Geriatric Comanagement is associated with
Reduced 90 day Postoperative Mortality
among Patients Aged 75+ with Cancer

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Prevalence of surgery

- 38% of patients undergoing surgery are >65 years of age

Aging surgical patients have a unique physiology, often with diminished reserve and increased risk for postoperative complications. In addition, older adults undergoing surgery may prioritize function, cognition, and quality of life in their goals of care over quantity of life.”
Age was not associated with developing post operative complications.

Prognostic factors for postoperative complications: common geriatric syndromes - frailty, functional impairment, cognitive impairment, depressive symptoms.
“Frailty, an age-related physiological decline, particularly correlates with increased mortality and complications. “How we talk to them, how we care for them, their outcomes — there’s a lot of opportunity to do better.”
Objectives

• Discuss frailty and the Geriatric Assessment for older cancer patient undergoing surgery.
• Discuss the association between Geriatric Comanagement and 90 day postoperative mortality in our cohort.
Frailty

External stressor (e.g. minor illness or injury)

Managing Well

Response to stressor

Mild Frailty

Response to stressor

Severe Frailty

Response to stressor

Negative outcomes

Dependence

Function

Homeostatic mechanism

BCGuidelines.ca: Frailty in Older Adults – Early Identification and Management (2017)
Why Should I Care about Frailty?

Negative Outcome  ==  Frail Body  ×  Stress [of Cancer (Rx)]
With adequate peri-operative risk stratification elderly patients with cancer can do as well as their younger counterparts.
Electronic Rapid Fitness Assessment: A Novel Tool for Preoperative Evaluation of the Geriatric Oncology Patient

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Abstract

Background: The American College of Surgeons and American Geriatrics Society recommend performing a geriatric assessment (GA) in the preoperative evaluation of older patients. To address this, we developed an electronic GA, the Electronic Rapid Fitness Assessment (eRFA). We reviewed the feasibility and clinical utility of the eRFA in the preoperative evaluation of geriatric patients. Methods: We performed a retrospective review of our experience using the eRFA in the preoperative assessment of geriatric patients. The rate and time to completion of the eRFA were recorded. The first 50 patients who completed the assessment were asked additional questions to assess their satisfaction. Descriptive statistics of patient-reported geriatric-related data were used for analysis. Results: In 2015, 636 older patients with cancer (median age, 80 years) completed the eRFA during preoperative evaluation. The median time to completion was 11 minutes (95% CI, 11–12 minutes). Only 13% of patients needed someone else to complete the assessment for them. Of the first 50 patients, 88% (95% CI, 75%–95%) responded that answering questions using the eRFA was easy. Geriatric syndromes were commonly identified through the performance of the GA: 16% of patients had a positive screening for cognitive impairment, 22% (95% CI, 19%–26%) needed a cane to ambulate, and 26% (95% CI, 23%–30%) had fallen at least once during the previous year. Conclusions: Implementation of the eRFA was feasible. The eRFA identified relevant geriatric syndromes in the preoperative setting that, if addressed, could lead to improved outcomes.

Geriatric Assessment Made Easy to Use
The eRFA Domains and Instruments

Functional Status
- KPS
- ADL
- IADL
- TUG
- Falls history
- Use of assistive devices

Social Support
- 4-item MOS-SSS

Social Activity
- MOS-SAS

Interference

Emotional status
- DT
- GDS-4 item

Sensory Deficit
- Hearing
- Vision

Cognition
- Mini-Cog

Nutrition status

Polypharmacy
Administering the eRFA

Geriatric RNs perform the Mini-Cog™ and the Timed Get Up & Go test and enter the result into eRFA.

Final report

Engage database
For future analysis
Final Report

Electronic Rapid Fitness Assessment (eRFA)

OVERVIEW

Patient has **9 impairments** with abnormal scores in: KPS, ADL, iADL, Falls, TUG Test, MiniCog, Social Support, Limited Social Activity, and Depression.

**IMPAIRMENT SUMMARY**

*Global recommendation:* If 3 or more impairments are listed in the summary below, consider referral to geriatrics. "$% Below Threshold" refers to the proportion of patients who score below the threshold value.

<table>
<thead>
<tr>
<th>Patient Score</th>
<th>Impairment Threshold</th>
<th>% Below Threshold</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPS</td>
<td>50</td>
<td>(&lt;= 80)</td>
<td>37%</td>
</tr>
<tr>
<td>ADL</td>
<td>8</td>
<td>(&lt; 14)</td>
<td>52%</td>
</tr>
</tbody>
</table>

**Pre/Postop Recommendation:**
- A: Consider consultation with social worker or case manager.
- B: Consider consultation with physical and occupational therapists.

| iADL          | 2                     | \(< 16\)          | 45%             | Read more       |
| History of Falls | in the last 6 months | At least once     | 25%             | Read more       |
| Timed Up and Go (TUG) Test | \(> 20 \text{ seconds}\) | \(\geq 10 \text{ seconds}\) | 38% | Read more |
| MiniCog       | 2                     | \(< 3\)           | 16%             | Read more       |
| Social Support| 16                    | \(\leq 16\)       | 43%             | Read more       |
| Limited Social Activity | 12 | \(\geq 8\) | 50% | Read more |
| Depression    | 1                     | \(\geq 1\)        | 55%             | Read more       |
The eRFA Takes About 11 Minutes to Complete.
Comprehensive Assessment of Older Patients in Short Amount of Time

- Distress: 55%
- Depression: 53%
- Polycomorbid conditions: 51%
- Social Activity: 50%
- ADL: 49%
- Polypharmacy: 44%
- IADL: 43%
- Social Support: 41%
- KPS: 37%
- TUG: 35%
- Fall: 24%
- Weight loss: 18%
- Cognition: 15%
How We Can Improve Surgical Outcomes of Older Adults with Cancer
Our Intervention

Negative Surgical Outcome  

Support the Frail Patient
Geriatric Comanagement Programs

- Programs focused on the effective management of frail patients on non-geriatric wards
- Collaboration between non-geriatrics and geriatrics teams focusing on the prevention and management of geriatric-oriented problems and syndromes
- Geriatrics team is directly involved in the treatment of relevant medical issues
- Potential improvement of functional status, prevention of complications and reduced LOS
- Early inclusion and interdisciplinary care with geriatric expertise are key-elements of comanagement programs

Geriatrics Comanagement at MSKCC

**Preoperative assessment including eRFA**
- Perform Geriatric Assessments and provide necessary interventions to optimize patient status
- Educate patients and caregivers on:
  - Use of incentive spirometry in the postoperative period
  - Importance of exercise before surgery
  - Postoperative delirium and preventive measures
  - Importance of proper pain management in the perioperative period

**Surgical Procedure**

**Postoperative follow-up**
- Implement delirium risk reduction interventions
- Assist with pain management
- Reinforce use of incentive spirometry
- Assist with functional recovery
- Educate patients and caregivers about the importance of early mobility
- Request physical & occupational therapy consultation
- Assist the surgical team with safe hospital discharge planning
Aims of the Study

Primary aim:
To assess the association between Geriatric Comanagement and 90 day postoperative mortality.

Secondary aims:
To assess the association between Geriatric Comanagement and Adverse Surgical Outcomes.
To assess the association between Geriatric Comanagement and Inpatient Supportive Care Utilization.
Patient Population

- Retrospective Review of Prospective Cohort Study
- Age 75 or older
- Seen by a surgical service as a new visit from 2015-2018
- Proceeded with surgery within the first two months after visit
- Hospital length of stay ≥1 day
Study arms

N=1892

Geriatric Comanagement Group
N=1020

Surgery Management Group
N=872
### Outcome Variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 day postoperative mortality rate</td>
<td>Social Security Death Index and/or chart review</td>
</tr>
<tr>
<td>Adverse surgical outcomes</td>
<td>Composite score of any Major complication, Readmission, or Emergency room visit within 30 days of surgery.</td>
</tr>
<tr>
<td>Inpatient Supportive Care Utilization</td>
<td>Chart review for any note by: Physical therapy, Occupational therapy, Psychiatry, Nutrition, Social worker, Case manager</td>
</tr>
</tbody>
</table>
# Covariates

<table>
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<tr>
<th>Class</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sociodemographic</strong></td>
<td>Age, gender</td>
</tr>
<tr>
<td><strong>Functional status</strong></td>
<td>Memorial Sloan Kettering Frailty Index American Society of Anesthesiologists, Physical status</td>
</tr>
<tr>
<td><strong>Healthcare process</strong></td>
<td>Days from initial visit to surgery</td>
</tr>
<tr>
<td><strong>Intensity of surgery</strong></td>
<td>Operation time, intraoperative blood loss</td>
</tr>
<tr>
<td><strong>Preoperative evaluation</strong></td>
<td>Albumin level</td>
</tr>
</tbody>
</table>
Surgical Procedures

- Colorectal: 585
- Head and Neck: 461
- Thoracic: 459
- Gynecology: 309
- GU: 258
- HPB: 238
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Same age

81 vs. 80
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Same preoperative albumin

4 vs. 3.9 g/dl
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Same Frailty Level (based on MSK-FI)
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Underwent Longer Operations

~ 3.5 hours vs. 2.5 hours

203 min vs. 138 min, p<0.001
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Same Intraoperative Blood Loss

309 cc vs. 304
Description of Cohort

The Geriatric Comanagement Group vs. Surgery Management Group

Stayed in the hospital One Day longer

7 vs. 6 days, p<0.0001
90-day Postoperative Mortality Rate

Whole cohort: **6.7%**
90-day Postoperative Mortality Rate

- Surgery Management group: 10.5%
- Geriatric Comanagement group: 3.5%
Adjusted Odds of 90 day Postoperative Mortality based on Geriatric comanagement

Following adjustment for
- Age
- Gender
- Memorial Sloan Kettering Frailty Index
- American Society of Anesthesiologists-Physical Status
- Preoperative albumin
- Duration of Surgery
- Intraoperative blood loss
Adjusted Odds of 90 day Postoperative Mortality based on Geriatric comanagement

OR=0.43

95% CI 0.28-0.67, p=0.0002
Geriatric Comanagement was Associated with 57% Lower Risk of 90-day Mortality Following Cancer Surgery.
Adjusted Odds of 30 day Adverse Surgical Events based on Geriatric comanagement

Following adjustment for
- Age
- Gender
- Memorial Sloan Kettering Frailty Index
- American Society of Anesthesiologists-Physical Status
- Preoperative albumin
- Duration of Surgery
- Intraoperative blood loss
Adjusted Odds of 90 day Adverse Surgical Events based on Geriatric comanagement

OR = 0.93

95% CI 0.73-1.18, p=0.5
Geriatric Comanagement was not Associated with Reduction in Adverse Surgical Events.
Postoperative Inpatient Supportive Services Utilization

- Physical Therapy: Surgery cohort 64% vs. Geriatric comanagement 80%
- Occupational therapy: Surgery cohort 25% vs. Geriatric comanagement 38%
- Case Management: Surgery cohort 71% vs. Geriatric comanagement 75%
- Social Work: Surgery cohort 19% vs. Geriatric comanagement 20%
- Nutrition: Surgery cohort 73% vs. Geriatric comanagement 79%
- Psychology/Psychiatry: Surgery cohort 5% vs. Geriatric comanagement 5%
Limitations

Not a Randomized Controlled Trial. No data on:
- Neoadjuvant cancer treatment
- Exact cause of mortality
- Hospital disposition plan

In institutions with limited resources, a robust geriatric comanagement program may not be feasible.
Strengths

- The largest study on geriatric comanagement for improving postoperative outcomes for cancer patients aged 75+.
- Incorporating a great number of variables from pre, intra, and postoperative period.
- A single institution study in relatively short period of time (3 years) which limits the effect of other healthcare processes (e.g. surgeons’ expertise, surgical techniques, other QI activities) on outcomes.
Why did geriatric comanangement lead to significantly reduced 90 day post operative mortality?

<table>
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<tr>
<th>Pre-operative Geriatric Assessments: Identification of geriatric syndromes</th>
<th>Education of patients and caregivers</th>
<th>Delirium risk reduction intervention</th>
<th>Polypharmacy</th>
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<td>Pain management</td>
<td>Communication</td>
<td>Referral to supportive services</td>
<td>Discharge planning</td>
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Summary

Perioperative geriatric co-management was associated with significant reduction in 90-day postoperative mortality and higher utilization of inpatient and outpatient supportive care services.

Future studies should confirm these findings and assess the links between reduction in 90 day post operative mortality and geriatric co-management
With special thanks to our Geriatric team including MDs, NPs, RNs, Pharmacist, Clinic Coordinators.
Thank you!