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Comprehensive geriatric assessment in older adults with cancer: recommendations by the Italian Society of Geriatrics and Gerontology (SIGG)

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Introduction

The number of cancer diagnoses has been increasing during the last decades as a result of the improved diagnostic capacities and the demographic modifications [1]. More than half of the subjects who are newly diagnosed with cancer are today aged 65 years or older. These estimates are expected to increase in the next decades as reported by the Italian Association of Cancer Registries AIRTUM 2017 data [2]. Similar figures are quite consistent across high income countries [3].

Cancer treatment in older adults faces two major issues: i) the low rate of older persons enrolled in randomized clinical trials (the so-called “evidence-based medicine issue” of geriatrics) [4,5], and ii) the need to tailor interventions for an heterogeneous population that, due to its frailty, may differ from traditional standards in terms of priorities, preferences, and clinically relevant outcomes [6-7]. For these reasons, an evidence-based approach to older patients with cancer is still hardly achieved in the most cases. In addition, such shortcomings can easily lead to either under- or over-treatment, potentially causing serious negative effects to the patient and his/her caregivers [7,8]. Thus, optimizing management of cancer in older adults represents a major clinical problem and a top priority for modern health care systems.

The clinical management of older patients extends beyond traditional paradigms, largely focused on diagnosing and dealing with standalone diseases. Instead, it implies the assessment of a clinical complexity spanning over multiple domains (including physical, cognitive, psychological, affective, socioeconomic, and environmental aspects). The comprehensive geriatric assessment (CGA) is the methodology developed over the years by geriatricians to deal with such complexity in order to design personalized interventions according to the patient’s needs, priorities, and resources [9]. Although they have never been officially coded and univocally standardized, the key components of the CGA are usually indicated in the evaluation of comorbidities, physical function, cognitive status, mood, fall risk, polypharmacy, social support, and nutrition. However, the CGA can easily include many other domains as sexual function, continence, financial issues, oral health, sensory (in particular, vision and hearing), and spirituality. The CGA is pivotal for defining the patient's biological status, which has strong prognostic implications [10], and was proposed as a criterion for assigning patients to the most appropriate type of

treatment [11]. The CGA should be meant as a process that, from the multidimensional evaluation of the individual allows to manage his/her complexity via a coordinated and multidisciplinary action plan. According to several meta-analyses, CGA-guided management of community-dwelling older adults indeed translates into benefits in terms of mortality, preservation of physical function, and lower health care utilization (including reduced hospitalizations) [12-15].

In older adults with cancer, CGA components have shown to predict adverse outcomes, including adverse reactions to chemotherapy, delirium, and mortality [7,16]. In a randomized controlled trial, Corre and colleagues randomly assigned 494 older patients with non-small-cell lung cancer to a CGA-based treatment vs. a standard strategy of chemotherapy [17]. Although no difference in survival between the two arms was observed, patients in the CGA-guided treatment arm experienced reduced all-grade toxicity to chemotherapy. In addition, these patients received combination chemotherapy more often than patients randomized to the usual-care arm, suggesting that a CGA-based profiling of the patient may also help proposing more aggressive solutions against cancer. Based on these studies, a more extensive evaluation of the older person has recently been recommended as a means to inform chemotherapy decisions [7].

Impairments in different health domains are quite common in older cancer patients. The geriatrician's contribution in the evaluation of the older patient with cancer frequently leads to interventions that are particularly neglected/overlooked by traditional medicine, such as nutritional care, treatment of depression, physical therapy, medication review and deprescribing, or social support [18,19]. A recent retrospective study showed that CGA-based interventions (vs. usual care) resulted in a lower incidence of delirium and other geriatric syndromes in patients undergoing elective surgery for colorectal cancer [20]. This evidence suggests that in older adults with cancer, the CGA may have a beneficial impact on major geriatric endpoints (e.g. cognitive and functional status, mood) [7]. Thus, although conclusive results from clinical studies of CGA-guided management in older patients with cancer are still pending [7], experts panels (including ASCO, the National Comprehensive Cancer Network, the Society of International Geriatric Oncology, and the American Geriatrics Society) already support a wide range of interventions on geriatric conditions such as falls, physical and cognitive impairment, depression, malnutrition, clinical complexity, and polypharmacy [7].

Current guidelines by the Italian Association of Medical Oncology (AIOM) recommend administering a CGA to all patients who are aged 70 years or older and who screen positive at screening tools such as the G8 or the VES-13 [21]. Recent guidelines by ASCO strongly recommend a minimum core of geriatric assessment based on the evaluation of function, comorbidity, falls, depression, cognition, and nutrition to all patients who are candidates for chemotherapy [7].

There is considerable variation in the geriatric tool/tests that can be used in a CGA, even for assessing the same domain. As a result, different CGA formats are frequently adopted at different centers, hampering the comparison of results across patients, settings, and populations. In addition, the use of CGA tests that are particularly lengthy, can prevent a truly widespread use of this geriatric approach in routine oncology settings.

Given this scenario, experts from the Italian Society of Geriatrics and Gerontology (SIGG) identified existing problems with the use of CGA in oncological settings and formulated specific questions to poll expert opinion. Specifically, the SIGG taskforce decided to focus on the following questions:

1. Do all older patients with cancer need to undergo a CGA?
2. Which domains should be explored in the CGA of older cancer patients and which tools should be utilized?
3. Which tool should be utilized for estimating an older patient's life expectancy?
4. In those centers where senior cancer patients are referred to the geriatrician based on a screening method, which screening tool should be utilized?
5. Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?

Methods

The three-step Delphi survey took place between June 2018 and August 2019. Details of the Delphi process are summarized in Figure 1. An advisory board including geriatricians, oncologists, oncological surgeons and palliative care physicians (SIGG Oncoger Group) reviewed the medical literature and developed the Likert-type questionnaire (Table 1). Concerning the revision of the literature, the experts performed searches of Pubmed for reviews and clinical studies of i) CGA of old age cancer patients, ii) CGA domains in old age cancer patients, iii) CGA tools, iv) life expectancy estimation tools, v) frailty screening tools in oncology, vi) CGA-based patient allocation to treatment, vii) CGA-driven management of geriatric conditions in older adults with cancer, viii) CGA-driven management of community-dwelling older adults and ix) quality of life in old age cancer patients, x) cancer epidemiology. For their searches, the SIGG experts were recommended to use keywords, such as "comprehensive geriatric assessment'', ''CGA domains'', ''older/senior/elderly cancer patients'', ''screening for frailty'', ''CGA-driven interventions'', ''functional status'', ''quality of life'', ''sarcopenia'', ''physical performance'', ''nutritional status'', psychological status'', ''multimorbidity'', ''polypharmacy'', ''prediction tool'' and ''chemotherapy toxicity'', "surgery", "perioperative complications". A total of 139 manuscripts were deemed relevant for these topics and revised (see References) (Figure 1).

The Likert-type questionnaire developed in the light of these revisions (Table 1) was administered to a panel of 30 skilled SIGG members operating in the Italian Healthcare System and recommended by the scientific committee; these experts had proven expertise in oncogeriatrics and at least 5-year clinical practice in the field. A skilled oncologist (A.B.) and a skilled oncological surgeon (S.S.), both with strong experience in the management of older patients, served as advisors and they submitted their comments on each single round of the Delphi process (Figure 2), comments that the panelists were provided with before the subsequent step. The questionnaire included closed items, and multiple choices were allowed. The panelists expressed their opinion on each issue using a Likert-type scale (with scores ranging between 1 and 5, where 1 indicated a total disagreement and 5 a complete agreement). Free text comments at the end of each question were allowed to promote the discussion. At each stage the panelists received the results of the previous stage, including the median response to

each item, the percentage level of agreement, and their own selection. They also received the advisors' comments at each round. Eventually, the panelists reached a final consensus report. Consensus was defined as at least 70% of panelists giving similar rates on a statement on the 5-point Likert-type scale. The nonparametric Friedman test and the Wilcoxon Rank test were used to assess differences between items. Differences were considered significant at the P<.050 level. The results of our Delphi process are summarized in Table 2. The mean age of the raters was 49 (SD 11), with a mean clinical experience of 10 (SD 3); 13 of the raters (42%) were female. The final response rate was 98.2%. Panelists A.N. and R.A.I. were responsible for coordinating the group, collecting all the information, guaranteeing the five operative principles (inclusion, participation, cooperation, egalitarianism, orientation to solution) to be respected. All members from the panel were responsible for reviewing and approving the ultimate version of the guideline. SIGG will determine the need to update these recommendations, based on a constant review of the new literature.

Question 1. 1. Do all older patients with cancer need to undergo to a CGA?

By itself, chronological age is an insufficient marker of an individual's biological status. The aging process is indeed highly heterogeneous, ranging from fit older subjects with a good performance status and who are eligible for standard treatments similar to young adults, to vulnerable elders, for whom the usual oncological treatments are burdened by severe toxicity and who need specific geriatric interventions [21] Therefore, the use of geriatric assessment tools is in principle very useful to help oncologists in planning the most appropriate treatment, but also to put interventions for geriatric conditions in place as needed [7]. If, on one hand, it is true that many senior cancer patients (particularly those aged 65-75) nowadays show a remarkable fitness, making so that a widespread use of the CGA will translate into a significant allocation of resources towards patients who do not ultimately benefit from this approach, on the other hand, trying to select those patients who will profit from a CGA by screenings remains problematic. A study comparing different screening methods for the need of senior cancer patients for a geriatric assessment [i.e. VES-13, Geriatric 8 (G8), Triage Risk Screening Tool (TRST 1+), Groningen Frailty Index (GFI), frailty phenotype, Barber, and abbreviated CGA (aCGA)] found that even in case of the highest sensitivity, the

sensitivity and/or negative predictive value or of these tests was poor [22]. As a result, by routinely applying such screening policies, it is likely that one would miss a considerable proportion of senior patients with problems in one or more health domains and have these patients possibly experience negative consequences from cancer treatment and/or not be offered geriatric interventions that they would need. Given these premises, a consensus was reached within our taskforce that at this stage offering a CGA to all senior cancer patients (≥ 65) is the best recommendation. Eventually, such extensively CGA administration will enable the definition of new and much more powerful screening tools that will ideally allow reserving a CGA to those patients who actually need it. In addition, we anticipate that such practice will eventually lead to shortened and more agile forms of CGA for patients with cancer, that will retain sensitivity for detecting impairments in the relevant domains, while at the same time being of more user-friendly administration in routine practice.

Recommendation: *All older adults (aged 65 years and older) with cancer should undergo a CGA with the aim of:*

a. *targeting geriatric clinical interventions to potentially revert clinical and/or functional deficits, thus optimizing health status;*
b. *allocating more older patients to active types of treatment;*
c. *providing valuable information on prognosis and risk of treatment-emergent toxicity.*
d. *choosing the most suitable approach also in order to minimize adverse events and to promote quality of life (including, in the presence of an excessive risk of severe toxicity, best supportive care) (Figure 3).*

We recommend that the CGA is performed by a trained geriatrician with the ability to detect and treat impairments in the different domains, possibly calling into play additional health professionals (e.g. physiotherapists, nutritionists, phoniatrists, social workers) as needed. Alternatively, having the CGA tests and questionnaires administered by a nurse practitioner or by a professional nurse with skills in geriatrics is also possible. In the latter case, whenever compromised domains/health or social issues became apparent, we recommend that the patient is referred to the geriatrician for a thorough assessment and possibly for having the appropriate interventions and/or diagnostic workup prescribed.

Moreover, in any case (i.e. both in patients with and without impairments in geriatric domains) the geriatrician should be in charge for writing a report to be submitted to the treating oncologist/surgeon/radiotherapist and possibly for taking part in the case discussion within the disease management team (particularly for those patients who were found to have geriatric health problems). This will aid to reach the final therapeutic decision and to propose a personalized, global treatment plan that will include the geriatric interventions proposed for the affected domains.

A consensus was also reached that a CGA should performed at the moment of cancer diagnosis and that, from then on, the geriatrician should become in charge for following patients with impairments in one or more domains for what competes to him (e.g. treatment of depression and/or of neurodegenerative disorders, nutritional care, physical therapy, medication deprescribing, social support, etc.) as per standard practice. There is currently no information as of the most appropriate schedule of subsequent CGAs (following the initial assessment) in the same cancer patient. Thus, we recommend that additional CGAs are administered as per judgment of the treating geriatrician, possibly, also in the light of health problems that other specialists my bring to their attention.

Question 2. Which domains should be explored in the CGA of older cancer patients and which tools should be utilized?

The 2014 SIOG guidelines recommended that the geriatric assessment of older cancer patients should include domains such as functional status, comorbidity, cognitive status, psycho-affective status, nutritional status, social support, fatigue, polypharmacy and the presence of geriatric syndromes [23]. In August 2018, as previously mentioned, ASCO recommended performing a geriatric assessment in all older persons *(aged 65 years and older)* who are candidates to chemotherapy, by assessing (as a minimum) physical function, comorbidity, falls, depression, cognition, and nutrition [7]. In defining a CGA format to be applied to patients with cancer, we have taken these ASCO recommendations into account. Although a series of third-generation CGA tools (e.g. Suite interRAI) has been developed and applied to different healthcare settings to improve the appropriateness of care and outcomes for older adults, its application in oncogeriatrics is scant and devoid of evidence-based results [25]. In addition, based on

the recent recommendations of the European Working Group on Sarcopenia in Older People (EWGSOP-2) [26], we decided to recommend that sarcopenia is also assessed within the CGA of older adults with cancer, as a potent mediator of functional impairment and adverse clinical outcomes (e.g. postural instability, falls, fractures, functional decline, malnutrition, poor quality of life, mortality).

Recommendation*: The clinical domains that should be systematically included in the CGA of older adults with cancer (ONCOGER CGA) are the following (Table 3):*

- *Cognitive status*
- *Functional status*
- *Sarcopenia and physical performance*
- *Nutritional status*
- *Psychological state*
- *Multimorbidity/Polypharmacy*
- *Quality of life*
- *Social status*

COGNITIVE STATUS

Cognitive disorders are of key relevance in determining older patients' clinical outcomes and vulnerability to environmental stressors. In older cancer patients, dementia is a known predictor of shorter survival [27]. By how much exactly cognitive impairment affects clinical outcomes is unclear. However, studies show that cognitive impairment and/or dementia can deeply affect the effectiveness of oncological treatments, including the ability to withstand and comply with chemotherapy [28], resulting as a risk factor for under or over adjuvant therapy as well. Cognitive impairment associated with cancer could also be a risk factor for delirium during medical or surgical treatments, which is a complication known for causing a shorter life expectancy and higher disability. In a broader clinical perspective, cognitive impairment may ultimately reduce the subject's functional reserves, leading to poor oncological outcomes as a whole.

In addition, over the past years, there has been a growing interest in oncology in understanding cognitive dysfunction caused by cancer treatments. In particular, the

development of cognitive impairment during cancer treatment, especially chemotherapy, or among cancer survivors, has led to the definition of a new cognitive condition termed CICI (chemotherapy-induced cognitive impairment). CICI is characterized by memory impairment, loss of concentration, slow speech and movements and executive dysfunction, and is frequently associated with inconsistent findings of neuropsychological testing [29]. Such a collection of symptoms may be transient or persistent over time, ultimately affecting patient's quality of life and daily functioning. Old age and cumulative chemotherapy cycles were the main influential factors for objectively confirmed CICI, and fatigue was the most common predictor of self-reported cognitive decline. CICI is expected to have significant prognostic relevance, and its occurrence to have an impact on selection and physicians' decisional process [29].

Despite these premises, so far, few studies have investigated which psychogeriatric assessment could best match the specificity of these issue in oncogeriatrics. The Mini Mental State Examination (MMSE) [30] has frequently been incorporated into the CGA of older cancer patients, as a mean to assess cognitive status and its trajectory over a patient clinical history. This test is useful to detect and monitor dementia over time, but is less sensitive for the detection of subtle impairments such as mild cognitive impairment (MCI) [31]. The latter MCI is a transitional cognitive impairment, that can be placed between the normal brain aging and the earliest features of dementia. Similarly, CICI could be considered as an early MCI, and the intertwined roles of these two clinical entities with regard to dementia in old-age cancer patients are still unsolved.

The Montreal Cognitive Assessment (MoCA) lends itself to the early detection and monitoring over time of MCI, potentially offering discriminating clinometric properties between MCI and CICI by virtue of its multidomain cognitive assessment [30]. MoCA could be used for the systematic assessment of the spectrum of cognitive disorders that may be diagnosed in elders with cancer and improve our understanding of the possible cognitive trajectories associated with cancer diagnosis, treatment and progression [32]. Thus, we propose that, whenever MoCa is feasible, this test should be applied to evaluate the cognitive status in senior patients with cancer.

DEPRESSION

Depression is extremely common among older adults who are newly diagnosed with cancer. Depression was shown to lead to decreased treatment adherence and to increased health care utilization. Ultimately, it was associated with poor overall survival, functional status, and quality of life [33]. Although geriatric depression is a well-defined clinical construct, its psychopathology in cancer patients has only been partially investigated [34].

In older adults, the relationship between cancer and depression is complicated and it may be the result of heterogeneous disorders [35]. A preexisting history of depression, comorbidities and aging-related changes (including decreased psychological resilience to environmental stressors) frequently represent the psychological background of these patients. On such a background, new stressors such as the cancer diagnosis itself, surgery, chemotherapy, radiotherapy and treatment-emergent side effects are frequently the trigger for a clinically overt depression [35].

Several screening instruments for depression have been developed for older adults. Although the self-reported Geriatric Depression Scale (GDS) [36] is the most commonly used tool as a part of the CGA for assessing the spectrum of depression in older cancer patients (including suicide ideation), the Center for Epidemiological Studies Depression Scale (CES-D) [37] appears as the most promising instrument in this population. This tool fully encompasses the heterogeneous spectrum of depression in older adults and using a low cut-off (<14) could help identify subtle depressive phenotypes and maximize clinometric accuracy in older adults with cancer. Thus, we recommend that whenever the CES-D test can be performed, it is administered instead of the GDS standard examination in the CGA of older patients with cancer.

FUNCTIONAL STATUS

Functional status is a CGA domain which has important prognostic implications [38,39] and can be negatively affected by cancer itself and/or its treatments. Indeed, several studies have shown detrimental changes in older adults' functional status within the first year after chemotherapy initiation or after cancer surgery [40,41]. An impaired functional status may reduce a patients' ability to fully regain his pre-morbid functional status after cancer treatments, which represents a key challenge in oncogeriatrics [40,41]. Thus, properly assessing functional status in the older adult with cancer is

essential. It is generally accepted that measuring the activities of daily living is of key prognostic relevance and it goes beyond the mere performance status alone, since the eastern cooperative oncology group (ECOG PS) is not specifically designed for older patients [42]. SIOG has recently recommended the activities of daily living (ADL) based on Katz Index [43] (covering six basic functions, i.e. bathing, dressing, toileting, moving, bowel and bladder control, and eating) as a tool for assessing functional status in oncogeriatric settings [23]. A study suggested that ADL could have predictive value with respect to overall survival, short- and long-term post-operative complications [23,44]. The instrumental activities of daily living (IADL) proposed by Lawton and Brody [45] also evaluate the person's functional status. They include self-care skills that allow independent living at home and provide prognostic information. IADL were reported to be a sensitive marker of early clinical vulnerability and could represent a better prognostic tool for long-term mortality, as compared to ADL [42,45]. The 2018 ASCO guidelines indicated the Barthel Index (B-ADL) [46] (which assesses ten different functions: personal hygiene, bathing, feeding, toileting, climbing stairs, dressing, bowel and bladder control, mobility, and chair/bed transfers) as the reference tool to estimate functional status in older cancer patients [7]. A history of falls is also a useful indicator of overall functional status in older adults. Fall history and the dependence in ADL were reported to be an accurate prognostic factor for adverse clinical outcomes in an older cancer population [47]. Frequent falls represent a risk factor for chemotherapy-emergent side effects, whereas the IADL scale seems to be predictive of treatment feasibility and chemotoxicity outcomes in older patients treated for cancer.

Overall, the B-ADL [46] and IADL [45] scales appear as the most suited tools for assessing functional status in oncogeriatric settings, while ADL can be employed as an alternative tool.

PHYSICAL PERFORMANCE

In older adults, physical performance measures are robust and consistent predictors of disability, hospitalization, institutionalization, and death [48,49], although there is only limited evidence in oncogeriatrics. In particular, the Short Physical Performance Battery (SPPB) is easy to administer, has a good test-retest reliability, and is sensitive to changes [50]. Poor performance in SPPB has been associated with

functional deterioration [51] and mortality [52]. In older adults with cancer, SPPB retains its role as a predictor of reduced survival [53]. In gynecological and hematological cancers treated with chemotherapy, low scores at the SPPB were associated with increased mortality [54,55]. Poor performance at SPPB has also shown to predict functional decline after surgical procedures [56], chemotherapy [58], and hormone therapies [57]. Of the three SPPB components, gait speed (measured over a short distance, usually 4 meters) has gained vast interest as a single synthetic measure of physical performance. It is easily performed, reproducible, and robustly associated with mortality and incident disability [59,60]. In older cancer, slow walking speed has been associated with reduced survival [59]. The 4 meter-gait speed test (with a cut-point of <0.8 m/s) has been used as predictor of mortality [54,61], surgical complications, and functional decline [57,62]. Another measure of physical performance that is frequently reported as having good prognostic value in observational studies and clinical trials in older cancer patients is the Timed Up and Go test (TUG) [63]. This is an easy and reproducible test. Poor performance at the TUG test was associated with reduced survival in older cancer patients [64,65], while its ability to predict functional decline and toxicity from treatments has not been consistent in clinical trials in cancer patients [66,67].

Overall, current evidence supports the use of physical performance measures to identify enhanced vulnerability to treatments in older adults with cancer. SPPB is the most comprehensive instrument. It is here suggested this to be the test of choice to assess performance in daily routine as well as in research contexts. When SPPB cannot be performed for reasons of time or other reasons, it can be substituted by the TUG test.

SARCOPENIA

Sarcopenia can be defined as a pathological loss of skeletal muscle mass. It is characterized by structural changes in muscle affecting its quality. Loss of muscle mass and quality causes reduced strength and functional impairment [68]. Even though sarcopenia is frequently associated with aging, it can develop much earlier in life, particularly in disease conditions [69].

It should be considered that the presence of a catabolically active disease (as cancer) makes the definition of sarcopenia somehow inappropriate in the oncogeriatric

setting. In fact, it is more likely that older patients with cancer may present the body composition abnormalities more characterizing the condition of cachexia. Unfortunately, the operational definition of this latter is still debated and largely controversial. Thus, the difficulty in distinguishing between sarcopenia and cachexia makes so that we typically make the use or the term ''sarcopenia'' using it in a broader sense us discussing about the geriatric syndrome of sarcopenia in a broader sense, and generally meaning detrimental age-related body composition modifications with it.

In adults with cancer, sarcopenia has been associated with mortality and increased risk of complications from different treatment modalities (surgery, chemotherapy) [70,71]. The prevalence of sarcopenia, as defined according to EWGSOP criteria, is 1-29% in community-dwelling older adults, 14-33% in long-term care populations and 10% in the hospitalized patients [72]. Using the same criteria, prevalence of sarcopenia in older adults with different types of cancer has been estimated to be 27%, with a reduced survival associated with this condition [73]. Even though different definitions exist for this condition, we suggest to refer to the European Working Group on Sarcopenia in Older People (EWGSOP) revised criteria [25], for the operational definition of sarcopenia both in the clinic and for research purposes. Revised criteria prioritize the assessment of muscle strength over muscle mass to identity sarcopenic patients. Strength is more closely related to survival and functional decline, compared to muscle mass [74,75]. Moreover, it is a more overt and clinically relevant feature of muscle decline than the reduction in mass.

We recommend to assess muscle strength by measuring hand grip strength, by means of a dynamometer, as it is an inexpensive and easily reproducible method to assess the presence of probable sarcopenia. Reduced grip strength by itself has been associated with higher risk of developing disability [76], as well as toxicity from chemotherapy [77]. If a dynamometer is not available a chair stand test (also called chair rise test) can be used as a proxy for strength of leg muscles (quadriceps muscle group)This test measures the amount of time needed for a patient to rise five times from a seated position without using his or her arms. For clinical reasons, measurement of physical performance, as detailed above, is advised to confirm the presence of sarcopenia and assess its severity, and for this SPPB should be the preferred test.

Measurement of muscle mass is strongly recommended in the research setting, and it is advisable in centers where there is access to one of the many different techniques to assess muscle mass. One of the most widely used instruments to determine muscle quantity (either expressed as total body lean tissue or appendicular skeletal muscle mass) is Dual-energy X-ray absorptiometry (DXA) [78]. It exposes the patient to low-dose radiation, doesn't require dedicated training and is less expensive than MRI or CT scans. Bioimpedance analysis (BIA) is a commonly used method for estimating the volume of fat and lean body mass. The device is easy to use, portable, and the measurement is inexpensive. Reference data for the older Caucasian Italian population have been published [79]. In the oncology setting, assessment of muscle mass has been pursued mainly using CT scans, measuring either the total psoas cross-sectional area (TPA) or the total abdominal muscle area (TAMA) at the L3 lumbar spine level [70,80,81]. Data of muscle quantity should be normalized to body size, using height squared (ASM/height2), weight (ASM/weight) or body mass index (ASM/BMI) [82]. Skeletal muscle index (SMI, cm2/m2) has been proposed as a measure to normalize data of L3 skeletal muscle area (SMA, cm2) to body size [83]. EWGSOP2 guidelines suggest the use of the SARC-F questionnaire to screen for sarcopenia in the general older population [84]. Its use can be recommended even in the geriatric oncology setting, even though clinical data are still scant in this specific population [85].

NUTRITIONAL STATUS

Evaluating the nutritional status is crucial in oncogeriatric patients, since malnutrition is a highly prevalent, may lead to changes in the prescribed treatments, and concur in the onset of treatment-related complications. Indeed, both malnutrition (i.e. undernutrition in the vast majority of the cases) and weight loss are associated with increased mortality and chemotherapy toxicity in older cancer patients [86, 38]. MNA (Mini Nutritional Assessment (MNA; Nestle Nutrition, Vevey, Switzerland) shows prognostic relevance with regard to hospital costs, functionality, morbidity, and mortality of the elders in different settings [87]. It has a 96% sensitivity, a 98% specificity, and a positive predictive value of 97% in identifying nutritional risk [88,89], even before severe changes in weight or albumin levels occur [90]. Burman et al. showed that the MNA is a good instrument for assessing the nutritional status of very old people, with a linear

association with mortality; differently the BMI (Body Mass Index) may underestimate the prevalence of malnutrition, especially in women [91].

Thus, we recommend the use of the MNA for the assessment of the older patient's nutritional status in oncology settings, or of its shortened version, MNA-SF, which is time-saving and can be used to select those patients who need a complete evaluation with MNA [92,93].

MULTIMORBIDITY AND POLYPHARMACY

Comorbidity has been associated with increased mortality in older patients with cancer, especially among subjects with localized and potentially curable oncological conditions [94,95]. In addition, effectiveness of cancer treatment and its completion have also been reported to be affected by multimorbidity in older patients. Moreover, multimorbidity may act as a mediator of functional decline and the effect of different comorbid conditions on the patient's functional status should be acknowledged when choosing a cancer treatment. So, accurately recording and quantifying health problems is fundamental in the CGA of oncological older patients [96,97]. Among the different tools that are available to measure health problems, we recommend the Cumulative Illness Rating Scale for Geriatrics (CIRS-G), which is a simple tool that can be completed by using information derived from the clinical history and assessment. It allows obtaining two scores, a severity index and a comorbidity index [98,99]. Alternately, another tool that can be used is the Charlson Comorbidity Index, which was the first tool to be used in clinical practice to estimate 10-year survival based on the patient's 'comorbidities [100].

Polypharmacy was also identified as an essential clinical domain of the Comprehensive Geriatric Assessment, for its potential influence on health outcomes [101]. Generally, polypharmacy is defined as the use of five or more medications. However, the optimal cut-point (i.e. number of drugs) for predicting clinically important adverse events in older people with cancer is still unclear [102].

Older cancer patients with multiple comorbidities are at risk of adverse drug events associated with polypharmacy and drug –drug interactions due to the altered pharmacokinetic/pharmacodynamics status of senior patients and the narrow therapeutic window that are frequently associated with the use of anti-neoplastic agents. Cancer therapy, indeed, adds to the risk pf polypharmacy in older adults, as many new

medications may be prescribed, including chemotherapeutics, molecularly targeted drugs, biologicals and supportive medications. Therefore, screening for polypharmacy (by enquiring about the number of drugs a patient takes daily) and potentially for inappropriate medications is highly recommended as it could reduce the risk of adverse events, fall, hospitalization, post operative complications, and mortality [102,103].

The most widely used indicators of inappropriate medication use are the Beers criteria [104] and the Screening Tool of Older Persons' potentially inappropriate Prescriptions/Screening Tool to Alert to Right Treatment (STOPP/START) [105]. It should be noticed that while Beers' criteria were reported to be associated with delirium, falls, fractures, and with gastrointestinal bleeding, no association with in-hospital or post-discharge outcomes, including adverse drug reactions and re- hospitalizations, was found [106]. Similarly, the association between STOPP, on the one hand, and hospitalizations related to adverse drug reactions, on the other, was not confirmed in every study evaluating this tool [105,107]. Thus, overall, there is no univocal demonstration of the efficacy of such indicators. Potential drug-drug interactions can also be detected by the Italian Computerized Prescription Support Systems, INTERCheck, which was developed by the Istituto di Ricerche farmacologiche Mario Negri to specifically address prescribing in older people with altered pharmacokinetics and pharmacodynamics and complex comorbidity [108]. Overall, the best approach to identify and address PP in older patients with cancer still has to be determined and studies of polypharmacy screening and deprescription in terms of their impact on clinical outcomes in older patients with cancer are also required.

Cancer-related therapy adds to the risk of polypharmacy in older adults, as many new medications may be prescribed, including cancer therapy and supportive medications. Therefore, screening for polypharmacy (by enquiring about the number of drugs a patient takes daily) and potentially for inappropriate medications is highly recommended as it could reduce the risk of adverse events, falls, hospitalization, postoperative complications, and mortality.

QUALITY OF LIFE

Patient-related outcome measures are gaining growing interest for an ultimate judgment

on the value of an interventions in oncology. Cancer survivors tend to have significantly lower scores in health-related quality-of-life (HRQoL) than age-matched non-cancer individuals due to cancer related symptoms (mainly pain or fatigue) or to treatments toxicity [109]. So, the maintenance or the improvement of HRQoL is one of the most important goals when treating older cancer patients. Furthermore, HRQoL data demonstrated to be prognostic of patient survival in older population in a variety of types of cancer, such as colorectal carcinoma and advanced non-small cell-lung-cancer (NSCLC) [44]. The majority of clinical studies used generic HRQoL instrument, that are closely related to physical functioning or psychological distress [110]. The EQ-5D score has been widely used in different countries and a variety of clinical areas by clinical researchers. It provides a simple descriptive profile and a single-index value that can be easily used for clinical evaluations. Furthermore, HRQoL data demonstrated to have a strong prognostic importance for survival in older population in a variety of types of cancer, such as colorectal carcinoma, advanced non-small cell-lung-cancer (NSCLC) [44].

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The European Organisation for Research and Treatment of Cancer (EORTC) developed the QLQ-ELD15 questionnaire to supplement its core tool, the QLQ-C30, for measuring HRQoL in cancer patients aged 70 years and older [113]. Subsequent analyses and improvements resulted in the removal of one item, leading to the QLQ-ELD14 [114], which includes scales for mobility, worries about others, future worries, maintaining purpose and illness burden as well as two single items, i.e. family support and joint stiffness. The QLQ-ELD14 was found to well differentiate patients across disease stages, treatment intentions, performance status, geriatric screening scores, and number of comorbidities. Thus, the QLQ-ELD14 is also a validated questionnaire to

assess HRQoL issues of primary relevance for older patients with cancer across many types of cancer sites and types of treatment.

In light of these scientific evidence, we stress the need to include HRQoL in the CGA

Of senior patients with cancer. We recommend EQ-5D for assessing HRQoL within a CGA in routine oncogeriatrics. The EORTC's QLQ-ELD14 questionnaire in combination with the QLQ-30 can also used as an alternative to the EQ-5D. the use of EORTC tools (QLQ-ELD14+QLQ-C30) may be preferred to the EQ-5D when designing an oncological clinical trial enrolling older patients.

SOCIAL STATUS

Socio-economics factors and social or family network play a key role in determining health outcomes in older cancer patients, especially now that the number of older patients living alone is increasing [115]. The presence of a primary caregiver, a person who can help the patient at home, or a strong circle of friends and family members capable of meeting the patient's needs is of major importance to support older adults at coping with cancer and the adverse reactions of treatments [116]. Screening for signs of social vulnerability in terms of inadequate social environment is highly recommended. Thus, we recommend enquiring about marital status living alone or transfers to (and from) children/parents, careers, as well as participation in social and recreational activities.

Question 3. Which tool should be utilized for estimating an older patient's life expectancy?

An accurate preliminary evaluation to better ascertain prognosis and/or life expectancy, independently from the cancer diagnosis, is fundamental for the decisions made by the physician (i.e. for avoiding both under and overtreatment), as well as for the patient, who is enabled to weigh pros and cons of different types of treatment and, thereby, to make an informed decision [7]. For example, in some types of cancer, the time lag to benefit from cancer treatments may be beyond the life expectancy of a patient, independently from cancer diagnosis [117].

According to ASCO; either one of two indexes (Schonberg or Lee index [119,120]) should be considered in elders with cancer [7]. These tools were validated in very large cohorts of ten thousands subjects each [121,122]. Schonberg et al. developed a well-validated 11 items prognostic index for older adults, based on data from community-dwelling individuals older than 65 years. Lee et al reported a 12- variable index from the Health and retirement survey population for patients older than 50 years to estimate 4-10 –year survival [119,123]. Both indexes are applicable to community residents aged 50 or older and predict 4,5,10 and 14 year mortality based on age, male, sex, body mass index (>25 kg /m2), perception of health state (''good''), presence of chronic obstructive pulmonary disease or of congestive heart failure or diabetes , previous history of cancer, smoke history, physical performance, hospitalizations in the last 12 months and on several ADL domains. When using these indexes for an accurate comparison of life expectancy in cancer patients, it is worth to mention that is necessary to select ''no'' in the field ''history of cancer''.

Recommendation: *In line with ASCO, we also agree that obtaining either one of these two scores for the estimation of a patient's life expectancy, Schonberg or Lee Index, is in principle useful for a decision as of the best therapeutic approach. These tests can either be performed by the treating oncologist, by the surgeon, by the radiotherapist, by the geriatrician (whenever geriatricians are called by default to evaluate all senior patients) or by a nurse practitioner/professional nurse, based on internal decisions/policies. It should, however, be taken into account that certain scores included in these online calculators are modifiable by specific geriatric interventions (e.g. a patient's self-rated health and/or ADL score may improve upon onset of antidepressants and/or of physical or nutritional therapy). As a result, within a few weeks/months, a patient's life expectancy may be found to be different and possibly to have improved, which in turn may have important consequences on therapeutic decisions. In fact, the primary goal of the CGA itself is to optimize health and self-perceived health status in senior subjects and to possibly re-gain them to active treatments. Thus, this aspect always needs to be considered and whenever a patient is prescribed geriatric interventions, he/she should be consistently re-evaluated as upon subsequent assessments the judgment on his/her suitability for active therapies make change.*

Even if the definition of life expectancy may ultimately exclude active treatments, it should never exclude a CGA, as the letter is very likely to help define the best supportive care plan.

Question 4. In those centers where patients are referred to the geriatrician based on a screening method, which screening tool should be utilized?

Performing a CGA requires a geriatrician or a physician skilled in this field and is time-consuming (each evaluation typically takes between 30 and 90 minutes) [118]. Considering the large prevalence of cancer in the older adults and that not all cancer centers have geriatricians among their workforce, it is frequently impossible to actually offer a CGA to all older cancer patients with the available resources [118]. Given this scenario, as previously mentioned, research efforts have focused on the development of methods to screen senior patients to identify those who need a geriatric assessment [124]. These screening tools have also been studied for their ability to provide prognostic information and to define the geriatric interventions that may be needed (e.g. physiotherapy, fall prevention, nutrition, treatment of depression, etc.). Again, we remind the reader that all the available screening tools do have major limitations based on the study by Hamaker and colleagues, who found that even the screening methods with the highest sensitivity have poor specificity and poor negative predictive value [22]. These authors conclude that best would be to actually administer a CGA to all old aged patients with cancer. That being said, we do acknowledge that given the frequent lack of resources the use of a screening tool to select the patients who have to be administered a CGA remains very common and is frequently unavoidable.

The SIOG guidelines [118] identify some characteristics that a screening tool should have: brevity and simplicity of use, high sensitivity, high specificity and high negative predictive value; prognostic/predictive value for relevant outcomes such as toxicity related to oncological treatments, functional decline, survival. A SIOG expert panel provided a more extended systematic review of literature, evaluating 22 studies reporting sensitivity and specificity of screening tools [118]. The authors reported that the highest sensitivity was observed for G8, fTRST, Oncogeriatric screen, Study of Osteoporotic Fractures, Eastern Cooperative Oncology Group-Performance Status, Senior Adult Oncology Program (SAOP) 2 screening and Gerhematolim. Overall, the G8 scale seems

the most robust geriatric assessment screening tool for its high sensitivity and acceptable specificity [112]. In eleven direct comparisons for detecting problems on a CGA, the G8 was more or equally sensitive than other instruments in all six comparisons, whereas results were mixed for the VES-13 in seven comparisons [118]. More recent studies reported data on modified G8 scales [124, 125]. For instance, in a large cohort of 1,435 patients, adding four IADL items was shown to improve the performance of G8 [126].

However, the performance of different screening tools varies depending on the settings and the preferred screening tool should be chosen also on the basis of the clinical situation. Thus, according to the SIOG guidelines, no specific screening tool can actually be recommended or discouraged [118].

Overall, the screening methods for vulnerability that are almost commonly recommended by national and international guidelines for their statistical performance and their large use in cancer and clinics and research are:G8, VEs13, SAOP2.

G8. It is an eight-item screening tool, that was specifically created for older cancer patients. It covers multiple domains included in the CGA and it could be administered also by physicians without experience in geriatrics in about 5 min [127]. A score ≤14 is considered abnormal and indicates those patients to be referred to CGA. Several studies of G8 showed a wide variability of sensitivity (from 65% to 92%) and specificity (from 3% to 75%) in identifying patients who would likely benefit from a full CGA. Nonetheless, G8 is considered a useful screening test both in academic and nonacademic hospitals. In four studies, G8 was compared with outcome measures. Moreover, in several cancers, G8 predicted chemotherapy-induced toxicity and in two studies of various cancer types, G8 showed a significant predictive value for survival [128].

Vulnerable Elders Survey-13. VES-13 encompasses 13 self-administered items and was developed for stratifying the risk of deterioration in community-dwelling older people [129]. A score ≥3 identified vulnerable individuals at increased risk for functional decline or death over 2 years [130]. The time to complete the VES-13 is 5 min. In several studies comparing VES-13 with CGA in older cancer patients, sensitivity ranged between 39% and 88% and specificity between 62% and 100% [130,131]. Interestingly, while

comparing VES-13 with subparts of the CGA, a high sensitivity for functional status but not for comorbidity was shown [132]. In patients with various cancer types, VES-13 was predictive for the occurrence of severe toxicity of chemotherapy [133] and, in patients with gastrointestinal cancers who underwent chemotherapy, VES-13 correlated with survival ($P < 0.0014$) [134].

SAOP2. This short screening questionnaire is used at the Senior Adult Oncology Program of the Moffitt Cancer Center (Tampa, FL, USA) [135]. It is aimed at defining those older cancer patients who needs a multidisciplinary evaluation by a geriatric-oncology team by evaluating several domains included in geriatric assessment. Specifically, it includes a self-reported part (including ADL and IADL and nutritional status items) and a questionnaire for cognitive evaluation and drug medication that can be administered by a doctor or by a nurse. The performance of the SAOP2 screening questionnaire at detecting geriatric issues was as follows: sensitivity 100%, specificity 40%, positive predictive value 90%, negative predictive value 100% [135].

***Recommendation**: As per our response to Question #1, we recommend that a CGA (preferably the ONCOGER CGA format described above) is performed in every patient who is diagnosed with cancer and who is aged 65 or older. However, whenever a systematic CGA administration is not feasible (e.g. due to the lack of personnel/resources), we recommend that, as a second-choice, a two-step approach is adopted, whereby a screening method is utilized to identify patients who need a CGA (Figure 3). We proposed that, at this stage, the G8 is preferably utilized as a screening method, although VES-13 and SAOP2 can also be used to this end (Figure 3).*

The SIGG identifies the definition of new screening tools for senior cancer patients to be subjected to a CGA (tools that will perform better than the currently available ones) as one of its key goals and, hopefully, contributions to the field of geriatric oncology. In fact, as previously stated, our recommendation to extend the CGA to all senior patients with cancer is also meant to overcome the limitations of the currently available screens, by helping define new instruments. The creation of large patient databases recording both clinical al biological data is functional to this goal and is also among the aims of the SIGG oncogeriatric taskforce.

Even in those hospitals, where, due to the lack of resources, the two-step approach is adopted, we suggest that the minimum core of geriatric assessments recommended by ASCO (i.e. evaluation of function, comorbidity, falls, depression, cognition, and nutrition) is administered (either by the treating oncologist/hematologist/surgeon/radiotherapist, by a nurse practitioner or by a professional nurse) to comply with ASCO recommendations [7]. In the presence of clinical issues that should emerge from these core tests, we recommend that a geriatrician is called to evaluate the patient and to design, together with the treating oncologist/surgeon/radiotherapist, a global treatment approach tailored to the patient's needs. The geriatrician is also going to be in charge for following-up the patients for the emerging problems that are of his competence.

Question 5. Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?

Older age is associated with increased risk of chemotherapy toxicity, leading to dose reductions, treatment discontinuation, functional decline, hospitalizations and death. Assessment of performance status is commonly used in adult patients to predict the risk of adverse events from chemotherapy, but its usefulness in older adults is very limited [42]. As previously outlined, many different domains in CGA, such as functional dependency, falls, comorbidities, cognitive impairment, depression and malnutrition, are strongly associated with the occurrence of adverse events from chemotherapy [136]. Other risk factors can include the use of more toxic therapeutic regimens and of combination chemotherapy [136].

Tools to aid clinicians in defining a patient's risk of chemotherapy-emergent toxicity were developed and validated in clinical studies. The Chemotherapy Risk Assessment Scale for High-Age Patient (CRASH) is an online tool for estimating such toxicity that was defined by Extermann et al. in a heterogeneous group of 518 older cancer patients (age ≥70 years) [39]. Hematological toxicity was associated with the intrinsic risk associated with the type of chemotherapy used, as predicted by using the MAX2 score (which expresses the per-patient risk for toxicity from chemotherapy across several regimens), as well as with IADLs, diastolic blood pressure and LDH levels. Non-hematological toxicities were associated with the type of chemotherapy scheme used, ECOG PS,

cognitive impairment (assessed by MMSE), and malnutrition (defined by MNA score). Risk of toxicity ranges from 7 to 100%, using this tool. The procedure takes 20-30 minutes.

Another prediction tool was designed by Hurria et al. in a study carried out by the Cancer and Aging Research Group (CARG), which included 500 older (age ≥ 65) cancer patients with different kinds of tumors [137]. It was subsequently validated in a cohort of 250 patients in different cancer centers in the United States [38]. The CARG score includes eleven variables, including age, the type of cancer, the chemotherapy scheme used (monotherapy vs. polytherapy), anemia, renal impairment, hearing impairment and functional status (ability to walk one block, decreased social activities because of physical or emotional problems, falls, and the need for assistance with taking medications). Risk of toxicity ranges from 25% to 89% and the administration time is less than 5 minutes.

Both of these tools are user-friendly (online applications are available for both) and ASCO indeed recommends that either one of these scores are utilized to assess the risk of side effects of chemotherapy in older subjects [7]. However, it should be kept in mind that both tools do have limitations. In the first place, the area under the curve for the receiver-operating characteristic of both models was 0.65, meaning that almost 35% of patients are inaccurately classified using these instruments [38,39]. Secondly, they focus on grade 3-5 toxicities, even though in older adults, grade 2 toxicities can also be troublesome, leading to functional decline and/or to hospitalization. Finally, CRASH and CARG were not designed to predict toxicities from targeted therapies (such as monoclonal antibodies, tyrosine-kinase inhibitors, CDK4/6 inhibitors or PARP inhibitors), immunotherapies or hormonal therapies, and patients treated with these agents were not included in the validation cohorts [138]. These agents are generally better tolerated than chemotherapy, but older patients may still experience their significant toxicity [139]. Therefore, tools for predicting treatment-emergent adverse events of molecularly-targeted small molecules, biologicals, immune checkpoint inhibitors and hormone therapies are not presently available and developing such tools remains a priority.

Recommendation*: In line with the recent ASCO guidelines, we recommend that in senior patients who are candidates to receive chemotherapy, either CRASH or CARG are calculated to inform the oncologist's decision on whether or not to prescribe a certain*

type of regimen (even though with the limitations discussed above) (Figure 3). Given that both scores require the knowledge of the type of chemotherapy that a patient is candidate to receive and also of blood results, which are usually more easily accessible to the treating oncologist rather than to the geriatric consultant (i.e. LDH in the case of the CRASH, hemoglobin and creatinine for the CARG), obtaining these scores should reasonably be left up to the former (or to nurse practitioners/professional nurses working with the oncologist). On the other hand, whenever proximity and interaction between oncologists/hematologists and geriatricians allow for the latter to have access to this information, they could in principle take over calculating CRASH or CARG through the freely available online resources and provide the oncologist/hematologist with it together with the rest of their CGA.

Conclusions

Now that the majority of the cancer diagnoses are made in older subjects, a closer interaction between oncologists/hematologists and geriatricians is desirable in order to optimize the approach to patients and ultimately maximize clinical outcomes and quality of life. The CGA represents the gold standard for detecting possible issues in different domains, including cognitive, nutritional and functional status, mood, multimorbidity and polypharmacy. CGA tools exploring these domains have prognostic value and may guide geriatric interventions. Several ongoing clinical studies aim at verifying the benefits that are associated with the CGA in the older cancer patients and their results are expected in the next future.

The SIGG has identified a set of CGA tools that, according to a revision of the literature, appear as the best suited for evaluating older patients with cancer and recommends that this CGA format (ONCOGER CGA) is uniformly applied at Italian cancer centers/clinical units. A homogeneous application of this geriatric approach will allow

i) a better exchange of information between different clinical centers and between different health care settings,

ii) an easier comparison of patients' phenotypes,

iii) to define how treatments affect clinical and functional outcomes over time,

iv) to identify new, accurate screening tools that will allow to only administer a CGA to patients with actual impairments in CGA domains and who are candidate to benefit from geriatric interventions,

v) identifying new areas of intervention and

vi) to promote the cooperation between different centers.

Utilizing the proposed CGA tools is anticipated to promote the recording of patient oncological and geriatric features into databases, which, in turn, shall boost oncogeriatric research (Box 1). Finally, we foresee that the proposed ONCOGER CGA format will be susceptible of modifications in the light of studies of the application and performance of it as a whole and of its single tests and items. Ultimately, we will aim to deliver an updated and possibly more concise version of CGA for oncological settings, that will still be functional to identifying and treating impaired domains and emerging conditions, but that will also be much more time-saving and easy to apply in clinical practice.

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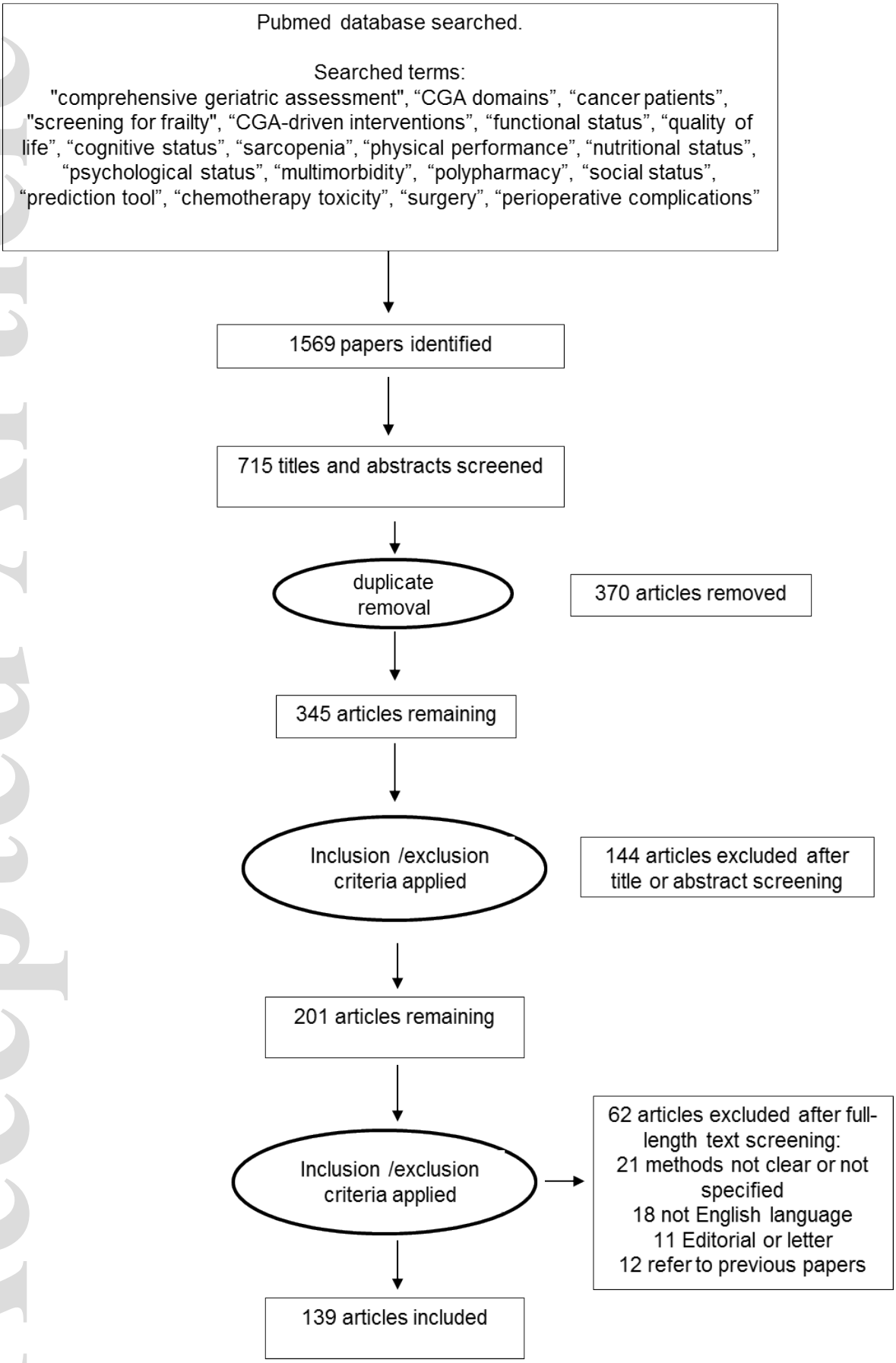

Figure 1. SIGG oncogeriatric guideline: literature search and selected articles

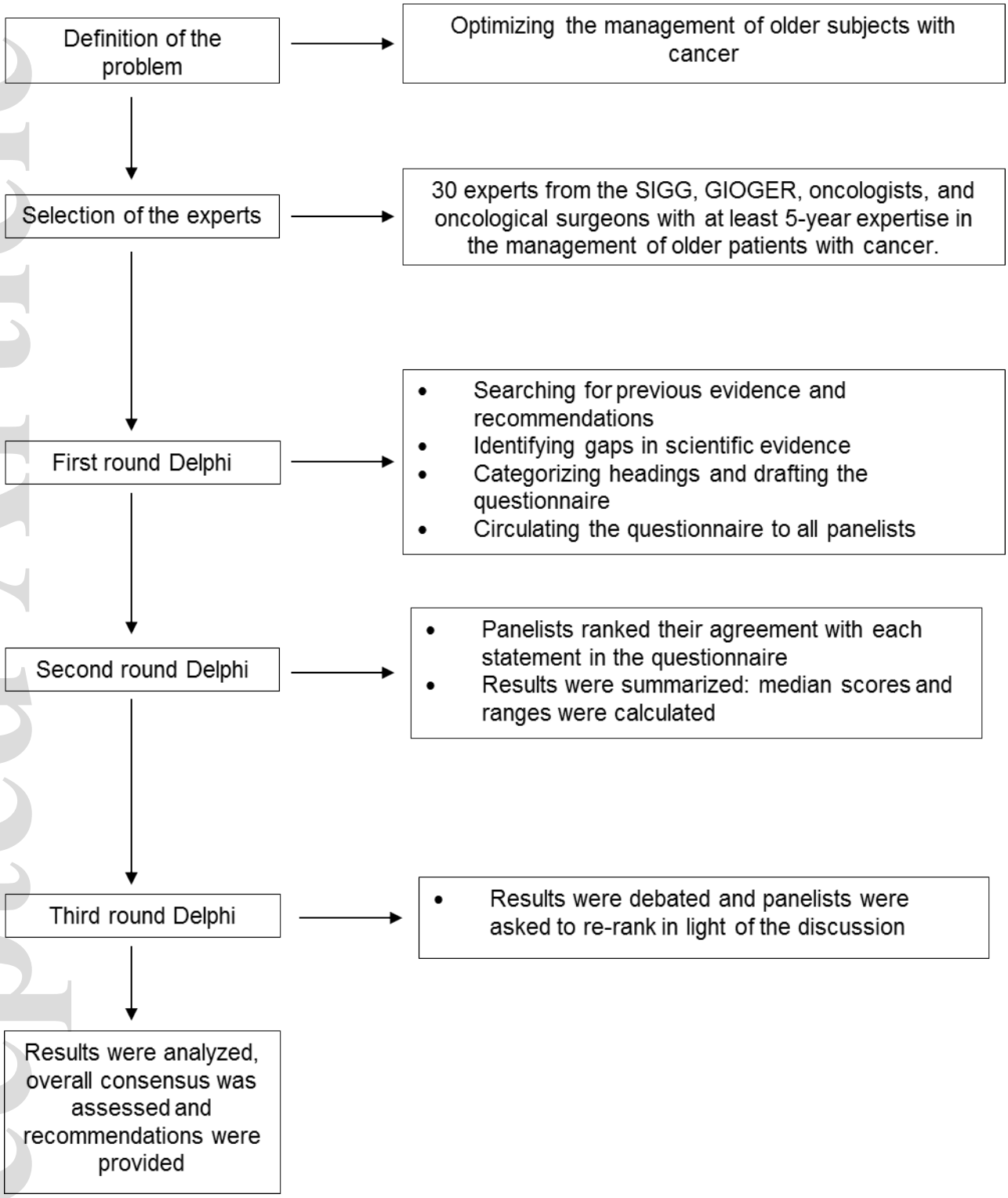

Figure 2: 2020 SIGG oncogeriatric guideline: information retrieval and Delphi process flowchart.

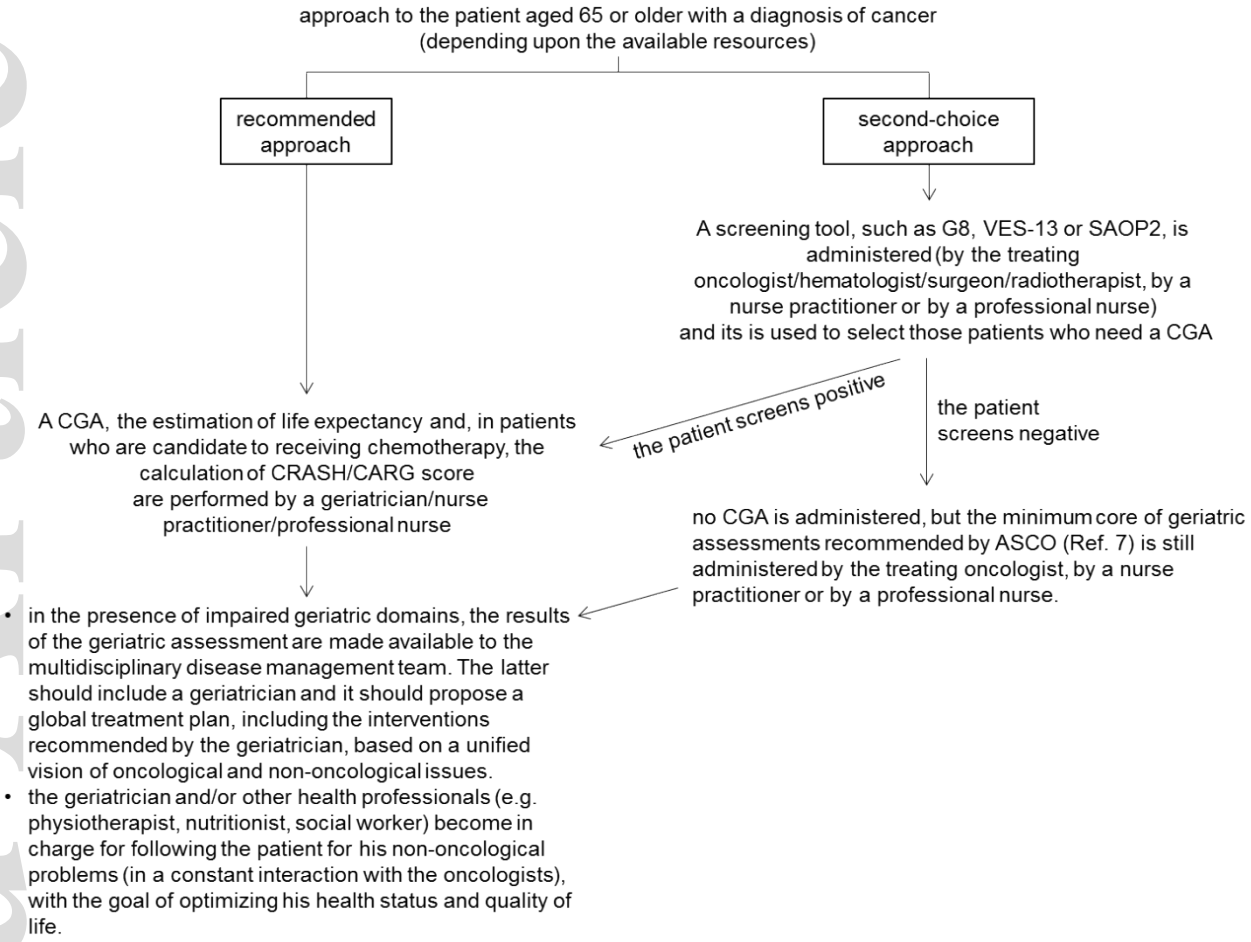

Figure 3. Proposed clinical approach to the older patient with cancer. In the ideal setting, all older adults with a recent cancer diagnosis should undergo a CGA. Whenever impairments in one or more geriatric domains are found, the CGA results are discussed within the multidisciplinary disease-management team by the geriatrician who evaluated the case. The disease-management team should ultimately propose a patient-tailored treatment plan that takes both oncological and non-oncological issues into account. When the lack of resources prevents the widespread administration of a CGA, screening patients for their need for a CGA by tools such as G8, VES-13 or SAOP2 is recommended. In addition, a minimum core of geriatric assessments (as per ASCO recommendations) should still be administered and, in the presence of impaired domains, the patient should be referred to a geriatrician for further assessments.

Table 1. 2020 SIGG guideline for oncogeriatric CGA: Delphi process, Likert-like Questionnaire

QUESTION 1

Do all older patients with cancer need to undergo a CGA?

(Indicate on a scale from 1 to 5 where 1 is not important and 5 is very important)

	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2

Which domains should be explored in the CGA of older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is not important and 5 is very important; you can provide either single- or multiple-answers)

Cognitive status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Functional status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Sarcopenia and Physical performance	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Nutritional status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Psychological status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Multimorbidity	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Polypharmacy	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Quality of life	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Social status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.1

Which tools should be utilized to explore cognitive status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Mini Mental State Examination	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Montreal Cognitive Assessment (MOCA) test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Clock Drawing Test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.2

Which tools should be utilized to explore functional status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Barthel Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Instrumental Activities of Daily Living (IADLs)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Activities of Daily Living (BADLs)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.3

Which tools should be utilized to explore sarcopenia and physical performance in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

SARC-F questionnaire	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Handgrip strength	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
DeXA	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Bioimpedentiometry	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Short Physical Performance Battery	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Timed Up and Go test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.4

Which tools should be utilized to explore nutritional status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Mini Nutritional Assessment	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Mini Nutritional Assessment - short form	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Body Mass Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.5

Which tools should be utilized to explore psychological status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

30-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
15-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
5-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CES-D	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.6

Which tools should be utilized to explore multimorbidity in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

CIRS comorbidity index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CIRS severity index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Charlson Comorbidity Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.7

Which tools should be utilized to explore polypharmacy in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Number of drugs	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Beers criteria	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
STOP/START criteria version 2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.8

Which tools should be utilized to explore quality of life in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

EuroQol-5D	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
QLQ-ELD14 +QLQC30	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SF-36	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SF-12	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.9

Which tools should be utilized to explore social status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Medical Outcomes Study Social Support Scale (MOS-SSS)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Marital status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Helpers	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Partecipation in social and recreational activities		❍ 1	❍ 2	❍ 3	❍ 4 ❍ 5
Living alone	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 3

Which tools should be utilized for estimating an older patient's life expectancy?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

Schonberg index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Lee index					

Further comments and/or suggestions:

QUESTION 4

In those centers where patients are referred to the geriatrician based on a screening method, which screening tools should be utilized?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

VES-13	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
G8	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SAOP2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 5

Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement; you can provide either single- or multiple-answers)

CRASH	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CARG					
MAX-2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

Table 2 Results of the Delphi process.

	MEDIAN (IQR)	CONSENSUS LEVEL (%)
Do all older patients with cancer need to undergo a CGA?	5 (4-5)	92
Which domains should be explored in the CGA of older cancer patients?		
Cognitive status	5 (4-5)	95
Functional status	5 (4-5)	96
Sarcopenia and physical performance	4 (4-5)	88
Nutritional status	5 (4-5)	95
Psychological status	5 (4-5)	83
Multimorbidity	4 (3-5)	92
Polypharmacy	4 (3-5)	92
Quality of life	5 (4-5)	87
Social status	5 (3-5)	78
Which tools should be utilized to explore cognitive status in older cancer patients?		
Mini Mental State Examination	4 (4-5)	92
MOCA test	5 (4-5)	96
Clock Drawing Test	2 (2-4)	92
Which tools should be utilized to explore functional in older cancer patients?		
Barthel Index	5 (4-5)	88
Instrumental Activities of Daily Living	5 (4-5)	92
Activities of Daily Living	3 (2-5)	69
Which tools should be utilized to explore sarcopenia and physical performance in older cancer patients?		
SARC-F questionnaire	5 (3-5)	81

Handgrip strength	5 (4-5)	92
DeXA	3 (2-5)	90
Bioimpedentiometry	3 (2-5)	96
Short Physical Performance Battery	5 (4-5)	86
Timed Up and Go test	4 (3-4)	77
Which tools should be utilized to explore nutritional status in older cancer patients?		
Mini Nutritional Assessment	5 (4-5)	97
Mini Nutritional Assessment - short form	4 (4-5)	82
Body Mass Index	2 (2-4)	74
Which tools should be utilized to explore psychological status in older cancer patients?		
30-item Geriatric Depression Scale	3 (2-5)	91
15-item Geriatric Depression Scale	3 (2-5)	76
5-item Geriatric Depression Scale	5 (4-5)	76
CES-D	4 (4-5)	87
Which tools should be utilized to explore multimorbidity in older cancer patients?		
CIRS comorbidity index	5 (4-5)	86
CIRS severity index	5 (4-5)	87
Charlson Comorbidity Index	4 (4-5)	74
Which tools should be utilized to explore polypharmacy in older cancer patients?		
Number of drugs	5 (4-5)	90
Beers criteria	3 (2-5)	96
STOP/START criteria version 2	2 (2-4)	86
Which tools should be utilized to explore quality of life in older cancer patients?		
EuroQol-5D	5 (4-5)	82
QLQ-ELD14 +QLQC30	4 (4-5)	87
SF-36	3 (2-5)	78

SF-12	3 (2-5)	74
Which tools should be utilized to explore social status in older cancer patients?		
Medical Outcomes Study Social Support Scale	2 (1-3)	90
Marital status	5 (4-5)	80
Helpers	5 (4-5)	82
Partecipation in social and recreational activities	5 (4-5)	71
Living alone	5 (4-5)	73
Which tool should be utilized for estimating an older patient's life expectancy?		
Schonberg index	5 (4-5)	95
Lee index	5 (4-5)	94
In those centers where patients are referred to the geriatrician based on a screening method, which screening tool should be utilized?		
VES-13	4 (4-5)	90
G8	5 (4-5)	96
SAOP2	4 (4-5)	86
Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?		
CRASH	4 (3-5)	90
CARG	4 (3-5)	96
MAX-2	3 (2-4)	86

Table 3. Synopsis of recommended and alternative tools for the CGA of senior patients with cancer

Domains	Recommended Tools	Time requested to administer the test*	Alternative tools
Comorbidity/polypharmacy	CIRS-comorbidity index [98] CIRS-severity index [98] Number of drugs [102]	15-20 min	Charlson Comorbidity Index [100]
Functional Status	Barthel Index [46] IADL of Lawton-Brody [45]	5-10 min 5-10 min	ADL [43]
Physical Performance	Short Physical Performance Battery (SPPB) [50]	5 min	TUG [63]
Sarcopenia	SARC-F Questionnaire [84] Hand Grip [25]	2 min	
Cognitive Status	Montreal Cognitive Assessment (MOCA) test [30]	10-15 min	MMSE [29]
Psycho-affective Status	Geriatric Depression Scale (5-items version) [36]	5 min	CESD-D [37]
Nutritional Status	Mini Nutritional Assessment (MNA) [90]	10-15 min	Mini Nutritional Assessment Short-Form (MNA-SF) [93]
Quality of life	EuroQol-5D [111]	5 -10 min	QLQ-ELD14 +QLQ-

			C30 (for clinical trials) [113]
Social Status	-marital status -living alone or transfers to (and from) children/parents -helpers -participation in social and recreational activities	5 min	
Life expectancy	Schonberg o Lee Index [119,120]	3 min	
Total		70-110 min	

*as estimated by SIOG

Box 1: What's new in this SIGG oncogeriatric guideline

- We recommend that a CGA is performed in every patient with cancer aged 65 or older; as a second choice, a "two-step approach" (with the use of a screening method to select patients who need a CGA) can also be adopted.
- The recommendation to use the Montreal Cognitive Assessment (MoCA) in the oncogeriatric CGA, as this tool seems to be the most suitable to capture the broader spectrum of cancer related cognitive disorders (including CICI) and their trajectories over time.
- The use of CES-D for mood assessment in the oncogeriatric CGA to better define the depressive phenotypes in older adults with cancer
- The inclusion of polypharmacy in the oncogeriatric CGA, given the increased risk of adverse drug reactions and drugs to drugs interactions.
- The inclusion of sarcopenia and physical performance in the oncogeriatric CGA in the light of their tight association with disability and chemotherapy toxicity.
- The inclusion of quality of life in the oncogeriatric CGA given its association with patients' physical functioning and psychological distress, as well as its prognostic role.

Table 1. SIGG guideline for oncogeriatric CGA: Delphi process, Likert-like Questionnaire

QUESTION 1

Do all older patients with cancer need to undergo a CGA?

(Indicate on a scale from 1 to 5 where 1 is not important and 5 is very important)

	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2

Which domains should be explored in the CGA of older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is not important and 5 is very important)

Cognitive status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Functional status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Sarcopenia and Physical performance	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Nutritional status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Psychological status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Multimorbidity/Polypharmacy	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Quality of life	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Social status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.1

Which tools should be utilized to explore cognitive status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

Mini Mental State Examination	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Montreal Cognitive Assessment (MOCA) test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Clock Drawing Test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.2

Which tools should be utilized to explore functional status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

Barthel Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Instrumental Activities of Daily Living (IADLs)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Activities of Daily Living (BADLs)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.3

Which tools should be utilized to explore sarcopenia and physical performance in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

SARC-F questionnaire	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Handgrip strength	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
DeXA	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Bioimpedentiometry	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Short Physical Performance Battery	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Timed Up and Go test	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.4

Which tools should be utilized to explore nutritional status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

Mini Nutritional Assessment	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Mini Nutritional Assessment - short form	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Body Mass Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.5

Which tools should be utilized to explore psychological status in older cancer patients?
(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

30-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
15-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
5-item Geriatric Depression Scale	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CES-D	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.6

Which tools should be utilized to explore multimorbidity/polypharmacy in older cancer patients?
(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

CIRS comorbidity index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CIRS severity index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Charlson Comorbidity Index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Number of drugs	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Beers criteria	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
STOP/START criteria version 2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.7

Which tools should be utilized to explore quality of life in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

EuroQol-5D	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
QLQ-ELD14 +QLQC30	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SF-36	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SF-12	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 2.8

Which tools should be utilized to explore social status in older cancer patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

Medical Outcomes Study Social Support Scale (MOS-SSS)	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Marital status	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Helpers	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Partecipation in social and recreational activities	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Living alone	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 3

Which tool should be utilized for estimating an older patient's life expectancy?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

Schonberg index	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
Lee index					

Further comments and/or suggestions:

QUESTION 4

In those centers where patients are referred to the geriatrician based on a screening method, which screening tool should be utilized?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

VES-13	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
G8	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
SAOP2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

QUESTION 5

Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?

(Indicate on a scale from 1 to 5 where 1 is total disagreement and 5 is complete agreement)

CRASH	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5
CARG					
MAX-2	❍ 1	❍ 2	❍ 3	❍ 4	❍ 5

Further comments and/or suggestions:

Table 2: results of the Delphi process

	MEDIAN (IQR)	CONSENSUS LEVEL (%)
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Mini Nutritional Assessment - short form	4 (4-5)	82
Body Mass Index	2 (2-4)	74
Which tools should be utilized to explore psychological status in older cancer patients?		
30-item Geriatric Depression Scale	3 (2-5)	91
15-item Geriatric Depression Scale	3 (2-5)	76
5-item Geriatric Depression Scale	5 (4-5)	76
CES-D	4 (4-5)	87
Which tools should be utilized to explore multimorbidity/polypharmacy in older cancer patients?		
CIRS comorbidity index	5 (4-5)	86
CIRS severity index	5 (4-5)	87
Charlson Comorbidity Index	4 (4-5)	74
Number of drugs	5 (4-5)	90
Beers criteria	3 (2-5)	96
STOP/START criteria version 2	2 (2-4)	86
Which tools should be utilized to explore quality of life in older cancer patients?		
EuroQol-5D	5 (4-5)	82
QLQ-ELD14 +QLQC30	4 (4-5)	87
SF-36	3 (2-5)	78
SF-12	3 (2-5)	74
Which tools should be utilized to explore social status in older cancer patients?		

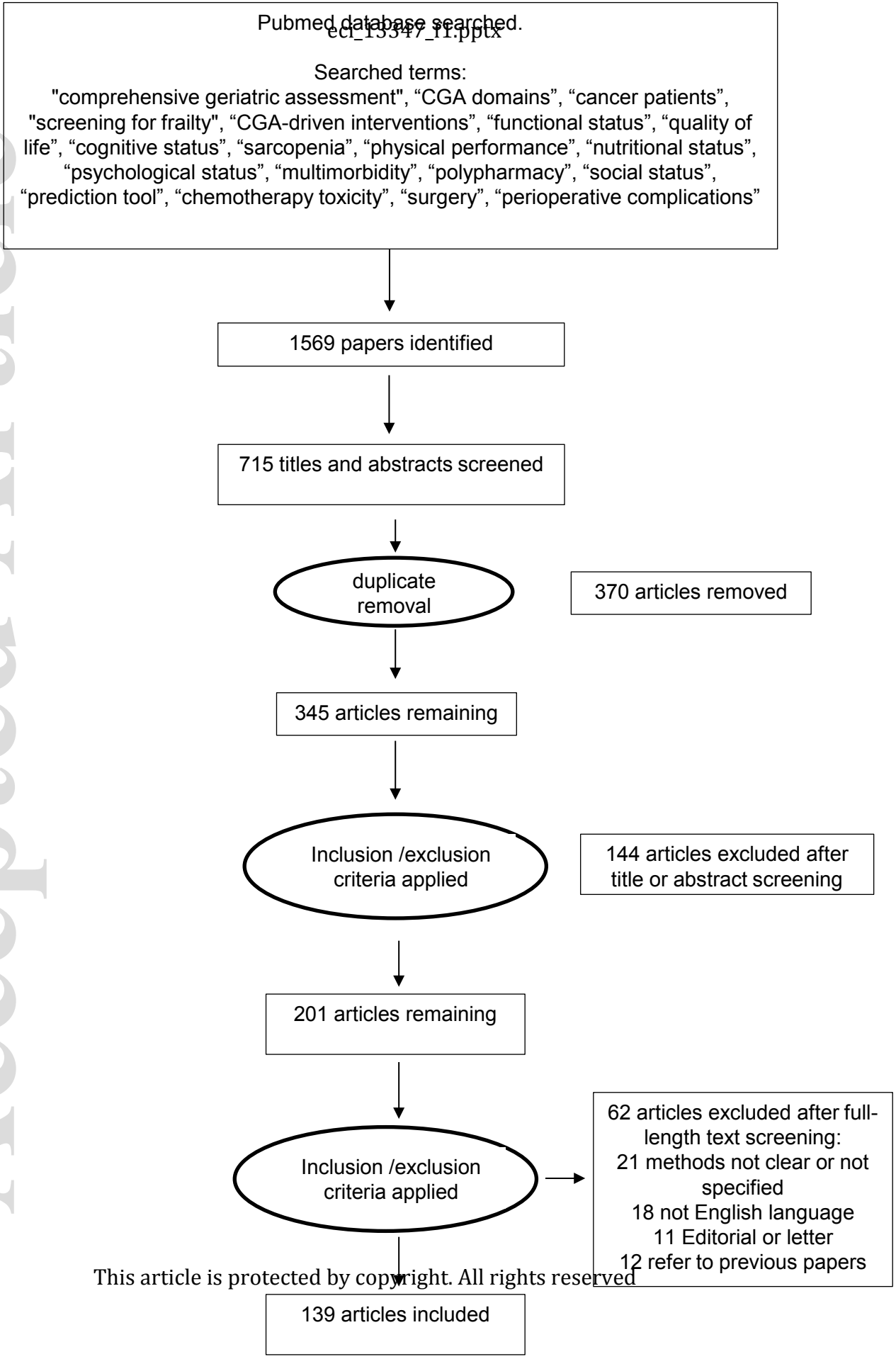
Medical Outcomes Study Social Support Scale	2 (1-3)	90
Marital status	5 (4-5)	80
Helpers	5 (4-5)	82
Partecipation in social and recreational activities	5 (4-5)	71
Living alone	5 (4-5)	73
Which tool should be utilized for estimating an older patient's life expectancy?		
Schonberg index	5 (4-5)	95
Lee index	5 (4-5)	94
In those centers where patients are referred to the geriatrician based on a screening method, which screening tool should be utilized?		
VES-13	4 (4-5)	90
G8	5 (4-5)	96
SAOP2	4 (4-5)	86
Which tools should be utilized to define the risk of chemotherapy-emergent toxicity in senior patients?		
CRASH	4 (3-5)	90
CARG	4 83-5)	96
MAX-2	3 (2-4)	86

Table 3. Synopsis of recommended and alternative tools for the CGA of senior patients with cancer

Domains	Recommended Tools	Time requested to administer the test*	Alternative tools
Comorbidity	CIRS-comorbidity index [98] CIRS-severity index [98] Number of Drugs [102]	15-20 min	Charlson Comorbidity Index [100]
Functional Status	Barthel Index [46] IADL of Lawton-Brody [45]	5-10 min 5-10 min	ADL [43]
Physical Performance	Short Physical Performance Battery (SPPB) [50]	5 min	TUG [63]
Sarcopenia	SARC-F Questionnaire [84] Hand Grip [25]	2 min	
Cognitive Status	Montreal Cognitive Assessment (MOCA) test [30]	10-15 min	MMSE [29]
Psycho-affective Status	Geriatric Depression Scale (5-items version) [36]	5 min	CESD-D [37]
Nutritional Status	Mini Nutritional Assessment (MNA) [90]	10-15 min	Mini nutritional assessment short form (MNA SF). [93]
Quality of life	EuroQol-5D [111]	5-10 min	QLQ-ELD14 +QLQC30 (for clinical trials) [113]
Social Support	- marital status -living alone or transfers to (and from) children/parents - helpers -participation in social and recreational activities	5 min	Criteri di Beers (2015)

Life expectancy	Schonberg o Lee Index [119,120]	3 min	
total		70-110 min	

∗ as estimated by SIOG



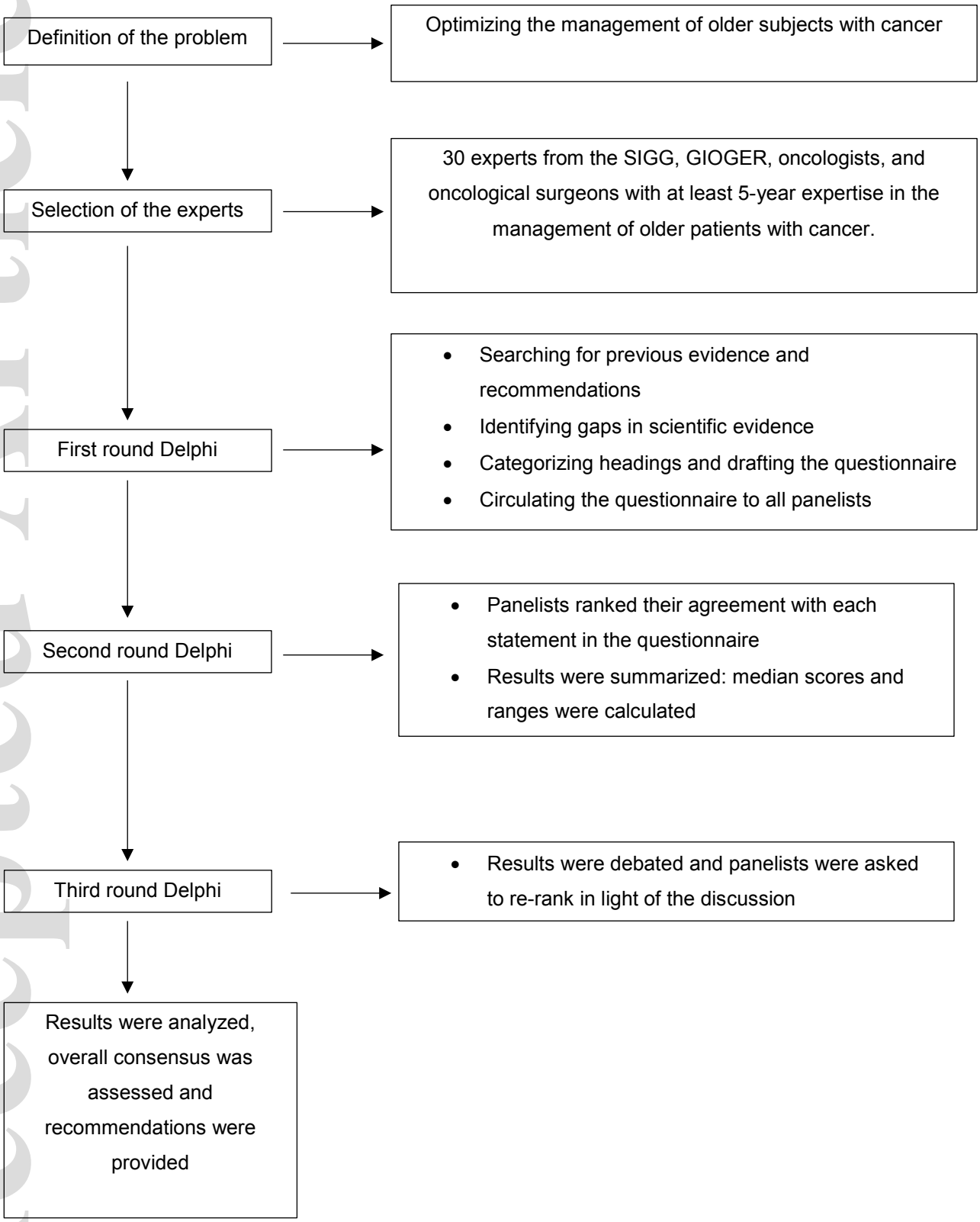


Table Y.

	MEDIAN (IQR)	CONSENSUS LEVEL (%)
Do all older patients with cancer need to undergo a CGA?	5 (4-5)	92
Which domains should be explored in the CGA of older cancer patients?		
Cognitive status	5 (4-5)	95
Functional status	5 (4-5)	96
Sarcopenia and physical performance	4 (4-5)	88
Nutritional status	5 (4-5)	95
Psychological status	5 (4-5)	83
Multimorbidity/Polypharmacy	4 (3-5)	92
Quality of life	5 (4-5)	87
Social status	5 (3-5)	78
Which tools should be utilized to explore cognitive status in older cancer patients?		
Mini Mental State Examination	4 (4-5)	92
MOCA test	5 (4-5)	96
Clock Drawing Test	2 (2-4)	92
Which tools should be utilized to explore functional in older cancer patients?		
Barthel Index	5 (4-5)	88
Instrumental Activities of Daily Living	5 (4-5)	92
Activities of Daily Living	3 (2-5)	69
Which tools should be utilized to explore sarcopenia and physical performance in older cancer patients?		
SARC-F questionnaire	5 (3-5)	81
Handgrip strength	5 (4-5)	92
DeXA	3 (2-5)	90
Bioimpedentiometry	3 (2-5)	96
Short Physical Performance Battery	5 (4-5)	86
Timed Up and Go test	4 (3-4)	77
Which tools should be utilized to explore nutritional status in older cancer patients?		
Mini Nutritional Assessment	5 (4-5)	97
Mini Nutritional Assessment - short form	4 (4-5)	82
Body Mass Index	2 (2-4)	74
Which tools should be utilized to explore psychological status in older cancer patients?		
30-item Geriatric Depression Scale	3 (2-5)	91
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CRASH	4 (3-5)	90
CARG	4 83-5)	96
MAX-2	3 (2-4)	86

approach to the patient aged 65 or older with a diagnosis of cancer
(depending upon the available resources)

recommended approach

second-choice approach

A screening tool, such as G8, VES-13 or SAOP2, is administered (by the treating oncologist/hematologist/surgeon/radiotherapist, by a nurse practitioner or by a professional nurse) and its is used to select those patients who need a CGA

the patient screens positive

the patient screens negative

A CGA, the estimation of life expectancy and, in patients who are candidate to receiving chemotherapy, the calculation of CRASH/CARG score are performed by a geriatrician/nurse practitioner/professional nurse

no CGA is administered, but the minimum core of geriatric assessments recommended by ASCO (Ref. 7) is still administered by the treating oncologist, by a nurse practitioner or by a professional nurse.

- in the presence of impaired geriatric domains, the results of the geriatric assessment are made available to the multidisciplinary disease management team. The latter should include a geriatrician and it should propose a global treatment plan, including the interventions recommended by the geriatrician, based on a unified vision of oncological and non-oncological issues.
- the geriatrician and/or other health professionals (e.g. physiotherapist, nutritionist, social worker) become in charge for following the patient for his non-oncological problems (in a constant interaction with the oncologists) with the goal of optimizing his health status and quality of life.