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## CLINICIAN'S PERSPECTIVE

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# Managing the Elderly Person with Cancer: a Geriatrician's Perspective

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### ABSTRACT

*In Hong Kong, 53% of new patients with cancer were aged over 65 years, the incidence of cancer being 8-fold higher than that in younger subjects, and 75% of cancer deaths occur in people aged over 60 years. When cancer is suspected or diagnosed in an elderly person, the doctor faces multiple challenges: diagnostic uncertainty because of multiple pathologies, multiple aetiologies, and cancer mimics; and treatment uncertainty from lack of any evidence-base on risk-benefit. In addition, there are ethical issues in relation to 'under-treatment' or 'over-treatment', and the need for sensitive and compassionate communication with the elderly patient and his / her family. Cancer treatment decisions should be based on biological age, which takes into account of the elderly individual's functioning and reserve, rather than the chronological age. Biological age is best estimated by comprehensive geriatric assessment, a multidimensional diagnostic process focused on determining the individual's medical, psychological, and functional capabilities. Clinical trials of comprehensive geriatric assessment in oncology have demonstrated benefits in recognising unsuspected geriatric problems and syndromes, predicting treatment outcomes and survival, and in implementing multidisciplinary intervention plans. The goals of treatment of cancer in an elderly person include: cure if possible, prolongation of survival, prolongation of active life expectancy, symptom management, sympathetic care and support, and preservation of quality of life. The management of the elderly person with cancer benefits from an individualised approach based on comprehensive geriatric assessment and the input of a geriatrician. In the past decade, collaboration between oncologists and geriatricians has emerged as a clinical model, whereby geriatric principles and oncological assessment were integrated for the care of elderly persons with cancer.*

*Key Words:* Aged; Frail elderly; Geriatric assessment; Medical oncology; Neoplasms

## 中文摘要

### 老年癌症患者的治療：老年病學專家的觀點

江德坤

在香港，新癌症患者中有53%屬65歲以上，該年齡組別的癌症發病率是年輕組別的八倍，癌症引發的死亡有75%發生於60歲以上的人士。當老人被懷疑或診斷患有癌症時，醫生會面臨多重挑戰，例如因病者有多種病症、多個病因或腫瘤樣病變以致不能確定診斷，以及因缺乏風險—得益二者比

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較的證據而不能確定治療方案。此外，還有「治療不足」或「過度治療」，以及與老年患者及其家人溝通時所需的敏感度和同情心這類道德倫理問題。癌症治療的決定應基於患者的生物學年齡，即考慮到老人患者的身體功能和儲備，而不是其實際年齡。估計生物學年齡的最佳方法是運用老年醫學綜合評估，即一個重點確定個人體格、心理和功能性的多角度的診斷過程。老年醫學綜合評估在臨床腫瘤試驗已證實其效用，它能識別未知的老人問題和症狀、預測治療結果和存活期，以及實施多學科的治療計劃。治療老人癌症的目標包括：治愈（如可能的話）、延長壽命、延長健康預期壽命、對症治療、愛心關懷和支持，以及保持生活質素。基於老年醫學綜合評估以及老年醫學專科醫生的參與而制定的個性化治療方案能讓老人癌症患者得益。過去十年，腫瘤科醫生和老年醫學專科醫生之間的合作已成為臨床典範，借此老年醫學的原則和腫瘤學的評估得以整合，從而為老人治療癌症。

## INTRODUCTION

Cancer has increasingly become a disease of elderly people as the population ages. Elderly people aged >65 years account for 53% of the new cases of cancer from 2005 to 2009 in both Hong Kong<sup>1</sup> and USA.<sup>2</sup> The incidence of all cancers in those aged ≥65 years was 8 times that in persons aged <65 years in Hong Kong, and in the USA it was 10 times.<sup>1,2</sup> Most of the common cancers show an age-related increase in incidence (Figure 1).<sup>1,2</sup> Moreover, cancer is a leading cause of mortality and morbidity in elderly persons. In 2009, three-quarters of Hong Kong cancer deaths occurred in persons aged ≥60 years.<sup>1</sup> In 2010, a 60-year-old man or woman in Hong Kong could expect to live another 22.7 and 27.6 years, respectively (Table 1).<sup>3</sup> Contrary to the common myth that an 80-year-old person has

“lived out his or her life expectancy”, a person who survives to that age can expect to live another 8.6 and 11.1 years, respectively on average (Table 1).<sup>3</sup> Many older patients prefer having early detection and more complete treatment of their cancer illnesses, so that their remaining years of life are well spent. This paper reviews clinical features and management issues unique to elderly persons with cancers, and updates current developments of care in the clinical oncology of geriatric patients.

## HOW DO ELDERLY CANCER PATIENTS DIFFER FROM YOUNGER PATIENTS?

Compared with younger adults, the presentations of cancers among the elderly are often non-specific and

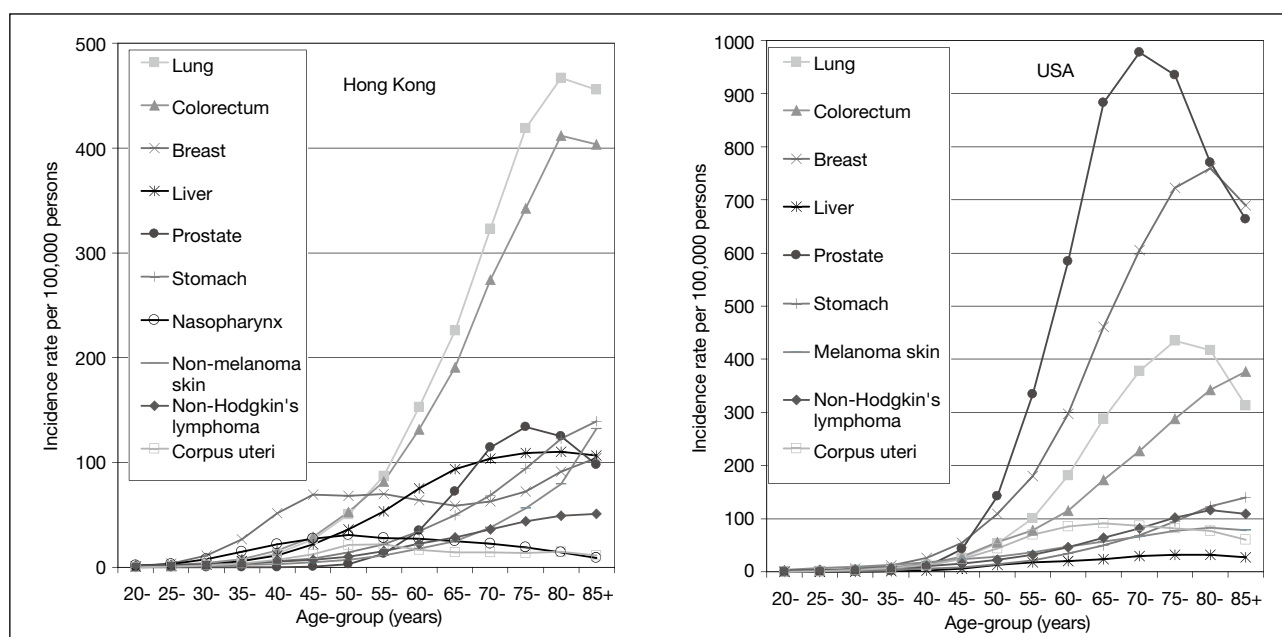


Figure 1. Increasing incidence of cancers with age (2000-2009) for Hong Kong<sup>1</sup> and USA.<sup>2</sup>

may be masked by concurrent chronic conditions and comorbidities, which are present in 40 to 90% of older cancer patients.<sup>4</sup> Cancers in elderly persons are underdiagnosed because the resulting symptoms may be attributed to ageing, chronic diseases, or social and psychological problems.<sup>5</sup> Cancers in elderly persons tend to be diagnosed at a more advanced stage. Multiple malignancies are common at presentation, occurring in up to 20% in those aged >70 years.<sup>6</sup> Decreased functioning is common among elderly cancer patients; 20% have impaired activities of daily living (ADL), while 70% have impaired instrumental activities of daily living (IADL).<sup>7,8</sup>

The ready availability of radiological imaging and 'tumour' markers may lead to overdiagnosis of cancers without histological confirmation. Incidental findings of raised serum alkaline phosphatase, sclerotic bone lesions, and active uptake in bone scan in an asymptomatic elderly person may be due to Paget's disease of bone rather than bone secondaries. Extremely elevated CA 19-9 serum concentration, thought to be

a marker for pancreatic or biliary cancer, have been reported in cholestasis caused by choledocholithiasis.<sup>9</sup> Increased serum CA-125 concentrations have been reported in a number of non-cancer conditions other than ovarian cancer,<sup>10</sup> and in countries where tuberculosis is prevalent; pulmonary, pelvic, or peritoneal tuberculosis are important diagnoses to consider other than ovarian cancer.<sup>10-13</sup> Tuberculous or non-tuberculous mycobacterial infections, infective endocarditis, masked hyperthyroidism, and giant cell arteritis may result in cachexia, ill health, or lytic bone lesions in old-age simulating cancer (Figure 2).<sup>14-16</sup> To complicate the diagnosis further, these conditions can coexist with cancer or occur after cancer treatment (Figure 3).<sup>17-19</sup> Early and accurate diagnoses of these cancer mimics will lead to correct and appropriate treatments.

The hallmarks of ageing are biological changes leading to decreased homeostatic reserve, which are of particular relevance to cancer treatment, and affect the bone marrow, kidneys, immune, and cardiovascular

**Table 1.** Life expectancy (years) at selected ages by gender in 2005, 2010 (actual), and 2015 (projected) in Hong Kong.<sup>3</sup>

Year	Male (age in years)					Female (age in years)				
	0	20	40	60	80	0	20	40	60	80
2005	78.8	59.2	39.9	21.7	8.1	84.6	64.9	45.3	26.4	10.4
2010	80.0	60.3	40.9	22.7	8.6	85.9	66.2	46.5	27.6	11.1
2015	80.9	61.2	41.8	23.5	8.8	87.2	67.5	47.8	28.9	12.2



**Figure 2.** Cancer mimics in old age: tuberculosis of knee in a 99-year-old woman with right knee pain. Imaging on (a) plain X-ray and (b) magnetic resonance imaging reveals an osteolytic lesion, which on (c) bone scan shows increased uptake reported as suspected malignancy.



**Figure 3.** Multiple pathologies and aetiologies in old age: an 82-year-old man with right-lower-lobe lung abscess (arrows) revealed on (a) plain chest X-ray and (b) computed tomography thorax; sputum cytology reveals squamous cell carcinoma; (c) pathology of the resected right lower lobe reveals squamous cell carcinoma over the periphery and tuberculous caseation in the centre.

systems. In contrast to younger adults, the management of cancers in elderly persons has to take into account differences in drug metabolism, pharmacodynamics and pharmacokinetics. Other pertinent differences entail the extent of polypharmacy, adverse drug reactions, potential for secondary complications of disease and treatment, the potential for unrelated conditions during cancer therapy, comprehension, extent of social support, limited financial resources (financial toxicity) impact compliance and access to care, and competing concurrent chronic conditions.<sup>20-22</sup> The geriatric syndromes of incontinence, instability and falls, intellectual decline, impaired hearing and vision, iatrogenesis, isolation and impaired nutrition, and immune deficiency not only affect cancer therapy but also impact on the patient as well as his / her family. A rehabilitative approach to the elderly cancer person is required to maintain or restore function and autonomy. There are needs for palliating the symptoms from cancer and / or its treatment; and for sensitive and compassionate communication with the elderly patient (who may have sensory or cognitive deficits), and with the family that may request non-disclosure.

Studies have shown that cancers among elderly persons are under-represented in clinical trials and under-treated.<sup>23-25</sup> Despite the documented benefits of cancer treatment in breast cancers, small-cell carcinoma of lung, and non-Hodgkin's lymphoma among these patients, the elderly remain untreated or under-dosed.<sup>5,26,27</sup> It should be noted that the elderly population is heterogeneous and can be sub-classified according to chronological ages as young-old (65-74

years), older-old (75-84 years), and oldest-old (85 plus years). However, there is great variability in health and functioning among elderly persons of the same chronological age. Biological age, which takes into account of the elderly individual's functioning and reserve, is more important than chronological age in individualising cancer treatment decisions. The estimate of one's biological age is best performed by applying what is termed comprehensive geriatric assessment (CGA).

### COMPREHENSIVE GERIATRIC ASSESSMENT

CGA is a multidimensional, often interdisciplinary, diagnostic process focused on determining a frail elderly person's medical, psychological, and functional capabilities in order to develop a coordinated and integrated plan for treatment and long-term follow-up.<sup>28</sup> A number of validated screening tools for geriatric assessment have been developed and published on the various domains of ADL,<sup>29,30</sup> IADL,<sup>31</sup> cognition,<sup>32</sup> mood,<sup>33</sup> mobility,<sup>34,35</sup> confusion,<sup>36</sup> nutrition,<sup>37</sup> and frailty<sup>38</sup> since the 1960s. Since the late 1970s, there have been controlled trials on the effectiveness of the CGA, leading to publications of positive results in the 1980s.<sup>39</sup> In a meta-analysis of 28 controlled trials on CGA, Stuck et al<sup>40</sup> demonstrated its benefit in terms of reduced risk of mortality, improved likelihood of living at home, reduced hospital readmissions, greater chance of cognitive improvement, and greater chance of physical function improvement. In the past 10 years, clinical trials of CGA in oncology have demonstrated benefits in recognising unsuspected geriatric

problems and syndromes,<sup>41-43</sup> predicting treatment outcome and survival,<sup>44-47</sup> and lastly in implementing multidisciplinary intervention plans.<sup>48,49</sup>

The application of CGA in elderly cancer patients revealed unsuspected syndromes, including cognitive impairment (dementia and / or delirium), depression, weight loss, nutrition, use of high-risk medications, and ADL dependence; and cancer treatments were changed in 21 to 49% of patients who were assessed.<sup>41-43</sup> A common geriatric syndrome revealed by CGA is delirium, which can readily be reversed by early recognition of potential underlying causes, including: fluid imbalance, dehydration or overload; infection (e.g. urinary tract, skin, respiratory infection); electrolyte abnormalities (e.g. hyponatremia, hypercalcaemia); uncontrolled pain; hypoxia; hypoglycaemia; hyperglycaemia; nutritional deficiencies; constipation or diarrhoea; hypothermia or hyperthermia; unfamiliar environment or isolation; sensory deprivation or overload; sleep deprivation; and adverse drug reactions.<sup>50</sup> Impaired neurotransmission of cholinergic impulses has been implicated in the pathogenesis of delirium.<sup>51</sup> Anticholinergic effects have been identified in many drugs other than those classically thought of as having major anticholinergic actions.<sup>51,52</sup> Examples of such drugs with anticholinergic effects include frusemide, digoxin, ranitidine, codeine, prednisolone, nifedipine, warfarin.<sup>52</sup> Studies have revealed that the cumulative anticholinergic burden of multiple medications prescribed to an elderly patient may challenge reduced brain reserve to induce delirium.<sup>51-53</sup>

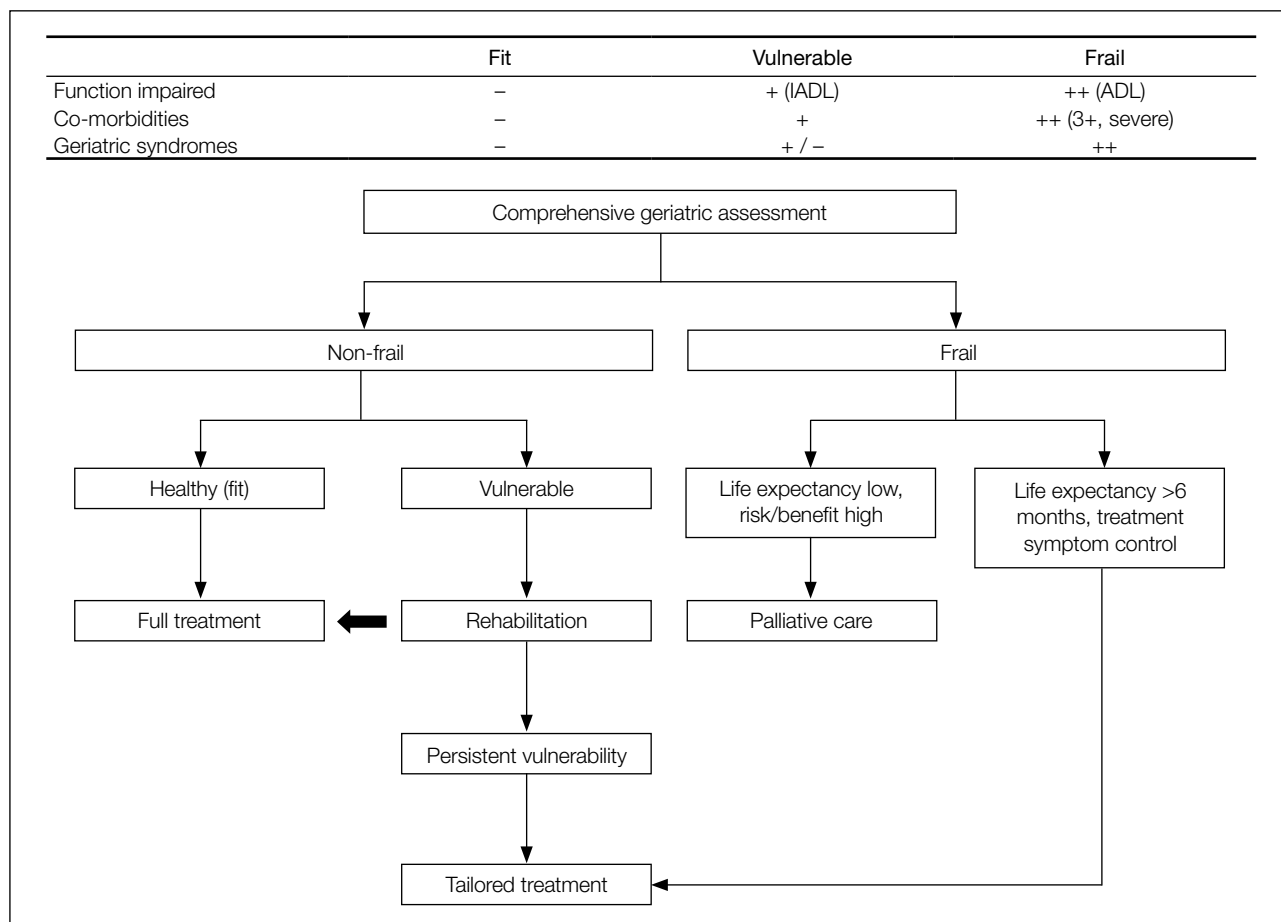
In elderly cancer patients, CGA trials have demonstrated that such assessment can predict the complications of surgery and chemotherapy, as well as treatment outcomes. Dependence in IADL has been useful in predicting surgical outcomes.<sup>44</sup> A score incorporating hearing loss, fall within 6 months, IADL (ability to take medications), difficulty to walk one block, and reduced social activity predicted chemotherapy toxicity, while the Karnofsky performance status (KPS) commonly used in oncology failed to identify older adults at increased risk for chemotherapy toxicity.<sup>45</sup> The CGA has been found to be more effective than clinical judgement in identifying elderly patients with diffuse, large-cell lymphoma who can benefit from aggressive immunochemotherapy.<sup>46</sup>

Studies have shown that the CGA can help to implement multidisciplinary intervention plans in elderly cancer

patients to improve ADL, pain control, quality of life, and mental health scores. Such assessments can also reduce inappropriate medications or unmet community needs, and provide information on the socio-economic status of the patient, and the need for caregiver support.<sup>48,49</sup>

## **GERIATRICIAN-ONCOLOGIST COLLABORATION IN INDIVIDUALISED CARE OF THE ELDERLY CANCER PATIENT**

Consensus guidelines recommend the routine use of CGA for elderly persons with cancer.<sup>54</sup> In the comprehensive geriatric model for cancer in elderly persons, specific interventions (surgery, chemotherapy, radiotherapy, hormonal treatment) are individualised. This can be according to the functional reserve compressed by ageing and disease, as well as biological and physical functioning and socio-psychological needs of the elderly person revealed through CGA.<sup>5</sup> A geriatrician — supported by an interdisciplinary team of nurses, therapists, and social workers — would assess the physical, mental, and social functional status of the elderly cancer patient, as well as the presence of comorbidities and geriatric syndromes (immobility, incontinence, instability, intellectual decline, iatrogenesis, immune deficiency, impaired eye / ears, insomnia, isolation, impecunity, irritable colon, impotence). Management-related decisions in an elderly person with cancer have to be guided by many considerations. They include the functional level in the fitness-frailty continuum; tolerance to and benefit-to-risk ratio of diagnostic and therapeutic interventions; socio-economic support; long-term consequences; life expectancy; and the patient's wishes and values. One such clinical algorithm of an individualised approach to the elderly cancer patient based on CGA is outlined in Figure 4,<sup>55</sup> and is exemplified by two case scenarios (Tables 2 and 3). The goals of treatment of cancer in an elderly person are: cure if possible, prolongation of survival, prolongation of active life expectancy (number of years of life remaining in an independent state free from significant disability), symptom management, prevention of adverse drug reactions, sympathetic care and support, and preservation of the quality of life. The provision of supportive care to the elderly patient is important to enhance the quality of life. It often entails recognising and managing pain effectively, relief from constipation, nutritional and hydration support, prevention and treatment of nausea and vomiting, and the treatment of fatigue and insomnia. In addition, there



**Figure 4.** Individualised approach to the elderly cancer patient based on comprehensive geriatric assessment.<sup>55</sup>  
 Abbreviations: IADL = instrumental activities of daily living; ADL = activities of daily living.

**Table 2.** Approach to a 67-year-old fit man with carcinoma of prostate.

- A 67-year-old retired accountant was diagnosed with carcinoma of the prostate by biopsy for a raised prostate-specific antigen level and irregular nodules of prostate noted on per-rectal examination.
- He had no urinary or musculoskeletal symptoms, and his past health was good other than a recent diagnosis of polyostotic Paget's disease by a geriatrician. Since his alkaline phosphatase (bone origin) was normalised after a treatment course of alendronate, the sclerotic bone lesions were thought to be related to Paget's disease rather than any bony metastases.
- He engaged in regular exercise, including swimming. He was functionally independent, had no geriatric syndromes, and thus belonged to the fit category.
- So, full treatment was given to his prostatic carcinoma (radical prostatectomy).
- At the age of 75 years, he remained well without any recurrence, and actively engaged in exercise (swimming) and volunteer work.

should be psychological support for the patient and family, discussions concerning decisions on end-of-life care, and the eventual provision of palliative care.<sup>5</sup> The need for human interactions in palliating distress is best illustrated from the story recounted by Archie Cochrane when he served as a camp doctor during the Second World War<sup>56</sup>:

*“Another event at Elsterhorst (prisoner of war*

*camp) had a marked effect on me. The Germans dumped a young Soviet prisoner in my ward late one night. The ward was full, so I put him in my room as he was moribund and screaming and I did not want to wake the ward. I examined him. He had obvious gross bilateral crepitations and a severe pleural rub. I thought the latter was the cause of the pain and the screaming. I had no morphia, just aspirin, which had no effect. I felt desperate. I knew*

**Table 3.** Approach to an 87-year-old frail man with carcinoma of prostate.

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- An 87-year-old semi-retired business man was diagnosed with carcinoma of the prostate by magnetic resonance imaging and positron emission tomography performed due to a raised prostate-specific antigen (PSA) level and acute retention of urine.
  - He had multiple comorbidities, including hypertension with left ventricular hypertrophy, gout, type II diabetes mellitus, obesity, mitral regurgitation, atrial fibrillation (on warfarin for primary stroke prevention), and congestive heart failure.
  - His vision was partially impaired by his cataract despite a history of cataract extraction, and he was partially deaf; he used a hearing aid. He had callosities over both feet and chronic toe ulcers regularly managed by a podiatrist. His exercise tolerance was limited to indoor walking using a frame and used a wheelchair for outdoor mobility. Despite his dependent physical functioning, his cognition was intact and he regularly visited his office. He lived with his wife, son and maid, who were all supportive.
  - He had the geriatric syndromes of immobility, instability, incontinence, and impaired hearing and eyesight, and these together with his multiple comorbidities, put him into the frail category.
  - A urologist would like to operate on him, but after discussion between the geriatrician and anaesthetist, the risk-benefit ratio for the surgical approach was assessed as too high. So, an oncologist prescribed tailored treatment (flutamide, an anti-androgen) for his prostatic carcinoma, the aim being symptom control.
  - An acute reduction in haemoglobin (Hb) from 80 to 60 g/l (8 to 6 g/dl) due to warfarin and a Cox II inhibitor (given by an orthopaedic surgeon for gout) alerted the geriatrician to a more insidious drop of Hb from 111 to 80 g/l (11.1 to 8 g/dl) over 4 months; the gradual decline in Hb attributed to the anti-androgenic drug, flutamide. After discussion between geriatrician and oncologist, flutamide was temporarily suspended and later resumed as less frequent injections; the PSA ultimately normalised and flutamide was withdrawn after 3 years.
  - At the age of 90 years, the patient had a reasonable quality of life, going frequently to restaurant and listening to Chinese opera.
  - He lived to the age of 91 years and died during his sleep.
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*very little Russian then and there was no one in the ward who did. I finally instinctively sat down on the bed and took him in my arms, and the screaming stopped almost at once. He died peacefully in my arms a few hours later. It was not the pleurisy that caused the screaming but loneliness. It was a wonderful education about the care of the dying. I was ashamed of my misdiagnosis and kept the story secret.”<sup>56</sup>*

Collaboration between oncologists and geriatricians has emerged in the past decade as a clinical model to integrate geriatric principles and assessment into oncology care of elderly persons with cancer. A structured Geriatric Oncology Programme has been promoted to coordinate oncologists, geriatricians, physiotherapists, nurses, and social workers to generate treatment plans for elderly cancer patients.<sup>4,54,57-59</sup> The International Society of Geriatric Oncology recommended that every elderly cancer patient should have a screening assessment to identify frailer elderly patients requiring a more detailed CGA by a geriatrician.<sup>54</sup> The frailer patients, instead of being excluded from standard oncological treatment, may still benefit from cancer treatments after an individualised intervention based on CGA which has solved the biological, clinical, and social issues limiting the general application of oncological guidelines (Figure 5).<sup>54,60</sup> The important focus areas of CGA in an elderly cancer patient are: functional status, comorbidity and its severity, medication use and potential adverse drug reactions, nutritional status, cognition, and social

support. Studies of Geriatric Oncology Programmes and Onco-Geriatric approaches have revealed promising outcomes in improved selection of elderly cancer patients for appropriate intervention.<sup>44,61</sup>

In targeting elderly cancer patients, one question often asked is “what is the age cut-off?”. As explained above, not all individuals age biologically at the same rate. A very high age cut-off will have a high specificity but low sensitivity for biologically aged patients, while a low age cut-off will mean a high sensitivity but low specificity for biologically aged individuals who would benefit from CGA and joint geriatrician-oncologist collaboration. An alternative more sensible approach is a need-related service, targeting those patients whose medical and social problems indicate that they would benefit from the team approach. A third strategy is to combine the two approaches and offer an age-related service with a fairly high cut-off age (say 80 years), plus a need-related service between 65 years and the cut-off age.

## CONCLUSION

The management of the elderly person with cancer benefits from the input of a geriatrician, who has expertise in ageing and frailty, diagnoses, and CGA. Such a specialist can recognise geriatric syndromes; manage multiple co-morbidities, polypharmacy and appropriate medication use; assist rehabilitation to improve function; help counselling; and arrange palliative and end-of-life care. Treatment safety in older cancer patients has also been enhanced by recent

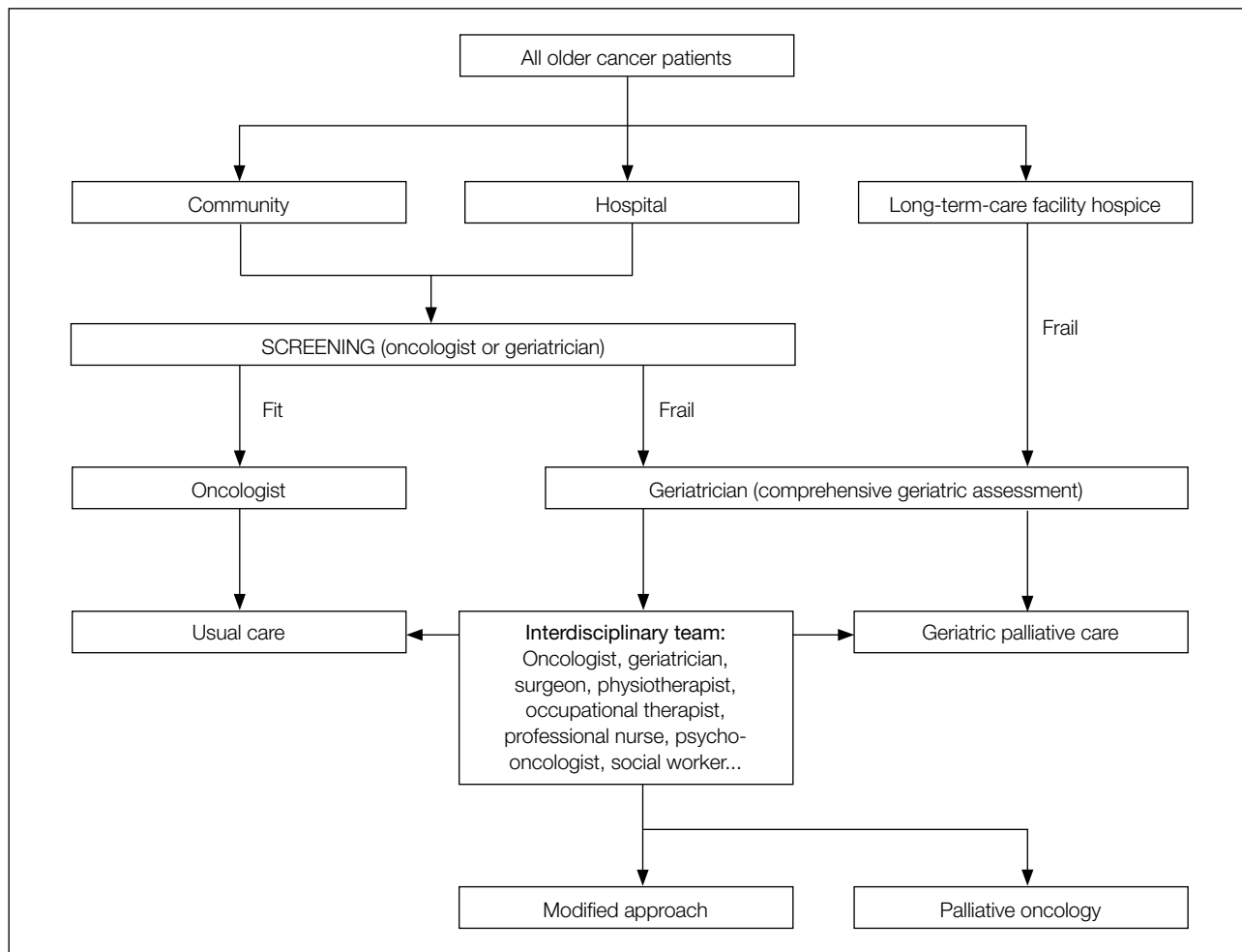


Figure 5. Geriatrician-oncologist collaboration in the individualised care of the elderly cancer patient.<sup>60</sup>

advances in oncology. They include minimally invasive robotic surgery, new radiation techniques, antidotes to reduce the toxicity of chemotherapy, personalised medicine from genomic profiles, and methods to gauge the response to cancer therapy early during treatment.<sup>62</sup> Tallis<sup>63</sup> has argued that the future of old age should be optimistic with enjoyable longevity, rather than pessimistic with un-enjoyed life. The emerging practice of geriatric oncology will be a promising paradigm to add to this optimism.

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