Challenge: the elderly patient with cancer
The physical therapists perspective

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Disclosure

We have no actual or potential conflict of interest in relation to this program/presentation.
Questions are raised when.....
Faced with a newly diagnosed elderly patient with cancer

• Can this patient benefit from treatment?
• How can I assess the patients capacity to cope with the treatment?
• How can I support this patient as a physical therapist before, during, and after treatment?
Problem or Challenge?

Treatment of cancer in the elderly is challenging due to risk of:

### General risks
- Comorbid conditions
- Disability
- Cognitive decline
- Hospitalization
- Functional dependence
- Institutionalization
- Falls
- Health care-associated complications
- Social withdrawal
- Death

### Cancer specific risks
- Chemotherapy intolerance
- Treatment-associated complications
- Disease recurrence/progression

Not all patients can cope with the treatment or side effects of the treatment.

Fit or Frail?

Aging = individualised

Chronological age is may not reflect the functional capacity of a patient......
Fit or Frail?

Genetic factors

Environmental factors

Cumulative molecular & cellular damage

Reduced physiological reserve

Brain
Endocrine
Immune

Skeletal muscle
Respiratory
Renal

Physical activity

Nutritional factors

Frailty

Stress

Falls, Delirium, Fluctuating disability

Increased care needs
Admission to hospital
Admission to long-term care

Fit or Frail?

**Stressor**

- **Fit**
- **Pre-frail**
- **Frail**

**Critical zone**

**Frail** defined by Fried et al. (2001) ≥3
1. Unintentional weight loss or sarcopenia
2. Weakness as measured by grip strength
3. Poor endurance capacity
4. Slowness measured in walking speed
5. Self-reported low physical activity

**Pre-frail**: 1 or 2 signs

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Fit or Frail?

Fit

No Stressors

Adaptive Capacity

Adaptive Capacity

Resiliency

Robust adaptive capacity and resiliency to stressors


Can we **Predict** it?

- Morbidity
- Mortality
- Functional decline
- Complications

High-risk patient
Predict ‘high-risk’ patients

30% residue multi-organ function represents lowest threshold to remain functional

Risk for adverse effects

Predict ‘high-risk’ patients

How to classify ‘high-risk’ patient?

Value of multidisciplinary risk-assessment

Care pathway for patients with gastro-intestinal cancer in MUMC+

Mona, 75 years old
Functional independent

Visit hospital

Further research

Appointment
General practitioner

Nausea, vomiting, stomach complaints

Nutritional screening

Geriatric screening

Medical imaging
Laboratory research

Visit hospital
Further research

+ + +

Physical fitness assessment
# Geriatric screening – G8

<table>
<thead>
<tr>
<th>Items</th>
<th>Possible answers (score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?</td>
<td>0 : severe decrease in food intake</td>
</tr>
<tr>
<td></td>
<td>1 : moderate decrease in food intake</td>
</tr>
<tr>
<td></td>
<td>2 : no decrease in food intake</td>
</tr>
<tr>
<td>Weight loss during the last 3 months</td>
<td>0 : weight loss &gt; 3 kg</td>
</tr>
<tr>
<td></td>
<td>1 : does not know</td>
</tr>
<tr>
<td></td>
<td>2 : weight loss between 1 and 3 kgs</td>
</tr>
<tr>
<td></td>
<td>3 : no weight loss</td>
</tr>
<tr>
<td>Mobility</td>
<td>0 : bed or chair bound</td>
</tr>
<tr>
<td></td>
<td>1 : able to get out of bed/chair but does not go out</td>
</tr>
<tr>
<td></td>
<td>2 : goes out</td>
</tr>
<tr>
<td>Neuropsychological problems</td>
<td>0 : severe dementia or depression</td>
</tr>
<tr>
<td></td>
<td>1 : mild dementia or depression</td>
</tr>
<tr>
<td></td>
<td>2 : no psychological problems</td>
</tr>
<tr>
<td>Body Mass Index (BMI (weight in kg) / (height in m²))</td>
<td>0 : BMI &lt; 19</td>
</tr>
<tr>
<td></td>
<td>1 : BMI = 19 to BMI &lt; 21</td>
</tr>
<tr>
<td></td>
<td>2 : BMI = 21 to BMI &lt; 23</td>
</tr>
<tr>
<td></td>
<td>3 : BMI = 23 and &gt; 23</td>
</tr>
<tr>
<td>Takes more than 3 medications per day</td>
<td>0 : yes</td>
</tr>
<tr>
<td></td>
<td>1 : no</td>
</tr>
<tr>
<td>In comparison with other people of the same age, how does the patient consider his/her health status?</td>
<td>0 : not as good</td>
</tr>
<tr>
<td></td>
<td>0.5 : does not know</td>
</tr>
<tr>
<td></td>
<td>1 : as good</td>
</tr>
<tr>
<td></td>
<td>2 : better</td>
</tr>
<tr>
<td>Age</td>
<td>0 : &gt;85</td>
</tr>
<tr>
<td></td>
<td>1 : 80-85</td>
</tr>
<tr>
<td></td>
<td>2 : &lt;80</td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td><strong>0 – 17</strong></td>
</tr>
</tbody>
</table>

Best screening tool for elderly patients with cancer
- Research in ca. 4,000 patients
- Sensitivity 65 – 92% > 75% studies
- Specificity 3 – 75% > 50% studies

Predictive value
- Predictive chemotoxicity
- Survival
- Not for functional decline

Screening tools do **not replace a full geriatric assessment**

**Recommendation in busy practice** to identify those patient in need for a complete geriatric assessment

Physical fitness assessment

Self-reported physical activity

- Questionnaires VSAQ & DASI

Functional assessment

- Tests related to daily functioning
  - Two minutes walking test (2MWT)
  - Five Times Sit To Stand Test (FTSTST)
  - Handgrip strength
  - Timed up and Go (TUG)

Cardio-respiratory exercise capacity

- Cycling test – Steep ramp test
  - Short maximal exercise capacity test
  - Reflects anaerobic capacity & muscle strength
  - Modified protocol 10watt/10 seconds
Cardiorespiratory exercise capacity

Major surgery for cancer

Perioperative stress response
Increased aerobic metabolism

Increased $O_2$ demand
($\sim5\text{mL/kg/min} = 1.5\text{ METs}$)

Low-risk
$VO_{2\text{peak}} > 18\text{mL/kg/min (>5METs)}$
or
$VAT > 11\text{mL/kg/min (>3METs)}$

High-risk
$VO_{2\text{peak}} \leq 18\text{mL/kg/min (\leq 5METs)}$
or
$VAT \leq 11\text{mL/kg/min (\leq 3METs)}$

Prehabilitation
“Walking is man’s best medicine”

- Hippocrates (400vr Chr)

Network of available comparisons between exercise and all drug interventions

Exercise is medicine

How to PREVENT functional decline

1. Neoadjuvant treatment
2. Prehabilitation before surgery
3. Physical activity during hospital stay
4. Oncological rehabilitation

The SCIENCE of EXERCISE
Functional decline during NACRT

- N=39
- Rectal cancer

West et al. 2015. Effect of prehabilitation on objectively measured physical fitness after neoadjuvant treatment in preoperative rectal cancer patients: a blinded interventional pilot study. British Journal of Anaesthesia, Volume 114, Issue 2, 244-251
Training and NACRT

- Patients with colorectal cancer
- Chemotherapy and Radiotherapy
- Training 2x/week, 45-60 minutes, moderate intensity

Cardiorespiratory fitness
6MWT

Training and NACRT

- Patients with colorectal cancer
- Chemotherapy and Radiotherapy
- Training 2x/week, 45-60 minutes, moderate intensity

Functional decline & abdominal cancer surgery

Functional mobility

Muscle strength

Van Beijsterveld et al. unpublished data
Prehabilitation

• RCT
• 144 high-risk patients for major abdominal cancer surgery
  • Age > 70 years
  • ASA class III/IV
• Personalised prehabilitation, 6 weeks, supervised
  • Motivational interview
  • High-intensity endurance training
  • Promotion of physical activity
• Outcome
  ↑ increase aerobic capacity
  ↓ postoperative complications
  ↓ rate of postoperative complications

How to give the surgical patient a chance?

Window of opportunity

Low risk

High risk

Prehabilitation

Critical zone

Hospitalization & surgery

Time

Triple T

Talent Therapy Technology

Physical fitness

Hospital Fit

Overzicht per dag

Beweging: 251 MINUTEN
Zelfstandig: 64 PROCENT

Vandaag, 07 sept

[Graph showing activity levels at different times of the day, with a peak in the afternoon.]
Hospital Fit

Overzicht per week

BEWEGING
621
MINUTEN

ZELFSTANDIG
55
PROCENT

Ma 29-08 t/m Zo 04-09

78
Minuten

Maastricht UMC+
Hospital-fit

Liggen naar zittend:
Standby assistentie

Zittend naar liggend:
Standby assistentie

Zittend naar staand:
Matige assistentie

Aankleden:
Standby assistentie

traplopen:
Niet opgegeven

BEVESTIGEN
Hospital Fit

Overzicht algemeen

BEWEGING
251
MINUTEN

ZELFSTANDIG
64
PROCENT

Vandaag, 07 sept

Arm strek
Lorem ipsum dolor sit
10 x 4 min

Knie buig - strek
Lorem ipsum dolor sit
5 x 3 min

Enkel
Lorem ipsum dolor sit
Aim.... Towards a proactive new multidisciplinary care pathway

Identify high-risk patients
multidisciplinary screening

Better in, Better out
Oncological Abdominal surgery

Critical zone

Time

Indication
Risk screening
Prehabilitation
Admission
Surgery
Recovery
(Department mobilization)
Discharge

P4 medicine
• Predictive
• Preventive
• Personalized
• Participatory

Multidisciplinary oncological rehabilitation

All stages of cancer
Multidisciplinary oncological rehabilitation

Steep ramp test

6-minute walk test

Belasting (watt)

Baseline | After

Baseline | After

Afstand (m)

Baseline | After
Are there any questions?

Better in, Better out MUMC+

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