MINIMUM GERIATRIC SCREENING TOOL

MINIMUM GERIATRIC SCREENING TOOLS TO DETECT COMMON GERIATRIC PROBLEMS

T. PEPERSACK ON BEHALF OF THE *COLLEGE OF GERIATRICS AND THE BELGIAN SOCIETY FOR GERONTOLOGY AND GERIATRICS

Correspondance : Thierry Pepersack, Service de Gériatrie, Hôpital Erasme, Université Libre de Bruxelles, route de Lennik 808, 1070 Bruxelles, Belgium. +32.2.5553806; +32.2.5553211; E-mail : tpepersa@ulb.ac.be

Abstract: Background: Health services for the elderly are becoming increasingly important in industrialized nations, and comprehensive geriatric assessment (CGA) is one of the procedures designed to improve the health of this sector of the population. In 2003 a survey among Belgian geriatricians showed that despite the interest of the geriatric teams for comprehensive geriatric assessment, it was not used enough. Considering these results, as a first step, screening tools were proposed for the main geriatric domains (Minimum Geriatric Screening Tools, MGST). Objectives: To assess the feasibility of a MGST within the teams of geriatric units and to evaluate the efficacy of a MGST on the detection rate of the geriatric problems of admitted subjects. Design: Prospective observational survey. Methods: The teams were first asked to encode active geriatric problems suspected according to their conventional assessment. Then, in a second phase, a complete MGST was completed by the same team within the first week after admission. Results: Three hundred and twenty six registrations from 33 centres were available. Mean (±SD) number of screened geriatric problems was 1.5±1.2 without MGST and 4.7±1.7 (p<0.0001) using the MGST. Except for the assessment for the risk of falls, the MGST leads to a better screening for the seven other main geriatric domains (functional, continence, cognition, depression, nutrition, pain, social). Conclusions: An improvement associated with the use of simple minimal geriatric tools to screen geriatric problems was evident. This approach has additional value for education and quality assurance.

Key words: Geriatric assessment, hospitalization, aged, quality, elderly, frailty, education.

Introduction

Health services for the elderly are becoming increasingly important in industrialized nations, and comprehensive geriatric assessment (CGA) is one of the procedures designed to improve the health of this sector of the population (1). Geriatric assessment determines an elderly person’s medical, psychosocial, functional, environmental resources and problems and produces an overall plan for treatment and follow-up (1-3).

In general, quality of care can be measured using implicit criteria (i.e., the measurement effort defines no explicit standards, and healthcare professionals use their own individual judgments to determine the quality) or explicit criteria (i.e., criteria for what should be done are established, and then the care received is compared with these standards) (4).

A study has suggested that older patients are receiving improved care for common diseases affecting this age group (e.g., acute myocardial infarction, diabetes mellitus, pneumonia), although geriatric syndromes (e.g., dementia, urinary incontinence, falls) were not assessed (5). Despite this improvement, the current quality of care rendered to older persons is less than optimal, and there is substantial room for continued improvement. For example, in Belgium, only 50% of elderly hospitalized geriatric patients present adequate immunization against tetanus (6).

In 2003, a survey from a quality program on behalf of the Belgian College for Geriatrics showed that despite the interest of geriatric teams for comprehensive geriatric assessment, the procedure to detect common geriatric problems was underused (systematic tools to detect the “geriatric problems” such as the risk of fall, malnutrition, pain, etc. were used by less than 60% of the teams) (7).

Considering these results, the Belgian College for Geriatrics reviewed the literature in order to propose instruments which could be accepted by the teams. The criteria proposed to accept these instruments were: screening tools, feasibility, sensitivity, specificity, validity, allowing to be followed by interventional algorithms.

The result of this work was discussed at the Consensus Conference of May 7th, 2004 with the collaboration of the Belgian Society of Gerontology and Geriatrics (8).

The tools proposed are the basis of a “Minimum Geriatric Screening Tools” (MGST).

The aims of this project were: 1) to assess the feasibility of a MGST within the teams of Belgian geriatric units; 2) to assess the efficacy of a MGST on the detection rate of the geriatric problems; and 3) to analyze quality variables within the data collected.

Materials and Methods

Study design
Prospective observational survey followed by benchmarking (feed back).
Each Belgian acute geriatric unit was asked to use the MGST for 10 consecutive admissions between March to June 2005. Initially, within the 48h after admission and without any MGST procedure, the teams were asked to encode the active geriatric problems suspected for which a geriatric intervention should be programmed. Then, on a second occasion, and within the week, a complete MGST was performed by the same team.

**Administrative data**
For each patient, the age, the length of stay was noted.

**Belgian Minimum Geriatric Screening Tools**
1. The assessment of the activities of daily living used the Belgian scale adapted from the Katz’s scale (9). This included the following items: bathing, dressing, transfer, toilet, continence, and eating. Each task is graded in a 4-level scale (1 to 4 for Katz’s scale), where lower levels represent the absence of dependence, and upper level the maximal dependence for the task.
2. Instrumental Activities of daily living assessment used the Lawton scale (10).
3. The risk of fall was assessed with the ‘stratify’ score (11).
4. Depression was screened with the “Clock Drawing Test” (12, 13).
5. The presence of social complexity was screened with the “Socios” scale (16).
6. Malnutrition was screened using the 3 first questions of the Malnutrition Universal Screening Tool (MUST) (17).
7. The presence of pain was screened either asking the patient for the presence of pain or other complaints synonymous with pain (Burning, Discomfort, Aching, Soreness, Tightness), or using a vertical presentation like the pain thermometer (18, 19). For non communicative elderly or the elderly with moderate to severe dementia, a check list of non verbal pain indicators was done (20).
8. The “Identification of Seniors At Risk” (ISAR) assessed the frailty (risk of functional decline and adverse outcomes) (11).

**Polypharmacy**
The number of different drugs at admission was collected.

**Evaluation of the comorbidity and the severity of the disease**
Used a comorbidity index adapted from Greenfield et al. 21 at the end of the hospitalization.

**Statistics**
Results from groups of patients are presented as means±SD. Non-paired Student t test was used to compare means of the parameters. Z-score with Yates correction was used to assess the differences between proportions of conditions.

**Results**
Three hundred and twenty six registrations from 33 centres were available. Mean (SD) age of the patients was 83.3 (6.8) yr (median: 83.3 yr; range 64 -102yrs); mean length of stay was 18.5 (15.8) days (median 16 d, range: 1 -102 days).

Residences of the admitted patients were: 68% private, 24% nursing home, 5% other wards of the hospital, and 3% others. Comorbidity and severity of the medical conditions of the patients are illustrated in Figure 1.

**Figure 1a**
Global comorbidity and severity of the medical conditions of the patients. Bars represent the proportions of patients presenting with uncontrolled condition. GI= gastro-intestinal pathology; Muscles= musculo-skeletal pathology

**Figure 1b**
Uncontrolled morbidity: severity of the medical conditions of the patients are illustrated in Bars represent the proportion of patients presenting with uncontrolled condition. GI= gastro-intestinal pathology; Muscles= musculo-skeletal pathology
A mean (±SD) of 6.6 (3.4) different drugs at admission per patient was observed (median: 6; range: 0-21).

Ninety percent of the patients presented a ISAR score ≥2; 82% a score ≥3. A score ≥2 is associated with a risk of unfavourable outcome or functional decline increased by 2; a score ≥3 the risk is increased by 3.

Functional characteristics the patients are presented in Figure 2a. Bars represent the proportions (%) of patients presenting with no-, -partial, or -complete dependence in their activities of daily living. For example in this figure we observe 60% of the patients screened for partial of complete urinary incontinence (without the systematic use of this Katz scale, urinary incontinence was declared as a geriatric problem in only 4% of the case (Table 1). Figure 2b shows dependence for instrumental activities for daily living.

### Table 1

**Added-value of Minimum Geriatric Screening Tools:** proportion of screened risks for geriatric problems before or after Minimum Geriatric Screening Tools (expressed as percentage and +/-95% confidence limits for means)

<table>
<thead>
<tr>
<th>Geriatric problems</th>
<th>Before MGST</th>
<th>After MGST</th>
<th>Gain</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL-IADL</td>
<td>26%(21-31)</td>
<td>89%(86-93)</td>
<td>63%(59-69)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Incontinence</td>
<td>4%(3-9)</td>
<td>60%(55-65)</td>
<td>56%(48-59)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Falls</td>
<td>35%(30-40)</td>
<td>46%(41-52)</td>
<td>11%(7-26)</td>
<td>0.1497</td>
</tr>
<tr>
<td>Cognition</td>
<td>34%(29-39)</td>
<td>68%(67-77)</td>
<td>34%(27-48)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Depression</td>
<td>13%(9-17)</td>
<td>49%(43-54)</td>
<td>36%(33-43)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Social</td>
<td>7%(5-11)</td>
<td>45%(44-55)</td>
<td>38%(35-50)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Nutritional</td>
<td>17%(13-21)</td>
<td>65%(60-71)</td>
<td>48%(45-57)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Pain</td>
<td>8%(5-11)</td>
<td>43%(38-49)</td>
<td>35%(32-42)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Total of suspected problems / patient (mean±SD)</td>
<td>1.5±1.2</td>
<td>4.7±1.7</td>
<td>3.2±1.8</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Mean (±SD) number of screened geriatric problems was 1.5±1.2 without GMST and 4.7±1.7 (p<0.0001) using the MGST (Table 1).

The number of geriatric problems screened with MGST was significantly correlated to the length of stay \(R=0.22, \ p<0.05\) and the ISAR score\(R=0.35, \ p<0.0001\), but not with age.

Except for the risk of falls, all the other geriatric problems were significantly better screened using MGST \(p<0.0001\).

“Added-value” of the Minimum Geriatric Screening Tools (MGST) is variable according the centres. This graph with the results of the 8 domains investigated in the MGST were sent to all participants anonymously (except for their known) data in order to offer them the opportunity to compare their results.

**Discussion**

Thirty three centres among 104 Belgian geriatric units participated in this National program (32%). There was no obligation to participate. Participating centres received a small fee only. In general, dissemination of interventions to improve quality of care for older persons can be aimed at individual providers, medical groups, or health plans. For practitioners in small or moderate-size groups, the infrastructure and impetus to
However, the diagnosis of depression is often not recognised. Depression is common among hospitalised geriatric patients. Using GDS half of the patients were considered at risk (only 3% of patients considered at risk at admission) whereas dementia, delirium and depression were quite well represented: scale used in this program, the three conditions commonly overestimated. Nevertheless, according to the comorbidity risk of cognitive disorders. This incidence is probably incorrect), 68% of the patients were classified as presenting a risk of cognitive disorders (versus only 5% of those without medical illnesses. Similarly, Evans (25) and Katona (26) observed that the prevalence of depression in elderly primary care attenders with poor physical health was double that in the physically healthy. Studies in hospitalised subjects show conflicting results: The prevalence of depression in physically ill inpatients has been reported as being between 11% and 59%, depending on the instrument used, sex, age and type of ward (26-28).

Using the SOCIOS instrument, forty percent of patients were considered at risk for social complexity (versus only 7% without this screening). The early recognition of social complexity is a important part of comprehensive geriatric assessment and leads to a reduction in the length of stay and the risk of re-hospitalization (2).

Using a systematic screening of malnutrition, 65% of the patients presented a risk. We have already observed this high incidence in a previous study of the College for Geriatrics recently published (29).

Finally, pain was also demonstrated to be under-detected: (only 8% detected without a systematic screening versus 43% of the patients at risk). Chronic pain was observed among 25 to 50% of autonomous subjects of >70 years old (30, 31). For nursing home residents, this prevalence can reach 45-80 % (32, 33).

Our study has some limitations that deserve comment. This short-time survey was the first attempt for the teams to list “a priori” geriatric problems for a limited number of successive patients; this situation was probably not associated with a “training effect”. On the other hand, the sensitivity of the screening tools is high and allows a good detection of well known problems but is not always suitable for intervention or for potential improvement. Moreover the delay before and after the use of the MGST may be associated with the occurrence of new geriatric problems; this situation might “overestimated” the added value of the MGST.

The risk of underestimation could also be present: for example, for initial diagnosis there was a time window of two days, however, for a geriatric assessment diagnosis, there was a time window of seven days. For some problems, the length of observation may be important, for example, in the detection of...
Urinary incontinence. The possibility of over-diagnosis may also have been present. Did 49% of patients have depression? The use of too sensitive instruments could identify risks rather than problems. Nevertheless, at the end of hospitalization the prevalence of depression assessed by the comorbidity index remained high.

The main causes usually seen for admission are of great importance for the choice of the tools. The MGST was proposed a priori for all patients admitted in Belgian acute geriatric units independently of the main causes of admission.

Finally, the time necessary for the minimum geriatric data set assessment was not calculated and this study was not designed to assess the effect of MGST on the outcomes of the patients.

The quality of care of older persons remains far from optimal, particularly for conditions that exemplify the clinical discipline of geriatrics 34-36. Quality improvement efforts for older persons will likely remain piecemeal, largely confined to managed care and research settings. At the dawn of the third millennium, the distance to the goal line of uniformly high quality of care for older persons remains many yards away.

Acknowledgments: We are indebted to A Perissino, P Hennickes and P Meunis (Health Care Quality Management Policy Unit, Ministry of Social Affairs, Public Health and the Environment) for their help during this project management. Grant: The management of the project was supported by the Belgian Ministry of Social Affairs, Public Health and the Environment.


References


Annex

Comorbidity index

The severity of the medical conditions is scored as follow: 0=absence of the disease; 1=asymptomatic disease without treatment; 2=symptoms controlled by treatment; 3=symptomatic disease uncontrolled by treatment; 4=the highest severity of the disease.

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Score (0-4)</th>
<th>Diseases</th>
<th>Score (0-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Infarction</td>
<td>Stroke</td>
<td>Incontinence</td>
<td>Anaemia</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Vascular</td>
<td>Respiratory</td>
<td>Vision</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Vision</td>
<td>Gastro-intestinal</td>
<td>Vision</td>
</tr>
<tr>
<td>Turnour</td>
<td>Vision</td>
<td>Liver</td>
<td>Audition</td>
</tr>
<tr>
<td>Dementia</td>
<td>Dementia</td>
<td>Renal</td>
<td>Delirium</td>
</tr>
<tr>
<td>Musculo-skeletal Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>