Objectives

- Anaesthetic management
- Postoperative delirium
- Geriatric assessment in the perioperative period
- Does anaesthesia could influence recurrence of cancer?

Elderly patients with cancer

- Too old
- Too sick
- Too expensive?

Anaesthesia-related deaths in the United States (1999-2005) and France

Predictors of 1-year Mortality

Univariate analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Relative risk (odds ratio) (95 % CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlson Comorbidity Score (3+ versus 0 – 2)</td>
<td>13.091 (7.722 – 25.027)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>ASA physical status Class 3, 4 versus Class 1</td>
<td>8.300 (2.009 – 34.289)</td>
<td>0.0035</td>
</tr>
<tr>
<td>Age (65+ versus 18 – 39 yr)</td>
<td>4.459 (2.032 – 9.784)</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

Multivariate analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Relative risk (odds ratio) (bootstrapped 95 % CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlson Comorbidity Score (3+ versus 0 – 2)</td>
<td>16.116 (10.110 – 25.717)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Cumulative deep hypnotic time (per h)</td>
<td>1.244 (1.062 – 1.441)</td>
<td>0.0121</td>
</tr>
<tr>
<td>Systolic blood pressure &lt; 80 mm Hg (per min)</td>
<td>1.038 (1.006 – 1.060)</td>
<td>0.0125</td>
</tr>
</tbody>
</table>
**Perioperative Risk in Elderly Patients**

- High prevalence of co-morbidities
- Preoperative malnutrition
- Polypharmacy
- Increased risk for postoperative complications, infections, sepsis
- Higher morbidity and mortality
- Increased risk for postoperative delirium and POCD
- Length of stay in hospital
- Discharge to nursery homes
- Increased costs


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**Preoperative Risks in Elderly Patients**

- **Age-related changes of the cardiovascular system**
  - Increased incidences: Hypertension, Ischaemic Heart Disease, Arrhythmia
  - Systolic and diastolic dysfunction
  - 1/3 of perioperative morbidity and mortality is caused by cardiovascular disease

- **Age-related changes of the respiratory system**
  - Decreased sensitivity vs. Hypoxia and hypercapnia
  - Ventilation; FRC

Blommers E. et al., Z Gerontol Geriat 2011; Pisani MA, J Intensiv Care Med 2009

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**Anaesthetic Management**

**AIM: Maintenance of organ function Stress-protection**

**Preoperative Evaluation**

- Functional reserve
- Multimorbidity
- Polypharmacology
- Optimising therapy?
- Cancer specific considerations

**Intraoperative**

- Haemodynamic stability
- Normothermia
- GA plus Regional anaesthesia

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**Anaesthetic Management: Intraoperative Considerations**

- Short fasting times
- Preoperative drugs: short acting drugs
- Intraoperative:
  - Short acting drugs
  - Normothermia, Avoidance of hypotension
  - Avoidance of too deep anaesthesia
  - Prophylaxis of nausea and vomiting
  - Considering fast track concepts
  - Combination of General anaesthesia and thoracic anaesthesia
  - Avoidance of catheters and tubes
Postoperative: multimodal concepts

- Pain Management
- Patient controlled analgesia
- Mobilization
- Nutrition
- Screening for delirium
- IMCU / ICU

Older Patients (>60yrs)

- Frequent postoperative complication: 14-56%
- Up to 60% of the patients after long-time analgesic and sedative therapy
- Up to 80% of patients being mechanical ventilated
- Hip-Fracture > 35-85%
- On the ICU > 19-82%
- Cancer patients: chemotherapy induced delirium, disease-related

Postoperative Delirium

In 66-84% delirium is not diagnosed!

Subtypes

- hyperactive delirium > ca. 15%
- hypoactive delirium > ca. 25%
- mixed > ca. 59%

Delirium: Consequences

- Longer stay in hospital/ ICU
- Increased morbidity
- Increased mortality
- Increased cognitive impairment
- Increased risk for dementia
- Increased discharge in a nursery home
- Increased costs

Patient Selection: Stages of Aging

Primary/Healthy
- No activity limitations
- Reduced functional reserve

Intermediate/ Vulnerable
- Functional reserve critically reduced
- Some recovery possible

Secondary or frailty
- No recovery of functional reserve
- Severe limitations

Near Death
- No functional reserve

CGA: 30-day morbidity

<table>
<thead>
<tr>
<th>Component of PACE</th>
<th>Any complication</th>
<th>Major complication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RRa 95% CI</td>
<td>RRa 95% CI</td>
</tr>
<tr>
<td>MMS abnormal (&lt; 24)</td>
<td>1.23 0.81-1.88</td>
<td>1.08 0.48-2.44</td>
</tr>
<tr>
<td>ADL dependent (&gt; 0)</td>
<td>1.41 0.95-2.10</td>
<td>1.87 0.95-3.69</td>
</tr>
<tr>
<td>IADL dependent (&lt; 8)</td>
<td>1.43* 1.03-1.98</td>
<td>1.65 0.88-3.08</td>
</tr>
<tr>
<td>GDS depressed (&gt; 4)</td>
<td>1.30 0.93-1.81</td>
<td>1.69 0.93-3.08</td>
</tr>
<tr>
<td>BFI mod/severe fatigue (&gt; 3)</td>
<td>1.52* 1.09-2.12</td>
<td>1.24 0.67-2.27</td>
</tr>
<tr>
<td>ASA abnormal (≥ 2)</td>
<td>1.00 0.73-1.38</td>
<td>1.96* 1.09-3.53</td>
</tr>
<tr>
<td>PS abnormal (&gt; 1)</td>
<td>1.64* 1.07-2.52</td>
<td>1.97 0.92-4.23</td>
</tr>
<tr>
<td>Satariano's index (1)</td>
<td>1.11 0.78-1.59</td>
<td>1.29 0.66-2.44</td>
</tr>
<tr>
<td>Satariano's index (2+)</td>
<td>1.58 0.88-2.85</td>
<td>1.95 0.74-5.18</td>
</tr>
</tbody>
</table>

Preoperative Geriatric Assessment

Table 1. Characteristics of Elderly Surgical ICU Patients With and Without Six-Month Mortality

| Age (yr) | 76.1 ± 7.3 | 73.9 ± 6.2 | 0.1285 |
| Weight (kg) | 70.4 ± 9.9 | 69.1 ± 8.7 | 0.9174 |
| ASA score | 3.2 ± 1.4 | 3.2 ± 1.3 | 0.6857 |
| Medications (≥ 4) | 6.3 ± 3.2 | 6.9 ± 3.4 | 0.7811 |

*P < 0.005

Thomassen JH et al. Crit Care 2006
Kalisvaart et al. JAGS 2005
Ely et al. JAMA 2004
Conclusions
Tailored Anaesthesia
Optimising Preoperative Therapies
Preoperative Geriatric Assessment

Multi-Disciplinary Team
Nutrition
Delirium: Screening, Prophylaxis

Pain Management

Do not harm!
Thank you!