Use of comprehensive geriatric assessment in older cancer patients: Recommendations from the task force on CGA of the International Society of Geriatric Oncology (SIOG)

Martine Extermann a,*, Matti Aapro b, Roberto Bernabei c, Harvey Jay Cohen d, Jean-Pierre Droz e, Stuart Lichtman f, Vincent Mor g, Silvio Monfardini h, Lazzaro Repetto i, Liv Sørbye j, Eva Topinkova k

a H. Lee Moffitt Cancer Center, 12902 Magnolia Drive, Tampa, FL 33612, USA
b Clinique de Genolier, Genolier, Switzerland
c Catholic University, Rome, Italy
d Duke University, NC, USA
e Centre Léon Bérard, Lyon, France
f Sloan-Kettering Cancer Center, Connick, NY, USA
g Brown University, Providence, RI, USA
h Azienda-Ospedaliera-Universitaria, Padova, Italy
i INRCA, Rome, Italy
j Diakonhjemmets College, Oslo, Norway
k Institute of Postgraduate Medicine, Prague, Czech Republic

Accepted 23 June 2005

Contents

1. Introduction ......................................................................................................... 242
   1.1. Methods ...................................................................................................... 242
   1.2. Key questions .......................................................................................... 242
2. Results .............................................................................................................. 243
   2.1. Question 1: Is there clinically usable biological or other evidence for “degrees of aging”?
        2.1.1. Key evidence .................................................................................. 243
        2.1.2. Clinical recommendations ................................................................. 244
        2.1.3. Future research directions .................................................................. 244
   2.2. Question 2: What does a CGA detect in addition to oncological/medical assessments?
        2.2.1. Key evidence .................................................................................. 245
        2.2.2. Clinical recommendations ................................................................. 245
        2.2.3. Future research directions .................................................................. 245
   2.3. Question 3: What is the evidence for the effectiveness of CGA?
        2.3.1. Key evidence .................................................................................. 245
        2.3.2. Clinical recommendations ................................................................. 246
        2.3.3. Future research directions .................................................................. 246
   2.4. Question 4: Screening tools and alternative assessments
        2.4.1. Key evidence .................................................................................. 246
        2.4.2. Clinical recommendations ................................................................. 247
        2.4.3. Future research directions .................................................................. 247

* Corresponding author. Tel.: +1 813 979 3822; fax: +1 813 972 8468.
E-mail address: extermann@moffitt.usf.edu (M. Extermann).

© 2005 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.critrevonc.2005.06.003
1. Introduction

Persons over the age of 65 years are the fastest growing segment of the population and will account for an estimated 20% of Americans and 25% of Europeans by the year 2030. Cancer incidence is 11-fold higher in persons over the age of 65 years than in younger ones [1]. This increasingly older cancer population will require specific management [1,2].

Aging being a highly individualized process, geriatricians have developed a thorough assessment method: the comprehensive geriatric assessment (CGA) in cancer patients. A systematic review of the evidence was conducted.

Methods: The International Society of Geriatric Oncology (SIOG) created a task force to review the evidence on the use of a comprehensive geriatric assessment (CGA) in cancer patients. A systematic review of the evidence was conducted.

Results: Several biological and clinical correlates of aging have been identified. Their relative weight and clinical usefulness is still poorly defined. There is strong evidence that a CGA detects many problems missed by a regular assessment in general geriatric and in cancer patients. There is also strong evidence that a CGA improves function and reduces hospitalization in the elderly. There is heterogeneous evidence that it improves survival and that it is cost-effective. There is corroborative evidence from a few studies conducted in cancer patients. Screening tools exist and were successfully used in settings such as the emergency room, but globally were poorly tested. The article contains recommendations for the use of CGA in research and clinical care for older cancer patients.

Conclusions: A CGA, with or without screening, and with follow-up, should be used in older cancer patients, in order to detect unaddressed problems, improve their functional status, and possibly their survival. The task force cannot recommend any specific tool or approach above others at this point and general geriatric experience should be used.

Keywords: Aged >70; Comprehensive geriatric assessment; Cancer; Screening; Consensus; Systematic review

1.1. Methods

The task force was composed of four oncologists and four geriatric specialists (two geriatricians, a geriatric nurse, and a geriatric epidemiologist). The task force structured its approach into four questions.

1.2. Key questions

1. Is there clinically usable biological or other evidence for “degrees of aging”?
2. What can CGA detect that cannot be detected by an oncologic assessment?
3. What is the evidence for the effectiveness of CGA?
4. What screening tools and alternative assessments are available and what is their validity compared to full CGA?

Each question was reviewed by an oncologist and a geriatric specialist, and submitted to the whole task force for review. We used Medline searches for English language literature, linked references and expert knowledge. Articles and abstracts published up to February 2003 were considered. A formatted data collection tool was created. The level of evidence was rated according to the adapted Oxford criteria [4] (Appendix A). The task force met three times in 2002–2003, the last time including international experts from several oncologic and geriatric societies (Appendix B), and the data were presented and debated. A consensus summary was written. The level of agreement was rated as α for unanimous agreement, β for agreement with some divergences, and γ for disagreement among the panel. Given the status of the evidence at present time, we have chosen to publish...
2. Results

2.1. Question 1: Is there clinically usable biological or other evidence for "degrees of aging"?

2.1.1. Key evidence

A major goal of the review was to determine whether there are simple clinical and biological markers for predicting functional decline and/or mortality and frailty. Overall, there are a number of clinical syndromes and markers that could help the oncologist predict outcome for older persons with cancer. Clinical markers have more evidence than biological markers. Albumin, hemoglobin and summary performance scores appear the most established of these markers. They indicate the reaction of the body to disease and aging and indicate functional reserve rather than age per se. Most of the data reviewed were from community-dwelling elderly who tended to be healthy; there were very few published studies of older persons with cancer. Studies, mostly retrospective or surveys, identified prognostic factors mostly as predictors of functional decline and early mortality. Data come from two types of sources: population studies and clinical trials. The strengths and weaknesses of each approach should be taken into consideration when evaluating their results. Our systematic review used the following keywords: functional change, longitudinal study, older people, anemia, hemoglobin, albumin, disability, frailty, alcohol abuse, cognitive impairment, mortality, interleukin-6, aged, geriatric assessment, clock-drawing test, dementia, low cholesterol, weight loss, weight gain, comorbidity, activities of daily living. Key findings are below.

2.1.1.1. Biological markers. Biological markers often are easily obtainable and reproducible. A study in healthy community-dwelling elderly over 70 years of age combined four measures of inflammation: albumin, cholesterol, IL-6 and C-reactive protein, to determine their prognostic value [5]. A combination of these markers predicted 3- and 7-year mortality. Another study evaluated serum albumin level to determine its role in combination with physical disability status in predicting mortality [6]. Serum albumin level was an independent risk factor for all-cause mortality. A combined measure of albumin and disability revealed a strong gradient in mortality risk. A gradient was also seen within the normal albumin range. In another study, persons with high interleukin-6 and high D-dimers levels had the greatest declines in all measures of function. That effect was independent of the presence of cancer, although cancer was also associated with higher values of IL-6 and D-dimers.

Activation of the coagulation and inflammatory pathways is associated with mortality and decline in function, and may be part of the explanation for the development of a frailty phenotype in the elderly [7].

A number of studies have clearly shown that anemia is correlated with functional decline and mortality [8–12]. This is also true within hemoglobin ranges considered as "normal" (12–16 g/dL) [9]. It holds even after adjustment for chronic conditions that could be linked to anemia [9,10], or iron, albumin, and cholesterol levels [10]. Studies in the very old (>80 or 85 years) confirmed that this effect persists unto an advanced age [11,12].

A comment from the task force is that the cancer itself can also alter several of these markers. Little evidence was found that attempted to assess the independent impact of cancer and aging on these markers.

2.1.1.2. Clinical markers of aging. Numerous studies have demonstrated a global association of comorbidity with mortality, both in general and specifically in cancer patients [13]. This effect is independent from functional status. Various methods are used to sum comorbidity, however, a major effort is still needed in analyzing how various diseases combine to influence prognosis. Some studies did show no or very weak impact of comorbidity on the behavior of the cancer itself [14,15]. Others did show major predictive value in toxicity and outcome of treatment [16–18]. Some general studies indicate the inclusion of a broader number of comorbidities in the evaluation increases their prognostic value [19,20]. An index integrating comorbidity with tumor stage exists and leads to clinically meaningful improvement in prognostic predictions in head and neck cancer [21].

Functional decline is a known predictor of early mortality [22,23]. Selected medical conditions such as diabetes mellitus, hypertension, coronary disease, cerebrovascular disease, osteoporosis and smoking were associated with worse functional outcomes. Exercise and moderate alcohol use were associated with better functional outcomes. Dependency and decreased functionality increased the risk of death [22,24].

Some geriatric indexes have been developed. Walter et al. studied predictors of 1-year mortality in elderly patients when discharged after a hospitalization [25]. Six independent risk factors were identified: male sex, number of dependent ADLs at discharge, congestive heart failure, cancer, creatinine level higher than 3.0 mg/dL, 265 μmol/L, and low albumin level. A risk score was calculated. In the derivation cohort, 1-year mortality ranged from 4% to 64%, respectively [25]. Another model predicting mortality risk, based on ten high-risk medical diagnoses has been published: the high-risk diagnoses for the elderly scale [26]. Individual condition weights, based on their 1-year mortality risks, ranged from 1 (pneumonia, diabetes mellitus with end-organ damage) to 6 (lymphoma/leukemia). Mortality rates for patients
categorized into four risk groups were 9.5, 31.8, 46.4, and 73.6% in the development cohort, and 9.9, 24.3, 33.6, and 50.8% in the validation subjects. Unintended weight loss is also a negative prognostic factor in the elderly [27]. Inouye et al. has shown that functional measures are strong predictors of 90-day and 2-year mortality after hospitalization [28]. A functional axis was developed using three independent risk factors: impairment in instrumental activities of daily living, Mini-Mental State Examination score of less than 20 and a short Geriatric Depression Scale score of 7 or higher. A three-tier risk categorization was developed with associated mortality rates of 20, 32 and 60%. This data added significantly to each of the burden of illness indexes evaluated (Charlson, APACHE II, disease staging, All Patient Refined Diagnosis Related Groups, clinician’s subjective rating).

2.1.1.3. Stages or states of aging. The definition of frailty is evolving—disability model, medical model, composite models (biomedical/social/psychological). One of the available definitions is a three-step definition of functional reserve, increasingly used in geriatrics. Healthy elderly, vulnerable elderly, who are at increased risk of developing dependence and death, and frail, who are people with minimum functional reserve. One definition of vulnerability was used in a study on community-dwelling elderly. The Vulnerable Elders Survey 13 (VES-13) is a self-report function-based targeting system that identifies older people at risk of functional decline and death over 2 years. A score of ≥3 targeted 32% of the sample as vulnerable. This group had 4.2 times the risk of death or functional decline over a 2-year period compared with those with scores <3 [29].

Proposals for staging aging and frailty have been defined in the literature [30]. Fried et al. defined frailty as a clinical syndrome including three of the following items: unintentional weight loss, self-reported exhaustion, weakness (grip strength), slow walking speed, and low physical activity. An intermediate frailty status, as indicated by the presence of one or two criteria, showed intermediate risk of these outcomes as well as increased risk of becoming frail over 3–4 years of follow-up [31]. The overall prevalence of frailty in this community-dwelling population was 6.9%. Four-year incidence was 7.2%. Frailty phenotype independently predicted incident falls, worsening mobility or ADL disability, hospitalization, and death at 3 years. Frailty is not synonymous with either comorbidity or disability, but comorbidity is an etiologic risk factor for, and disability is an outcome of, frailty. Rockwood et al. classified community-dwelling elderly at four levels from fitness to frailty [24]. There are other conditions that represent functional decline [32]. These include underweight or cachexia [33,34], failure to thrive [35–37], sarcopenia, and weakness [38,39].

Detecting frailty was evaluated in a study comparing clinical judgment with an empirically derived model applying statistical methods [40]. Clinical judgment classified 88% of the patients correctly. Persons identified empirically as frail had a mortality rate over a decade of 82% compared with 34% of the non-frail. Frailty emerged as an important factor when the profiles of older Medicare decedents were analyzed [41]. A number of studies have attempted to provide biochemical correlates of frailty. For example, in a study by Leng et al., the frail subjects had significantly higher serum IL-6 levels and significantly lower hemoglobin than the non-frail subjects [42]. There was an inverse correlation between IL-6 level and hemoglobin in the frail group but not in the non-frail group.

2.1.1.4. Relevance to oncology. Most of the data identified were from community-dwelling elderly who tended to be healthy; although a subgroup of them may have had cancer. This subgroup was usually not analyzed separately. However, several predictors have been found in parallel to be valid in oncology studies. Functional status appears to signal a decrease in functional reserve in both the geriatric and the oncologic setting. Several studies assess the impact of comorbidity in cancer patients [13–19,21]. IL-6 and its increase with age can in theory be relevant to cancer prognosis, as numerous laboratory and clinical studies have highlighted the prognostic relevance of this cytokine in cancer. Anemia and hypoalbuminemia may affect the distribution and the toxicity of oncologic treatments [43,44].

2.1.2. Clinical recommendations

The best biological and clinical markers to use in the evaluation of older cancer patients remains to be determined. Our review identified several specific elements that appear useful to integrate in the CGA of cancer patients. Biochemical markers such as albumin, hemoglobin, and creatinine clearance can provide prognostic information and clues as to tolerance to treatment. As for clinical markers, functional status assessment should be more extensive than the ECOG performance status evaluation and may include ADL/IADL, and/or a performance test such as the timed get up and go. Other markers of aging need further testing in the oncology setting but the geriatric models cited above can be helpful frameworks of analysis.

2.1.3. Future research directions

Many of the markers of aging and functional decline can also be affected by the cancer itself. Should the impact of aging and cancer be analyzed separately or together? We noted that two “blocks” of reserves should be considered: functional reserve, which could be affected by aging, cancer and age-related disease, and coping reserve (e.g., social, psychological and treatment reserves). Definitions should be found for the various types of functional reserves (organ, body, person). We also suggest that, in addition to static models looking at one point in time, dynamic models should be explored, with, e.g., evolution over time, response to treatment.
2.2. Question 2: What does a CGA detect in addition to oncological/medical assessments?

2.2.1. Key evidence

There is no widely accepted definition of “regular oncological assessment”. However, the following general assessments are usually recommended:

- Confirmation of diagnosis by pathology and tumor staging.
- Basic functional assessment (e.g., ECOG performance status).
- Evaluation of functional reserves of certain organs (e.g., liver, kidney, bone marrow).
- Identification of concomitant conditions.

In older persons with cancer, these basic evaluations do not provide detailed enough clinical information to properly support clinical decisions. Over the years extensive and robust evidence has accumulated that CGA improves outcomes compared to traditional medical approach in older patients affected by multiple interactive medical and social problems in different clinical settings. However, it shows some limitations in the assessment of older persons affected by single, severe medical conditions which dominate the clinical picture and that have not been previously screened for some specific characteristics [45]. Good examples of CGA-based approach are the management and care of older patients with hip fracture [46,47] and congestive heart failure [48–50].

In both cases patients are very old, with substantial impairments, gait/balance impairment, etc. [52]. In both cases patients are very old, with substantial impairment of physical functioning and frequently with frailty and multiple comorbidities.

Results from four randomized, controlled trials in geriatric patients found multiple previously unknown or suboptimally treated problems:

- Kravitz et al. [51]: A mean of three new problems were found in 99% of patients discharged from hospital (mean age 80 years). These problems were mainly medical (50%), functional (58%), social (53%), and pharmacological (22%). The most common problems were communication (54%), laboratory abnormalities (20%), home safety (18%), vision (17%), gait instability (15%), and hearing (14%) [51].
- Fabacher et al. [52]: In community-dwelling elderly (>70 years), many new problems were identified, for example, around 20% of them suffered from impotence, dental problems, gait/balance impairment, etc. [52].
- Alessi et al. [53]: 77% of community-dwelling elderly patients (mean age >75 years) had one or more problems at baseline: medical (67%), functional (17%), mental (23%), and social/environment (20%). About one-third of these patients developed new problems in the second and third years of intervention [53].
- Silverman et al. [54]: Geriatric assessment, compared with usual community care, identified significantly more patients with cognitive impairment, depression, and incontinence [54].

2.2.1.1. Relevance to oncology. The available evidence seems to corroborate the relevance of CGA for screening in the oncologic setting. A pilot trial in elderly patients with breast cancer demonstrated that several unrecognized geriatric problems are detected by CGA, with some interaction with cancer treatment [55]. Furthermore, the underrecognition of depression and cognitive impairment in the oncology setting (as well as in others) is a well demonstrated fact [56,57].

2.2.2. Clinical recommendations

- Based on several randomized clinical trials, CGA-based approach is strongly recommended in elderly patients to improve the detection of problems (LOE 1, agreement α).
- As these results were obtained in patients in a wide range of health statuses, there are no substantial reasons not to apply the same approach in elderly “cancer” patient despite the lack of specifically designed randomized trials (LOE 4, agreement β).
- Oncologists should be informed that significant clinical information may be missed if a CGA-based approach is not pursued in the older cancer patients (LOE 4, agreement β).
- The best form of geriatric assessment pertaining to cancer patients remains to be defined. In addition to the biological and functional assessment elements mentioned under Point 1, screening for depression and cognitive impairment should be conducted (Overall LOE 4, agreement β). As a practical example, a combination of tools frequently used in geriatric oncology comprises ADL, IADL, the Geriatric Depression Scale, and Folstein’s Mini-Mental Status (LOE 5).

2.2.3. Future research directions

See under Question 3.

2.3. Question 3: What is the evidence for the effectiveness of CGA?

2.3.1. Key evidence

A number of randomized, controlled trials has consistently demonstrated that a geriatric intervention guided by CGA has positive effects on health outcomes such as: prevention of disability progression and reduction of the risk of falls, unplanned hospitalization and nursing home admission, and cost-effective, providing extensive and robust evidence supporting the use of multidimensional approach in older patients [58].

In summary, published data demonstrated that CGA is effective:

- in community-dwelling elderly [52,59–66];
- in the context of integrated social and medical home care coordinated by a case manager [67];
- as the basis for the design of discharge planning [48,49,68–73];
for hospitalized patients, both before and after discharge [73].

The impact of CGA on mortality is more heterogeneous, and was observed in some trials, but not others [73,74]. Meta-analyses show an effect on survival, heterogeneous and more pronounced for inpatient interventions [75]. In community-dwelling elderly, the survival benefit appears limited to the younger subjects [76]. A key component of the effectiveness of CGA is a follow-up by the intervention team [75,76].

Several studies analyzed the cost-effectiveness of CGA. It was cost saving [48], cost neutral [73,77], or with low marginal cost [63,78].

2.3.2. Clinical recommendations

- For hospitalized patients, both before and after discharge [73].
- The impact of CGA on mortality is more heterogeneous, and was observed in some trials, but not others [73,74]. Meta-analyses show an effect on survival, heterogeneous and more pronounced for inpatient interventions [75]. In community-dwelling elderly, the survival benefit appears limited to the younger subjects [76]. A key component of the effectiveness of CGA is a follow-up by the intervention team [75,76].

Several studies analyzed the cost-effectiveness of CGA. It was cost saving [48], cost neutral [73,77], or with low marginal cost [63,78].

2.3.3. Future research directions

Questions 2 and 3: There is an urgent need to validate in multicentric prospective trials CGA-based approaches in older cancer patients. There is enough evidence to justify the design and conduct of randomized trials that could test the effectiveness of CGA in the care, management, and follow-up of older cancer patients.

CGA trials are quite heterogeneous in the approach used. Future trials should analyze whether there is better detection of problems by assessment type, assessment location, and by professional involved (doctor, nurse, other care workers or self-questionnaire).

Future clinical trials should explore the “black box” of CGA to identify what does and does not work in geriatric assessments. Controlling that the interventions are implemented matters.

More research on the costs and potential savings of CGA-based approach is needed.

A large database of geriatric problems and outcomes in older persons with cancer should be created. Its results could be used to help clinicians to determine risk factors, measure outcomes and toxicity, evaluate quality of life, project costs, and compare study results.

Another approach could be to retrospectively analyze the information on geriatric patients already in many data systems specifically for patients who have then developed cancer. The studies should ask questions targeted for relevance to oncology treatment.

2.4. Question 4: Screening tools and alternative assessments

2.4.1. Key evidence

2.4.1.1. Screening tools. Our review identified six published screening tools. A first pair of tools, very similar to each other, was described by Lachs et al. [81] and Moore and Siu [82], respectively. Moore’s tool is the best tested. A validation study showed good correlation with a geriatrician’s examination [82]. However, a randomized trial failed to show a major screening effect [83]. Another pair of screening tools were used in the emergency room setting [84,85]. In both cases a geriatric nurse/nurse practitioner was evaluating further the patients screening positive, making referrals, and following up to ensure recommendations were followed. This resulted in a reduced rate of functional decline (IADL and death) [85], and increased the referrals to primary physicians and home health services [84,85]. Another screening tool was designed to identify vulnerable elderly: the VES 13, described in Section 1 [86]. Another screening tool was extracted from the Minimum Data Set (see below): the Michigan Choice [87]. It had a good correlation with a telephonic interview determination of need for level of care.

An instrument that borders between screening test and abbreviated CGA is the EASY Care instrument, used for screening community-dwelling elderly patients. It allows an assessment of mental health, goal setting, and generates a disability score [88].

2.4.1.2. Alternative assessments. The key example of such an assessment is the Minimum Data Set (MDS), a comprehensive shortened geriatric assessment instrument, used for example in American nursing homes. In several studies, the MDS in its various versions (mainly the nursing home and home care instruments) allowed modifying outcomes and creating databases. The use of the MDS resulted in decreases in hospital admissions and length of stay in a population.
of home care patients when compared, in a randomized trial, against traditional assessment scales [89]. The MDS-HC (home care) significantly decreased hospital admissions and length of stay [90,91]. The MDS generated two main databases, the SAGE and the Silver Network. The former delivered data on US nursing home residents’ prognostic factors, outcome measurements, quality control, and allowed comparisons of patients’ characteristics. Its main data concern pain predictors in cancer patients [92], outcomes of heart failure patients treated with digoxin- or ace-inhibitors [93,94], and undertreatment of pain in cancer patients [92]. Comparisons of nursing home residents’ characteristics in various countries are collected in a special issue of Age and Ageing [95–97]. The Silver Network database targets Italian home care clients, examining the same issues as the SAGE. Its main data relate to predictors of secondary stroke prevention with antiplatelet or anticoagulant drugs [98], outcomes of influenza-vaccinated [99] or exercise-practicing clients [100], undertreatment of pain in the elderly population [101], and comparisons of home care clients in 11 EC countries [102].

2.4.1.3. Relevance to oncology. None of these screening tools or alternative assessments has been specifically tested in oncology patients. The feasibility and positive results of screening tools in the emergency room setting are encouraging for developing such a tool for busy oncology practices.

2.4.2. Clinical recommendations
- Based on retrospective evidence that the incidence of geriatric problems increases sharply after 70 in cancer patients [103], we recommend screening for them beyond that age. This should be considered a soft limit (LOE 4).
- In the absence of tools specifically tested in the older cancer patient, one of the screening tools mentioned above can be used (LOE 5, agreement β). If the screening is positive, it should be followed by a more complete geriatric evaluation (Minimum Data Set or more) (LOE 1 for CGA, agreement β for the type of assessment).
- As older patients, especially the frail, vulnerable, and disabled patients, require more assistance and support, oncologists must be aware of the available resources and activate the process (LOE 5).

2.4.3. Future research directions
A first direction should be outcome-based research. There is a need to use standardized geriatric assessment tools to collect information in cancer patients and extract screening tools specific to this population. A pool of institutions should choose one standardized tool, potentially based on a modified MDS, and generate data in enough patients to assess what affects outcome. Some of the data analyzed should be: checking whether screening tools correctly identify patients (i.e., too well, too ill); validating inclusion/exclusion categories; developing a scoring algorithm to identify target groups, identifying the best candidates for a specific intervention. CGA tools need to be tailored to cancer patients in order to address relevant specific clinical questions. When assessed patients reach the thousands, we could start analyzing the database and understand the predictors of successful treatments, the better outcomes and their reasons, and the problems during follow-up.

3. Future developments
The efforts of this task force are a starting point. They provide a solid research basis, and some clinical recommendations. Although there is strong general evidence of the effectiveness of CGA, the evidence concerning its specific components is much weaker. Given this weakness, our recommendations should not yet be seen as guidelines for a standard of care. We do believe nevertheless that they represent a progress in that this is the first systematic compilation of evidence concerning the use of CGA in cancer patients. These recommendations took into account publications up to early 2003. However, the amount of research conducted in the field of geriatric oncology is increasing rapidly and these recommendations will be periodically updated.

Acknowledgments
This task force was sponsored by the International Society of Geriatric Oncology. SIOG was supported in its effort by an unrestricted grant from AMGEN Europe. The initiative, conduct, and results of this task force are the Society’s alone.
Appendix A. Adapted Oxford criteria: Levels of evidence and grades of recommendations (reprinted from reference 4 with permission)
Appendix B

Invited experts present at the 2003 meeting of the SIOG task force with experts from other societies:

<table>
<thead>
<tr>
<th>Invited experts</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilta Baker</td>
<td>International Union against Cancer</td>
</tr>
<tr>
<td>Carsten Bokemeyer</td>
<td>European Society for Medical Oncology</td>
</tr>
<tr>
<td>Deborah Boyle</td>
<td>Oncology Nursing Society (USA)</td>
</tr>
<tr>
<td>Anne-Chantal Brand</td>
<td>Fédération Nationale des Centres de lutte contre le cancer (France)</td>
</tr>
<tr>
<td>Nora Kowrnay</td>
<td>European Oncology Nursing Society</td>
</tr>
<tr>
<td>Matthew Loscalzo</td>
<td>–</td>
</tr>
<tr>
<td>Joanne Mortimer</td>
<td>American Society of Clinical Oncology</td>
</tr>
<tr>
<td>Jean-Pierre Michel</td>
<td>European Union Geriatric Medicine Society</td>
</tr>
<tr>
<td>Deborah Boyle</td>
<td>Oncology Nursing Society (USA)</td>
</tr>
<tr>
<td>Brita Baker</td>
<td>International Union against Cancer</td>
</tr>
<tr>
<td>Carsten Bokemeyer</td>
<td>European Society for Medical Oncology</td>
</tr>
<tr>
<td>Deborah Boyle</td>
<td>Oncology Nursing Society (USA)</td>
</tr>
<tr>
<td>Anne-Chantal Brand</td>
<td>Fédération Nationale des Centres de lutte contre le cancer (France)</td>
</tr>
<tr>
<td>Nora Kowrnay</td>
<td>European Oncology Nursing Society</td>
</tr>
<tr>
<td>Matthew Loscalzo</td>
<td>–</td>
</tr>
<tr>
<td>Joanne Mortimer</td>
<td>American Society of Clinical Oncology</td>
</tr>
<tr>
<td>Darryl Weland</td>
<td>American Geriatric Society</td>
</tr>
<tr>
<td>Gilbert Zulin</td>
<td>European Organisation for Research and Treatment of Cancer</td>
</tr>
</tbody>
</table>

References


[101] Personal communication.


Biographies

Martine Extermann is Associate Professor of Oncology of the University of South Florida and Attending physician in the Senior Adult Oncology Division at the H. Lee Moffitt Cancer Center in Tampa, FL, USA. She is the chair of this task force.

Matt S. Aapro is Dean of the Multidisciplinary Oncology Institute, Genolier, Switzerland. He chairs the EORTC Cancer in the Elderly Task Force, is Executive Director of the International Society for Geriatric Oncology (SIOG) and President of the Multinational Association for Supportive Care in Cancer (MASCC).

Roberto Bernabei is Director of the Department of Geriatric Medicine, University of Rome. He is the executive vice-president of interRAI, a non-profit corporation for the standardisation of assessment instruments in the elderly care and president elect of the Italian Society of Gerontology and Geriatrics.

Harvey Jay Cohen is Professor of Medicine, Chief of the Division of Geriatrics and Director of the Center for the Study of Aging at Duke University and the Director of the Geriatric Research Education and Clinical Center at the VAMC in Durham, NC. He is chair of the Cancer in the Elderly Committee for CALGB and the Task Force on Cancer and Aging for the AACR. He is current President of the International Society for Geriatric Oncology (SIOG).

Jean-Pierre Droz is Professor of Medicine, Chief of the Medical Oncology Department of the Centre Léon Bérard, Lyon, France. His main research areas are G-U malignancies and geriatric oncology.

Stuart M. Lichtman is an Associate Attending, Memorial Sloan Kettering Cancer Center, New York; member of the Pharmacology and Experimental Therapeutics Committee and the Cancer in the Elderly Committee of the Cancer and Leukemia Group B; chemotherapy taskforce leader of the International Society of Geriatric Oncology (SIOG); Board of Directors and the Scientific Advisory Board of the Geriatric Oncology Consortium.

Vincent Mor, Ph.D. is Professor and Chair of the Department of Community Health in the Brown Medical School. His research focuses on the determinants of care quality in the nursing home setting in the US and abroad.
Silvio Monfardini, MD, is Chief of the Division of Medical Oncology, Azienda Ospedaliera Università, Padova (Italy). His works concern the main fields of medical oncology with particular reference to non Hodgkin’s lymphomas, Hodgkin’s lymphomas, chronic myeloid leukemias, solid tumors (in particular cancer of the testis) and phase I-II studies. He is the immediate past president of SIOG and has served as President of the European Society for Medical Oncology and of the Italian Association of Medical Oncology.

Lazzaro Repetto, is a Senior Investigator at the National Institute of the Care of the Elderly, Rome, Italy. He is the treasurer of SIOG.

Liv Sørbye, RN, works at the Diakonhjemmet University College in Oslo, Norway, where she has focused on health services research. She is the project leader of the Norwegian part of the Ad HOC project on home care.

Eva Topinková is Chair of Department of Geriatrics at Charles University in Prague, Director of postgraduate training program in geriatrics, Institute of Postgraduate Medical Education in Prague. Professor Topinková is Secretary general of International Association of Gerontology -European Region, and board member of other European bodies (Geriatric Medicine Section of UEMS, European Union of Geriatric Medicine Society).