

## ORIGINAL ARTICLE

# Adherence to geriatric assessment-based recommendations in older patients with cancer: a multicenter prospective cohort study in Belgium

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**Background:** In the general older population, geriatric assessment (GA)-guided treatment plans can improve overall survival, quality of life and functional status (FS). In GA-related research in geriatric oncology, studies mainly focused on geriatric screening and GA but not on geriatric recommendations, interventions and follow-up. The aim of this study was to investigate the adherence to geriatric recommendations and subsequent actions undertaken in older patients with cancer.

**Patient and methods:** A prospective Belgian multicenter ( $N = 22$ ) cohort study included patients  $\geq 70$  years with a malignant tumor upon oncologic treatment decision. Patients with an abnormal result on the geriatric screening ( $G8 \leq 14/17$ ) underwent GA. Geriatric recommendations were formulated based on GA results. At follow-up the adherence to geriatric recommendations was documented including a description of actions undertaken.

**Results:** From November 2012 till February 2015, G8 screening was carried out in 8451 patients, of which 5838 patients had an abnormal result. Geriatric recommendations data were available for 5631 patients. Geriatric recommendations were made for 4459 patients. Geriatric interventions data were available for 4167 patients. A total of 12 384 geriatric recommendations were made. At least one different geriatric recommendation was implemented in 2874 patients. A dietician, social worker and geriatrician intervened most frequently for problems detected on the nutritional, social and functional domain. A total of 7569 actions were undertaken for a total of 5725 geriatric interventions, most frequently nutritional support and supplements, extended home care and psychological support.

**Conclusions:** This large-scale Belgian study focuses on the adherence to geriatric recommendations and subsequent actions undertaken and contributes to the optimal management of older patients with cancer. We identified the domains for which geriatric recommendations are most frequently made and adhered to, and which referrals to other health care workers and facilities are frequently applied in the multidisciplinary approach of older patients with cancer.

**Key words:** cancer, older persons, geriatric assessment, geriatric recommendations, geriatric interventions, follow-up

## Introduction

In the past years, important steps have been made in the improvement of the multidisciplinary care for older patients with cancer. One of the contributions is the introduction of geriatric assessment (GA) into daily oncology practice [1, 2]. GA is part of a comprehensive GA (CGA) that is the cornerstone of modern geriatric medicine and comprises five consecutive steps: (i) identifying patients who can benefit from CGA by screening tools; (ii) assessing these patients by GA; (iii) developing geriatric recommendations for interventions based on the problems detected by GA; (iv) implementing these recommendations in a care plan and (v) providing follow-up and adjusting the care plan with repeated GA [3]. Each part of this process is essential for the delivery of evidence-based CGA [4].

The effectiveness of geriatric screening and GA by itself is limited unless followed by geriatric recommendations, the implementation of these recommendations (=geriatric interventions) and follow-up [3, 5]. Geriatric recommendations need to be tailored to the detected geriatric problems, which may affect several aspects of the patient's condition [e.g. functional status (FS), nutritional status] as revealed and evaluated by the GA. They are part of the comprehensive management of the older patient and of a personalized care plan to maintain FS, quality of life (QoL), and overall survival (OS). Nevertheless, few studies in oncology have focused on the (non)adherence to geriatric recommendations despite their importance for CGA effectiveness [6].

The aim of the present study was to investigate the adherence to geriatric recommendations based on GA results and subsequent actions undertaken in older patients with cancer ~3 months after the initial assessment.

## Patients and methods

### Patient population

This prospective, multicenter, observational cohort study was carried out in 22 hospitals (8 academic and 14 nonacademic) in Belgium from November 2012 until February 2015. Patients 70 years and older with a malignant invasive tumor were approached for inclusion by a trained health care worker during a hospital visit at diagnosis or at disease progression/relapse, when a cancer treatment decision had to be made. The study was approved by the ethical committee of all participating centers (B322201215495).

### Geriatric screening and assessment

At baseline, all patients were screened using the G8 screening tool and if the score was abnormal ( $\leq 14/17$ ), a GA was carried out as previously described [7, 8] (supplementary Table S1, available at *Annals of Oncology* online). Classical oncologic parameters such as Eastern Cooperative Oncology Group—Performance Status (ECOG-PS) [9], tumor characteristics and

treatment details were recorded. Since the aim of this study was to investigate the adherence to geriatric recommendations based on GA results, the results are restricted to the patients in need of a GA (G8 score  $\leq 14$ ).

### Geriatric recommendations based on GA results

Case-specific geriatric recommendations were formulated based on GA results and were made within each participating center depending on the available infrastructure and care processes, as previously described [10].

Geriatric recommendations were predefined and structured in different categories (Table 1).

### Adherence to geriatric recommendations

Approximately 3 months ( $\pm 2$  weeks) after the baseline GA and subsequent geriatric recommendations, the adherence to the geriatric recommendations was documented. For each patient, this was documented in two different ways: patient and geriatric domain level.

On patient level, we first described the frequency of the different geriatric recommendations to obtain an overview of the number of different geriatric recommendations for each patient. Secondly, the number of times, a geriatric recommendation was made and implemented, was recorded.

In order to have an overview of which problems led to a geriatric recommendation, the results are also described on geriatric domain level. We documented problems leading to a recommendation and evaluated the implementation afterwards. For each geriatric domain, three geriatric recommendations were possible.

Lastly, the grade of adherence to geriatric recommendations (ratio between geriatric recommendations made and implemented) was evaluated.

Geriatric recommendations, that are implemented, are henceforth called geriatric interventions.

### Geriatric interventions and subsequent actions undertaken

Concerning geriatric interventions, we also predefined and categorized, which actions were undertaken (Table 1), and documented this for each individual patient. Actions undertaken were categorized in 34 different actions in various domains (e.g. social support) (Table 1).

### Statistical analysis

A descriptive analysis (frequencies, median and percentages) was carried out using SPSS 23.0 software (Chicago, IL). Percentages were associated with a 95% confidence interval calculated in accordance with Wilson's method where appropriate.

Details on the abovementioned points are further summarized in the supplementary Methods, available at *Annals of Oncology* online.

## Results

### Patient and clinical characteristics

A total of 9102 patients were approached for participation in the study. Of these patients, 394 patients refused to participate and 257 did not meet the inclusion criteria. The data of 8451 patients were

**Table 1. Overview of geriatric domains, geriatric recommendations and actions undertaken**

Geriatric domains included in the GA	Geriatric recommendations	Actions undertaken
Social status	Geriatrician	1. Change living situation: institution
FS (ADL+IADL)	GCT	2. Change living situation: Assisted Living Community Apartment
Fall	Social worker	3. Change living situation: palliative unit or other
Pain (VAS)	Occupational therapist	4. Extended home care: home care nurse
Fatigue (VAS)	Physiotherapist	5. Extended home care: home help
Cognition (MMSE)	Fall clinic	6. Extended home care: meals at home
Depression (GDS-15)	Geronto-psychiatrist	7. Extended home care: cleaning help
Nutrition (MNA-SF)	Psychologist	8. Extended home care: homesitter
Other	Memory clinic	9. Extended home care: other
	Geriatric day clinic	10. Rehabilitation unit
	Dietician	11. Adjustment living environment
	Other physician	12. Technical support
	Other health support	13. Physiotherapy
		14. Occupational therapy/check-up
		15. Recommendations for (in)continence
		16. Recommendations for falls/falls check-up
		17. Orthostatism prevention
		18. Adjustment medication
		19. Psychological/emotional support
		20. Cognitive check-up
		21. Recommendations delirium prevention/ROT
		22. Nutritional check-up/Recommendations for nutritional support
		23. Nutritional supplements
		24. Recommendations for sleep
		25. Recommendations for wound care/pressure ulcers
		26. Nursing wound care
		27. Visual/Hearing check-up
		28. Parenteral nutrition
		29. Social assessment
		30. Palliative care
		31. Information, application and transport
		32. Follow-up of non-cancer related health problems
		33. Additional treatment
		34. Undefined

ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living; VAS, Visual Analogue Scale; MMSE, Mini-Mental State Examination; GDS, Geriatric Depression Scale; MNA-SF, Mini-Nutritional Assessment – Short Form; GCT, geriatric consultation team; ROT, reality orientation training.

used for this study (supplementary Figure S1, available at *Annals of Oncology* online). The median age of all patients included was 78 years (range 70–101) and 53.6% were female. A solid tumor was diagnosed in 91.9% of patients and 8.1% of patients were diagnosed with a hematologic malignancy. Totally, 5907 patients (69.9%) presented with an abnormal G8 warranting a GA and GA data were available for 5838 patients. Detailed patient and clinical characteristics, geriatric screening, social, and GA data are summarized in Table 2 and supplementary Tables S2 and S3, available at *Annals of Oncology* online. A detailed description with example of the CGA-process in this study is described in Figure 1.

### Frequency of different geriatric recommendations and interventions

Geriatric recommendations data were available in 5631 of the 5838 (96.5%) patients in whom a GA was carried out (Figure 1).

Patient and clinical characteristics and the results of the social data, geriatric screening and GA for this patient population are separately summarized in Table 2 and supplementary Table S3, available at *Annals of Oncology* online, respectively. In supplementary Table S4, available at *Annals of Oncology* online, the numbers of patients are shown according to the number of different geriatric recommendations per patient. In 4459 of the 5631 patients (79.2%) at least 1 different recommendation was made with a median of 2 different geriatric recommendations per patient (range 0–10).

Approximately 3 months after the baseline assessment, data on geriatric interventions were available in 4167 of the 4459 patients (93.5%). Baseline patient and clinical characteristics and the results of the social data, geriatric screening and GA for this patient population are also separately summarized in Table 2 and supplementary Table S3, available at *Annals of Oncology* online, respectively. At least one different geriatric intervention was

Table 2. Baseline patient and clinical characteristics, social data and geriatric screening data

Baseline patient and clinical characteristics	Operationalization	Total of patients included	Patients with geriatric recommendations data available	Patients with geriatric interventions data available
		N = 8451	N = 5631	N = 4167
		N (%)	N (%)	N (%)
<b>Age (years)</b>	70–74	2361 (27.9)	1173 (20.8)	914 (21.9)
	75–79	2539 (30.0)	1533 (27.2)	1161 (27.9)
	80–84	2095 (24.8)	1622 (28.8)	1189 (28.5)
	≥85	1456 (17.2)	1303 (23.1)	903 (21.7)
	Median	78	80	80
	Mean	78.7	79.9	79.7
	Range	70–101	70–101	70–101
<b>Gender</b>	Male	3925 (46.4)	2553 (45.3)	1836 (44.1)
	Female	4526 (53.6)	3078 (54.7)	2331 (55.9)
<b>Diagnosis general</b>	Solid tumor	7763 (91.9)	5107 (90.7)	3797 (91.1)
	Hematologic malignancy	688 (8.1)	524 (9.3)	370 (8.9)
<b>Diagnosis specific</b>	New diagnosis	6674 (79.0)	4416 (78.4)	3261 (78.3)
	Relapse	619 (7.3)	792 (14.1)	597 (14.3)
	Disease progression	1158 (13.7)	423 (7.5)	309 (7.4)
<b>CCI (0–37)</b>	Score 0	2605 (30.8)	1440 (25.6)	1078 (25.9)
	Score ≥1	5766 (68.2)	4148 (73.7)	3062 (73.5)
	Missing	80 (1.0)	43 (0.8)	27 (0.6)
<b>Polypharmacy</b>	Number 0–4	3798 (44.9)	2012 (35.7)	1521 (36.5)
	Number ≥5	4463 (52.8)	3513 (62.4)	2593 (62.2)
	Missing	190 (2.3)	106 (1.9)	53 (1.3)
<b>ECOG-PS</b>	Score 0	2658 (31.5)	967 (17.2)	644 (15.5)
	Score 1	2655 (31.4)	1891 (33.6)	1417 (34.0)
	Score 2	1301 (15.4)	1137 (20.2)	896 (21.5)
	Score 3	1233 (14.6)	1106 (19.6)	834 (20.0)
	Score 4	593 (7.0)	530 (9.4)	376 (9.0)
	Missing	11 (0.1)	0	0
<b>Geriatric screening</b>	<b>Operationalization</b>	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>
<b>G8 (0–17)</b>	Absence of a geriatric risk profile (score >14)	2544 (30.1)	0 (0)	0 (0)
	Presence of a geriatric risk profile (score ≤14)	5907 (69.9)	5631 (100)	4167 (100)
<b>Social data</b>	<b>Operationalization</b>	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>
<b>Living situation</b>	At home: alone	2781 (32.9)	2015 (35.8)	1518 (36.4)
	At home with family member	503 (6.0)	383 (6.8)	264 (6.3)
	At home with partner	4573 (54.2)	2722 (48.3)	2028 (48.7)
	Institution (e.g. nursing home)	347 (4.1)	309 (5.5)	207 (5.0)
	Assisted living community apartment	164 (1.9)	143 (2.5)	103 (2.5)
	Other	72 (0.9)	58 (1.0)	46 (1.1)
	Missing	11 (0.1)	1 (0.0)	1 (0.0)
<b>Marital status</b>	Single	426 (5.0)	303 (5.4)	214 (5.1)
	Married	4544 (53.8)	2738 (48.6)	2047 (49.1)
	Divorced	448 (5.3)	288 (5.1)	219 (5.3)
	Legally cohabiting	116 (1.4)	76 (1.4)	56 (1.3)
	Widow/er	2848 (33.8)	2180 (38.7)	1596 (38.3)
	Other	53 (0.6)	42 (0.7)	32 (0.8)
	Missing	16 (0.2)	4 (0.1)	3 (0.1)

Continued

Table 2. Continued

Baseline patient and clinical characteristics	Operationalization	Total of patients included	Patients with geriatric recommendations data available	Patients with geriatric interventions data available
		<i>N</i> = 8451	<i>N</i> = 5631	<i>N</i> = 4167
		<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
Professional home care	No	4353 (51.5)	2637 (46.8)	1924 (46.2)
	Yes	4076 (48.2)	2985 (53.0)	2240 (53.8)
	–Home nursing	1340 (32.9)	1152 (38.6)	870 (38.8)
	–Home help	597 (14.7)	515 (17.3)	383 (17.1)
	–Meals at home	441 (10.8)	394 (7.0)	301 (13.4)
	–Cleaning help	3191 (78.3)	2278 (76.3)	1693 (75.6)
	–Other	493 (12.1)	349 (11.7)	275 (12.3)
	Missing	22 (0.3)	9 (0.2)	3 (0.1)

CCI, Charlson Comorbidity Index; ECOG-PS, Eastern Cooperative Oncology Group – Performance Status.

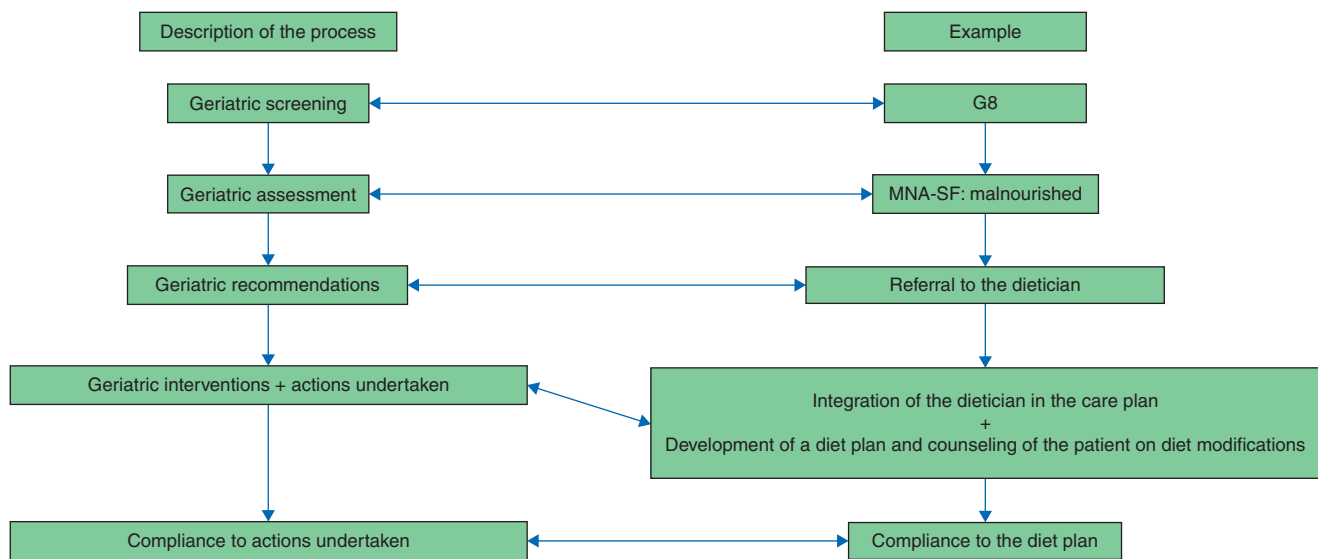


Figure 1. Description of the CGA-process. CGA, comprehensive geriatric assessment; MNA-SF, Mini-Nutritional Assessment—Short Form.

present in 2874 patients (69.0%) with a median of one different geriatric intervention per patient (range 0–6) (supplementary Table S4, available at *Annals of Oncology* online).

### Adherence to geriatric recommendations (patient level/geriatric domain level)

In the group of patients with baseline geriatric recommendations data available ( $N = 5631$ ), a total of 13 234 geriatric recommendations were made. Most frequently the following recommendations were made: referral to a dietician (3207 times; 57.0% of the patients), social worker (2385 times; 42.4% of the patients) and geriatrician (2058 times; 36.6% of the patients) (Table 3).

In the group of patients with geriatric interventions data available ( $N = 4167$ ), a total of 12 384 geriatric recommendations were made. In this group, the most frequent made recommendations were also referral to a dietician (3043 times; 73.0% of the patients), social worker (2284 times; 54.8% of the patients) and geriatrician (1756 times; 42.1% of the patients) (Table 3). A referral to a dietician was recommended for problems detected by GA on the nutritional domain, a social worker for problems detected by GA on the social and FS domain and a geriatrician for problems detected by GA on all geriatric domains including social status, FS, and nutrition (supplementary Table S5, available at *Annals of Oncology* online).

Table 3. Overview of geriatric recommendations and geriatric interventions on patient level

Geriatric recommendations	Baseline			Follow-up at 3 months ( $\pm 2$ weeks)						Grade of adherence (%) <sup>b</sup>
	Geriatric recommendations (N = 5631)			Geriatric recommendations (N = 4167)			Geriatric interventions (N = 4167)			
	No. of times geriatric recommendation is made <sup>a</sup>	%	95% CI	No. of times geriatric recommendation is made <sup>b</sup>	%	95% CI	No. of times geriatric recommendation is implemented <sup>b</sup>	%	95% CI	
<b>Geriatrician</b>	2058	36.6	35.3–37.8	1756	42.1	40.6–43.6	944	22.7	21.4–23.9	53.8
<b>GCT</b>	660	11.7	10.9–12.6	608	14.6	13.5–15.7	152	3.7	3.1–4.2	25.0
<b>Social worker</b>	2385	42.4	41.1–43.6	2284	54.8	53.3–56.3	1087	26.1	24.8–27.4	47.6
<b>Occupational therapist</b>	400	7.1	6.4–7.8	374	9.0	8.1–9.8	172	4.1	3.5–4.7	46.0
<b>Physiotherapist</b>	634	11.3	10.4–12.1	596	14.3	13.2–15.4	249	6.0	5.3–6.7	41.8
<b>Fall clinic</b>	129	2.3	1.9–2.7	123	3.0	2.4–3.5	13	0.3	0.1–0.5	10.6
<b>Geronto-psychiatrist</b>	38	0.7	0.5–0.9	28	0.7	0.4–0.9	7	0.2	0.0–0.3	25.0
<b>Psychologist</b>	1390	24.7	23.6–25.8	1310	31.4	30.0–32.8	553	13.3	12.2–14.3	42.2
<b>Memory clinic</b>	336	6.0	5.3–6.6	326	7.8	7.0–8.6	17	0.4	0.2–0.6	5.2
<b>Geriatric day clinic</b>	275	4.9	4.3–5.4	261	6.2	5.5–7.0	18	0.4	0.2–0.6	6.9
<b>Dietician</b>	3207	57.0	55.7–58.2	3043	73.0	71.7–74.4	1810	43.4	41.9–44.9	59.5
<b>Other<sup>c</sup></b>	1722	30.6	29.4–31.8	1675	40.2	38.7–41.7	703	16.9	15.7–18.0	42.0
<b>Total</b>	<b>13 234</b>			<b>12 384</b>			<b>5725</b>			

<sup>a</sup>Data calculated from the total No pts with geriatric recommendations data available (N = 5631 pts).

<sup>b</sup>Data calculated from the total No pts with geriatric interventions data available (N = 4167 pts).

<sup>c</sup>Other=other physician+other health support.

GCT, geriatric consultation team.

In total, there were 5725 (46.2%) geriatric interventions (Table 3). Referral to the dietician (1810 times; 43.3% of the patients), social worker (1087 times; 26.1% of the patients) and geriatrician (944 times; 22.7% of the patients) were the most frequent interventions. Referral to a dietician was adhered to in almost all patients for problems detected by GA on the nutritional domain, to a social worker for problems detected by GA on the social and FS domain, and to a geriatrician for problems detected by GA in all domains (most frequently nutritional, social, and functional domains) (supplementary Table S5, available at *Annals of Oncology* online).

In summary, the highest grade of adherence is noticed for referral to the dietician (59.5%), followed by the geriatrician (53.8%), the social worker (47.6%), the occupational therapist (46.0%), the psychologist (42.2%), and the physiotherapist (41.8%). The grade of adherence was the least for referral to the memory clinic (5.2%), the geriatric day clinic (6.9%), and the fall clinic (10.6%) (Table 3).

### Geriatric interventions and subsequent actions undertaken

A total of 7569 actions were undertaken for a total of 5725 geriatric interventions. These actions were undertaken for geriatric interventions in all geriatric domains (supplementary table S6).

The most frequent actions undertaken were nutritional support (N = 1860) and supplements (N = 1174) for recommendations on the nutritional domain, extended home care (N = 694) and change in living situation (N = 250) mainly for recommendations on the

social and FS domain, and psychological support (N = 690) mainly for recommendations on the psychological domain.

### Discussion

A crucial aspect to improve the quality of care for older patients with cancer is the integration of CGA in daily oncology practice. In order to optimize the impact of GA, it is acknowledged that integration of geriatric recommendations in care plans, interventions based on these recommendations and follow-up are needed. A few studies in geriatric oncology report geriatric interventions in their results but data related to the grade of (non)adherence are often not reported [6, 11–13].

As shown in our results, not all problems detected by GA lead to geriatric recommendations. The detected problems could already be addressed, optimized or not reversible. Secondly, not all geriatric recommendations are adhered to. In patients with a G8 score below threshold ( $\leq 14$ ), geriatric recommendations are made in ~80% of the assessed patients and adhered to in ~70% of the patients. When taking the total number of geriatric recommendations into account, 46% of the geriatric recommendations are adhered to. In our previous smaller feasibility study, there was a similar result regarding the percentage of geriatric recommendations (76%) but a lower adherence rate in only 52% of the patients [6]. This may be explained by a learning curve [14]. All hospitals participating in the study of Baitar et al. were also participating in this study, and the increasing experience with CGA

may have led to a higher number of geriatric interventions. Secondly, there were more geriatric recommendations documented for problems detected by GA in this study. The adherence to geriatric recommendations is far from 100% but it can be questioned, if this is the ideal goal to reach. The decision to intervene on short term in older patients with cancer can also be influenced by its importance and anticipated benefit as judged by the treating physician as well as by the patient. For instance, slight memory problems in a patient with metastatic pancreatic cancer or a brain tumor, are not the highest priority in the initial stage of treatment, where prognosis and QoL is largely determined by cancer diagnosis. It is important that treating physician/team and patient are aware of the problems detected by GA at diagnosis, but the amount and timing of geriatric interventions need to be determined within the global clinical context of the individual older patient. Depending on the response to treatment, and clinical evolution, some problems detected by GA may be handled at a later timepoint.

The highest grades of adherence were noticed for referrals to the dietician, followed by the geriatrician, the social worker, the occupational therapist, the psychologist and the physiotherapist. With the exception of the geriatrician's involvement, these results are in line with the results of previous research by Baitar et al. [6]. Oncology teams may interpret these referrals as most important for immediate implementation, but it could also be that these health care workers are most easily accessible. In Belgium, additional finances by the Cancer Plan for integration of psychologists and dieticians in the care for patients with cancer in general are available, but this may be different in other countries. These health care workers should be available in all cancer centers, but even then, their numbers may be insufficient to cover all patients in need. The lowest grade of adherence was observed for referrals to the memory clinic, the geriatric day clinic, and the fall clinic. This can possibly be caused by logistic problems or long waiting lists for those facilities, which may be less an issue for referral to other health care workers. Furthermore, geriatric interventions mostly aimed to address problems detected by GA in the domain of social status, FS, and nutritional status. In general, oncology teams do not have the geriatric expertise to tackle the different problems detected by GA. Therefore, the geriatric recommendations allow directed referrals to specific other health care workers and facilities.

To our knowledge, this study is the first study to examine in detail that geriatric interventions and subsequent actions are undertaken for problems detected by GA. The most frequent actions undertaken were nutritional support and supplements, extended home care, and psychological support. The description of these actions undertaken is important for the further development of multidisciplinary care plans for older patients with cancer.

In general, the geriatric recommendations, interventions, and subsequent actions undertaken show in detail which referrals to other health care professionals and facilities are important and frequently addressed in this population. This might be an efficient way to structure care for older patients with cancer.

This study has some limitations. GA was only carried out when the G8 screening tool demonstrated a geriatric risk profile. Some patients with a normal result on the G8 could still have some underlying problems, while some patients with an abnormal result on the G8 do not have problems in subsequent GA. Despite

this, several studies have shown the capability of G8 to identify a group of older patients with cancer with a geriatric risk profile and have demonstrated its prognostic capability for outcomes such as OS and functional decline [7, 15]. The use of a geriatric screening tool has been proposed as an efficient way to identify patients in need of GA and multidisciplinary approach [15]. Secondly, differences between the participating hospitals may exist regarding geriatric recommendations, interventions, and subsequent actions undertaken. We were not able to capture for each individual patient, the reason for (non)adherence to specific geriatric recommendations. Each hospital has its own processes and care plans. Although there may be good reasons in specific patients not to adhere to geriatric recommendations (on short- and long-term), it remains difficult to describe why. Thirdly, we were not able to collect information on the last step of the CGA process, i.e. the long-term compliance to actions undertaken (Figure 1). This would require a further huge effort and long-term follow-up of the included patients, and financial means were not available for this purpose. The compliance to actions undertaken remains therefore an important point of interest for future research. Fourth, this study describes the implementation of CGA in Belgium; the situation may be different in other countries and health care settings. But anyhow, the Belgian model can be one example on how to improve care for the older patient with cancer.

This study has also several strengths. It has a prospective design, a large and representative sample with almost 8500 patients included in 22 Belgian cancer centers in <2.5 years, and a low drop-out rate. Further research is still necessary to optimize CGA-effectiveness. Little is known about the impact of geriatric interventions on patient-related outcomes in the older population with cancer, such as OS, health-related QoL, and FS [16, 17]. Additional confounding factors such as patient preference and patient compliance to the actions undertaken should also to be taken into account in the future.

In summary, this large-scale Belgian study gives important insight into the adherence to geriatric recommendations and subsequent actions undertaken in older patients with cancer and contributes to the optimal management of older patients with cancer. We identified the domains for which geriatric recommendations are most frequently made and adhered to, and which referrals to other health care workers and facilities are frequently applied in the multidisciplinary approach of older patients with cancer.

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**Disclosure**

The authors have declared no conflicts of interest.

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