The Role that Geriatricians Can Play in the Care of Older Patients with Cancer Across the Care Continuum

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Disclosures: Holly M. Holmes, MD

No relevant financial relationship with commercial interests

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Acknowledgement for use of slides: Tanya Wildes, MD, MSCI, Washington University School of Medicine
Objectives

1. Understand the potential role of primary and consultative geriatrics relating to the continuum of care of an older adult who has received a cancer diagnosis.

2. Understand and use geriatric medicine centered principles and cancer focused geriatric assessment to enhance the delivery of comprehensive supportive cancer care for older adults.
Aging of the global population

Trends in proportion of population age 60 and older, by region, 1990–2030

From Health in 2015: from MDGs to SDGs. World Health Organization
New cancers are increasing, because the numbers of older people are increasing.

Common themes across oncology, supportive care, and geriatric medicine

• Workforce shortages
• Specialty identity
• Shifting to a chronic disease model
• Need to integrate care earlier
• Multidisciplinary focus
There are 3.6 geriatricians for every 10,000 people >75 years in the US.

Significant heterogeneity in survival

Upper, Middle, and Lower Quartiles of Life Expectancy for Women and Men at Selected Ages from the 2008 Life Tables of the United States

Treating Older Adults with Cancer

- Estimating Prognosis (with and without cancer)
- “Staging the Aging” (along with the cancer)
- Shared Decision Making and Communication
Models of shared cancer care

Chemotherapy in older adults: Undertreatment or tailored treatment?

• Breast cancer\textsuperscript{1-4}
• Ovarian cancer\textsuperscript{4,5}
• Colorectal cancer\textsuperscript{6-8}
• Prostate cancer\textsuperscript{9,10}
• Sarcoma\textsuperscript{11}

• Acute myeloid leukemia\textsuperscript{12-14}
• Diffuse large B-cell lymphoma\textsuperscript{15,16}
• Melanoma\textsuperscript{17,18}
• Nonsmall cell lung cancer\textsuperscript{19,20}
• Pancreatic cancer\textsuperscript{21}

\textsuperscript{1}Weiss Ann Surg Oncol 2013
\textsuperscript{2}Malik J Cancer Epidemiol 2013
\textsuperscript{3}van de Water Br J Surg 2012
\textsuperscript{4}Bouchardy JCO 2007
\textsuperscript{5}Fourcadier BMC Cancer 2015
\textsuperscript{6}Ko Clin Colorectal Cancer 2015
\textsuperscript{7}Quipourt JAGS 2011
\textsuperscript{8}Wildes J Geriatr Oncol 2010
\textsuperscript{9}Bratt Eur Urol 2015
\textsuperscript{10}Chen Int J Radia Oncol Biol Phys 2014
\textsuperscript{11}Al-Refaie Ann Surg Oncol 2010
\textsuperscript{12}Finn Curr Opin Hematol 2016
\textsuperscript{13}Master Anticancer Res 2016
\textsuperscript{14}Medeiros Ann Hematol 2015
\textsuperscript{15}Ha Cancer Res Treat 2016
\textsuperscript{16}Hamlin Oncologist 2014
\textsuperscript{17}Balch Ann Surg Oncol 2015
\textsuperscript{18}Monroe Ann Surg Oncol 2013
\textsuperscript{19}Hardy Cancer 2009
\textsuperscript{20}Ramsey JCO 2004
\textsuperscript{21}Enewold J Gastrointest Cancer 2015

Slide courtesy of Tanya Wildes
Chemotherapy in the noncurative setting: Overtreatment

• Aggressive care in the end-of-life is common
  – 4.5% of Medicare beneficiaries receive chemotherapy within 14 days of death¹
  – Chemotherapy use in last 30 days similar across age spectrum²

• Chemotherapy use in the end-of-life:
  – No difference in survival³
  – Quality of death poorer³
  – Less likely to die in their preferred place⁴

¹Wang J Geriatr Oncol 2016
²Mack Cancer 2015
³Prigerson JAMA Oncol 2015
⁴Wright JAMA 2016
Older people are at greater risk of toxicities

- Decline in renal function with age
- Similar benefits from adjuvant chemotherapy for breast cancer, but higher side effects and TRM with age.
- Similar benefit in DFS or OS with 5-FU based tx but greater risk of heme toxicities.
- Greater risk of death with induction therapy and SCT for leukemias.

NCCN Guidelines Senior Adult Oncology 2014.
The Oncologist’s Focus

The Gerontologist’s Focus

My bias: the Geriatrician’s Focus

- Social Resources
- Medical Conditions
- Medications
- Psychological Reserve
- Nutritional Status
- Physical Function
- Functional Status

Patient
Cases: With and Without Geriatric Assessment (GA)

Case 1
• 78 year old woman with breast cancer recurrence
• Referred to Geriatrics because she thinks she’s “too old for treatment”
• Had left breast cancer in 1998
• Now presents with right breast cancer

Case 2
• 73 year old man diagnosed with pancreatic cancer
• Seems “older than his age” and his surgeon is concerned about his likelihood of recovering from surgery
• His daughter moved in with him after his wife died one year ago
Cases: without GA

Case 1
• Patient refuses treatment and is lost to follow up (?)

Or
• Patient completes partial treatment and stops AI after 8 months

Case 2
• Receives FOLFIRINOX and is admitted to the ICU; dies of sepsis (?)
Cases: with GA

Case 1
• GA: FIT, no issues except tremor and spinal stenosis
• Encourage to pursue “the same therapy a 50 year old woman in your situation would receive”
• Completes standard therapy but unable to complete AI

Case 2
• GA: FRAIL, due to moderate dementia and severe comorbidity >> safe home care arranged
• Hospitalized for dehydration after 1st dose gemcitabine
• Enrolls in hospice and lives 11 months
NCCN Senior Adult Oncology Guidelines

Is the patient at moderate or high risk of dying or suffering from cancer given his/her overall life expectancy?

Does the patient have decision-making capacity?

Are goals and values consistent with treating cancer?

Are there risk factors for adverse outcomes from cancer treatment?
Geriatric Assessment (GA)

• Test multiple domains that are associated with bad outcomes.
• Use of validated tools to measure common geriatric problems.

• Ability to diagnose and intervene to treat reversible problems.
Recommendations for Geriatric Assessment

Adults 75+:
Geriatric Assessment

Adults 65+ who fail screening

Normal
- Treat based on organ function
  - Dose escalation
  - Modify supportive plan

Abnormal
- Focus on treatable conditions
  - Dose reduction
  - Primarily palliative care

SIOG.org
Incorporating GA into cancer care

- **Comorbid conditions**: number and severity
- **Medications**: drug interactions, inappropriate meds
- **Cognitive**: screening tools for cognition and executive function
- **Affective**: screening for depression and anxiety
- **Nutritional**: weight loss, nutrition risk
- **Social**: living situation, support at home, ability to get meds
- **Functional**: activities/instrumental activities of daily living
- **Physical**: gait speed, timed-up-and-go, short physical performance battery

Utility of Comprehensive Geriatric Assessment in Older Adults with Cancer

- **Risk Prediction**
  - Chemotherapy Toxicity
  - Survival

- **Cancer Treatment Modification**
  - Modification of treatment/chemotherapy
  - Modification of supportive care

- **Intervention**
  - General Geriatrics vs. Cancer-focused
  - Goals

Slide courtesy of Tanya Wildes
# CRASH Score to Predict Toxicity

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Hematologic score</strong></td>
<td></td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>≤72</td>
</tr>
<tr>
<td>IADL</td>
<td>26-29</td>
</tr>
<tr>
<td>LDH</td>
<td>0-459</td>
</tr>
<tr>
<td>Chemotox</td>
<td>0-0.44</td>
</tr>
<tr>
<td><strong>Nonhematologic score</strong></td>
<td></td>
</tr>
<tr>
<td>ECOG PS</td>
<td>0</td>
</tr>
<tr>
<td>Cognition</td>
<td>MMSE 30</td>
</tr>
<tr>
<td>Nutrition</td>
<td>MNA 28-30</td>
</tr>
<tr>
<td>Chemotox</td>
<td>0-0.44</td>
</tr>
</tbody>
</table>

CRASH Score to Predict Toxicity

### Table 5. Predictive Model

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Prevalence</th>
<th>Grades 3 to 5 Toxicity</th>
<th>OR</th>
<th>95% CI</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥ 72 years</td>
<td>270</td>
<td>54</td>
<td>163</td>
<td>60</td>
<td>2.82</td>
</tr>
<tr>
<td>Cancer type GI or GU</td>
<td>185</td>
<td>37</td>
<td>120</td>
<td>65</td>
<td>2.12</td>
</tr>
<tr>
<td>Chemotherapy dosing, standard dose</td>
<td>380</td>
<td>76</td>
<td>204</td>
<td>54</td>
<td>3.52</td>
</tr>
<tr>
<td>No. of chemotherapy drugs, polychemotherapy</td>
<td>351</td>
<td>70</td>
<td>192</td>
<td>55</td>
<td>2.65</td>
</tr>
<tr>
<td>Hemoglobin &lt; 11 g/dL (male), &lt; 10 g/dL (female)</td>
<td>62</td>
<td>12</td>
<td>46</td>
<td>74</td>
<td>4.64</td>
</tr>
<tr>
<td>Creatinine clearance (Jelliffe, ideal weight) &lt; 34 mL/min</td>
<td>44</td>
<td>9</td>
<td>34</td>
<td>77</td>
<td>5.44</td>
</tr>
<tr>
<td>Hearing, fair or worse</td>
<td>123</td>
<td>25</td>
<td>76</td>
<td>62</td>
<td>2.69</td>
</tr>
<tr>
<td>No. of falls in last 6 months, 1 or more</td>
<td>91</td>
<td>18</td>
<td>61</td>
<td>67</td>
<td>4.27</td>
</tr>
<tr>
<td>IADL: Taking medications, with some help/unable</td>
<td>39</td>
<td>8</td>
<td>28</td>
<td>72</td>
<td>3.38</td>
</tr>
<tr>
<td>MOS: Walking 1 block, somewhat limited/limited a lot</td>
<td>109</td>
<td>22</td>
<td>69</td>
<td>63</td>
<td>2.86</td>
</tr>
<tr>
<td>MOS: Decreased social activity because of physical/emotional health, limited at least sometimes</td>
<td>218</td>
<td>44</td>
<td>126</td>
<td>58</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Abbreviations: GU, genitourinary; IADL, instrumental activities of daily living; MOS, Medical Outcomes Study; OR, odds ratio.
CARG Score Validation

A Development and B Validation cohorts

Hurria A et al. JCO 2016.
# GA in Surgical Oncology

<table>
<thead>
<tr>
<th>CATEGORIZATION BASED ON CGA DOMAINS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIT</strong></td>
</tr>
<tr>
<td>All of:</td>
</tr>
<tr>
<td>Function</td>
</tr>
<tr>
<td>Comorbidity</td>
</tr>
<tr>
<td>Polypharmacy</td>
</tr>
<tr>
<td>Nutrition</td>
</tr>
<tr>
<td>Cognition</td>
</tr>
<tr>
<td>Depression</td>
</tr>
</tbody>
</table>

Prediction of toxicity: 3.13 (1.65–5.92) times the odds of severe toxicity for frail vs. nonfrail based on CGA in 178 patients 70+ years with colorectal cancer.

IADLs associated with perioperative complications.

GA: Predicting toxicity in myeloma

Non-hematologic Adverse Events

Discontinuation of Therapy

Palumbo Blood 2015
### CGA: Predicting Early Mortality

**Table 4. Logistic Regression Model Analysis for Early Deaths (within 6 months) That Occurred for All Patients Who Received First-Line Chemotherapy (n = 339)**

<table>
<thead>
<tr>
<th>Risk Factor*</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2.40</td>
<td>1.20 to 4.82</td>
<td>.013</td>
</tr>
<tr>
<td>Tumor stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Localized</td>
<td>1</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Advanced</td>
<td>3.9</td>
<td>1.59 to 9.73</td>
<td>.003</td>
</tr>
<tr>
<td>Mini Nutritional Assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good nutrition, score &gt; 23.5</td>
<td>1</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>At risk/poor nutrition, score ≤ 23.5</td>
<td>2.77</td>
<td>1.24 to 6.18</td>
<td>.013</td>
</tr>
<tr>
<td>Timed Get Up and Go</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No impairments (≤ 20 seconds)</td>
<td>1</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Impaired</td>
<td>2.55</td>
<td>1.32 to 4.94</td>
<td>.006</td>
</tr>
</tbody>
</table>

**NOTE:** Model was adjusted for treatment site (regional and teaching hospitals vs community hospitals). *Age, tumor site, Activities of Daily Living, Mini-Mental State, platelet count, and performance status were also included in the model but not retained because they were not significant.

Soubeyran J Clin Oncol 2012
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Slide courtesy of Tanya Wildes
A conceptual model of decision-making

- Tumor Biology/Treatment Effectiveness
- Personalized Decision-making
- Patient Preferences
- Toxicity

Slide courtesy of Tanya Wildes
Patient Preferences

Figure 2. Treatment Preferences According to the Burden and Outcome of Treatment.

CGA to Guide Treatment Planning

- 161 patients age 73-97
- Colorectal & GI > Breast > Lung > Other
- CGA: severe comorbidity in 75, ADL impaired in 52, decreased cognition in 42, malnutrition in 104, depression in 39 people
- Results:
  - Same dose – 82 (53 required geriatric intervention)
  - Lower dose – 34
  - Higher dose – 45

Treatment Modifications Based on CGA

- French ASRO study
- N=217, mean age 83 years
- 40% treatment recommendation modifications
- On multivariate analysis: ADL dependence and Fried’s frailty markers associated with treatment modifications
CGA for treatment allocation

Outcome | Comparison
--- | ---
TFFS | No different
Toxicity | 11.8% vs 4.8%
PFS | No different
OS | No different
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Slide courtesy of Tanya Wildes
CGA intervention associated with improved chemotherapy tolerance

• Pre-post study design
• N=135, age 70+ undergoing chemotherapy
• Participants completed self-report CGA
• In intervention arm, high-risk patients referred to geriatrician
• Outcomes:
  – Intervention group were more likely to complete treatment as planned (33.8% vs 11.4%, p=0.006) and required fewer treatment modifications (43.1 vs 68.8%, p=0.006)
  – Rate of grade 3+ toxicity similar (43.8% vs 52.9%, p=0.29)
Gap 70+ Study

Cluster Randomized Trial

**Patients**
- Age ≥ 70
- Advanced solid tumor malignancy
- To receive a new chemotherapy regimen or other regimen with similar prevalence of toxicity

**Chemotherapy or other agents with similar prevalence of toxicity (NCI CTCAE version 4.0)**

**Oncology Decision Making**
- Chemotherapy or other agents with similar prevalence of toxicity (Drugs, Doses, Schedule)

**Randomize Sites**

**Arm 1**
- Physician provided with GA summary and GA-driven recommendations for each enrolled participant prior to starting chemotherapy/agents with similar prevalence of toxicity

**Arm 2**
- Usual Care

**OUTCOMES**
- Grade 3-5 TOXICITY
- Survival
- Functional and physical performance

ASCO Annual Meeting 2016, Abstract #10055.

Slide courtesy of PI Supriya Mohile
GA-driven recommendations

How can GA drive non-oncologic intervention and cancer treatment decision making?

- Panel of 30 experts
- 3 rounds of survey
- 67% agreement = consensus

Models of shared cancer care
Care of older survivors

• Adverse event management
• Short- and long-term toxicity assessment
• Ongoing surveillance and screening
• End of life care
Cancer Increases the Odds of Frailty and Vulnerability in Older Persons

Increased Prevalence of Geriatric Syndromes in Cancer Survivors

- Vision loss
- Hearing loss
- Eating problems
- Memory loss/dementia
- Incontinence
- Osteoporosis
- Depression
- Falls


**Fig 1.** Prevalence of geriatric syndromes (weighted prevalence, $\chi^2$ tests; $P < .001$).
The importance of shared care at the end of life

- Older people less likely to receive high quality palliative care: less informed, not assessed, undertreated
- Older patients more likely to value quality of life and function
- Oncologists and older patients want primary care involved

Lindskog et al Eur J Cancer 2015
Competing goals in older patients with cancer?

Slide courtesy of Tanya Wildes
Summary

• Incorporating geriatricians or geriatrics care principles into cancer care can provide value information on prognostication and modification to treatment plans with a goal toward more patient-centered care.

• Shared care models between oncology, palliative care, and geriatrics may represent best supportive care.
Thank you

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