-related symptoms in older patients which should be elicited regularly include:
 - ◆ *Neurological* – dizziness, confusion, unsteadiness walking, falls
 - ◆ *Gastrointestinal* – ↓ appetite/anorexia, nausea, diarrhea, constipation
 - ◆ *Systemic* – fatigue, insomnia, muscle weakness, ↓ energy/poor endurance, depressive symptoms

▪ **Medication-related examination**

- ▲ **When to perform:** As the examination is more time consuming than the history of symptoms, the suggested frequency of performance is less, including: when patient reports a concern **or** there is an unexplained change in health status **or** when the number of medications exceeds 4 **or** at least twice a year.
- ▲ **What examination findings to ascertain:** These are the most common exam findings related to medication effects. Impairment in any of these entities should trigger a consideration of medications as a contributing factor. For each entity, suggestions are provided for quick, easy, feasible and reliable assessment of impairment.
 - ◆ **Weight loss** of $\geq 10\%$
 - ◆ **Postural blood pressure** (BP and heart rate after ≥ 5 minutes lying; repeat standing; a drop of 20 mm Hg systolic, even if “asymptomatic”, is positive and a cause for action.
 - ◆ **Attention:** Attention is the cognitive area most commonly affected by medications. Inability to list the days of the week or months of the year backwards is evidence of impaired attention.
 - ◆ **Muscle Strength and endurance:** For individuals who are able to transfer and walk on their own, inability to stand and sit from a chair 5 times rapidly (e.g. < 30 sec.) without use of arms is evidence of impaired strength and/or endurance
 - ◆ **Balance/gait:** Any unsteadiness or abnormalities (e.g. slow pace, unsteady turning, unable to stand with one foot in front of other) observed with informal or formal testing is evidence of impaired balance and/or gait.

➤ **Step 7:** Act on medication review of symptoms and signs. [Principles 1,2,3,5,7]:

- The above symptoms and signs should trigger a careful review of **ALL** medications to determine which (often more than one) of the medications are likely to be contributing to the problem. Remember that the adverse effects may be the accumulation of the effects of multiple medications. Follow the management steps below.
- Do not treat any of the above symptoms or signs with a new medication until all possible contributing medications have been identified and eliminated or reduced.
- If there is an obvious single offending drug that can be discontinued, then discontinue it (or taper and discontinue if indicated) and reevaluate symptoms and signs.
- If there is no single obvious offending medication **or** if you suspect there are several contributing medications **or** if there is no medication that can be eliminated without concern for the status of coexisting health conditions, then make medication adjustments based on the patient's priorities and tradeoffs by first eliciting tradeoffs (e.g. patients may be willing to tolerate increased risk of a health event to decrease adverse effects of medications) and then reducing the dose of several medications in with these elicited priorities and tradeoffs.

HIGH RISK MEDICATION CLASSES:

- alpha- adrenergic blocking agents
- angiotensin 2 receptor antagonists
- angiotensin converting enzyme inhibitors
- antiarrhythmics
- anticonvulsants
- anti-depressants (all classes)
- antihistamines
- antiparkinsonian medications
 - *anticholinergics, dopaminergic agents, dopamine receptor agonists*
- anti-psychotics
- benzodiazepines
- beta-blockers
- calcium-channel blockers
- centrally and peripherally acting antiadrenergic agents
- decongestants
- diuretics
- H2-blockers and proton pump inhibitors
- opioids
- skeletal muscle relaxants
- sleep medications, OTC and prescription
- urinary anticholinergics

Medication Reduction Strategy For Older Patients With Multiple Conditions: Safe and Effective Medication Decision-Making (Summary)

Older patients consume increasing numbers of medications. While they improve outcomes of diseases and conditions, multiple medications compromise adherence and increase the likelihood of adverse medication effects. The risk of an adverse effect increases 10% with each additional medication, approaching 100% for persons receiving 10 or more medications. Impaired cognition, dizziness, falls, anorexia, weight loss, diarrhea, and orthostasis are the most common manifestations of adverse medication effect. The clinical dilemma is how to balance disease and symptom prevention and management vs. the adverse effects of multiple medications. In the absence of an easy method for determining “net benefit vs. harm of a patient’s total medication regimen”, there are general principles and specific steps that can lessen the likelihood of adverse effects of multiple medications.

Principles of safe prescribing for older patients:

- As all medications have beneficial as well as harmful effects, consider both the benefits and harms when adding a medication or increasing the dose;
- Consider the effect of all medications in combination;
- Prescribe the lowest possible dose of the fewest possible medications;
- Some medications are inappropriate in older patients;
- Individualize prescribing based on a patient’s health priorities and tradeoffs;
- Symptoms should be considered an adverse drug effect until proved otherwise;
- Chronic conditions have periods of quiescence as well as exacerbation; and
- Non-pharmacologic treatments often improve health conditions while lessening the need for medications.

Steps toward reducing the likelihood of adverse drug effect:

- Ascertain and monitor total medication use;
- Eliminate medications for which there is not an active indication;
- Ascertain and act on probable adverse drug effects;
- Avoid “inappropriate” drug use (e.g. Beers criteria);

- Whenever considering adding a new, or increasing the dose of, a medication, consider which medications can be eliminated or reduced;
- Perform systematic “medication review of symptoms and signs” on a regular basis;
- Do not treat symptoms or signs with a new medication until all possible contributing medications have been identified and eliminated or reduced;
- If there is an obvious single offending drug that can be discontinued, then discontinue it; and
- If there is no single obvious offending medication **or** if you suspect there are several contributing medications **or** if there is no medication that can be eliminated without concern for the status of coexisting health conditions, then reduce the dose of several medications.

HIGH RISK MEDICATION CLASSES:

- | | |
|---|---|
| • alpha- adrenergic blocking agents | • benzodiazepines |
| • angiotensin 2 receptor antagonists | • beta-blockers |
| • angiotensin converting enzyme inhibitors | • calcium-channel blockers |
| • antiarrhythmics | • centrally and peripherally acting antiadrenergic agents |
| • anticonvulsants | • decongestants |
| • anti-depressants (all classes) | • diuretics |
| • antihistamines | • H2-blockers and proton pump inhibitors |
| • antiparkinsonian medications | • opioids |
| - <i>anticholinergics, dopaminergic agents,</i> | • skeletal muscle relaxants |
| <i>dopamine receptor agonists</i> | • sleep medications, OTC and prescription |
| • anti-psychotics | • urinary anticholinergics |

Assessment of Medication Effects That May Increase Chance of Falling

Overview:

Medication effects are among the most common causes of older adults' symptoms and examination findings. Conversely, these symptoms and examination findings are among the most common signs of an adverse effect of medications. The symptoms and examination findings listed here are particularly likely to increase the chance of falling. Asking about these symptoms and looking for these examination findings should be part of every fall risk assessment.

What symptoms:

Ask about the most common medication-related symptoms in older adults that may increase chance of falling:

- *Neurological* – dizziness, unsteadiness walking
- *Cognitive* – confusion, poor concentration, grogginess
- *Gastrointestinal* – ↓ appetite/anorexia, nausea, weight loss, diarrhea, constipation
- *Systemic* – fatigue, drowsiness, insomnia, muscle weakness, ↓ energy/poor endurance

What examination findings:

- *Weight loss of $\geq 10\%$*
- *Postural blood pressure drop:* Measure BP and heart rate after ≥ 5 minutes lying; repeat standing; a drop of 20 mm Hg systolic, even if asymptomatic, is positive.
- *Unsteadiness:* Look for problems with simple tests and observation such as any unsteadiness or gait abnormality (e.g. slow pace, unsteady turning, unable to stand with one foot in front of the other).

What to do if the symptoms or exam findings are present:

The key for providers is to consider medications as a very likely cause of these symptoms or findings unless there is another obvious explanation.

- Physicians, physician assistants, and APRNs should follow the “*Medication Reduction Strategy*”.
- Other providers should have the older adult discuss these findings with their physicians, physician assistant, or APRN.
- Go over the “*What You Can Do to Avoid the Bad Effects of Medications*” handout or the *medication brochure* with the person so he/she is better prepared to talk with his/her care provider about the possible medication effects.

What You Can Do To Help Avoid Bad Effects Of Medications

Medications help you prevent and treat symptoms and diseases. Sometimes they can cause health problems as well. The more medications you take, the more likely you are to have a bad effect, such as a fall. There are steps you can take to avoid such problems:

- Keep an updated medication list with correct names, doses, and time of day that you take them. Include over-the-counter and herbal medications.
- Bring your medication list to every visit with all your doctors and other health care providers, review it with them, and note changes on the list. It is especially important to do this after you have been seen in the Emergency Department or have been hospitalized.
- When you review your medication list with your doctor or health care provider, ask if there are any medications that can be reduced or stopped. Don't reduce or stop a medication on your own - ask your doctor first.
- When a new medication is added, find out what it is for, how it will help you, and what the risks of taking it are. Ask if there are any common side effects that you should be aware of, and ask if there are any interactions with medications you are already taking.
- If you have symptoms such as fatigue, dizziness, unsteadiness, poor appetite, or confusion, or have had a fall, ask your doctor:
 - if these symptoms are due to any of the medications you are taking;
 - to check your blood pressure lying AND standing, because a drop in pressure when you stand can be a sign of too much medication;
 - which medications can be decreased or stopped.
- Ask your health care provider before starting non-prescription or herbal medications, especially ones for sleep, colds, or allergies. There may be interactions with medications that you are already taking, or side effects that you are unaware of.
- Ask your health care provider if there is any treatment, instead of medication, that will help your health problem(s). Examples of non-pharmacological treatment include exercise, massage therapy, and changes in diet and fluid intake.
- Your pharmacist can help identify potential problem interactions or side effects of medications. Use one pharmacy so that they have a complete record of the medications that you are taking.

Fall Code Created

V15.88 History of Fall

The Centers for Disease Control and Prevention (CDC) and Centers for Medicare and Medicaid Services (CMS) have created a new code, V15.88 History of Fall, on the list of new diagnosis codes to be implemented on October 1, 2005. They also listed “at risk for fall” as an inclusion term and both of these will be indexed to direct the user to the new code V15.88. For hospital discharges and outpatient encounters on or after October 1, 2005 this code will be available and valid for use. This code can be used to identify patients at risk and justify a provider’s decision to order or perform certain services. There is no existing diagnosis or condition code that conveys this same information.

CDC and CMS experts determined that the fall code should be a V-code rather than the more familiar diagnostic or symptom code. V-codes describe a status rather than a specific condition; the specific conditions and diseases that predispose to falling already have diagnostic codes. The V-code would denote that the person has the status of having fallen and/or is at risk for recurrent falls so that the status is relevant to current care, and could benefit from evaluation and management. Depending on the situation, the code could serve as a justification for further evaluation and management such as referral to rehabilitation or performance of time-intensive activities such as medication review and adjustment. To be effective, providers must be made aware of the new code and its proper use, through avenues such as the CMS website and communications from their professional organizations. A specific fall code might heighten the awareness of providers of the importance of falling as a manageable medical problem. It would also enhance the likelihood that providers would perform fall risk evaluation and management, understanding that these services would be covered. *Members of the Connecticut Collaboration for Fall Prevention were instrumental in encouraging the creation of this new code and providing the needed documentation in its support.*

Footwear Style and Risk of Falling

A recent study investigated fall risk in relation to shoe style worn in a group of community-living older adults. Fall occurrence was monitored prospectively. Those who fell received an in-person, post-fall interview including a direct examination of footwear worn at the time of the fall. To obtain information about shoe styles worn by those who had not fallen, matched controls (similar in age and sex) were asked questions about footwear worn during an activity similar to what the faller was doing at the time of the fall. The styles of footwear most commonly worn by this sample of older adults were athletic and canvas shoes (sneakers) with all others categorized as “other shoe styles” or “shoeless”.

Athletic and canvas shoes were the styles of footwear associated with the lowest risk of a fall. Previous laboratory studies had raised questions about the safety of athletic shoes because thick, soft soles had been found to interfere with position sense and stability as assessed by falls off a balance beam. Walking barefoot has been associated with good balance performance in controlled laboratory tests. Contrary to these findings, this investigation of footwear and risk of falling in “real-world” walking environments found that athletic shoes were associated with relatively low risk of falls and that fall risk was most markedly increased when participants were shoeless or just wearing socks or stockings.¹ In a companion article, these investigators found that shoes with low heels and large sole contact area were associated with a decreased risk of a fall in everyday settings and activities.²

CCFP recommends that older adults choose a style of athletic shoe with a relatively thin, firm sole and low heel and avoid walking in bare feet, socks or stockings.

Visit the CCFP website (www.fallprevention.org) to order brochures and download point of care materials. A new link for public use is available and a listing of collaborating outpatient rehabilitation sites by town is accessible via the Collaborators link.

¹ Koepsell TD, Wolf ME, Buchner DM, et al. Footwear Style and Risk of Falls in Older Adults. *J Am Geriatr Soc* 2004; 52:1495-1501.

² Tencer AF, Koepsell TD, Wolf ME, et al. Biomechanical Properties of Shoes and Risk of Falls in Older Adults. *J Am Geriatr Soc* 2004; 52:1840-6.

Orthostatic Hypotension...A Common Problem Among Older Adults

Orthostatic hypotension or postural hypotension is defined as a drop in systolic blood pressure of 20mm Hg or more, or a systolic pressure of less than 90mm Hg within three minutes of standing relative to blood pressure measured supine. The drop in systolic pressure may or may not be accompanied by symptoms such as lightheadedness, dizziness, weakness, nausea or syncope. Among older adults, orthostatic hypotension is associated with an **increased risk of falling**, stroke and myocardial infarction. While orthostatic hypotension may be a symptom of primary autonomic dysfunction, it is more commonly associated with chronic diseases (e.g. diabetes, renal failure, Parkinson's disease), dehydration, use of antihypertensive and antidepressant medications that may further compromise underlying autonomic dysfunction, and de-conditioning. Studies have shown that the incidence of postural hypotension increases with age and frailty. Among adults aged ≥ 65 years prevalence is approximately 20%; in those aged >75 years approximately 30%; and as high as 50% among institutionalized frail older adults living in long term care. Treatment begins with non-pharmacologic measures and may include withdrawal of any medication that could contribute to the problem, fluid replacement in those diagnosed with dehydration, increased salt intake, physical maneuvers, compression stockings, and regular exercise. If non-pharmacological measures fail, pharmacologic agents may be used.¹

The increased incidence of postural hypotension among older adults and its association with increased risk of falling underscores the importance of checking postural blood pressures as part of a comprehensive falls risk assessment. Interventions include a review of all medications with the elimination of offending medications as possible; prescribing the lowest dose of the fewest number of medications; physical counter maneuvers (e.g. ankle pumps, upper extremity movements) with habitual getting up slowly when moving supine to standing; hydration; and reconditioning exercise regimens. Visit the CCFP website (www.fallprevention.org) for more information about evidenced-based falls risk assessment and interventions, and brochures/ handouts for older adults.

Measuring Postural Blood Pressure

- **Measure blood pressure after lying quietly supine for five minutes.**
- **Recheck blood pressure immediately upon standing.**
- **Recheck again after two minutes standing.**

If the systolic blood pressure drops 20mm Hg OR is less than 90 mmHg, relative to the pressure measured supine, the reading is considered positive. All older adults should have their postural blood pressure measured at least yearly. Simply asking if one feels dizzy or lightheaded upon standing is not sufficient to detect postural hypotension as many older adults may not have obvious symptoms.

One barrier to checking for postural hypotension, particularly where older adults routinely get blood pressures checked such as in senior centers, has been the lack of a place to rest supine. A portable massage table works well and some senior centers in the greater Hartford area have purchased one just for this purpose.

For more information about the Connecticut Collaboration for Fall Prevention, visit the website www.fallprevention.org or call 203-737-2109

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¹Gupta V, Lipsitz LA. Orthostatic Hypotension in the Elderly: Diagnosis and Treatment. *The American Journal of Medicine*. 2007;120: 841-847.