



# City Health Information

August 2010

The New York City Department of Health and Mental Hygiene

Vol. 29(4):25-32

## PREVENTING FALLS IN OLDER ADULTS IN THE COMMUNITY

- Be aware that falls are the leading cause of fatal and nonfatal injuries in adults aged  $\geq 65$  years.
- Routinely conduct falls risk screening and assessment of all patients aged  $\geq 65$  years.
- Recommend multifactorial falls-prevention strategies, including medication and environmental modification and increased physical activity.

Falls are a major health problem for adults aged  $\geq 65$  years, resulting in fractures and head injuries, disability, loss of independence, and nursing home placement.<sup>1-5</sup> Unintentional falls are the leading cause of injury-related death and hospitalization in this age group in New York City (NYC).<sup>6</sup> Each year, NYC hospitals treat and release about 21,000 older adults in their emergency departments and admit another 16,000 for falls.<sup>7</sup>

Older adults may fall because of changes that affect walking, coordination, and balance, medication side effects, poor vision, osteoporosis, environmental hazards, and diminished strength and reflexes (see **Box**).<sup>8,9</sup> Risk for falls increases with the number of risk factors a patient has (see **Box**).<sup>8-10</sup> Falls risk assessment and multifactorial prevention strategies are important in maintaining the independence and quality of life of older adults.<sup>4</sup>

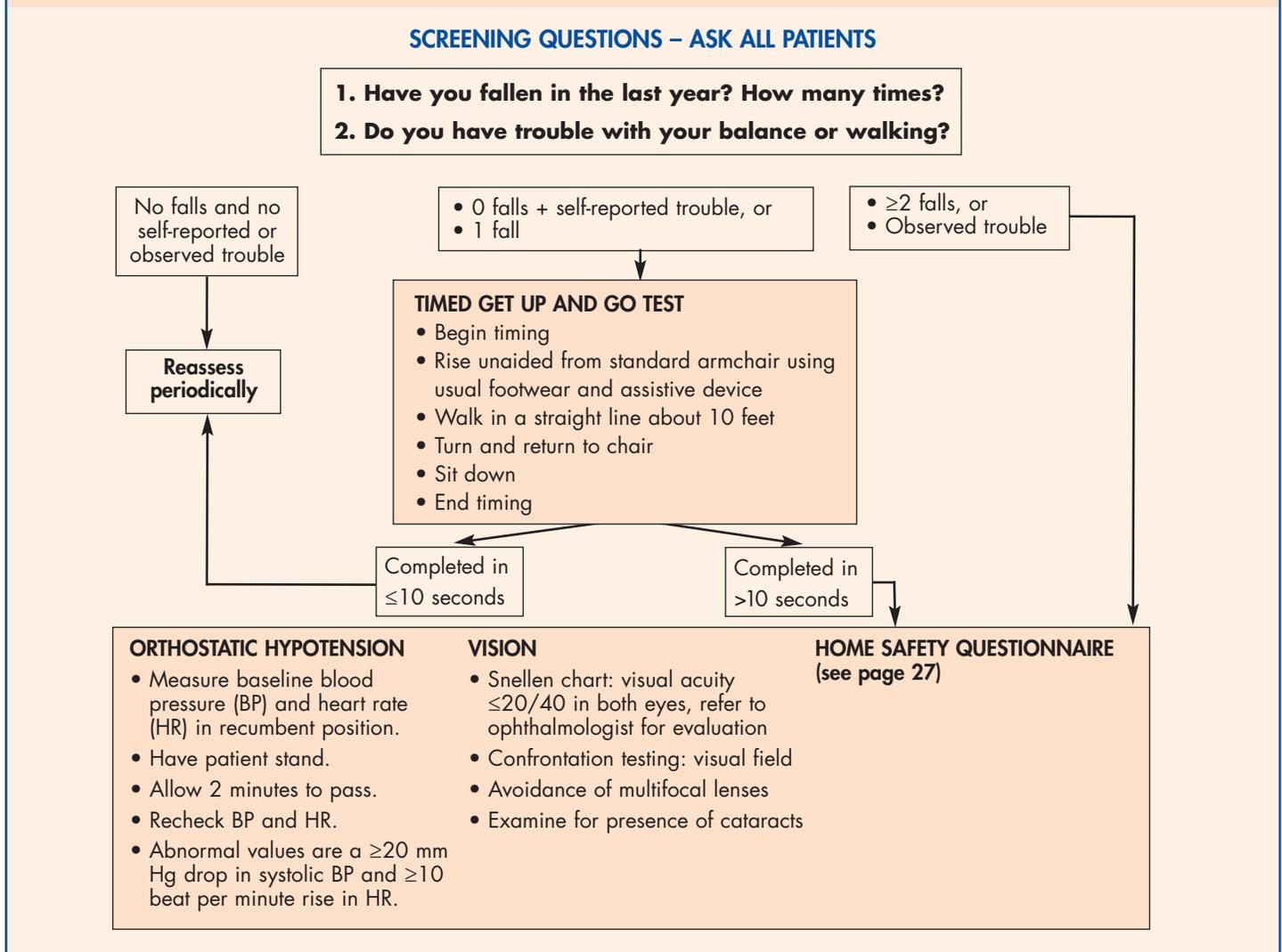
### INDEPENDENT RISK FACTORS FOR FALLS IN OLDER ADULTS<sup>3,4,9,11</sup>

- Muscle weakness (upper or lower extremity)
- Previous falls
- Gait or balance impairment
- Medications
  - ✦ Use of  $\geq 4$  medications
  - ✦ Use of any psychoactive medications, eg,
    - ✦ neuroleptics
    - ✦ benzodiazepines
    - ✦ antidepressants
    - ✦ sedative hypnotics
    - ✦ anxiolytics
    - ✦ antipsychotics
  - ✦ Class IA antiarrhythmics
  - ✦ Antiparkinson agents
  - ✦ Anticholinergics
  - ✦ Anticonvulsants
  - ✦ Muscle relaxants
  - ✦ Analgesics

**Strongest risk**

- Visual impairment
- Depression
- Dizziness or orthostasis
- Functional limitations, activities of daily living disabilities
- Age  $> 80$  years
- Female
- Low body mass index
- Urinary incontinence
- Cognitive impairment
- Arthritis
- Diabetes
- Pain
- Vestibular dysfunction
- Osteoporosis
- Parkinson's disease
- Cardiovascular conditions (eg, carotid sinus syndrome)
- Home safety hazards



**FIGURE. FALLS-RISK SCREENING AND ASSESSMENT**

## FALLS-RISK SCREENING AND ASSESSMENT

Assess all older patients' risk for falls using history, physical examination, medication review, gait-balance screening, evaluation of functional limitations, and questions about home safety hazards (Figure).<sup>9,12</sup> A complete evaluation may not be possible during one visit, so determine what assessments and interventions you can accomplish in the time you have with the patient.

Online training is available to help you improve your skills in assessing risk for falls and choosing the interventions most relevant to your patients. Familiarize yourself with community resources and specialists to whom you can refer patients who need further assessment and interventions (Resources).

**Medication review.** Polypharmacy and the use of psychoactive and certain other medications are a common risk factor for falls. Routinely conduct a "brown bag" review of all prescription and over-the-counter medicines including recent dosage changes, current dosages, and over-the-counter agents such as antihistamines, cough remedies, sleep aids (eg, Tylenol PM), supplements, and herbal remedies, since these can also increase risk for falls.<sup>9,11,12</sup>

**Gait-balance screening.** Gait, balance, and mobility deficits also increase falls risk.<sup>9</sup> Observe patients aged  $\geq 65$  years for signs of difficulty with walking or balance, and ask whether they have fallen in the past 12 months, how many times, and if they have difficulty with balance or walking.<sup>9</sup> If no falls are reported and no problem with gait or balance is reported or seen, reassess periodically.<sup>9</sup> If the patient reports either one fall or trouble with balance or walking, continue assessment using the brief Timed Get Up and Go Test. Patients who report 2 or more falls in a year or appear to be unsteady should be further assessed for orthostatic hypotension, vision deficits, and other risk factors, and referred to specialists and community resources that offer services for people with visual impairment and other needs (Resources).

**Other functional deficits.** Functional limitations can make older adults more prone to falls. Screen for muscle weakness of lower and upper extremities, hearing impairment, incontinence, and physical and instrumental activities of daily living (Resources—Age-Friendly Primary Care CHI).

**Cognitive impairment and dementia.** If you suspect cognitive impairment or dementia based on direct observation, patient report, or concerns of family or caregivers, screen with the Mini-Cog™ or Mini-Mental Status Exam (**Resources**). See “Age-Friendly Primary Care” CHI (**Resources**) for information on screening for cognitive impairment. A positive screen can be the result of mild cognitive impairment, Alzheimer’s disease, or other forms of dementia. Consider referring patients with positive dementia screens to a geriatrician, neurologist, psychologist, or psychiatrist for further evaluation.

**Depression.** Depression can also contribute to the risk for falls. Screen elderly patients annually with the 2-question Patient Health Questionnaire-2 (PHQ-2) or the Geriatric Depression Scale ([www.stanford.edu/~yesavage/GDS.html](http://www.stanford.edu/~yesavage/GDS.html)).

#### PATIENT HEALTH QUESTIONNAIRE (PHQ-2)

Over the past 2 weeks, have you been bothered by:

- Little interest or pleasure in doing things?
- Feeling down, depressed, or hopeless?

A “yes” to either question requires further evaluation with the Patient Health Questionnaire-9 (PHQ-9).

See “Detecting and Treating Depression in Adults” CHI (**Resources**) for information on screening for and treating depression.

**Home safety review.** The home environment often needs to be modified to reduce the risk for falls and injury. Review potential home safety hazards with older patients who have fallen or have risk factors for falling (see **Box** at right).<sup>9</sup> A nurse, trained medical assistant, or social worker can also review the home safety questionnaire with patients. When cognitive impairment is an issue, ask another informant to corroborate the information. Common hazards that should be addressed include clutter on floor, inadequate lighting, absence of bathtub grab bars or handrails on stairs, and loose rugs.<sup>9</sup> Online training in recognition and modification of patients’ home hazards is available (**Resources—Cornell-Weill**).

## FALLS-PREVENTION STRATEGIES

Strategies that address multiple risk factors are more effective in preventing falls in community-dwelling older adults than any single intervention.<sup>4,9,13-15</sup> Depending on the patient’s risk factors, the strategy may include medication modification, exercise to improve strength and balance, assistive devices, and safety advice to modify home hazards.<sup>15</sup> Following up to see that the interventions were implemented is critical to the strategy’s effectiveness.<sup>9</sup>

**Medication modification.** Pay particular attention to medication reduction for patients taking psychoactive or 4 or more medications. After the “brown bag” review, withdraw unnecessary medications and, if possible, modify dosages of psychoactive and other classes of medications known to increase falls risk in the elderly (see **Box** on page 25).<sup>9</sup> Alcohol and over-the-counter preparations for insomnia,

## HOME SAFETY QUESTIONNAIRE

### FLOORS:

- When you walk through a room, do you have to walk around furniture?
- Are throw rugs loose, or held down with double-sided tape or a non-slip backing?
- Are there papers, books, towels, shoes, magazines, boxes, blankets, or other objects on the floor?
- Do you have to walk over or around wires or cords (like lamp, telephone, or extension cords)?

### STAIRS AND STEPS:

- Are there papers, shoes, books, or other objects on the stairs?
- Are some steps broken or uneven?
- Has the stairway light bulb burned out?
- Are you missing a light over the stairway?
- Do you have only one light switch for your stairs (only at the top or at the bottom of the stairs)?
- Are the handrails loose or broken?
- Is the carpet on the steps loose or torn?

### KITCHEN:

- Are the things you use often on high shelves?
- Is your step stool unsteady? Does it have a bar to hold on to?

### BATHROOMS:

- Is the tub or shower floor slippery?
- Do you need some support when you get in and out of the tub or up from the toilet?

### BEDROOMS:

- Is the light near the bed hard to reach?
- Is the path from your bed to the bathroom dark?

### LIVING ROOM:

- Does the furniture have steady arms?
- Does the furniture have sharp edges?
- Is the light switch near the entrance to the room?

### OUTSIDE:

- Are the sidewalks cracked?
- Are the walkways poorly lit?
- Are there handrails, and are they sturdy?

colds, or allergies that contain diphenhydramine or doxylamine can also increase the risk for falls.<sup>11,12</sup> Some herbs, such as kava kava and valerian, have additive sedative effects when combined with central nervous system depressants (eg, alcohol, benzodiazepines, opiates, barbiturates) or levodopa.<sup>16</sup> Risk evaluation is more of an art than a science, and it can be challenging to weigh the benefits and harms of medications to reduce falls risk without compromising health conditions.<sup>8</sup> Recommend a vitamin D supplement of at least 800 IU/day to patients with vitamin D deficiency and consider vitamin D supplementation for patients with suspected vitamin D deficiency or who are otherwise at increased risk for falls.<sup>9,17</sup>

**Gait-balance interventions.** Refer older patients who have not fallen and are not homebound to community-based programs

## PROS AND CONS OF ASSISTIVE DEVICES

	Advantages	Disadvantages
<b>Straight cane</b>	<ul style="list-style-type: none"> <li>• Appropriate for mild instability</li> <li>• Supports 15%–20% of body weight</li> <li>• Relatively easy to use</li> <li>• Simple on stairs</li> </ul>	<ul style="list-style-type: none"> <li>• May not give enough support</li> <li>• Requires upper-extremity strength</li> </ul>
<b>Quad cane</b>	<ul style="list-style-type: none"> <li>• Gives increased base of support</li> </ul>	<ul style="list-style-type: none"> <li>• May be less stable</li> <li>• Difficult to place all 4 prongs at same time</li> <li>• May be difficult for patients with cognitive impairment</li> </ul>
<b>Walker (pick-up)</b>	<ul style="list-style-type: none"> <li>• Can fully support one lower extremity but not whole body</li> </ul>	<ul style="list-style-type: none"> <li>• Requires upper-extremity strength and coordination to use</li> <li>• Slow staggering gait</li> </ul>
<b>Walker (2-wheeled)</b>	<ul style="list-style-type: none"> <li>• Smoother, coordinated, faster gait</li> <li>• Brakes automatically</li> <li>• Useable with the cognitively impaired</li> </ul>	<ul style="list-style-type: none"> <li>• May require too much energy for use with Parkinson's or ALS patients</li> <li>• Difficult on steps</li> </ul>
<b>Rollator walker (4-wheeled)</b>	<ul style="list-style-type: none"> <li>• Seat for resting</li> <li>• Basket for carrying</li> <li>• Hand brakes</li> </ul>	<ul style="list-style-type: none"> <li>• May be difficult to control</li> <li>• Hard to fold up</li> <li>• May be difficult for patients with cognitive impairment</li> </ul>

for exercises that improve gait, balance, and muscle strength (**Resources**). Caution patients against walking barefoot or in socks, loose-fitting shoes, or slippers with worn soles, and examine feet for toe and foot deformities.

Even if the patient has not fallen, under Medicare and Medicaid you can prescribe assistive devices and refer for physical therapy if medically necessary. See **Boxes** above and on page 29 for information on selecting and ordering assistive devices, and at right for patient instructions in the proper use of a cane. Consider referring ambulatory patients to an office-based physical or occupational therapist for proper fitting and training in use of the device, and for individually tailored strength/gait/balance training. Medicare and Medicaid will cover these for homebound patients when the services are provided by a certified home health agency (CHHA).

**Home safety modification.** Frail elderly adults who received home safety assessment and modification and training in the use of assistive devices had 31% fewer falls than a comparable group that did not receive these interventions.<sup>18</sup> Recommend home safety modifications for patients based on results of the home safety questionnaire, or refer high-risk patients to a physical or occupational therapist for home safety assessment and modification (**Resources**).<sup>9,10,19</sup> Medicare and Medicaid cover home safety assessments by a CHHA for patients who are receiving additional nursing or physical therapy services such as therapy for gait abnormalities and medication reconciliation or management.

NYC landlords must install grab bars in disabled adults' bathtubs upon request, but do not have to pay for them. Financial assistance may be available from private organizations and the Veterans Administration. The NYC Housing Authority will install free grab bars for physician-

## INSTRUCTIONS FOR USING A CANE

### Walking With a Cane

1. Adjust the cane length so that when you are standing, the handle of the cane is at the level of your wrist.
2. Hold the cane on the side of your good leg unless your physical therapist has told you otherwise.
3. Begin by stepping forward with your injured or weak leg and cane, keeping them in line with each other.
4. Step forward with your good leg, bringing it ahead of your injured or weak leg and cane.

### Going Upstairs With a Cane

Take your time and go slowly. Have someone stand behind you to help the first time.

1. Grasp the handrail with your free hand. Begin by raising your good leg up to the first step.
2. Bring your injured or weak leg and cane together up to the same step. Keep your leg and cane in line with each other.

### Going Downstairs With a Cane

Take your time and go slowly. Have someone stand in front of you to help the first time.

1. Put your feet near the steps and place your cane on the first step down.
2. Step down first with your injured or weak leg. Bring your good leg to the same step.
3. Repeat until you are at the bottom of the stairs.

When using a cane to go up and down stairs, it is helpful to remember, "**Up with the good and down with the bad.**"

August 2007. Developed through a partnership of Mount Carmel Health, Ohio State University Medical Center, and OhioHealth, Columbus, Ohio. Available for use as a public service without copyright restrictions at [www.healthinfotranslations.org](http://www.healthinfotranslations.org).

## ORDERING ASSISTIVE DEVICES

Indications for assistive devices include loss of balance; history of falls; gait abnormalities such as asymmetry; decreased foot clearance, gait velocity, and step length; and increased or decreased step width.

### Through Medicare:

- Medicare will pay for assistive devices every 3 years.
- Physicians/nurse practitioners/physician assistants must write prescriptions that include:
  - Diagnosis and specified equipment on prescription
  - Medical necessity documented in chart
  - For walkers, primary use must be inside the home
- The patient chooses which medical supply store, certified home health agency, or pharmacy will fill the prescription for the durable medical equipment and picks it up from the equipment provider, who will fit the device and teach proper use.
- Physicians/nurse practitioners/physician assistants review fittings and instructions for use during the patient's next office visit (see **Box**, page 28). Refer patients to physical or occupational therapists for proper fitting and usage if needed.

### Through Medicaid:

- Prior approval for Medicaid-only patients is required.
- Provider writes prescription and signs fiscal order.
- No copay for durable medical equipment (eg, walkers); small copay for supplies (eg, canes).

designated disabled seniors in public housing. Seniors living in private housing may be eligible for free grab bars from the Metropolitan Council (**Resources**).

**Referrals.** Consider referring patients who have comorbidities that increase falls risk, such as vision deficits, orthostatic hypotension, and neurologic and cardiovascular disorders, or who experience unexplained recurrent falls, to specialists. When necessary, refer patients to CHHAs for support services to help them age in place at home (**Resources—Medicare Home Health Agencies**).

## SUMMARY

Multifactorial falls risk assessment and interventions offer the best chance of reducing older patients' risk for falls, helping to prevent injury, disability, and nursing home placement. Given time constraints and conflicting priorities, primary care providers must decide which risk factors they can reasonably target for assessment and intervention over several routine office visits, referring patients to community-based groups and specialists where necessary. ♦

## RESOURCES

### For Providers

#### Falls-Prevention Guidelines

American Geriatrics Society/British Geriatrics Society Clinical Practice Guideline: *Prevention of Falls in Older Persons*: [www.americangeriatrics.org/education/prevention\\_of\\_falls.shtml](http://www.americangeriatrics.org/education/prevention_of_falls.shtml). 212-308-1414

#### Falls-Prevention Training Programs

- Consortium of New York Geriatrics Education Centers programs, all of which include sections on falls prevention: [www.nygec.org/index.cfm?section\\_id+10](http://www.nygec.org/index.cfm?section_id+10). 718-584-9000, x3850 or 3836
- Mount Sinai School of Medicine, Physician Mini-Fellowships: Geriatrics for the Non-Geriatrician: [www.mssm.edu/geriatrics/education/mini-fellowship/index.shtml](http://www.mssm.edu/geriatrics/education/mini-fellowship/index.shtml). 212-241-3624

#### Falls-Prevention Tools

- Centers for Disease Control and Prevention (CDC) Home and Recreational Safety: [www.cdc.gov/HomeandRecreationalSafety/Falls/index.html](http://www.cdc.gov/HomeandRecreationalSafety/Falls/index.html). 800-232-4636

- Connecticut Collaboration for Fall Prevention. Provider and patient materials for purchase: [www.fallprevention.org](http://www.fallprevention.org)
- Cornell University-Weill Medical College. Environmental geriatrics (online home safety program): [www.environmentalgeriatrics.org](http://www.environmentalgeriatrics.org)
- National Council on Aging, Fall Prevention Center: [www.healthyagingprograms.org/content.asp?sectionid=69](http://www.healthyagingprograms.org/content.asp?sectionid=69). 202-479-1200
- National Institute on Aging. AgePage. Free print brochures for waiting room on fall and fracture prevention and physical activity and exercise can be ordered at [www.nia.nih.gov/HealthInformation/Publications/falls.htm](http://www.nia.nih.gov/HealthInformation/Publications/falls.htm). 800-222-2225
- New York City Department of Health and Mental Hygiene (NYC DOHMH). *City Health Information*. Age-Friendly Primary Care. December 2009: [www.nyc.gov/html/doh/downloads/pdf/chi/chi28-8.pdf](http://www.nyc.gov/html/doh/downloads/pdf/chi/chi28-8.pdf).
- NYC DOHMH. *City Health Information*. Detecting and Treating Depression in Adults. May 2008: [www.nyc.gov/html/doh/downloads/pdf/chi/chi26-9.pdf](http://www.nyc.gov/html/doh/downloads/pdf/chi/chi26-9.pdf)

## RESOURCES (CONTINUED)

- The Portal of Geriatric Online Education: [www.pogoe.org](http://www.pogoe.org)
- Tinetti ME, Baker DI, King M, et al. Effect of dissemination of evidence in reducing injuries from falls. *N Engl J Med*. 2008;359(3):252-261; Supplementary Appendix. (Useful assessment tools for providers and patients)
- US Department of Health & Human Services. Home Health Compare (list of certified Medicare home health agencies in New York City): [www.medicare.gov/HHCompare/Home.asp](http://www.medicare.gov/HHCompare/Home.asp). Call 1-800-MEDICARE (1-800-633-4227) for assistance 24 hours a day, 7 days a week. English and Spanish-speaking customer service representatives can answer questions about the Original Medicare Plan and provide up-to-date information regarding health plans available in your area.

### Mental Status Assessments

- Mini-Cog™ assessment instrument for dementia: [www.hospitalmedicine.org/geriresource/toolbox/mini\\_cog.htm](http://www.hospitalmedicine.org/geriresource/toolbox/mini_cog.htm)
- Mini-Mental Status Examination (MMSE), available for purchase at [www.minimental.com](http://www.minimental.com)

### For Patients

#### Community Centers for Exercise/Gait/Balance/Strength Training:

- Mount Sinai-Martha Stewart Center for Living at Mount Sinai Medical Center: [www.mountsinai.org/patient-care/service-areas/geriatrics-and-aging/areas-of-care/martha-stewart:center-for-living](http://www.mountsinai.org/patient-care/service-areas/geriatrics-and-aging/areas-of-care/martha-stewart:center-for-living). 212-659-8552
- NYC Department for the Aging Stay Well Exercise Programs at community senior centers: [www.nyc.gov/html/dfta/html/health/staywell.shtml](http://www.nyc.gov/html/dfta/html/health/staywell.shtml)
- NYC Parks Indoor Recreation Centers: [www.nycgovparks.org/facilities/recreationcenters](http://www.nycgovparks.org/facilities/recreationcenters) or call 311
- NYC Parks Events Calendar (includes walking programs): [www.nycgovparks.org/events/all](http://www.nycgovparks.org/events/all) or call 311
- NYC YMCA Active Older Adults Program: [www.ymcanyc.org/ymca-of-greater-new-york/adults/healthy-lifestyles/active-older-adults-aoa](http://www.ymcanyc.org/ymca-of-greater-new-york/adults/healthy-lifestyles/active-older-adults-aoa). 212-912-2317
- NYC Department for the Aging community senior centers, including center programs at NYC Housing Authority sites: [www.nyc.gov/html/dfta/html/senior/senior.shtml](http://www.nyc.gov/html/dfta/html/senior/senior.shtml) to find a conveniently located senior center or call 311. To find whether an NYC Housing Authority building has a senior center: [www.nyc.gov/html/nycha/html/ccshtml/senior-centers.shtml](http://www.nyc.gov/html/nycha/html/ccshtml/senior-centers.shtml)

### Services for People With Visual Impairment

- The Jewish Guild for the Blind: [www.jgb.org/programs.asp](http://www.jgb.org/programs.asp). 212-769-6200
- Lighthouse International: [www.lighthouse.org](http://www.lighthouse.org). 212-821-9470
- VISIONS/Service for the Blind and Visually Impaired: [www.visionsvcb.org](http://www.visionsvcb.org)

### Preventing Falls

- American Geriatrics Society: Aging in the Know. Falls: [www.healthinaging.org:80/agingintheknow/chapters\\_ch\\_trial.asp?ch=21](http://www.healthinaging.org:80/agingintheknow/chapters_ch_trial.asp?ch=21). 212-308-1414
- Centers for Disease Control and Prevention. 800-232-4636
  - Help seniors live better, longer: Prevent brain injury: [www.cdc.gov/traumaticbraininjury/seniors.html](http://www.cdc.gov/traumaticbraininjury/seniors.html).
  - Home safety checklists for older adults: [www.cdc.gov/ncipc/falls/FallPrev4.pdf](http://www.cdc.gov/ncipc/falls/FallPrev4.pdf)
- Centers for Disease Control and Prevention Foundation/ MetLife Foundation: Patient home safety checklist: [www.cdc.gov/HomeandRecreationalSafety/pubs/English/booklet\\_Eng\\_desktop-a.pdf](http://www.cdc.gov/HomeandRecreationalSafety/pubs/English/booklet_Eng_desktop-a.pdf)
- Metropolitan Council Project Metrorepair (free grab bars and minor repair services for low-income seniors aged ≥60 years and/or disabled): [homeservices@metcouncil.org](mailto:homeservices@metcouncil.org). 212-453-9525
- National Association of Area Agencies on Aging (n4a). Community resources: [www.n4a.org](http://www.n4a.org). 202-872-0888
- National Institute of Arthritis and Muscular and Skin Diseases. National Institutes of Health. Osteoporosis and fracture. Preventing falls and related fractures: [www.niams.nih.gov/Health\\_Info/Bone/Osteoporosis/Fracture/preventing\\_falls.asp](http://www.niams.nih.gov/Health_Info/Bone/Osteoporosis/Fracture/preventing_falls.asp). 877-226-4267 (toll free)
- National Institutes of Health. SeniorHealth: Falls and older adults: <http://nihseniorhealth.gov/falls/toc.html>
- NYC Department for the Aging: Stay Well Exercise Manual (balance and muscle strength) for home use by persons 60 years of age and older. Online request form for home mailing: [www.nyc.gov/html/dfta/downloads/pdf/stay\\_well\\_order%20form.pdf](http://www.nyc.gov/html/dfta/downloads/pdf/stay_well_order%20form.pdf)

### Post-Falls

- NYC Medicare/Medicaid-Certified Home Care Agencies: [www.medicare.gov](http://www.medicare.gov). 1-800-MEDICARE
- National Institute on Aging. Exercise & physical activity: your everyday guide from the National Institute on Aging (online resource guide): [www.nia.nih.gov/healthinformation/publications/exerciseguide](http://www.nia.nih.gov/healthinformation/publications/exerciseguide)
- CDC: Growing Stronger: Strength training for older adults: [www.cdc.gov/nccdphp/dnpa/physical/growing\\_stronger/index.htm](http://www.cdc.gov/nccdphp/dnpa/physical/growing_stronger/index.htm) [www.cdc.gov/nccdphp/dnpa/physical/growing\\_stronger/growing\\_stronger.pdf](http://www.cdc.gov/nccdphp/dnpa/physical/growing_stronger/growing_stronger.pdf). 800-232-4636
- American Society on Aging: Exercise for life: [www.asaging.org/CDC/module6/home.cfm](http://www.asaging.org/CDC/module6/home.cfm). 800-537-9728 x635

## REFERENCES

1. Gates S, Fisher JD, Cooke MW, Carter YH, Lamb SE. Multifactorial assessment and targeted intervention for preventing falls and injuries among older people in community and emergency care settings: systematic review and meta-analysis. *BMJ*. 2008;336(7636):130-133.
2. Scaf-Klomp W, van Sonderen E, Sanderman R, Ormel J, Kempen GI. Recovery of physical function after limb injuries in independent older people living at home. *Age Ageing*. 2001;30(3):213-219.
3. Vellas BJ, Wayne SJ, Romero LJ, Baumgartner RN, Garry PJ. Fear of falling and restriction of mobility in elderly fallers. *Age Ageing*. 1997;26(3):189-193.
4. Tinetti ME, Kumar C. The patient who falls. "It's always a trade-off." *JAMA*. 2010;303(3):258-266.
5. Centers for Disease Control and Prevention. Falls among older adults: an overview. [www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html](http://www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html). Accessed February 22, 2010.
6. New York City Department of Health and Mental Hygiene. Injury Epidemiology. Injury statistics. Ranked causes of deaths and hospitalizations, 2002-2006. [www.nyc.gov/html/doh/html/ip/ip-index.shtml](http://www.nyc.gov/html/doh/html/ip/ip-index.shtml). Accessed February 22, 2010.
7. New York City Department of Health and Mental Hygiene. Injury Epidemiology. Vital Statistics. 2006.
8. Tinetti ME, Gordon C, Sogolow E, Lapin P, Bradley EH. Fall-risk evaluation and management: challenges in adopting geriatric care practices. *Gerontologist*. 2006;46(6):717-725.
9. American Geriatrics Society. AGS/BGS Clinical Practice Guideline: *Prevention of Falls in Older Persons*. 2010. [www.americangeriatrics.org/education/prevention\\_of\\_falls.shtml](http://www.americangeriatrics.org/education/prevention_of_falls.shtml). Accessed February 22, 2010.
10. Tinetti ME, Baker DI, McAvay G, et al. A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *N Engl J Med*. 1994;331(13):821-827.
11. Tinetti ME. Clinical practice. Preventing falls in elderly persons. *N Engl J Med*. 2003;348(1):42-49.
12. Ganz DA, Bao Y, Shekelle PG, Rubenstein LZ. Will my patient fall? *JAMA*. 2007;297(1):77-86.
13. Chang JT, Morton SC, Rubenstein LZ, et al. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomized clinical trials. *BMJ*. 2004;328(7441):680.
14. Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2009;(2):CD007146.
15. Steinberg M, Cartwright C, Peel N, Williams G. A sustainable programme to prevent falls and near falls in community dwelling older people: results of a randomised trial. *J Epidemiol Community Health*. 2000;54(3):227-232.
16. Watson R, Watson RR, Preedy VR, eds. *Botanical Medicine in Clinical Practice*. Wallingford, Oxon, UK: CABI; 2008.
17. Bischoff-Ferrari HA, Dawson-Huges B, Staehelin HB, et al. Fall prevention with supplemental and active forms of vitamin D: a meta-analysis of randomised controlled trials. *BMJ*. 2009;339:b3692.
18. Nikolaus T, Bach M. Preventing falls in community-dwelling frail older people using a home intervention team (HIT): results from the randomized Falls-HIT trial. *J Am Geriatr Soc*. 2003;51(3):300-305.
19. Shekelle P, Maglione M, Chang J, et al. Evidence report and evidence-based recommendations: Falls prevention interventions in the Medicare population. Baltimore, MD: US Department of Health and Human Services, Centers for Medicare and Medicaid Services and RAND; 2003.



# City Health Information

August 2010 The New York City Department of Health and Mental Hygiene Vol. 29(4):25-32

2 Lafayette Street, 20th Floor, CN-65, New York, NY 10007 (212) 676-2188



PRST STD  
U.S. POSTAGE  
PAID  
NEW YORK, N.Y.  
PERMIT NO. 6174

**Michael R. Bloomberg**  
Mayor

**Thomas Farley, MD, MPH**  
Commissioner of Health and Mental Hygiene

**Division of Epidemiology**  
Carolyn Greene, MD, Deputy Commissioner

**Division of Environmental Health**  
Daniel Kass, MSPH, Deputy Commissioner

**Bureau of Environmental Disease Prevention**  
Nancy Clark, MA, CIH, CSP, Assistant Commissioner  
Laura DiGrande, DrPH, MPH, Co-Director, Injury Surveillance and Prevention Program

**Special Consultants**  
Elizabeth M. Clark, MD, FACP  
Amy R. Ehrlich, MD

**Office of Provider Education**  
Ram Koppaka, MD, PhD, Senior Advisor  
Peggy Millstone, Director, Scientific Communications Unit  
Peter Ephross, Medical Editor  
Colleen Quinn, Medical Editor  
Rhoda Schlamm, Medical Editor

Copyright ©2010 The New York City Department of Health and Mental Hygiene  
E-mail *City Health Information* at: [nycdohrp@health.nyc.gov](mailto:nycdohrp@health.nyc.gov)  
Suggested citation: DiGrande L, Clark E, Ehrlich A, Clark N, Millstone M, Schlamm R.  
Preventing falls in older adults in the community. *City Health Information*. 2010;29(4):25-32.

**NOTICE TO READERS:** The NYC DOHMH no longer offers continuing education credits (CME/CNE). We are exploring options for offering the credits in the future. We apologize for any inconvenience.

**RECEIVE CHI BY E-MAIL:** Each time **City Health Information** is published you will receive a link to the issue in PDF format.

To subscribe, visit [www.nyc.gov/html/doh/html/chi/chi.shtml](http://www.nyc.gov/html/doh/html/chi/chi.shtml).

**DOHMH JOB OPENINGS:** We seek doctors, nurses, administrators, social workers, and other public health professionals. Visit [www.nyc.gov/health/careers](http://www.nyc.gov/health/careers) to view openings.