

## Prevention of falls and subsequent injuries in elderly people: a long way to go in both research and practice

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See related article page 537

Falls and related injuries among elderly people are a major public health problem worldwide; falls are the leading cause of unintentional injury and death in these individuals and are also responsible for appreciable morbidity, including bone fracture, pain, functional impairment, disability, fear of falling and admission to a long-stay facility.<sup>1-3</sup> Furthermore, the problem is likely to increase, because the number of elderly people, and their mean age, is increasing everywhere and because there are clear signs that the age-adjusted incidence (that is, the average individual risk) of fall-induced injury is also rising.<sup>1</sup> About 70% of fall-induced injuries sustained by elderly people are bone fractures, hip fracture being the most common, the most devastating and the most costly for our modern health care systems to treat.<sup>1,4</sup>

Because of this alarming increase in the number and incidence of fall-related problems among elderly people, researchers have developed and tested various methods for the prevention of falls, including single-factor interventions (such as exercise or withdrawal of psychotropic medication)<sup>5,6</sup> and their multifactorial counterparts (assessment and reduction of many predisposing and situational risk factors for falling).<sup>7</sup> The newest and most clearly different approach has been the protection of the vulnerable site of the body when a fall occurs (with hip protectors).<sup>4</sup>

In this issue (page 537), David Hogan and colleagues<sup>8</sup> report the results of their randomized controlled trial in which they used a multifactorial strategy or "consultation service" in an effort to reduce the risk of falling among 79 community-dwelling, ambulatory people aged 65 years or more who had fallen at least once within 3 months of study entry. Eighty-four comparable elderly people (the control group) received a home visit and usual care. The intervention included a home visit by an assessor, which involved assessment of both the subject and the environmental risk factors for falling. Then, an individualized fall-prevention plan was drawn up for each subject by the assessors, risk-reducing recommendations were made in writing to the subject, the attending physician or the referral source (if different), and some of the subjects (57%) were referred to exercise classes. The adherence of participants in the intervention group was documented once, at 6 months, during the 12-month trial and was categorized as none, partial or

complete. Overall adherence with the recommendations was 81% (partial and complete adherence combined), indicating that for most of the recommendations at least some attention had been paid to the problem in question, although the authors did not report any further analysis of this important issue so that the intensity, frequency and duration of each protective action remained unknown.

The intervention was found to have had little effect on the cumulative number of falls, the likelihood of participants having at least one fall during the 12-month follow-up period or the mean number of falls per person, although it is of interest that all the between-groups differences favoured the intervention group. In addition, when the data for individuals who had had 2 or more falls within 3 months before study entry were analyzed separately, an individual in the intervention group was significantly less likely to fall and had a significantly longer time between falls than her or his counterpart in the control group. In the efficacy analysis, individuals in the intervention group who adhered more closely to the fall-prevention recommendations had fewer falls per person than those who adhered less closely to the recommendations (mean number of falls 2.3, SD 3.2, v. 4.07, SD 7.8;  $p = 0.29$ ).

Hogan and colleagues<sup>8</sup> are to be congratulated on having successfully conducted this clinical trial. The results are well presented and logical. However, on reading their article,<sup>8</sup> a pessimist would say that this type of multifactorial fall-prevention intervention does not work, whereas an optimist would argue that the study only had a problem with statistical power (because of the relatively small sample size) and that in high-risk groups (of individuals who fell more than once) and among those who adhered to the prevention program the consultation team succeeded. We can always choose whether to view the glass as half-empty or half-full.

We suggest that the strategy described by Hogan and colleagues<sup>8</sup> should not be copied immediately in clinical practice, because the results may be disappointing. Instead, we should pick up all the positive tips from this trial, analyze them carefully and try to apply them to our clinical work. If the clinical experience is as positive as that of Hogan and colleagues, the next step ought to be a new randomized trial. Fall-prevention research sits within mandate

of several of the Canadian Institutes of Health Research and, thus, is an ideal area for the national funding agency.<sup>9</sup>

This study left many questions unanswered. As the authors point out, it remained unclear which components of their multifaceted intervention were effective and which were not, which is an annoying problem in all multifactorial prevention programs. Second, the cost-effectiveness of the intervention could not be evaluated, which is again a major problem with this type of study. Third, as already noted earlier, very little is known about the level of compliance or adherence of the individuals in the intervention group to the recommendations and protective actions throughout the 12-month period, although this information is crucial to the interpretation of the data. Very often we deem the content of the intervention ineffective, when the truth may be that insufficient effort went in to carrying out the intervention.

As the current study shows, there is, as yet, no easy way to prevent falls and fall-related injuries among elderly people. Although many of the recent multifactorial interventions have shown encouraging results, this has not been the case for other similar interventions,<sup>10</sup> including the current one. Exercise seems to be a very promising single-factor intervention: a recent systematic literature review of randomized controlled trials,<sup>5</sup> reinforced by the results of a new randomized study,<sup>11</sup> indicates that regular strength and balance training can reduce significantly the risk of falling in elderly adults. In addition, the systematic withdrawal of psychotropic medication seems to reduce the risk of falling, although this conclusion is based on only one high-quality randomized trial.<sup>6</sup> A new approach involves preventing the injuries that result from falls; a recent randomized controlled trial indicated that the risk of hip fracture can be clearly reduced in frail elderly people by the use of a shield-shaped external hip protector.<sup>4</sup>

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