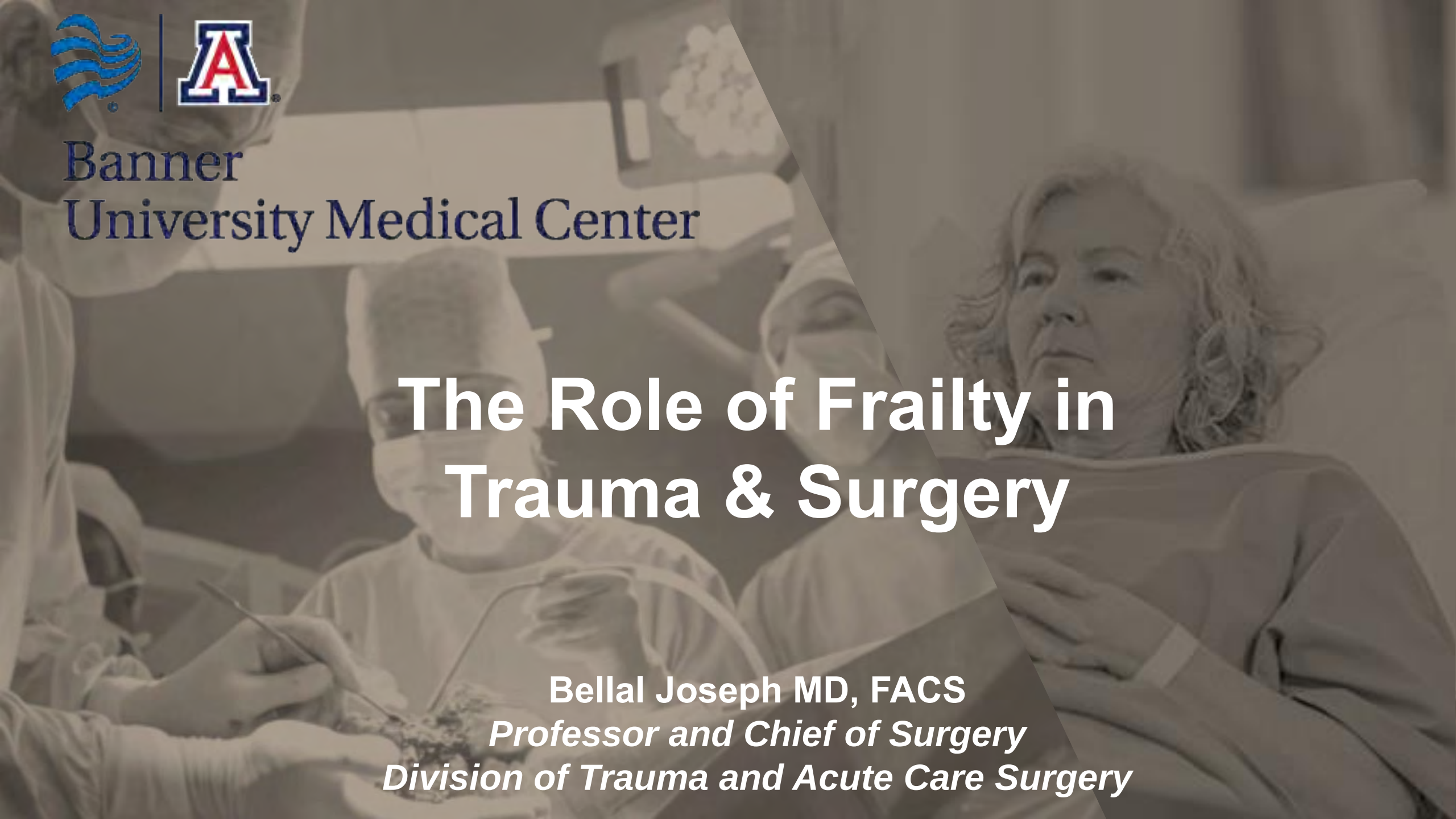

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University Medical Center

# The Role of Frailty in Trauma & Surgery

**Bellal Joseph MD, FACS**
*Professor and Chief of Surgery*
*Division of Trauma and Acute Care Surgery*

# Nothing to Disclose

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# Twenty Years Ago in the Journal of Trauma

## Differences in Mortality between Elderly and Younger Adult Trauma Patients: Geriatric Status Increases Risk of Delayed Death

Perdue, Philip W. MD, MPH; Watts, Dorraine D. RN, PhD; Kaufmann, Christoph R. MD, MPH; Trask, Arthur L. MD

The Journal of Trauma: Injury, Infection, and Critical Care: October 1998 - Volume 45 - Issue 4 - p 805-810
Article

**Background** Elderly patients suffer higher mortality rates after trauma than younger patients. This increased mortality is attributable to age, preexisting disease, and complications as well as injury severity.

**Methods** Records from 5,139 adult patients from a Level I trauma center were retrospectively reviewed. Injury Severity Score (ISS), Revised Trauma Score (RTS), early mortality (<24 hours), and late mortality (>24 hours) were determined for elderly (>or=to65 years) and younger (16-64 years) patients. Preexisting diseases and complications were identified by International Classification of Diseases, Ninth Revision, Clinical Modification diagnosis coding.

**Results** Mortality in elderly patients was twice that in younger patients despite equivalent injury severity ($p < 0.001$), and elderly patients were more likely to suffer later death than younger patients ($p < 0.005$). The prevalence of preexisting disease was greater in the elderly, as was the incidence of complications. Using logistic regression, ISS, RTS, preexisting cardiovascular or liver disease, the development of cardiac, renal, or infectious complications, and geriatric status were all independently predictive of late mortality ($p < 0.05$).

**Conclusion** Elderly trauma patients more frequently suffer late mortality than younger patients because of the combination of injury and increased preexisting disease and complications after injury. Aggressive treatment of the elderly trauma patient is warranted; however, in the face of significant preexisting disease or complications, survival is less likely. Predictive models of survival can be developed, taking into account preexisting disease and complications as well as admission parameters such as age, ISS, and RTS, and specific risk of mortality quantitated.

How Have we Changed in 2018?

Elderly patients suffer ⬆ Mortality after trauma compared to younger patients.

In 1998 this was found to be Attributable to:

- Preexisting disease
- Higher incidence of complications
- Increased Age

What variables are we using now?

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February 1, 2007

# Surgery in the Geriatric Patient

## Aging, the Heart, Emergencies, and Us

Michael E. Zenilman, MD

» Author Affiliations | Article Information

*Arch Surg.* 2007;142(2):109-110. doi:10.1001/archsurg.142.2.109


Yes, things are looking good for our elderly patients and us aging surgeons. As we understand the aging process and create safer environments, we can get our patients through complex surgery with acceptable morbidity and mortality. Now we need to start to recognize other curve balls our elderly patients throw us, which when controlled can improve survival even more—issues like dementia, delirium, polypharmacy, unrecognized alcoholism or abuse, and the need for dedicated geriatric services. The American College of Surgeons and the American Geriatrics Society have teamed up to increase research and awareness in these areas. There is a lot we do not know, that we weren't taught, and that we need to study. Maybe next time I'll go to the next level and talk about nursing homes.

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# TRANSFORMATION

- **Marked change in form, nature, appearance process by which one figure or function is converted into another one of SIMILAR VALUE**

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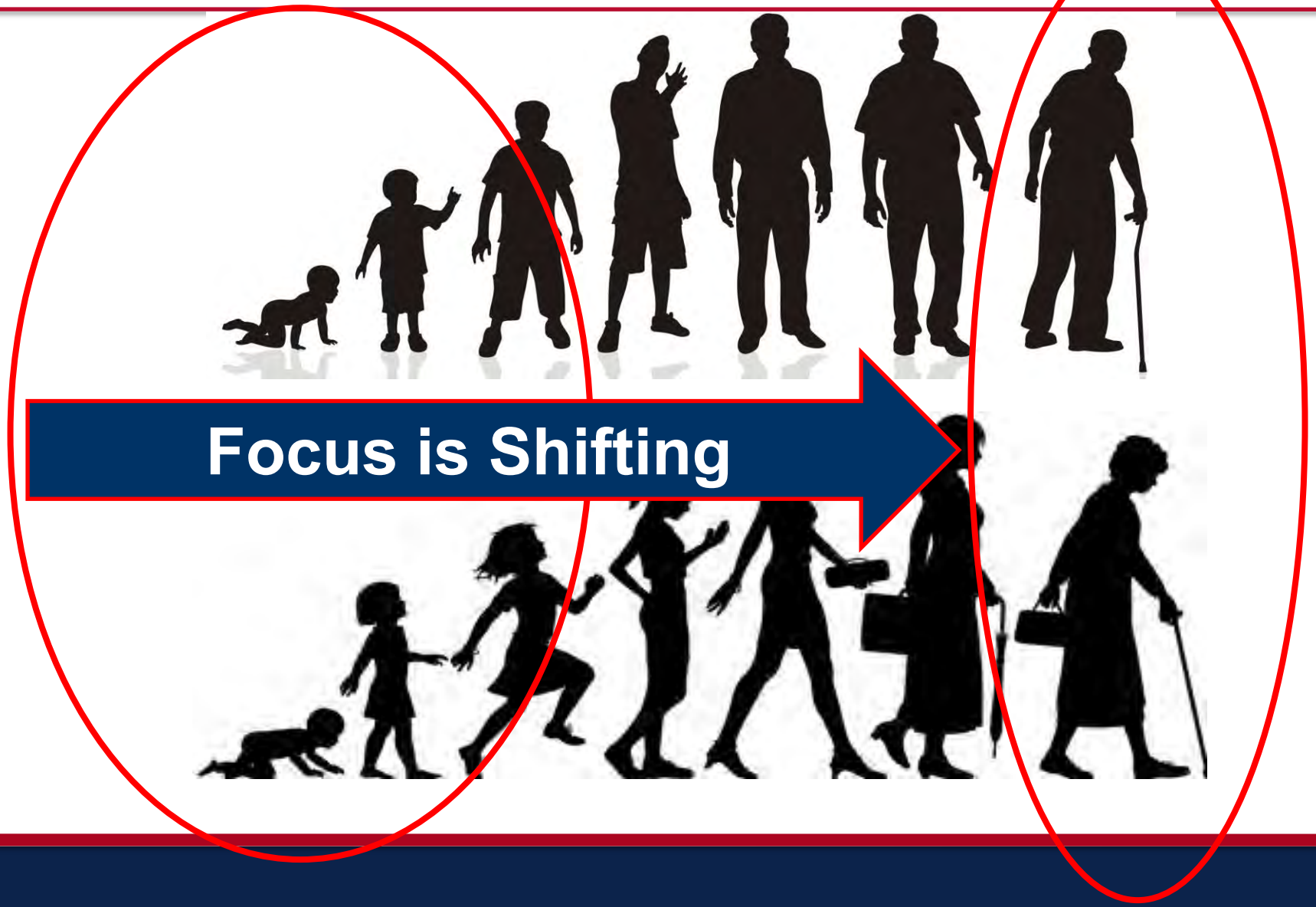
# AGING



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# INTRODUCTION

## Expectations

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# INTRODUCTION

## Reality

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# SILVER SERVICE

# Why Should We Distinguish Geriatric Patients?

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# Trauma

Extrication

**Traumatic brain injury**

vasopressors

Transfusion

FAST

GCS

Protocol

Burns

Injury severity score

Intubation

Cardiac Arrest

**Falls**

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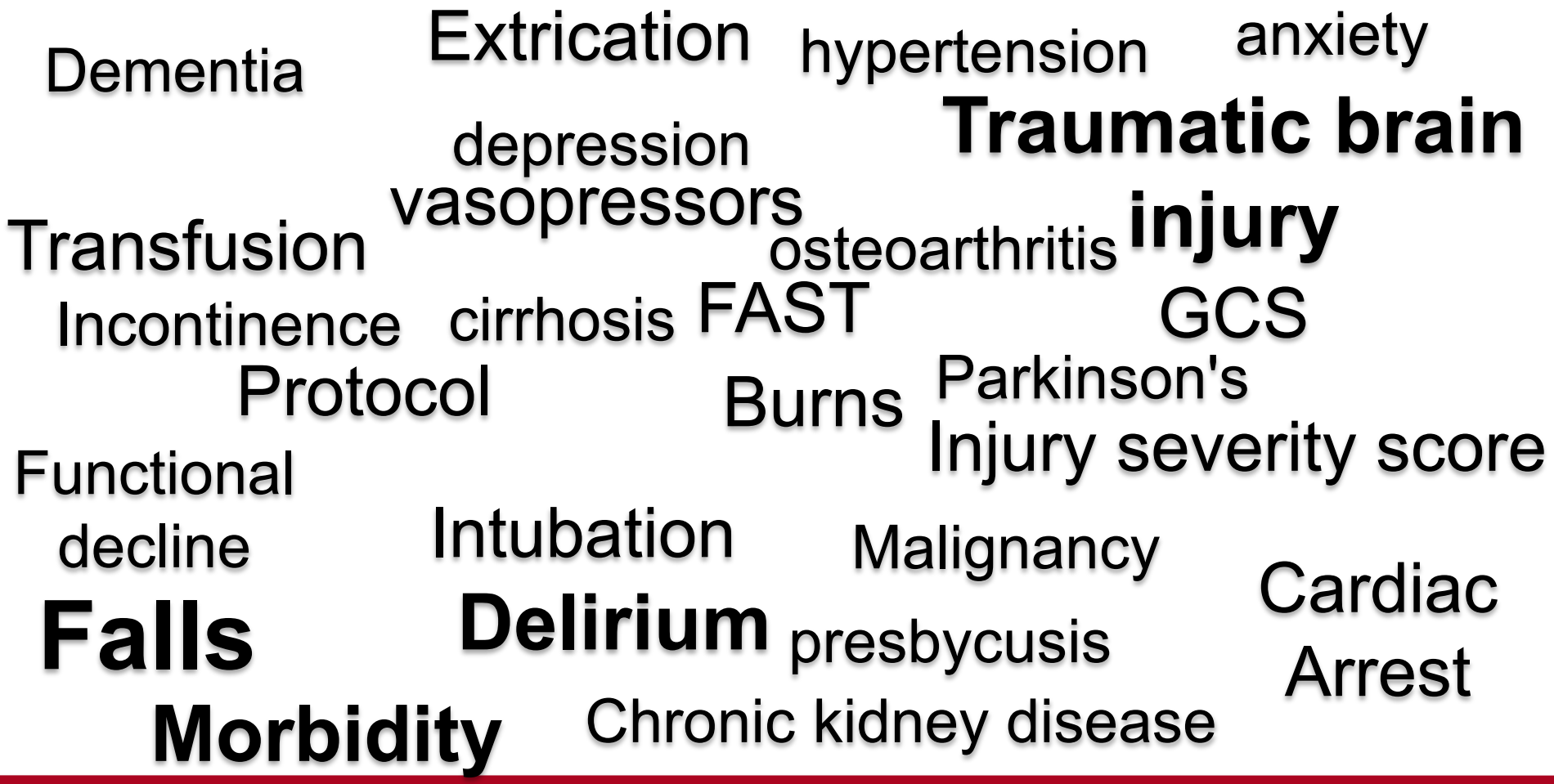
# Geriatric Trauma



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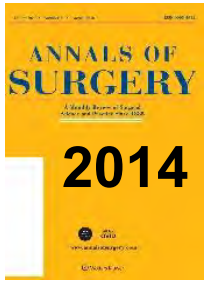
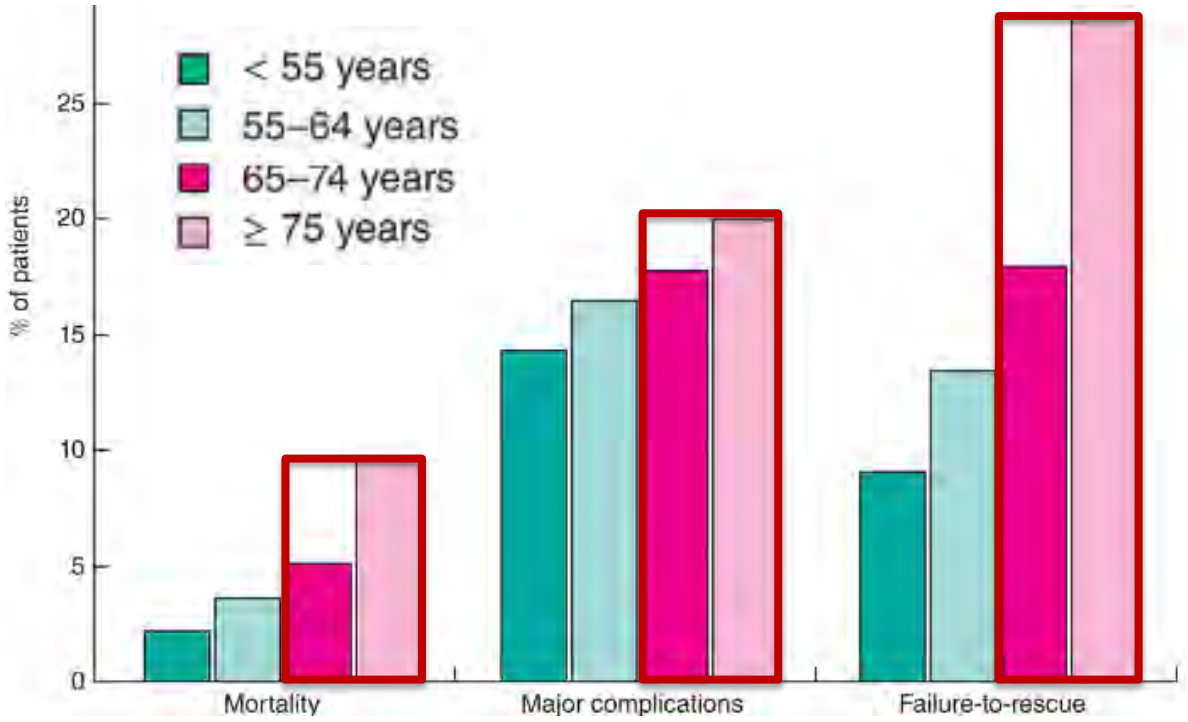
# Improving Mortality Following Emergency Surgery in Older Patients Requires Focus on Complication Rescue

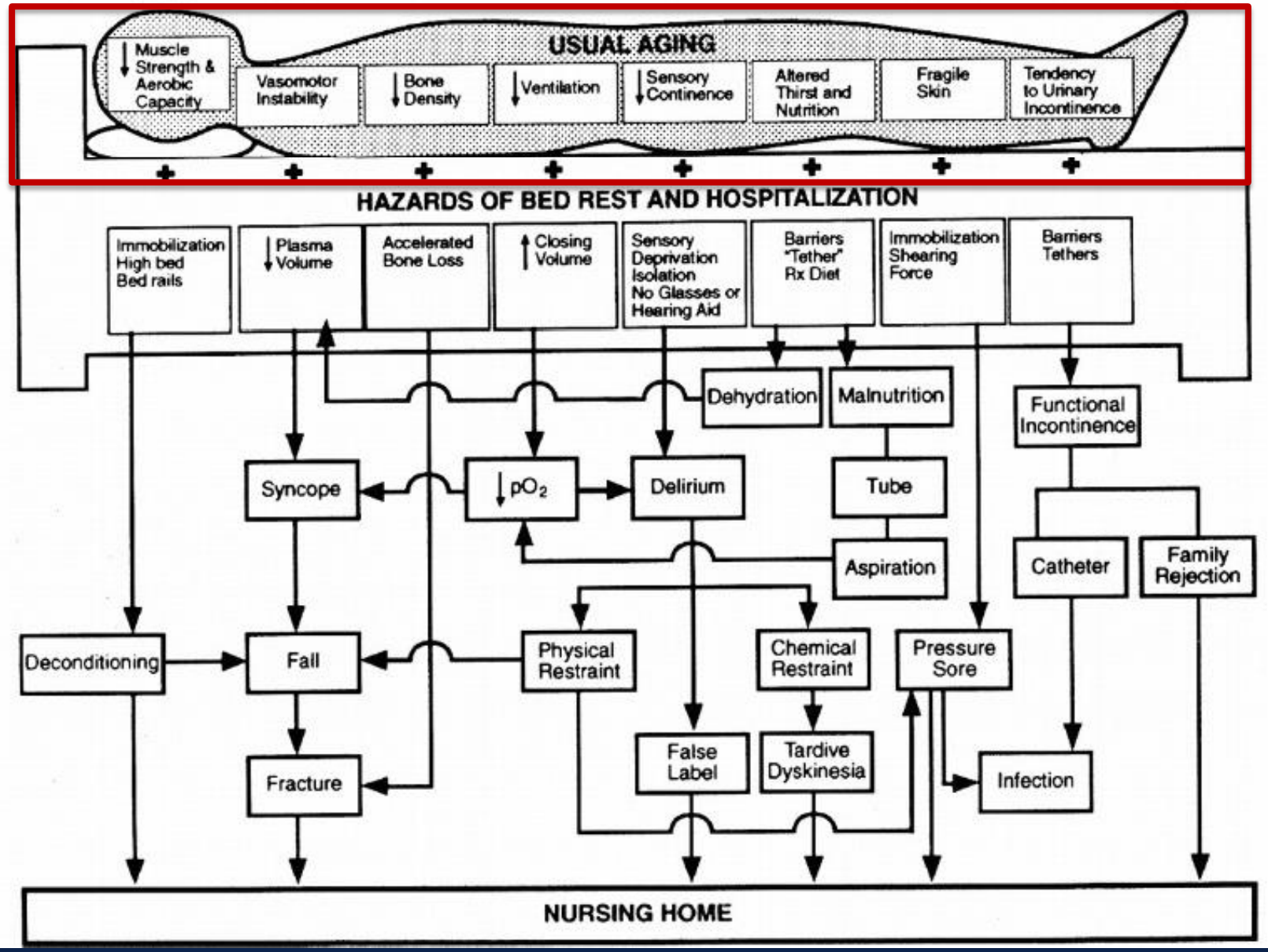
*Kyle H. Sheetz, Seth A. Waits, Robert W. Krell, Darrell A. Campbell, Jr., Michael J. Englesbe, and Amir A. Ghaferi*




## In Elderly:

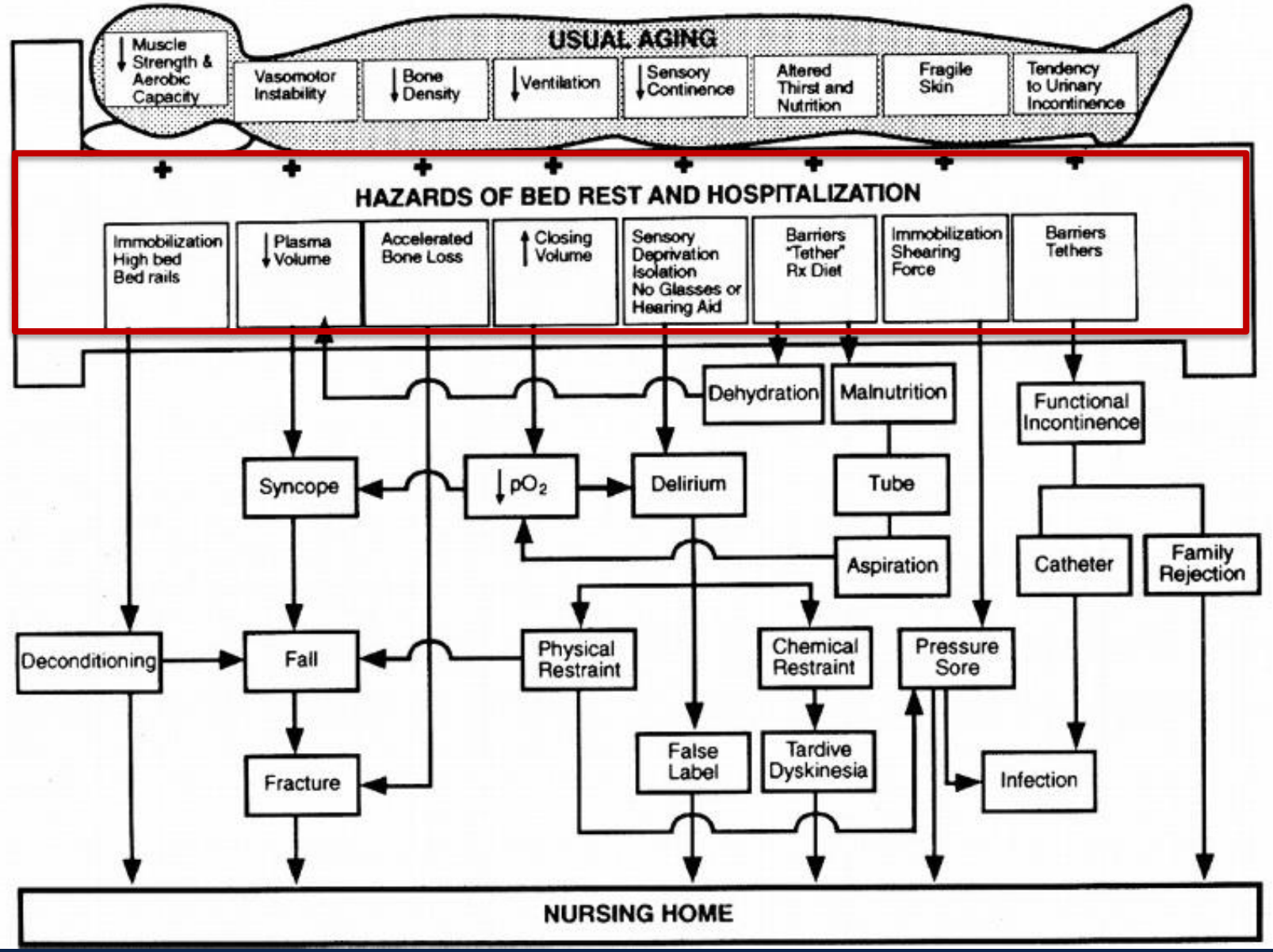
- ↑ Major Complications
- ↑ Mortality
- ↑ Failure to Rescue





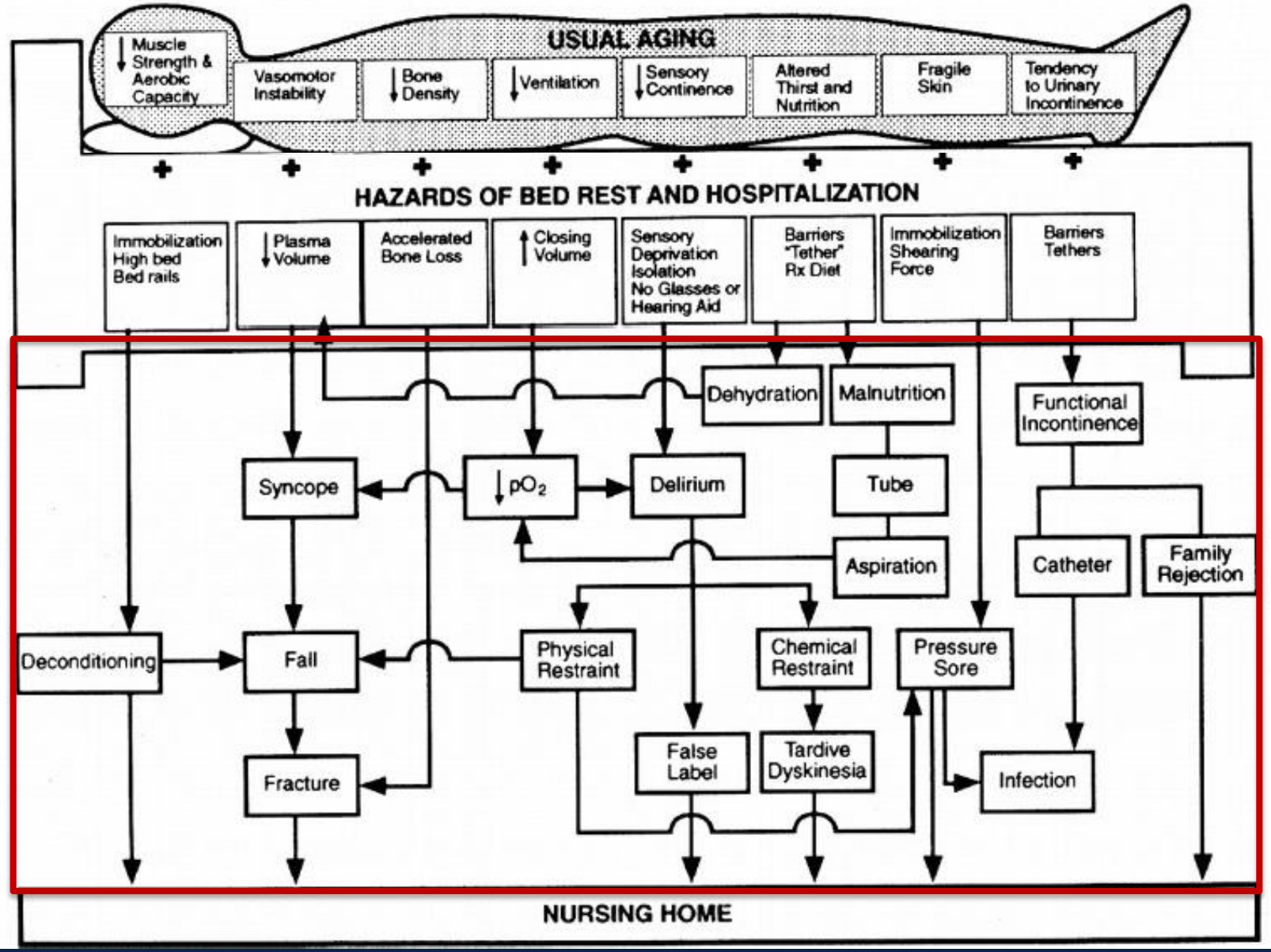

# Normal Aging

- Muscle strength
- Respiratory Function
- Nutrition




# Hospitalization

- Mobilization
- Plasma Volume
- Bone Loss




# Deconditioning

- ↑ Dehydration
- ↑ Delirium
- ↑ Fall
- ↓ Function status

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# AGING


# Frailty

Which life are you Designing?


# Frailty:

- Osteoporosis
- Weight loss
- Adverse drug reactions
- Cognitive impairment and dementia
- Disability

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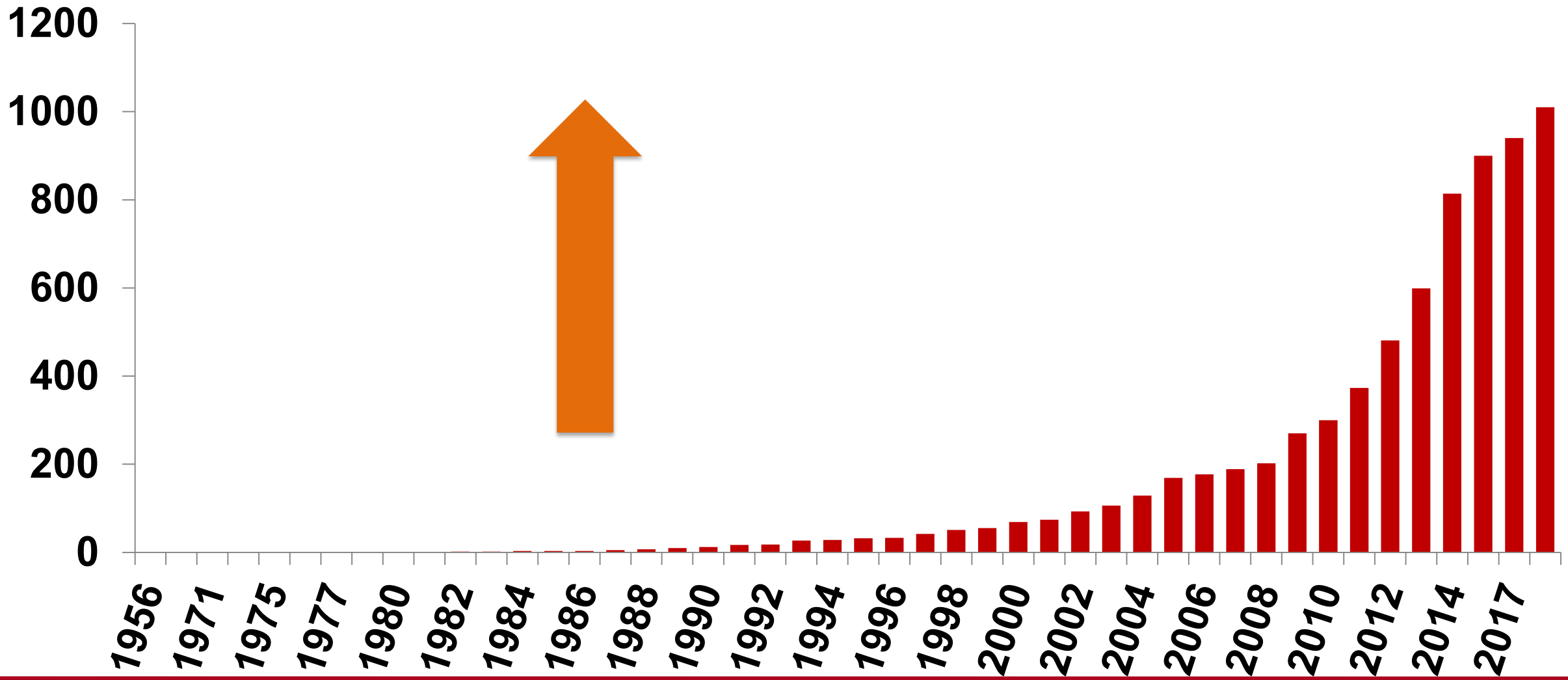

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**F** IXING

**R** EASONS

**A** GING

**I** NDIVIDUALS

**L** OSE

**T** IME-CONSUMING

**Y** EARS

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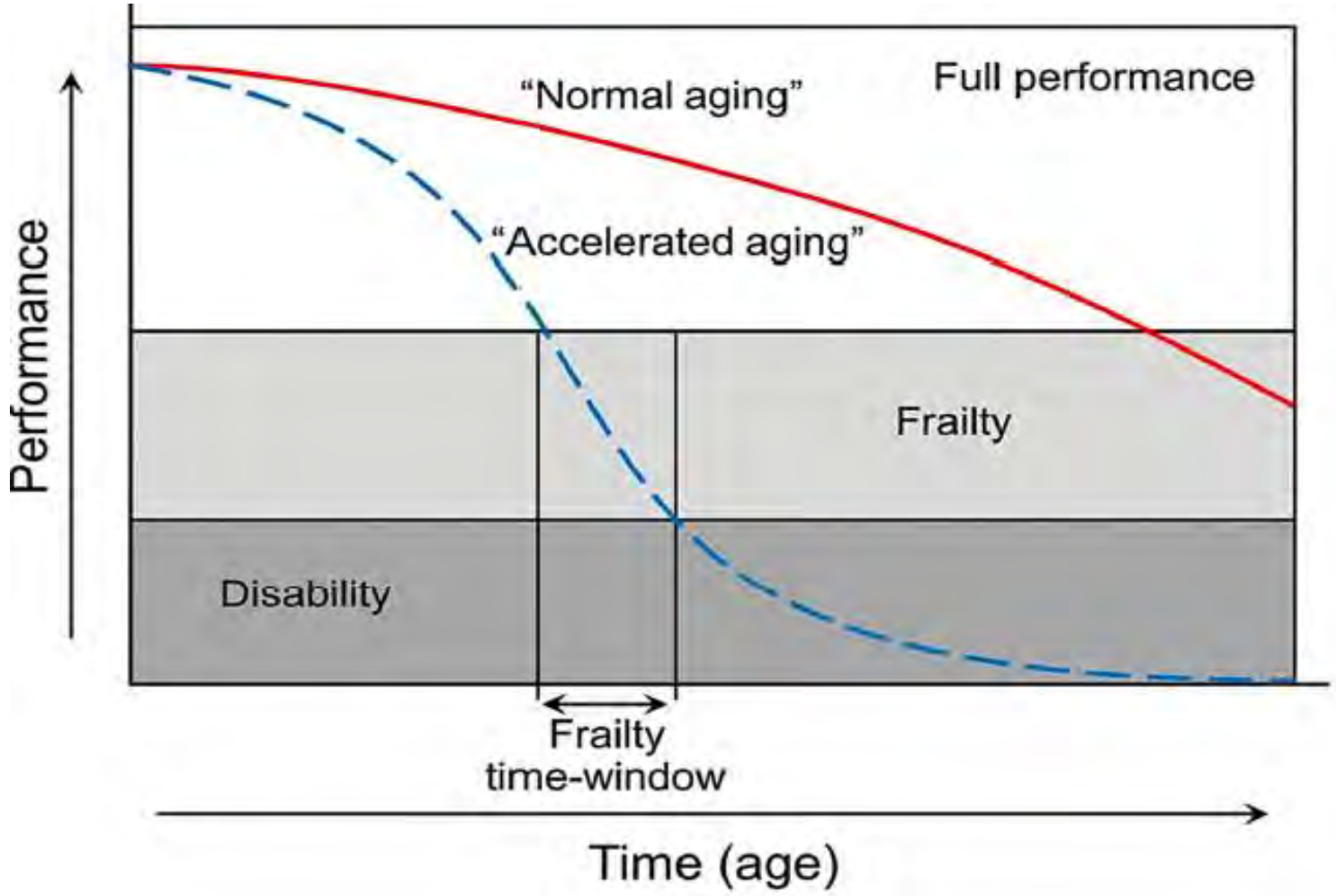
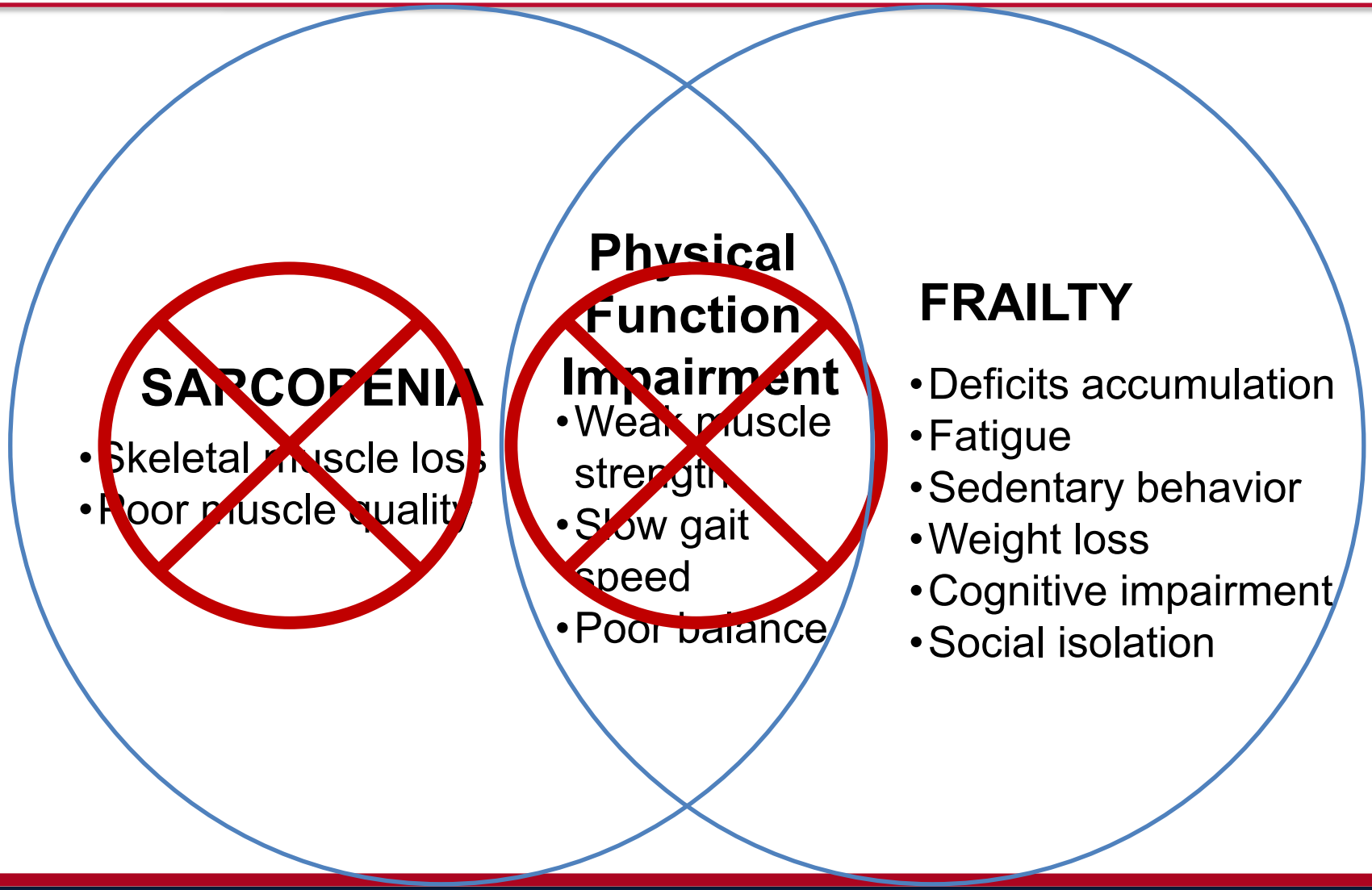
# FRAILTY

**A syndrome of Physiological Decline that affects all organ systems.**

- Clinically recognizable state with Increased Vulnerability
- Age-associated declines in physiologic reserve and function across multiple organ systems.
- Independent of
  - Age
  - Functional disability


Performance
"Normal aging"
Full performance
"Accelerated aging"
Frailty
Disability
Frailty
time-window
Time (age)


SARCOPENIA
•Skeletal muscle loss
•Poor muscle quality
Physical Function Impairment
•Weak muscle strength
•Slow gait speed
•Poor balance
FRAILTY
•Deficits accumulation
•Fatigue
•Sedentary behavior
•Weight loss
•Cognitive impairment
•Social isolation


WHICH CAME FIRST
OR
THE

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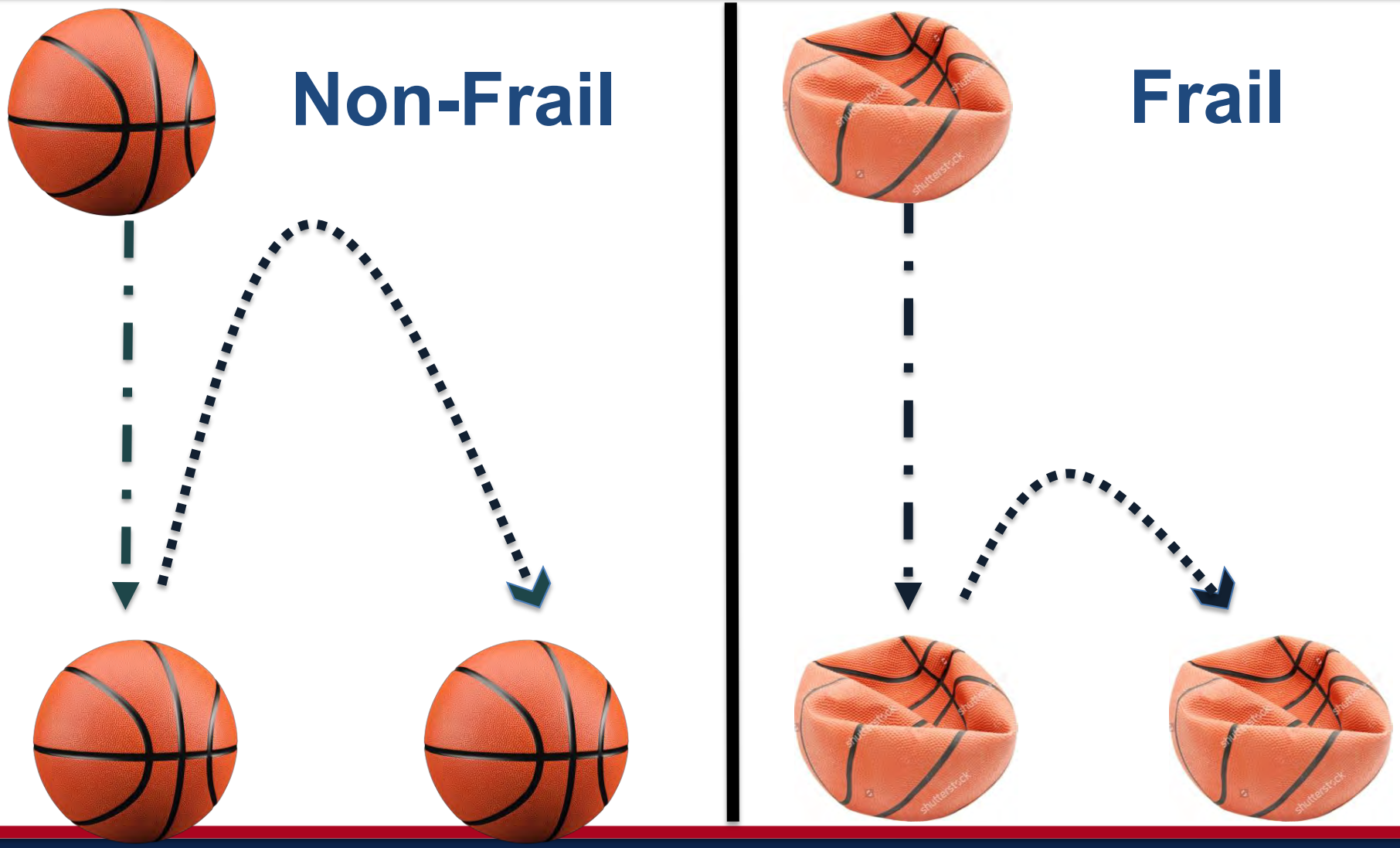

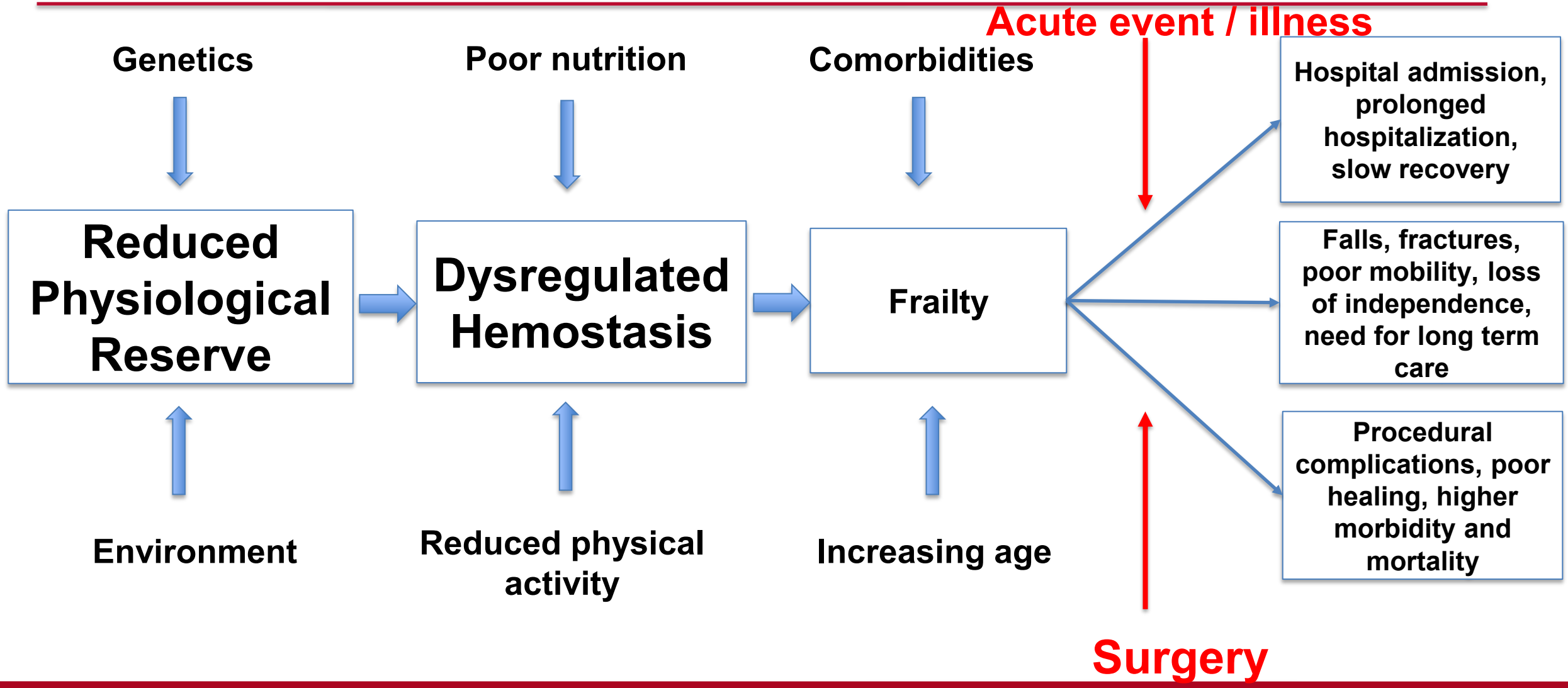
Acute event / illness
Genetics
Poor nutrition
Comorbidities
Reduced Physiological Reserve
Dysregulated Hemostasis
Frailty
Hospital admission, prolonged hospitalization, slow recovery
Falls, fractures, poor mobility, loss of independence, need for long term care
Procedural complications, poor healing, higher morbidity and mortality
Environment
Reduced physical activity
Increasing age
Surgery


FRAILTY

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# FRIED'S Index

# ROCKWOOD'S

# ACS Frailty Score

**Frailty crite**

Weight loss

Exhaustion

Weakness

Slowness

Low physic
activity leve

Frailty

| Frailty Domains |
|---|
| Changes in everyday activity |
| Head and neck problems |
| Poor muscle tone in neck |
| Bradykinesia, facial |
| Problems getting dressed |
| Problems with bathing |
| Problems with grooming |
| Urinary incontinence |
| Problems with toileting |
| Bulk difficulties |
| Rectal problem |
| Gastrointestinal problems |
| Problems cooking |
| Sucking problems |
| Problem going out alone |
| Impaired mobility |
| Musculoskeletal problems |
| Bradykinesia of the limbs |
| Poor tone in limbs |
| Poor trunk coordination trunk |
| Poor standing posture |
| Irregular gait pattern |
| Falls |

## FRAILTY SCORE: OPER

| Criteria | Definition |
|---|---|
| Shrinkage | Unintentional weig |
| Weakness | Decreased grip str |
| Exhaustion | Self-reported poo |
| Low physical activity | Low weekly energ |
| Slowness | Slow walking |

### Interpretation of the Frailty Score

The patient receives 1 point for each criterior

0–1 = Not Frail
2–3 = Intermediate Frail (Pre-frail)
4–5 = Frail

**Frail patients are at much higher risk of**

**Intermediate frail patients are at elevat**
**at more than double the risk of becomir**

See **Appendix III** for a more detailed descrip

## FRAILTY SCORE[89,92]

PATIENT RECEIVES ONE POINT FOR EACH CRITERION (0–5)

| Frailty Criteria | Definition |
|---|---|
| Weight loss | Unintentional weight loss ≥10 pounds in the past year. |
| Decreased grip strength (Weakness) | Grip strength in the lowest 20th percentile by gender and BMI. Three trials ar performed with a hand-held dynamometer and the average value is used. |
| Exhaustion | For the following two statements:<br>• "I felt that everything I did was an effort."<br>• "I could not get going."<br>The patient is asked: "How often in the last week did you feel this way?"<br>0 = rarely or none of the time (<1 day)<br>1 = some or a little of the time (1–2 days)<br>2 = a moderate amount of the time (3–4 days)<br>3 = most of the time<br>The criterion is met if patient answers 2 or 3 to either statement. |
| Low physical activity | Weekly energy expenditure, determined with the short version of the Minnes Leisure Time Activities Questionnaire (see Taylor et al.[125]) in the lowest 20th percentile by gender:<br>**Men**: <383 kcal/week. **Women**: <270 kcal/week. |
| Slowed walking speed | Walking speed in the lowest 20th percentile by gender and height. Time is measured for a distance of 15 feet at normal pace. The average of three trials used. |

| Men | | Women | |
|---|---|---|---|
| BMI | Kg Force | BMI | Kg Force |
| ≤24 | ≤29 | ≤23 | ≤17 |
| 24.1–26 | ≤30 | 23.1–26 | ≤17.3 |
| 26.1–28 | ≤30 | 26.1–29 | ≤18 |
| >28 | ≤32 | >29 | ≤21 |

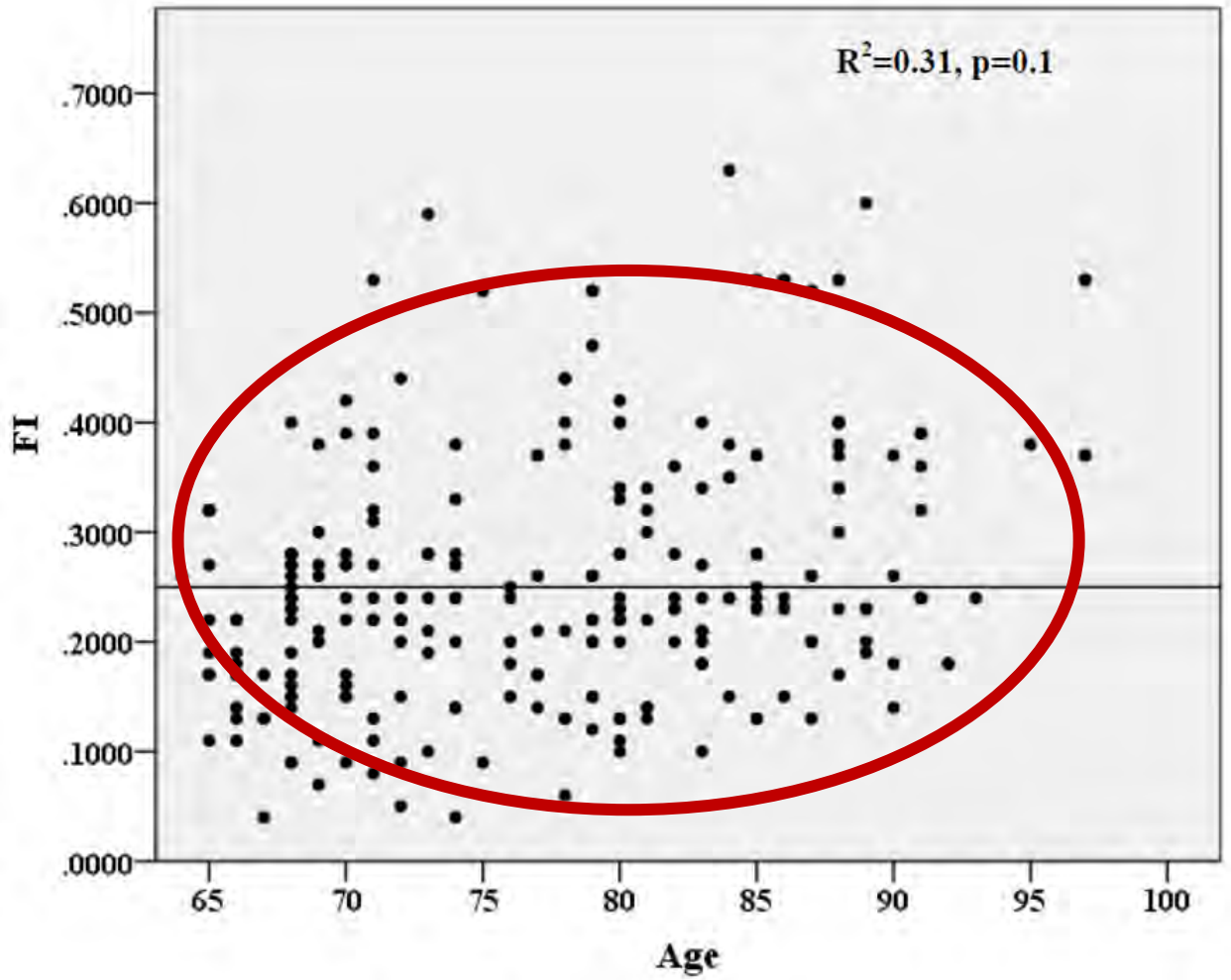
| Men | | Women | |
|---|---|---|---|
| Height | Time | Height | Time |
| ≤173 cm | ≥7 sec | ≤159 cm | ≥7 sec |
| >173 cm | ≥6 sec | >159 cm | ≥6 sec |

**Table 2. Trauma Specific Frailty Index (TSFI)**

| Fifteen Variable Trauma Specif | |
|---|---|
| **Comorbidities** | |
| Cancer history | YES (1) |
| Coronary Heart Disease | MI (1) |
| | Medication (0.25) |
| Dementia | Severe (1) |
| | No (0) |
| **Daily Activities** | |
| Help with grooming | Yes (1) |
| Help managing money | Yes (1) |
| Help doing housework | Yes (1) |
| Help toileting | Yes (1) |
| Help walking | Wheelchair (1) |
| | No (0) |
| **Health Attitude** | |
| Feel less useful | Most time (1) |
| Feel sad | Most time (1) |
| Feel effort to do everything | Most time (1) |
| Falls | Within last month (1) |
| Feel lonely | Most time (1) |
| **Function** | |
| Sexual active | Yes (0) |
| **Nutrition** | |
| Albumin | <3 (1) |

**Table 2. EGS Specific Frailty Index (EGSFI)**

| Fifteen Variable EGS Specific Frailty Index | | | |
|---|---|---|---|
| **Comorbidities** | | | |
| Cancer history | YES (1) | No (0) | |
| Hypertension | YES (1) | No (0) | |
| Coronary Heart Disease | MI (1) | CABG (0.75) | PCI (0.5) |
| | Medication (0.25) | None (0) | |
| Dementia | Severe (1) | Moderate (0.5) | Mild (0.25) |
| | No (0) | | |
| **Daily Activities** | | | |
| Help with grooming | Yes (1) | No (0) | |
| Help managing money | Yes (1) | No (0) | |
| Help doing housework | Yes (1) | No (0) | |
| Help toileting | Yes (1) | No (0) | |
| Help walking | Wheelchair (1) | Walker (0.75) | Cane (0.5) |
| | No (0) | | |
| **Health Attitude** | | | |
| Feel less useful | Most time (1) | Sometimes (0.5) | Never (0) |
| Feel sad | Most time (1) | Sometimes (0.5) | Never (0) |
| Feel effort to do everything | Most time (1) | Sometimes (0.5) | Never (0) |
| Feel lonely | Most time (1) | Sometimes (0.5) | Never (0) |
| **Function** | | | |
| Sexual active | Yes (0) | No (1) | |
| **Nutrition** | | | |
| Albumin | <3 (1) | >3 (0) | |


$R^2$=0.31, p=0.1
.7000
.6000
.5000
.4000
.3000
.2000
.1000
.0000
FI
65
70
75
80
85
90
95
100
Age

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# Novel Wearable Technology for Assessing Spontaneous Daily Physical Activity and Risk of Falling in Older Adults with Diabetes



# FRAIL scale

- **F**atigue
- **R**esistance (ability to climb one flight of stairs)
- **A**mbulation (ability to walk one block)
- **I**llnesses (Greater than 5)
- **L**oss of Weight (>5%)

0 = robuste/ 1-2 = pre-frail /≥ 3 = frail

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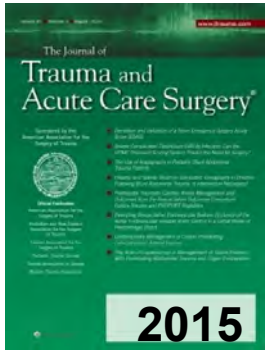
# Injury In The Aged: Geriatric Trauma Care at the Crossroads

Rosemary A. Kozar, MD, PhD, Saman Arbabi, MD, MPH, Deborah M. Stein, MD, MPH, Steven R. Shackford, MD, Robert D. Barraco, MD, MPH, Walter L. Biffl, MD, Karen J. Brasel, MD, MPH, Zara Cooper, MD, MSc, Samir M. Fakhry et al/




- **No consensus** on which frailty score is best to use across all clinical settings
- **Scores lack feasibility**→ require assessment of up to 30 to 70 variables
- Due to the limitations of current frailty measures → use functional status and sarcopenia as surrogate measures

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# Prospective Evaluation And Comparison Of The Predictive Ability Of Different Frailty Scores To Predict Outcomes In Geriatric Trauma Patients

Mohammad Hamidi, MD, Muhammad Zeeshan, MD, Terence O'Keeffe, MD, Narong Kulvatunyou, MD, Andrew Tang, MD, Lynn Gries, MD, El-Rasheid Zakaria, MD, Bellal Joseph, MD

Western Trauma Association

- 2-year Prospective
- 341 geriatric trauma patients
- TSFI, mFI, Rockwood FI, Frail Scale
- Outcomes
  - Predictive ability of each model

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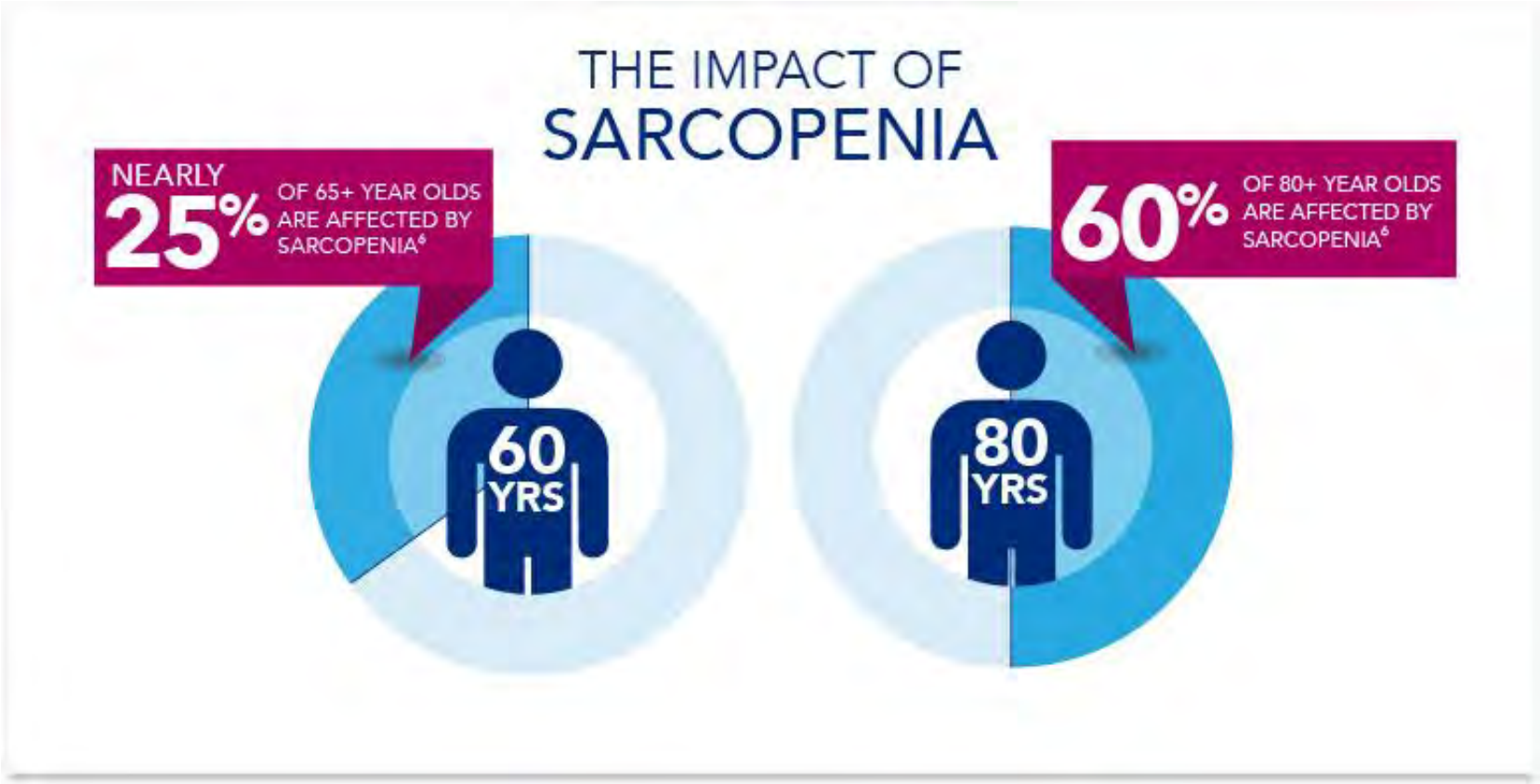
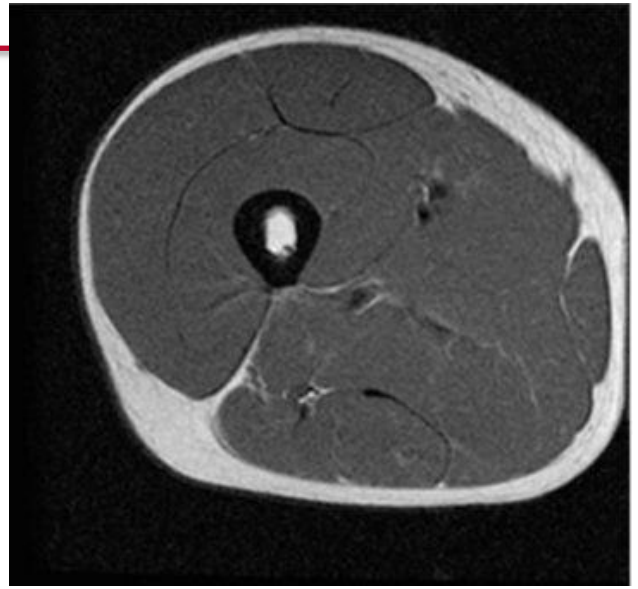
# Prospective Evaluation And Comparison Of The Predictive Ability Of Different Frailty Scores To Predict Outcomes In Geriatric Trauma Patients

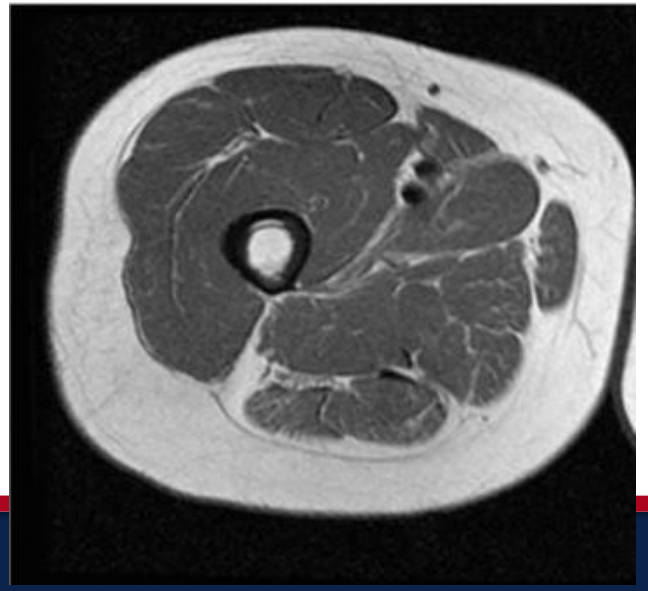
Mohammad Hamidi, MD, Muhammad Zeeshan, MD, Terence O'Keeffe, MD, Narong Kulvatunyou, MD, Andrew Tang, MD, Lynn Gries, MD, El-Rasheid Zakaria, MD, Bellal Joseph, MD

Western Trauma Association

| Outcomes | TSFI | RFS | mFI | FS |
|---|---|---|---|---|
| **Complications** | 80% | 81% | 71% | 70% |
| **Mortality** | 84% | 85% | 74% | 70% |
| **Rehab/SNF Disposition** | 84% | 82% | 65% | 61% |
| **30-d Readmission** | 75% | 76% | 61% | 60% |


THE IMPACT OF
SARCOPENIA
NEARLY
25%
OF 65+ YEAR OLDS ARE AFFECTED BY SARCOPENIA[6]
60%
OF 80+ YEAR OLDS ARE AFFECTED BY SARCOPENIA[6]
60
YRS
80
YRS





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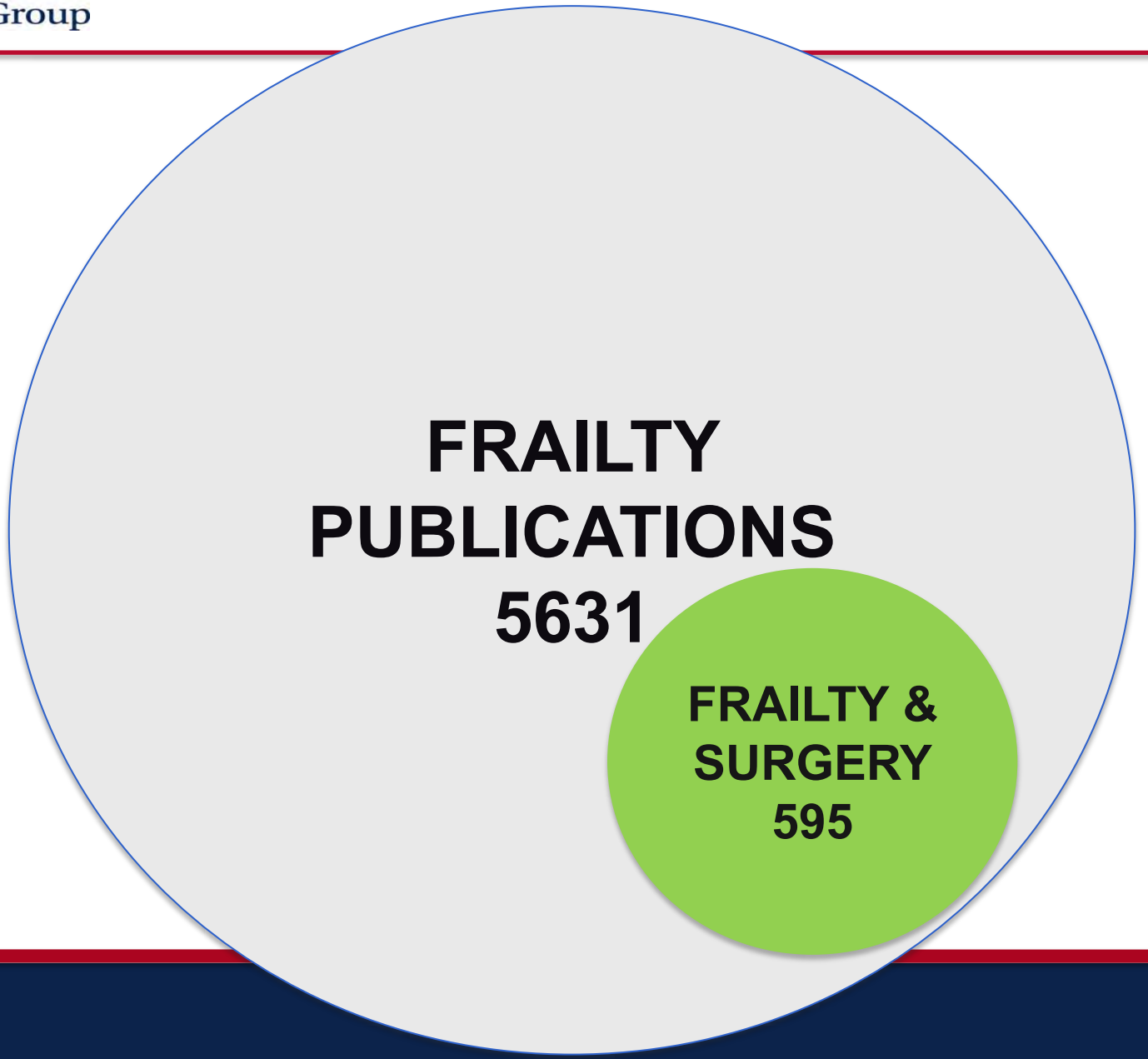
# Can Sarcopenia Quantified by CT Scan Predict Adverse Outcomes in Emergency General Surgery?

Mohammad Hamidi, MD, Cathy Ho, MD, Muhammad Zeeshan, MD, Terence O'Keeffe, MD, Ali Hamza, MD, Narong Kulvatunyou, MD, Faisal Jehan, MD, and Bellal Joseph, MD


# Sarcopenia does not predict frailty

- 30d-outcomes


FRAILTY
PUBLICATIONS
5631
FRAILTY &
SURGERY
595

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## The Association of Frailty With Outcomes and Resource Use After EGS: A Population-Based Cohort Study

McIsaac, Daniel I. MD, MPH, FRCPC; Moloo, Husein MD, FRCSC, MSc; Bryson, Gregory L. MD, MSc, FRCPC; van Walraven, Carl MD, FRCPC, MSc

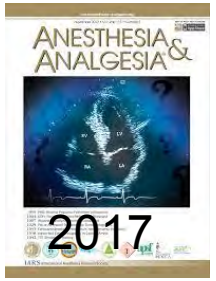


## Frailty as a Risk Predictor of Morbidity and Mortality Following Liver Surgery

Faiz Gani, Marcelo Cerullo, Neda Amini, Stefan Buettner, Georgios A. Margonis, Kazunari Sasaki, Yuhree Kim,

## Frailty, Aging, and Cardiovascular Surgery

Graham, Antonio DO; Brown, Charles H. IV MD, MHS





## Comparison of Frailty Measures as Predictors of Outcomes After Orthopedic Surgery

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## Superiority of Frailty Over Age in Predicting Outcomes Among Geriatric Trauma Patients: A Prospective Analysis

Bellal Joseph, MD, Viraj Pandit, MD, Bardiya Zangbar, MD, Narong Kulvatunyou, MD, Ammar Hashmi, MD, Donald J. Green, MD, Terence O'Keeffe, MB, ChB1, Andrew Tang, MD, Gary Vercruysse, MD, Mindy J. Fain, MD, Randall S. Friese, MD, and Peter Rhee, MD



## Frailty Predicts Increased Hospital And 6-month Healthcare Cost Following Colorectal Surgery In Older Adults

Thomas N. Robinson, M.D., F.A.C.S, Daniel S. Wu, M.D, Gregory V. Stiegmann, M.D., F.A.C.S., and Marc Moss, M.D.cMD, MSc

## Frailty, Length of Stay, and Mortality in Kidney Transplant Recipients: A National Registry and Prospective Cohort Study

McAdams-DeMarco, Mara A. PhD; King, Elizabeth A. MD; Luo, Xun MD, MPH; Haugen, Christine et al



## Assessing Risk of Critical Care Complications and Mortality in the Elective Bariatric Surgery Population Using a Modified Frailty Index


...and i should care,
why?

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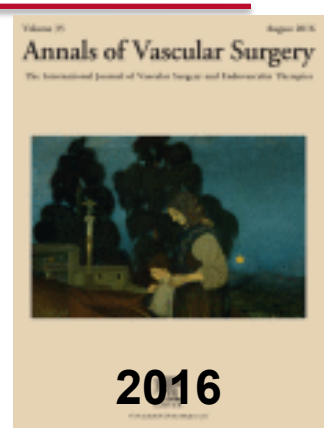
# Simplified Frailty Index to Predict Adverse Outcomes and Mortality in Vascular Surgery Patients

Joseph Karam, Athanasios Tsiouris, Alexander Shepard, Vic Velanovich, and Ilan Rubinfeld

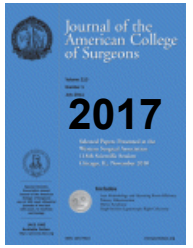




# Simple Frailty Score Predicts Postoperative Complications Across Surgical Specialties

Thomas N. Robinson, M.D., F.A.C.S., Daniel S. Wu, M.D., Lauren Pointer, M.S., Christina L. Dunn, B.A., Joseph C. Cleveland Jr., M.D., and Marc Moss

# The Impact Of Frailty On Failure-to-rescue In Geriatric EGS Patients: A Prospective Study



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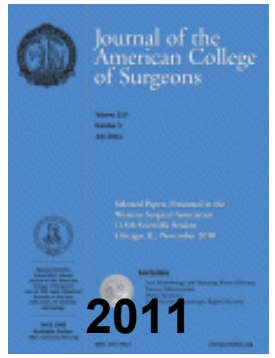
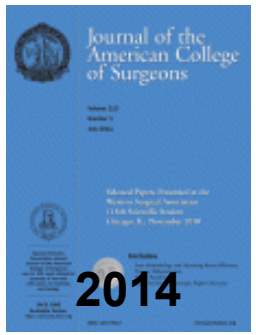
## Accumulated Frailty Characteristics Predict Postoperative Discharge Institutionalization in the Geriatric Patient

Thomas N. Robinson, MD. FACS, Jeffrey I. Wallace, MD, Daniel S. Wu, MD, Arek Wiktor, MD et al.




## The Association of Frailty With Outcomes and Resource Use After EGS: A Population-Based Cohort Study

McIsaac, Daniel I. MD, MPH, FRCPC; Moloo, Husein MD, FRCSC, MSc; Bryson, Gregory L. Et al

## Prospective Evaluation of Delirium in Geriatric Patients Undergoing Emergency General Surgery

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# Superiority of Frailty Over Age in Predicting Outcomes Among Geriatric Trauma Patients: A Prospective Analysis

Bellal Joseph, MD, Viraj Pandit, MD, Bardiya Zangbar, MD, Narong Kulvatunyou, MD, Ammar Hashmi, MD, Donald J. Green, MD, et al



# The Impact Of Frailty On Failure-to-rescue In Geriatric Trauma Patients: A Prospective Study

Joseph B, Phelan H, Hassan A, Orouji Jokar T, O'Keeffe T, Azim A, Gries L, Kulvatunyou N, Latifi R, Rhee P.

# Preinjury Physical Frailty And Cognitive Impairment Among Geriatric Trauma Patients Determine Post Injury Functional Recovery And Survival

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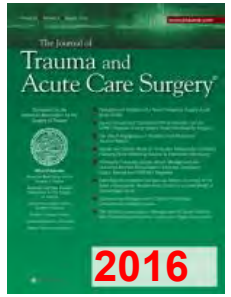
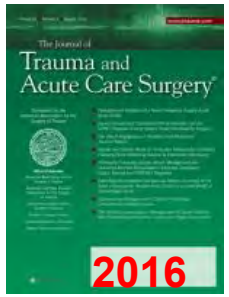
University Medical Group

## Predicting Hospital Discharge Disposition In Geriatric Trauma Patients: Is Frailty The Answer?

Joseph, Bellal MD; Pandit, Viraj MD; Rhee, Peter MD; Aziz, Hassan MD; Sadoun, Moutamn MD; Wynne, Julie MD et al




## Redefining The Association Between Old Age And Poor Outcomes After Trauma: The Impact Of Frailty Syndrome.

Joseph, Bellal MD; Orouji Jokar, Tahereh MD; Hassan, Ahmed MD; Azim, Asad MD; Mohler, Martha Jane PHD, MPH et al


Complications

Banner

- Prospective, Single center study
- 260 EGS Patients
- EGS Specific Frailty Index
- Outcomes:
  - Post-Op complications
  - Mortality

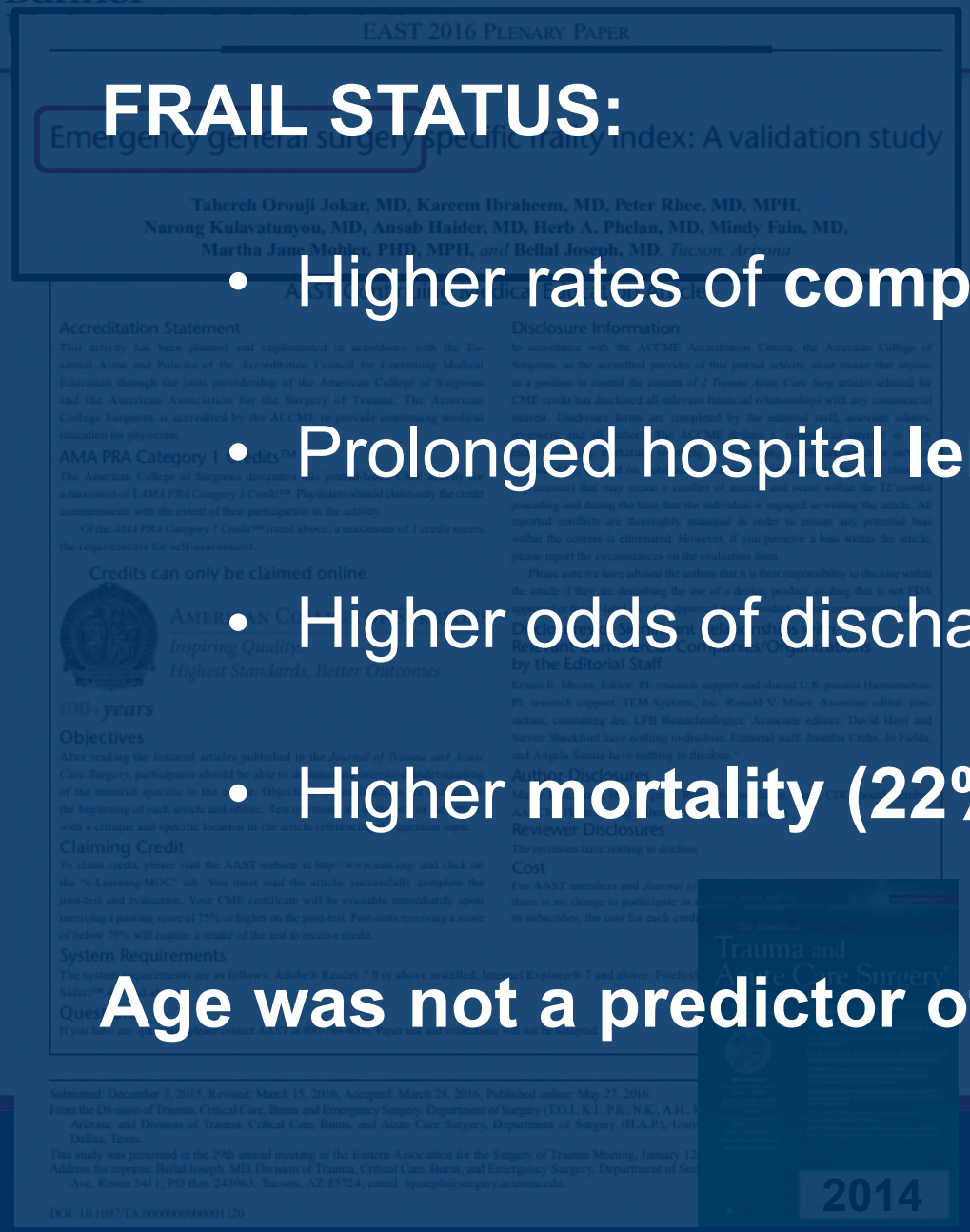
- Prospective, Single center study
- 250 Trauma Patients
- Trauma Specific Frailty Index
- Outcomes:
  - In-hospital complications
  - Adverse disposition

Banner

# FRAIL STATUS:

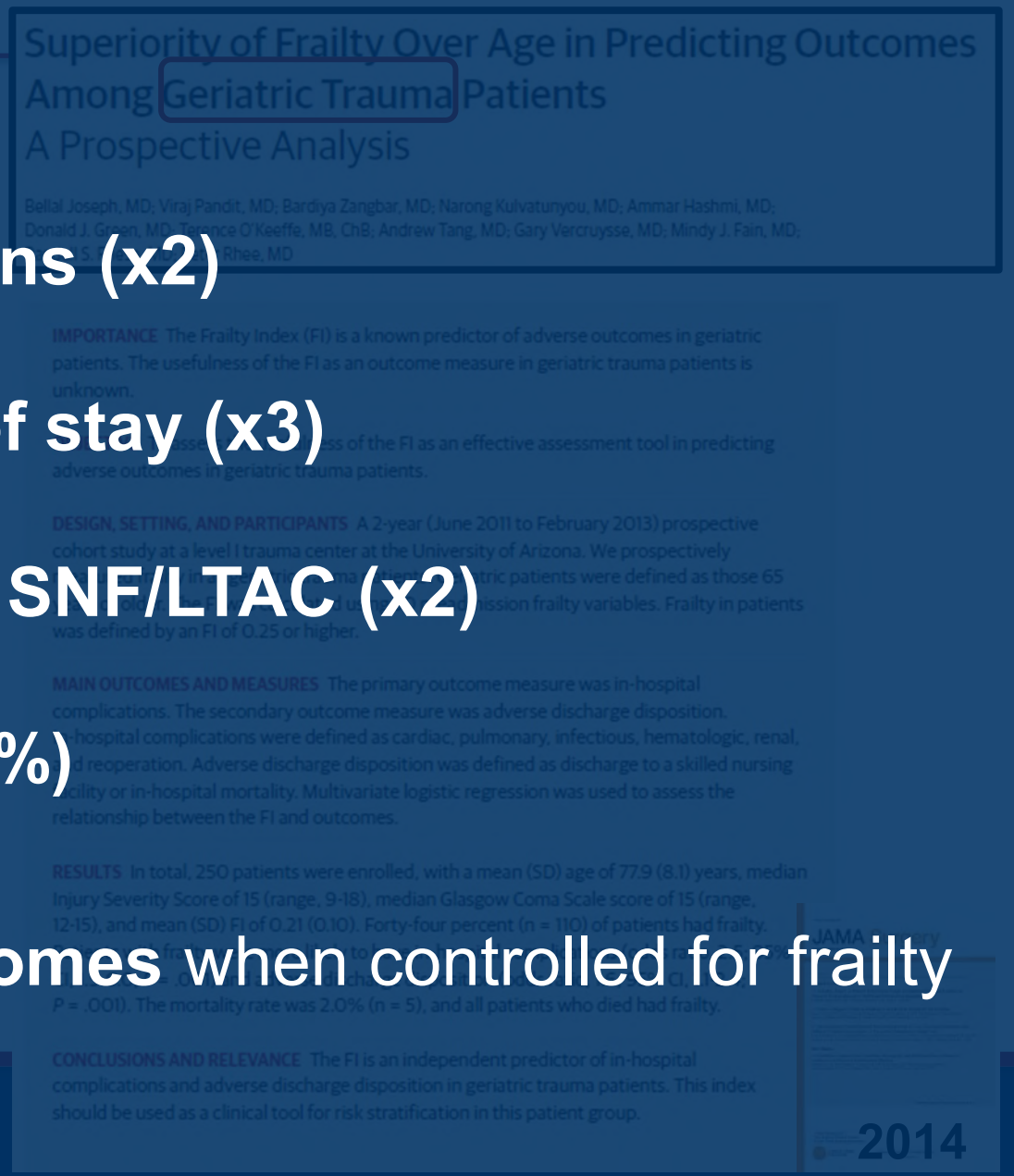
- Higher rates of **complications (x2)**
- Prolonged hospital **length of stay (x3)**
- Higher odds of discharge to **SNF/LTAC (x2)**
- Higher **mortality (22% vs 2%)**

**Age was not a predictor of outcomes** when controlled for frailty









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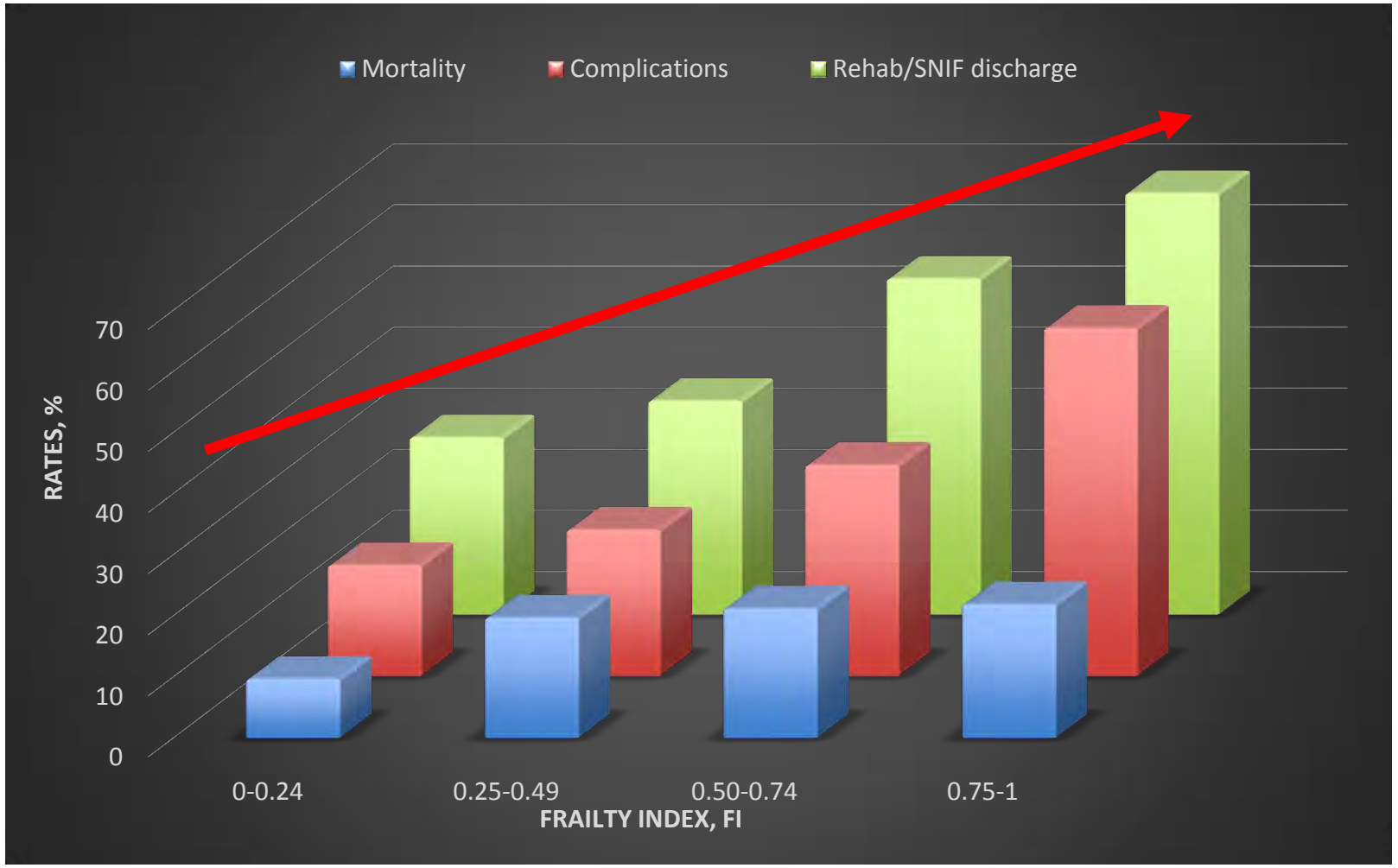
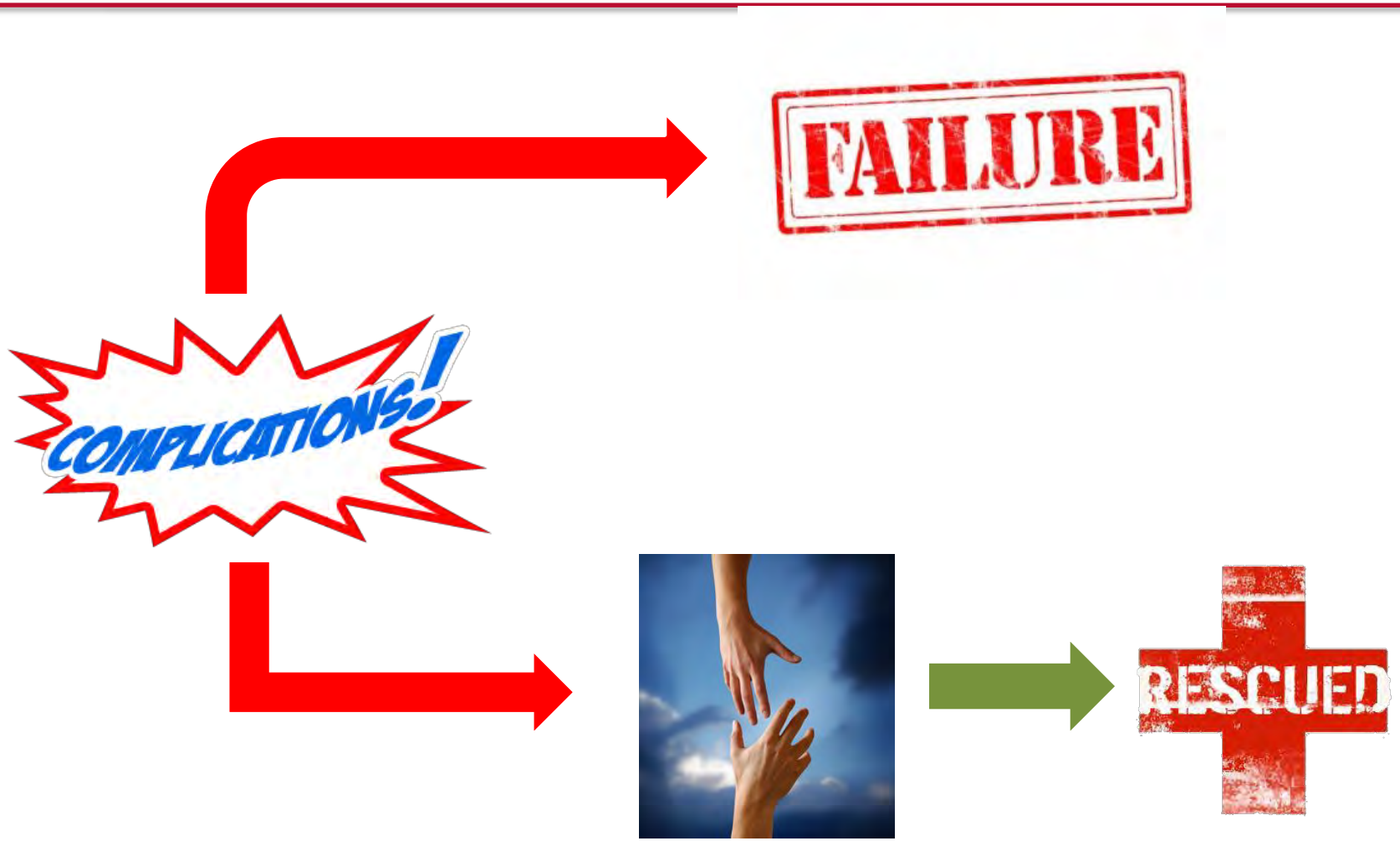
# The Impact of Frailty on Outcomes after Trauma in Critically Ill Geriatric Patients Admitted to Intensive Care Unit

Mohammad Hamidi, MD, Terence O'Keeffe, MD, Muhammad Zeeshan, MD, Narong Kulvatunyou, MD, Andrew Tang, MD, Gary Vercruysse, MD, Arpana Jain, MD, and Bellal Joseph, MD

AGS Geriatrics Healthcare Professionals
Leading Change. Improving Care for Older Adults.

- 5-year retrospective national database analysis
- 88629 geriatric trauma patients admitted to ICU (66% TBI patients).
- Frailty: CSHA-FI 11 variables
- **Outcomes:**
  - Complications
  - Mortality
  - Unfavorable discharge disposition (Rehab/SNF)


Mortality
Complications
Rehab/SNIF discharge
RATES, %
70
60
50
40
30
20
10
0
0-0.24
0.25-0.49
0.50-0.74
0.75-1
FRAILTY INDEX, FI


FAILURE
COMPLICATIONS!
RESCUED


Measure
Quality

Banner

- Prospective, single center
- **326 EGS** patients
- EGS Specific Frailty Index
- **Outcomes:**
  - Failure to rescue

- Prospective, single center
- **368 trauma** patients
- Trauma Specific Frailty Index
- **Outcomes:**
  - Failure to rescue

# FRAIL STATUS:

- **Higher rate** of FTR
  - EGS: **19% vs 4%**
  - Trauma: **15% vs 5%**
- Independent predictor of **FTR [OR~3]**

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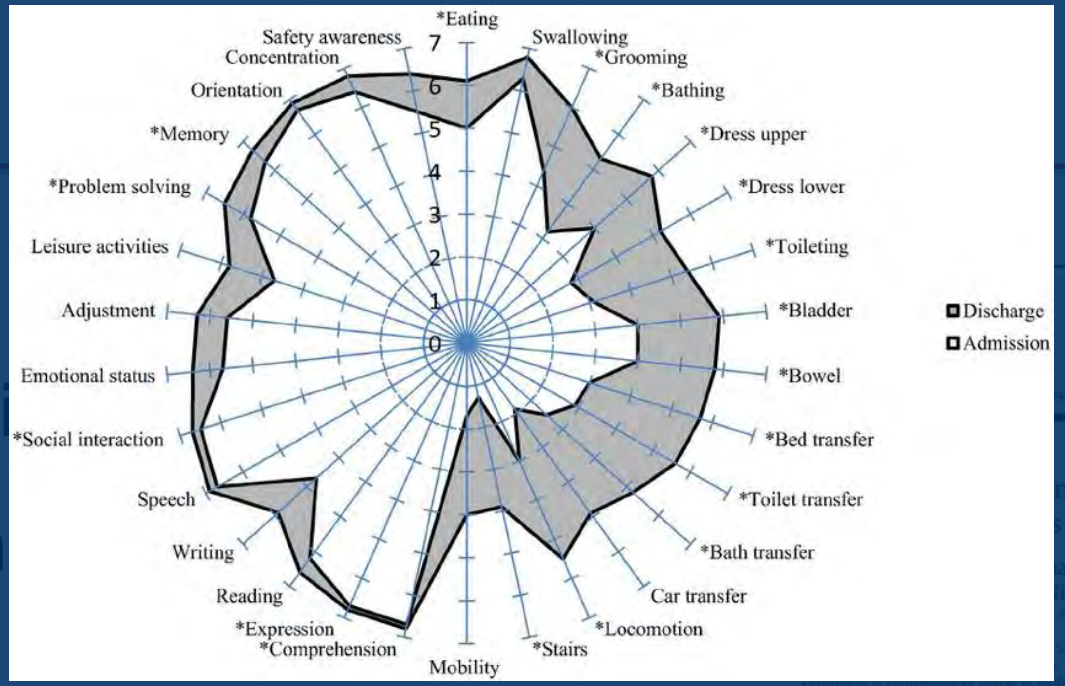
- 3-y Prospective, s
- 267 trauma patien
- TSFI
-




| FIM | Non-Frail | Pre-Frail | Frail | *p* |
|---|---|---|---|---|
| **Admission FIM** | 11.98 ± 0.14 | 11.96 ± 0.18 | 11.81 ± 0.52 | 0.004 |
| **Discharge FIM** | 11.20 ± 0.80 | 11.14 ± 1.51 | 10.32 ± 2.14 | 0.002 |
| **Delta FIM** | -0.78 ± 0.81 | 0.82 ± 1.51 | -1.48 ± 2.1 | 0.013 |

- Prospective, single center study

| Variables | Non-Frail (n=99) | Pre-Frail (n=84) | Frail (n=97) | *p* |
|---|---|---|---|---|
| **Trauma readmission** | 4% | 14% | 40% | 0.01 |
| **Recurrent Falls** | 5% | 13% | 65% | 0.03 |
| **No. of falls** | 0[0-1] | 0[0-3] | 2[0-4] | 0.01 |
| **Mortality** | 1% | 3.5% | 8.2% | 0.04 |

- Recurrent falls

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# The Impact Of Frailty On Quality Of Life In The Geriatric Trauma Population: A Prospective Study

Chelsea Santino, MS, Muhammad Zeeshan, MD, Terence O'Keeffe, MD, Mohammad Hamidi, MD, Narong Kulvatunyou, MD, Andrew Tang, MD, Gary Vercruysse, MD, Arpana Jain, MD, and Bellal Joseph, MD


- 1 year prospective, single-center cohort study
- 296 trauma patients
- TSFI
- Short Form 36
- **Outcomes:** Quality of Life at discharge & Quality of Life at 30d after discharge

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# The Impact Of Frailty On Quality Of Life In The Geriatric Trauma Population: A Prospective Study

Chelsea Santino, MS, Muhammad Zeeshan, MD, Terence O'Keeffe, MD, Mohammad Hamidi, MD, Narong Kulvatunyou, MD, Andrew Tang, MD, Gary Vercruysse, MD, Arpana Jain, MD, and Bellal Joseph, MD


| Variables | Frail (n=50) | Non-Frail (n=50) | *P-Value* |
|---|---|---|---|
| **HRQoL at discharge, (mean ± SD)** | 366 ± 81 | 547 ± 54 | <0.01 |
| **30-d Post Discharge HRQoL, (mean ± SD)** | 393 ± 74 | 743 ± 32 | <0.01 |
| **Delta HRQoL (mean ± SD)** | 21 ± 16 | 196 ± 38 | <0.01 |
| **P-value** | 0.11 | <0.01 | |

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# Geriatric Acute Care Surgery

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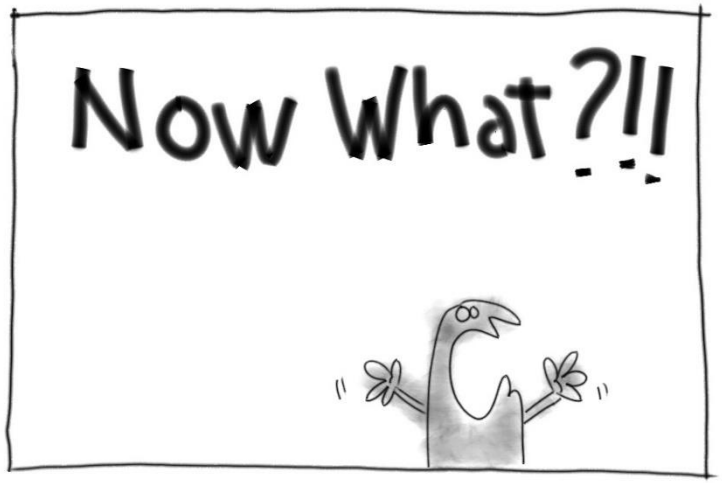



# MANAGE THE DAMAGE

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# GERIATRIC TRAUMA OPTIMIZATION



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# GERIATRIC SPECIFIC EDs

## Geriatric Emergency Department Accreditation Program

GEDA was developed by leaders in emergency medicine to ensure that our older patients receive well-coordinated, quality care at the appropriate level at every ED encounter.

### Level 3

**Level 3** accreditation signifies excellence in older adult care as represented by one or more geriatric-specific initiatives that are reasonably expected to elevate the level of elder care in one or more specific areas.

### Level 2

**Level 2** accreditation identifies sites that have integrated and sustained older adult care initiatives into daily operations.

### Level 1

**Level 1** accreditation defines an ED with policies, guidelines, procedures, and staff (both within the ED and throughout the institution) providing a coherent system of care targeting and measuring specific ED outcomes for older adults

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

ACEP Geriatric Emergency Department Accreditation

Banner University Medical Group

# GERIATRIC SPECIFIC EDs

- Began appearing in the US in **2008** and have become increasingly common

- **Multi-disciplinary team** of care providers focused on the needs of the geriatric population

- **Staffing enhancements**: availability of

  - Specialized nurses
  - Specialized Pharmacists
  - Social workers
  - Geriatric consultation services in the ED

ACEP Geriatric Emergency Department Accreditation

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# GERIATRIC SPECIFIC EDs

- Main goals →↓ **hospital admissions**
- **Discharge protocols**: facilitate communication with outpatient care providers
- Provides **appropriate outpatient follow up** (telephone/telemedicine)
- **Geriatric Program Quality Improvement Plan**
  - Geriatric volume
  - Admission and readmission rates

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# MANAGEMENT PLAN

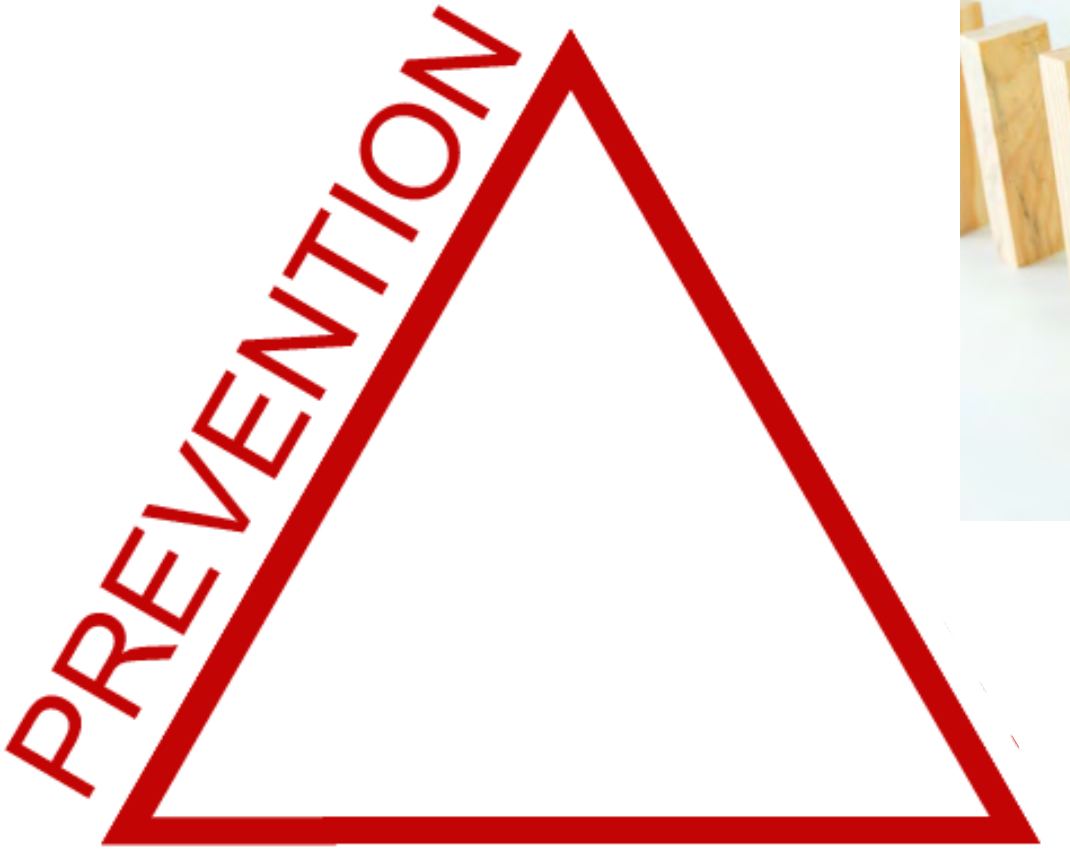

## Triage

## Assessment

## In-hospital management

THE UNIVERSITY OF ARIZONA
University Medical Group

# PREVENTION

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# PREVENTION

AGS | THE AMERICAN GERIATRICS SOCIETY
Geriatrics Health Professionals.
Leading change. Improving care for older adults.

## Fall Prevention

- Gait, and balance check
- Medication modification
- Exercise program
- Home modification
- Avoid polypharmacy

**60% ↓ in Falls**

AOTA The American Occupational Therapy Association, Inc.

## MVC Prevention

- Graduated exercise programs
- Driving simulations
- Video based training

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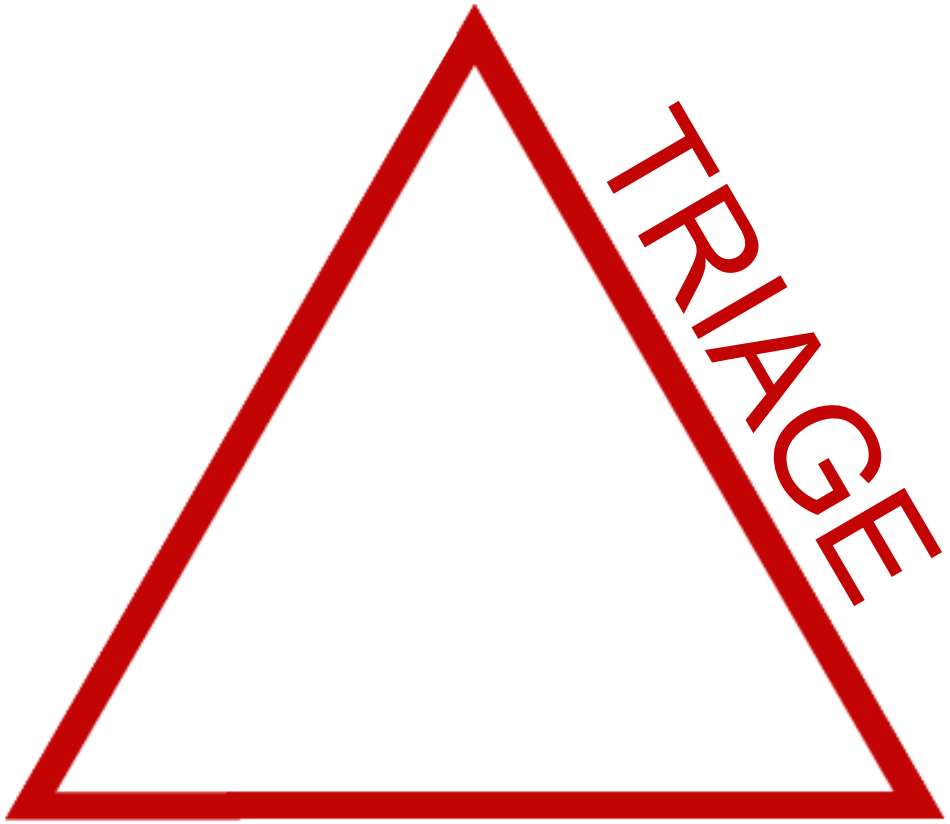
# TRIAGE

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# TRIAGE

## Are Trauma Systems Designed for Geriatric Injuries ?

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University Medical Group

# TRIAGE

## Unconscious Age Bias:

Older adults, especially women, are **less likely to receive care** at trauma centers

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# TRIAGE

## Older Adults are Under-Triaged

Lethal: **2-fold ↑ mortality**

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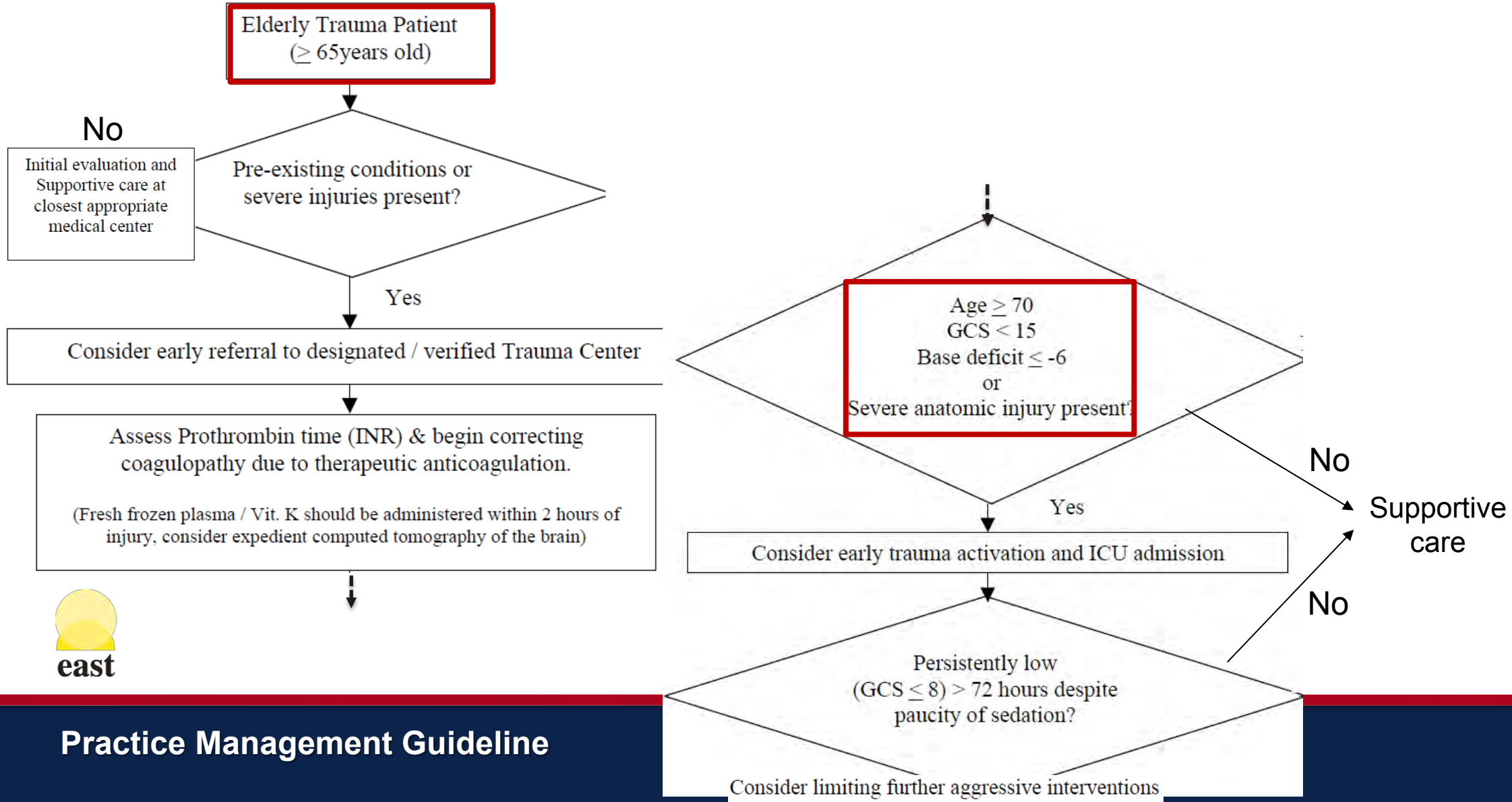
# TRIAGE



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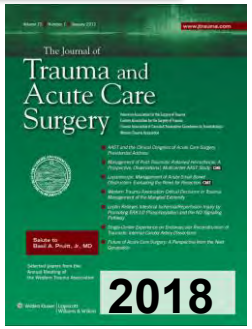
# Increased Trauma Activation Is Not Equally Beneficial For All Elderly Trauma Patients

Carr, Bryan W., MD; Hammer, Peter M., MD; Timsina, Lava, PhD, MPH; Rozycki, Grace, MD, MBA; Feliciano, David V., MD; Coleman, Jamie J., MD




- ↑ Trauma activation was proposed to improve outcomes vs. increased cost and stress to the hospital system

- **What is the age at which an increase in activation status is beneficial?**

- Policy change ↑ the activation criteria to the highest level for patients >70y

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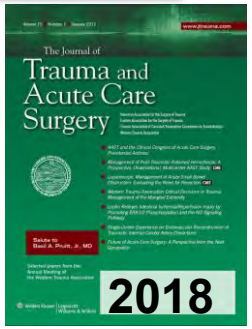
# Increased Trauma Activation Is Not Equally Beneficial For All Elderly Trauma Patients

Carr, Bryan W., MD; Hammer, Peter M., MD; Timsina, Lava, PhD, MPH; Rozycki, Grace, MD, MBA; Feliciano, David V., MD; Coleman, Jamie J., MD




- Patients who presented prior to policy changes (PRE) were compared with those after the change (POST)
- Mortality and LOS were ↓ in patients in the POST group **who are >77y**
  - There is benefit with ↓ cost

- **Lower Threshold for Trauma Team Activation in Elderly patients**
  - **Own activation Team**

- Advanced AGE is not an absolute predictor of poor outcomes should not be used
- Aggressive Care
- Shock Index Will help in Triage Protocol

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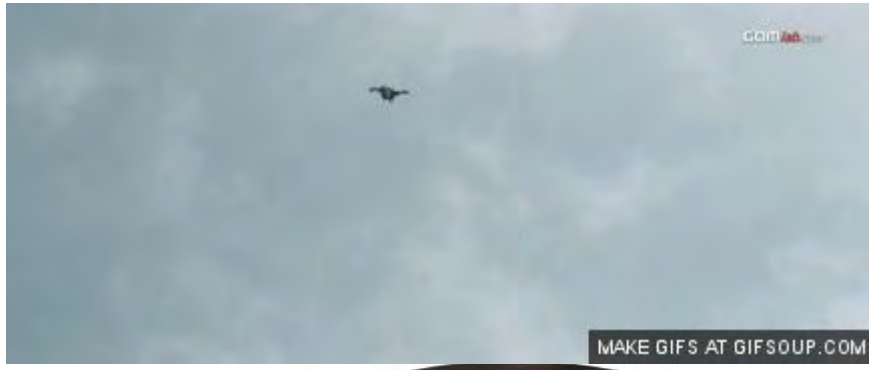
# INTERVENTION





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# INTERVENTION

**Geriatric Trauma:**

- Primary survey: **No difference**
- Secondary survey
  - Determine medications that affect initial evaluation
    - Anticoagulants
    - Antiplatelet
    - Beta blocker
    - ACE Inhibitors
  - Identify disease that complicate patient's presentation
    - MI
    - Pneumonia
    - CVA
    - Hypovolemia

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# RESUCITATION

- Adopt moderate resuscitation approaches

- High volume resuscitation (**≥1.5 L**)→ high risk for mortality

- When required consider
  - ICU admission
  - Operative intervention

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# Massive Blood Transfusions Post Trauma In The Elderly Compared To Younger Patients

Biswadev Mitra , Alexander Olaussen , Peter A.Cameron , Tom O'Donohoe , MarkFitzgerald


- 311 patients receiving massive transfusion post trauma
- Aim: investigate mortality of elderly patients and explore variables associated with poor outcomes
- Stratification >65 y and <65 y

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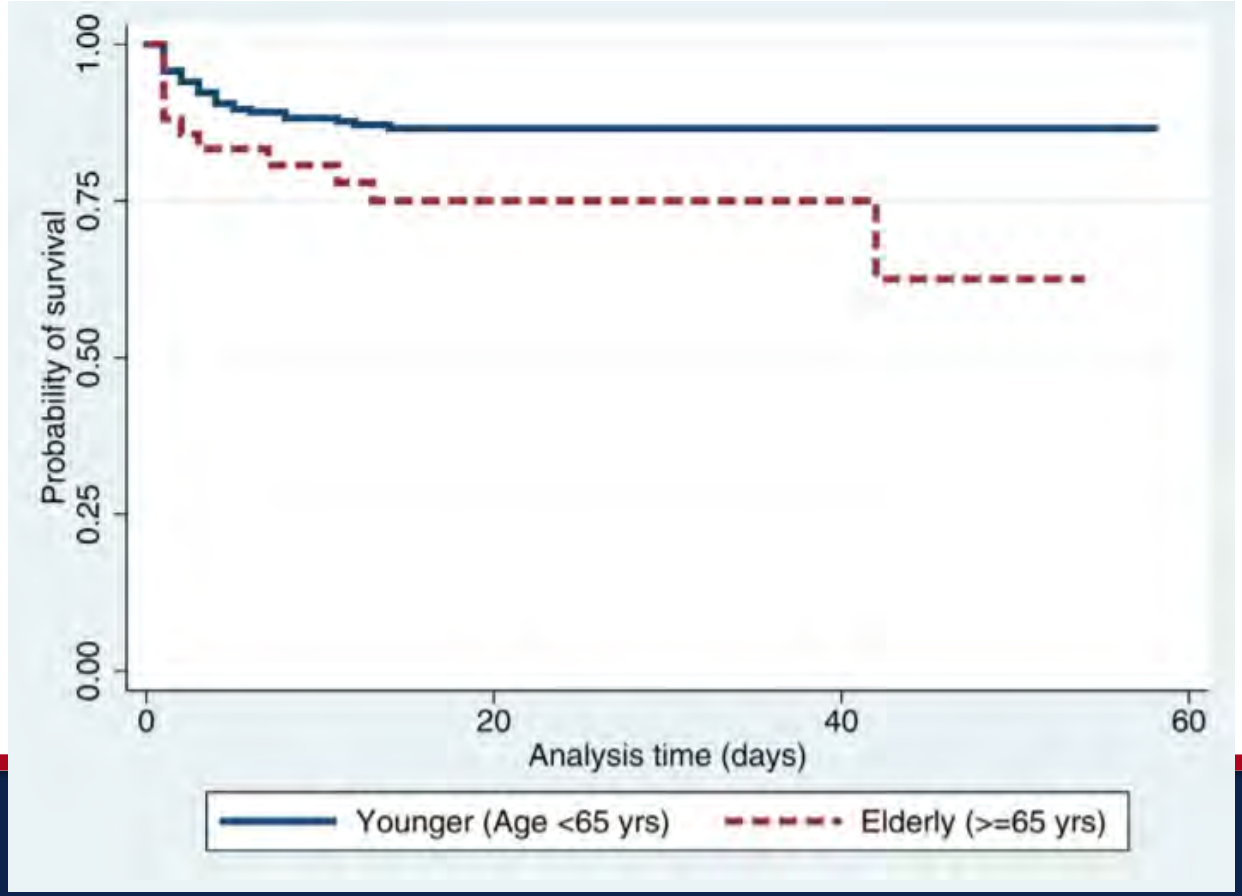
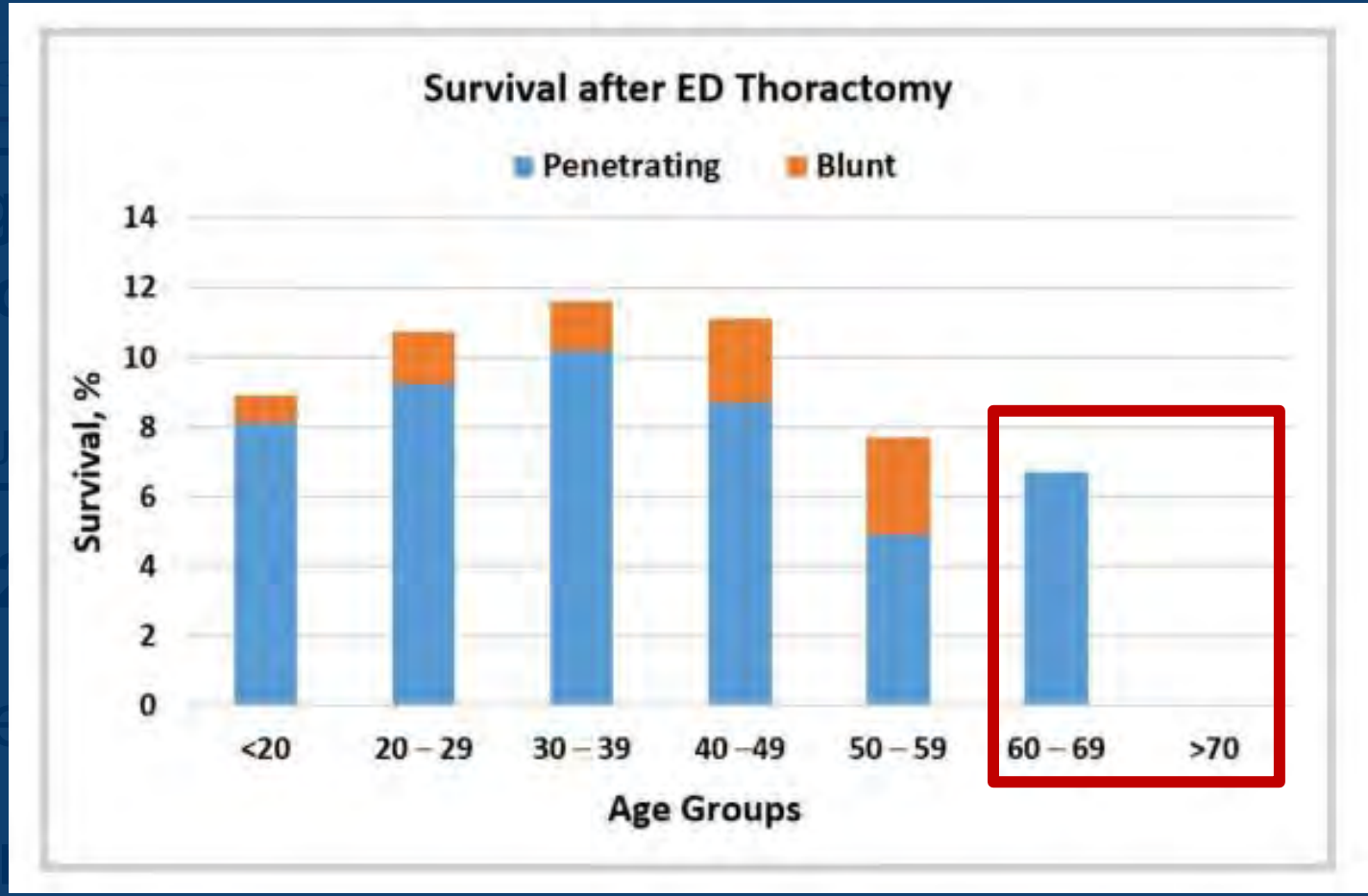
# Massive Blood Transfusions Post Trauma In The Elderly Compared To Younger Patients

Biswadev Mitra , Alexander Olaussen , Peter A.Cameron , Tom O'Donohoe , MarkFitzgerald


- **Predictors of mortality**
  - Acute traumatic coagulopathy (OR 11.75 p=0.02)
  - Age (OR 1.18 p=0.06)




**No patient ≥ 60 y with a blunt MOI survived**

**No patient ≥ 70 y regardless of MOI survived**

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# LAPAROTOMY IN ELDERLY

## Mortality After Trauma Laparotomy In Geriatric Patients

Bellal Joseph, Bardiya Zangbar, Viraj Pandit, Narong Kulvatunyou, Lynn Gries, Randall S. Friese, Peter Rhee


- 6-year retrospective analysis, all trauma patients undergoing a laparotomy
- Age ≥55 y who underwent a trauma laparotomy

**Outcomes:** Mortality & Predictors of mortality

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# LAPAROTOMY IN ELDERLY

## Predictors of Mortality

- Age
- Admission lactate

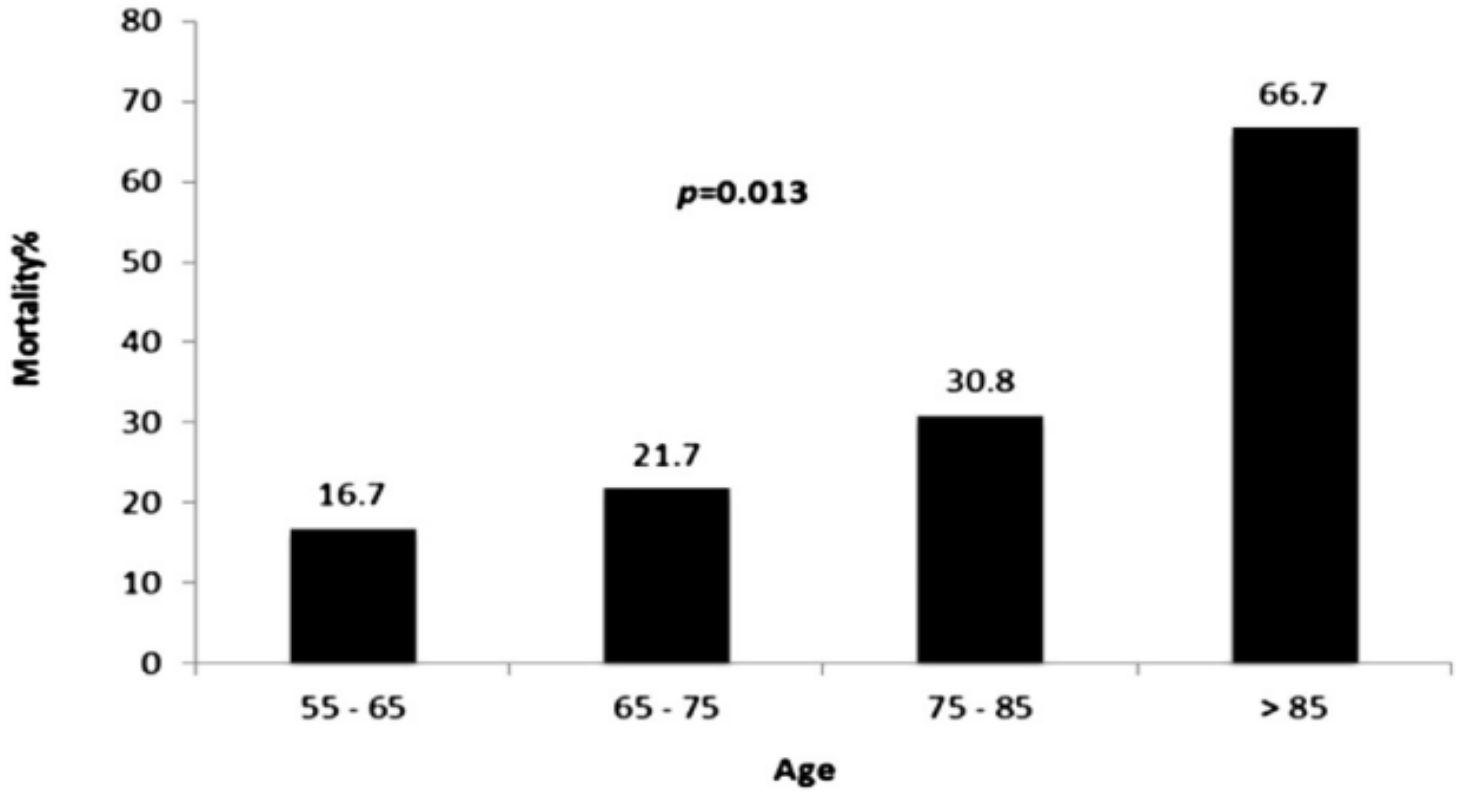


Fig – Mortality stratified by age.

# INPATIENT CARE

Specialized Inpatient Care

- Pain management
- Consult geriatrician
- CGA
- Frailty


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# PAIN MANAGEMENT

- Assessment of pain severity
- Multimodal approach to pain
  - Regional anesthesia
  - PCA
  - Nerve blocks
- Careful utilization of opioids
  - Bowel stimulating laxatives
- NSAIDs
  - PUD
  - Anticoagulation


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University Medica

Decrea
Analgesia

nal
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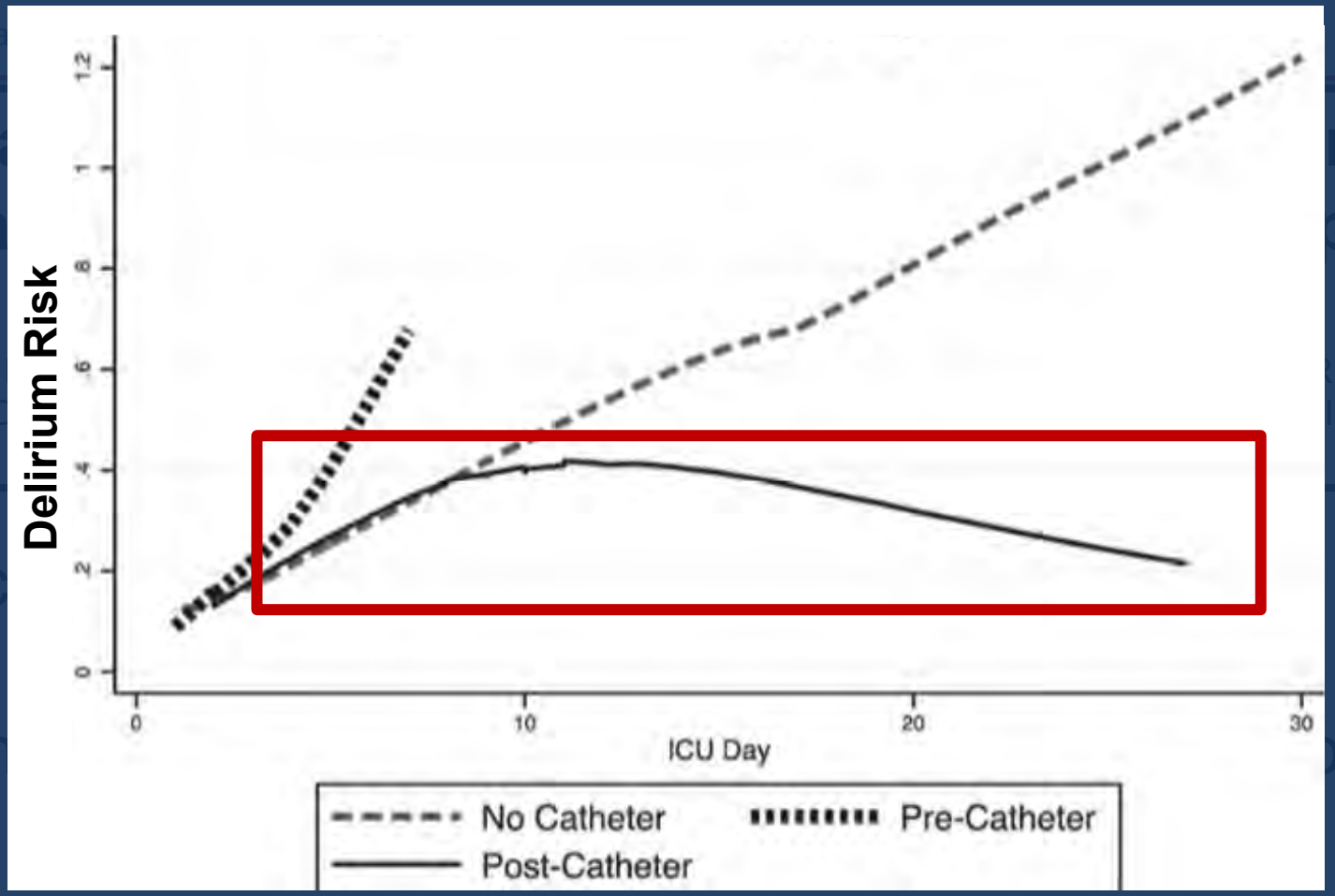
O'Connell, Kathleen
Cuschieri, Joseph, MD

H., MD, MS;
lla, Paul I., MD;

ANNALS OF SURGERY
2018

- Retrospec
- 144 patien
  ICU

on to




**Risk of delirium ↓ by 24% per day per patient after regional anesthesia**

**Individual opioid use ↓ after regional anesthesia**

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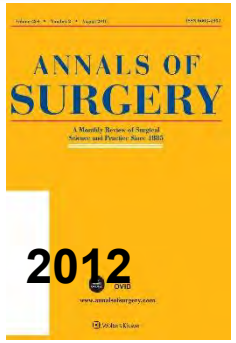
# INPATIENT CARE

## An Evaluation of a Proactive Geriatric Trauma Consultation Service

Lenartowicz, Magda MD*; Parkovnick, Meredith MSc†; McFarlan, Amanda BA†; Haas, Barbara MD‡; Straus, Sharon E. MD, MSc§; Nathens, Avery B. MD, PhD, MPH‖; Wong, Camilla L. MD




- 2 year prospective analysis
- 486 geriatric trauma patient
- **Intervention:** geriatric trauma consultation
- **Outcome measures** Complications & Mortality

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# INPATIENT CARE

**Geriatric trauma consultation:**

- Clinical nurse specialist
- Geriatrician

- Communication of recommendations
- Weekly interdisciplinary meetings with the trauma team
- Measurement of quality indicators.

↓ **10% delirium**

↓ **5% SNF discharge**

Issue addressed:

- Sensory impairment
- Pain

# INPATIENT CARE



## Comprehensive Geriatric Assessment:

- 10% ↓ in delirium
- 36% ↓ in falls
- 4 days ↓ in hospital stay
- 13% ↑ in ADL

| Fifteen Variable Trauma Specific Frailty Index | | | |
|---|---|---|---|
| **Comorbidities** | | | |
| Cancer history | YES (1) | No (0) | |
| Coronary Heart Disease | MI (1) | CABG (0.75) | PCI (0.5) |
| | Medication (0.25) | None (0) | |
| Dementia | Severe (1) | Moderate (0.5) | Mild (0.25) |
| | No (0) | | |
| **Daily Activities** | | | |
| Help with grooming | Yes (1) | No (0) | |
| Help managing money | Yes (1) | No (0) | |
| Help doing housework | Yes (1) | No (0) | |
| Help toileting | Yes (1) | No (0) | |
| Help walking | Wheelchair (1) | Walker (0.75) | Cane (0.5) |
| | No (0) | | |
| **Health Attitude** | | | |
| Feel less useful | Most time (1) | Sometimes (0.5) | Never (0) |
| Feel sad | Most time (1) | Sometimes (0.5) | Never (0) |
| Feel effort to do everything | Most time (1) | Sometimes (0.5) | Never (0) |
| Falls | Within last month (1) | Present not in last month (0.5) | None (0) |
| Feel lonely | Most time (1) | Sometimes (0.5) | Never (0) |
| **Function** | | | |
| Sexual active | Yes (0) | No (1) | |
| **Nutrition** | | | |
| Albumin | <3 (1) | >3 (0) | |

# If limited resources

- Use: Trauma Specific Frailty Index

**ISAR screening questions**

| | | |
|---|---|---|
| 1. | Before the illness or injury that brought you to the Emergency Department, did you need someone to help you on a regular basis? | Yes/No |
| 2. | Since the illness or injury that brought you to the Emergency Department, have you needed more help than usual to take care of yourself? | Yes/No |
| 3. | Have you been hospitalized for one or more nights during the past six months (excluding a stay in the Emergency Department)? | Yes/No |
| 4. | In general, do you see well? | Yes/No |
| 5. | In general, do you have serious problems with your memory? | Yes/No |
| 6. | Do you take more than three different medications every day? | Yes/No |

Score of 2 or more **Obtain Geriatric Consultation**

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# INPATIENT CARE

**Establi**

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**Effecti**

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AGS BEERS CRITERIA 2015


ACS tqip TRAUMA QUALITY IMPROVEMENT PROGRAM

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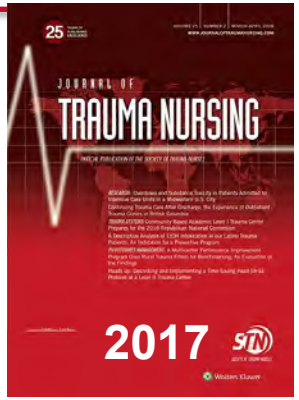
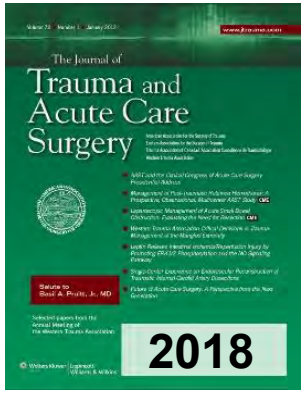
# INPATIENT CARE

## Delirium in the ICU: What About the Floor?

Cahill, Anthony MD; Pearcy, Christopher MD; Agrawal, Vaidehi PhD; Sladek, Phillip MD; Truitt, Michael S. MD




## Don’t Call Me Crazy! Delirium Occurs Outside of the Intensive Care Unit

Cahill, Anthony MD; Pearcy, Christopher MD; Almahmoud, Khalid MD; Agrawal, Vaidehi PhD; Mani, Usha MD; Sladek, Phillip MD; Truitt, Michael S. MD

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# INPATIENT CARE

- 14-56 % of all hospitalized elderly patients
- 70-87% of all elderly in ICU
    - **Mortality:** 22-76%
- Increases cost by $2,500/patient
- **Annual expenditures:** $7 billion.

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# INPATIENT CARE

| Outcomes | Consultation (n=62) | Standard (n=65) | *P-value* |
|---|---|---|---|
| **Delirium** | 32% | 50% | 0.04 |
| **Severe delirium** | 12% | 29% | 0.02 |
| **Hospital stay,** | 5 ± 2 | 5 ± 2 | 0.72 |
| **Rehab/SNF Disposition** | 92% | 88% | 0.41 |
| **Delirium at discharge** | 13% | 19% | 0.35 |

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# MANAGING EGS


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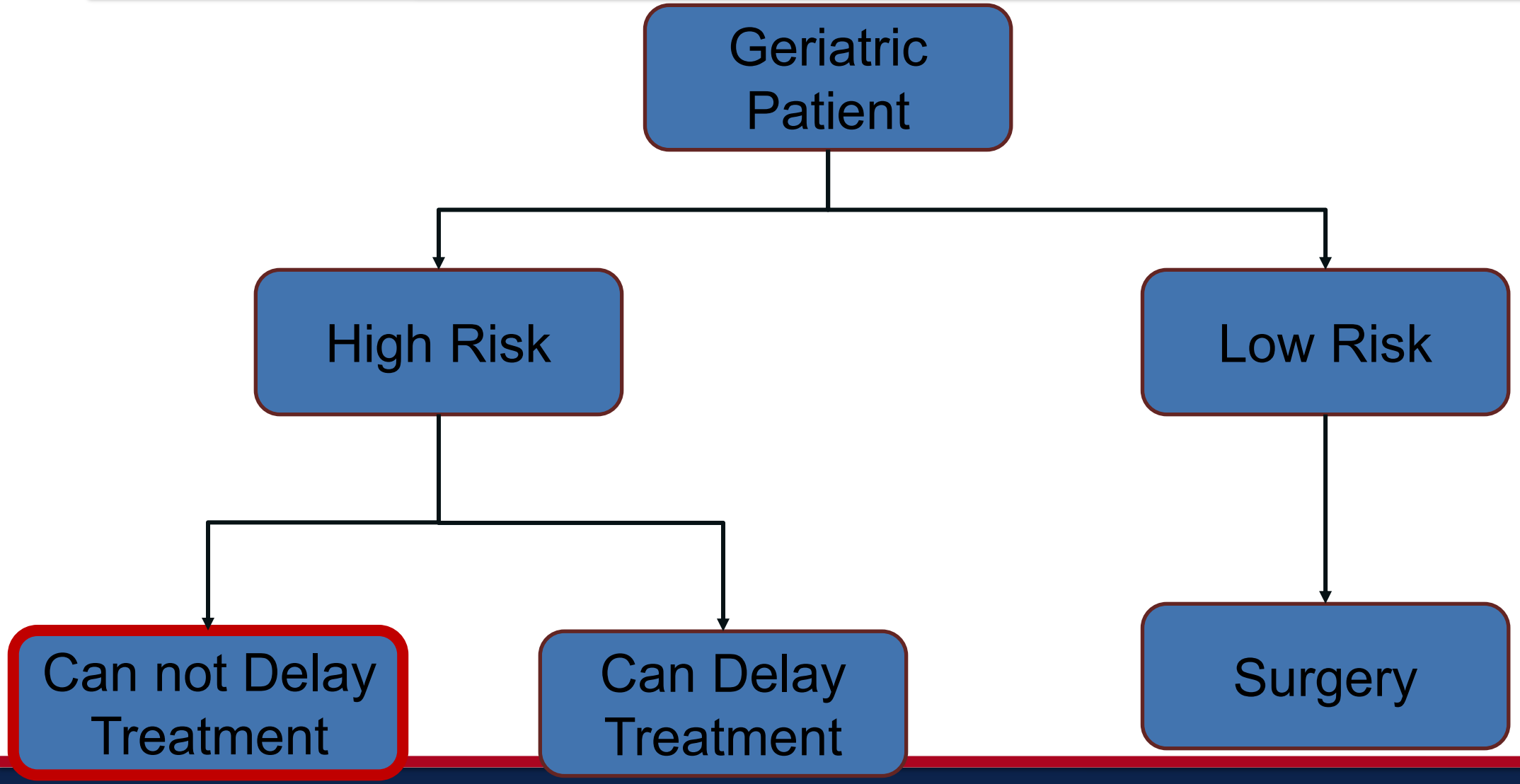
## Pre-operative care

## In-hospital management

## Discharge planning

## RECOMMENTDATIONS

- Use realistic risk prediction tools


Geriatric Patient
High Risk
Low Risk
Can not Delay Treatment
Can Delay Treatment
Surgery

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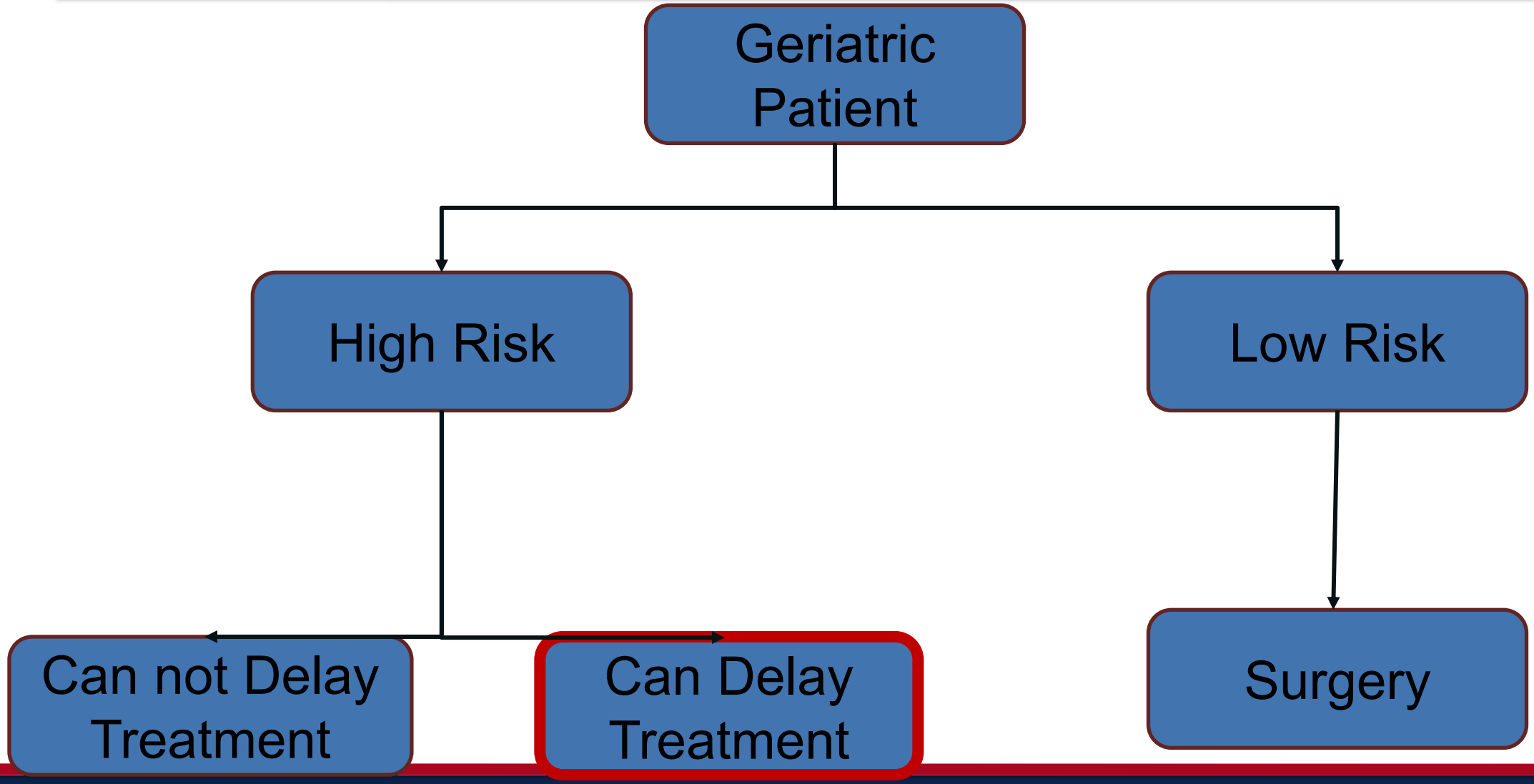
| Diagnosis | Non-surgical options |
|---|---|
| Diveritiular/appendix abcess | Radiological drainage |
| Nongangrenous mesenteric ischemia | Anticoagulation<br>Interventional radiology |
| Severe cholecystitis | Radiological drainage,<br>“cholecystostomy” |
| Bleeding duodenal ulcer | Endoscopic hemostasis<br>Selective IR emolization |
| Obstructing colorectal cancer | Endoluminal stenting |
| Sigmoid volulus | Rigid or flexible endoscopic decompression |


Geriatric Patient
High Risk
Low Risk
Can not Delay Treatment
Can Delay Treatment
Surgery

## Prehabilitation

- Enhancing functional capacity
- Withstand the stressor of surgery


## Intention

The fitter they are, the quicker they will recover.

# Assessing Decision Making Capacity

Determine whether or not the patient has decision-making capacity

- Able to **communicate** a choice
- **Understand** the relevant information
- **Appreciate** the situation and its **consequences**
- **Reason** about treatment options

# Patient Goals, Preferences, and Advance Directives

Personal goals and treatment preferences should be addressed prior to surgery

**Discuss:**

- Postoperative functional decline
- Loss of independence
- Skilled care burden
- Advance directive and a designated health care proxy

# Medication Management

- **Review** all medications including **OTC and herbal products**
- **Discontinue** medications with risk of **adverse reaction**
- Adequately **control pain**
- Appropriate **reversal of anticoagulation**

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## Pre-operative care

## In-hospital management

## Discharge planning

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## Anesthetic Approach

- Elderly Considerations
- Techniques


## Patient Safety

- Pressure Ulcers / Nerve Damage
- VTE Prophylaxis

## Perioperative Analgesic Plan

- Opioid-Sparing Techniques
- Regional Techniques

## Fluid management

- IV Fluids considerations

## Perioperative Nausea & Vomiting

- Risk stratification

## Hypothermia and Pulmonary Complications

- Prevention Strategies

- A **directed pain history** and physical examination
- **Multimodal approach**
  - Scheduled **acetaminophen > regional blocks > epidural**
  - Appropriately **titrate** to patient needs
  - Give **prophylactic** pharmacological **bowel regimen**
    - Stool softeners + Stimulant Laxatives
  - Follow **Beers Criteria** (Benzos, barbiturates, non-cox NSAIDs…)

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# Multidisciplinary approach

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# Postoperative Rounding Checklist

| Daily Evaluation For | Prevention/Management Strategies |
|---|---|
| ☐ Delirium/cognitive impairment | • Pain control<br>• Optimize physical environment (for example, sleep hygeine, sleep protocol, minimize tethers, encourage family at bedside)<br>• Vision and hearing aids accessible |
| ☐ Perioperative acute pain* | |
| ☐ Pulmonary complications | |
| ☐ Ability to maintain adequate nutrition | • Resume diet as early as feasible<br>• Dentures made available<br>• Supplementation if indicated |
| ☐ UTI prevention | • Daily documentation of Foley catheter indication<br>• Catheter care bundles, hand hygiene, barrier precautions |
| ☐ Functional decline | • Care models and pathways<br>• Structural: uncluttered hallways, large clocks and calendars<br>• Multidisciplinary rounds<br>• Early mobilization and/or PT/OT<br>• Family participation<br>• Nutritional support<br>• Minimize patient tethers |
| ☐ Pressure ulcers | • Reduce/minimize pressure, friction, humidity, shear force<br>• Maintain adequate nutrition<br>• Wound care |

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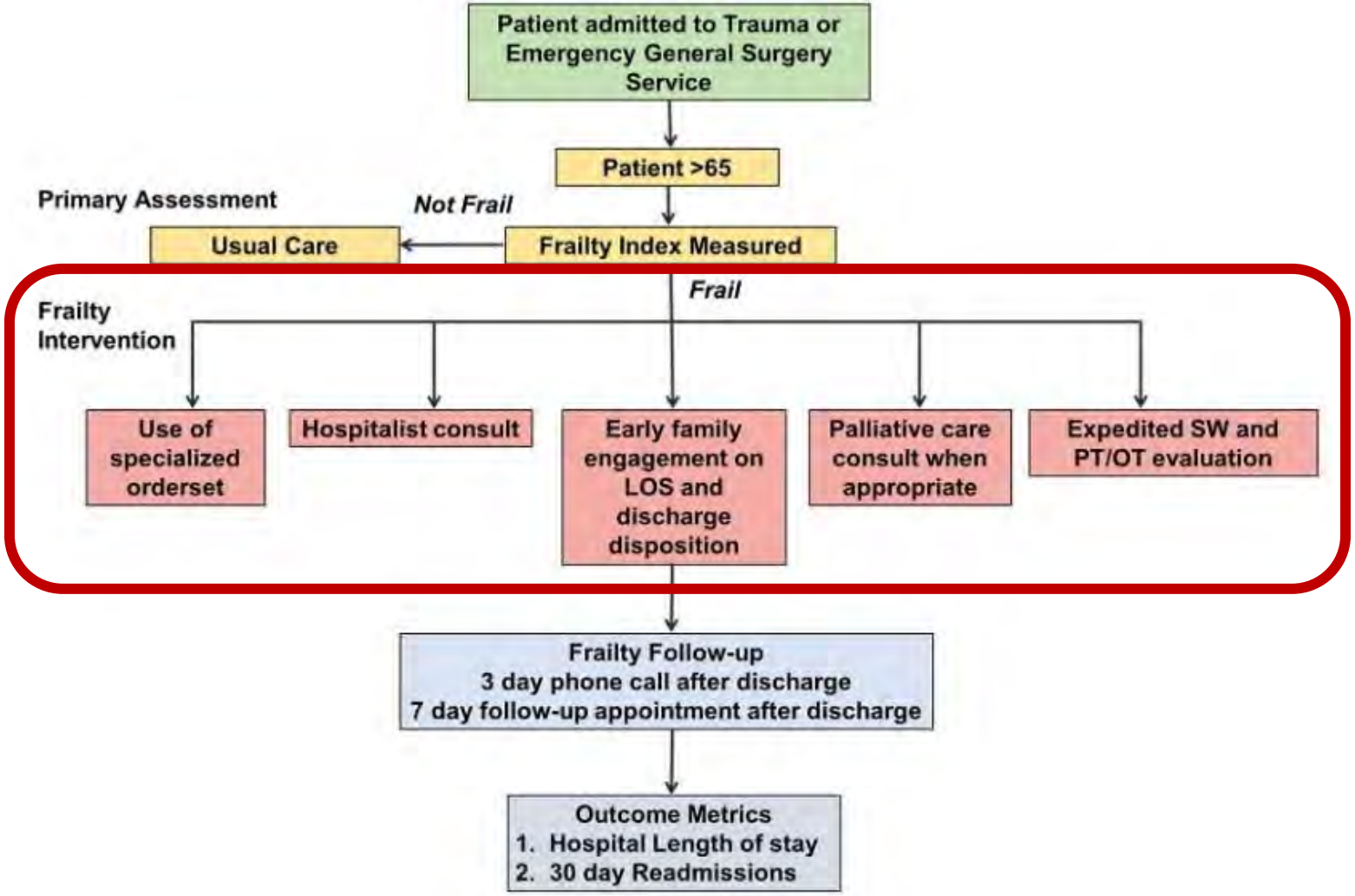
**Frailty screening and a Frailty Pathway Decrease Length of stay, Loss of Independence, and 30-day Readmission rates in Frail Geriatric Trauma and Emergency General Surgery Patients**

Kathryn E. Engelhardt, MD, Quentin Reuter, MD, Jessica Liu, MD, Jonathan F. Bean, MD, Joliette Barnum, MD, Michael B. Shapiro, MD, Allison Ambre, DPT, Amanda Dunbar, Mara Markzon, Tara N. Reddy, MD, Christine Schilling, MFS, and Joseph A. Posluszny, Jr.


- Prospective (before-after) study
- 70 frail patients (11 before vs 59 after intervention)
- **Intervention:** novel frailty pathway
- **Outcomes:** LOS & 30-day readmission rate


Patient admitted to Trauma or Emergency General Surgery Service
Patient >65
Primary Assessment
Not Frail
Usual Care
Frailty Index Measured
Frail
Frailty Intervention
Use of specialized orderset
Hospitalist consult
Early family engagement on LOS and discharge disposition
Palliative care consult when appropriate
Expedited SW and PT/OT evaluation
Frailty Follow-up
3 day phone call after discharge
7 day follow-up appointment after discharge
Outcome Metrics
1. Hospital Length of stay
2. 30 day Readmissions

| Measure/Outcome | Before Intervention n = 11 (%) | After Intervention n = 59 (%) | P-value |
|---|---|---|---|
| Hospitalist consult | 27% | 98% | <0.001 |
| Documented discussion of expectations | 18% | 96% | <0.001 |
| Length of stay, median [IQR] | 9 [3-14] | 6 [3-12] | 0.40 |
| 30-day readmission | 4 (36.4) | 6 (10.2) | 0.04 |

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# ERAS®

## Preop:

- Patient education (1C)
- Carb loading (2B) / Clear liquids until 2hrs prior (1A)
- Mechanical *& oral* bowel prep (2B)
- Optimize comorbidity (2B)

## Intraop:

- Preset orders (2C)
- SSI bundle: abx / prep (1B)
- Pre-emptive, multimodal pain control (1B)
- Restrictive / goal directed fluid use (1B)
- Laparoscopic approach (1A)

## Postop:

- Early feeding, heplock (1B)
- Multimodal pain regimen (1B)
- Early foley removal / ambulation (1B)
- No drains (1B)

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**High Cor**
**≥65 Years**
**As**
Oluwafe

- 4 years
- **Analys**
- **Outcor**

TABLE 1. ERP in Perioperative Care

| Perioperative Variables | Definition of Variables |
|---|---|
| Preoperative | |
| 1. Preadmission counselling | Shared educational book and online EMMI module on enhanced recovery after gastrointestinal surgery |
| Day of surgery | |
| 2. Prevention of Insulin Resistance | Clear liquid carbohydrate drink (Gatorade) consumption between midnight and 3 h prior to induction of anesthesia |
| 3. Prevention of postoperative nausea/vomiting | Documented screening for risk factors for postoperative nausea or vomiting. Risk factors include: female, nonsmoking, history of motion sickness, history of postoperative nausea and vomiting, and preoperative, intraoperative opioid. Preoperative placement of a scopolamine patch + ≥ 1 intraoperative IV antiemetic. |
| 4. Use of regional anesthetic | The use of a thoracic epidural placed preoperatively of for all open cases with continuous epidural infusion of bupivacaine unless contraindicated. Alternatively, a TAP block can be performed preoperatively for laparoscopic cases unless contraindicated. If regional anesthetic is contraindicated, intraoperative intravenous lidocaine infusion may be used. |
| 5. Intraoperative temperature control | Intraoperative temperature > = 36 C/96.8 F and on admission to the PACU. |
| 6. Intraoperative fluid management | Goal-directed fluid therapy monitored by Edwards ClearSight hemodynamic monitoring and/or case volume = 3 mL/kg per hour of intraoperative crystalloid and colloid fluid. |
| Postoperative | |
| 7. Multimodal analgesia | Preoperative administration of Gabapentin, Acetaminophen and Celebrex.<br>Use of Lidocaine dermal patches 24 h after TAP block in laparoscopic procedures.<br>Use of intravenous and oral NSAIDS postoperatively.<br>Use of intravenous Acetaminophen postoperatively.<br>If epidural in place, continuous epidural infusion of Bupivacaine + low dose Fentanyl.<br>Recording of POD pain controlled with oral pain medication: First date on which pain is adequately controlled with oral pain medications alone for 24 h. The patient should be able to ambulate (unless unable preoperatively) without significant pain (significant pain is a score > 4 on a scale from 0 to 10). |
| 8. Mobilization POD #0 | Ambulation occurred any length of time within the POD 0 given time |
| 9. Mobilization POD #1 | Ambulation occurred twice during this time period. Standing at bedside not included. |
| 10. Mobilization POD #2 | Ambulation occurred twice during this time period. Standing at bedside not included. |
| 11. Diet started on POD #0 | Clear liquid diet ordered POD #0. Return of bowel function recorded in EMR as date bowel movement or flatus passed. |
| 12. Diet advanced POD #1 | Solid diet was ordered POD #1. Date tolerating diet recorded as first date patient could tolerate 1 solid meal and drink 800 cc or more of a liquid diet without need for IV fluids and no signs of nausea/vomiting, or abdominal pain. Solid meal indicates not puree food. |
| 13. Discontinuation of IVF | Maintenance IVF discontinued (anything 42 cc or more) POD #0, fluid bolus allowed |
| 14. Discontinuation of Foley Catheter | Foley catheter removed POD #1 unless indicated patient was high risk (history of BPH, prostate surgery, bladder injury, extensive pelvic surgery or history of postoperative urinary retention) |


major

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**High Compliance to an Enhanced Recovery Pathway for Patients ≥65 Years Undergoing Major Small and Large Intestinal Surgery Is Associated With Improved Postoperative Outcomes**

Oluwafemi P. Owodunni, MD, MPH,Jessica Hampton, MS,y Dianne Bettick, MSN, CNS, RN,z
Sara Sateri, MD, Thomas Magnuson, MD, Elizabeth


# ERP:

- Shorter **h-LOS** (OR:0.7[0.6-0.9]) **30% decrease**
- Lower **complications** (OR: 0.4[0.1-1.0]) **60% decrease**
- No effect on readmissions

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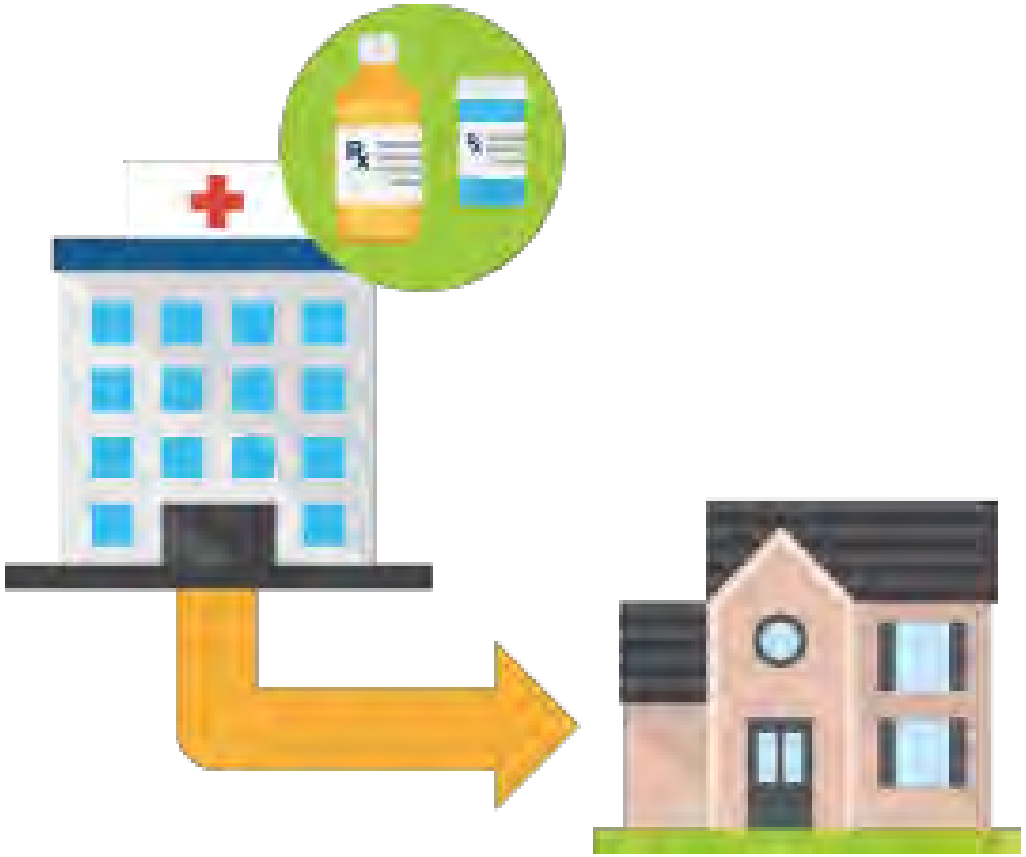
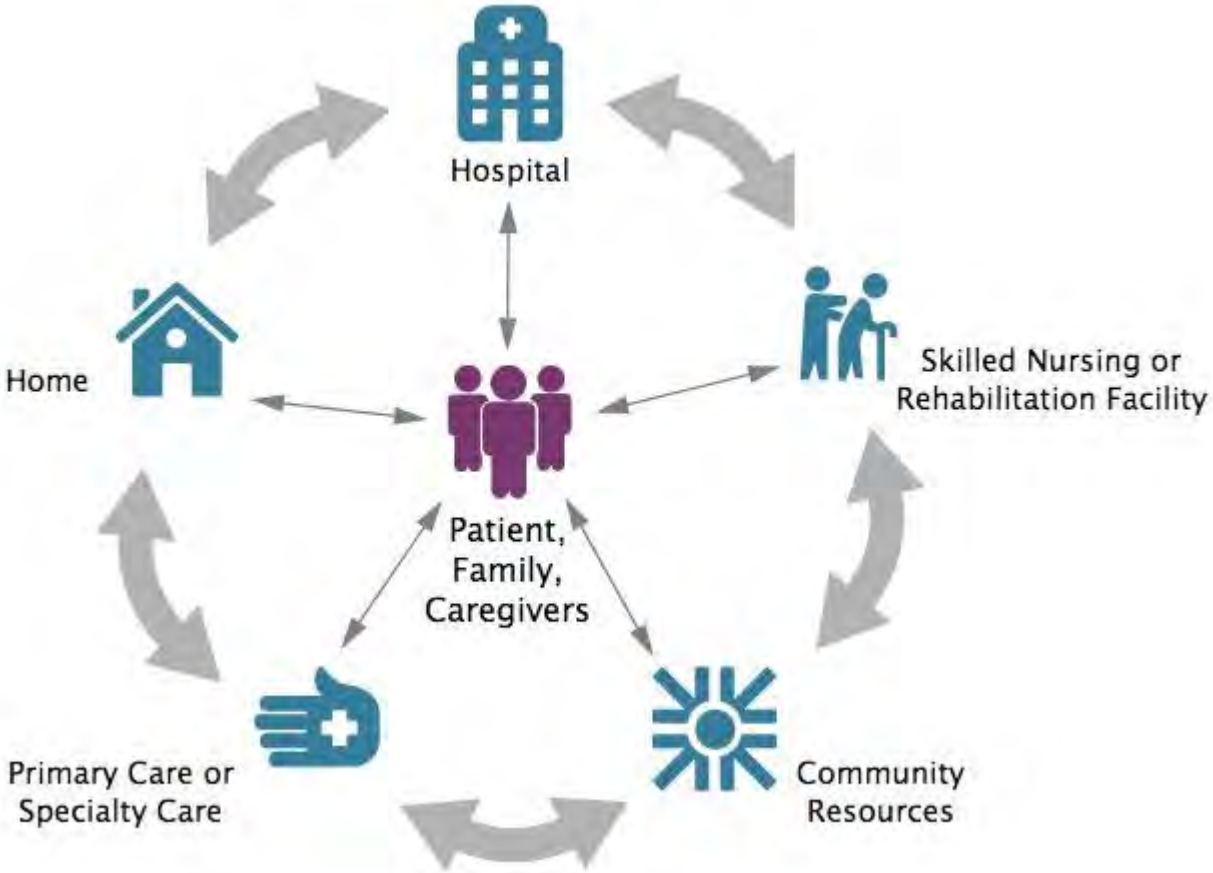
## Pre-operative care

## In-hospital management

## Discharge planning




Hospital
Home
Skilled Nursing or
Rehabilitation Facility
Patient,
Family,
Caregivers
Primary Care or
Specialty Care
Community
Resources

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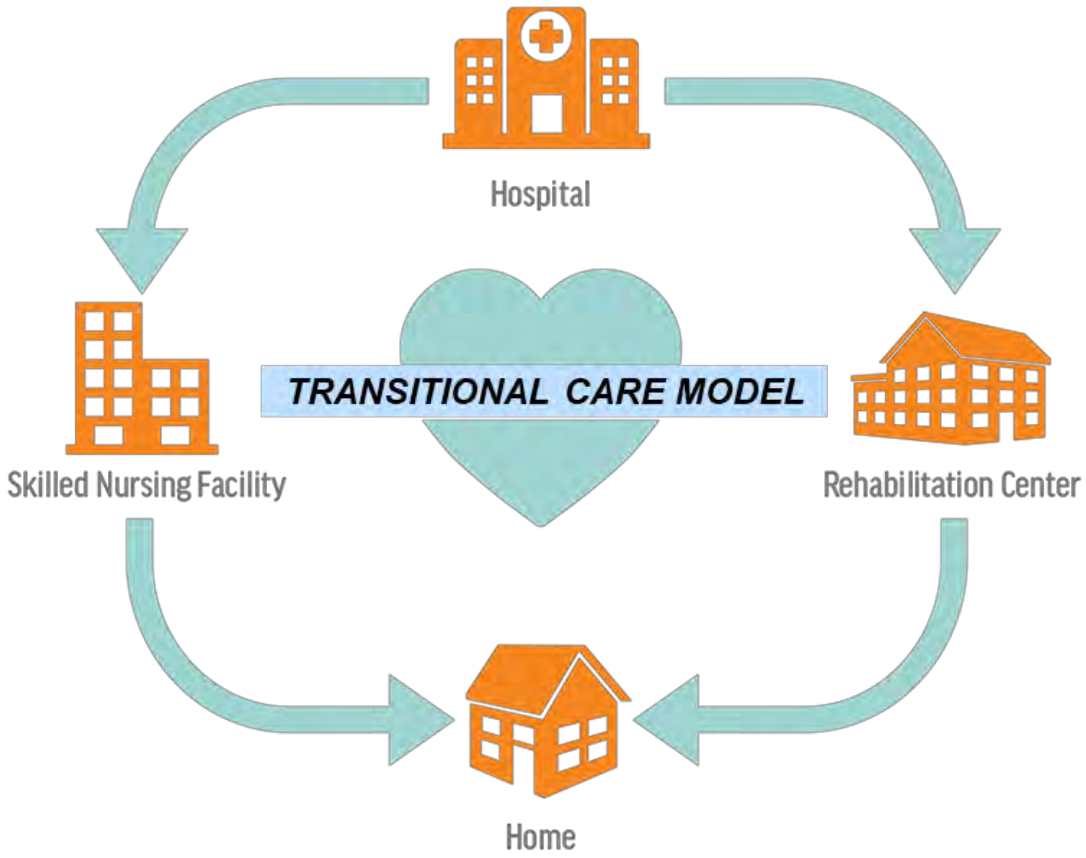
BU
Boston University School of Medicine

Penn
University of Pennsylvania

PROJECT RED
Re-Engineered Discharge

THE CARE TRANSITIONS PROGRAM



# Transition of Care

Coordinated care, particularly with primary care physician

Engagement of patient, family, and/or caregiver

Post-discharge follow up plan

Consistent communication

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# HOSPICE & PALLIATIVE CARE

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# High Burden of Palliative Care Needs of Older Adults During Emergency Major Abdominal Surgery

Zara Cooper, MD, MSc, Elizabeth J. Lilley, MD, MPH, Evan Bollens-Lund, MA, Susan L. Mitchell, MD, Christine S. Ritchie, MD, MSPH, Stuart R. Lipstiz, ScD, Amy S. Kelley, MD,


- Retrospective study
- 411 elderly patients undergoing emergency major abdominal surgery
- **Aim:** Quantify preoperative illness burden, examine its association with outcomes, and describe end-of-life care

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## High Burden of Palliative Care Needs of Older Adults During Emergency Major Abdominal Surgery

Zara Cooper, MD, MSc, Elizabeth J. Lilley, MD, MPH, Evan Bollens-Lund, MA, Susan L. Mitchell, MD, Christine


2/3rd of these individuals were potential candidates for palliative care

Validation of a C… lculator: A P.A.

Allyson C. Cook, MD, Bellal Joseph, MD, M. Jane Mohler, MSN, MPH, PhD,c Kenji Inaba, MD,d Brandon R. Bruns, MD, Paul A. Nakonezny, PhD, Jeff D. Kerby, MD, PhD, Karen J. Brasel, MD, MPH, Steven E. Wolf, MD et al.

JOURNAL AMERICAN GERIATRICS SOCIETY
2017

- Retrospective cohort study (2000-2015)
- **Aim:** Validate a prognosis calculator → geriatric trauma outcome score ii (**GTOS II**)
  - Estimate… le disc…
- 16,114 traum… g to dis…
- **Outcomes:** gastrostomy, tracheostomy placement, and enrollment in hospice

**Primary Sample (n = 16,114)**

**Score Creation Sample (n = 8,057)**

**Score Validation Sample (n = 942)**

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# Surgical Palliative Care Consultations Over Time in Relationship to Systemwide Frailty Screening

Katherine F. Ernst, BS; Daniel E. Hall, MD, MDiv, MHSc; Kendra K. Schmid, PhD; Georgia Seever, RN; Pierre Lavedan, MD; Thomas G. Lynch, MD, MHA; Jason Michael Johanning, MD, MS


- 310 surgery patients who underwent palliative care consultations (160 before frailty screening, 150 after)
- **Intervention:** Surgical palliative care consultations, including frailty screening
- **Primary Outcomes:** 30-, 180-, and 360-day mortality

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Surgical Palliative Care Consultations Over Time in Relationship to Systemwide Frailty Screening

JAMA Surgery

## Take Home Message:

1. **You Must Calculate Frailty**
2. **Use Objective Data for Conversations**

- **Increased rate** of palliative care consultations (30%)

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# Future

Emergency General Surgery in Geriatric Patients: A Statewide Analysis Of Surgeon And Hospital Volume With Outcomes

Mehta, Ambar MPH; Dultz, Linda A. MD, MPH; Joseph, Bellal MD; Canner, Joseph K. MHS; Stevens, Kent MD, MPH; Jones, Christian MD, MS; Haut, Elliott R. MD, PhD; Efron, David T. MD; Sakran, Joseph V. MD, MPH, MPA


- Surgeon volume is predictor, **NOT the hospital volume**
- Surgeons performing **≤8 procedures** annually:
  - 86% **higher** odds of **death**
  - 74% **higher** odds of **FTR**

- Geriatric specific centers?
- Dedicated geriatric surgical training?

# Thank You!

@TopKnife_B

bjoseph@surgery.arizona.edu