Cochrane for Clinicians

Putting Evidence Into Practice

Environmental Interventions for Preventing Falls in Older People Living in the Community

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Clinical Question

Do environmental interventions (e.g., home hazard reduction, assistive technology, education) prevent falls in older people living in the community?

Evidence-Based Answer

Programs that assess and address fall hazards in the home decrease the rate of falls among older people living in the community. In a group of 1,000 older patients at risk who would otherwise experience 1,319 falls in a year, a home-based fall-hazard intervention would prevent 343 falls (95% CI, 118 to 514 fewer falls). These programs are even more effective when targeted for patients at high risk (e.g., those who have fallen previously). Assistive devices (e.g., eyeglasses, specialized footwear, bed alarm systems) and patient education programs alone do not decrease the rate of falls. None of these interventions affect health-related quality of life or decrease the risk of fall-related fractures or hospitalizations.[1] (Strength of Recommendation: B, inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

Up to one-third of community-dwelling older people fall each year.[2] Physical harms range from minor injuries to hip fractures and life-threatening traumatic brain injuries. There are 36 million reported falls in the United States each year, leading to 6.8 million emergency department visits, 300,000 hip fractures, and 42,000 deaths.[2,3] Environmental factors in the home, such as clutter, uneven surfaces, loose rugs, poor lighting, inappropriate footwear, and unsafe railings, are recognized risk factors for falls.[4] The authors of this Cochrane review sought to evaluate whether environmental interventions may decrease the risk of falls in community-dwelling older people.

The Cochrane review included 22 randomized controlled trials and 8,463 patients.[1] The trials involved adults older than 60 years living in the community (defined as a home that does not provide residential health-related care or rehabilitative services). Patients with falls related to stroke or Parkinson disease were excluded. The authors identified evidence for three broad categories of environmental intervention: home fall-hazard reduction interventions, assistive devices, and patient education. The original search also included home modification strategies as an intervention, but no suitable evidence was identified. The primary outcome was the rate of falls, measured as falls per person-year. Secondary outcomes included the number of patients experiencing a fall, a fall-related fracture, and fall-related hospitalization; health-related quality of life (measured by various scales); and adverse events. The authors performed a subgroup analysis on the primary outcome for patients selected as high risk (defined as having a fall within the past year, recent hospitalization, or the need for support for activities of daily living). Follow-up periods were from 3 to 18 months.

Home fall-hazard reduction was defined as a comprehensive evaluation and the use of a validated tool to identify and address home fall hazards and assess the patient's functional capacity. In the included studies, most interventions comprised one home visit with variable focus, assessment tools used, and follow-up. Home fall-hazard reduction programs decreased the rate of falls and the number of fallers. These programs had an even more significant effect among patients at high risk, decreasing the number of falls per person-years at 3 to 18 months by 702 per 1,000 patients treated (95% CI, 554 to 812). There was no demonstrated effect on fracture rate, hospitalizations, health-related quality of life, or adverse events. The authors note that the specific components that make up these fall-hazard reduction programs are not well-defined and have been heterogeneously studied. Determining which components contribute most to fall reduction should drive future research.

The authors identified studies that describe vision impairment interventions, footwear selection, and self-care. Of the eight studies, only those investigating vision impairment interventions (i.e., eyeglasses, corrective surgery) were similar enough to be pooled. The studies concluded that vision correction had little to no effect on the rate of falls, fractures, hospitalizations, or health-related quality of life.

The authors identified a study from Japan that described patient education interventions. This study used a model of

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a typical home to increase awareness of fall hazards. Based on these limited data, there was no demonstrated effect on the outcomes of interest.

In 2018, the U.S. Preventive Services Task Force released recommendations for interventions to prevent falls. Based on their review of the evidence on environmental interventions, the group concluded that the data were insufficient to issue a recommendation. They determined that exercise (not included in this Cochrane review) has a moderate net benefit and that multifactorial fall assessments and interventions, including home evaluations, have a small net benefit in decreasing fall risk.[5]

Patient Perspective

It was no surprise to me that home-based fall-hazard interventions produced a decrease in the frequency of falls. Despite my family's best efforts to keep my 92-year-old father from falling down any of the two-step locations where levels in his house changed, he fell twice onto slate-covered concrete, resulting in trips to the emergency department. The mistake we made was underestimating the ways my father could get over or through the barriers we used to block the steps. The message here is that the family should be advised by someone professionally skilled in identifying fall hazards and how to mitigate the risk effectively. This is especially true if the home has multiple levels or unusual structures that may create fall risks.

The practice recommendations in this activity are available at https://www.cochrane.org/CD013258.

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Class I and III Antiarrhythmic Drugs for Maintaining Sinus Rhythm After Catheter Ablation of Atrial Fibrillation

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Clinical Question

Do antiarrhythmic agents (class I and III) prevent the recurrence of atrial fibrillation postablation?

Evidence-Based Answer

Compared with placebo, class I and III antiarrhythmic agents reduce the recurrence of atrial fibrillation after catheter ablation at three to six months postablation (absolute risk reduction = 6.8%; 95% CI, 3.2% to 10%; number needed to treat [NNT] = 15). There are no differences in all-cause mortality, thromboembolic events, or myocardial infarction during the three- to six-month postablation period in patients using class I and III antiarrhythmics compared with those in the control group.[1] (Strength of Recommendation: C, disease-oriented evidence.)

Discussion

Atrial fibrillation is the primary diagnosis in more than 454,000 hospitalized patients each year; it contributes to approximately 158,000 deaths annually.[2] In 2019, updates to the American Heart Association guidelines indicated that atrial fibrillation ablation is reasonable in patients with symptomatic atrial fibrillation and heart failure with reduced left ventricular ejection fraction to lower the mortality rate and hospitalizations.[3] Recurrent atrial tachyarrhythmias following catheter ablation for atrial fibrillation are a common problem, with an incidence of at least 20% to 40%.[4] Although antiarrhythmic drugs, particularly class I and III medications, are used to maintain sinus rhythm, it is unclear whether they reduce the risk of recurrent atrial tachyarrhythmias. The authors of this Cochrane review sought to determine whether class I and III antiarrhythmic drugs prevent postablation recurrence of atrial tachyarrhythmias and whether the use of these medications is associated with an increased risk.

This review included nine randomized controlled trials from six countries in North America, Europe, and Asia. The 3,269 participants were

assigned to class I or III antiarrhythmics (or both) vs. placebo or control with standard treatment to maintain sinus rhythm. Class I antiarrhythmics were flecainide or propafenone, and class III medications were amiodarone, dofetilide, dronedarone (Multaq), and sotalol. Patients were 18 years and older of either sex, with an average age of 59 years. Among the participants, 72.9% had paroxysmal atrial fibrillation, and 27.4% were in persistent atrial fibrillation. The doses of antiarrhythmics used were not reported in all trials. The follow-up duration of these studies ranged from 13 to 48 months. Primary outcomes were recurrence of atrial tachyarrhythmias (atrial fibrillation, atrial flutter, or atrial tachycardia lasting longer than 30 seconds) and occurrence of adverse events including thromboembolic events, myocardial infarction, a new diagnosis of heart failure, and a need for one or more hospitalizations for atrial tachyarrhythmia. Secondary outcomes were all-cause mortality and needing one or more repeat ablations.

The follow-up period of interest for recurrence of atrial tachyarrhythmias was three to six months or more because arrhythmias are more common while the body is recovering from ablation during the zero- to three-month postablation period.

Antiarrhythmic drugs reduced the recurrence of atrial tachyarrhythmias by 6.8% compared with placebo (95% CI, 3.2% to 10%; NNT = 15) at three to six months or more postablation, based on five trials of 2,591 participants. Data were collected via electrocardiographic event recorders, transtelephonic electrocardiography, ambulatory electrocardiographic monitoring, or 12-lead electrocardiography, representing disease-oriented evidence. Most trials did not specify the reported duration of atrial tachyarrhythmia recurrence.

Three trials with 448 participants noted a reduction in hospitalizations between zero and three months postablation (NNT to prevent one hospitalization = 7; 95% CI, 5 to 10; moderate-certainty evidence). The adverse outcomes of thromboembolism, myocardial infarction, and all-cause mortality showed no difference among groups but were based on low- to very low-certainty evidence.

Previous meta-analyses did not assess the recurrence of atrial tachyarrhythmias after catheter ablation during the three to six months postablation.

The latest guidance from the American Heart Association/American College of Cardiology/Heart Rhythm Society and the National Institute for Health and Care Excellence does not recommend the use of antiarrhythmic drugs in patients after ablation.[3,5]

The practice recommendations in this activity are available at https://www.cochrane.org/CD013765.

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