Frailty among Surgical Patients

GRECC Connect

August 2022

Objectives

Be able to describe:

- Why frailty is considered a clinical syndrome
- Clinical manifestations of frailty
- Adverse outcomes that are common in frail surgical patients
- Approaches to prevention of frailty
- Approaches to caring for frail surgical patients

Changing Demographics of Surgery

- Older adults account for more than **40 percent of inpatient operations** and **33 percent of outpatient procedures** performed each year in the U.S.

- U.S. Census Bureau anticipates **55% increase in older adults** between 2010 and 2050

"Optimal Resources for Geriatric Surgery." American College of Surgeons. 2019.
Neuman, M and Bosk, C. The Redefinition of Aging in American Surgery. Milbank Q. 2013 Jun; 91(2): 288–315.

Older adults and surgery: The concept of frailty

Frailty can be understood as a "biologic **syndrome of decreased reserve and resistance to stressors**, resulting from cumulative declines across multiple physiologic systems, and causing vulnerability to adverse outcomes" (Fried et al 2001)

Increasingly being seen as a concept that can enhance surgical decision making, and targeting of interventions, **beyond consideration of age alone**

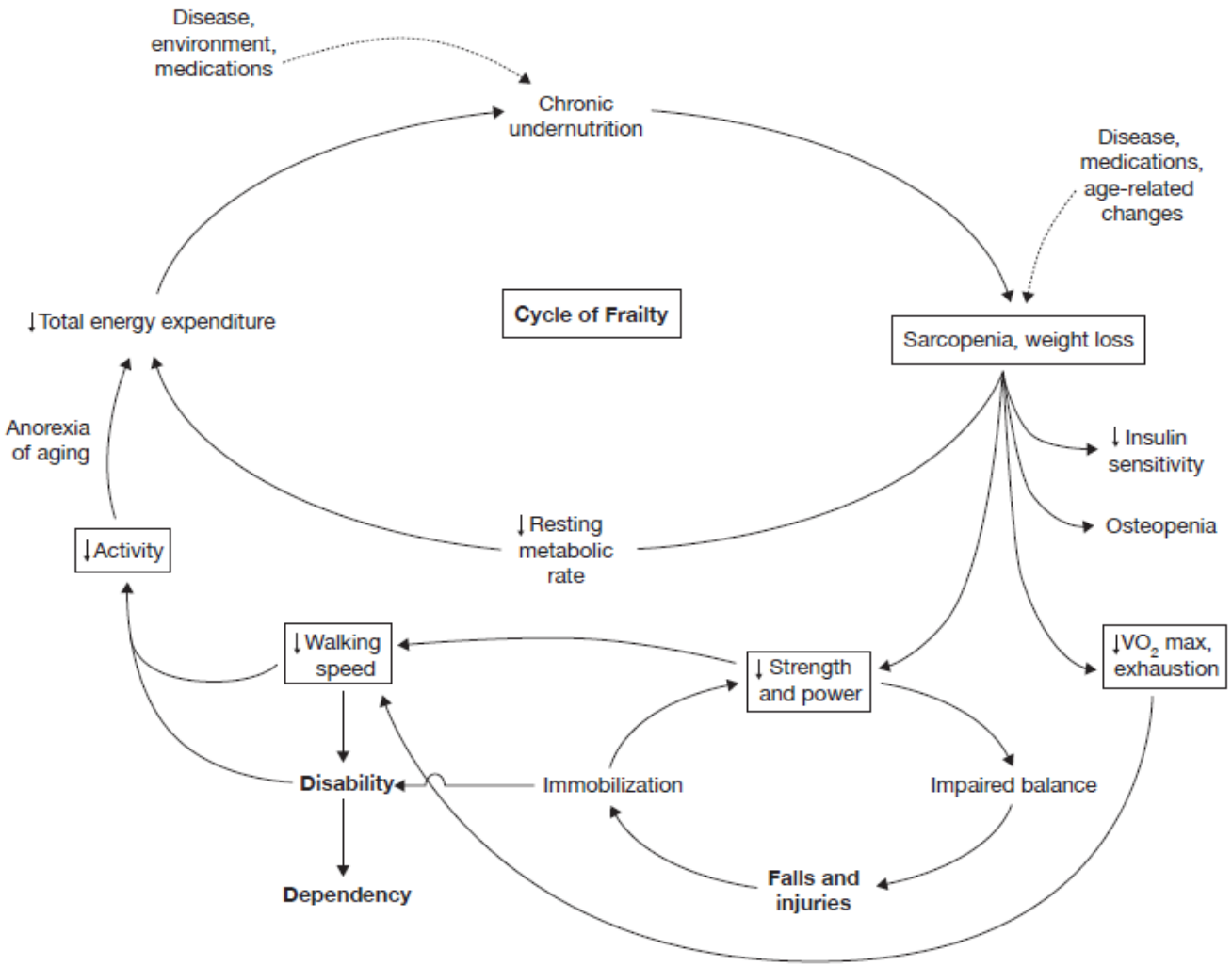
Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-M156. doi:10.1093/gerona/56.3.m146
Lin HS, Watts JN, Peel NM, Hubbard RE. Frailty and post-operative outcomes in older surgical patients: a systematic review. *BMC Geriatr*. 2016;16(1):157. Published 2016 Aug 31. doi:10.1186/s12877-016-0329-8
Xue QL. The frailty syndrome: definition and natural history. Clin Geriatr Med. 2011;27(1):1-15. doi:10.1016/j.cger.2010.08.009

The Frailty Syndrome

Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-M156. doi:10.1093/gerona/56.3.m146

Geriatric Nursing Review Syllabus 6. American Geriatrics Society. 2021.

- All frailty theories suggest:
  - Frailty involves ↑ vulnerability to adverse outcomes, which may most likely manifest in the face of stressors – such as surgery
- Aggregate loss of physiologic function is the process thought to underlie the high risk of adverse outcomes


Disease, environment, medications
Chronic undernutrition
Disease, medications, age-related changes
↓Total energy expenditure
Cycle of Frailty
Sarcopenia, weight loss
Anorexia of aging
↓Insulin sensitivity
Osteopenia
↓Activity
↓Resting metabolic rate
↓Walking speed
↓Strength and power
↓VO2 max, exhaustion
Disability
Immobilization
Impaired balance
Falls and injuries
Dependency

Characteristic	Criteria
Weight loss	Lost >10 pounds unintentionally last year
Exhaustion	Felt last week that "everything I did was an effort" or "I could not get going"
Slowness	Gait speed (cutoffs relate to gender and height)
Low activity level	Expends <270 kcal/week (calculated from activity scale incorporating episodes of walking, household chores, yard work, etc.)
Weakness	Grip strength measured using hand dynamometer (cutoffs depend on gender and BMI)

Frailty Phenotype

Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-M156. doi:10.1093/gerona/56.3.m146

Geriatric Nursing Review Syllabus 6. American Geriatrics Society. 2021.

Deficit accumulation method of frailty assessment

CLINICAL FRAILTY SCALE

1 VERY FIT — People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.

2 FIT — People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g., seasonally.

3 MANAGING WELL — People whose **medical problems are well controlled**, even if occasionally symptomatic, but often are **not regularly active** beyond routine walking.

4 LIVING WITH VERY MILD FRAILTY — Previously "vulnerable," this category marks early transition from complete independence. While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up" and/or being tired during the day.

5 LIVING WITH MILD FRAILTY — People who often have **more evident slowing**, and need help with **high order instrumental activities of daily living** (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.

6 LIVING WITH MODERATE FRAILTY — People who need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 LIVING WITH SEVERE FRAILTY — **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).

8 LIVING WITH VERY SEVERE FRAILTY — Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.

9 TERMINALLY ILL — Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise living with severe frailty.** (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILTY IN PEOPLE WITH DEMENTIA

The degree of frailty generally corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

In **very severe dementia** they are often bedfast. Many are virtually mute.

DALHOUSIE UNIVERSITY

Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

Outcomes of Patients with Frailty

Geriatric Nursing Review Syllabus 6. American Geriatrics Society. 2021.

- As a group, frail older adults are more likely to:
  - Have delayed recovery from illness and/or to fall
  - Develop greater functional impairment, including becoming disabled or dependent
  - Be hospitalized, with worse outcomes once hospitalized, including dependency
  - Die

Clinical Courses of Frailty

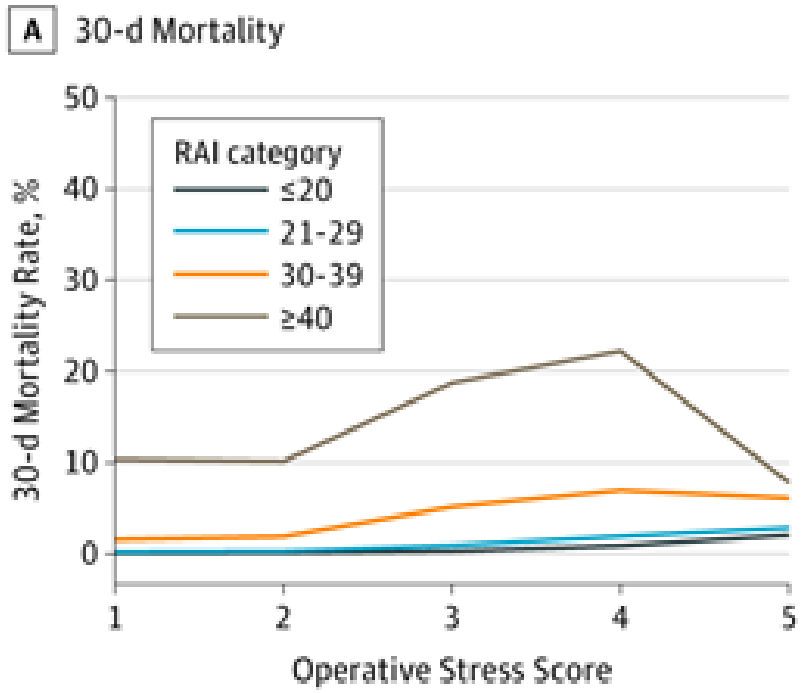
- **Frailty is generally thought of as a chronic, progressive condition, with a spectrum of severity**
  - The most severely frail older adults often appear to be in an irreversible, pre-death phase with high mortality over 6–12 mo
  - Earlier phases may be more responsive to treatment, either to prevent or ameliorate the clinical manifestations of frailty
- **Primary frailty**—results from intrinsic aging processes
- **Secondary frailty—**exists in tandem with one or more chronic diseases

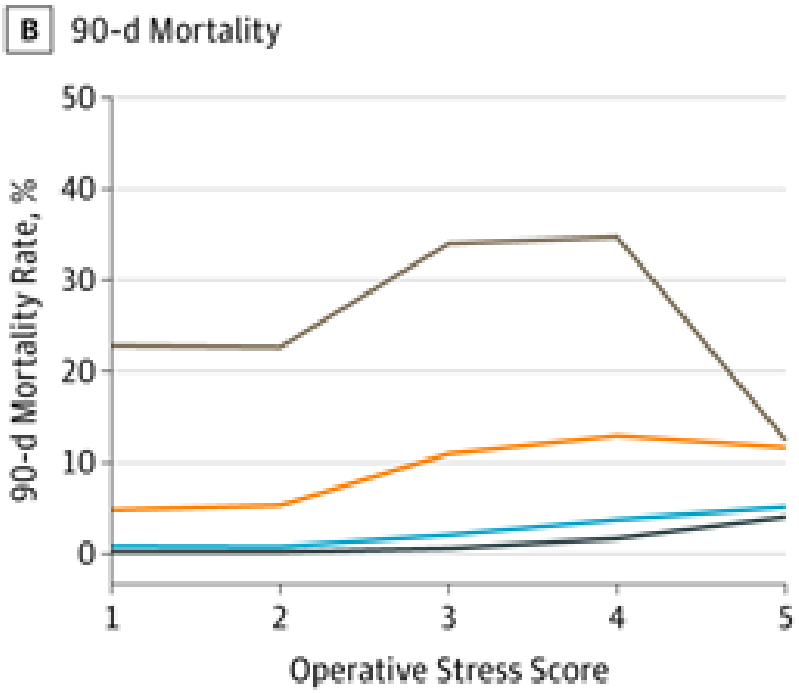
Post-op Risks for Surgical Patients with Frailty

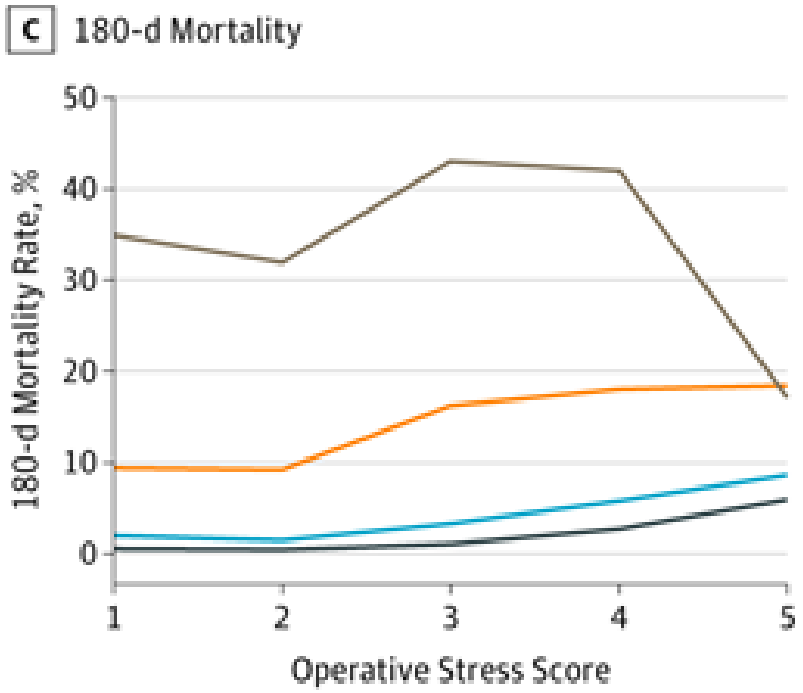
- Increased mortality at 30 days, 90 days and one year follow-up
- Increased post-operative complications
- Increased length of stay
- Increased discharge to institutional care
- Greater functional decline
- Lower quality of life after surgery

Lin HS, Watts JN, Peel NM, Hubbard RE. Frailty and post-operative outcomes in older surgical patients: a systematic review. *BMC Geriatr*. 2016;16(1):157. Published 2016 Aug 31. doi:10.1186/s12877-016-0329-8

Risks for Surgical Patients with Frailty







Shinall MC, Arya S, Youk A, et al. Association of Preoperative Patient Frailty and Operative Stress With Postoperative Mortality. *JAMA Surg.* 2020;155(1):e194620. doi:10.1001/jamasurg.2019.4620

General Options for Management of Frailty (Medical and Surgical Patients)

Apóstolo J, Cooke R, Bobrowicz-Campos E, et al. Effectiveness of interventions to prevent pre-frailty and frailty progression in older adults: a systematic review. JBI Database System Rev Implement Rep. 2018;16(1):140-232. doi:10.11124/JBISRIR-2017-003382

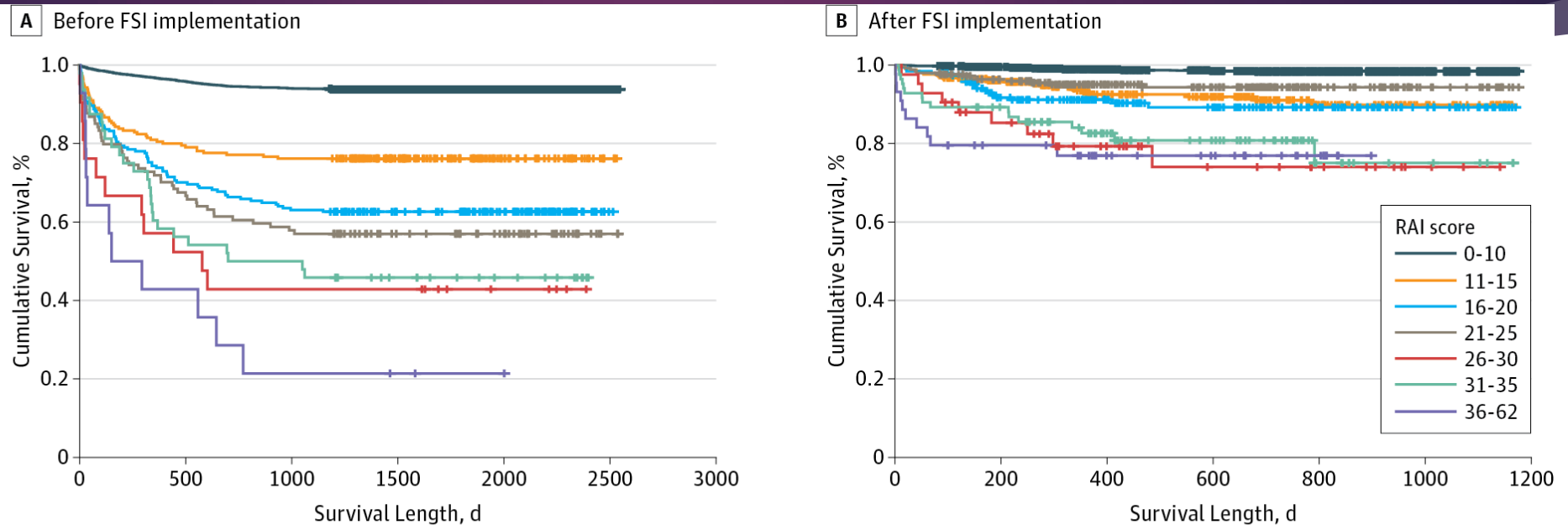
Geriatric Nursing Review Syllabus 6. American Geriatrics Society. 2021.

- **Full geriatric assessment and multidisciplinary care addressing the four geriatric domains (medical, functional, psychological, social)**
  - Management programs for **comorbidities** such as heart-failure, diabetes, COPD, depression
  - **Exercise programs** (resistance training/strengthening, aerobic, balance/Tai Chi, flexibility)
  - **Nutrition optimization** (especially related to addressing malnutrition, calorie deficits, protein intake)
- **Consideration of decreasing environmental risks and stressors, such as surgeries**
- **Shared decision making/careful choosing of goals**
- **Compensation for diminished competencies through increased reliance on other functions and/or replacement**

JAMA Network™

From: **Association of a Frailty Screening Initiative With Postoperative Survival at 30, 180, and 365 Days**

JAMA Surg. 2017;152(3):233-240. doi:10.1001/jamasurg.2016.4219



No. at risk

RAI score													
0-10	4654	4459	4377	3313	1537	142	0	2922	2560	2027	1707	1178	506	0
11-15	210	166	160	107	40	3	0	340	261	176	139	64	27	0
16-20	214	150	135	105	75	1	0	192	153	110	83	53	26	0
21-25	114	76	66	45	33	3	0	254	224	155	125	49	17	0
26-30	21	11	9	9	4	0	0	42	32	20	13	9	3	0
31-35	48	27	24	15	9	0	0	84	71	49	35	11	5	0
36-62	14	6	3	2	1	0	0	44	31	22	18	8	0	0

Interventions: Geriatric Surgery Verification (GSV) Program

- **Evidence-based standards developed by the American College of Surgeons to optimize perioperative care of older adults (with and without frailty)**

- **For patients ≥ 75 years of age having inpatient surgeries**

- **Levels of hospital participation**
  - **Level 1/Comprehensive Excellence** (program reaching at least 50% of eligible patients; ACS visits for verification process)
  - **Level 2/Focused Excellence** (reaching 25-49% of eligible patients; ACS visits for verification process)
  - **Commitment Level** (reaching less than 25% of eligible patients; no verification process)

- **Anticipated to improve clinical care, patient satisfaction, interdisciplinary communication and results with payment/incentive programs**

"Optimal Resources for Geriatric Surgery." American College of Surgeons. 2019.

Components of the Geriatric Surgery Verification Program

- Institutional Administrative Commitment
- Program Governance/Personnel
- Facilities and Equipment Resources
- Patient Care Expectations
- Data Surveillance
- Quality Improvement
- Professional and Community Outreach
- Research (optional)

GSVP Patient Care

1. Goals and Decision Making

- Treatment and Overall Health Goals
- Code Status and Advanced Directives
- Medical Proxy
- LST Discussion for Patients with Planned ICU Admission
- Reaffirm Surgical Decision-Making

2. Preoperative Work-Up

- Geriatric Vulnerability Screens
- Management Plan for Patients with Positive Geriatric Vulnerability Screens
- Interdisciplinary Input or Conference for High-Risk Elective Patients
- Surgeon-PCP Communication for High-Risk Elective Patients

3. Postoperative Management

- Return of Personal Sensory Equipment
- Inpatient Medication Management
- Opioid-Sparing, Multimodality Pain Management
- Standardized Post-Operative Care
- Interdisciplinary Care for High-Risk Patients
- Revisiting Goals of Care for ICU Patients
- Assessment of Geriatric Vulnerabilities

4. Transitions of Care

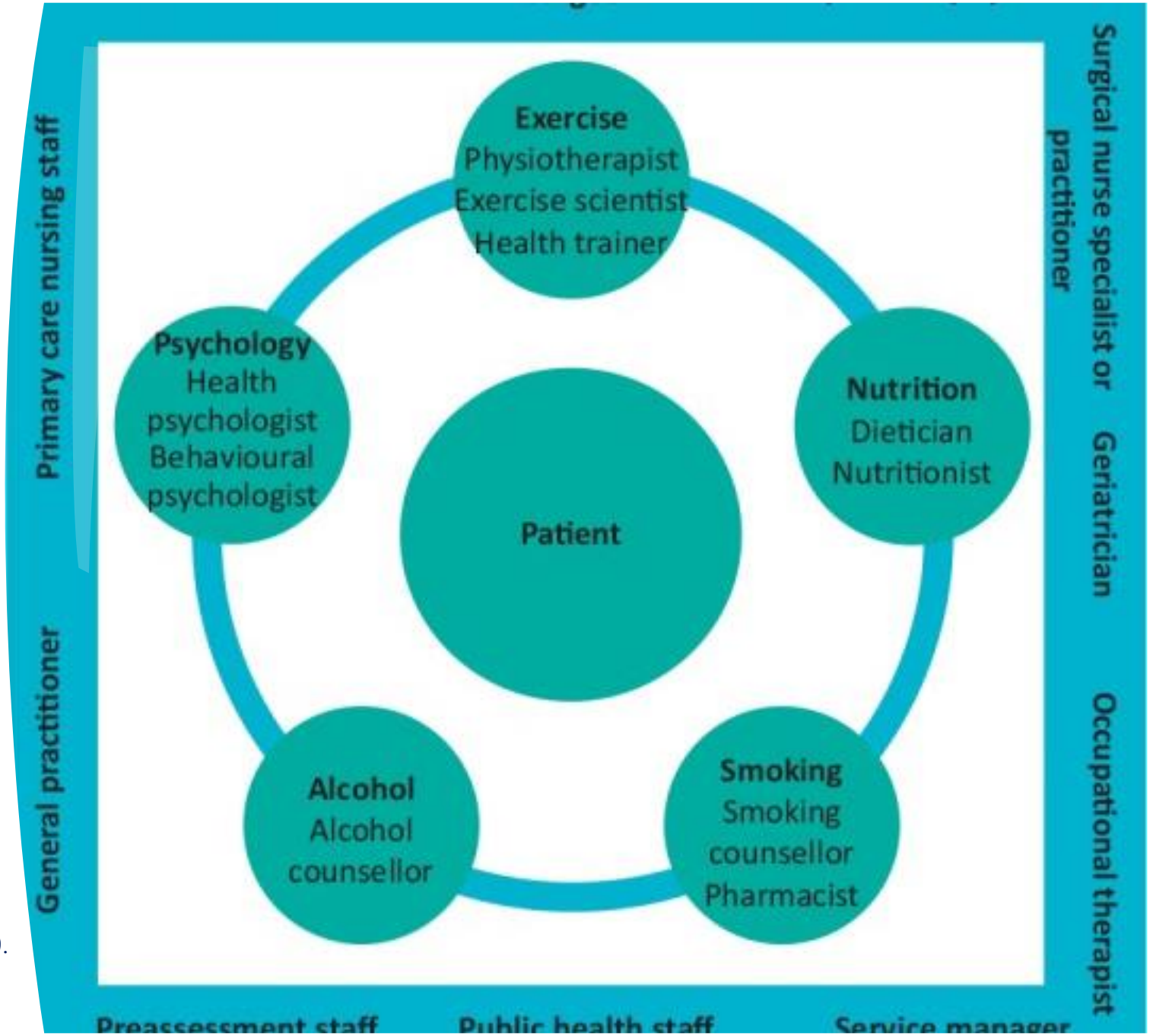
- Discharge Documentation and Hand-Off Communication
- Communication with Post-Acute Facilities

Preliminary Data: GSVP May Reduce Post-op Length of Stay and Readmissions

- "Patients cared for by the GSV Program had **a reduced postoperative length of stay** (median 4 days [range 1,31] vs. 5 days [range 1,86]; $p < 0.01$; and mean 5.4 ± 4.8 vs. 8.8 ± 11.8 days; $p < 0.01$) **compared with the matched cohort**."
- "In a multivariable regression model, the GSV Program's **reduced length of stay was independent of other associated covariates including age, operative time, and comorbidities** ($p < 0.01$)."
- We've been seeing lower numbers of **readmissions** of GSVP participants at Miami VA than would be expected based on their NSQIP scores

Jones TS, Jones EL, Richardson V, et al. Preliminary data demonstrate the Geriatric Surgery Verification program reduces postoperative length of stay. J Am Geriatr Soc. 2021;69(7):1993-1999. doi:10.1111/jgs.17154

Management of Surgical Patients with Frailty: Prehabilitation



Durrand J, Singh SJ, Danjoux G. Prehabilitation. *Clin Med (Lond)*. 2019;19(6):458-464. doi:10.7861/clinmed.2019-0257

Prehabilitation in ERAS Recommendations for Elective Colorectal Surgery

- "**Prehabilitation shows promising results** in recovery of functional capacity and **may reduce complications after colorectal surgery**. Patients who are less fit may be more likely to benefit. **Further research is required before considering this as a mandatory item in an ERAS protocol**."

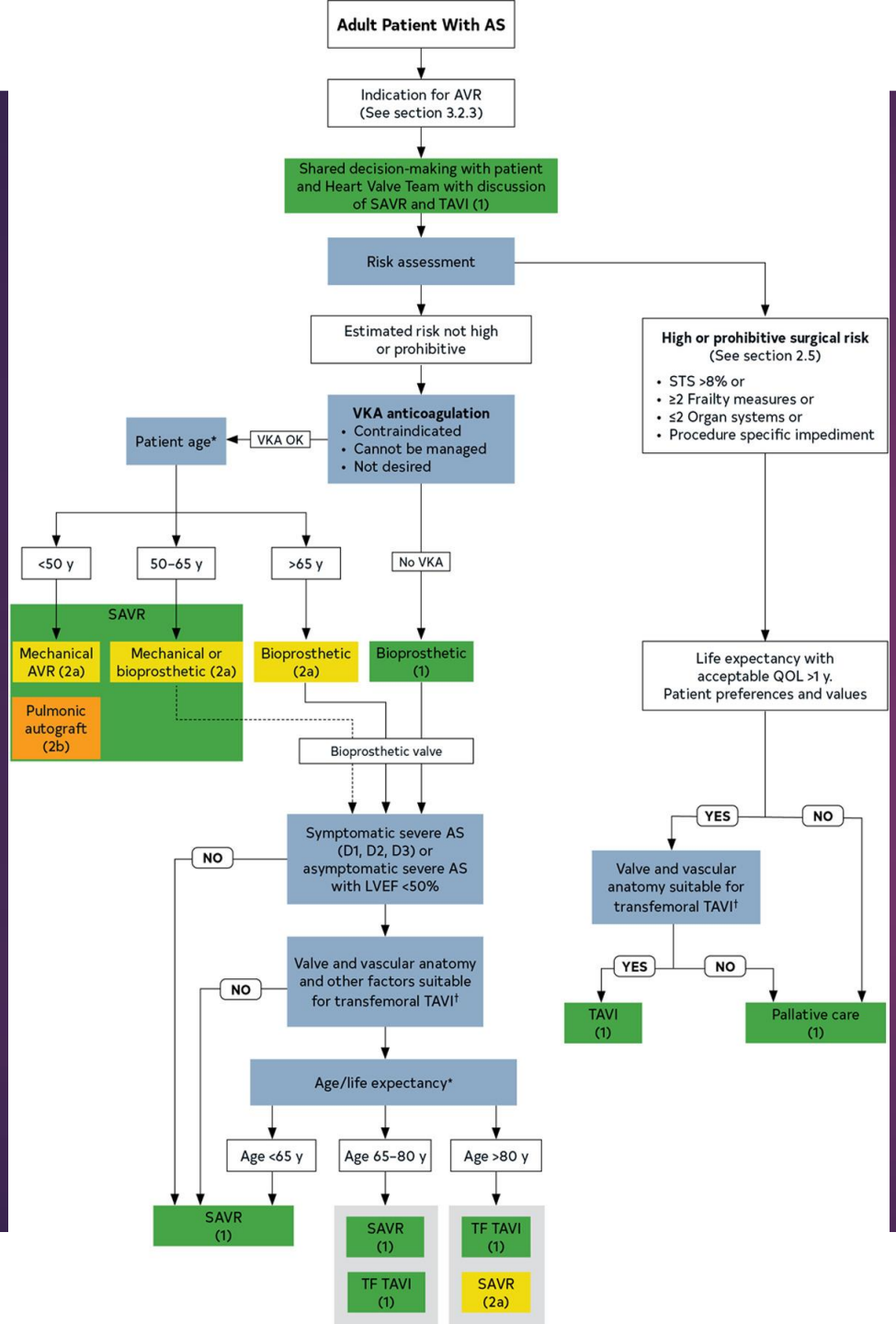
Gustafsson, U.O., Scott, M.J., Hubner, M. *et al*. Guidelines for Perioperative Care in Elective Colorectal Surgery: Enhanced Recovery After Surgery (ERAS®) Society Recommendations: 2018. *World J Surg* **43**, 659–695 (2019). https://doi.org/10.1007/s00268-018-4844-y

Management of Surgical Patients with Frailty: ERAS for Open Aortic Vascular Surgery

- "Based on the consensus of best practices from the Society for Perioperative Assessment and Quality Improvement, **a patient who has a positive frailty screening result should be followed up with a diagnostic assessment of frailty, and, when feasible, a comprehensive geriatric assessment with a tailored intervention (shared decision-making or prehabilitation)** should be performed, ideally by a geriatric specialist."

McGinigle et al. Perioperative care in open aortic vascular surgery: A consensus statement by the Enhanced Recovery After Surgery (ERAS) Society and Society for Vascular Surgery. Journal of Vascular Surgery. Volume 75, Issue 6, 2022.

Frailty and Decision-Making for Aortic Stenosis



Frailty and Goals of Care: The "Surprise Question"

- "Would I be surprised if the patient were to die in the coming year even with having the surgery?"
- If answer is no, consider involvement of the hospice/palliative care team in further discussion of goals of care

Questions? Things you'd like to discuss?

References

- Apóstolo J, Cooke R, Bobrowicz-Campos E, et al. Effectiveness of interventions to prevent pre-frailty and frailty progression in older adults: a systematic review. JBI Database System Rev Implement Rep. 2018;16(1):140-232. doi:10.11124/JBISRIR-2017-003382
- Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-M156. doi:10.1093/gerona/56.3.m146
- Geriatric Nursing Review Syllabus 6. American Geriatrics Society. 2021.
- Gustafsson, U.O., Scott, M.J., Hubner, M. *et al.* Guidelines for Perioperative Care in Elective Colorectal Surgery: Enhanced Recovery After Surgery (ERAS®) Society Recommendations: 2018. *World J Surg* **43**, 659–695 (2019). https://doi.org/10.1007/s00268-018-4844-y
- Hall DE, Arya S, Schmid KK, et al. Association of a Frailty Screening Initiative With Postoperative Survival at 30, 180, and 365 Days. JAMA Surg. 2017;152(3):233-240. doi:10.1001/jamasurg.2016.4219
- Jones TS, Jones EL, Richardson V, et al. Preliminary data demonstrate the Geriatric Surgery Verification program reduces postoperative length of stay. J Am Geriatr Soc. 2021;69(7):1993-1999. doi:10.1111/jgs.17154
- Lin HS, Watts JN, Peel NM, Hubbard RE. Frailty and post-operative outcomes in older surgical patients: a systematic review. BMC Geriatr. 2016;16(1):157. Published 2016 Aug 31. doi:10.1186/s12877-016-0329-8
- Marcantonio et al. A Clinical Prediction Rule for Delirium after Elective Noncardiac Surgery. JAMA. 1994. 271(2).
- McGinigle et al. Perioperative care in open aortic vascular surgery: A consensus statement by the Enhanced Recovery After Surgery (ERAS) Society and Society for Vascular Surgery. Journal of Vascular Surgery. Volume 75, Issue 6, 2022.
- Neuman, M and Bosk, C. The Redefinition of Aging in American Surgery. Milbank Q. 2013 Jun; 91(2): 288–315.
- "Optimal Resources for Geriatric Surgery." American College of Surgeons. 2019.
- Shinall MC, Arya S, Youk A, et al. Association of Preoperative Patient Frailty and Operative Stress With Postoperative Mortality. JAMA Surg. 2020;155(1):e194620. doi:10.1001/jamasurg.2019.4620
- Writing Committee Members, Otto CM, Nishimura RA, Bonow RO, Carabello BA, Erwin JP 3rd, Gentile F, Jneid H, Krieger EV, Mack M, McLeod C, O'Gara PT, Rigolin VH, Sundt TM 3rd, Thompson A, Toly C. 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2021 Feb 2;77(4):e25-e197. doi: 10.1016/j.jacc.2020.11.018. Epub 2020 Dec 17. Erratum in: J Am Coll Cardiol. 2021 Feb 2;77(4):509. Erratum in: J Am Coll Cardiol. 2021 Mar 9;77(9):1275. PMID: 33342586.
- Xue QL. The frailty syndrome: definition and natural history. Clin Geriatr Med. 2011;27(1):1-15. doi:10.1016/j.cger.2010.08.009