Complete Summary

GUIDELINE TITLE

Guideline for the prevention of falls in older persons.

BIBLIOGRAPHIC SOURCE(S)

American Geriatric Society, British Geriatrics Society, American Academy of Orthopaedic Surgeons. Guideline for the prevention of falls in older persons. J Am Geriatr Soc 2001 May;49(5):664-72. [93 references]

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SCOPE

DISEASE/CONDITION(S)

Falls in older persons

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Risk Assessment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Geriatrics
Internal Medicine
Nursing

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Occupational Therapists
Physical Therapists
Physician Assistants
Physicians
Social Workers

GUIDELINE OBJECTIVE(S)

- To assist health care professionals in their assessment of fall risk
- To assist health care professionals in their management of older patients who are at risk of falling and those who have fallen

TARGET POPULATION

Older adults

INTERVENTIONS AND PRACTICES CONSIDERED

Prevention

Assessment

1. Asking older patients about falls in past year
2. Checking for gait/balance problem ("Get Up and Go Test")
3. Fall evaluation including an assessment of history, medications, vision, gait and balance, lower limb joints, and neurological and cardiovascular functions.
4. Referral to specialist (e.g., geriatrician) for more comprehensive and detailed fall evaluation as needed.

Management

Multifactorial Interventions in Community Settings

1. Gait training, balance and exercise programs
2. Review and modification of medications, especially psychotropic medications
3. Postural hypotension treatment
4. Environmental hazard modification
5. Cardiovascular disorder treatment

Multifactorial Interventions in Long-Term Care and Assisted Living Settings

1. Staff education program
2. Gait training program
3. Review and modification of medications, especially psychotropic medications

Single Interventions

1. Exercise and balance training (e.g., Tai Chi C´uan)
2. Environmental modification
3. Review and modification of medications, especially psychotropic medications
4. Assistive devices
5. Behavioral and educational programs

Other Potential Interventions (considered but no recommendations made)

1. Use of bone strengthening medications, such as calcium, hormone replacement therapy, vitamin D, antiresorptive agents
2. Cardiovascular interventions, such as pacemakers
3. Visual interventions
4. Footwear interventions
5. Use of restraints

MAJOR OUTCOMES CONSIDERED

- Incidence of falls, slips, trips, injuries, and/or fractures
- Resource/health service utilization
- Prevalence of geriatric syndromes
- Quality of life
- Strength, aerobic capacity, balance, gait, and physical health in relationship to training programs
- Functional capacity and ability to participate in activities of daily living (ADLs)
- Diagnostic information

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature search attempted to locate systematic reviews and meta-analyses, randomized trials, controlled before-and-after studies, and cohort studies using a combination of subject heading and free text searches. The panel made extensive use of high-quality recent review articles and bibliographies, as well as contact with subject area experts. New searches were concentrated in areas of importance to the guideline development process, for which existing systematic reviews were unable to provide valid or up-to-date answers. The expert knowledge and experience of panel members also reinforced the search strategy. It is important to note that the literature upon which the guideline is based includes only those articles that were available to the guideline development group during its September 2000 meeting.

A literature search conducted by researchers at the RAND Corporation (RAND Corporation, Santa Monica, CA) for the purpose of identifying quality of care

indicators for falls and mobility problems for two ongoing national projects provided the initial set of articles reviewed for the guideline. "Included" articles were meta-analyses and systematic literature reviews, randomized controlled trials, nonrandomized clinical trials, case control studies, and cohort studies in which outcomes involved data related to fall risk or fall prevention as well as articles that provided epidemiological or other background information. For each included article, data were extracted. Reference lists of included articles were scanned for any additional relevant studies, and further relevant articles were identified.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Categories of Evidence

Class I: Evidence from at least one randomized controlled trial or a meta-analysis of randomized controlled trials.

Class II: Evidence from at least one controlled study without randomization or evidence from at least one other type of quasi-experimental study.

Class III: Evidence from nonexperimental studies, such as comparative studies, correlation studies and case-control studies.

Class IV: Evidence from expert committee reports or opinions and/or clinical experience of respected authorities.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The guideline Panel identified and synthesized relevant published evidence to allow recommendations to be evidence-based, whenever possible, using the grading criteria shown in the "Rating Scheme" field and at the end of the "Major Recommendations". The grading criteria distinguish between category of evidence and strength of the associated recommendation. It was possible to have methodologically sound (Class I) evidence about an area of practice that was clinically irrelevant or had such a small effect that it was of little practical importance and would, therefore, attract a lower strength of recommendation. More commonly, a statement of evidence would only cover one part of an area in

which a recommendation had to be made or would cover it in a way that conflicted with other evidence. Therefore, to produce comprehensive recommendations, the Panel had to extrapolate from the available evidence. This may lead to weaker levels of recommendation (B, C, or D) based on evidence Class I statements.

It was accepted that there would be areas without evidence where recommendations should be made and that consensus would be required to address such area. For a number of the interventions, there was not sufficient evidence to make recommendations and "Comment" sections were written.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

It was accepted that there would be areas without evidence where recommendations should be made and that consensus would be required to address such areas. For a number of the interventions, there was not sufficient evidence to make recommendations and "Comment" sections were written.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Strength of Recommendation

A. Directly based on Class I evidence.
B. Directly based on Class II evidence or extrapolated recommendation from Class I evidence.
C. Directly based on Class III evidence or extrapolated recommendation from Class I or II evidence.
D. Directly based on Class IV evidence or extrapolated recommendation from Class I, II, or III evidence.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The following organizations with special interest and expertise in the management of falls in older persons provided peer review of a preliminary draft of this guideline: American College of Cardiology, American Academy of Ophthalmology, American Academy of Otolaryngology, American Academy of Physical Medicine & Rehabilitation, American College of Emergency Physicians, American Physical

Therapy Association, British Association of Accident and Emergency Medicine, College of Occupational Therapists (UK), National Gerontological Nurses Association, Royal College of General Practitioners, Royal College of Physicians in London (England and Wales), Royal College of Nursing-Older-Peoples Section, and the Society for Academic Emergency Medicine.

The guideline was approved by the American Geriatric Society Board of Directors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the type of the evidence (Class I-Class IV) and the strength of the recommendations are repeated at the end of the "Major Recommendations" field.

Assessment

Approach to Older Persons as Part of Routine Care (Not Presenting After a Fall)

1. All older persons who are under the care of a health professional (or their caregivers) should be asked at least once a year about falls.
2. All older persons who report a single fall should be observed as they stand up from a chair without using their arms, walk several paces, and return (i.e., the "Get Up and Go Test") (Mathias, Nayak, & Issacs, 1986; Podsiadlo & Richardson, 1991). Those demonstrating no difficulty or unsteadiness need no further assessment.
3. Persons who have difficulty or demonstrate unsteadiness performing this test require further assessment.

Approach to Older Persons Presenting with One or More Falls or, Have Abnormalities of Gait and/or Balance, or Who Report Recurrent Falls

1. Older persons who present for medical attention because of a fall, report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance should have a fall evaluation performed. This evaluation should be performed by a clinician with appropriate skills and experience, which may necessitate referral to a specialist (e.g., geriatrician).
2. A fall evaluation is defined as an assessment that includes the following: a history of fall circumstances, medications, acute or chronic medical problems, and mobility levels; an examination of vision, gait and balance, and lower extremity joint function; an examination of basic neurological function, including mental status, muscle strength, lower extremity peripheral nerves, proprioception, reflexes, tests of cortical, extrapyramidal, and cerebellar function; and assessment of basic cardiovascular status including heart rate and rhythm, postural pulse and blood pressure and, if appropriate, heart rate and blood pressure responses to carotid sinus stimulation.

Multifactorial Interventions

1. Among community-dwelling older persons (i.e., those living in their own homes), multifactorial interventions should include:
    - gait training and advice on the appropriate use of assistive devices ("B" recommendation)
    - review and modification of medication, especially psychotropic medication ("B" recommendation)
    - exercise programs, with balance training as one of the components ("B" recommendation)
    - treatment of postural hypotension ("B" recommendation)
    - modification of environmental hazards ("C" recommendation)
    - treatment of cardiovascular disorders, including cardiac arrhythmias ("D" recommendation)
2. In long-term care and assisted living settings, multifactorial interventions should include:
    - staff education programs ("B" recommendation)
    - gait training and advice on the appropriate use of assistive devices ("B" recommendation)
    - review and modification of medications, especially psychotropic medications ("B" recommendation)
3. The evidence is insufficient to make recommendations for or against multifactorial interventions in acute hospital settings.

Single Intervention

Exercise

1. Although exercise has many proven benefits, the optimal type, duration and intensity of exercise for falls prevention remain unclear ("B" recommendation)
2. Older people who have had recurrent falls should be offered long-term exercise and balance training ("B" recommendation)
3. Tai Chi C´uan is a promising type of balance exercise, although it requires further evaluation before it can be recommended as the preferred balance training ("C" recommendation).

Environmental Modification

When older patients at increased risk of falls are discharged from the hospital, a facilitated environmental home assessment should be considered ("B" recommendation)

Medications

Patients who have fallen should have their medications reviewed and altered or stopped as appropriate in light of their risk of future falls. Particular attention to medication reduction should be given to older persons taking four or more medications and to those taking psychotropic medications. ("C" recommendation)

Assistive Devices

Studies of multifactorial interventions that have included assistive devices (including bed alarms, canes, walkers (Zimmer frames), and hip protectors) have demonstrated benefit. However, there is no direct evidence that the use of assistive devices alone will prevent falls. Therefore, while assistive devices may be effective elements of a multifactorial intervention pro-gram, their isolated use without attention to other risk factors cannot be recommended ("C" recommendation).

Behavioral and Educational Programs

Although studies of multifactorial interventions that have included behavioral and educational programs have demonstrated benefit, when used as an isolated intervention, health or behavioral education does not reduce falls and should not be done in isolation ("B" recommendation).

Comments on Other Potential Interventions

Bone Strengthening Medications

A number of medications used widely to prevent or treat osteoporosis (e.g., hormone replacement therapy (HRT), calcium, vitamin D, antiresorptive agents) reduce fracture rates. However, these agents do not reduce rates of falls per se. Given the wealth of information concerning hormone replacement therapy and vitamin D in osteoporotic fractures, including ample prior analyses and practice guidelines, the Panel refers the reader to published guidelines on hormone replacement therapy for osteoporosis.

Cardiovascular Interventions

There is emerging evidence that some falls have a cardiovascular cause that may be amenable to intervention strategies often directed to syncope, such as medication change or cardiac pacing. The role of these cardiac investigations and treatments is not yet clear.

Pending the results of an ongoing randomized trial, pacemaker therapy for the treatment of recurrent falls cannot be recommended at this time.

Visual Interventions

Patients should be asked about their vision and if they report problems, their vision should be formally assessed, and any remediable visual abnormalities should be treated.

There are no randomized controlled studies of interventions for individual visual problems despite a significant relationship between falls, fractures, and visual acuity. Fall-related hip fractures were higher in patients with visual impairment. Visual factors associated with two or more falls included poor visual acuity, reduced contrast sensitivity, decreased visual field, posterior subcapsular cataract, and nonmiotic glaucoma medication.

Footwear Interventions

Because there are no experimental studies of footwear examining falls as an outcome, the Panel is not able to recommend specific footwear changes to reduce falls. However, some trials report improvement in intermediate outcomes, such as balance and sway from specific footwear intervention. In women, results of functional reach and timed mobility tests were better when subjects wore walking shoes than when they were barefoot. Static and dynamic balance were better in low-heeled rather than high-heeled shoes or than the patient´s own footwear. In men, foot position awareness and stability were best with high mid-sole hardness and low mid-sole thickness. Static balance was best in hard-soled (low resistance) shoes.

Restraints

The Panel found no evidence to support restraint use for falls prevention. Restraints have been traditionally used as a falls prevention approach. However, they have major, serious drawbacks and can contribute to serious injuries. There is no experimental evidence that widespread use of restraints or, conversely, the removal of restraints, will reduce falls.

Definitions

Categories of Evidence

Class I: Evidence from at least one randomized controlled trial or a meta-analysis of randomized controlled trials.

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Class III: Evidence from nonexperimental studies, such as comparative studies, correlation studies and case-control studies.

Class IV: Evidence from expert committee reports or opinions and/or clinical experience of respected authorities.

Strength of Recommendation

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D. Directly based on Class IV evidence or extrapolated recommendation from Class I, II, or III evidence.

CLINICAL ALGORITHM(S)

An algorithm is provided for the assessment and management of falls.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based primarily on a comprehensive review of published reports. In cases where the data did not appear conclusive, recommendations were based on the consensus opinion of the group.

Detailed evidence tables supporting the recommendations can be found in the related document titled "Evidence Tables Associated with Intervention Recommendations and Comments in â ˜"The Prevention of Falls in Older Persons´" (see "Companion Documents").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Reduce probability of falls among older adults

Subgroups Most Likely to Benefit:

Older adults with the most common risk factors for falls, including:

- Muscle weakness
- History of falls
- Gait or balance deficits
- Use of assistive devices
- Visual deficits
- Arthritis
- Impaired activities of daily living
- Depression
- Cognitive impairment
- Age older than 80 years

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The guideline developers assume that health care professionals will use their clinical knowledge and judgment in applying the general principles and specific recommendations of the guideline to the assessment and

management of individual patients. Decisions to adopt any particular recommendation must be made by the practitioner in light of available evidence and resources.

- It is a fundamental tenet of the guidelines, based on a number of controlled studies, that detecting a history of falls and performing a fall-related assessment are likely to reduce future probability of falls when coupled with interventions. Because of this dependence of the assessment on subsequent intervention for effectiveness, it was more difficult to ascribe strength of recommendation to assessment recommendations alone. Therefore, specific recommendations for assessment have been left ungraded. Likewise, prior to any intervention, assessment of an individual's risk and deficits is required to determine specific needs and, if necessary, to deliver targeted interventions.
- Although development of the guideline was a joint project, the epidemiology of falls is largely based on North American data, and there are little data to inform the appropriate configuration of services within the United Kingdom National Health Service. In particular, the balance between the benefits of assessment and intervention, set against the workload and cost implications of a potential increase in referral for specialist assessment, is unclear and would need to be carefully planned when implementing this guideline within any local setting.
- The risk factors identified in the assessment may be modifiable (such as muscle weakness, medication side effect, or hypotension) or nonmodifiable (such as hemiplegia or blindness). However, knowledge of all risk factors is important for treatment planning. Essential components of the fall-related patient assessment were identified whenever possible from successful controlled trials of fall-prevention interventions. The justification for assessment to identify a specific risk factor is strongest when successful treatment or other risk-reduction strategies have been explicitly based on this specific risk factor. In some cases, the link between identified risk factors and the content of interventions is not clear. When conclusive data on the importance of specific aspects of the assessment (either to prediction of falls or to responsiveness of these risk factors to the intervention) were not available, consensus from the Panel was sought.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm
Patient Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Geriatric Society, British Geriatrics Society, American Academy of Orthopaedic Surgeons. Guideline for the prevention of falls in older persons. J Am Geriatr Soc 2001 May;49(5):664-72. [93 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2001 May

GUIDELINE DEVELOPER(S)

American Academy of Orthopaedic Surgeons - Medical Specialty Society
American Geriatrics Society - Medical Specialty Society
British Geriatrics Society - Medical Specialty Society

SOURCE(S) OF FUNDING

Funding was provided as unrestricted educational grants from Medtronic, Inc. (Minneapolis, MN, USA) and Shire Pharmaceuticals (Richwood, KY, USA).

GUIDELINE COMMITTEE

Panel on Falls Prevention

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Authors: Rose Anne Kenny (Co-Chair), MD, FRCPI, FRCP; Laurence Z. Rubenstein (Co-Chair), MD, MPH, FACP; Finbarr C. Martin, MD, FRCP; and Mary E. Tinetti, MD.

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American Geriatrics Society Web site.

Print copies: Available from the American Geriatrics Society, 350 Fifth Avenue, Suite 801, New York, NY 10118.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Evidence tables associated with intervention recommendations and comments in "The Prevention of Falls in Older Persons." New York (NY): American Geriatrics Society (AGS), 2001. 54 p.

Electronic copies: Available in Portable Document Format (PDF) from the American Geriatrics Society Web site.

Print copies: Available from the American Geriatrics Society, 350 Fifth Avenue, Suite 801, New York, NY 10118.

PATIENT RESOURCES

The following is available:

- A patient´s guide to preventing falls. New York (NY); American Geriatrics Society (AGS), 2001.

Electronic copies: Available in Portable Document Format (PDF) from the American Geriatrics Society Web site.

Print copies: Available from the American Geriatrics Society, 350 Fifth Avenue, Suite 801, New York, NY 10118.

The following information is also available:

- The patient education forum (PEF): falls and balance problems.

Electronic copies: Available from the American Geriatrics Society Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on July 19, 2002.

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