Risk-factor assessment for falls: from a written checklist to the penless clinic

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Abstract

Objective: to audit risk-factor identification of fallers before and after an education programme and the insertion of a written checklist in medical notes. Risk-factor identification in a dedicated, computerized falls clinic was then examined.

Methods: documentation of risk factors for falls was studied on wards and a self-auditing 'penless' clinic for fallers subsequently set up to generate reports for medical notes and letters for general practitioners.

Results: risk-factor identification improved after the insertion of the checklist but remained relatively poor. A dedicated clinic allowed almost complete identification of risk factors. Of the first 112 patients (median age 82) seen in the clinic, 75 (67%) were housebound. Remediable risk factors — e.g. inappropriate medication (67%), unsatisfactory footwear (59%) and postural hypotension (17%) — were found in most. Thirty-three patients (29%) had difficulty with alarm raising.

Conclusion: ward-based intervention showed limited capacity to identify risk factors for falls: a dedicated clinic was more successful. The use of a portable computer with a programme to screen fallers for risk factors is worthy of consideration.

Keywords: audit, falls, risk factors

Introduction

Recurrent falls in an elderly person can have a devastating impact, resulting in a deterioration in gait pattern [1], loss of confidence, reduced physical activity [2], hospitalization, soft tissue injury, fractures [3] and death [4]. The risk factors associated with falling include poor vision, unsatisfactory footwear and inappropriate medication [5, 6]. The greater the number of risk factors, the greater the risk of falling: with no risk factors, an elderly person has only an 8% annual chance of falling compared with a 78% chance if four risk factors are present [7]. Tinetti et al. (1994) conducted a multifactorial intervention programme to reduce falls in 150 pairs of subjects and demonstrated a 44% reduction in falls in the intervention group [8]. Until recently, falls were not a distinct clinical condition in the International Classification of Diseases Coding (ICD 9) and management is likely to have been sub-optimal.

We have audited the documentation of risk factors in the medical notes of patients admitted to acute geriatric wards with falls, before and after the introduction of a specific risk-factor checklist in the notes of fallers. We then re-examined risk-factor assessment in a self-auditing computerized clinic for fallers.

Methods

In the first phase, the medical and nursing notes of all patients on acute geriatric wards at Broadgreen Hospital, Liverpool, UK, were examined on death or discharge over a 6-month period to identify those admitted with a fall. All notes were scrutinized by one of us (C.L.W.) before they left the ward to ensure inclusion of all affected, regardless of whether the fall was proffered as the main reason for admission. A fall was defined as "unintentionally coming to rest on ground, floor or other lower level" [9].

We listed important risk factors (poor vision, inappropriate medication, postural hypotension, condition of feet and inappropriate footwear) and requested
that all patients with falls should have these items recorded. These risk factors are simple to detect and potentially modifiable. 'Inappropriate medication' was any drugs (sedatives, diuretics, hypotensive agents etc.) which may have contributed to the fall. Any mention of these factors in the medical notes, however brief, was marked positively, whether or not they were specifically referred to as risk factors. Attention was also paid to the documentation of methods of raising an alarm in the event of a fall, as this is a desirable humanitarian goal.

Following an intensive educational programme of seminars primarily for junior doctors, a written checklist in the form of a ‘district falls policy’ (Figure 1) was inserted into the notes of all patients admitted following a fall and the survey was continued for a further 6 months. Admissions were monitored on a daily basis and checklists, inserted within 1 working day of admission. Other elements, such as gait assessment, were included in the policy but were not specifically audited.

Subsequently, a self-auditing ‘penless’ falls clinic was established to follow up patients after discharge and also to assess new patients referred from general practice. A database (PC-File, Atlantic Coast Software, Exeter, UK) stored on a laptop computer automatically prompts the operator to enter the presence or absence of risk factors for falls, as well as any modifications made to reduce the impact of the risk factor. The computer can generate a report for the notes together with a letter for the general practitioner, creating a truly penless clinic. A complementary routine to analyse data from patients attending this clinic was written in Epi Info 6 (Center for Disease Control, Atlanta and the World Health Organisation, Geneva). This could be accessed by a single command, to generate an automated audit.

Results

A total of 112 fallers (mean age 83 years, range 63–97, 88 female) were included in the first phase, comprising 10% (1128) of all admissions during that time. In the second phase an additional 127 patients with falls (mean age 84, range 64–95, 92 female) were found.

Table 1. Frequency of risk factors recorded (as a result of positive or negative reference) on a hospital ward with and without a checklist in the medical notes, and in a dedicated falls clinic

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Pre-checklist (n = 112)</th>
<th>Post-checklist (n = 127)</th>
<th>Falls clinic (n = 112)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>62 (55)</td>
<td>91 (72)</td>
<td>110 (98)</td>
</tr>
<tr>
<td>Feet</td>
<td>6 (5)</td>
<td>72 (57)</td>
<td>112 (100)</td>
</tr>
<tr>
<td>Footwear</td>
<td>3 (3)</td>
<td>69 (54)</td>
<td>112 (100)</td>
</tr>
<tr>
<td>Postural hypotension</td>
<td>5 (4)</td>
<td>34 (27)</td>
<td>112 (100)</td>
</tr>
<tr>
<td>Medication</td>
<td>101 (90)</td>
<td>119 (94)</td>
<td>112 (100)</td>
</tr>
<tr>
<td>Alarm raising</td>
<td>3 (3)</td>
<td>8 (6)</td>
<td>112 (100)</td>
</tr>
</tbody>
</table>

Using the $\chi^2$ test all differences except alarm raising and inappropriate medication were found to be significant pre- and post-checklist: $^b p < 0.001$; $^c p < 0.0001$.  

Figure 1. The written checklist
over 90% documentation of current drug therapy in both phases of the audit. We identified 70 patients (62.5%) in phase 1 and 66 patients (52.0%) in phase 2 whose ‘inappropriate medication’ may have contributed to their fall.

A dedicated clinic allowed almost complete identification of risk factors (see Table 1). Of the first 112 patients (median age 82) seen in clinic, 75 (67%) were housebound and only 24 (21%) could mobilize without an aid or support. Modifiable risk factors were found in most (see Table 2).

**Discussion**

We have demonstrated by a large full-cycle audit that ward-based intervention strategies can improve the identification of risk factors for falls. The number of risk factors for falls in patients presenting to hospital are potentially large and this study was not intended to assess the documentation of them all. Although we did not study the presence of an underlying physical illness, cognitive impairment, impaired muscle strength or abnormal gait, the risk factors audited are simple to assess and might be amenable to modification by the doctor or another member of the ward staff. (Jack and co-workers found potentially reversible visual impairment in 60% of all elderly fallers admitted to a geriatric unit [10].) Nevertheless our study suggests that performing comprehensive assessments of complex multifactorial conditions such as falls in busy acute geriatric units is not practical. Furthermore, a recent study of patients with falls attending an accident and emergency department suggests that more detailed investigations, such as carotid sinus massage, may also have a high risk-factor yield [11]. Unfortunately this type of investigation can only be practically performed in a clinic.

Our results demonstrate that a dedicated clinic is far more successful in the identification of risk factors for falls than a ward-based approach. Repetitive stereotypical information, such as risk-factor identification, is ideally suited to a database which prompts the user and also allows automated audit. This format could also accommodate questions about the many other modifiable risk factors—such as gait problems. The data can also be used to generate reports for the notes and letters for general practitioners which saves time and reduces the need for secretarial support. While dedicated falls clinics are beneficial [12], they could not cope with the many elderly people who fall each year and other strategies must also be considered. Possibilities include the use of a portable computer incorporating a falls risk-factor database operated by a specialist nurse and other strategies to improve risk-factor identification in frail elderly fallers.

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**Key points**

- Falls cannot be prevented unless risk factors are identified.
- Risk factors for patients admitted to hospital with falls are poorly documented.
- A written checklist of risk factors improves documentation but results remain relatively poor; a dedicated computerized falls database prompts the user to identify risk factors and is far more successful.

**References**

8. Tinetti ME, Baker DI, McAvay G et al. A multifactorial
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