



Memorial Sloan Kettering  
Cancer Center

# Geriatric Comanagement



**Of Older Patients with Cancer, MSKCC Experience**

Armin Shahrokni, MD, MPH  
shahroka@mskcc.org

Oct 2021

# Disclosure

- I have nothing to disclose.



Edit profile

**Armin Shahrokni**

@MSK\_GeriOnc

Geriatrician & Oncologist. Seeking answer to just 1 question; Do We and How Much We Value Our Aging Population? Ops R Mine Only.

 [New York, USA](#)  [mskcc.org/cancer-care/do...](https://mskcc.org/cancer-care/do...)

 Joined May 2016



# About Me

- Joined MSKCC in 2013 after completing a geriatric oncology fellowship at UCLA.
- Have both oncology and geriatric clinics.
- Attend both disease management team and geriatrics service meetings.
- In the geriatric clinic, mainly perform preoperative evaluation on patients aged 75+.
- Currently our Geriatric Service has 5MDs, 3NPs, 4RNs, pharmacist, social worker, nutritionist.



# Outline

- ✓ My MSKCC Problem
- ✓ My (our) 7-year Journey to Solve the Problem



# *Fascination with Age*



# Age and Adjuvant Chemotherapy Use After Surgery for Stage III Colon Cancer

**Impact of age on postoperative outcomes in 1118 gastric cancer patients undergoing surgical treatment**

**Effects of Age and Nutritional Status on Surgical Outcomes in Head and Neck Cancer**

The effect of age on clinical/pathologic features, surgical morbidity, and outcome in patients with endometrial cancer



Excerpta Medica

The American Journal of Surgery 191 (2006) 216–224  
Scientific papers—International

The American  
Journal of Surgery

Comparison of surgical outcomes of gastric cancer in elderly and middle-aged patients

# Limitations of focusing on just AGE



Ann Surg Oncol

<https://doi.org/10.1245/s10434-018-6983-7>

Annals of

---

**SURGICAL ONCOLOGY**

OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

---

EDITORIAL – COLORECTAL CANCER

# The Age of Talking About Age Alone is Over

Armin Shahrokni, MD, MPH and Koshy Alexander, MD

Geriatric Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY





In conclusion, over the past decades we have made significant advances in understanding the risk factors associated with poor surgical outcomes. We have realized that some older cancer patients are at higher risk for poor surgical outcomes compared with others of the same age. The data are clear that fitness of an older cancer patient, rather than age per se, should be the factor considered. Data

# Differentiating between these Octogenarians



# The Gray Zone



# A Very Simple Formula

Negative Cancer/Tx Outcome = Frail Body × Stress of X

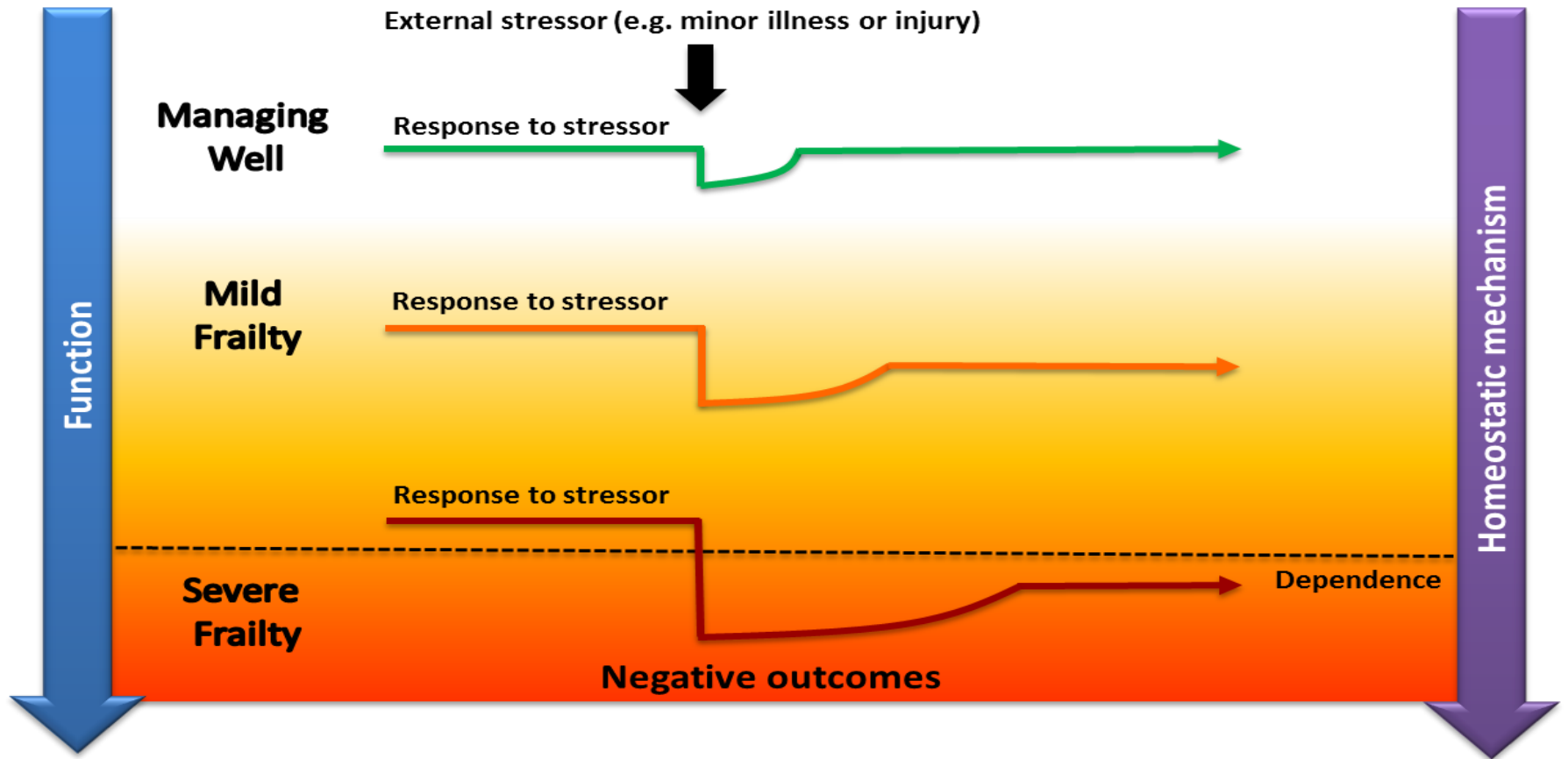
Where X could be  
Cancer  
Cancer surgery  
Other cancer treatment  
Or other stressors



# The Concept of Frailty



# When frailty differs among patients, same level of stress produces different outcomes.



# Our MSKCC Problem

- Geriatric Assessment was mainly performed on paper and the data was mostly wasted.
- We were **UNABLE TO**
  - compare one patient's fitness with the other patient easily
  - retrieve or collect the data easily.
  - communicate with other colleagues in a data-driven environment.
  - explain/show the importance of our work.
- Every medical personnel had its own interpretation of frailty, making it very difficult to understand what they mean by frailty.



# Solution: Electronic Rapid Fitness Assessment

A web-based Geriatric Assessment

## Missions

To allow physicians to have a more comprehensive overview of fitness of older patients with cancer

To be patient-centered.

To have the capability of capturing data in a way that is useful for practice and valuable for research at the same time.

To be supportive of patient care and not disruptive.





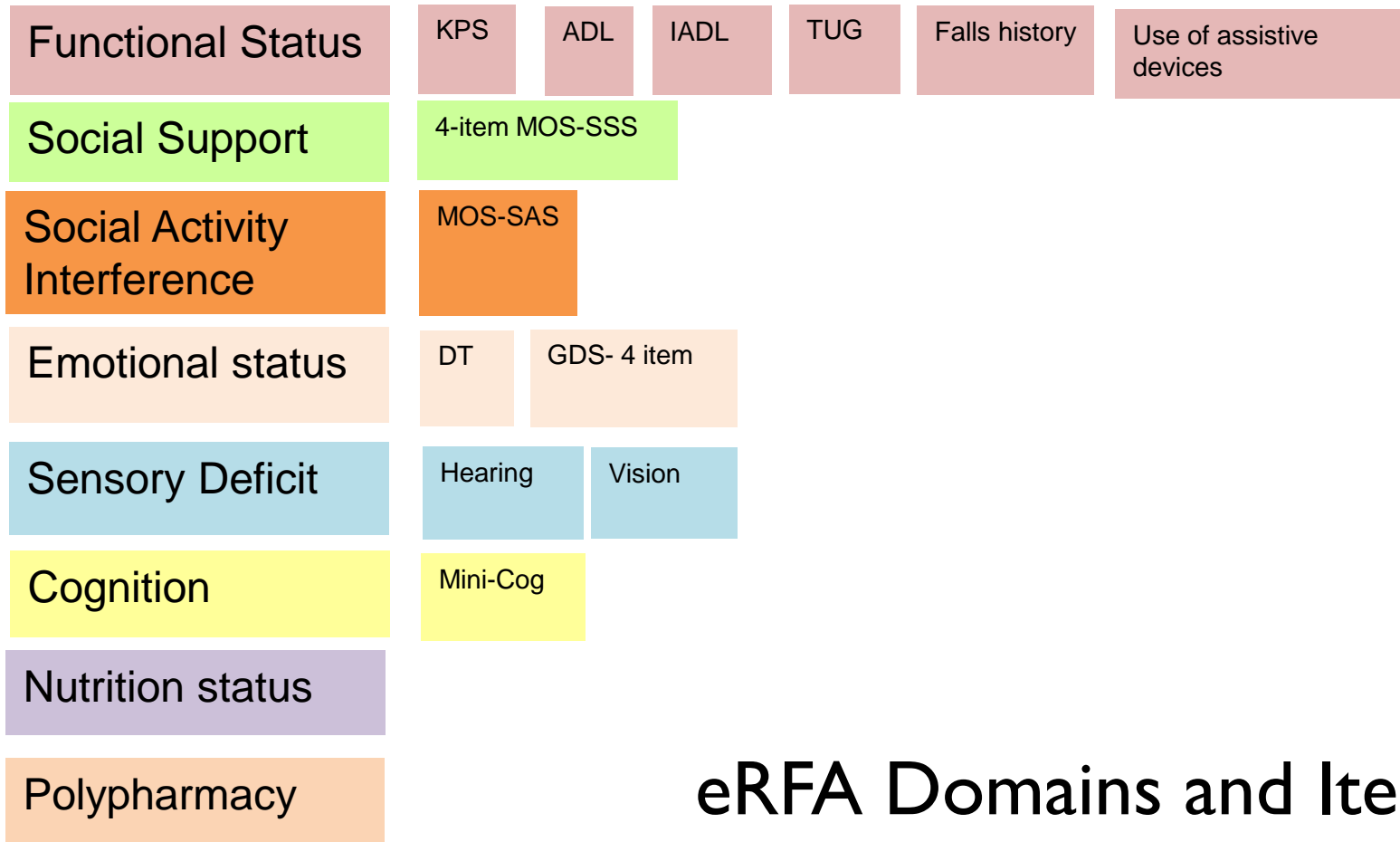
# Electronic Rapid Fitness Assessment

- Validated questionnaires for each geriatric assessment domain

Patients/caregivers able to complete the eRFA

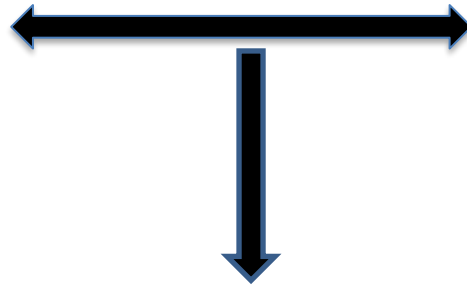
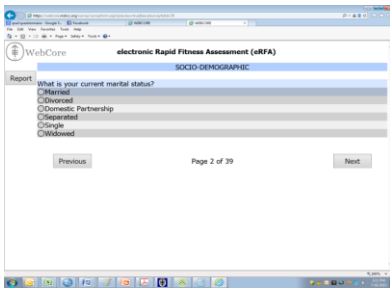
- At home (if they have email access)
- In the clinic waiting area using a tablet or laptop
- In the exam room using a desktop





# eRFA Domains and Items

# How is eRFA administered?



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

**Final report**






**Database For future analysis**

# eRFA Final Report: Quantifying Frailty

## 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.

	Patient Score	Impairment Threshold	% Below Threshold	Recommendations
<b>KPS</b>	<b>60</b>	<b>&lt;= 80</b>	<b>37%</b>	<a href="#">Read more</a> 
<b>ADL</b>	<b>13</b>	<b>&lt; 14</b>	<b>52%</b>	<a href="#">Read more</a> 
<b>iADL</b>	<b>12</b>	<b>&lt; 16</b>	<b>45%</b>	<a href="#">Read more</a> 
<b>History of Falls</b>	<b>In the last 6 months</b>	<b>At least once</b>	<b>25%</b>	<a href="#">Read more</a> 
<b>Timed Up and Go (TUG) Test</b>	<b>10 - 19 seconds</b>	<b>&gt;= 10 seconds</b>	<b>36%</b>	<a href="#">Read more</a> 

### Pre/Postop Recommendation:

- A- Consider consultation with physical therapy and occupational therapists.
- B- Encourage use of appropriate assistive devices.
- C- Encourage resistance exercises such as repeated chair stand in the preoperative period.
- D- Consider use of stationary bike or bike pedals in the preoperative period.

<b>Social Support</b>	<b>8</b>	<b>&lt;= 16</b>	<b>43%</b>	<a href="#">Read more</a> 
<b>Limited Social Activity</b>	<b>9</b>	<b>&gt;= 8</b>	<b>50%</b>	<a href="#">Read more</a> 
<b>Distress Level</b>	<b>8</b>	<b>&gt;= 4</b>	<b>55%</b>	<a href="#">Read more</a> 
<b>Depression</b>	<b>3</b>	<b>&gt;= 1</b>	<b>55%</b>	<a href="#">Read more</a> 
<b>Number of Medications</b>	<b>&gt; 10</b>	<b>&gt;= 5</b>	<b>45%</b>	<a href="#">Read more</a> 

# eRFA: Feasible

172

Original  
Research

## Electronic Rapid Fitness Assessment: A Novel Tool for Preoperative Evaluation of the Geriatric Oncology Patient

Armin Shahrokni, MD, MPH<sup>1</sup>; Amy Tin, MA<sup>2</sup>; Robert J. Downey, MD<sup>3</sup>; Vivian Strong, MD<sup>4</sup>;  
Sarvam Mahmoudezadeh, MD<sup>5</sup>; Manpreet K. Boparai, MS<sup>6</sup>; Sincere McMillan, ANP<sup>7</sup>; Andrew Vickers, PhD<sup>8</sup>;  
and Beatriz Kore-Grodzicki, MD, PhD<sup>9</sup>

### 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.

*J Natl Compr Canc Netw* 2017;15(2):172–179



Memorial Sloan Kettering  
Cancer Center



Memorial Sloan Kettering  
Cancer Center

# eRFA Score and Postoperative Mortality

ORIGINAL RESEARCH

## Geriatric Assessment, Not ASA Physical Status, Is Associated With 6-Month Postoperative Survival in Patients With Cancer Aged $\geq 75$ Years

Armin Shahrokni, MD, MPH<sup>a</sup>; Bella Marie Vishnevsky, MD<sup>b</sup>; Brian Jang, BA<sup>c</sup>; Saman Sarraf, MD<sup>a</sup>; Koshy Alexander, MD<sup>a</sup>; Soo Jung Kim, GNP<sup>a</sup>; Robert Downey, MD<sup>d</sup>; Anoushka Afonso, MD<sup>e</sup>; and Beatriz Korc-Grodzicki, MD, PhD<sup>a</sup>

JNCCN, 2019



Memorial Sloan Kettering  
Cancer Center



Memorial Sloan Kettering  
Cancer Center

# Each additional impairment adds 14% to the risk of dying within 6 months after surgery



Variable	Odds Ratio	95% CI	P Value
ASA PS III*	0.86	0.24–2.99	.81
ASA PS IV*	0.44	0.09–2.10	.30
Age	1.05	0.99–1.11	.08
Number of geriatric deficits	1.14	1.02–1.26	.01
30-day ICU admission	2.77	1.06–7.24	.03
Hospital length of stay	1.03	1.005–1.067	.02
Preoperative albumin level	0.36	0.18–0.72	.004

\*Compared with ASA PS II.

Abbreviations: ASA PS, American Society of Anesthesiologists physical status; ICU, intensive care unit.


# eRFA and Perioperative Care Process

## Is Screening for Psychosocial Risk Factors Associated With Mental Health Care in Older Adults With Cancer Undergoing Surgery?

Kelly M. Trevino, PhD <sup>1</sup>; Christian J. Nelson, PhD<sup>1</sup>; Rebecca M. Saracino, PhD<sup>1</sup>; Beatriz Korc-Grodzicki, MD, PhD<sup>2</sup>; Saman Sarraf, BS <sup>2</sup>; and Armin Shahrokni, MD, MPH<sup>2</sup>





Preoperative Distress:  72%  
 Poor Social Support:  56%

likelihood of receipt of postoperative mental health care services

**TABLE 3.** Relationship Between Preoperative Geriatric Assessment Variables, Surgical Characteristics and Outcomes, and Postoperative Receipt of Mental Health Care Services

	Odds Ratio	95% CI	P
<b>Demographic characteristics</b>			
Marital status	0.59	0.35-0.99	.05
Non-Hispanic white	0.82	0.48-1.39	.46
Living with family	1.48	0.85-2.58	.17
<b>Surgical characteristics and outcomes</b>			
Hospital length of stay	1.08	1.05-1.11	<.001
ASA	1.46	0.92-2.32	.11
Major adverse events reported	0.78	0.37-1.65	.51
Postoperative ICU admission	1.70	0.82-3.51	.15
Length of surgery	1.00	0.99-1.001	.85
Minor adverse events reported	1.06	0.71-1.58	.78
<b>Geriatric assessment variables</b>			
Elevated distress	1.72	1.16-2.56	.007
Poor social support	1.56	1.07-2.27	.02
Impaired iADL	1.49	0.94-2.36	.09
Comorbid conditions	1.34	0.93-1.95	.12
Impaired ADL	1.47	0.94-2.30	.09
Impaired KPS	0.85	0.54-1.35	.49
Falls within the past y	1.14	0.75-1.72	.55
Impaired TUG	1.05	0.69-1.58	.83
Social activity interference	1.11	0.71-1.73	.64
Weight loss	1.22	0.80-1.86	.35
Elevated depression	1.10	0.73-1.64	.65



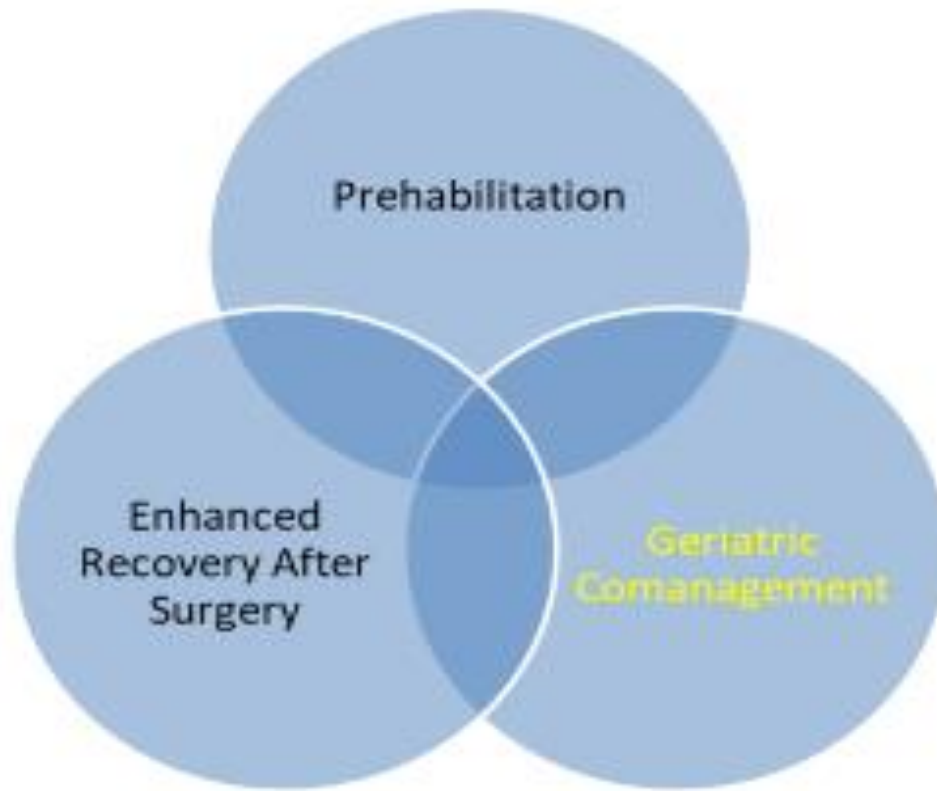


---

Original Investigation | Geriatrics

# Association of Geriatric Comanagement and 90-Day Postoperative Mortality Among Patients Aged 75 Years and Older With Cancer

Armin Shahrokni, MD, MPH; Amy L. Tin, MA; Saman Sarraf, MD; Koshy Alexander, MD; Steve Sun, MD; Soo Jung Kim, ANP; Sincere McMillan, GNP; Heidi Yulico, GNP; Farnia Amirnia, MD; Robert J. Downey, MD; Andrew J. Vickers, PhD; Beatriz Korc-Grodzicki, MD, PhD



# The Geriatric Comanagement

## Preoperative Care

Perform Geriatric Assessment and do the necessary interventions to optimize the status

Educate patients and caregivers

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.



# The Geriatric Comanagement

## Inpatient Postoperative Care

Implement delirium risk reduction interventions

Assist with the pain management

Reinforce the use of incentive spirometry

Assist with functional recovery  
Educate patient and family about the importance of early mobility  
Request physical 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 Inpatient Supportive Care Utilization.



# Patient Population

- Age 75 or older
  - Seen by a surgery service as a new visit from 2015-18.
  - Proceeded with surgery within the first two months of that visit.
  - Hospital Length of Stay of  $\geq 1$  day.
- 
- Cohort is divided into Geriatric Comanagement and Surgery cohorts



**Table 1. Demographic and Perioperative Characteristics of 1892 Patients**

Characteristic	No. (%)		P value
	Surgical service management (n = 872)	Geriatric comanagement (n = 1020)	
Age, mean (SD) y	80 (4)	81 (4)	<.001
Men	450 (51.6)	488 (47.8)	.11
Length of stay, median (IQR), d	4 (2-7)	5 (3-8)	<.001
Operative time, mean (SD), min	138 (112)	203 (146)	<.001
ASA score >3 <sup>a</sup>	818 (93.8)	963 (94.4)	.62 <sup>b</sup>
Preoperative albumin level, mean (SD) g/dL <sup>a</sup>	3.9 (0.5)	4.0 (0.4)	<.001 <sup>b</sup>
Estimated blood loss, mean (SD), mL <sup>a</sup>	138 (309)	200 (298)	<.001 <sup>b</sup>
<b>MSK-FI score<sup>a</sup></b>			
0	104 (11.9)	111 (10.9)	.32 <sup>b</sup>
1	227 (26.0)	294 (28.8)	
2	213 (24.4)	278 (27.3)	
3	156 (17.9)	168 (16.5)	
4	98 (11.2)	95 (9.3)	
≥5	74 (8.5)	74 (7.3)	
<b>Procedure type<sup>c</sup></b>			
Colorectal	137 (15.7)	448 (43.9)	<.001
Gastric and mixed tumor	92 (10.6)	82 (8.0)	.07
Gynecology	45 (5.2)	264 (25.9)	<.001
Head and neck	147 (16.9)	314 (30.8)	<.001
Urology	78 (8.9)	180 (17.6)	<.001
Plastic	47 (5.4)	118 (11.6)	<.001
Hepatobiliary-pancreatic	55 (6.3)	183 (17.9)	<.001
Thoracic	309 (35.4)	150 (14.7)	<.001
Other procedures	109 (12.5)	159 (15.6)	.06



**eTable 4.** Association Between Geriatric Comanagement and 90-day Mortality on Sensitivity Analyses, With Adjustment for Additional Covariates

<b>Model</b>	<b>Odds Ratio (95% CI)</b>	<b>P</b>
Additionally, adjusted for time to surgery (N=1892)	0.47 (0.30-0.73)	0.001
Additionally, adjusted for preoperative hemoglobin level (N=1606)	0.49 (0.30-0.80)	0.004
Additionally, adjusted for preoperative sodium level (N=1604)	0.50 (0.31-0.82)	0.006
Additionally, adjusted for preoperative calcium level (N=1602)	0.49 (0.30-0.80)	0.004
Additionally, adjusted for preoperative hemoglobin, preoperative sodium, and preoperative calcium levels (N=1600)	0.49 (0.30-0.80)	0.005
Additionally, adjusted for heart disease and arthritis or degenerative joint disease (N=1892)	0.47 (0.30-0.74)	0.001
Additionally, adjusted for procedure type (N=1892)	0.57 (0.36-0.90)	0.015
Additionally, adjusted for procedure type and time to surgery (N=1892)	0.58 (0.36-0.91)	0.018
Additionally, adjusted for procedure type, time to surgery, heart disease, and arthritis or degenerative joint disease (N=1892)	0.58 (0.37-0.92)	0.021

All analyses are adjusted for age at surgery, sex, American Society of Anesthesiologists score, operative time, preoperative albumin level, estimated blood loss, and Memorial Sloan Kettering Frailty Index score.

**Table 2. Use of Inpatient Supportive Care Services for 1892 Patients**

Service	No. (%)		P value <sup>a</sup>
	Surgical service management (n = 872)	Geriatric comanagement (n = 1020)	
Physical therapy	555 (63.6)	820 (80.4)	<.001
Occupational therapy	220 (25.2)	385 (37.7)	<.001
Speech and swallow rehabilitation	42 (4.8)	86 (8.4)	.002
Psychiatry	41 (4.7)	55 (5.4)	.53
Nutrition	637 (73.1)	803 (78.7)	.004
Social work	166 (19.0)	208 (20.4)	.49
Case management	623 (71.4)	768 (75.3)	.06

**Table 3. Discharge Locations Among 1855 Patients Who Survived to Hospital Discharge**

Discharge location	No. (%)		P value <sup>a</sup>
	Surgical service management (n = 846)	Geriatric comanagement (n = 1009)	
Home	676 (79.9)	731 (72.4)	<.001
Home with home supportive services	115 (13.6)	182 (18.0)	
Hospice or home with hospice	8 (0.9)	2 (0.2)	
Rehabilitation facility	44 (5.2)	89 (8.8)	
Transfer to another hospital	3 (0.4)	5 (0.5)	

# Conclusion

- Every Cancer Center is facing or will face the Memorial Problem; *The Ever-Growing Problem of Frailty.*
- The solution would be a mixture of data, geriatric expertise, and multidisciplinary collaboration.
- It requires adequate human resource, constant education and training to promote the value of geriatric oncology, collecting data, presenting the data in various local and non-local venues, and building teams and partnering with other services.

# Thanks to the Members of the Team

