What surgeons can do for older patients with cancer

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World Geriatric Map

http://www.worldmapper.org/
Age-specific Gastric ca. - UK

Figure 1.1: Numbers of new cases and age-specific incidence rates by sex, stomach cancer, UK 2002
Figure 1.2: Numbers of new cases and age specific incidence rates, by sex, kidney cancer, UK 2004
Age-specific Pancreatic cancer - Japan

![Graph showing age-specific rates of pancreatic cancer in Japan, comparing males (1994) and females (1994) and males (1975) and females (1975). The graph displays the rate per 100,000 population against age from 0 to 85 years.](image-url)
Age-specific Colon ca. - Japan
With the exception of cervical ca. all cancers prevail in the elderly population.

| Probability of Developing Invasive Cancers Over Selected Age Intervals, by Sex, US, 1998-2000* |
|---------------------------------|----------------|----------------|----------------|----------------|
|                                 | Birth to 39 (%) | 40 to 59 (%) | 60 to 79 (%) | Birth to Death (%) |
| All Sites†                      | Male           | Female       | Male          | Female        |
|                                 | 1.36 (1 in 73) | 1.92 (1 in 52) | 8.03 (1 in 12) | 9.01 (1 in 11) | 33.92 (1 in 3) | 22.61 (1 in 4) | 44.77 (1 in 2) | 38.03 (1 in 3) |
| Bladder‡                        | Male           | Female       | Male          | Female        |
|                                 | .02 (1 in 4603) | .01 (1 in 9557) | .40 (1 in 250) | .12 (1 in 831) | 2.36 (1 in 42) | .64 (1 in 157) | 3.46 (1 in 29) | 1.10 (1 in 91) |
| Breast                          | Female         | Male         | Female        | Male          |
|                                 | .44 (1 in 229) | .41 (1 in 24) | .753 (1 in 13)| .14 (1 in 24) | 7.53 (1 in 13) | 13.36 (1 in 7) |                  |                  |
| Colon & rectum                  | Male           | Female       | Male          | Female        |
|                                 | .06 (1 in 1678) | .06 (1 in 1651) | .86 (1 in 116) | .67 (1 in 150) | 3.94 (1 in 25) | 3.05 (1 in 33) | 5.88 (1 in 17) | 5.49 (1 in 18) |
| Leukemia                        | Male           | Female       | Male          | Female        |
|                                 | .15 (1 in 649) | .13 (1 in 789) | .20 (1 in 495) | .14 (1 in 706) | .82 (1 in 122) | .46 (1 in 219) | 1.45 (1 in 70) | 1.00 (1 in 100) |
| Lung & bronchus                 | Male           | Female       | Male          | Female        |
|                                 | .03 (1 in 3439) | .03 (1 in 3046) | .102 (1 in 98) | .79 (1 in 126) | 5.80 (1 in 17) | 3.93 (1 in 25) | 7.69 (1 in 13) | 5.73 (1 in 17) |
| Melanoma of skin                | Male           | Female       | Male          | Female        |
|                                 | .12 (1 in 809) | .19 (1 in 532) | .49 (1 in 205) | .39 (1 in 255) | .97 (1 in 103) | .51 (1 in 197) | 1.81 (1 in 55) | 1.22 (1 in 82) |
| Non-Hodgkin lymphoma            | Male           | Female       | Male          | Female        |
|                                 | .14 (1 in 739) | .08 (1 in 1258) | .45 (1 in 224) | .30 (1 in 332) | 1.27 (1 in 79) | .08 (1 in 102) | 2.10 (1 in 48) | 1.76 (1 in 57) |
| Prostate                        | Male           | Female       | Male          | Female        |
|                                 | .01 (1 in 12833) | .16 (1 in 632) | .28 (1 in 44) | .31 (1 in 322) | 14.20 (1 in 7) | .27 (1 in 368) | .78 (1 in 128) |                  |
| Uterine cervix                  | Female         | Male         | Female        | Male          |
|                                 | .05 (1 in 1832) | .69 (1 in 144) | .69 (1 in 144) | .69 (1 in 144) | 1.57 (1 in 64) | 2.60 (1 in 38) |                  |                  |

*For those free of cancer at beginning of age interval. Based on cancer cases diagnosed during 1998-2000. The “†” in each statistic and the inverse of the percentage may not be equivalent due to rounding.
†All sites exclude basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. ‡Includes invasive and in situ cancer cases.


American Cancer Society, Surveillance Research, 2004
### Who is ELDERLY?

<table>
<thead>
<tr>
<th>Age</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>65yrs</td>
<td>Inter. Conference Harmonisation</td>
</tr>
<tr>
<td>70yrs</td>
<td>90% subjects present signs of ageing</td>
</tr>
<tr>
<td>85yrs</td>
<td>Significant increase of functional impairments, &gt;3 comorbidities, presence of “geriatric syndrome”</td>
</tr>
</tbody>
</table>

**No** biological marker has proven reliable in drawing a cut-off line.
How to define « normal ageing »?

Aging is characterized by an increased variability of all biological and clinical parameters. 60% of women over 80 years have cognitive troubles – is this normal ageing? Need for treatment?

Example:

The definition of illness varies with age:
- Osteoporosis
- Arthrosis
- Impaired renal function or chronic renal failure?

Fig. 1 Data compiled by Shock and colleagues clearly document the loss of organ functional capacity that occurs with advancing age. From Shock N W. Physiologic aspects of ageing. J. Am Diet Assoc, 1970; 56: 492 (254).
## Prevalence of GFR ranges
### NHANES III (1988-1994)

<table>
<thead>
<tr>
<th>FG ml/mn/1.73 m²</th>
<th>20-39 years</th>
<th>40-59 years</th>
<th>60-69 years</th>
<th>&gt;70 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 90</td>
<td>86 %</td>
<td>55,7 %</td>
<td>38,5 %</td>
<td>25,5 %</td>
</tr>
<tr>
<td>60-89</td>
<td>13,7 %</td>
<td>42,7 %</td>
<td>53,8 %</td>
<td>48,5 %</td>
</tr>
<tr>
<td>30-59</td>
<td>1,8 %</td>
<td>7,1 %</td>
<td>24,6 %</td>
<td></td>
</tr>
<tr>
<td>15-29</td>
<td></td>
<td></td>
<td></td>
<td>1,3 %</td>
</tr>
</tbody>
</table>

MDRD - 15,000 patients
Health Status in the Elderly

Ageing

- tolerance to stress
- functional reserves
- socio-economical support
- cognitive/psychological status
- comorbidities

Chronologic age & life expectancy are not measurable with the number of organ impairments
Comorbidities

• Comorbidities & Functional Status are independent

• Correlation between PS & ADL/IADL is moderate

• Patients with comorbidities do not have a higher risk of developing complications

Extermann M. JCO 1998
Repetto L. JCO 2002
Lemmens V. WJSO 2006
Comorbidities

• Widely affect patient’s accrual (especially thoracic surgery)

• Their impact on short-term surgical outcomes is complex:
  – no impact for Breast Surgery
  – moderate impact on CRC & Thoracic Surgery

• Negative impact on long term survival

Janssen-Heijnen ML EJC 2007
Comorbidities

Comorbidity is prognostically important where the prognostic impact of the tumour is small. Conversely, where the tumour is advanced or aggressive and the prognosis is poor, comorbidity information is less important.

Read WL. JCO 2004
Malnourishment in the Elderly

12% males & 8% females undernourished:
protein/caloric deficiency, hypoalbuminemia, low intake iron, ascorbic acid, thiamine, vit D, vit C, vit A

nursing homes US: malnutrition 52%-85%
hospitalised pt EC: malnutrition 60%

malnutrition associates to:
adverse treatment outcomes, morbidity & mortality, longer hospital stay, increased costs

Bozzetti F. Clinical Nutrition 2001
Elderly Cancer Patients Seek for Surgical Treatment

There is no justification for rationing care on the basis of chronological age

• less likely to challenge the physician’s authority
• comfortable with someone else making the decision
• ask for best standards of care
• appreciate good use of health service money
• desire radical surgery aiming to cure

Nordin AJ. Gynec Oncol 2001
Surgery works!

223 CRC & gastric surgical patients >75yrs were administered ADL and QOL before and 6 months after surgery.

Is age a contraindication?

• Ageistic attitude is highly prevalent
• Poor diagnosis & treatment rates
• Not specific to cancer surgery
• Substandard management of IBD
• More conservative management in AAA

Surgery for Acute Type A Aortic Dissection: Is Advanced Age a Contraindication?

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Hans Kelder, MD, PhD, Karl Dossche, MD, PhD, and Marc Schepens, MD, PhD

Departments of Cardiothoracic Surgery and Cardiology, St. Antonius Hospital, Nieuwegein, the Netherlands

Background. With the general increase in human life-span, cardiac surgeons are faced with treating an increasing number of elderly patients. The purpose of this study was to demonstrate early and late results of surgery for aortic dissection in patients older than 70 years of age compared with those younger than 70 years and to clarify the clinical problems related to this subset of patients.

Methods. Between 1976 and 2001, 315 patients underwent emergency operation for acute type A dissection: 245 were younger than 70 years (group 1) and 70 patients (p = 0.42). The mean cross-clamp time was 116.3 ± 45.8 minutes and 100 ± 36.7 minutes in groups 1 and 2, respectively (p = 0.009). Actuarial survival rates were 77.1% after a mean follow-up time of 259 ± 9 months for patients of group 1 and 90% after 77 ± 5 months for patients of group 2, without any statistically significant difference (p = 0.619).

Conclusions. No significant differences were observed in the 30-day mortality and actuarial survival between the two groups. Therefore we believe that surgery for
Optimizing techniques

• Precise surgical techniques
• Tailor-made surgical strategy (TNM?)
• Accurate anaesthetics
• Per-operative pain control
• Hard-line physiotherapy
• Psychological support & nursing
Prospective series of consenting (MMS > 18) elderly (> 70 yrs) surgical cancer patients recruited (07/03-12/05)

Functional Health Status
Satariano's indexed Co-biditi

Surgical risk
POSSUM
ASA

Performance Status (PS)
Min t St t a t e (MMS)

Activities of Daily Living (ADL)
P-POSSUM

Brief Fatigue Inventory (BFI)

Geriatric Depression Scale (GDS)
Instrumental activities of daily living (IADL)
# PACE - multivariate analysis (Cox Regression)

<table>
<thead>
<tr>
<th>Component of PACE</th>
<th>RR*</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 days Morbidity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BFI mod/severe fatigue (&gt;3)</td>
<td>1.46</td>
<td>1.18-2.13</td>
</tr>
<tr>
<td>IADL dependent (&lt;8)</td>
<td>1.36</td>
<td>1.04-2.05</td>
</tr>
<tr>
<td>Hospital stay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADL dependent (&gt;0)</td>
<td>2.00</td>
<td>1.37-2.92</td>
</tr>
</tbody>
</table>
Prospective series of consenting surgical cancer patients

Functional Health Status

Performance Status (PS)

Quick tools

VES-13

Performance Status (PS)

Mini mental State (MMS)

Brief Fatigue Inventory (BFI)

up & go

Activities of Daily Living (ADL)

Geriatric Depression Scale (GDS)

Instrumental activities of daily living (IADL)

End Points

30 day mortality & morbidity

n. of specialists involved
1. Age ________________________________

<table>
<thead>
<tr>
<th></th>
<th>No Difficulty</th>
<th>A little Difficulty</th>
<th>Some Difficulty</th>
<th>A Lot of Difficulty</th>
<th>Unable to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. stooping, crouching or kneeling? ...........</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
<tr>
<td>b. lifting, or carrying objects as heavy as 10 pounds? ..........................</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
<tr>
<td>c. reaching or extending arms above shoulder level? ..........................</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
<tr>
<td>d. writing, or handling and grasping small objects? ..........................</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
<tr>
<td>e. walking a quarter of a mile? ..........</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
<tr>
<td>f. heavy housework such as scrubbing floors or washing windows? ..................</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐ *</td>
<td>☐ *</td>
</tr>
</tbody>
</table>

**SCORE:** 1 POINT FOR EACH * RESPONSE IN Q3a THROUGH f. MAXIMUM OF 2 POINTS.
4. Because of your health or a physical condition, do you have any difficulty:

   a. shopping for personal items (like toilet items or medicines)?
      □ YES → Do you get help with shopping? □ YES * □ NO
      □ NO
      □ DON’T DO → Is that because of your health? □ YES * □ NO

   c. walking across the room? USE OF CANE OR WALKER IS OK.
      □ YES → Do you get help with walking? □ YES * □ NO
      □ NO
      □ DON’T DO → Is that because of your health? □ YES * □ NO

   d. doing light housework (like washing dishes, straightening up, or light cleaning)?
      □ YES → Do you get help with light housework? □ YES * □ NO
      □ NO
      □ DON’T DO → Is that because of your health? □ YES * □ NO

   e. bathing or showering?
      □ YES → Do you get help with bathing or showering? □ YES * □ NO
      □ NO
      □ DON’T DO → Is that because of your health? □ YES * □ NO

**SCORE: 4 POINTS FOR ONE OR MORE * RESPONSES IN Q4a THROUGH Q4e**
Groening Frailty Index (GFI)

- Mobility
- Vision
- Hearing
- Nutrition
- Co-morbidities
- Cognition
- Psycho-social
- Physical fitness
Patient sits on arm chair with his or her back against the chair, arms resting on the chair's arms and walking aid at hand. On the word "go" the patient stands, walks to a line on the floor 10 feet away, turns, walks back to the chair, and sits down again. The end of the test is defined when the patient's buttocks first touch the seat surface.
Patient selection based on:

“gut feeling”
ASA
Comorbidities

Performance Status (PS)
CGA or quick screening tools
Resulting advantages:

Unbiased selection
Comparison of surgical outcomes
Consenting & treatment planning
Tackling comorbidities
Personalised care
Improved survival?