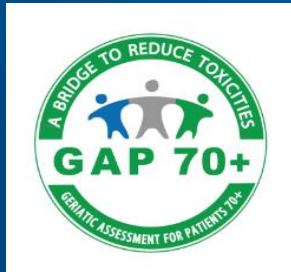


# Improving Care Delivery and Outcomes for Older Patients with Cancer and their Caregivers



*Supriya Mohile, MD, MS*

*Philip and Marilyn Wehrheim Professor*

*Co-Director, Cancer Control Program, WCI*

*Director, Geriatric Oncology Research Program*

*Editor-in-Chief, Journal of Geriatric Oncology*

*Co-Lead, Cancer and Aging Research Group*



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# Epidemiology of Cancer in Older Adults

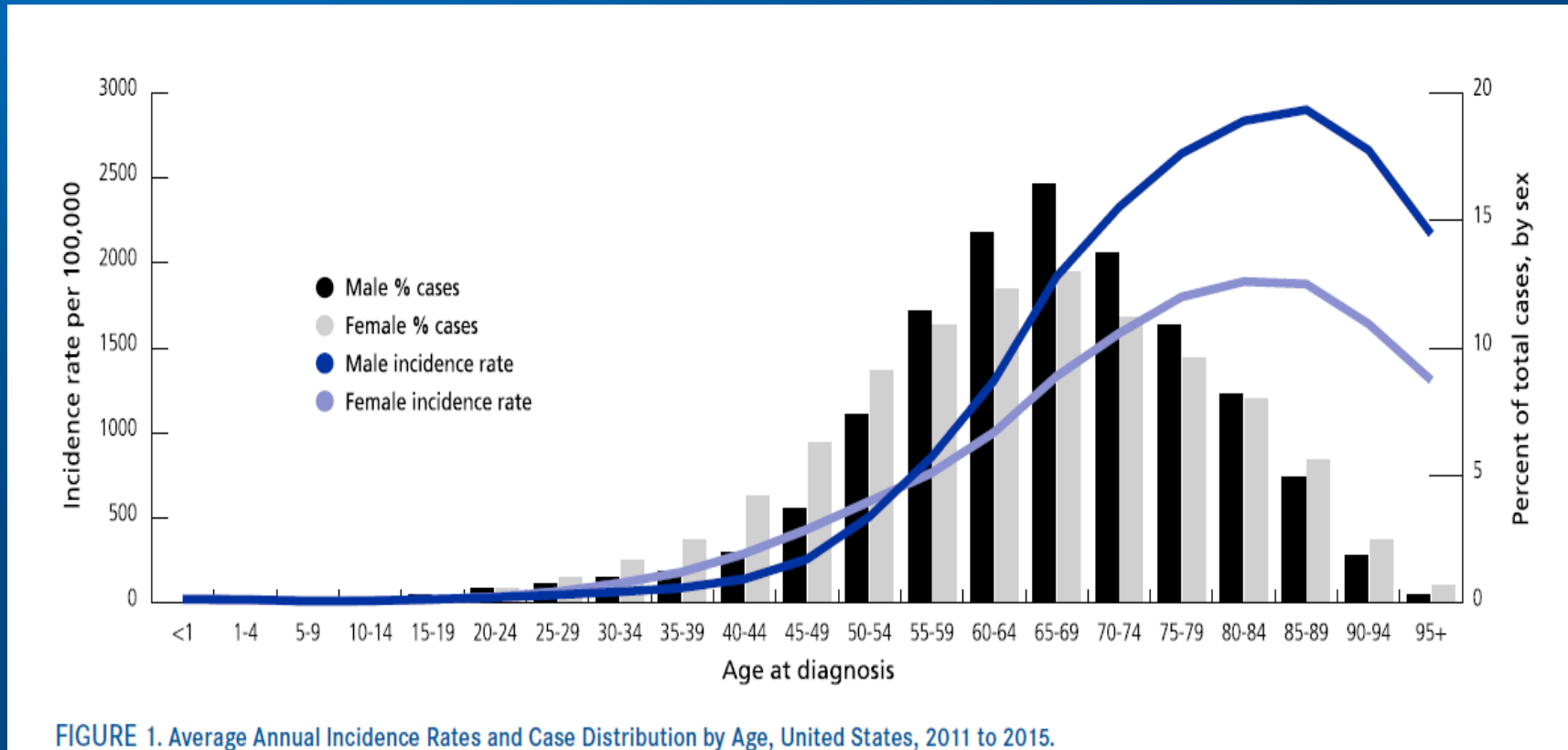


FIGURE 1. Average Annual Incidence Rates and Case Distribution by Age, United States, 2011 to 2015.

DeSantis et al, CA Cancer J, 2019

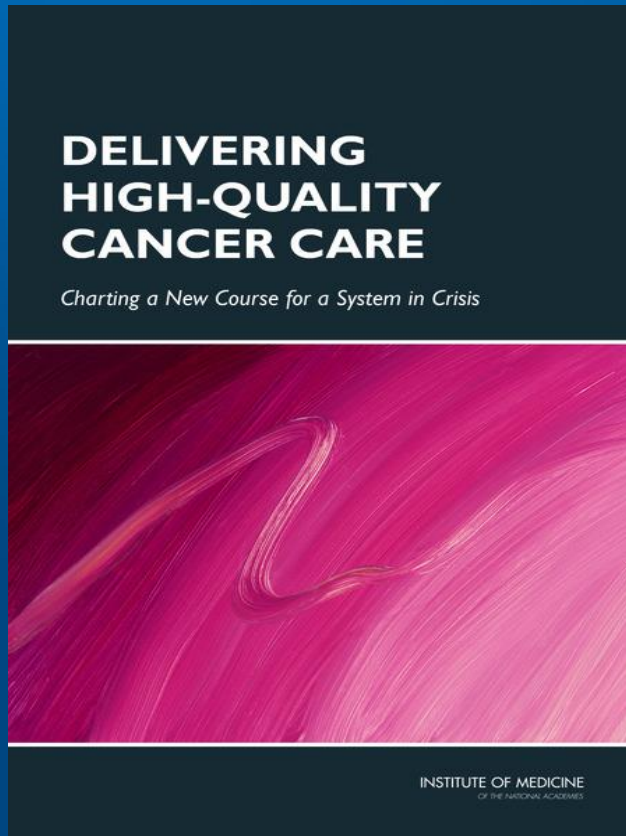
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# IOM Report: Cancer Care System “in Crisis”



- 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>

<http://www.iom.edu/Reports/2013/Delivering-High-Quality-Cancer-Care-Charting-a-New-Course-for-a-System-in-Crisis.aspx>

# 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



Mohile, Dale, Hurria and Panel. ASCO Guidelines in Geriatric Oncology. JCO; 2018.

# 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

# GA Variables Predict Chemotherapy Toxicity in Older Adults

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

## Validation of a Prediction Tool for Chemotherapy Toxicity in Older Adults With Cancer

*Arti Hurria, Supriya Mohile, Ajeet Gajra, Heidi Klepin, Hyman Muss, Andrew Chapman, Tao Feng, David Smith, Can-Lan Sun, Nienke De Glas, Harvey Jay Cohen, Vani Katheria, Caroline Doan, Laura Zavala, Abrahm Levi, Chie Akiba, and William P. Tew*

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Risk factor for Grade III-V Toxicity	OR (95% CI)	Score
Age $\geq 73$ years	1.8 (1.2-2.8)	2
GI/GU Cancers	2.1 (1.4-3.2)	3
Standard dose chemotherapy	2.1 (1.3-3.5)	3
Polychemotherapy	1.7 (1.1-2.6)	2
Anemia (Male < 11, female <10)	2.3 (1.1-4.6)	3
Cr Cl <34 ml/min (using Jelliffe equation/IBW)	2.5 (1.1-5.4)	3
Falls in last 6 months	2.5 (1.4-4.3)	3
Hearing impairment	1.7 (1.0-2.7)	2
Limited ability to walk 1 block	1.7 (1.0-2.8)	2
Requires assistance with medications	1.5 (0.7-3.2)	1
Decreased social activities	1.4 (0.9-2.0)	1
Possible score 0-25		

# Real World Usage of the Geriatric Assessment



**CARG**  
CANCER & AGING RESEARCH GROUP

[www.mycarg.org](http://www.mycarg.org)

Meet the Researchers	U13 Meeting	CARG Studies	Grants/Job Opportunities	Educational Resources	Resources for the Older Adult	Geriatric Assessment Tools	Geriatric Oncology Events	R25 Nursing Grant	URCC GA Studies	CARG Advocacy	Contact Us
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## GERIATRIC ASSESSMENT TOOLS

### Chemotherapy Toxicity Tool and Geriatric Assessment Tool

#### The Chemo-Toxicity Calculator

The Chemo-Toxicity Calculator is a pre-assessment variables (function, comorbidities, etc.) to predict chemotherapy toxicity in patients across seven participating institutions. This study was identified by the American Society of Clinical Oncology (ASCO) as a model of vulnerability to chemotherapy toxicity in clinical practice.

[Chemo Toxicity Calculator](#)

#### Geriatric Assessment Tool

A geriatric assessment is utilized to care for the most vulnerable patients (for example, those with cognitive impairment, functional decline, or other vulnerabilities) required for their administration. A geriatric assessment includes domains that are assessed include functional status, cognition, mood, and social support. Please click on the below for more information.

<sup>1</sup>Hurria et al. Cancer 2005  
<sup>2</sup>Hurria et al. JCO 2011

Geriatric Assessment in English

- [Patient portion](#)
- [Patient portion \(mobile-friendly\)](#)
- [Healthcare provider portion](#)

Geriatric Assessment in Spanish (Evaluación Geriátrica en Español)

- [Porción del paciente](#)
- [FACITtrans Certified Translation Certificate \(Spanish\)](#)
- [Porción del paciente \(optimizado para dispositivos móviles\)](#)

**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

JOURNAL OF CLINICAL ONCOLOGY

ASCO SPECIAL ARTICLE

# Practical Assessment and Management of Vulnerabilities in Older Patients Receiving Chemotherapy: ASCO Guideline for Geriatric Oncology

*Supriya G. Mohile, William Dale, Mark R. Somerfield, Mara A. Schonberg, Cynthia M. Boyd, Peggy S. Burhenn, Beverly Canin, Harvey Jay Cohen, Holly M. Holmes, Judith O. Hopkins, Michelle C. Janelsins, Alok A. Khorana, Heidi D. Klepin, Stuart M. Lichtman, Karen M. Mustian, William P. Tew, and Arti Hurria*

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# 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](http://www.asco.org/supportive-care-guidelines) ©American Society of Clinical Oncology 2018. All rights reserved.

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# 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

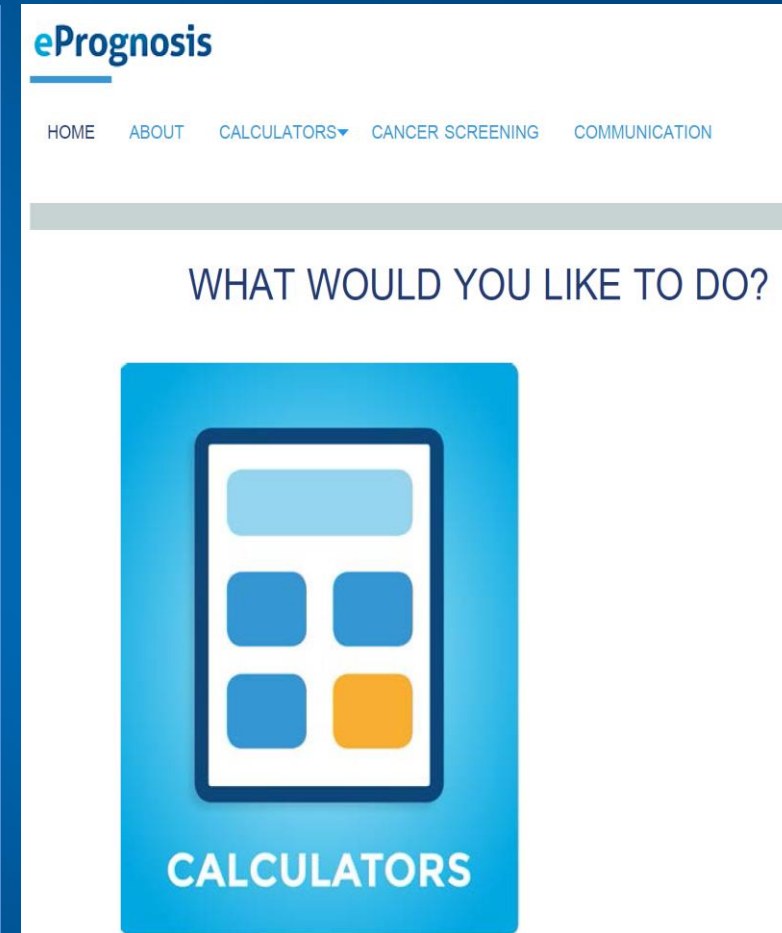
See [Table 1](#) for more details and rationale.

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>
- 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

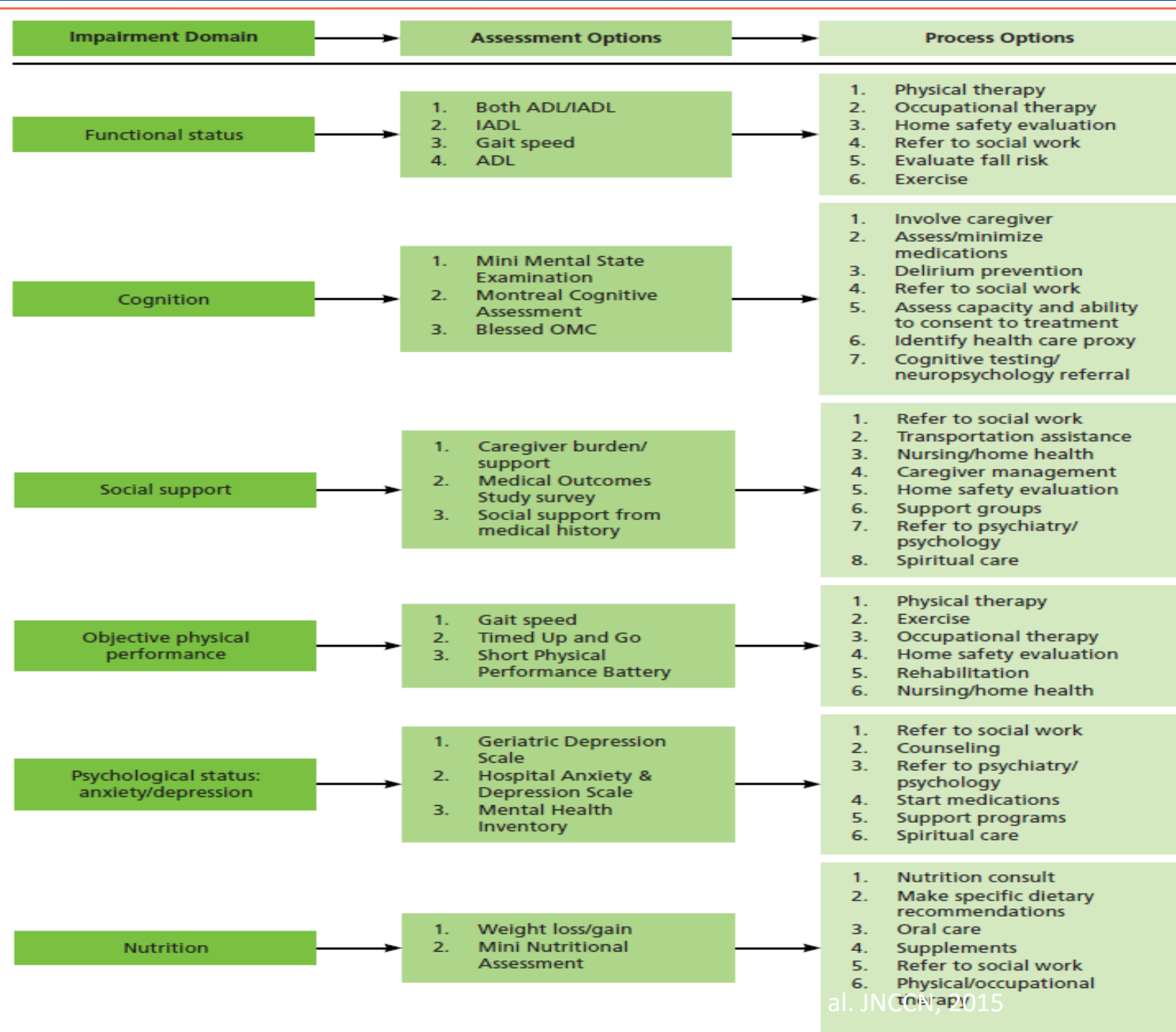
Measure	Interventions
Functional Deficit/Falls	PT and/or OT; Fall prevention discussion Home safety evaluation
Comorbidity Considerations	Involve caregiver to assess risks; Involve PCP/geriatrician Review and minimize medications Assess medication adherence
Screen Positive on Cognitive Screen	Assess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

# Implementing Interventions

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

Magnuson, Dale, Mohile, Curr Geri Reports, 2014





# 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



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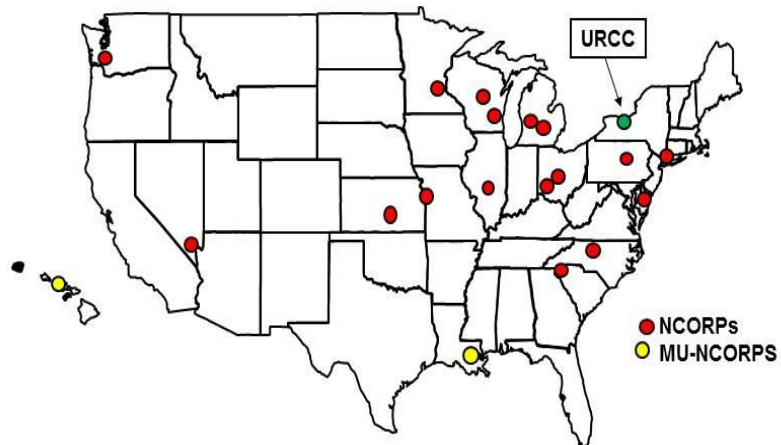
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# University of Rochester NCORP Research Base

## University of Rochester Cancer Center NCORP Research Base

### Map of Affiliates – 2016



Aurora NCORP  
Cancer Research Consortium of West Michigan  
Columbus NCORP  
Dayton Clinical Oncology Program  
Delaware/Christiana Care NCORP  
Gelsinger Cancer Institute NCORP  
Greenville NCORP of the Carolinas

Gulf South MU NCORP  
Hawaii MU NCORP  
Heartland Cancer Research NCORP  
Kansas City NCORP  
Metro-Minnesota NCORP  
Michigan Cancer Research Consortium

Nevada Cancer Research Foundation NCORP  
Northwell NCORP  
Pacific Cancer Research Consortium  
SCOR NCORP  
Wichita NCORP  
Wisconsin NCORP

### The 2017 URCC NCORP Research Base Annual Meeting with 20 NCORP Affiliates



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# GA-guided Communication and Intervention Recommendations

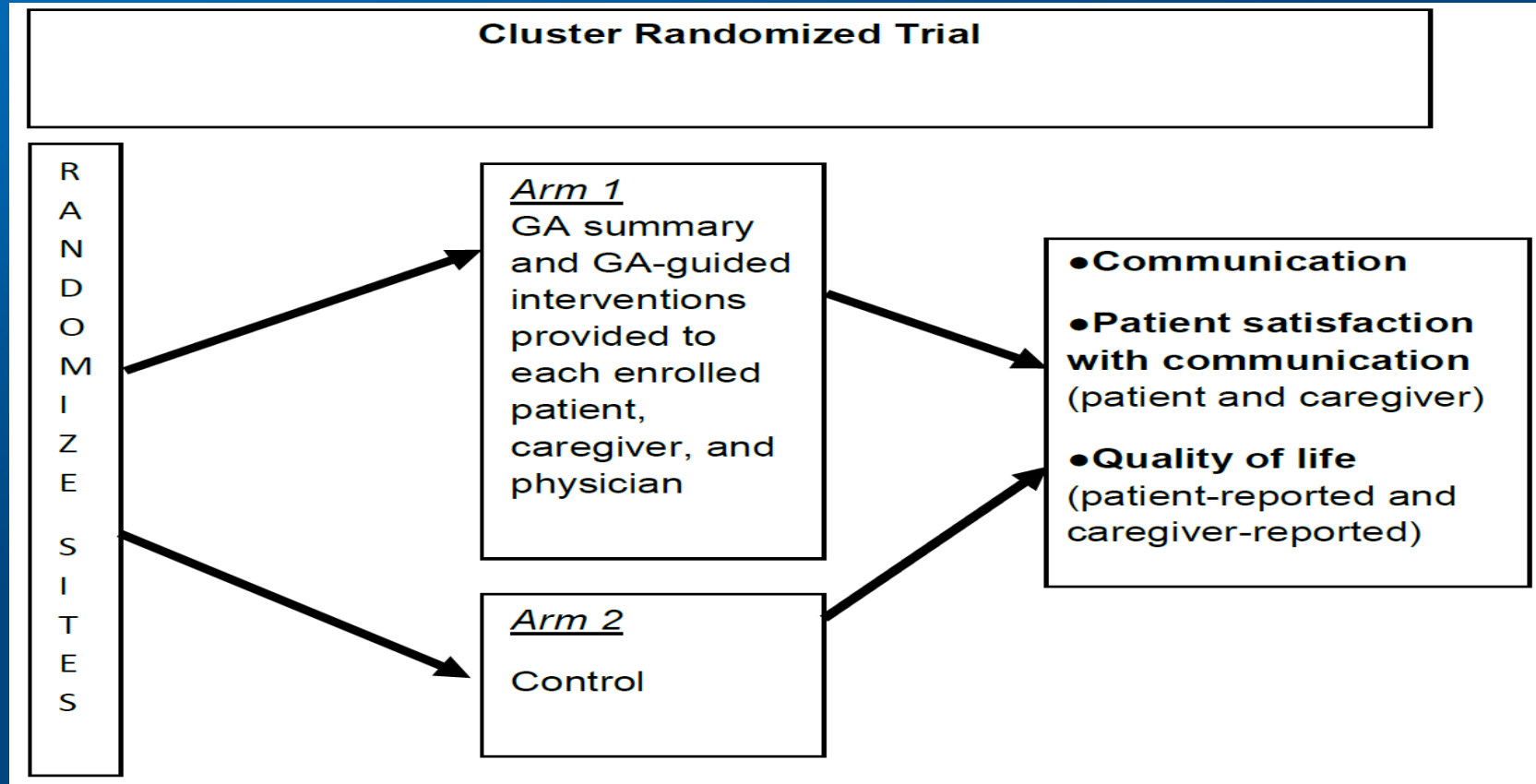
Did you or your staff complete any of the following with the patient during the clinic consultation (study visit)?	Completed		Not Completed	
	Yes	No	Not Appropriate	Patient Declined
1. Discuss patient's concerns about cognition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Elicit input and perspectives from caregiver(s) about the patient's cognition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Assess decision-making capacity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Elicit health care proxy information and input if the patient lacks decision-making capacity.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Carefully weigh risks and benefits given limited data and potential for further cognitive impairment and functional impairment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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# Study Design and Eligibility



Audio recorded clinic visit for each patient after GA



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# Patient and Caregiver Eligibility Criteria

## Patients

- Age  $\geq 70$  years
- Diagnosis of advanced solid tumor or lymphoma
- Have  $\geq 1$  GA Impairment (other than polypharmacy)
- Will see their oncologist for next  $\geq 3$  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



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## Caregivers

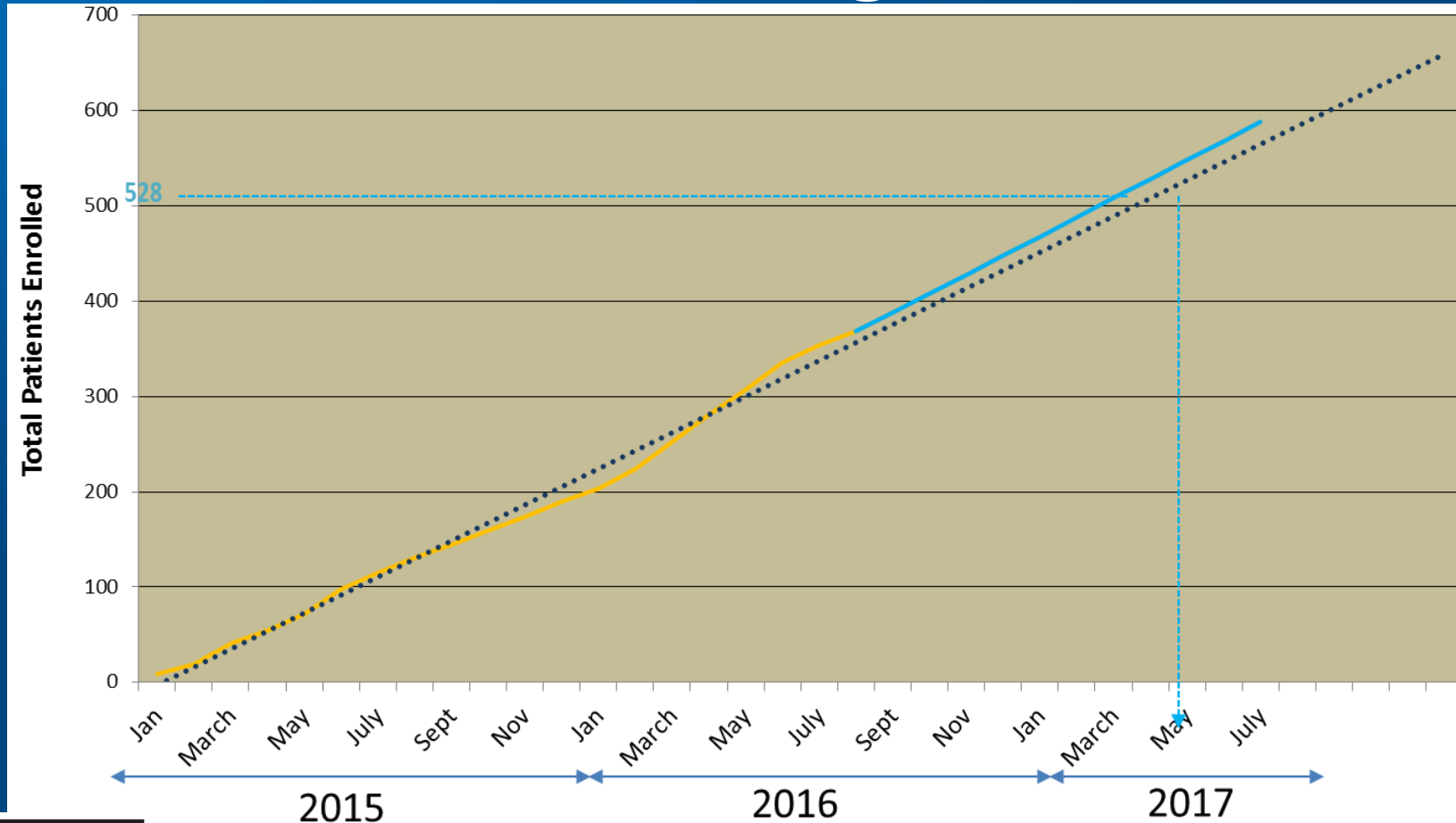
- One caregiver was chosen by the patient to enroll using the question:
  - “Is there a family member, partner, friend, or caregiver (age 21 or older) with whom you discuss or who can be helpful in health-related matters?”
- Caregivers not required for patients to participate
- Able to provide informed consent
- Able to read and understand English



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# Accrual: 305 oncologists, 541 patients, 414 caregivers



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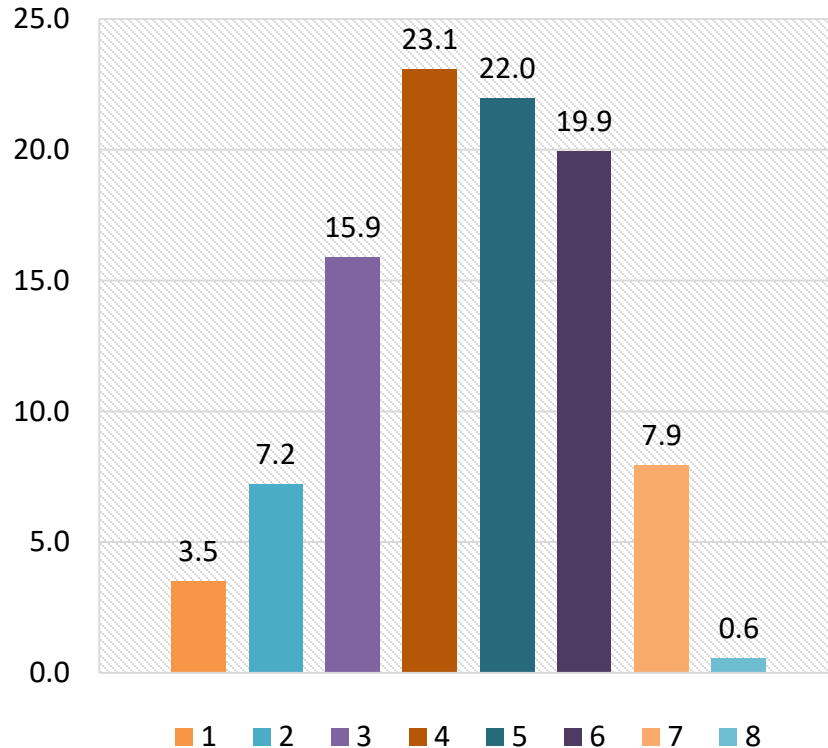


# Improving the Care of Older Adults with Cancer is Important: Oncologists Want Guidance

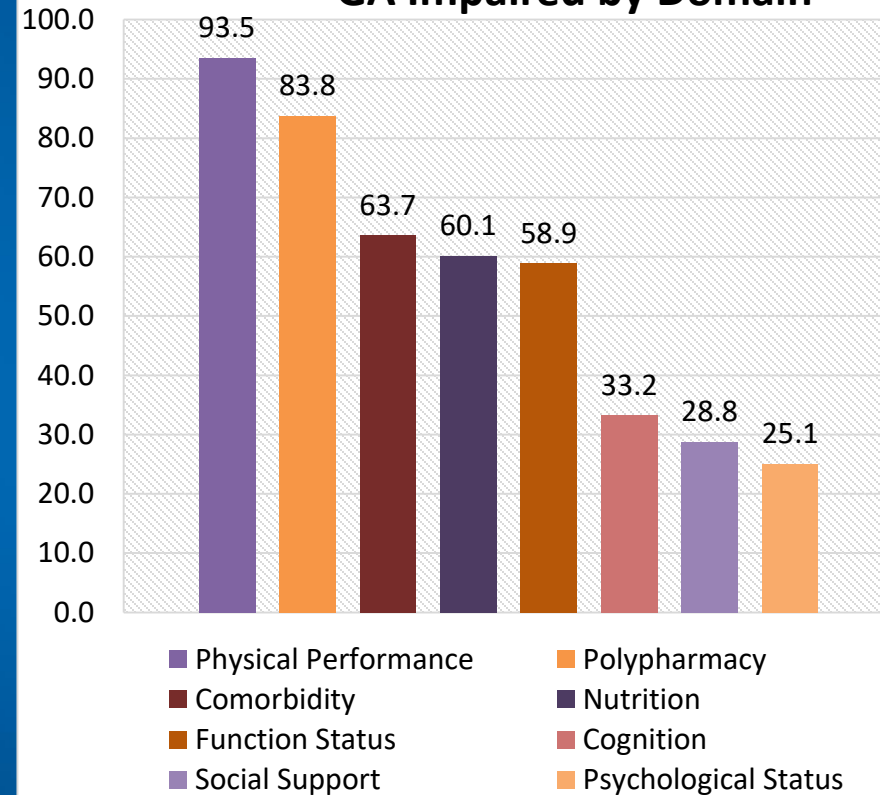
n=305 community oncologists	Agree (%)	Disagree (%)	Neutral (%)
I believe that the medical care of older adults with cancer needs to be improved	89%	3%	8%
I would appreciate additional training in topics related to the care of older adults with cancer	79%	4%	17%
I routinely ask my patients if they have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

# GA domains for all patients (N=541)

Percentage of Number of  
GA Domains Impaired



Percentage of  
GA Impaired by Domain



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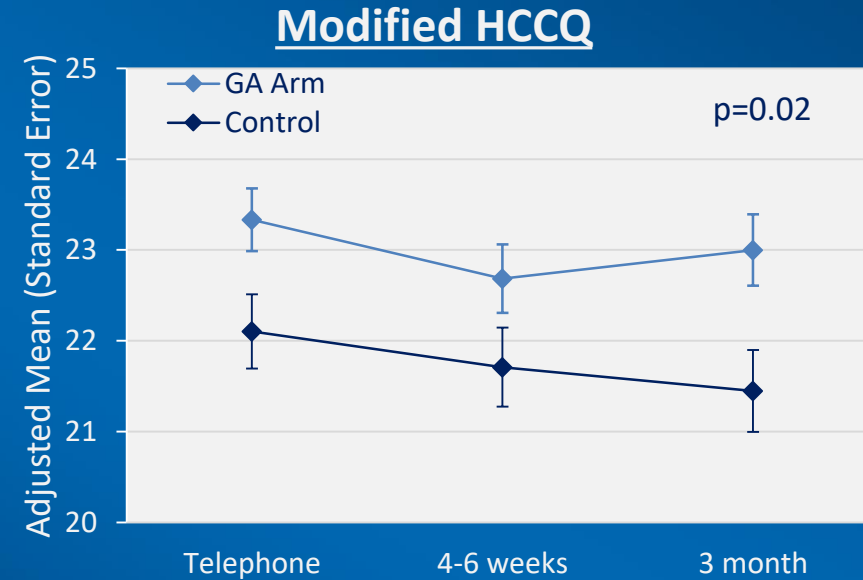
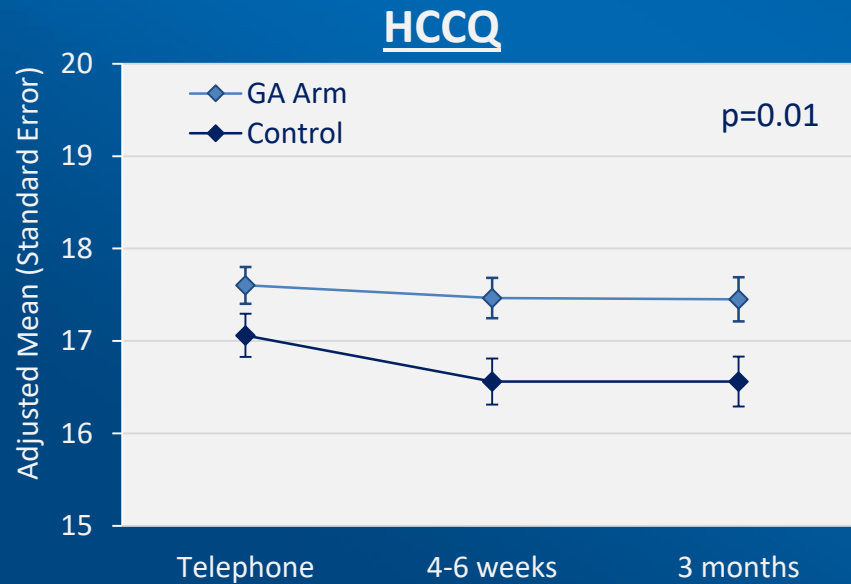
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Mohile et al, ASCO 2018

# 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)



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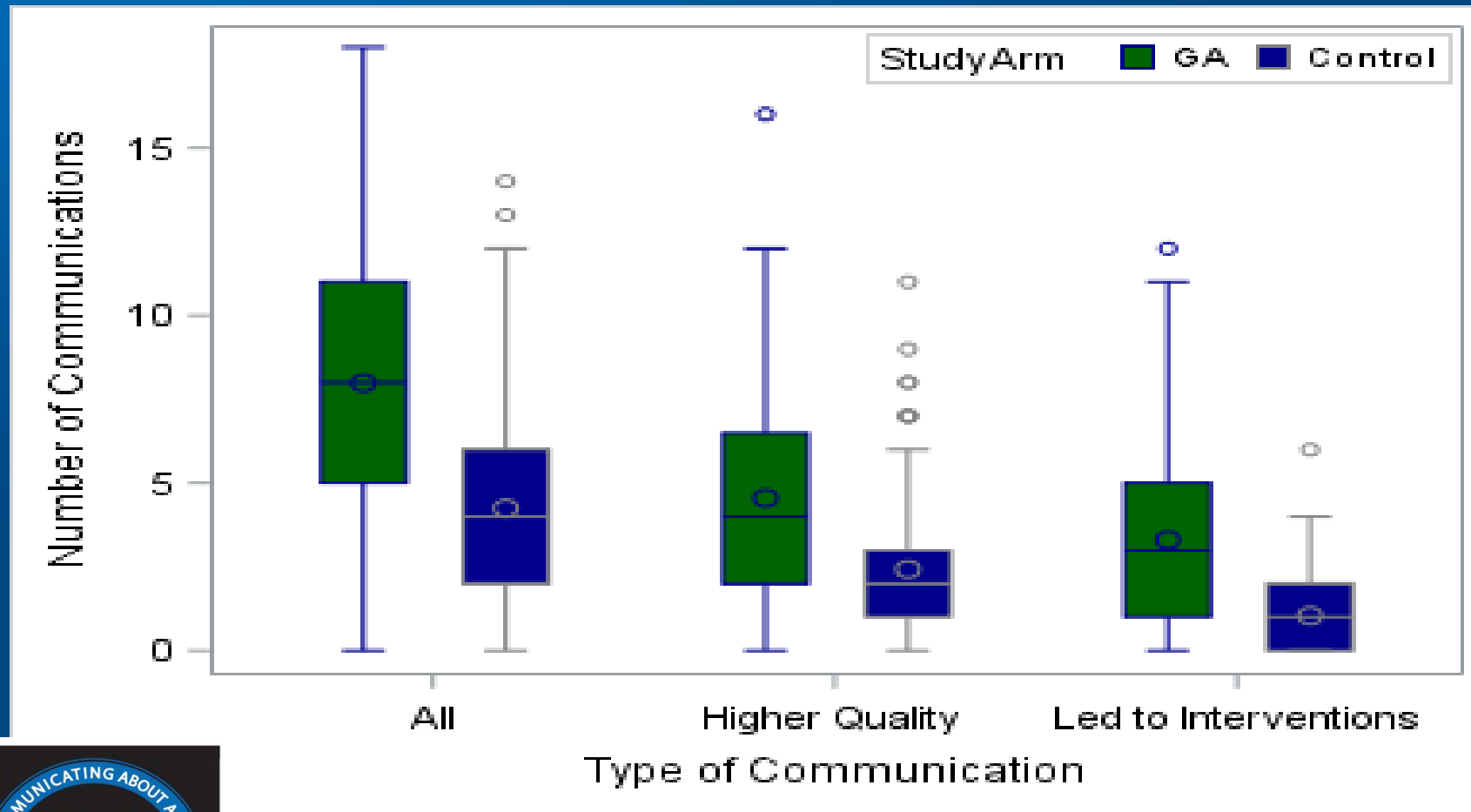


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Mohile et al.; JAMA Onc, 2019

# GA Improves Communication about Age-Related Concerns



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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.

Gilmore, N., Cancer; 2019.



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# “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.

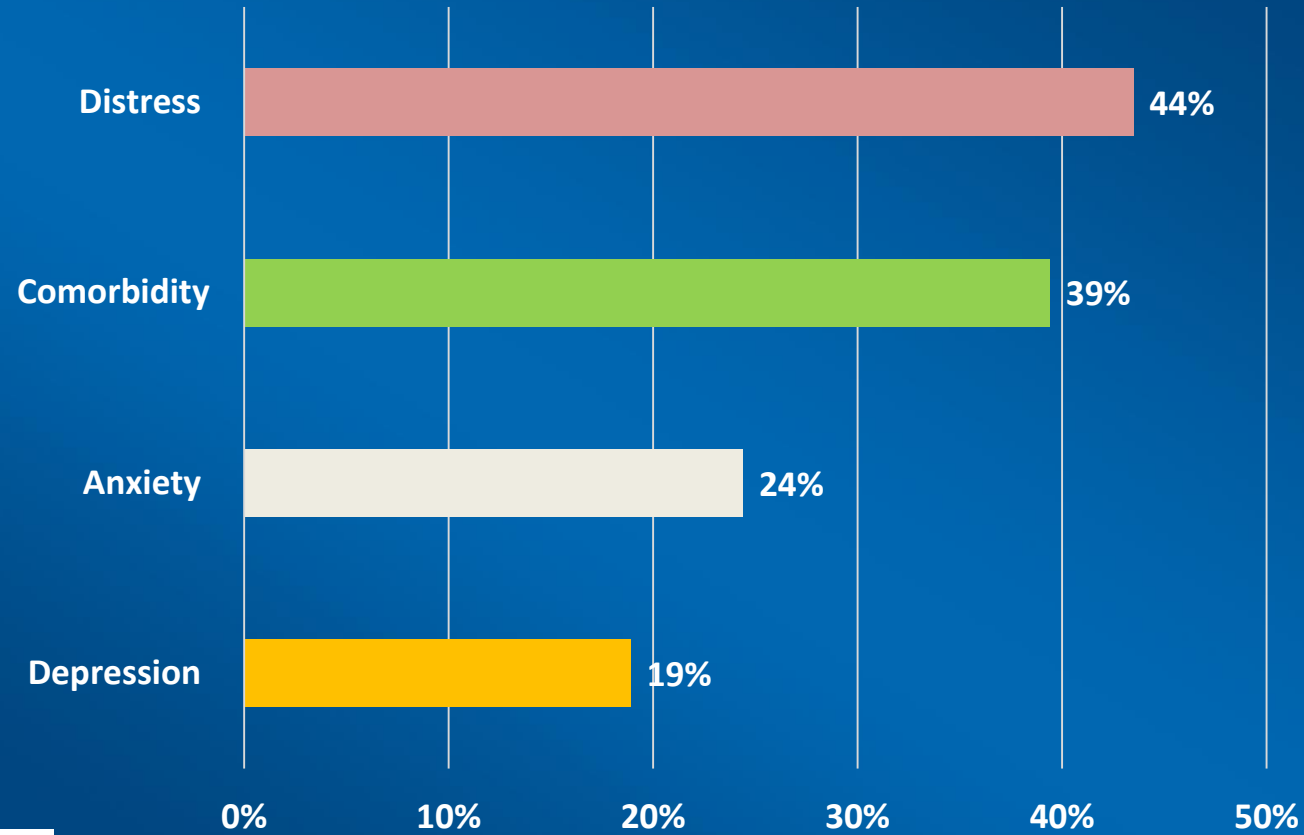
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# Caregiver Health



Kehoe et al. JAGS; 2019



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# 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?



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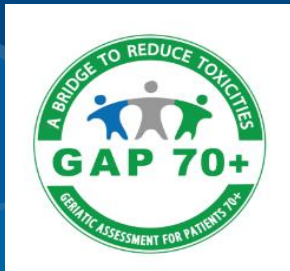
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Lowenstein et al. JGO; 2018

# 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



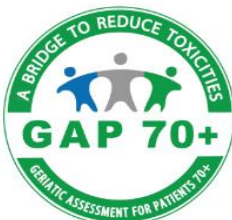
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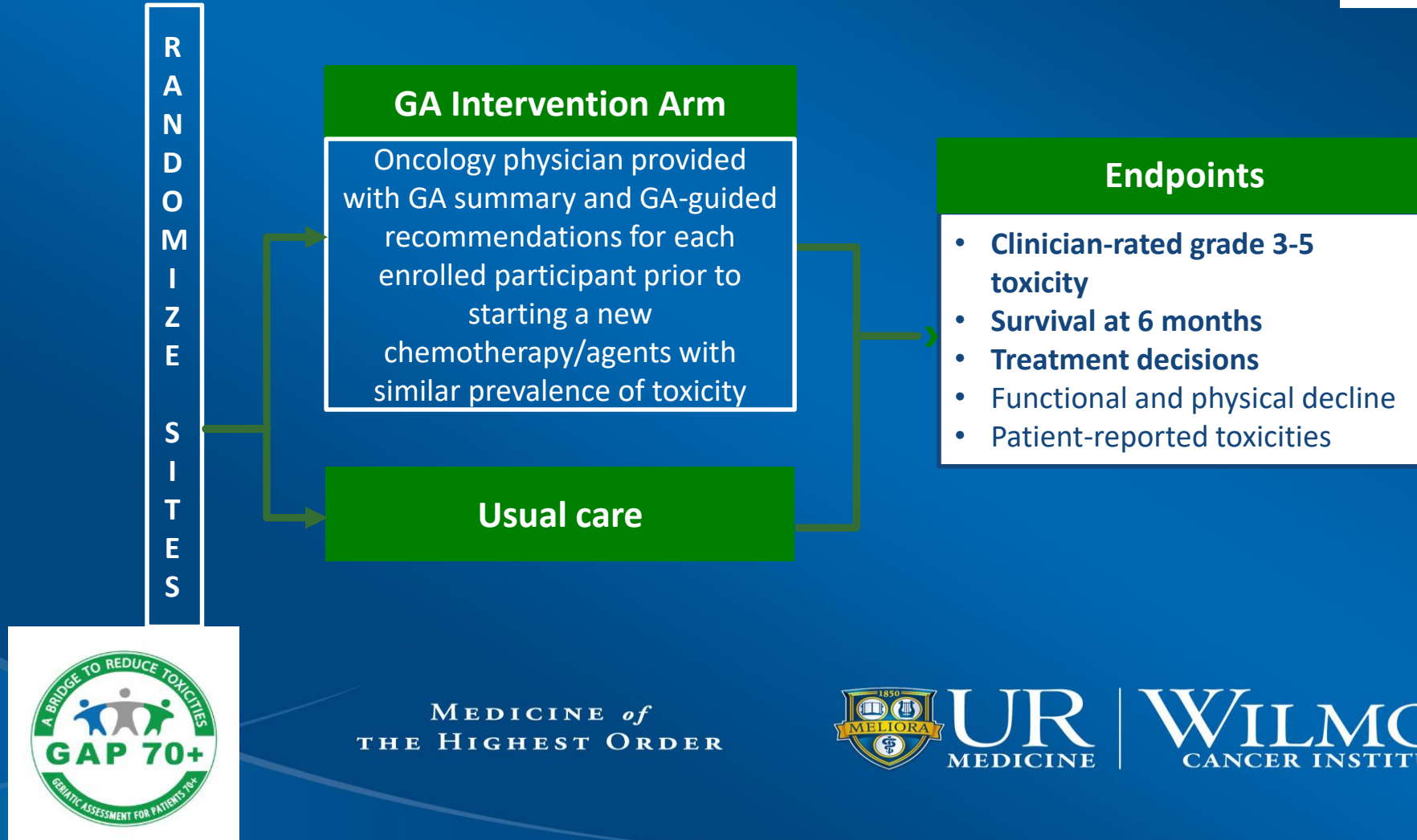
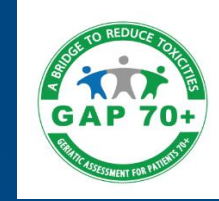
Recommendations	Recommended		Implemented?	Implemented by	
	Yes	No	Enter Reason Code	Physician	Staff
1. Referrals:					
A. Physical Therapy (outpatient or home-based depending on eligibility for home care): request gait/assistive device evaluation, strength and balance training.	<input type="checkbox"/>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





# Study Schema

## Geriatric Assessment for Patients 70+



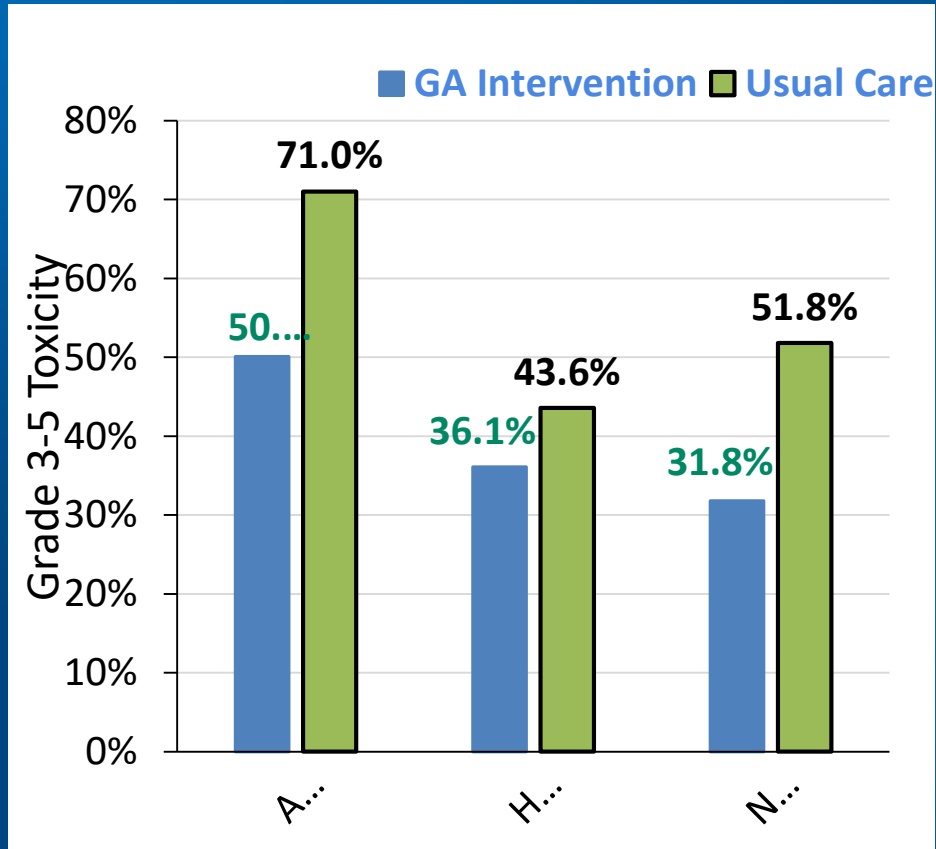
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# Any Grade 3-5 CTCAE Toxicity in 3 Months



- **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:  $P < 0.01$



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# NCI Tolerability Consortium:

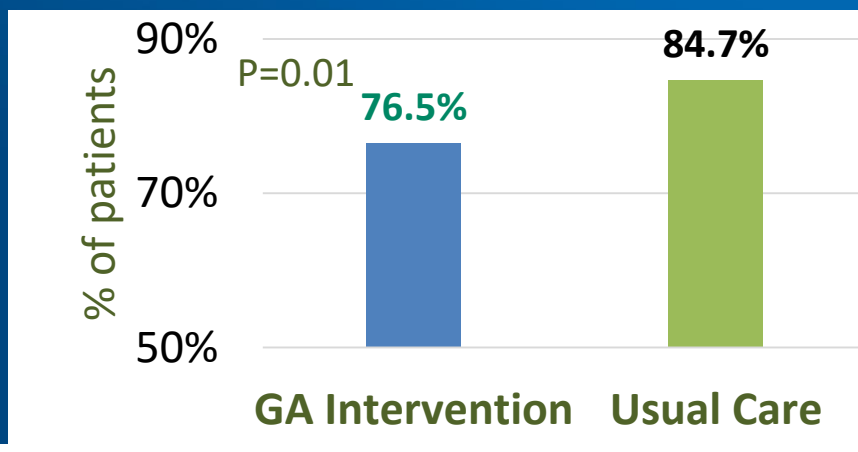
## Results: Grade $\geq 2$ Symptomatic Toxicities (PROCTCAE): Moderate, Severe, Very Severe

❖ Adjusted Risk Ratio=0.91

95% CI: (0.83-1.00)

P=0.05

### All 24 symptoms

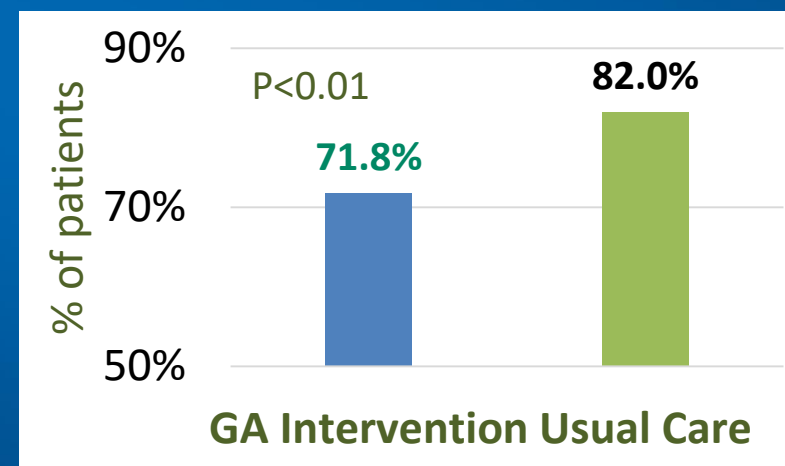


❖ Adjusted Risk Ratio=0.88

95% CI: (0.81-0.95)

P<0.01

### 11 core symptoms



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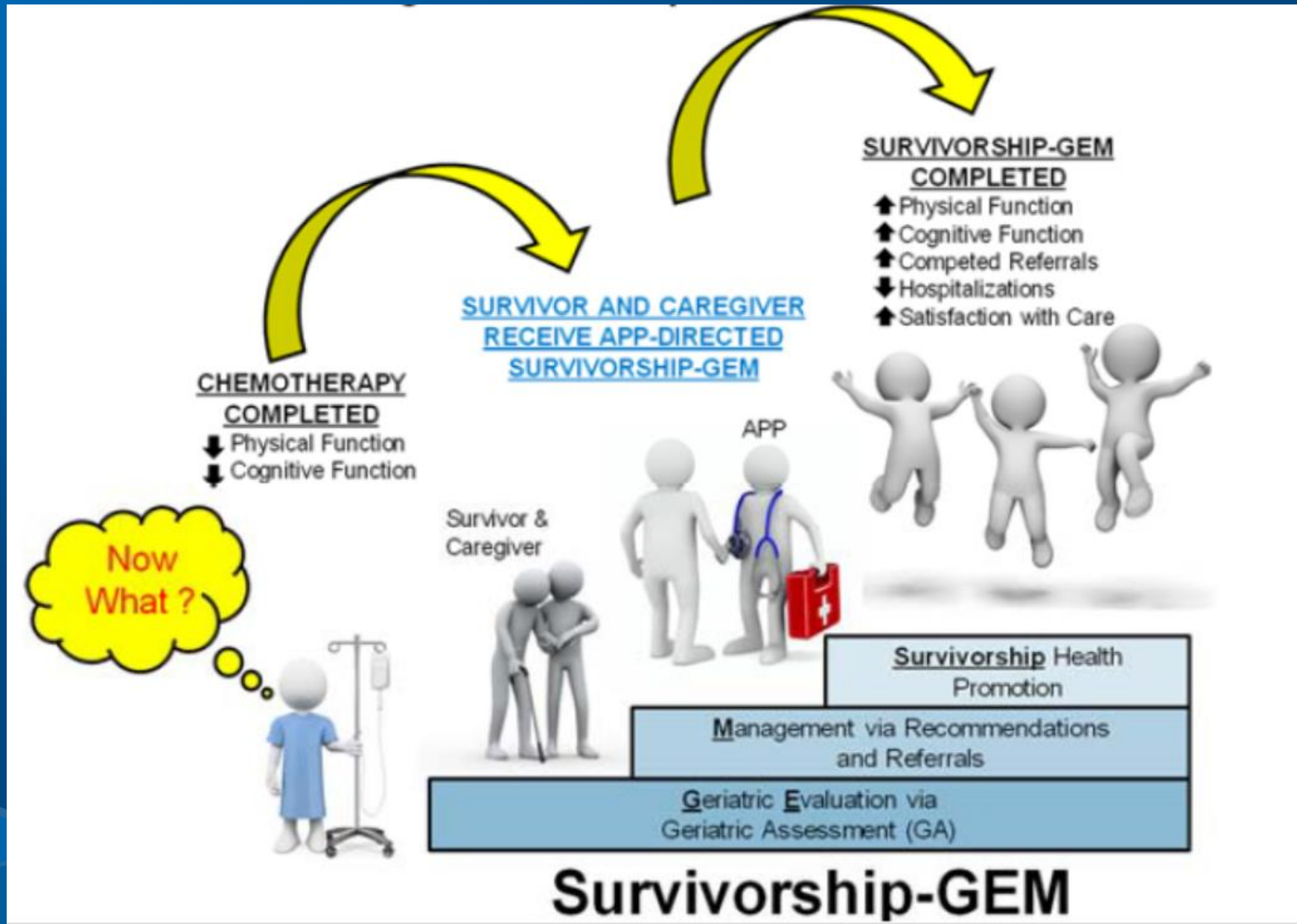


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Eva Culakova; ASCO QUAL, 2020

# Optimizing Function in Older Cancer Survivors after Chemotherapy



# 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



# GA Costs Compared to Other Modalities

## Hamaker JCO; 2018.

Nurses salary for one hour†	\$28
Complete blood count	\$17
Carcinoembryonic antigen	\$50
Chest X-ray	\$67
Bilateral screening mammography	\$321
Abdominal or chest CT scan	\$640
MRI pelvis	\$739
Liver biopsy	\$879
Whole body PET-CT	\$1788
Colonoscopy with biopsy	\$2187
Breast cancer genomic testing: Oncotype¥	\$3416
Liquid biopsy: Guardant 360§	\$5800

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

\*Based healthcarebluebook.com January 14<sup>th</sup>, 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

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

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c/o Hy Muss

- “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*



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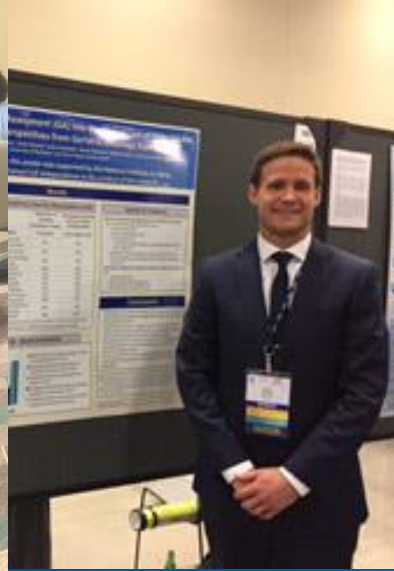
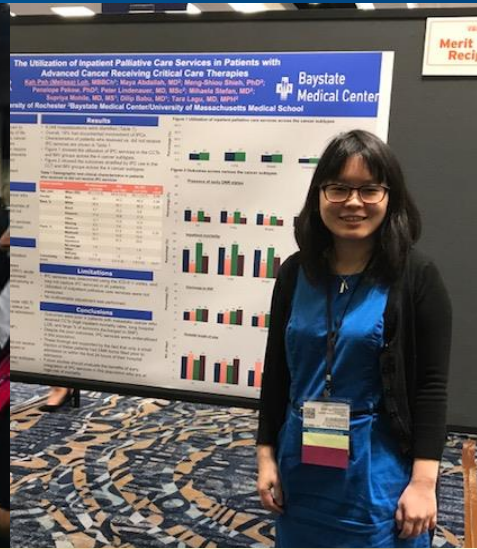
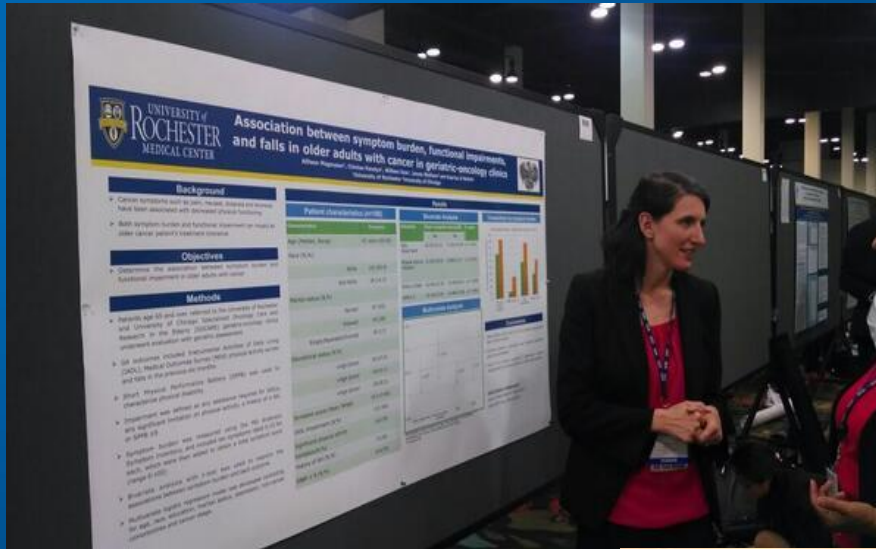
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