Improving Care Delivery and Outcomes for Older Patients with Cancer and their Caregivers

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Editor-in-Chief, Journal of Geriatric Oncology
Co-Lead, Cancer and Aging Research Group
Epidemiology of Cancer in Older Adults

**FIGURE 1.** Average Annual Incidence Rates and Case Distribution by Age, United States, 2011 to 2015.

DeSantis et al, CA Cancer J, 2019
IOM Report: Cancer Care System “in Crisis”

- 60% of cancer survivors 65+
- “One problem among many”
- Limited (but growing) evidence on care of older adults
- Workforce with little geriatric training
- Support for caregivers is lacking

http://jama.jamanetwork.com/article.aspx?articleid=1764058#jvp130139r1
Outline

• ASCO geriatric oncology guidelines
• Using geriatric assessment to foster high quality communication and improve outcomes
• Enhancing our understanding of the experience and preferences of older patients and their caregivers
  - What Matters!
Common Concerns for Older Patients

- Needs assistance with daily activities
- Multiple comorbid medical conditions
- Mild cognitive impairment
- Limited social support
- Lives alone
- Transportation issues
- Polypharmacy
- Frailty

Likely Did Not Participate in Registration & Cooperative Group Studies
Geriatric Assessment

• Geriatric assessment (GA) is an approach to the evaluation of the older patient, leading to the early identification and treatment of areas of vulnerability.

• The GA evaluates the following domains:
  • Functional and physical status
  • Objective physical performance
  • Comorbid medical conditions
  • Cognition
  • Nutritional status
  • Psychological status
  • Social support

• Each domain is an independent predictor of morbidity and mortality in older patients with cancer

Why Geriatric Assessment?

- GA captures clinically important issues that otherwise go undetected
- GA variables can identify older adults who are at high risk of adverse outcomes from cancer treatment
- Through improved communication, GA can help guide decision-making and interventions to improve outcomes of older patients with cancer and their caregivers

Mohile (with Hurria&Dale), et al. ASCO guidelines in geriatric oncology. JCO; 2018
Validation of a Prediction Tool for Chemotherapy Toxicity in Older Adults With Cancer

<table>
<thead>
<tr>
<th>Risk factor for Grade III-V Toxicity</th>
<th>OR (95% CI)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥73 years</td>
<td>1.8 (1.2-2.8)</td>
<td>2</td>
</tr>
<tr>
<td>GI/GU Cancers</td>
<td>2.1 (1.4-3.2)</td>
<td>3</td>
</tr>
<tr>
<td>Standard dose chemotherapy</td>
<td>2.1 (1.3-3.5)</td>
<td>3</td>
</tr>
<tr>
<td>Polychemotherapy</td>
<td>1.7 (1.1-2.6)</td>
<td>2</td>
</tr>
<tr>
<td>Anemia (Male &lt; 11, female &lt;10)</td>
<td>2.3 (1.1-4.6)</td>
<td>3</td>
</tr>
<tr>
<td>Cr Cl &lt;34 ml/min (using Jeliffe equation/IBW)</td>
<td>2.5 (1.1-5.4)</td>
<td>3</td>
</tr>
<tr>
<td>Falls in last 6 months</td>
<td>2.5 (1.4-4.3)</td>
<td>3</td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>1.7 (1.0-2.7)</td>
<td>2</td>
</tr>
<tr>
<td>Limited ability to walk 1 block</td>
<td>1.7 (1.0-2.8)</td>
<td>2</td>
</tr>
<tr>
<td>Requires assistance with medications</td>
<td>1.5 (0.7-3.2)</td>
<td>1</td>
</tr>
<tr>
<td>Decreased social activities</td>
<td>1.4 (0.9-2.0)</td>
<td>1</td>
</tr>
</tbody>
</table>

Possible score  0-25
Real World Usage of the Geriatric Assessment

Website Usage:
- ~6,000 hits/month on the GA Tools Page
- ~16,000 hits/month overall for the website
- Visitors from 24 countries
- 45% international visitors
Practical Assessment and Management of Vulnerabilities in Older Patients Receiving Chemotherapy: ASCO Guideline for Geriatric Oncology

This ASCO Clinical Practice Guideline Addresses Four Questions:

1. Should geriatric assessment (GA) be utilized in older adults with cancer to predict adverse outcomes from chemotherapy?
2. For older patients who are considering undergoing chemotherapy, which GA tools should clinicians use to predict adverse outcomes?
3. What general (i.e., non-cancer specific) life expectancy data for community-dwelling patients should clinicians consider to estimate mortality and best inform treatment decision-making for older patients with cancer?
4. How should GA be used to guide management of older patients with cancer?

www.asco.org/supportive-care-guidelines ©American Society of Clinical Oncology 2018. All rights reserved.
Questions 1&2

• Should GA be used?
  – Yes
  – Evidence quality: High
  – Strength of recommendation: Strong

• Which tools?
  – Evidence quality: Moderate
  – Strength of recommendation: Moderate

Box 2: Summary of a Minimum Data Set for Practical Assessment of Vulnerabilities in Older Patients With Cancer

See Table 1 for more details and rationale.

1. Predict chemotherapy toxicity (if clinically applicable): Cancer and Aging Research Group or Chemotherapy Risk Assessment Scale for High-Age Patients tools
2. Estimate (noncancer) life expectancy (if clinically applicable): ePrognosis
3. Functional assessment: instrumental activities of daily living
4. Comorbidity assessment: medical record review or validated tool
5. Screening for falls, one question: how many falls or falls with an injury have you had in the previous 6 months (or since your last visit)?
6. Screening for depression: Geriatric Depression Scale or other validated tool
7. Screening for cognitive impairment: Mini-Cog or Blessed Orientation-Memory-Concentration test
8. Screening for malnutrition: weight loss/body mass index
Question 3: Estimate Non-Cancer Specific Life Expectancy?

- [https://eprognosis.ucsf.edu](https://eprognosis.ucsf.edu)
- Either the Schonberg or Lee index
- Answer “no” to “presence of cancer” question
- Evidence quality:
  - High that it predicts mortality
  - Insufficient that it improves outcomes or decision-making
- Strength of recommendation:
  - Strong that it predicts mortality
  - Weak that it improves outcomes or decision-making
Question 4

- How should GA guide management?
  - Evidence quality: moderate
  - Strength of recommendation: moderate

<table>
<thead>
<tr>
<th>Measure</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Deficit/Falls</td>
<td>PT and/or OT; Fall prevention discussion; Home safety evaluation</td>
</tr>
<tr>
<td>Comorbidity Considerations</td>
<td>Involve caregiver to assess risks; Involve PCP/geriatrician; Review and minimize medications; Assess medication adherence</td>
</tr>
<tr>
<td>Screen Positive on Cognitive Screen</td>
<td>Assess decision-making capacity; Identify and involve health care proxy; Delirium risk counselling; Medication review; Work up with specialist</td>
</tr>
<tr>
<td>Depression</td>
<td>Referral; Consider cognitive behavioral therapy; Social work; Consider pharmacologic therapy</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>Nutrition counselling; Referral to nutritionist; Assess need for extra support</td>
</tr>
</tbody>
</table>
## Implementing Interventions

<table>
<thead>
<tr>
<th>Domain</th>
<th>Assessment</th>
<th>Selected Examples of GA-driven interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Performance</td>
<td>Fall history</td>
<td>- Physical therapy consult for balance/strength training and assist device evaluation</td>
</tr>
<tr>
<td></td>
<td>Standardized assessment such as Short Physical</td>
<td>- Home safety evaluation and modification</td>
</tr>
<tr>
<td></td>
<td>Performance Battery</td>
<td>- LifeAlert system</td>
</tr>
<tr>
<td></td>
<td>Assess for neuropathy</td>
<td>- Consider chemotherapy with low risk of neuropathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Osteoporosis risk review</td>
</tr>
</tbody>
</table>
Patient and Clinician Communication

• The assessment of the older cancer patient’s values and preferences is critical to informed treatment decision-making.

• Older adults with cancer and their caregivers are presented with complex information, but age-related concerns and outcomes are not usually discussed.

• Providing older cancer patients and their caregivers and oncologists with a summary of GA information may improve communication about age-related health concerns and satisfaction with care.
Goals of our PCORI-funded NCORP Study

- To improve communication about age-related concerns of older patients with advanced cancer and their caregivers
  - Direct communication about age-related concerns in clinical encounters
  - Patient satisfaction with communication about age-related concerns
- Providing a summary of geriatric assessment results with recommendations for GA-guided interventions
  - Has potential to improve communication about age-related concerns of older patients with cancer and their caregivers
University of Rochester NCORP Research Base

The 2017 URCC NCORP Research Base Annual Meeting with 20 NCORP Affiliates
<table>
<thead>
<tr>
<th>Did you or your staff complete any of the following with the patient during the clinic consultation (study visit)?</th>
<th>Completed</th>
<th>Not Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1. Discuss patient's concerns about cognition.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Elicit input and perspectives from caregiver(s) about the patient's cognition.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>3. Assess decision-making capacity.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>- Elicit health care proxy information and input if the patient lacks decision-making capacity.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Carefully weigh risks and benefits given limited data and potential for further cognitive impairment and functional impairment.</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Study Design and Eligibility

Cluster Randomized Trial

- Arm 1: GA summary and GA-guided interventions provided to each enrolled patient, caregiver, and physician
- Arm 2: Control

- Communication
- Patient satisfaction with communication (patient and caregiver)
- Quality of life (patient-reported and caregiver-reported)

Audio recorded clinic visit for each patient after GA
Patient and Caregiver Eligibility Criteria

Patients

• Age ≥70 years
• Diagnosis of advanced solid tumor or lymphoma
• Have ≥1 GA Impairment (other than polypharmacy)
• Will see their oncologist for next ≥3 months and willing to participate in study visits
• Have decision-making capacity, or, if not, oncologist has obtained consent from health-care proxy
• Able to read and understand English

Caregivers

• One caregiver was chosen by the patient to enroll using the question:
  - “Is there a family member, partner, friend, or caregiver (age 21 or older) with whom you discuss or who can be helpful in health-related matters?”
• Caregivers not required for patients to participate
• Able to provide informed consent
• Able to read and understand English
• Able to read and understand English
Accrual: 305 oncologists, 541 patients, 414 caregivers
Improving the Care of Older Adults with Cancer is Important: Oncologists Want Guidance

<table>
<thead>
<tr>
<th>n=305 community oncologists</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Neutral (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe that the medical care of older adults with cancer needs to be improved</td>
<td>89%</td>
<td>3%</td>
<td>8%</td>
</tr>
<tr>
<td>I would appreciate additional training in topics related to the care of older adults with cancer</td>
<td>79%</td>
<td>4%</td>
<td>17%</td>
</tr>
<tr>
<td>I routinely ask my patients if they have a history of recent falls</td>
<td>70%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>I frequently order home safety evaluations for my older patients</td>
<td>41%</td>
<td>35%</td>
<td>25%</td>
</tr>
<tr>
<td>I frequently enlist the help of a social worker</td>
<td>31%</td>
<td>37%</td>
<td>32%</td>
</tr>
<tr>
<td>I use standardized geriatric assessment tools to help me make decisions about my patients</td>
<td>23%</td>
<td>49%</td>
<td>29%</td>
</tr>
</tbody>
</table>

Mohile et al. JNCCN; 2018
GA domains for all patients (N=541)

Mohile et al, ASCO 2018
GA Improves Patient and Caregiver Satisfaction with Communication

- Health Care Climate Questionnaire (5 questions, scale: 0-20)
- Health Care Climate Questionnaire modified for age-related concerns (modified) (7 questions, scale: 0-28)

Mohile et al.; JAMA Onc, 2019
GA Improves Communication about Age-Related Concerns

Mohile et al, ASCO 2018
SCOREBoard Members: Improving our Understanding of Stakeholder Engagement

- I’ve been highly critical of PI’s who say they have patient advocates as collaborators or partners in their study, when they’ve really only been tokens. At times I wondered if it was even possible to establish real partnerships between researchers and patients/patient advocates. Now I know it is possible.

- I have found that what resonated with me perhaps more than any single part of this experience was the critical importance of **authentic communication** among ALL stakeholders.

“More Caregivers Are No Spring Chickens Themselves”
Paula Span; NYT 2015

Gail Schwartz, 78, helped her husband David, 85, out of his wheelchair at their home in Chevy Chase, Md., where she thinks he does better than he would at a nursing home.
Caregiver Health

- Distress: 44%
- Comorbidity: 39%
- Anxiety: 24%
- Depression: 19%

Kehoe et al. JAGS; 2019
Analysis of Conversations: “Missed Opportunities” to Explore Preferences

• **Caregiver:** Well, she... she’s been spending a lot of time in bed lately. [...] And for some reason she’s not able to stand for more than a few minutes at a time.

• **Oncologist:** I see.

• **Caregiver:** And she doesn’t walk long distances. That’s why she’s in a wheelchair now.

• **Patient:** But I want to get out of this wheelchair. [...] I’ll probably come dancing in here the next time.

• **Oncologist:** And the hope is that we can help you feel better. And how often are you taking the Norco?

Lowenstein et al. JGO; 2018
Goal of our R01-funded NCORP Study

• Primary Aim:
  • To evaluate if providing a GA summary with recommendations for management to oncologists reduces **grade 3-5 toxicity** (CTCAE v4) in patients aged 70+ starting a new regimen with chemotherapy and/or other agents which cause toxicity for advanced cancer

• Secondary Aims:
  • **Survival** at 6 months
  • **Treatment decisions**
  • Functional and Physical Performance
# Management Recommendations

**Example: Physical Performance**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Recommended</th>
<th>Implemented?</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Enter Reason Code</td>
</tr>
<tr>
<td><strong>1. Referrals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Physical Therapy (outpatient or home-based depending on eligibility for home care): request gait/assistive device evaluation, strength and balance training.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Occupational therapy (if eligible for home care, OT referral to do safety evaluation).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Aide services (SW may be able to assist).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Personal Emergency Response information (PERS) especially if alone at any time while receiving treatment (SW may be able to assist).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Study Schema**

**Geriatric Assessment for Patients 70+**

**GA Intervention Arm**
- Oncology physician provided with GA summary and GA-guided recommendations for each enrolled participant prior to starting a new chemotherapy/agents with similar prevalence of toxicity

**Endpoints**
- Clinician-rated grade 3-5 toxicity
- Survival at 6 months
- Treatment decisions
- Functional and physical decline
- Patient-reported toxicities
Any Grade 3-5 CTCAE Toxicity in 3 Months

- Any Grade 3-5 Toxicity
  Adjusted Risk Ratio: 0.74
  95% CI: (0.63-0.87), P < 0.01
  Clustering effect: P = 0.15

- Any Grade 3-5 Hematologic Toxicity
  Adjusted Risk Ratio: 0.85
  95% CI: (0.69-1.05), P = 0.13
  Clustering effect: P = 0.30

- Any Grade 3-5 Non-hematologic Toxicity
  Adjusted Risk Ratio: 0.73
  95% CI: (0.53-0.996), P = 0.047
  Clustering effect: P < 0.01
NCI Tolerability Consortium: Results: Grade ≥ 2 Symptomatic Toxicities (PROCTCAE): Moderate, Severe, Very Severe

- Adjusted Risk Ratio = 0.91
  95% CI: (0.83 - 1.00)
  \( P = 0.05 \)

All 24 symptoms

<table>
<thead>
<tr>
<th>% of patients</th>
<th>GA Intervention</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>76.5%</td>
<td>84.7%</td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Adjusted Risk Ratio = 0.88
  95% CI: (0.81 - 0.95)
  \( P < 0.01 \)

11 core symptoms

<table>
<thead>
<tr>
<th>% of patients</th>
<th>GA Intervention</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>71.8%</td>
<td>82.0%</td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Optimizing Function in Older Cancer Survivors after Chemotherapy

- Chemotherapy completed
  - Physical Function
  - Cognitive Function

Now What?

Survivorship-GEM
- Management via Recommendations and Referrals
- Geriatric Evaluation via Geriatric Assessment (GA)

Survivorship Health Promotion

Survivor and Caregiver receive app-directed Survivorship-GEM
- Physical Function
- Cognitive Function
- Competed Referrals
- Hospitalizations
- Satisfaction with Care

APP

Survivor & Caregiver
Cancer and Aging Research Group

Build the support network:

• Bring together mentors
• Bring together peers
• Present, discuss, and develop research ideas
• Collaborate

Goals:

• Mentor junior geriatric oncology investigators and promote academic productivity
• Design intervention studies
• Improve accrual of older adults to clinical trials

Slide c/o Arti Hurria and team Hurria, JCO; 2008
NIA R21/R33 (MPIs: Dale, Hurria, Mohile): Geriatric Oncology Infrastructure to Improve Clinical Care

1) Accelerate high-quality research at the aging and cancer interface
2) Attract and mentor investigators
3) Combine aging and cancer research to form a pipeline of sustainability for Cores
4) Disseminate these results to the broader community
<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses salary for one hour†</td>
<td>$28</td>
</tr>
<tr>
<td>Complete blood count</td>
<td>$17</td>
</tr>
<tr>
<td>Carcinoembryonic antigen</td>
<td>$50</td>
</tr>
<tr>
<td>Chest X-ray</td>
<td>$67</td>
</tr>
<tr>
<td>Bilateral screening mammography</td>
<td>$321</td>
</tr>
<tr>
<td>Abdominal or chest CT scan</td>
<td>$640</td>
</tr>
<tr>
<td>MRI pelvis</td>
<td>$739</td>
</tr>
<tr>
<td>Liver biopsy</td>
<td>$879</td>
</tr>
<tr>
<td>Whole body PET-CT</td>
<td>$1788</td>
</tr>
<tr>
<td>Colonoscopy with biopsy</td>
<td>$2187</td>
</tr>
<tr>
<td>Breast cancer genomic testing: Oncotype¥</td>
<td>$3416</td>
</tr>
<tr>
<td>Liquid biopsy: Guardant 360§</td>
<td>$5800</td>
</tr>
</tbody>
</table>

Abbreviations: CT, computer tomography; MRI, magnetic resonance imaging; PET, positron emission tomography.

†Based healthcarebluebook.com January 14th, 2017. This website uses a nationwide database of medical payment data to create transparency in pricing for medical procedures. Within the range of pricings, the website’s “reasonable amount” data are presented here.

‡Mean salary for a registered nurse in the USA according to payscale.com

¥Genomeweb.com, reported Medicare reimbursement rate 2016

§Fortune.com/2016/06/05/asco-guardant-liquid-biopsy/, accessed 2017-01-24
## ASCO 2020; Geriatric Assessment Comes of Age

<table>
<thead>
<tr>
<th>Reference</th>
<th>Interventions</th>
<th>Patients</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GAIN</strong></td>
<td>GA intervention vs usual care</td>
<td>Age ≥65 Solid tumors All stages Starting chemotherapy</td>
<td>Decreased chemotherapy toxicity (50 vs 60%, p = 0.02). Increased advance directive completion</td>
</tr>
<tr>
<td>Li et al.</td>
<td>N=600</td>
<td>JCO 38(15_suppl):12010</td>
<td></td>
</tr>
<tr>
<td><strong>GAP-70</strong></td>
<td>GA intervention vs usual care</td>
<td>Age &gt;70 &gt;1 impaired GA domain Incurable solid tumors or lymphoma Starting new treatment</td>
<td>Decreased chemotherapy toxicity (50 vs. 71%, p&lt;0.01) No differences in six month survival</td>
</tr>
<tr>
<td>Mohile et al.</td>
<td>N=718</td>
<td>JCO 38(15_suppl):12009</td>
<td></td>
</tr>
<tr>
<td><strong>INTEGRATE</strong></td>
<td>GA intervention group: co-managed by a geriatrician during treatment. vs Usual care</td>
<td>Age ≥70 Solid tumors and lymphoma Candidates for systemic therapy</td>
<td>Quality of life better in the intervention group at 6 months Reduced hospitalizations (41% less) and ER visits (39% less)</td>
</tr>
<tr>
<td>Soo et al.</td>
<td>N=154</td>
<td>JCO 38(15_suppl):12011</td>
<td></td>
</tr>
<tr>
<td><strong>Qian et al.</strong></td>
<td>Intervention group: peri-operative GA vs Usual care group</td>
<td>Age ≥65 surgery for GI cancer Any functional status All stages</td>
<td>Per-protocol analysis: Decreased hospital stay (8.2 vs 7.3 days, p =.02) Decreased ICU admissions (32 vs 13%, p =.05)</td>
</tr>
<tr>
<td>N=160</td>
<td>JCO 38 (15_suppl):12104</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“Even as we embrace new, exciting drugs and technologies, the time-honored medical tradition of compassion and active listening is the core of what we do.”

— Arti Hurria, MD, FASCO
Funders

• Philip and Marilyn Wehrheim
• Sandy Lloyd
• Anonymously
• NCI: R01, U01, NCORP
• NIA: GEMSSTAR R03, R21/R33, K24
• PCORI
• Wilmot Cancer Institute
• University of Rochester CTSI
• American Geriatrics Society Hartford Outcomes Research Award
• ASCO YIA