# **Research**Summary

**NHS**
**National Institute for Health Research**

# Scoping exercise on fallers' clinics

Older people living in the community are at increased risk of falling and fall-related injuries. Fallers' clinics aim to prevent these falls and to reduce morbidity and mortality associated with them. However, we do not know how well these clinics target people at risk of falling, or how well they prevent future falls. This study describes how fallers' clinics function, and explores ways in which their success can be measured so that a much-needed economic appraisal can be carried out. It also identifies some key areas that would benefit from further research.

This summary is based on research led by Sarah Lamb at Warwick Medical School (Lamb *et al*, 2007) and was commissioned by the NIHR Service Delivery and Organisation Programme (SDO). It is for any health professionals interested in preventing falls in older people, including policy makers and health managers, as well as patients and those responsible for their care.

## **Key findings**

● Fallers' clinics in the UK aim to reduce the health impact and costs associated with falls. Current services cost approximately £32.5 million per year.

● Clinics vary greatly in their organisation, the skills mix of their staff, the procedures used, and how they manage their clients.

● The evidence indicates clinics have negligible clinical effect, but the ability to assess this is constrained by the variability in their organisation and limited outcome data.

● A common service pathway can be identified, but the key parameters must be linked to reliable information on costs and clinical effectiveness in order to conduct economic modelling.

● Further research in several key areas would generate high-quality data to tie together currently disparate evidence.

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# Background

The costs associated with hospitalisation and long-term care of people aged over 75 for falls and fall-related injuries in the UK are very high – estimated at £981 million per year (Scuffham *et al*, 2003). These costs are likely to rise further as the aged population continues to grow.

In 2001 The National Service Framework for Older People highlighted the need to reduce the health impact of falls (Department of Health, 2001). As a result of this publication, hundreds of fallers' clinics were set up throughout the UK. However, they received very little guidance on how to do this.

The first guidelines on the matter were published some years later, by the National Institute for Health and Clinical Excellence (NICE, 2004), and these addressed many operational aspects of running fall-prevention services, including client assessments and interventions. By the time they were published, however, fallers' clinics throughout the UK had already set in place their own specific approaches and procedures. These clinics may share common aims, but they have very different ways of achieving them.

In 2004 a much-needed economic analysis of fallers' clinics was launched. Unfortunately it was suspended because evidence was so poor at that time. This scoping study aimed to increase the body of evidence on fallers' clinics, to map out a model of service delivery, and to quantify the impact of these clinics on falls prevention. If sufficient high-quality data was generated, robust economic modelling would become possible. Its approach was twofold:
● to survey all existing NHS fallers' clinics
● to systematically review all published trials of falls screening and interventions.

Measures were taken to classify and standardise diverse information obtained from 231 clinics in different settings across the UK and to combine this information, where possible, with relevant data extracted from the literature.

# Practical findings

## What are fallers' clinics?

Fallers' clinics provide a range of fall-prevention services. Most mention "falls" or "fallers" in their title, but not all mention that they are a "clinic". Their common goals and practices have led to a definition of fallers' clinics that is consistent with the NICE guidelines.

> **Definition of a fallers' clinic**
> *A facility based either in primary or secondary health care that administers services to individuals with the purpose of preventing falls and involves qualified health professionals in the delivery of some or all of the assessment and intervention.*

## Aims of fallers' clinics

The most common aims are:
● to reduce falls
● to reduce health and social care use
● to reduce fall-related injuries
● to improve quality of life
● to increase physical activity
● to reduce fear of falling
● to improve function.

## Settings and staffing

Over half of fallers' clinics are in urban areas, in both community and acute hospitals, and a few in emergency departments. Most are staffed by multidisciplinary teams of health professionals, with a very broad skills mix. Teams based in acute-sector hospitals usually consist of a doctor, physiotherapist, nurse and occupational therapist. Other teams include rehabilitation assistants, exercise instructors, podiatrists, psychologists, social workers, speech therapists and dieticians.

## Referrals and first point of contact

Most referrals are from health professionals; open referrals and self-referrals are less common. Referrals from clients' families, nursing homes and voluntary agencies are occasionally accepted, but a few clinics only accept referrals from a doctor. The first point of contact is via community hospitals, primary care, social services, or acute and emergency departments. There are 10 to 1700 new attendances at these clinics per year.

## Selection and eligibility

Clients must fulfil specific criteria to be accepted onto a fall-prevention programme. Multiple criteria are normal, usually based on one of more of the following factors:
● the number of previous or near falls (and fear of falling)

● results from a screening test
● the number of medications taken.

Only 18 clinics use no criteria at all. Gender is never a factor in selection, but age is. For example, some clinics only accept clients over the age of 60 and some accept anyone over 15. The age range of clients attending these clinics is 16 to 105.

## Screening tests

### Variability of screening tests
The variability is great. Numerous screening tools are used in these clinics, with data on 28 different tools found in the literature alone. Of the published tools, a few are used more frequently, such as the Falls Risk Assessment Tool (FRAT), the Performance-Oriented Mobility Assessment (POMA), the Tinetti Mobility Test (TMT), the Stops Walking When Talking (SWWT) and the Timed Up and Go (TUG).

However, while some clinics use published tools, others devise their own. Some of the tools are of questionable quality. Others are used that were designed for entirely different settings or patient groups. Some clinics use identical tools, but there is little standardisation in the way they are performed, scored or interpreted. Many clinics assess precisely the same aspects of their clients' health, but they may use very different tools to do so.

### Predictive value of screening tests
Published trial data was used to determine the predictive value, sensitivity and specificity of various tools that assess patient factors (such as gait and balance) which relate to the risk of future falls. These tools included the TUG, FRAT, SWWT, TMT, Mobility Interaction Fall (MIF) chart and the Berg Balance Scale. However, the studies that focussed on the number of falls in older people after an initial screening test varied widely in terms of their design, the way in which they recorded and defined events and outcomes, and the losses they incurred to follow-up. As a result, no firm conclusions could be drawn on predictive value.

The most valuable screening tool reliably excludes anyone *not* at high risk for falls, and establishes a baseline level of risk with which to compare future outcomes. Such a tool was not identified during the course of the systematic review.

## Assessment of fallers

Most clinics use multiple criteria to assess the risk of falling. These address many health and lifestyle factors. Although the precise criteria vary, individual clinics generally evaluate factors relating to the client's gait and balance, home environment, medication regimen

and cardiovascular status. The FRAT, POMA and TMT are used most frequently, but some clinics base their assessments on the 2004 NICE guidelines.

> **Common assessments carried out in UK fallers' clinics** *(from most common to least common)*
>
> ● Gait and balance
> ● Environmental and home hazards
> ● Medication review
> ● Cardiovascular health
> ● Vision
> ● Incontinence
> ● Cognitive function
> ● Foot care
> ● Geriatric assessment
> ● Diet and nutrition
> ● Bone health
> ● Hearing
> ● Others (mobility, personal protection, daily functioning, fear of falling)

Meaningful comparisons are very difficult to make between these clinics, however. They use dozens of different tools, and apply and interpret them in many different ways. This is true even when evaluating the same trait – cardiovascular function, for example, can be determined by sinus carotid massage or listening to heart sounds, from electrocardiographic recordings or blood pressure measurements – and blood pressure can be measured in the clinic with the patient in one of several positions, lying or standing or sitting, or in the community using a 24-hour ambulatory monitor.

## Interventions

### Types of interventions
Over 80 per cent of clinics tailor their interventions to the individual client's needs, and these interventions tend to be multifactorial. The most widespread interventions are:
● improving client knowledge
● physical exercise
● medication review.

Less common interventions address general bone health (such as osteoporosis), foot health, cardiovascular health, vision and hearing, urological problems, and personal mobility and safety.

### Value of interventions
Determining the true value of any intervention is confounded by the limited data and the lack of homogeneity in methodology among the clinics. Some

interventions are supervised, others are not; some are performed within the clinic, and others in the client's home. Patient information may be provided routinely, but it is from very different sources and may be in the form of brochures or a talk by staff members. Exercise programmes may last for one week or many months, and might deal with any aspects of physical fitness – mobility, gait, balance, coordination, strength, resistance, flexibility or endurance. Medication review may result in dose reduction of one drug, withdrawal of another, or addition of completely new one.

## Onward referral and follow-up

While some fallers' clinics deal with certain related health problems, others refer their clients onwards to GPs, consultants or pharmacists, or other providers dealing with personal mobility or home safety. Many clients are referred to cardiac pacing units for heart problems, but surprisingly few are sent to the bone health services.

Just over half of UK clinics provide follow-up care. When it is carried out it is usually face-to-face and comprises of one to four sessions over a period of as little as 2 weeks or as long as a year (with an average of 21 weeks).

## A common service pathway

The main features of the service provided by fallers' clinics are referral, screening, assessment, intervention, onward referral, and follow-up. In all cases, routine collection of data is poor.

## Clinical effectiveness of fallers' clinics

Any evidence of clinical improvement is weak because of limited available data, as well as the absence of an accurate tool for measuring baseline risk of falling. Only a few high-quality reviews compare interventions with control treatments, but these use different assessments, interventions, outcome measures and follow-up periods.

This inconsistent methodology means it is not possible to draw firm conclusions about outcomes such as the number of falls and fall-related injuries and risk reduction.

### Impact on falls and fall-related injuries
From the current evidence, fallers' clinics have only a small impact on the number of falls during the follow-up period. Some trials show interventions to be no more effective than controls, but other results show a 20 per cent reduction in falls. From this limited data, the overall reduction in falling is estimated at 10 per cent. The number of lacerations, sprains, joint dislocations and head injuries are also unaffected. No information was available on peripheral fractures, which is considered a highly relevant indicator in such studies.

### Reduction of falling risk
Information on risk reduction is very useful for economic analysis, but only limited data was available on this. The overall falls' risk reduction estimated from data in this study is 0.9.

### Impact on other outcomes
There was no effect on mortality, transition to institutional care, hospitalisation, emergency department attendance and health-related quality of life, but a slight increase in GP attendances was found.
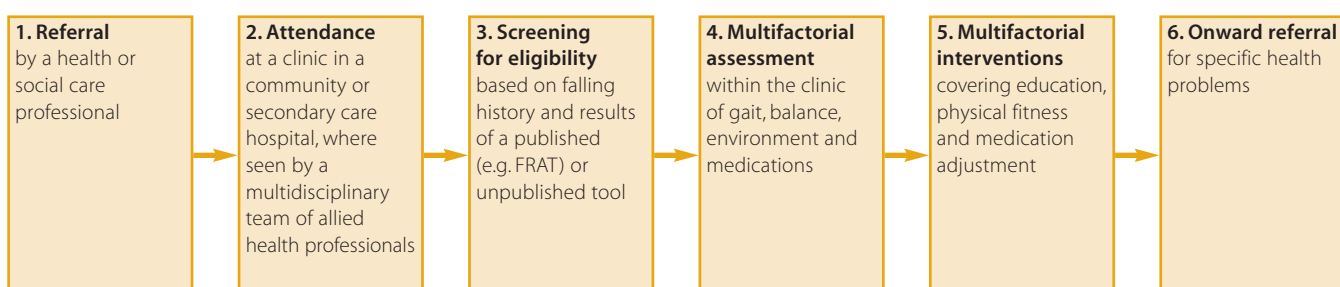
### Impact of other clinical factors
For all interventions examined there is no suggestion of a link between outcome and the setting of the clinic, whether hospital-based or in primary care or the community. There is also no difference in outcome when only high-risk clients are selected, or when a doctor is included in the multidisciplinary team.

## Economic factors

Indepth economic appraisal of fallers' clinics is required because the evidence for shaping future policy on them is very scarce. A number of economic factors were considered in this study.

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## Common service pathway for UK fallers' clinics

| **1. Referral** by a health or social care professional | **2. Attendance** at a clinic in a community or secondary care hospital, where seen by a multidisciplinary team of allied health professionals | **3. Screening for eligibility** based on falling history and results of a published (e.g. FRAT) or unpublished tool | **4. Multifactorial assessment** within the clinic of gait, balance, environment and medications | **5. Multifactorial interventions** covering education, physical fitness and medication adjustment | **6. Onward referral** for specific health problems |

# Conclusions

### Resource utilisation

These costs relate to factors such as the staffing and floor area of the clinic, patient transport and refreshments, and the drugs and equipment used for assessing and treating them. The systematic review found no published evaluations of UK services specifically. However, cost data was available on 162 existing clinics from community, acute and emergency settings. From this data, the estimated annual cost of fallers' clinics was calculated to be £32.5 million. These costs vary across different clinical settings thus:

- 58% in 79 acute-sector clinics
- 39% in 79 community clinics
- 3% in 5 emergency department clinics.

### Cost-effectiveness

Cost data must be attached to outcome data, no matter how weak the health benefit might seem from current evidence, in order to determine the impact of various clinical models of fallers' clinics and to construct a cost-effectiveness model that precisely represents their current activity. The vast body of evidence generated by this study did not produce sufficient high-quality data for these purposes. On this basis, economic modelling cannot be recommended, nor can the widespread implementation of fallers' clinics for reducing fall-related injuries.

### Effective modelling

A first step towards effective economic is to find a tool that provides a baseline risk of falling so that any clinical benefit can be quantified. Then, all the key components in the service delivery pathway must be clearly identified so they can be related to known models of effectiveness. A more precise model can be structured by defining these parameters more strictly, by focussing on specific aspects of each:

- *Population:* community-dwelling older people only (excluding those from residential or nursing homes).
- *Selection:* clients presenting opportunistically vs clients presenting proactively.
- *Eligibility:* triage used before assessment and/or before intervention.
- *Resources:* precise costs of interventions and treatments.
- *Follow-up:* long-term, preferably using a lifetime horizon.
- *Event data:* precise injury definitions such as peripheral fractures, hip fractures, head injuries.
- *Outcomes:* resource and health implications of discharge to home vs residential or nursing care settings; quality of life weights relative to different events; post-event mortality.

Fallers' clinics are facilities based either in primary or secondary health care that administer a range of services aimed at preventing falls. Qualified health professionals are involved in the assessment and intervention procedures.

### Common features

The way in which fallers' clinics operate and manage their clients has proved to be very diverse, but they do share common aims and a common service pathway that encompasses client referral, screening, assessment, interventions, onward referral and follow-up.

### Limitations of existing evidence

Every effort was made to combine evidence from the published data with observations of current clinical practice. There was limited success in doing this, however, because of the immense variability in existing practice, and because of the often flawed, inconsistent methodology in the published trials.

### Effectiveness of falls prevention

The true cost–benefit relationship of fallers' clinics is not yet known. It is difficult to draw firm conclusions with such limited high-quality evidence. Although the estimated cost of these services was calculated from the survey data, there was poor information on resource use to relate it to. The weak evidence observed for improved outcome after treatment was also derived from limited data, and it was not possible to relate this to valid outcome measures.

### Modelling of fallers' clinics

The limited evidence means it is not yet possible to formulate accurate models of service delivery and cost-effectiveness on which to base economic appraisal. Therefore it is not known whether fallers' clinics are an efficient use of limited NHS resources or if their high costs can be justified. The key parameters of the service pathway identified in this study will, however, contribute to robust modelling of fallers' clinics and help determine the most effective configuration.

Clearly, further research is needed to better inform future policy decisions about the running and implementation of fallers' clinics. Some recommendations for obtaining high-quality research data are outlined in the following section.

# Future research

Large-scale, high-quality, randomised controlled trials of fall-prevention interventions are needed that focus on older, independent-living people in the UK. Such trials should be accurately designed and free from bias. They should employ consistent methodology with rigidly defined parameters so that their results can be pooled for thorough statistical analysis.

It is important to ensure consistency in the both the screening and assessment procedures used, the way they are used and in their interpretation. Analysing the predictive values, sensitivities and specificities of the wide range of screening tools available may allow a single tool to be identified that is accurate enough to select only people at the greatest risk of falling. Ideally, this tool would also provide a baseline measure of risk against which outcomes can be uniformly measured in order to quantify any clinical benefit.

Valid indicators of outcomes must be established, preferably those that are most significant for health modelling, to better guide NHS policy. The most appropriate outcomes relate to peripheral fractures, admission to hospital or residential care, mortality, morbidity, health-related quality of life, and usage of health resources.

Data is needed on the costs associated with all operational aspects of fallers' clinics, including resources used at each step of the service pathway. These must then be linked to the known outcomes.

Controlled comparisons are needed between treated and untreated groups and between different interventions, as well as different clinical settings. The impact of those interventions and any benefits they confer needs to be examined both in the short and the long term. Furthermore, it would be valuable to explore the underlying causes of fall-related injuries, in order to design interventions that address them more specifically.

# About the study

This study drew information on fall-prevention services in the UK from two primary sources – a scoping exercise and a systematic review.

*Scoping survey of existing clinics:* The study targeted a total of 298 clinics that deliver fall-prevention services in the NHS. Of these, 231 undertook structured interviews about their organisation and staffing, as well as their selection, assessment and treatment of clients. Data was collected on any costs associated with clinical procedures and resources. The clinics' aims and approaches were compared to develop a precise definition of fallers' clinics that is compatible with NICE specifications. The ProFaNE (Prevention of Falls Network Europe) taxonomic system was used to classify and standardise the diverse information obtained (Lamb *et al*, 2005) and to allow comparison with data acquired from published trials.

*Systematic literature review:* Evidence was obtained from a series of systematic reviews, using highly tailored search strategies to sift through the large quantity of literature. The search strategies were largely guided by the findings of previous Cochrane reviews (Gillespie *et al*, 2003; McClure *et al*, 2006). Targeted trials included those of screening and interventions in independent older people who had fallen, or who were at risk of falling, and economic data was collected whenever it was available. Diverse information was standardised for comparison using the ProFaNE system, and all data were assessed for quality. Meta-analyses were conducted where possible.

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# Further information

The full report, this research summary and details of current SDO research in the field can be downloaded at: www.sdo.lshtm.ac.uk

**Disclaimer**

This report presents independent research commissioned by the National Institute for Health Research (NIHR). The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the NHS, the NIHR, the SDO programme or the Department of Health

**Addendum**

This document was published by the National Coordinating Centre for the Service Delivery and Organisation (NCCSDO) research programme, managed by the London School of Hygiene and Tropical Medicine.

The management of the Service Delivery and Organisation (SDO) programme has now transferred to the National Institute for Health Research Evaluations, Trials and Studies Coordinating Centre (NETSCC) based at the University of Southampton. Prior to April 2009, NETSCC had no involvement in the commissioning or production of this document and therefore we may not be able to comment on the background or technical detail of this document. Should you have any queries please contact sdo@southampton.ac.uk