Geriatric Assessment to Improve Outcomes for Older Adults with Cancer

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Objectives

- Appreciate the demographics of the aging population with regards to cancer
- Understand the role of geriatric assessment in the care of the older cancer patient
- Explore the role of geriatric assessment-guided interventions in improving outcomes in geriatric oncology
Epidemiology of Cancer

- Both the incidence and prevalence of cancer increase with age
- Median age of cancer patients in the US is 70
- People ≥65 incur:
  - >50% of all cancers
  - >60% of all cancer deaths
- Between 1968 and 2007, cancer mortality:
  - Decreased 23% in patients <55
  - Increased 17% in patients ≥55
Elderly are underrepresented in oncology clinical trials

Hutchins et al. NEJM 1999.
Fig 1. Percentage of estimated United States male population represented in NCI-sponsored cancer treatment scale.

Essentially no data for patients 80+
Comprehensive Geriatric Assessment versus ECOG Performance Status

- Patients classified with an ECOG PS of 0 or 1:
  - 13% had 2 or more significant comorbid conditions
  - 38% had an IADL dependence
  - 9% had an ADL dependence
  - 28% had impaired MMSE

Developing a Cancer-Specific Geriatric Assessment

**FEASIBILITY**

Time to complete
- Mean: 27 min (SD 10)
- Range: 8-45 min

No association of age with time to complete assessment ($p = 0.13$)

No association of age with ability to complete without assistance ($p=0.16$)

**ABILITY TO COMPLETE UNASSISTED**

- Yes: 78%
- No: 22%
Considerations for each GA domain in the oncogeriatric patient

- Physical function
- Comorbidity
- Polypharmacy
- Cognition
- Nutrition
- Psychological
- Social support
Data on physical function

- History of falls has been shown to be predictive of increased chemotherapy toxicity

- Functional impairment has been shown to be influential in treatment planning and decision making for oncologists
Comorbidity impacts outcome in cancer patients

Number of significant comorbid conditions

Polypharmacy

- Affect pharmacokinetics of cancer-related treatments
- Increased risk of drug-drug interactions
- Decreased medication compliance

Cognition

- Cognitive disorders frequently underdiagnosed
  - Approximately 22% of Americans age ≥70 have cognitive impairment without dementia and 12% have overt dementia
  - 24% of geriatric cancer patients screen positive for cognitive disorders
Cognitive changes with cancer therapy

- Up to 75% of cancer patients of all ages experience chemotherapy-related cognitive impairment (CRCI)\textsuperscript{1,2}

Are older patients with pre-existing memory loss at greater risk for experiencing chemotherapy-related cognitive changes?

\textsuperscript{1}Magnuson, et al Current Geriatric Reports, 2016
\textsuperscript{2}Ahles, et al JCO 2012
Cognitive change with therapy

Pre- to post-treatment change in processing speed by treatment, age group, and level of cognitive reserve among patients with breast cancer

Jeanne S. Mandelblatt et al. JCO 2014;32:2617-2626

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Processing Speed assessed by the Wide Range Achievement Test-Reading
Risk of Chemotherapy Toxicity

Are patients with cognitive impairment at greater risk for experiencing adverse events with chemotherapy?

- Chemotherapy risk-prediction models
  - CRASH study
    - MMSE <30 was a predictor for development of non-hematologic toxicity
  - CARG study
    - Cognitive measure (Blessed) not predictive of toxicity

1Extermann, et al Cancer 2012
2Hurria, et al JCO 2012
Cognition

Survival in Months
Case v Control

Survival Distribution Function

P-Value < 0.0001
Log Rank Test

Survival (in months)

Control

Case
Management

- Safety considerations
  - *Is my patient able to recall potential adverse events?*
  - *Is my patient able to reliably call for help if he/she encounters problems?*
  - *Does my patient have the ability to follow a complex treatment regimen (managing oral cancer therapy, supportive care medications, etc)?*
  - *What type of social support does my patient have?*
Nutrition

- Weight loss prior to diagnosis has been associated with poor outcomes in multiple types of malignancies
Psychological

- **Depression**
  - Positive geriatric depression screen has been shown to be an independent predictor of overall survival in solid tumor malignancy\(^1\)
  - Identified clinical depression as a predictor of severe toxicity in ovarian cancer treatment\(^2\)
Social support

- Older adults may have limited social support
- Logistics of limited social support:
  - Transportation
  - Managing complex appointment schedules
  - Managing complex medication regimens
  - Monitoring for side effects and assisting with contacting provider teams as needed
Social support

- Influence of marital status on breast cancer
  - Unmarried women were more likely to be diagnosed with breast cancer stage II-IV versus stage I or in situ
  - Unmarried women diagnosed with Stage I or II breast cancer were less likely to receive definitive treatment
  - Unmarried women were at increased risk of death from breast cancer

How is the comprehensive geriatric assessment used to predict outcomes?
- Identify risk factors for chemotherapy toxicity in the geriatric oncology population incorporating CGA

- Develop a risk stratification schema for chemotherapy toxicity
CARG Toxicity Profile

**Labs**
1) Renal function
2) Hepatic function
3) Hematologic function

**Tumor & Treatment**
1) Tumor type
2) Tumor stage
3) Chemotherapy - Mono- vs Poly- chemo
   - Dosage
4) Growth Factor Use

**Sociodemographic**
1) Age
2) Gender
3) Race/ethnicity
4) Education
5) Marital status
6) Living companion

**Geriatric Assessment**
1) Functional status
2) Comorbidity
3) Cognition
4) Psychological state
5) Social support
6) Nutritional status
CARG Toxicity Profile

- Factors associated with grade 3 to 5 toxicity
  - Age ≥ 72
  - Cancer type (GI or GU)
  - Standard dosing of chemotherapy
  - Polychemotherapy
  - Hemoglobin (males <11, females <10)
  - Creatinine clearance <34
  - Hearing impairment
  - One or more falls in the past six months
  - Limited in walking one block
  - Need for assistance with taking medications
  - Decreased social activities

CARG Toxicity Profile

- Risk score was assigned to each factor associated with increased risk for chemotherapy toxicity
But how can we improve outcomes?

- CGA
  - Better at assessing overall health status
  - Feasible to incorporate into oncology clinics
  - Influences decision making
  - Prediction of toxicity

- Can we use geriatric assessment to improve outcomes for older patients with cancer?
What are GA-guided interventions?

- Geriatric Assessment identifies an area of impairment
  - What should we do with this?

- In the non-cancer population, geriatricians use the GA to develop interventions to address impairments and improve outcomes
Develop consensus from an expert panel of geriatric oncologists regarding the use of GA and development of GA-based interventions

- Algorithms for GA-guided interventions were created
Care Process for Older Adults With Cancer

**Impairment Domain** → **Assessment Options** → **Process Options**

**Functional Status**
- 1. Both ADL/IADL
- 2. IADL
- 3. Gait speed
- 4. ADL

**Cognition**
- 1. Mini Mental State Examination
- 2. Montreal Cognitive Assessment
- 3. Blessed OMC

**Social Support**
- 1. Caregiver burden/support
- 2. Medical Outcomes Study survey
- 3. Social support from medical history

**Process Options**
- 1. Physical therapy
- 2. Occupational therapy
- 3. Home safety evaluation
- 4. Refer to social work
- 5. Evaluate fall risk
- 6. Exercise

- 1. Involve caregiver
- 2. Assess/minimize medications
- 3. Delirium prevention
- 4. Refer to social work
- 5. Assess capacity and ability to consent to treatment
- 6. Identify health care proxy
- 7. Cognitive testing/neuropsychology referral

- 1. Refer to social work
- 2. Transportation assistance
- 3. Nursing/home health
- 4. Caregiver management
- 5. Home safety evaluation
- 6. Support groups
- 7. Refer to psychiatry/psychology
- 8. Spiritual care
### Care Process for Older Adults With Cancer

**Impairment Domain**

- Objective physical performance
  - Gait speed
  - Timed Up and Go
  - Short Physical Performance Battery

- Psychological status: anxiety/depression
  - Geriatric Depression Scale
  - Hospital Anxiety & Depression Scale
  - Mental Health Inventory

- Nutrition
  - Weight loss/gain
  - Mini Nutritional Assessment

**Assessment Options**

**Process Options**

1. Physical therapy
2. Exercise
3. Occupational therapy
4. Home safety evaluation
5. Rehabilitation
6. Nursing/home health

1. Refer to social work
2. Counseling
3. Refer to psychiatry/psychology
4. Start medications
5. Support programs
6. Spiritual care

1. Nutrition consult
2. Make specific dietary recommendations
3. Oral care
4. Supplements
5. Refer to social work
6. Physical/occupational therapy
Feasible to use an algorithm to develop geriatric-specific recommendations

No difference in chemotherapy toxicity, hospitalizations or treatment changes
Multidisciplinary Geriatric Oncology Clinic

- **Name:** Specialized Oncology Care and Research for the Elderly (SOCARE)
  - Partners with a similar clinic at the University of Chicago

- **Purpose:** To provide resource where oncologists, surgeons, radiation oncologists, primary care physicians, and geriatricians can seek a comprehensive evaluation and opinion regarding cancer care for an older person
Participants

- Geriatric Oncologist
- Health Project Coordinator
- RN
- Physical Therapist
- Occupational Therapist
- Pharmacist
- Social Worker
- Nutritionist
SOCARe Clinic

- Visit is generally about 2 hours and patients meet with the multidisciplinary team

- Patients are sent a packet in the mail prior to the visit with assessment questionnaires
  - About 90% of the GA information is collected via patient questionnaire/self-report
SOCARE Clinic

- A health project coordinator completes the remaining portion:
  - Objective physical performance measure
  - Cognitive assessment
  - Can also help if patients have difficulty completing surveys
Blessed Orientation-Memory-Concentration Test (BOMC)

Short Performance Physical Battery (SPPB)
SO CARE Clinic

- A variety of clinical data is collected and recorded including:
  - Age
  - Gender
  - Cancer type
  - Cancer stage
  - History of cancer treatment regimen
  - Proposed cancer treatment regimen
  - Comorbidity type and number
  - Number and types of medications being taken, including non-prescription
  - Reason(s) for referral
  - Results of the geriatric assessment/geriatric syndromes identified
  - Management recommendation(s) as a result of the assessment
  - Resource(s) utilized in management recommendations (e.g., physical therapy, nutrition, social work)
  - Cancer treatment prescribed and toxicity rates
Case Study

78yo female:

- Invasive ductal carcinoma, 3cm, high grade
- ER/PR/Her2 negative
- 3/10 lymph nodes with metastatic ductal carcinoma identified

- T2N1aM0 (stage Stage IIB)
Comprehensive Geriatric Assessment

- Physical Performance
  - ECOG PS = 2
  - Self-rated KPS = 60
  - IADL – impaired (cooking, cleaning, finances)
  - Fall history – once in past 6 months

- Objective physical testing
  - SPPB – 6/12

- Comorbidities
  - CAD, COPD, HTN, bipolar disorder, arthritis, “dizziness”

- Medication review
  - 11 medications overall
Comprehensive Geriatric Assessment

- **Cognitive**
  - BOMC = 10

- **Psychological**
  - Geriatric Depression Screen = 6
  - Decreased social activities
  - Scored poorly on emotional well-being

- **Nutrition**
  - 14lb weight loss in past 6 months

- **Social support**
  - Lives alone – daughter and son in law nearby
# 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>
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</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
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<tr>
<td>Age ≥ 72 years</td>
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<td>Cancer type GI or GU</td>
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<td>Chemotherapy dosing, standard dose</td>
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<td>No. of chemotherapy drugs, polychemotherapy</td>
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<td>Hemoglobin &lt; 11 g/dL (male), &lt; 10 g/dL (female)</td>
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<td>Creatinine clearance (Jelliffe, ideal weight) &lt; 34 mL/min</td>
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<td>Hearing, fair or worse</td>
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<td>No. of falls in last 6 months, 1 or more</td>
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<td>IADL: Taking medications, with some help/unable</td>
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<tr>
<td>MOS: Walking 1 block, somewhat limited/limited a lot</td>
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<tr>
<td>MOS: Decreased social activity because of physical/emotional health, limited at least sometimes</td>
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Estimating Benefit
Life Expectancy

A Life Expectancy for Women

- Top 25th Percentile
- 50th Percentile
- Lowest 25th Percentile
Weighing the risks and benefits…

**Benefits:**
- Aggressive tumor features with high risk of relapse

**Risks:**
- High probability of treatment toxicity
- Limited life expectancy from other causes
Summary

- Older patients represent a large percentage of cancer patients
- Limited data exists to guide treatment recommendations of this population
- Geriatric assessment adds useful information when evaluating the older patient with cancer
- GA-guided interventions may help to improve outcomes in this population