



The assessment and management of older cancer patients: A SIOG surgical task force survey on surgeons' attitudes

F. Ghignone ^{a,*}, B.L. van Leeuwen ^b, I. Montroni ^a, M.G. Huisman ^b,
P. Somasundar ^c, K.L. Cheung ^d, R.A. Audisio ^e, G. Ugolini ^a,
on behalf of the International Society of Geriatric Oncology (SIOG)
Surgical Task Force

^a *University of Bologna, Policlinico S. Orsola-Malpighi, Department of Surgery, Via Giuseppe Massarenti 9, 40138 Bologna, Italy*

^b *University of Groningen, University Medical Center Groningen, Department of Surgery, Hanzplein 1, 9713 GZ Groningen, The Netherlands*

^c *Roger Williams Medical Center, Division of Surgical Oncology, Affiliate of Boston University, 50 Maude Street, Providence, RI 02908, United States*

^d *University of Nottingham, Royal Derby Hospital, Uttoxeter Road, Derby DE22 3DT, United Kingdom*

^e *University of Liverpool, St. Helens Teaching Hospital, Department of Surgery, Marshalls Cross Road, St. Helens WA9 3DA, United Kingdom*

Accepted 1 December 2015

Available online ■ ■ ■

Abstract

Aim: The Surgical Task Force at SIOG (International Society of Geriatric Oncology) designed this survey to explore the surgical oncologists' approach toward elderly cancer patients.

Methods: A web-based survey was sent to all members of ESSO (European Society of Surgical Oncology) and SSO (Society of Surgical Oncology).

Results: Two hundred and fifty-one surgeons responded (11% response rate) with a main interest on breast (62.1%), colorectal (43%) and hepatobiliary (27.4%) surgery. Almost all surgeons (>90%) offer surgery regardless the patient's age; only 48% consider mandatory a pre-operative frailty assessment. The American Society of Anesthesiologists (ASA) score, nutritional and performance status are most frequently used as screening tools; only 6.4% surgeons use Comprehensive Geriatric Assessment (CGA) in daily practice and collaboration with geriatricians is low (36.3%).

If proven to be effective, the majority of surgeons (71%) is prepared to pre-habilitate patients for up to 4 weeks before surgery. One in two surgeons would not offer an operation to patients with impaired cognitive status; conversely, one in three would proceed to surgery regardless of the patient's cognitive status, if functional capacity is conserved. Quality of life and functional recovery are regarded as the most important endpoints in onco-geriatric surgery. Large "real life" prospective observational studies and randomized controlled trials are demanded.

Conclusion: Age is not perceived as a limitation to surgery. Screening for frailty is limited. A thorough CGA is seldom used and collaboration with geriatricians is rather uncommon. There is a need for clinical investigations focusing on pre-habilitation and other strategies to achieve better functional recovery.

© 2015 Elsevier Ltd. All rights reserved.

Keywords: Geriatric oncology; Surgery; Geriatric assessment; Frailty; Functional recovery; Survey

Introduction

Over the last century, unthinkable goals were achieved in health care and medical sciences, leading to longer life

* Corresponding author. Tel.: +39 051 2144346, +39 389 3425330 (mobile); fax: +39 051 6364266.

E-mail address: ghignone.bologna@gmail.com (F. Ghignone).

<http://dx.doi.org/10.1016/j.ejso.2015.12.004>

0748-7983/© 2015 Elsevier Ltd. All rights reserved.

expectancy and a better quality of life. As a result, our society is aging: it is estimated that by 2030, 20% of the US and 21.6% of the EU population will be aged ≥ 65 years.¹ Although cancer affects all ages, it disproportionately targets older individuals. Data from the National Cancer Institute Surveillance, Epidemiology and End Results Program demonstrates how 56% of all newly diagnosed cancer patients, and 71% of cancer deaths, occur in people ≥ 65 years.²

Surgery is the most effective treatment within the multimodality approach to solid tumors, thus surgeons are mostly responsible for the poor cancer-related survival which has been consistently noticed world-wide³ and time has come to address this disparity.

Surgical oncologists are confronted with increasing numbers of elderly patients presenting with multiple chronic conditions. There is therefore some uncertainty on what is the optimal treatment plan for older patients who are exposed to an increased risk of developing postoperative complications,⁴ resulting into a frequent under-treatment and, occasionally, to an over-treatment.

Until recently, age per se was considered the most important factor in the surgical decision making process.⁵ However, efforts have been made to better understand the surgical risk and predict life expectancy of older cancer patients.^{6,7} Despite recommendations addressing the assessment and management of older patients with cancer from scientific societies,⁸ the use of preoperative screening tools and personalized management in this large patients group is still limited.

This survey was designed to investigate the assessment and decision making when cancer surgeons from the US (SSO) and EU (ESSO) are faced with yet another senior cancer patient.

Materials and methods

The Surgical Task Force at SIOG developed a questionnaire with 20 multiple-choice queries. The survey, which included items regarding onco-geriatric patient caseload, preoperative assessment and perioperative management (Fig. 1), was distributed to all members of ESSO (European Society of Surgical Oncology) and SSO (Society of Surgical Oncology) as a web-based survey link. ([SurveyMonkey.com](http://www.surveymonkey.com)). Descriptive analysis was carried out as appropriate.

Statistical analysis was carried out using χ^2 analysis with Yates correction for comparison of the nominal variables. The student t test was used to compare the continuous variables between the 2 groups. P value ≤ 0.05 was considered to be significant. The statistical analysis was obtained using the Statistical Package for the Social Sciences version 11 for Windows[®] (SPSS[®] Chicago, IL, USA).

Results

Out of 2281, 251 provided a reply to the survey (11% response rate). The characteristics of the participants are

reported in detail in Table 1. The majority of responders (aged between 35 and 54 years) are practicing at academic institutions and their main fields of interest is breast (62.1%), colorectal (43%) and hepatobiliary (27.4%) cancer surgery.

The cut-off point for defining a patient as “elderly” is drawn at 75 years according to 81/251 (32.2%); a similar proportion (77/251; 30.6%) suggests a cut-off at 70 years, while 62/251 (24.7%) considers 80 years as a more appropriate age threshold (Fig. 2A).

More than 90% surgeons are intended to offer surgery regardless the patient’s age (Fig. 2B). Preoperative frailty assessment is considered mandatory by 48% responders (120/251) and the American Society of Anesthesiologists (ASA) score, nutritional status and performance status are the three most frequently adopted tools to assess fitness for surgery (Fig. 3). Comprehensive Geriatric Assessment (CGA) has been adopted by only 6.4% (16/251) cancer surgeons. Conversely, the nutritional status is routinely assessed by 38.2% (96/251) surgical oncologists and 56% of them is keen to consider preoperative strategies to optimize nutritional status.

The majority of surgical oncologists claims to be offering some sort of pre-habilitation before surgery: most frequently nutritional support as well as active chest physiotherapy as well as psychological support.

When questioned about patients with optimal functional capacity but severely impaired cognitive function, 51% of surgeons would not be inclined to offer surgical treatment in patients with severely impaired cognitive function while 35% is offering surgery regardless the patient cognitive impaired status; 14% would consider relatives and/or caregivers preferences in the decision making process. A routine collaboration with geriatricians is seldom reported; 36.3% (91/251) never involves geriatricians while 33.5% does so in less than one fourth of their patients (Fig. 4A).

A total of 70.52% (177/251) of the responders would be inclined to allocate up to four weeks for a pre-habilitation program prior to elective cancer surgery, if there was evidence of them leading to a better functional recovery (Fig. 4B).

When asked to rank endpoints for clinical future investigations on elderly cancer patients, quality of life and functional recovery are considered the most important targets. Large prospective observational studies and randomized controlled trials are regarded as the most preferable study designs.

Surgical oncologists with a main interest in visceral surgery, when compared with those specialized in superficial surgery (e.g. breast, reconstructive surgeons) tend to define “the elderly patient” at a lower age cut-off; they are more likely to use an age cut-off for not offering elective cancer surgery and were more supportive of preoperative frailty assessment, CGA and assessment of nutritional status. They are also more inclined to actively manage nutritional impairment with some sort of pre-habilitation and to

Question 1: Dear Colleague, the goal of the International Society of Geriatric Oncology (SIOG) is to foster the development of health professionals in the field of geriatric oncology, in order to optimize treatment of older adults with cancer. The aim of the survey designed by SIOG Surgical Task Force is to recognize the state of the art in the assessment and management of oncogeriatric surgical patients. Answering these questions should take less than 5 minutes. Please note that the aggregate results of the survey may be used with scientific purpose. The results will always be presented ONLY in the format of an aggregated data report where the responses and identification of individual responders will not be possible. Thanking you in advance for your cooperation, SIOG Surgical Task Force. Selecting the "I agree" button below confirms that I agree to participate in this research project.

1. I agree
2. I do not agree

Question 2: Which country are you currently based?

Question 3: What is your age?

1. 25 to 34
2. 35 to 44
3. 45 to 54
4. 55 to 64
5. 65 to 74

Question 4: What kind of institution are you currently working for? (more than one option possible)

1. Academic
2. Non Academic/General Hospital
3. Cancer Centre

Question 5: Which surgical society are you member of?

1. ESSO (European Society of Surgical Oncology)
2. SSO (Society of Surgical Oncology) MEMBER
3. SSO (Society of Surgical Oncology) FELLOW

Question 6: What is your main field of interest/work? (more than one option possible)

1. Breast
2. Genito-urinary
3. Colo-rectal
4. Gynecological
5. Upper GI
6. Soft tissue/bone sarcoma
7. Hepato-biliary/pancreatic
8. Head/neck
9. Thoracic
10. Plastic Surgery
11. Skin Cancer
12. Neurosurgery

Question 7: In your clinical practice what would be your chronological cut-off in defining a patient as "elderly"?

1. >65 years old
2. >70 years old
3. >75 years old
4. >80 years old

Question 8: How many elderly cancer patients do you see in your routine practice?

1. None
2. <25%
3. 25-50%
4. >50%

Question 9: In your clinical practice what would be your cut-off for not offering elective cancer surgery at all?

1. >70 years
2. >75 years
3. >80 years
4. >90 years
5. None

Question 10: Preoperative frailty assessment for elderly patients undergoing elective cancer surgery is:

1. Mandatory
2. Helpful
3. Useless

Question 11: In your clinical practice do you perform evaluation of the biological age with a Comprehensive Geriatric Assessment (CGA)?

1. Never
2. <25% of all cases
3. 25-50% of all cases
4. >50% but not for always
5. Routinely for all patients

Question 12: In your clinical practice which assessing tool do you routinely utilize in order to define fitness for surgery in an elderly cancer patient?(more than one option possible)

1. ASA (American Society of Anesthesiologists) Classification
2. POSSUM ((Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity)
3. VES-13 (Vulnerable Elders Survey-13)
4. GFI (Groningen Frailty Index)
5. IADL-ADL (Instrumental Activities of Daily Living - Activities of Daily Living)
6. MMSE (Mini-Mental State Examination)
7. TUG (Timed "Up & Go") test
8. PS (Performance Status)
9. Nutritional Status
10. GDS (Geriatric Depression Scale)
11. None

Question 13: Would you consider elective cancer surgery in a patient with optimal functional capacity but severely impaired cognitive function?

1. Yes
2. No
3. Only in selected patients
4. Depending only on his/her caregivers/relatives' preference

Question 14: In your clinical practice do you perform an evaluation of the nutritional status?

1. Never
2. <25% of all cases
3. 25-50% of all cases
4. >50% but not for always
5. Routinely for all patients

Question 15: If a nutritional impairment is found, do you manage this before surgery?

1. Never
2. <25% of all cases
3. 25-50% of all cases
4. >50% but not for always
5. Routinely for all patients

Question 16: Do you collaborate with a geriatrician in managing your elderly patient with cancer?

1. Never
2. <25% of all cases
3. 25-50% of all cases
4. >50% but not for always
5. Routinely for all patients

Question 17: In your clinical practice, do you perform any sort of prehabilitation before surgery (multiple answers possible)?

1. Cardio-vascular exercise
2. Breathing exercise
3. Nutritional supplement
4. Psychological support
5. All of them
6. None

Question 18: If shown to be beneficial to obtain better functional recovery, would you be inclined to spend up to 4 weeks for a prehabilitation programme before delivering elective cancer surgery?

1. Yes
2. No
3. Don't know

Question 19: Please rank the most adequate endpoint in monitoring surgical outcomes in the elderly patient with cancer:

1. Quality of Life
2. Functional Recovery
3. Quality adjusted Survival
4. Disease free survival
5. Overall survival

Question 20: Which type of study design should be preferable for elderly patients with cancer?

1. Prospective observational study (Phase 4)
2. Randomized controlled trial (Phase 3)
3. Retrospective Study

Figure 1. Complete questionnaire sent to ESSO and SSO members.

Table 1
Characteristics of surgeons participating in the survey.

Age (years)	
25–34	11% (28/251)
35–44	29% (73/251)
45–54	35% (88/251)
55–64	19% (50/251)
65–74	5% (12/251)
Country	
United Kingdom	26.3% (66/251)
United States	20.7% (52/251)
The Netherlands	13.1% (33/251)
Italy	6.8% (17/251)
Spain	3.6% (9/251)
Greece	3.6% (9/251)
Others	25.9% (65/251)
Institution	
Academic	44.6% (112/251)
Non-academic/General hospital	43% (108/251)
Cancer centre	26.6% (66/251)
Field of interest	
Breast	62.1% (156/251)
Colorectal	43% (108/251)
Hepatobiliary/pancreatic	27.5% (69/251)
Upper gastrointestinal	26.7% (67/251)
Soft tissue/bone sarcoma	15.5% (39%)
Skin cancer	14.7% (37/251)
Gynecological	5.1% (13/251)
Thoracic	3.6% (9/251)
Genitourinary	0.4% (1/251)
Neurosurgery	0.4% (1/251)
Elderly managed in daily practice	
None	0 (0%)
<25%	37.4% (94/251)
25–50%	48.2% (121/251)
>50%	14.3% (36/251)

collaborate with a geriatrician. The two groups of surgeon do not otherwise differ with regards to endpoints and study design for older cancer patients.

Discussion

Despite significant improvements in surgical outcomes for elderly patients, age discrimination represents a real issue

in many health care systems, thus preventing elderly cancer patients from having access to vital surgical treatment. Wang et al. showed that a significant number of elderly patients with non-small-cell lung cancer, without significant comorbidities, were offered surgery less frequently as compared with younger patients with significant comorbidities.⁹ Aparicio et al. reported that a significant number of elderly colorectal cancer patients received sub optimal treatments.¹⁰

An analysis of surgical rates across England's 211 Clinical Commissioning Groups (CCGs) showed a widespread variation in the rates of surgery for people over 65 and 75 years of age. Overall, the report demonstrated that patients over the age of 75 with breast and colorectal cancer were less likely to receive surgical treatment for their condition than patients over the age of 65.¹¹ These results of such an under-treatment are clearly demonstrated by the EURO-CARE-5 population-based study.³

Several efforts have been put in place by the International Scientific Community to promote a change of attitude among physicians treating elderly patients with cancer.¹² It is clear, both from the literature¹³ and from the results of this survey, that age is no longer considered a criterion for denying surgery to patients. The vast majority of responders (88.8%) did not consider any age cut-off for offering elective operative cancer treatment. However, with the disappearance of age as a selection criteria, the challenge is to differentiate between chronological and biological age in elderly patients: this is intended to offer active treatment to fit elderly patients, as well as to neglect aggressive surgery to frail individuals with a limited life expectancy and a high morbidity burden.

It is particularly significant that the respondents to this survey identified a good quality of life and a satisfying recovery as the primary end points for their surgical intervention.

Over two-thirds respondents would be inclined to allocate preoperative time to improve patients' fitness and readiness to undergo surgery, if there was enough evidence that this leads to better postoperative outcomes. It is thus legitimate to seek for such evidence and put an effort in collecting convincing

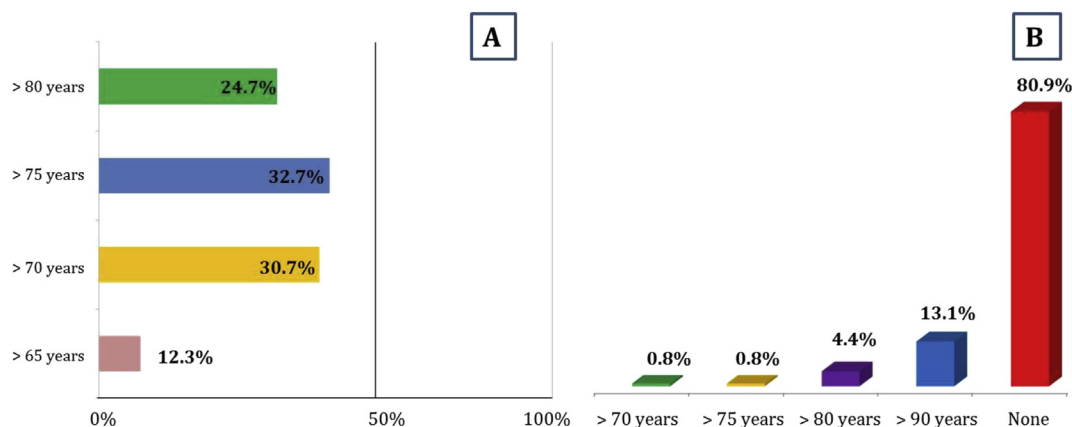


Figure 2. **A:** Chronological cut-off for defining patients as "elderly"; **B:** chronological cut-off for not offering elective cancer surgery at all.

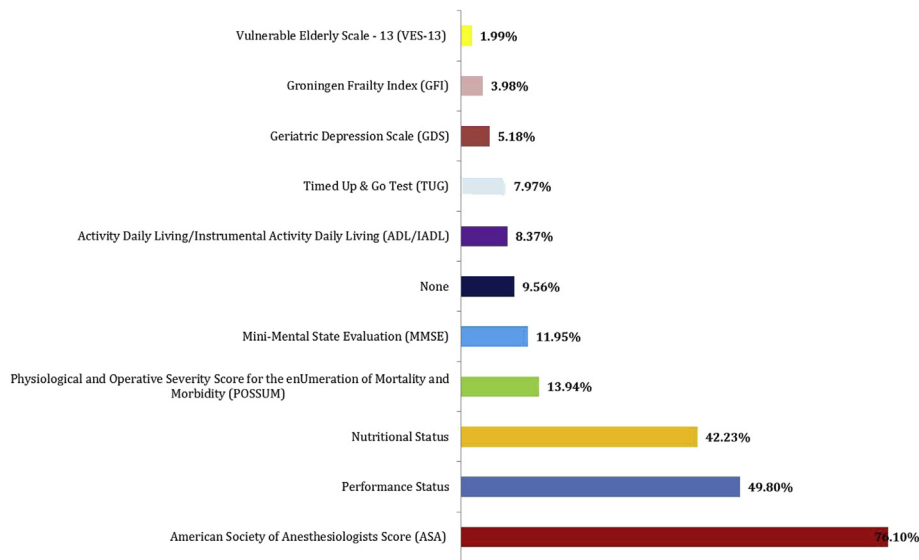


Figure 3. Preoperative tools routinely utilized to assess fitness for surgery.

data to support this view. Preliminary findings have already been gathered, favoring the optimization of nutrition ahead of bringing older patients to a major operative procedure.¹⁴ Malnourishment is a frequent condition even in the “healthy” elderly population,¹⁵ reaching 38.7% in hospitalized patients.¹⁶ The assessment of nutritional status and strategies to overcome this condition are essential since it would mean a dramatic reduction in postoperative complications (surgical site infection, pneumonia, urinary tract infection, anastomotic leak and prolonged hospital stay).¹⁷ The results of the survey showed that the majority of surgeons evaluate the nutritional status, even if 19.1% of the responders did not. Routine practice should include at least preoperative body mass index documentation, base-line serum albumin and investigation of unintentional weight loss.¹⁸ If nutritional impairment was found, 31.5% of responders managed this condition routinely and 25.5% managed it for the vast majority of their patients, demonstrating good acceptance of the recommendations of international societies.¹⁹

The assessment of frailty is a complex and imperfect science: several studies have proven a direct correlation between frailty and outcomes, i.e. increased morbidity, mortality, extended hospital stay and amplified costs.²⁰ However, no consensus on how best to assess frailty has so far been reached. Frailty assessment tools have so far been used for research purposes and “the perfect” clinical tool is still lacking.²¹ Broadly speaking, frailty can be thought of as a decreased physiologic reserve across multiple organ systems and its assessment is still evolving. Most respondents would rely on the ASA score, nutritional status and performance status, which are not at all intended to predict surgical outcomes. Only a small minority of respondents (6.4%) is using a geriatric assessment tool in their routine clinical practice.

Over the last decades, a close collaboration with geriatricians has proven extremely useful as it inspired several surgical oncologists to make good use of frailty assessment tools and test them in the surgical setting.^{22,6,14} Regrettably,

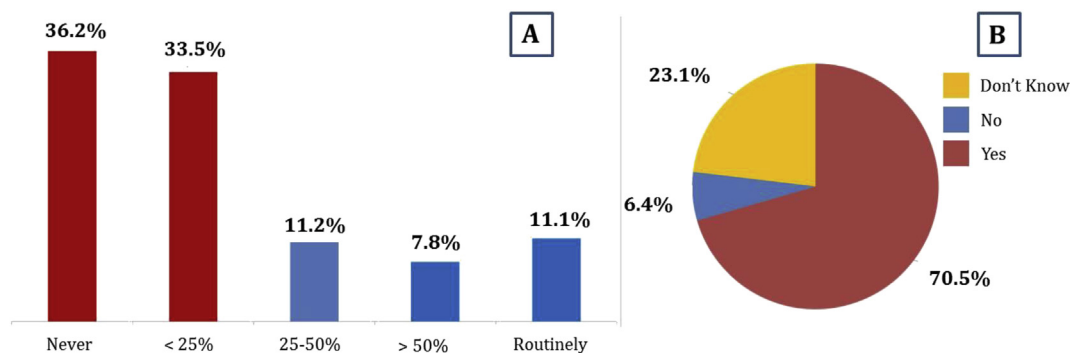


Figure 4. **A:** Collaboration with geriatricians in the management of onco-geriatric surgical patients; **B:** surgeons' attitudes towards spending up to four weeks for a pre-rehabilitation program prior to elective cancer surgery, if shown to be beneficial for obtaining better functional recovery.

one third of the responders have been unable to set up a fruitful collaboration with geriatricians.

A major limitation of this study could be represented by the response rate: although distributed via two major surgical associations, the response rate was low (11%). Collected results could be prone to some bias, since surgeons more interested to older cancer patients may have been more likely to answer to the questionnaire. Otherwise the low number of participants indirectly raises a crucial issue: optimizing the treatment of senior patients is still not perceived as a top priority.

Despite this limitation, as well as the fact that most responders are practicing at academic institutions (112/251, 44.6%), the strong message is that *all* surgeons acknowledge the presence of older patients on their surgical lists. It is thus our duty to expand the existing evidence in favor of frailty assessment, to optimize preoperative nutritional status and to associate surgical cancer treatment with quality of life outcomes.

Conflict of interest statement

All authors have no conflicts of interest to declare.

References

- Ferrucci L, Giallauria F, Guralik JM. Epidemiology of aging. *Radiol Clin North Am* 2008;**46**:643–52.
- Yancik R. Population aging and cancer: a cross-national concern. *Cancer J* 2005;**11**(6):437–41.
- De Angelis R, Sant M, Coleman MP, et al. Cancer survival in Europe 1999–2007 by country and age: results of EURO CARE-5 – a population-based study. *Lancet Oncol* 2014 Jan;**15**(1):23–34.
- Al-Refaie WB, Parsons HM, Habermann EB, et al. Operative outcomes beyond 30-day mortality: colorectal cancer surgery in oldest old. *Ann Surg* 2011;**253**:947–52.
- Kurian AA, Wang L, Grunkemeier G, Bhayani NH, Swanström LL. Defining “the elderly” undergoing major gastrointestinal resections: receiver operating characteristic analysis of a large ACS-NSQIP cohort. *Ann Surg* 2013;**258**(3):483–9.
- Huisman MG, van Leeuwen BL, Ugolini G, et al. “Timed up & go”: a screening tool for predicting 30-day morbidity in onco-geriatric surgical patients? A multicenter cohort study. *PLoS One* 2014;**9**(1):e86863.
- Kim SW, Han HS, Jung HW, et al. Multidimensional frailty score for the prediction of postoperative mortality risk. *JAMA Surg* 2014;**149**(7):633–40.
- Chow WB, Rosenthal RA, Merkow RP, Ko CY, Esnaola NF. American College of Surgeons National Surgical Quality Improvement Program; American Geriatrics Society. Optimal preoperative assessment of the geriatric surgical patient: a best practices guideline from the American College of Surgeons National Surgical Quality Improvement Program and the American Geriatrics Society. *J Am Coll Surg* 2012;**215**(4):453–66.
- Wang S, Wong ML, Hamilton N, Davoren JB, Jahan TM, Walter LC. Impact of age and comorbidity on non small-cell lung cancer treatment in older veterans. *J Clin Oncol* 2012;**30**:1447–55.
- Aparicio T, Navazesh A, Boutron I, et al. Half of elderly patients routinely treated for colorectal cancer receive a sub-standard treatment. *Crit Rev Oncol Hematol* 2009;**71**:249–57.
- <https://www.rcseng.ac.uk/news/docs/access-all-ages-2>.
- Droz JP, Aapro M, Balducci L, et al. Management of prostate cancer in older patients: updated recommendations of a working group of the International Society of Geriatric Oncology. *Lancet Oncol* 2014;**15**(9):e404–14.
- http://www.nccn.org/professionals/physician_gls/pdf/senior.pdf.
- Huisman MG, Audisio RA, Ugolini G, et al. Screening for predictors of adverse outcome in onco-geriatric surgical patients: a multicenter prospective cohort study. *Eur J Surg Oncol* 2015;**41**(7):844–51.
- Detsky AS, Baker JP, O'Rourke K, et al. Predicting nutrition-associated complications for patients undergoing gastrointestinal surgery. *J Parenter Enter Nutr* 1987;**440**–6.
- Kaiser MJ, Bauer JM, Ramsch C, et al. Frequency of malnutrition in older adults: a multinational perspective using the mini nutritional assessment. *J Am Geriatr Soc* 2010;**58**:1734–8.
- Schisser M, Kirchoff P, Muller MK, Schäfer M, Clavien PA. The correlation of nutrition risk index, nutrition risk score, and bioimpedance analysis with postoperative complication in patients undergoing gastrointestinal surgery. *Surgery* 2009;**145**:519–26.
- McGory ML, Kao KK, Shekelle PG, et al. Developing quality indicators for elderly surgical patients. *Ann Surg* 2009;**250**:338–47.
- Braga M, Ljungqvist O, Soeters P, Fearon K, Weimann A, Bozzetti F. ESPEN Guidelines on parenteral nutrition: surgery. *Clin Nutr* 2009;**28**(4):378–86.
- Makary MA, Segev DL, Pronovost PJ, et al. Frailty as a predictor of surgical outcomes in older patients. *J Am Coll Surg* 2010;**210**(6):901–8.
- Partridge JS, Harari D, Dhese JK. Frailty in the older surgical patient: a review. *Age Ageing* 2012;**41**(2):142–7.
- PACE participants, Audisio RA, Pope D, et al. Shall we operate? Preoperative assessment in elderly cancer patients (PACE) can help. A SIOG surgical task force prospective study. *Crit Rev Oncol Hematol* 2008;**65**(2):156–63.