Older adults with cancer are a growing segment of the population
Older Adults are underrepresented in clinical trials
Older patients are a heterogeneous population

Chronological Age ≠ Physiologic Age
Classic Oncology Performance Scales

- KPS developed in 1948 to assess patients receiving chemotherapy for lung cancer
- Use in clinical trials transitioned from assessment of therapeutic efficacy to eligibility
- Both the KPS and ECOG scales are strong independent predictors of clinical outcome in numerous oncology populations
Limitations of KPS and ECOG

• Clinician based and subjective

• Provides no additional prognostic information for patients with no obvious physical impairments

• KPS/ECOG may have limited use for toxicity risk stratification

• KPS/ECOG scales are only administered during in-person clinic visits
Comprehensive Geriatric Assessment:
Components detect vulnerability and aging-related issues associated with mortality

Interdisciplinary Team Approach:
- Physician
- Nurse
- PT/OT
- Nutritionist
- Pharmacist
- Social Worker
- Neuropsychologist
Comprehensive Geriatric Assessment: (CGA)

Well validated tools available to assess these domains:

- **Functional Status**
- **Cognitive Status**
- **Comorbidity**
- **Mental Health**
- **Nutritional Status**
- **Pharmacy**
- **Geriatric Syndromes**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Potential Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function Status</td>
<td>Instrumental Activities of Daily Living (IADL)</td>
</tr>
<tr>
<td></td>
<td>Activities of Daily Living (ADL)</td>
</tr>
<tr>
<td></td>
<td>Timed Up and Go (TUG) or gait speed</td>
</tr>
<tr>
<td></td>
<td>Vision and hearing assessment</td>
</tr>
<tr>
<td></td>
<td>Falls assessment</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>Number of comorbidities</td>
</tr>
<tr>
<td></td>
<td>Number of medications</td>
</tr>
<tr>
<td>Cognition</td>
<td>Mini-Cog, Mini-Mental State Exam (MMSE), or Montreal Cognitive Assessment (MoCA)</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Unintentional weight loss in past 6 months, Mini Nutritional Assessment (MNA)</td>
</tr>
<tr>
<td>Body Composition</td>
<td>Body mass index (BMI), Lean body mass assessment</td>
</tr>
<tr>
<td>Psychological</td>
<td>Geriatric Depression Scale (GDS), Patient Health Questionnaire-9 (PHQ-9)</td>
</tr>
<tr>
<td>Social Support</td>
<td>Medical Outcomes Survey (MOS) social support survey</td>
</tr>
</tbody>
</table>
Comprehensive Geriatric Assessment:
Identifies age-related problems not typically identified by a routine H&P in >50%
Comprehensive Geriatric Assessment

Advantages: Risk Prediction - Overall Survival

Any IADL deficit

Dementia
Comprehensive Geriatric Assessment:

Advantages: Predicts Risk of Surgical Complications

**Figure 2.** Meta-analysis. Forest plot for a meta-analysis of studies evaluated the association of polypharmacy (≥5 medications) and postoperative complications (using the Clavien-Dindo classification).

Abbreviation: CI, confidence interval.
Comprehensive Geriatric Assessment:

Advantages: Risk Prediction - Early Mortality

Comorbidities and Nutritional Status

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hazard ratio</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model with CGA-elements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70–79</td>
<td>1.00</td>
<td></td>
<td>.33</td>
</tr>
<tr>
<td>80–94</td>
<td>.73</td>
<td>0.40 to 1.36</td>
<td></td>
</tr>
<tr>
<td>Cancer stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TNM 0, I, and II</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TNM III</td>
<td>2.28</td>
<td>1.08 to 4.84</td>
<td>.03</td>
</tr>
<tr>
<td>TNM IV</td>
<td>11.24</td>
<td>5.36 to 23.57</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Comorbidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild and moderate</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>2.78</td>
<td>1.50 to 5.17</td>
<td>.001</td>
</tr>
<tr>
<td>Nutritional status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk of malnutrition/malnourished</td>
<td>2.39</td>
<td>1.24 to 4.61</td>
<td>.009</td>
</tr>
</tbody>
</table>

Depression

<table>
<thead>
<tr>
<th>Group by Length of follow-up</th>
<th>Study name</th>
<th>Statistics for each study</th>
<th>Risk ratio and 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years +</td>
<td>Nakaya 2006</td>
<td>1.86 0.80 3.45 0.172</td>
<td></td>
</tr>
<tr>
<td>6 years +</td>
<td>Prieto 2005</td>
<td>1.40 0.97 2.02 0.069</td>
<td></td>
</tr>
<tr>
<td>6 years +</td>
<td></td>
<td>1.45 1.06 2.01 0.026</td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td></td>
<td>1.05 0.45 2.46 0.008</td>
<td></td>
</tr>
</tbody>
</table>

Decreased risk | Increased risk
Comprehensive Geriatric Assessment Advantage: Predicts Risk of Serious Chemotoxicity
Comprehensive Geriatric Assessment

Advantages: Improves Communication

A. Patient satisfaction with communication about aging-related concerns. B. Patient satisfaction with overall care. C. Caregiver satisfaction with communication about the patient's age-related conditions. Scores were derived using modified versions of the Health Care Climate Questionnaire. The telephone assessment was 7 to 14 days after the audio-recorded clinic visit.
Comprehensive Geriatric Assessment

Figure 3. Conversations About Aging-Related Conditions

The patient’s visit with the oncologist within 4 weeks of completing the geriatric assessment (GA) was audiorecorded, transcribed, and coded. We used an open coding approach of themes and subthemes to quantify the number of age-related conversations, the number of aging-related discussions with high-quality communication, and the number of conversations of GA-driven recommendations communicated to patients by oncologists.

Advantages: Improves Communication
Comprehensive Geriatric Assessment

Disadvantages

- Time Consuming >1 hr
- Interdisciplinary team availability
- Lack of standardization
- Limited number of Geriatricians and Geriatric Oncologists
Integrating Geriatrics into Oncology

Older Cancer Patients

Perform Screening

- Screen

Standard Treatment

+ Screen

Comprehensive Assessment

Geriatric Syndromes +/- advanced comorbidities

Palliative approach

Moderate dependency or at risk for dependency

Reduced standard treatment
The G8 Screening Questionnaire

- 8 questions
- Nurse administered
- Takes 5-10 min to perform
  - Appetite, weight loss, BMI
  - Mobility
  - Mood and cognition
  - Number of medications
  - Patient-related health
  - Age categories
- Abnormal if score ≤14
  - Preliminary analysis
  - Sensitivity: 89.6%, Specificity: 60.4%

<table>
<thead>
<tr>
<th>Items</th>
<th>Possible answers (score)</th>
</tr>
</thead>
</table>
| Has food intake declined over the past 3 months due to loss of appetite, digestive problems, or chewing or swallowing difficulties? | 0: severe decrease in food intake  
1: moderate decrease in food intake  
2: no decrease in food intake |
| Weight loss during the last 3 months                                  | 0: weight loss > 3 kg  
1: does not know  
2: weight loss between 1 and 3 kg  
3: no weight loss |
| Mobility                                                              | 0: bed or chair bound  
1: able to get out of bed/chair but does not go out  
2: goes out |
| Neuropsychological problems                                           | 0: severe dementia or depression  
1: mild dementia or depression  
2: no psychological problems |
| Body mass index (BMI/ weight in kg/ height in m²)                     | 0: BMI < 18.5  
1: BMI = 18.5 to BMI < 21  
2: BMI = 21 to BMI < 23  
3: BMI = 23 and > 23 |
| Takes more than 3 prescription drugs per day                         | 0: yes  
1: no |
| In comparison with other people of the same age, how do they consider their health status? | 0: not as good  
0.5: does not know  
1: as good  
2: better |
| Age                                                                   | 0: > 85 yr  
1: 80-85 yr  
2: < 85 yr |

Total Score 0-17

Fig. 1: The G8 Screening Questionnaire. BMI = body mass index. Courtesy of Marie E. Wood, MD. Adapted from Soubeyran P, et al.
Overall Survival According to G8 Score
Final Thoughts

• Components of a Comprehensive Geriatric Assessment
• Pros and Cons associated with integration into Oncology
• Reviewed Case
• Future Directions- Comprehensive Geriatric Assessment improve patient outcomes?