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Use of a Fall Prevention Practice Guideline for Community-Dwelling Older Persons at Risk for Falling: A Feasibility Study

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Key Words
Primary healthcare · Elderly · Guidelines, prevention of falls · Feasibility study

Abstract
Background: Falls among older persons occur frequently and are a common cause of physical and psychological morbidity and healthcare utilization. The problem can be attributed to a complex interaction between health-related, behavioral and environmental factors. To ensure a uniform and evidence-based approach, a practice guideline was developed for fall prevention in community-dwelling older persons at risk for falls. ***Objective:*** To test the feasibility of integrating a fall prevention practice guideline into the daily practice of 4 primary healthcare disciplines, i.e. general practitioners, nurses, occupational therapists and physiotherapists. ***Methods:*** This was a descriptive study which was carried out by 10 local health networks located throughout Flanders. The subjects involved in the study were 99 primary care workers and 1,142 community-dwelling older patients (65 years or older) who could rise from a chair and transfer independently. For 6 months, primary care workers implemented our fall prevention guideline, which consisted of 3 parts (case finding, multifactorial in-depth assessment and interventions). After the 6-month trial phase, participating primary care workers were asked to complete a semistructured questionnaire to evaluate the feasibility of using the guideline in daily practice. ***Results:*** The average time spent on carrying out the guideline was 32.0 ± 14.0 min. Healthcare workers from all 4 disciplines considered case finding to be their responsibility. The picture was different for the evaluation of risk factors and interventions. Although 87.5% considered fall prevention to be an important issue, healthcare workers from different disciplines failed to agree about how to integrate the prevention guideline into daily practice. Perceived barriers to implementing the guideline were lack of time (57.3%), poor motivation of the target population (53.3%) and insufficient cooperation between healthcare workers (37.3%). ***Conclusion:*** A guideline can be used to initiate the integration of prevention strategies into daily practice. Case finding is feasible for all disciplines. Multifactorial assessment and interventions require specific task allocation, multidisciplinary cooperation and clear communication.
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Introduction

Falls among the elderly are a common cause of physical and psychological morbidity and healthcare utilization [1–9]. In Flanders, Belgium, the fall prevalence among community-dwelling adults aged 65 years and older is estimated to be at least 39.7%, with one third of these seniors falling at least twice a year [10]. These values

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are similar to international figures [1, 6, 9]. In 1–2% of cases, a fall results in a hip fracture [6]. A recent review found that the excess costs associated with treating hip fractures can reach USD 11,241–18,727 in the first year following the fracture, indicating that hip fractures are costly [4].

It is well established that falls in older adults are the result of multiple, coexisting intrinsic and extrinsic risk factors [1, 5, 9, 11, 12]. Multifactorial approaches have been shown to effectively reduce the rate of falling in community-dwelling older adults when they target the population at risk [13, 14]. In Flanders, fall prevention in older persons has received much attention, leading to many different local and regional initiatives. To ensure a uniform and evidence-based approach, the Flemish government initiated the development of a practice guideline for fall prevention in community-dwelling older persons at risk for falls. However, before implementing this guideline throughout Flanders, the Flemish government enlisted us to test whether it can be feasibly implemented in the daily practice of 4 primary healthcare disciplines, namely general practitioners (GPs), nurses, physiotherapists and occupational therapists, and to examine how these healthcare workers perceive the practice guideline.

Methods

Development of the Practice Guideline

From October 2005 to February 2006, a multidisciplinary panel of experts, stakeholders from homecare organizations and representatives of professional groups and agencies for preventive care held meetings on a regular basis and discussed the construction of the guideline. Development of the guideline was based on international guidelines and reviews [1, 11–14] and on our former fall prevention program [15]. The guideline consists of 3 consecutive parts: (1) case finding or the identification of persons at risk for falling, (2) in-depth multifactorial assessment of risk factors and (3) targeted interventions.

A person was defined as being at risk when he/she had experienced 2 or more falls in the past 12 months or had gait and mobility problems [1, 9, 11, 12]. The latter factor was evaluated with the timed 'Up & Go' test (TUGT) [16]. The TUGT is considered positive when a subject takes 14 s or more to stand up from a chair, walk 3 m, turn, walk back and sit down or when a subject's gait is unsteady or uneven as he/she performs the test. A fall was defined as an 'unexpected event in which the participant comes to rest on the ground, floor, or lower level' [17].

For the in-depth multifactorial assessment, 7 risk factors were selected on the basis of evidence in the literature, feasibility of assessment and intervention in primary care and expert opinion. The selected risk factors are: mobility impairment, medication, postural hypotension, vision, feet and footwear, environment and behavior and fear of falling [1, 9–12, 18–33]. A particular risk factor was assumed to be present as soon as 1 evaluation criterion was identified (table 1). After risk factor identification, discipline-specific multifactorial interventions were conducted. Examples of interventions are shown in table 1; further details can be found elsewhere [35]. Our development efforts produced a guideline summarized into a 2-page work sheet (fig. 1), backed up by an instruction manual.

Testing the Feasibility of the Practice Guideline

The practice guideline was tested in daily practice from March to August 2006. Flanders is divided into 26 local health networks, charged with the coordination of local persons involved in preventive healthcare. Fall prevention is one of the key targets of these networks. During a formal meeting, we explained our project to all 26 local health network regions and invited them to participate in the testing phase. A convenience sample of 10 regions agreed to participate.

Next, we conducted a 2-hour training session for the persons responsible for fall prevention in each of the 10 participating local health networks. All were provided with practice guideline work sheets and manuals, which were to be distributed to the healthcare workers in their regions. The representative from each region was asked to contact 5 healthcare workers from each of the 4 disciplines and to train them in using the guideline. Representatives had to report to the investigators about the course of each training session together with the number and discipline of participating healthcare workers. If needed, they could ask the investigators to support them on 1 training session. In turn, each of the healthcare workers was asked to recruit and apply the practice guideline to 15 community-dwelling older persons seen in a routine home visit. In cases of acute comorbidity (in which there was therefore little sense in assessing falls and mobility), it was left to the GP's discretion whether or not to assess the patient. Patients included in this study were at least 65 years old, living at home, independent in terms of mobility (e.g. being able to move or stand up without the help of others, if necessary using an assistive device, and not being bed or wheelchair bound) and not presenting for medical attention because of a fall. All patients included in our study were informed about the procedure and gave oral informed consent.

We recorded risk factor evaluation results as well as the time it took for healthcare workers to complete each part of the practice guideline. The time information was provided to us from the healthcare workers through self-reports. At the end of the testing period, healthcare workers were asked to send anonymous copies of all work sheets to the person responsible for fall prevention in their region, who then submitted these copies to the investigators for data analyses. Healthcare workers received a small financial compensation for each patient they evaluated.

Finally, an in-depth evaluation of the guideline was conducted by asking all participating healthcare workers to complete a semistructured questionnaire. The questionnaire consisted of 20 questions, including questions dealing with the healthcare workers' perceptions of the importance, practicality and feasibility of using the practice guideline in daily practice.

The review board of the Flemish Government approved this study. Confidentiality of patient data was guaranteed by the provision of anonymous copies of the work sheets to the researchers.

Table 1. In-depth multifactorial assessment and examples of interventions conducted by GPs, nurses, physiotherapists and occupational therapists

Risk factor	Assessment	Evaluation criteria	Interventions
Mobility impairment (muscle weakness and balance deficits) [16, 18, 19]	Four Test Balance Scale [20][a] Timed Chair Stand [21][b] Functional Reach [22][c]	inability to hold 1 of 4 positions for 10 s inability to perform test within 14 s inability to reach further than 25 cm	referral to physiotherapist (GPs) education on importance of exercising (nurses) individualized exercise program (PhysT) advise to use assistive devices (OccT)
Medication [23–26]	medication count kind of medication	polypharmacy (≥4 medications) use of benzodiazepines, sedatives, neuroleptics, antidepressants, digitalis, diuretics, class IA antiarrhythmics	review and/or reduce medications (GPs) education on the effect of medications on falls (nurses) referral to GP (PhysT) referral to GP (OccT)
Postural hypotension [9, 18, 27]	'Do you feel dizzy or lightheaded when getting up from a chair, couch, out of bed, or when bending?' evaluation of fall in BP[d]	reporting dizziness when getting up or bending systolic BP fall >20 mm Hg or diastolic BP fall >10 mm Hg on standing; systolic BP ≤90 mm Hg on standing	etiology and causal treatment (GPs) advise to prevent postural hypotension (nurses) advise to prevent postural hypotension (PhysT) advise to prevent postural hypotension (OccT)
Vision [28]	'Do you have difficulty with reading, driving, or watching TV?' date of last checkup evaluation of bifocal glasses linear E chart[e]	reporting difficulty with reading, driving, watching TV last checkup >1 year ago difficulty using bifocal glasses score ≤4/10	referral to ophthalmologist (GPs) discussion of problem with family (nurses) education on dangers of bifocal glasses (PhysT) advise to consult ophthalmologist once a year (OccT)
Feet and footwear [29, 30]	clinical evaluation of feet clinical evaluation of footwear	foot disorders (e.g. in-grown nails, calluses, presence of pressure points) unsteady shoes, open-back shoes, high heels, slippery soles	treatment or referral to orthopedic surgeon (GPs) advise decent footwear (nurses) advise decent footwear (PhysT) advise decent footwear (OccT)
Environment and behavior [9, 31]	'Are there any factors in your house that raise the risk for falls?' 'Do you turn the light on when you go to the bathroom at night?'[f] 'Are you afraid of falling?'	environmental risks (e.g. loose rugs, insufficient lighting) inappropriate behavior (e.g. standing on chair or stepladder to get something)	referral to occupational therapist (GPs) checklist for home safety (nurses) advise safe environment and behavior (PhysT) assessment of environment (OccT)
Fear of falling [10, 32]	'Do you limit your activity due to fear of falling?'	reporting fear of falling reporting restriction of activity as a result of fear of falling	education on risk factors for falls (GPs) information about personal alarm system (nurses) education on getting up after a fall (PhysT) assess with Falls Efficacy Scale-International [34] (OccT)

PhysT = Physiotherapist; OccT = occupational therapist; BP = blood pressure.

[a] The patient was asked to take the following 4 positions consecutively: stand with feet together, semi-tandem stand, tandem stand, one-leg stand.

[b] The patient was asked to repeat the following action 5 times: stand up from a chair without using arms and sit back down again.

[c] A meter stick was positioned horizontally on a wall, and the patient was asked to reach as far as possible in the standing position and after bending forward (physiotherapists only).

[d] Patient's blood pressure was measured after more than 5 min in a supine position, immediately after standing and 2 min after standing.

[e] The test is performed with the patient positioned 5 m from the chart; both eyes are tested together and the patient wears his/her glasses.

[f] The behavioral assessment consisted of 3 other questions regarding risky behavior: 'Do you perform unsafe activities such as hurrying to the door or to the phone when it rings or using a chair or ladder to reach for things located above your head?'; 'Do you wear unsteady shoes (e.g., slippers)?', and 'Do you perform other unsafe activities?'.

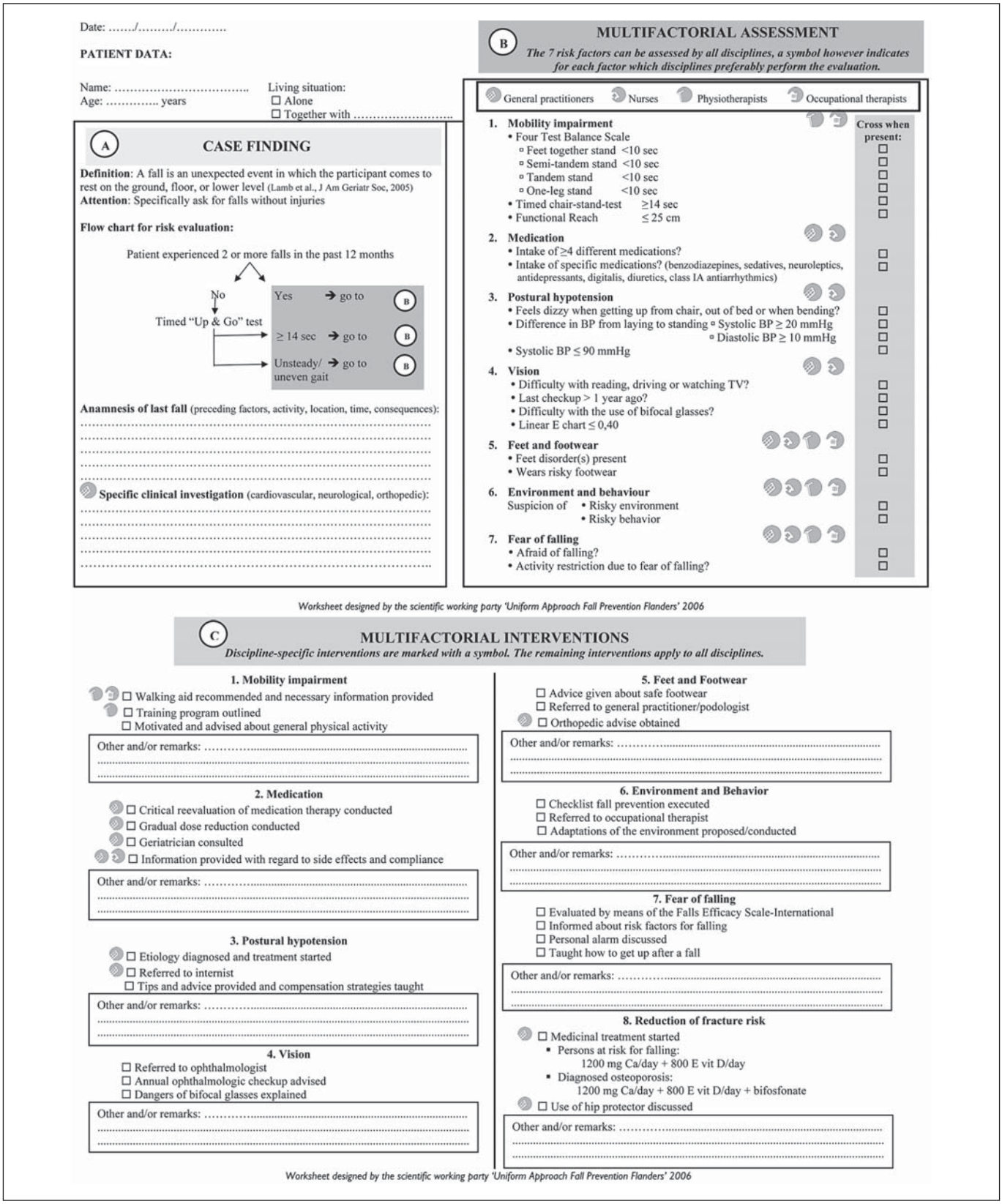

Fig. 1. Work sheet practice guideline for community-dwelling older persons at risk for falling.

Analysis

Frequencies and percentages were used for the nominal variables and means and standard deviations for the continuous variables. Group differences for the nominal variables were analyzed using Pearson's χ^2 test. Unpaired Student t tests were applied for the continuous variables. A p value of <0.05 was considered to be statistically significant.

Results

Sample

Ninety-nine healthcare workers agreed to participate in the study: 23 GPs, 34 nurses, 25 physiotherapists and 17 occupational therapists. The groups of nurses and occupational therapists were composed of more women (97.0 and 88.2%, respectively), were younger (37.1 ± 9.8 and 35.0 ± 9.9 years, respectively) and had less clinical experience (13.5 ± 9.5 and 13.6 ± 9.2 years, respectively) compared to the groups of GPs and physiotherapists (39.1 and 36.0% women, 47.9 ± 11.4 and 45.4 ± 7.0 years of age, and 21.7 ± 11.6 and 22.4 ± 7.2 years of clinical experience, respectively).

The healthcare workers screened 1,142 subjects (GPs, n = 273; nurses, n = 446; physiotherapists, n = 297; occupational therapists, n = 126) who met the inclusion criteria and agreed to participate in our study. Participants were, on average, 78.8 ± 7.1 years old, half of them lived alone (51.1%) and 2 of 3 were women (67.4%).

Somewhat more than half of the sample (52.0%, n = 592) was at risk for falling according to the criteria formulated: 59.1% had fallen twice or more in the previous year, 78.9% had a TUGT score of 14 s or more and 74.4% exhibited an unsteady gait. The at-risk group was on average older (80.6 ± 6.8 years; $p < 0.001$) than the not-at-risk group (76.8 ± 6.9 years). Moreover, the at-risk group comprised more females (73.2%; $p < 0.001$) and individuals living alone (54.1%; $p < 0.05$) than the not-at-risk group (61.3% females and 47.9% living alone).

Approximately 94% of the at-risk patients (n = 559) received further in-depth assessment; of these patients, 94.5% (n = 528) received interventions. At-risk patients exhibited, on average, 4.7 ± 1.4 risk factors. Mobility was the most frequently present risk factor (94.4%), followed by medication (77.0%), vision (73.0%), fear of falling (72.9%), postural hypotension (56.3%), environment and behavior (51.1%) and feet and footwear (51.0%).

Time Investment

The average time spent on case finding was 6.1 ± 4.0 min. Case finding was in general more time-consuming when dealing with the at-risk group than with the not-at-risk group (7.0 ± 4.2 and 5.0 ± 3.3 min, respectively; $p < 0.001$). In-depth multifactorial assessment and discipline-specific interventions required, on average, 14.0 ± 7.3 and 11.9 ± 7.5 min, respectively, to complete. Clear differences were noted between disciplines, with GPs spending the least time on case finding, in-depth multifactorial assessment and interventions compared to that spent by members of the other disciplines (table 2).

Appraisal and Feasibility

Of the 99 participating healthcare workers, 75.8% (75/99) responded to the questionnaire survey evaluating their perceptions of the guideline. All responders (100%) considered their own profession to be responsible for performing case finding. Most of them found it meaningful to conduct in-depth multifactorial assessment (84.4% of nurses, 92.9% of GPs, 100% of occupational therapists and physiotherapists) and interventions (77.5% of nurses, 100% of GPs, occupational therapists and physiotherapists). The majority of healthcare workers (62.6% of nurses, 66.7% of GPs, 77.8% of occupational therapists and 79.0% of physiotherapists) thought that the case-finding procedure was feasible for application in daily practice.

With regard to the in-depth assessment of patients for fall risk factors (table 3), at least 80% of the healthcare workers from the 4 disciplines felt that they could feasibly evaluate the factors feet and footwear, environment and behavior and fear of falling. Interestingly, at least 78.6% of GPs, nurses, occupational therapists and physiotherapists considered that it was the responsibility of members of their own discipline to perform this evaluation. Further, GPs generally also felt responsible for the assessment of the 4 remaining risk factors (mobility impairment, medication, postural hypotension and vision) and considered assessment of these to be feasible, except for vision (only 53.3%).

Nurses felt that nurses are responsible for assessing mobility impairment, postural hypotension and vision and believed that such assessment can be feasibly undertaken in daily practice. Although the majority of nurses (87.5%) considered that they could feasibly assess whether medication contributed to a patient's risk for falling, only 42.9% viewed this assessment as being part of their professional duties.

Occupational therapists and physiotherapists unanimously assumed that they are responsible for assessing mobility impairment and believed that doing so was feasible in daily practice. By contrast, 50% or more of occu-

Table 2. Time invested (in minutes) in case finding, in-depth multifactorial assessment and multifactorial interventions

	GPs	Nurses	Physio-therapists	Occupational therapists	Totals
Case finding					
All patients	n = 273	n = 446	n = 297	n = 126	n = 1,142
Mean ± SD	4.5 ± 4.0	6.9 ± 3.7	5.2 ± 3.5	8.2 ± 4.1	6.1 ± 4.0
Minimum – maximum	0.3 – 18	1 – 30	1 – 20	2 – 30	0.3 – 30
At-risk patients[a, b]	n = 110	n = 222	n = 169	n = 91	n = 592
Mean ± SD	5.3 ± 4.0	7.6 ± 4.0	6.2 ± 4.0	9.2 ± 4.1	7.0 ± 4.2
Minimum – maximum	1 – 18	2 – 30	2 – 20	3 – 30	1 – 30
Not-at-risk patients[b]	n = 163	n = 224	n = 128	n = 35	n = 550
Mean ± SD	3.7 ± 3.9	6.2 ± 3.3	4.0 ± 2.0	5.2 ± 2.3	5.0 ± 3.3
Minimum – maximum	0.3 – 18	1 – 19	1 – 10	2 – 15	0.3 – 19
In-depth multifactorial assessment	n = 99	n = 206	n = 163	n = 91	n = 559
Mean ± SD	9.8 ± 4.7	16.4 ± 6.6	12.2 ± 7.0	16.4 ± 8.5	14.0 ± 7.3
Minimum – maximum	1 – 25	5 – 38	3 – 35	5 – 60	1 – 60
Multifactorial interventions	n = 90	n = 204	n = 161	n = 73	n = 528
Mean ± SD	8.5 ± 5.0	12.9 ± 6.2	12.4 ± 9.6	12.1 ± 6.8	11.9 ± 7.5
Minimum – maximum	1 – 35	2 – 35	1 – 60	3 – 40	1 – 60
Entire guideline[c]	n = 88	n = 197	n = 161	n = 72	n = 518
Mean ± SD	23.1 ± 10.4	36.3 ± 10.6	29.9 ± 15.8	35.6 ± 15.5	32.0 ± 14.0
Minimum – maximum	2 – 58	15 – 90	7 – 85	18 – 105	2 – 105

SD = Standard deviation.

[a] Had ≥2 falls in the past 12 months, or a timed 'Up & Go' score of ≥14 s or an uneven/unsteady gait.

[b] The difference between the average time spent on case finding for at-risk patients and for not-at-risk patients was significant at $p < 0.001$, as assessed with the unpaired Student t test.

[c] The time taken to complete the entire guideline was based only on cases in which times were measured for all 3 parts of the guideline.

pational therapists and physiotherapists considered evaluating medication, postural hypotension and vision not to be part of their professional duties. Moreover, half of the occupational therapists and at least 57% of physiotherapists felt it was not feasible for them to assess some of these specific factors.

Our survey also evaluated the feasibility of implementing discipline-specific interventions for identified risk factors. Perceptions of feasibility varied between disciplines, from 62.6% for nurses and 73.3% for GPs to 100% for occupational therapists and physiotherapists.

At least 87.5% of all healthcare workers surveyed stated that fall prevention is important. Between 70.7% (nurses) and 92.8% (GPs) of healthcare workers judged our practice guideline to be meaningful. Moreover, 88.9% of occupational therapists, 84.2% of physiotherapists and 71.4% of GPs believed that the guideline could be successfully integrated into their daily practice, whereas only 51.6% of nurses believed this would be possible. All healthcare workers mentioned that the most significant barriers to implementing our guideline in their daily practice were large time investment without adequate compensation (57.3%), poor patient or family motivation (53.3%) and lack of communication and collaboration between healthcare workers (37.3%).

Discussion

To our knowledge, ours is the first European study to test the feasibility of implementing a fall prevention practice guideline in the daily practice of 4 healthcare disciplines involved in primary care. More specifically, our results provide insight into the challenges and barriers encountered with regard to identification of patients at risk for falling, in-depth multifactorial assessment of risk factors and targeted interventions in a multidisciplinary setting in primary care.

Table 3. Opinions of GPs, nurses, physiotherapists and occupational therapists on the feasibility and their responsibility for assessing each fall risk factor

Risk factor being assessed	Primary care professional performing the assessment	Feasibility, %	Responsibility, %
Mobility impairment	GPs (n = 15)	92.8	86.7
	Nurses (n = 32)	81.3	76.7
	Physiotherapists (n = 19)	100.0	100.0
	Occupational therapists (n = 9)	100.0	100.0
Medication	GPs (n = 15)	93.4	100.0
	Nurses (n = 32)	87.5	42.9
	Physiotherapists (n = 19)	63.1	15.8
	Occupational therapists (n = 9)	50.0	11.1
Postural hypotension	GPs (n = 15)	86.7	100.0
	Nurses (n = 32)	75.0	61.4
	Physiotherapists (n = 19)	42.2	36.8
	Occupational therapists (n = 9)	42.9	11.1
Vision	GPs (n = 15)	53.3	73.3
	Nurses (n = 32)	67.7	58.6
	Physiotherapists (n = 19)	84.2	50.0
	Occupational therapists (n = 9)	75.0	44.4
Feet and footwear	GPs (n = 15)	80.0	92.9
	Nurses (n = 32)	93.8	100.0
	Physiotherapists (n = 19)	100.0	94.4
	Occupational therapists (n = 9)	100.0	100.0
Environment and behavior	GPs (n = 15)	80.0	78.6
	Nurses (n = 32)	87.5	100.0
	Physiotherapists (n = 19)	94.7	94.4
	Occupational therapists (n = 9)	100.0	100.0
Fear of falling	GPs (n = 15)	93.3	100.0
	Nurses (n = 32)	87.5	100.0
	Physiotherapists (n = 19)	100.0	100.0
	Occupational therapists (n = 9)	100.0	100.0

All healthcare workers felt responsible for undertaking case finding. The large majority also found that case finding could be easily incorporated into their daily practice, thereby confirming the feasibility of proactive identification of persons at risk for falling during clinical encounters in primary care, as recommended by international guidelines [1, 12].

Healthcare workers differed in their opinions with regard to risk factor assessment and interventions. Although GPs generally considered these 2 parts of the guideline to be feasible and to be part of their professional duties, occupational therapists and physiotherapists had clear opinions regarding the feasibility of risk factor assessment and whether it is their professional responsibility to carry it out. The majority of GPs, occupational therapists and physiotherapists participating in our study believed that the basic strategy of the guideline could be successfully integrated into their daily practice. In contrast, nurses generally believed it was feasible to integrate risk factor assessment into their daily practice as part of their professional duties, while half of them doubted the successful integration of the entire guideline, mainly because of time constraints.

Multifactorial approaches have been proven to be effective in reducing fall rates and are therefore indispensable when tackling the problem of falls in persons at risk [13]. Thus, studies should identify the best way to deliver multifactorial approaches and to overcome different barriers. The Connecticut Collaboration of Fall Prevention (CCFP) set up a policy to disseminate evidence-based fall

risk assessment strategies in the standard care of different healthcare workers using professional behavior change strategies [36]. Outreach visits from CCFP physicians to healthcare workers of different disciplines took place in both the hospital and primary care settings. Primary care providers were harder to reach and to engage [36]. However, primary care settings are becoming more and more important in light of the growing aging population.

In the CCFP effort, similar barriers were identified, such as time constraints and healthcare workers believing that certain risk factor assessments were beyond their usual duties. Occupational therapists and physiotherapists are not trained to evaluate risk factors such as medication and postural hypotension and usually do not possess the equipment needed to perform a comprehensive risk factor assessment. GPs and nurses, however, are trained to assess these specific risk factors. Nurses theoretically serve as important sentinels, yet their sentinel role is hampered by competing demands and heavy workloads.

Indeed, our study, as well as others [15, 36, 37], has identified heavy workload as a key reason why healthcare workers fail to completely implement fall prevention programs. Although the entire approach – case finding, in-depth assessment and interventions – can be fully carried out in approximately half an hour, lack of time was still the main barrier identified by healthcare workers from all 4 disciplines preventing them from carrying out the entire guideline. We believe, however, that reducing the guideline further would negatively affect its effectiveness. The literature does not list a minimum number of factors necessary to assess fall risk, but the 7 risk factors we list in our guideline are considered to be the most important ones and correspond to those selected by other studies [1, 13, 36].

One strategy to deal with some of the aforementioned problems is to divide risk factor assessment duties among different healthcare workers according to their specific competencies. Achieving this strategy would require that our work sheet be integrated into already present home-care plans, allowing each healthcare worker involved in caring for an older person to complete part of the in-depth assessment, register important findings and review findings of healthcare workers from other disciplines. The problem with this strategy is that many older persons at risk for falling do not receive home care from multiple healthcare workers. Cooperation between healthcare workers and knowledge of the competencies and expertise of healthcare workers from other disciplines are essential to ensure quality of care, together with familiarity with referral patterns. Often this type of knowledge is lacking in primary care [36]. In Flanders, primary care workers do not usually work together in well-established teams; this lack of cooperation often promotes misconceptions about the coordination and follow-up of evaluations and interventions conducted by different healthcare workers. Intuitively, GPs should play a key role in this coordination. Yet, it has been reported that there is a lack of physician cooperation [15, 37] and awareness of the problem of falls in the elderly population [38].

A related problem is the absence of adequate financing mechanisms for fall prevention. Existing reimbursement modalities are few and poorly oriented to the specific problem of falls [36, 38]. Although falls are a typical geriatric problem that needs to be addressed by healthcare workers from various disciplines, in Flanders, primary care multidisciplinary team discussions are covered financially only if well-defined conditions are fulfilled. Often, these conditions are not fulfilled solely on the basis of a fall problem. Yet, the costs of falls and fall-related consequences are considerable [3, 4, 39]. Preventive approaches are most effective when they target the population at risk [13, 14], and initial evidence is available regarding the cost-effectiveness of fall prevention programs [40–42]. However, more studies evaluating effectiveness and cost are needed to assist decision makers in determining whether or not to implement a particular prevention program.

The introduction of our practice guideline does not contain provisions to educate older people to enhance their motivation to prevent falls. Lack of patient compliance and family involvement are key barriers frequently mentioned by other studies [37, 38], which were confirmed by the current study. Widespread misperceptions apparently exist among older people about being at risk for falling, the actual causes of a fall and the content of fall prevention programs [43–45]. Even in older adults who had sustained a fall, no more than 52% considered fall prevention and only 55% believed that falls are preventable [46]. Therefore, together with the implementation of a practice guideline by healthcare workers of different disciplines, older people and their families should be educated about the importance of fall prevention and encouraged to report fall-related events to healthcare workers [38]. The Prevention of Falls Network Europe recently published recommendations to promote participation in and adherence to fall prevention interventions. Key elements are raising awareness of the benefits of partaking in physical activities, using an individualized ap-

proach with the focus on self-management and benefits that reflect a positive self-identity embedded in a broader societal context, and using validated methods when promoting or assessing adherence [47].

Because our study involved a relatively small sample size, care should be taken in generalizing from our results. Moreover, bias may exist because it is likely that the most motivated healthcare workers participated in our study. However, the demographic data from the patients and professionals who participated in our study reflect the population in Flanders. The results of positive risk factors identified by the healthcare workers were not validated. However, the criteria of evaluation and interpretation of the 7 risk factors were derived from the literature and were clearly outlined in the manual and work sheet. Further, this guideline was only tested in patients not presenting for medical attention because of a fall. The feasibility of this guideline should be further tested in patients presenting spontaneously due to a fall.

The results of our study represent the first step in initiating the implementation of a practice guideline for fall prevention in the daily practice of primary care workers. Case finding was found to be feasible in daily practice. In-depth assessment and interventions, however, were found to require the cooperation of different disciplines in order to be successfully implemented in daily practice. In light of this, integration and implementation of fall risk assessment and interventions require specific task allocation, coordination and clear communication between all healthcare workers involved in caring for persons at risk for falling. Significant changes in professional health education (e.g. multidisciplinary teaching strategies, reaching beyond traditional disciplinary and geographic borders) may add to this. Additionally, healthcare systems need to be reorganized to meet the challenges of finding adequate financing systems to deal with specific geriatric conditions in community settings and of raising the population's awareness regarding fall prevention.

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