Dispelling Perioperative Myths

Emilee Borgmeier MD
Medical Director, Preoperative Clinic, University of Utah
Medical Director, Huntsman Cancer Institute Surgical Optimization Clinic
Director of Education, Perioperative Medicine

SURGERY OVER AGE 65: A BIG DEAL

600,000 elective surgeries/year

Up to 30% of surgical volume

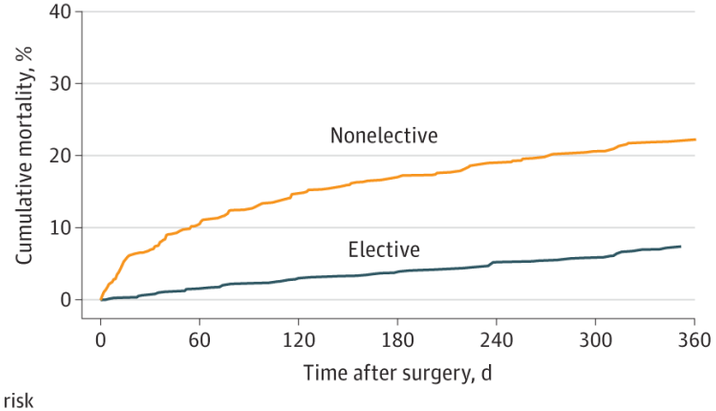
One year mortality 6-32% depending on comorbidities and age

JAMA Network™

From: **Population-Based Estimates of 1-Year Mortality After Major Surgery Among Community-Living Older US Adults**

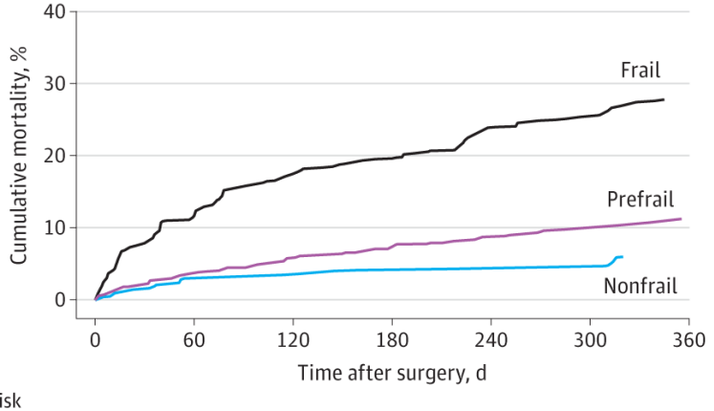
JAMA Surg. 2022;157(12):e225155. doi:10.1001/jamasurg.2022.5155

A Surgical characteristic: nonelective vs elective



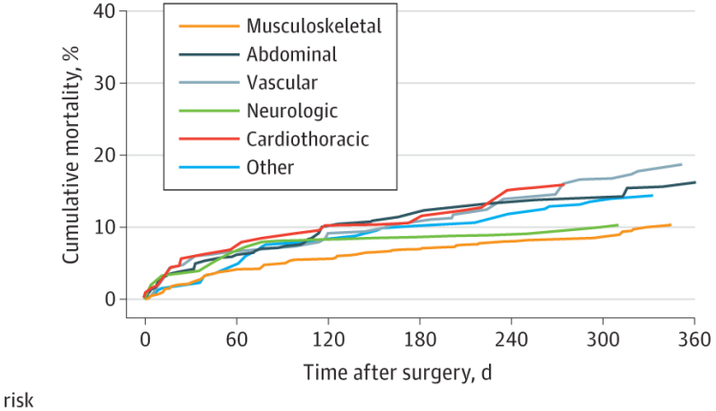
No. at risk							
Elective	661	645	632	624	616	608	596
Nonelective	532	463	442	424	411	401	390

B Geriatric characteristic: frailty phenotype



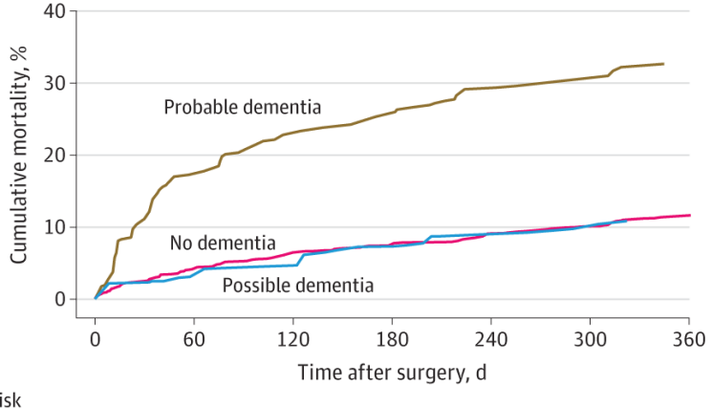
No. at risk							
Nonfrail	276	265	263	261	260	260	253
Prefrail	610	578	566	552	544	533	525
Frail	307	265	245	235	223	216	208

C Surgical characteristic: type of surgery



No. at risk							
Musculoskeletal	482	456	448	437	428	422	413
Abdominal	210	193	182	176	175	175	168
Vascular	146	133	128	125	119	116	112
Neurologic	99	92	90	90	90	89	87
Cardiothoracic	104	92	91	89	86	84	84
Other	152	142	135	131	129	124	122

D Geriatric characteristic: dementia status



No. at risk							
No dementia	917	864	846	830	819	805	788
Possible	127	120	116	113	110	108	106
Probable	149	124	112	105	98	96	92

TODAY'S MYTHS

1. Preoperative NPO Policies – Isn't More Time Better?
2. Perioperative DNR/DNI – No Surgery Zone?
3. Aortic Stenosis & Elective Surgery – Easy Cancellation?

NPO: UNDERSTANDING ORIGINS

- 1820s: First publication of gastric emptying
- ~1847: Concept of NPO conceived
  - To avoid "the unpleasantness of vomiting" associated with ether
- 1862: First mortality, **aspiration**
- Late 19th, early 20th century
  - Distinguished clears vs solids, varying practices
- Series of deaths in 1960s after aspiration during cesarean sections
  - Led to "NPO after midnight"

Maltby JR. Fasting from midnight – the history behind the dogma. *Best Practice & Research Clinical Anaesthesiology*. 2006;20(3):363-378. doi:10.1016/j.bpa.2006.02.001

NPO: CANCEL CULTURE?

Anesthesia's Mission:

- Ensure patient safety, provide amnesia and/or analgesia during a painful procedure

Awareness of Avoidable Complications:

- Aspiration of gastric contents!
  - →Chemical pneumonitis
  - →Bacterial infection
  - →Persistent oxygen requirement
  - →ICU admission
  - →Mortality
- Most common variable in anesthesia closed claims data
  - 31% of cases

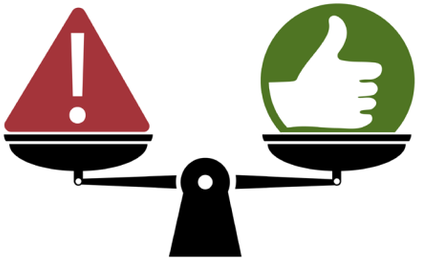


Table 1. Fasting and Pharmacologic Recommendations

*A. Fasting Recommendations**

Ingested Material	Minimum Fasting Period†
• Clear liquids‡	2h
• Breast milk	4h
• Infant formula	6h
• Nonhuman milk§	6h
• Light meal**	6h
• Fried foods, fatty foods, or meat	Additional fasting time (*e.g.*, 8 or more hours) may be needed

NPO: UNINTENDED CONSEQUENCES

Prolonged fasting times

- Dehydration
- Malnutrition
- Nausea, perioperative unpleasantness

1960s-1980s: Multiple clinical studies, RCTs and meta-analyses clear liquids, gastric emptying

- No increased gastric volume
- No change in esophageal sphincter tone

Glacial changes in adaptation to practice

- ASA Fasting Guidelines 1999
- Multiple updates, minor changes, last 2023
- NPO after midnight still haunts us

NPO: IMPLICATIONS FOR ELDERLY

Inpatient, unplanned surgery:

- Urgent/emergent
- Hip, arm, ankle fractures

More likely to be:

- Malnourished
- Frail
- Highest risk for complications

Excessive NPO times may predispose to:

- Worsened nutrition
- Dehydration
- Post-op nausea, vomiting
- Volume overload (maintenance fluids…)
- End-organ damage?

NPO: WHAT CAN YOU DO?

- Understand why, create local guidance
  - E.g., add-ons: NPO at 5am for first start 7am
- Create structure for communication
  - Order sets
  - Door signs
- Educate patient care colleagues

MYTH BUSTED:

NPO after midnight is NOT a standard of care

→Clear liquids OK up to 2h preop (14oz)

→Solids 8h preop

→Less dehydration, PONV, patient dissatisfaction

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DNR/DNI: SUSPEND FOR SURGERY?

- 87-year-old female
  - →History of CKD, mild dementia
  - →Mechanical fall on rug
  - →Humerus ORIF, will require general anesthesia, intubation
- Ambulatory DNR/DNI documented in Epic
- Now what?

DNR/DNI: OPTIONS

- A) Cancel case, patient has DNI
- B) Automatically fully suspend DNR/DNI
- C)Revisit code status with patient
- D)Revisit code status with legal next of kin

DNR/DNI: WHO'S RESPONSIBLE?

- Who *actually* has this conversation?
  - One retrospective study, US academic center
  - 28% of patients with DNR/DNI had re-evaluation
    - 39% IM/Palliative
    - 51% Anesthesiology
    - 10% Surgeon

Hadler RA, Fatuzzo M, Sahota G, Neuman MD. Perioperative Management of Do-Not-Resuscitate Orders at a Large Academic Health System. *JAMA Surg*. 2021;156(12):1175. doi:10.1001/jamasurg.2021.4135

DNR/DNI: PATIENT DISCUSSION

- Information = Autonomy
- Probably unfamiliar with surgical care – need a roadmap
  - Requirements for procedure (intubation, lines)
  - Unexpected events (cardiac arrest, prolonged intubation, prolonged support, renal failure, etc)
- Recovery
  - What does meaningful return to function look like?
  - Risks vs benefits

DNR/DNI: DOCUMENTATION + COMMUNICATION

- Discussion during timeout
- Communication with PACU
- Changes in EMR
  - Code status change?
  - Dotphrase example:

We discussed the patient's code status and how they would like it to be interpreted during the perioperative period. Their code status prior to the procedure has been _____ . We discussed our standard practice of treating rapidly reversible causes of instability under anesthesia, which they understand and support. During their perioperative period (from induction to recovery from anesthesia) they would like to a) keep their code status listed as above or b) change their code status to _____ and have it returned to _____ after recovery from anesthesia. This conversation was discussed with the surgical team prior to induction of anesthesia.

MYTH BUSTED:

DNR/DNI is NOT automatically suspended for surgery

→Patient & provider discussion of risks, options

→Documentation & communication

→Patients rely on your understanding & guidance

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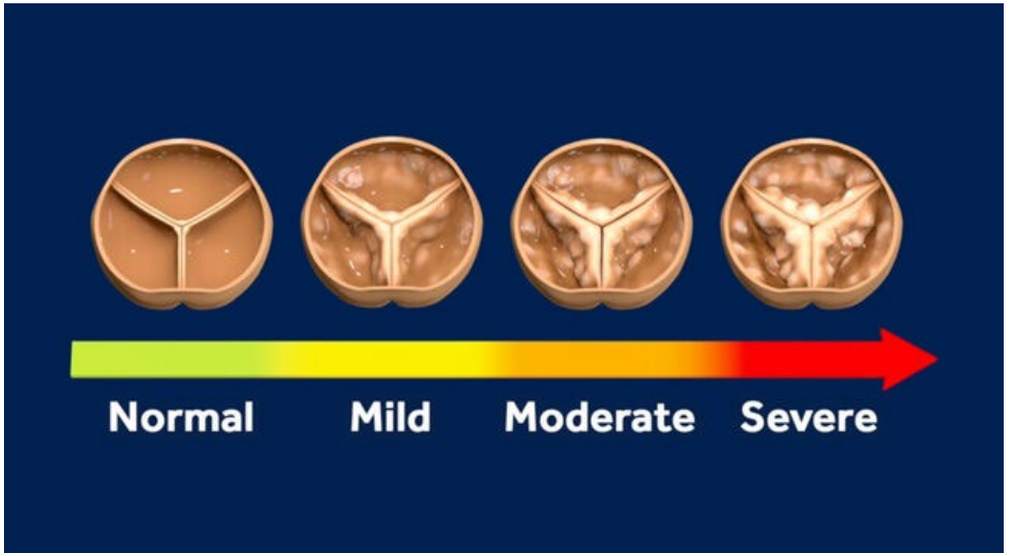
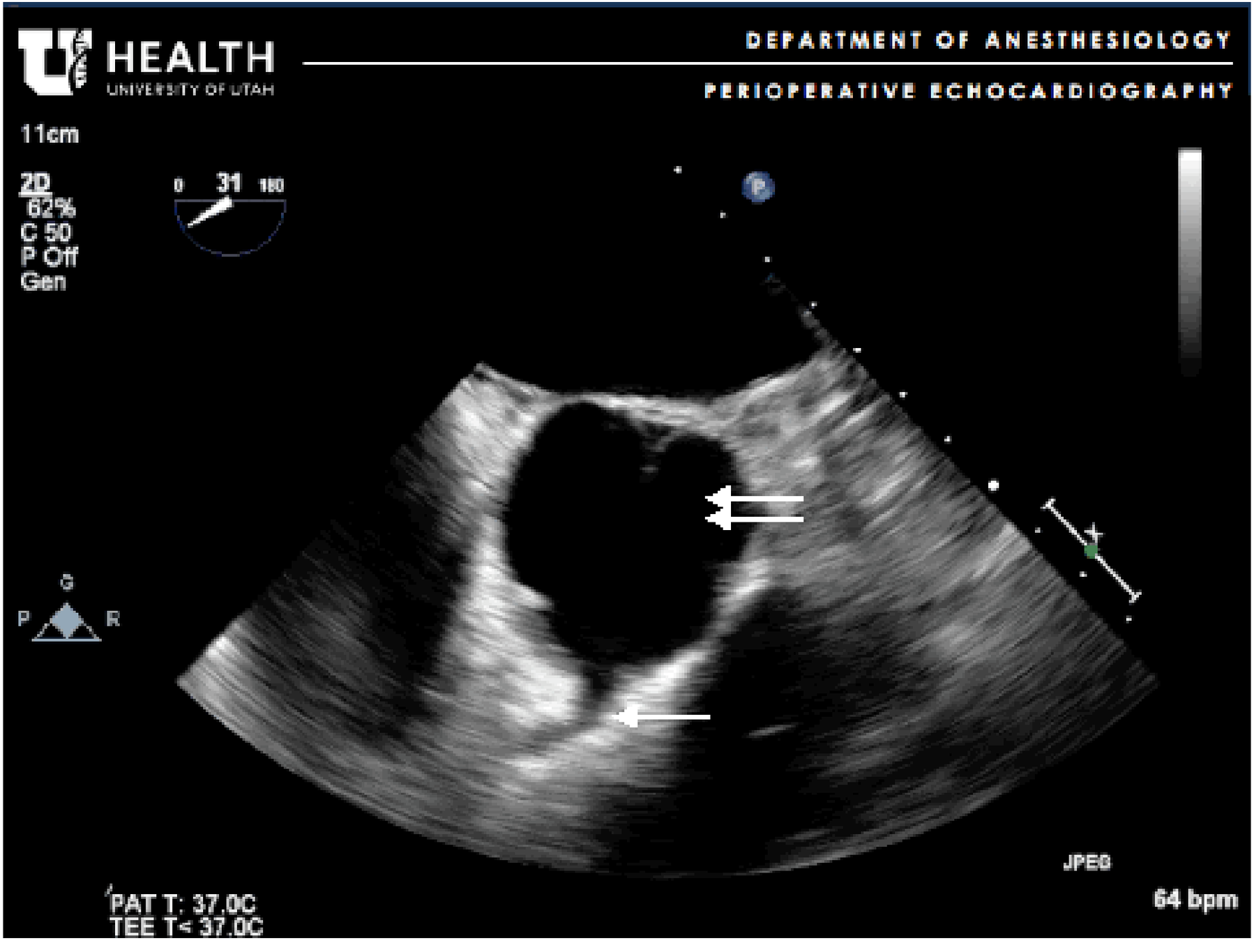
AORTIC STENOSIS: GENERAL

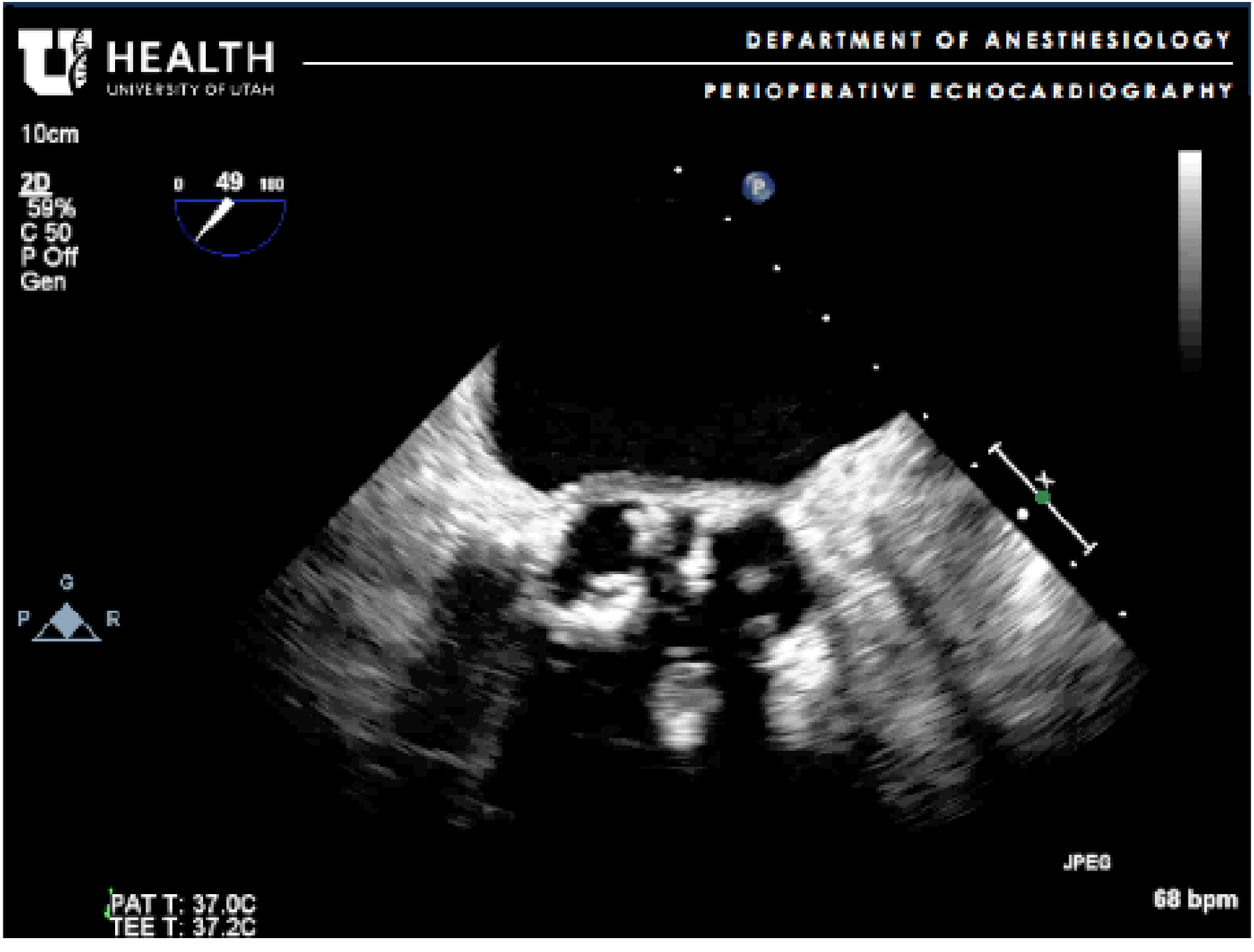
- Tricuspid AS
  - Calcific
  - 70s-80s

- Bicuspid AS
  - …Also calcific
  - Turbulent flow
  - 50s-60s





Clip courtesy of Dr Josh Zimmerman



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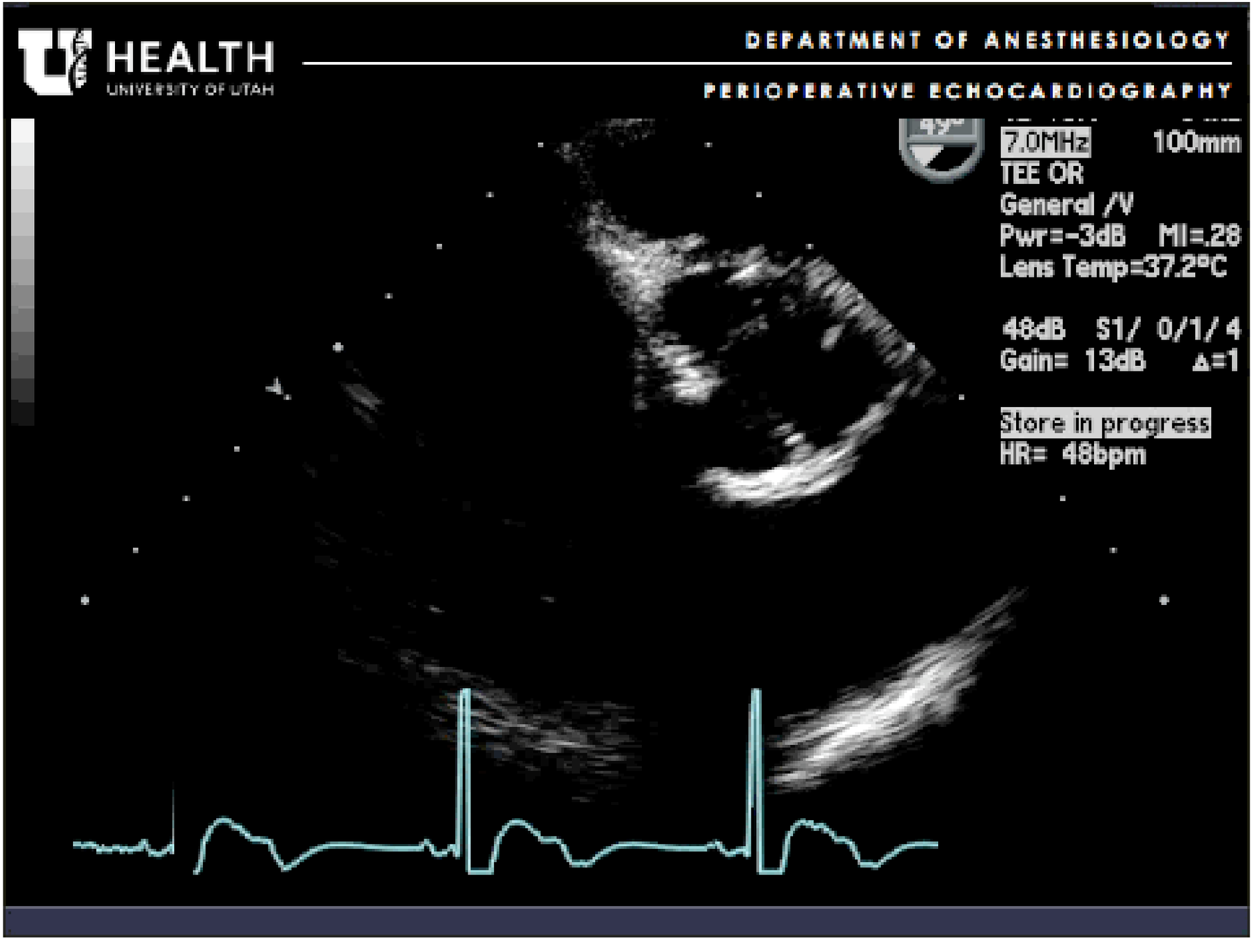

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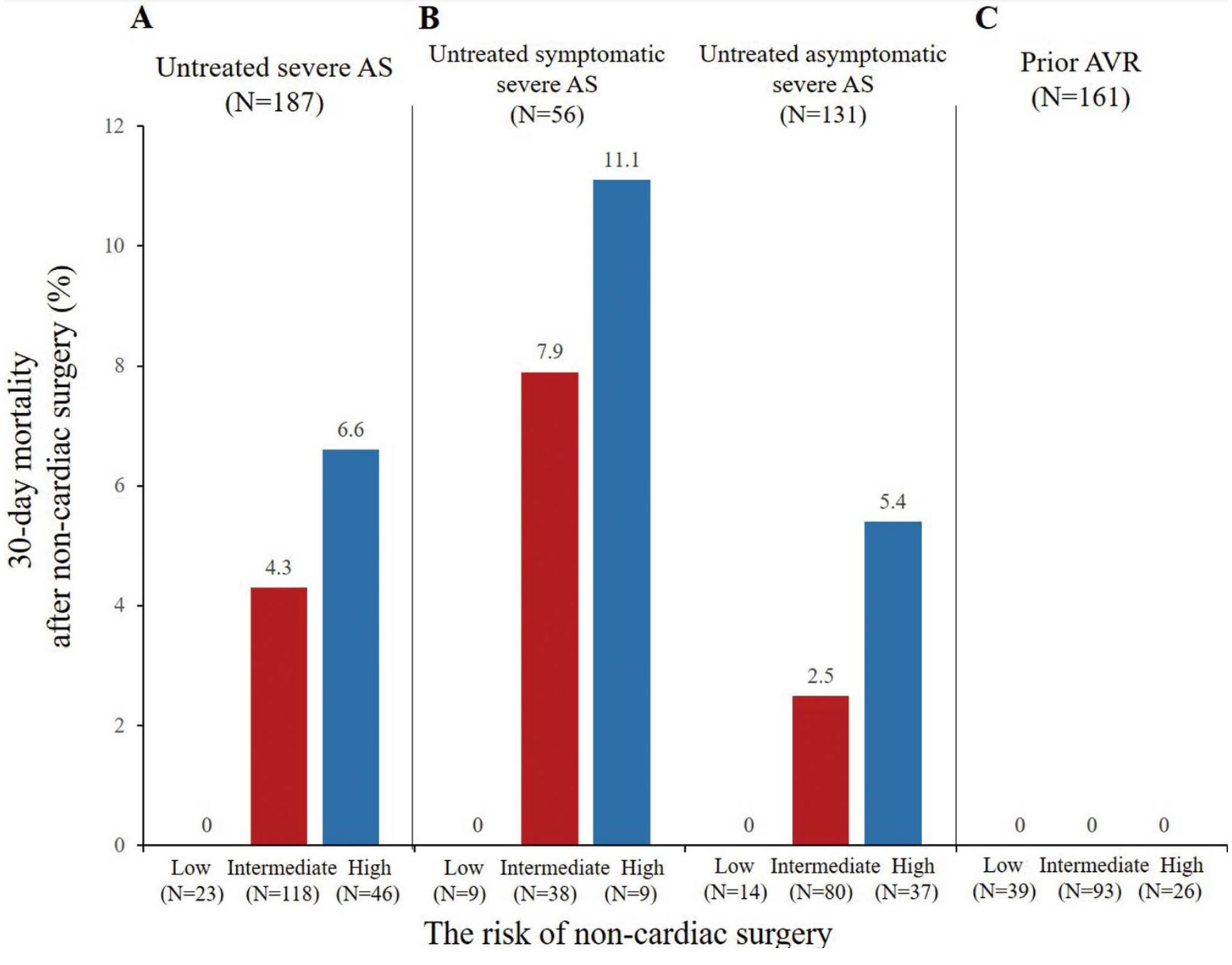
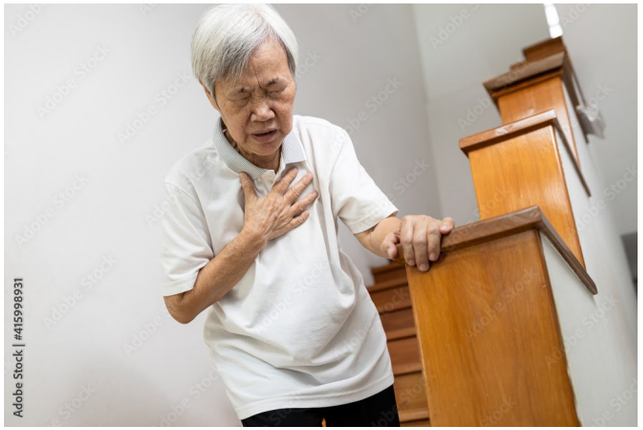


Taniguchi T, Morimoto T, Shiomi H, et al. Elective Non-Cardiac Surgery in Patients With Severe Aortic Stenosis — Observations From the CURRENT AS Registry —. *Circ J*. 2020;84(7):1173-1182. doi:10.1253/circj.CJ-20-0026

AORTIC STENOSIS: SYMPTOMS

- ‘I’ve just gotten so tired lately’
- ‘I can’t catch my breath around the house’
- ‘I thought I had the flu’

- Fatigue
- Dyspnea
- Syncope/falls
- Chest pressure/discomfort
- Symptoms of heart failure (oxygen need, edema)



AORTIC STENOSIS: PHYSIOLOGIC DECLINE

- LVEF < 50%
- Pulmonary hypertension
- Right ventricular dysfunction

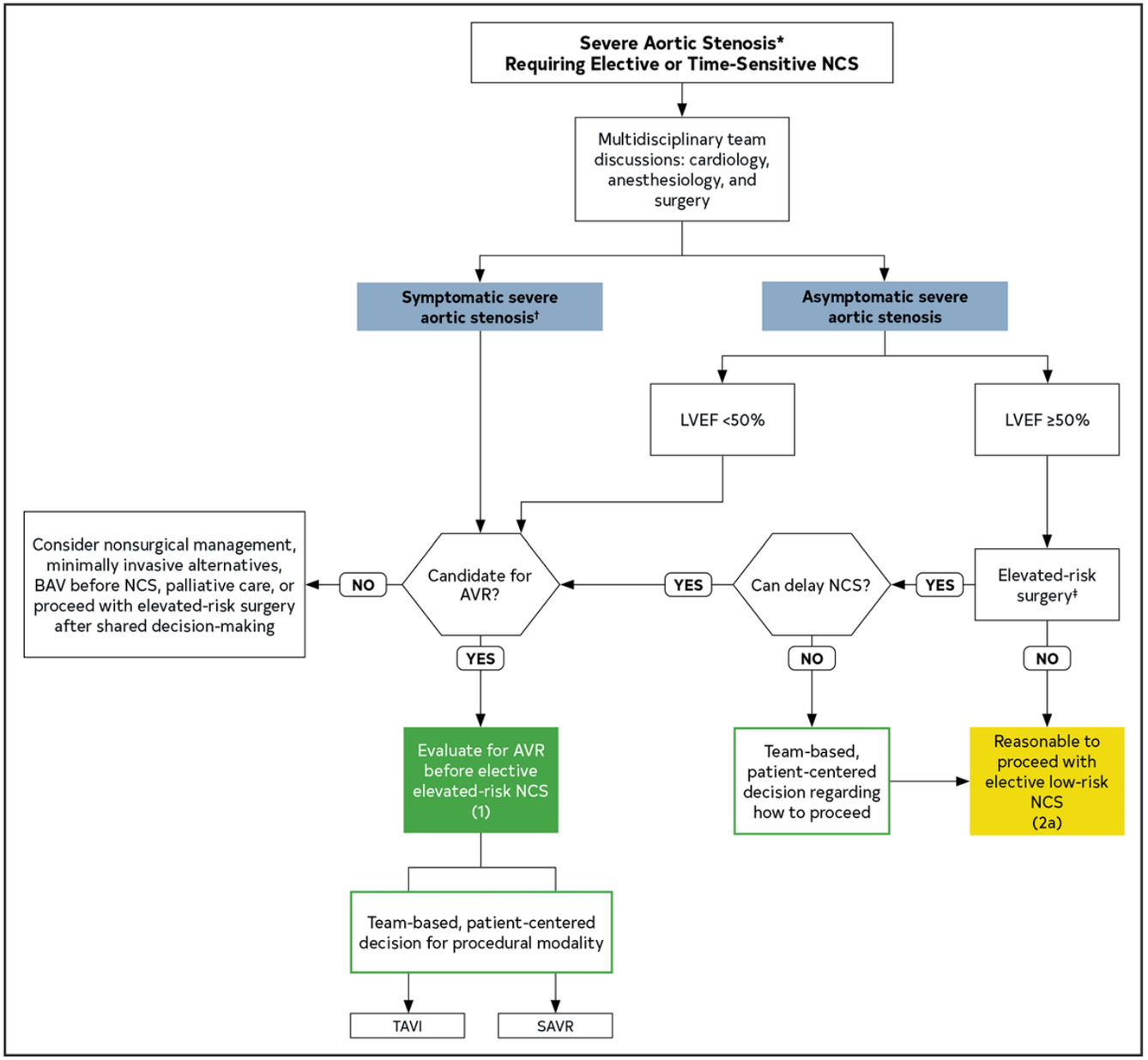
AS: SO YOU WANT TO HAVE YOUR ___ FIXED

6.4.1. Aortic Stenosis

Recommendations for Aortic Stenosis		
COR	**LOE**	**Recommendations**
1	**C-LD**	1. Patients with severe AS should be evaluated for the need for aortic valve intervention before elective NCS to reduce perioperative risk.*[1,2]
1	**C-EO**	2. In patients with suspected moderate or severe AS who are undergoing elevated-risk NCS, preoperative echocardiography is recommended before elective NCS to guide perioperative management.*
2a	**C-LD**	3. In asymptomatic patients with moderate or severe AS and normal LV systolic function as assessed by echocardiography within the past year, it is reasonable to proceed with elective low-risk NCS.[3–5]

Thompson A, Fleischmann KE, Smilowitz NR, et al. 2024 AHA/ACC/ACS/ASNC/HRS/SCA/SCCT/SCMR/SVM Guideline for Perioperative Cardiovascular Management for Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2024;150(19). doi:10.1161/CIR.0000000000001285

AS: SO YOU WANT TO HAVE YOUR ___ FIXED



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AS: WHAT IS LOW RISK SURGERY?

Low

- Minimal blood loss, fluid shifts
- <2h
- Generally outpatient

- Eye & dental
- Lumpectomy
- Cystoscopy
- Hysteroscopy
- Endoscopy
- Dermatology
- ENT (non-onc, no flap or neck dissection)
- Hernia repair (simple)
- Hand/feet procedures

Medium

- Blood loss <500mL, moderate fluid shifts
- >2h

- 1-3 level spine
- Gyn procedures
- Laparoscopic surgery unless meets high criteria
- Major joint replacement
- Bariatric
- Mastectomy
- Reconstructive surgery

High

- Potential EBL >500mL, significant volume shifts
- Anticipated invasive lines, and/or postop ICU

- Suprainguinal vascular
- Thoracic
- Cardiac
- Solid organ transplant
- Neurosurgery
- Open abdominal
- >4 level spine
- Oncologic procedures (unless otherwise specified)

AS: PREOPERATIVE PLANNING

Echocardiography within 1 year

More frequently if symptoms change

Highest risk

Symptomatic (complaints or physiology)

-LVEF <50%

-Pulmonary HTN/RV dysfunction

Urgent/emergent surgery

Other considerations

CAD

Other valvular lesions (MR)

Arrythmia

MYTH BUSTED:

Aortic stenosis = cancellation

→Asymptomatic (complaints and physiology)

→Low risk surgery

→Thoughtfully proceed

Questions?

emilee.borgmeier@hsc.utah.edu

HEALTH
UNIVERSITY OF UTAH

Caring for older adults with decisional impairment

MAUREEN HENRY, JD, PHD

AGENDA

- Ethical Objectives
- Utah's Law
- Fundamental Concerns about Capacity Assessment and Surrogate Decision-Making
- Human Rights Implications
- Pragmatic Interventions

Ethical Foundations of Capacity Requirement in Informed Consent

Respect for Autonomy

Patients' right to control their lives, including medical decisions, housing, and other fundamental life decisions

Beneficence and Nonmaleficence

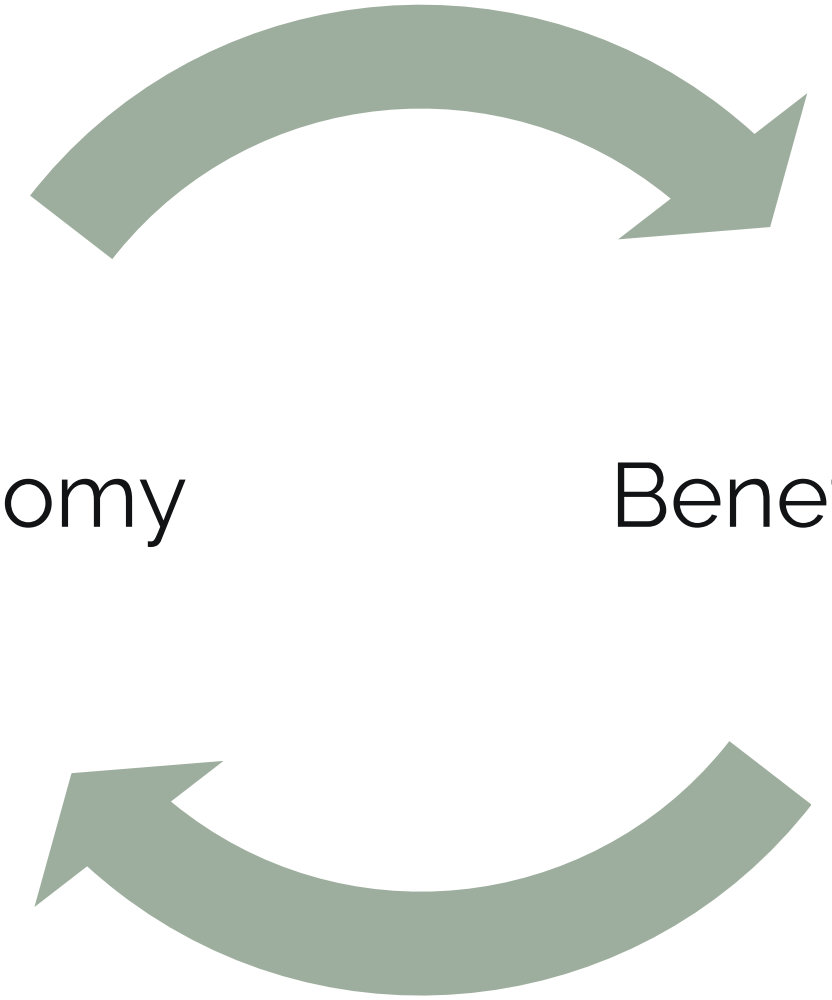
Promoting good

Avoiding harm

"Since the point of health care is to benefit the person to whom it is provided, all questions in health care ethics are in one way or another about beneficence: its scope, limits and proper expression."

"[T]he proper scope of medical beneficence dictates certain forms of respect for autonomy."

Beneficence, Cullity, Principles of Health Care Ethics, Second Edition, 2007


Autonomy
Beneficence

Justification for not respecting a person's autonomy after a finding that the person "lacks capacity"

- Person found to "lack capacity" is "non-autonomous" *Berg, Appelbaum & Grisso*
- Surrogate decision-makers can better make decisions than a person with limited decisional abilities – exercise autonomy on behalf of the person

Utah Law

75-2A-104. CAPACITY TO MAKE HEALTH CARE DECISIONS -- PRESUMPTION -- OVERCOMING PRESUMPTION.

Definition: Utah Code Annotated §75-2a-103.

(13) "Health care decision making capacity" means an **adult's ability to make an informed decision about receiving or refusing health care**, including:

(a) the ability to **understand the nature, extent, or probable consequences of health status and health care alternatives**;

(b) the ability to **make a rational evaluation** of the burdens, risks, benefits, and alternatives of accepting or rejecting health care; and

(c) the **ability to communicate** a decision.

ALL ADULTS ARE PRESUMED TO HAVE DECISION-MAKING CAPACITY

After a finding that the person “lacks capacity”

- Clinician must communicate the determination to the person
- The person may contest the finding orally or in writing
- Once contested, the clinician cannot rely on a surrogate for decision-making without a court order.

- *Not in the law, but clinician should inform person that capacity is being assessed*

75-2A-110. SURROGATE DECISION MAKING -- SCOPE OF AUTHORITY.

(1) A surrogate acting under the authority of either Section 75-2a-107 or 75-2a-108 shall make health care decisions in accordance with:

- (a) the adult's **current preferences**, to the extent possible;
- (b) the adult's **written or oral health care directions**, if any; or
- (c) the **substituted judgment** standard.

(2) A surrogate acting under authority of Sections 75-2a-107 and 75-2a-108:

- (a) **may not admit the adult to a licensed health care facility** for long-term custodial placement other than for assessment, rehabilitative, or respite care over the objection of the adult; and
- (b) may make health care decisions, including decisions to terminate life sustaining treatment for the adult patient in accordance with Subsection (1).

Human Rights Law

UN Convention on the Rights of Persons with Disabilities: Article 12

- Persons with disabilities have legal capacity on an equal basis with others. In other words, **an individual cannot lose his/her legal capacity to act simply because of a disability**
- Some persons with disabilities require assistance to exercise this capacity, so States must do what they **can to support those individuals and introduce safeguards against abuse of that support**. Support could take the form of one trusted person or a network of people; it might be necessary occasionally or all the time.
- With supported decision-making, **the individual is the decision maker.** It is not substituted judgement

https://www.un.org/development/desa/disabilities/resources/handbook-for-parliamentarians-on-the-convention-on-the-rights-of-persons-with-disabilities/chapter-six-from-provisions-to-practice-implementing-the-convention-5.html

STATUTORY AND CASE LAW IN US IS INCREASINGLY RECOGNIZING SUPPORTED DECISION-MAKING AS A SUBSTITUTE FOR OR ADJUNCT TO GUARDIANSHIP

Fundamental Concerns about Capacity Assessment and Surrogate Decision-Making

High stakes: capacity determinations bleed into the rest of life even though, in theory, each determination is decision-specific

Is there is a discernible line that is “capacity” for every healthcare decision?

For close calls, how confident are you that you (or your colleagues) are always right when determining that a person does or doesn't have capacity?

How adequate is capacity assessment training, skill, and knowledge?

How many determinations are influenced by factors other than the person's abilities? E.g. refusing treatment recommended by the clinician assessing capacity?

How confident are you that surrogates can accurately make a decision based on what the other person would have wanted?

Pragmatic (and “legal”) Approaches

Is there an alternative to this high-stakes, error prone system of capacity assessment and replacement with a surrogate decision-maker?

Alternatives

- Think supplementing, not supplanting
- Rule out reversible causes for a person's inability to demonstrate decision-making abilities
  - Medical
  - Sensory
- Consider cultural and spiritual factors that may impact decisions and perception of capacity
- Consider the impact of depriving the person of autonomy
- Examine the possibilities that your biases could impact your perception about a person's decision-making abilities
- Start by engaging the person in decisions, even when evident decision-making challenges are present

Alternatives

- Consider the stakes of assessing capacity and declaring that the person “lacks capacity.”
- Document preferences of people who are aging alone or where there are other concerns (e.g. family conflict)
    - NOT “get the DNR”
- Have candid discussions about disease trajectory and upcoming decision points
- Have the support person and patient sign consent forms if you’re concerned about “legal” documents

Addressing Complexities in the Older Trauma Patient

Cathy A. Maxwell, PhD, RN, FAAN, FNAP

Robert L. and Joyce T. Rice Presidential Endowed Chair in Healthy Aging

University of Utah College of Nursing

No disclosures or conflicts of interest

Objectives

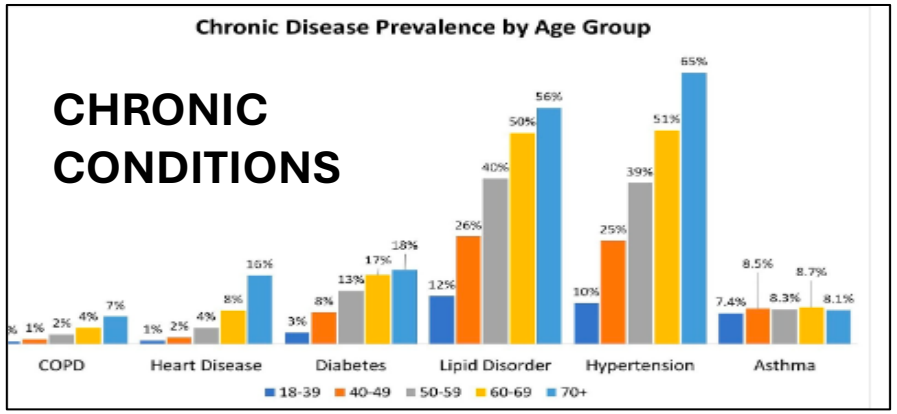
Describe trajectories of aging that lead to frailty and end of life

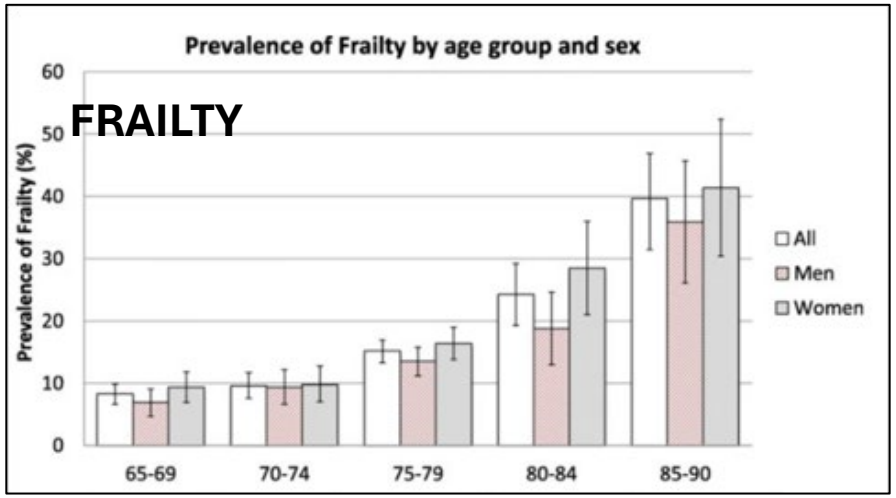
Discuss geroscience and the biology of aging

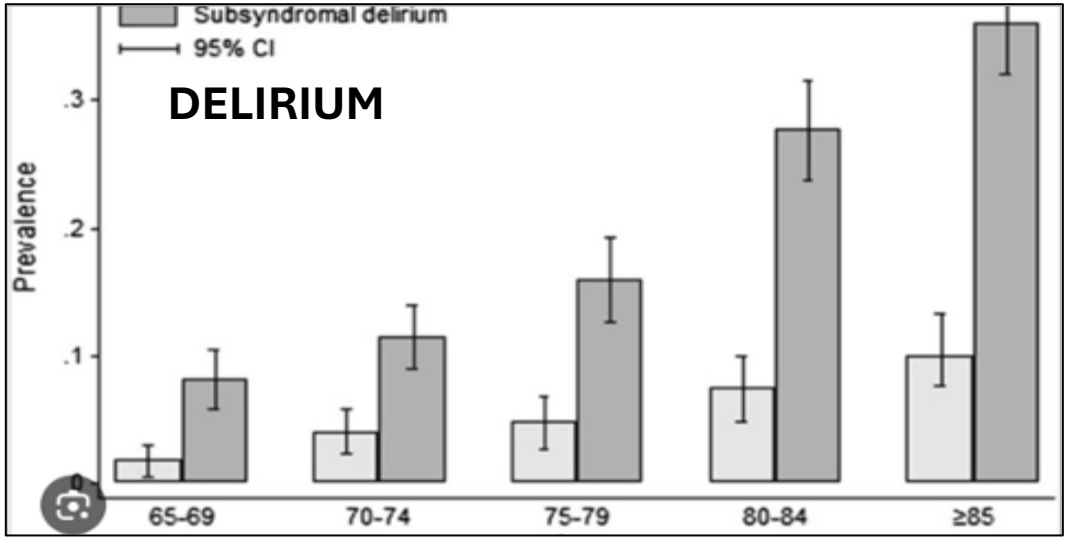
Summarize the integrated stress response and the effects on mitochondrial dysfunction

Discuss management strategies for hospitalized (injured) older adults

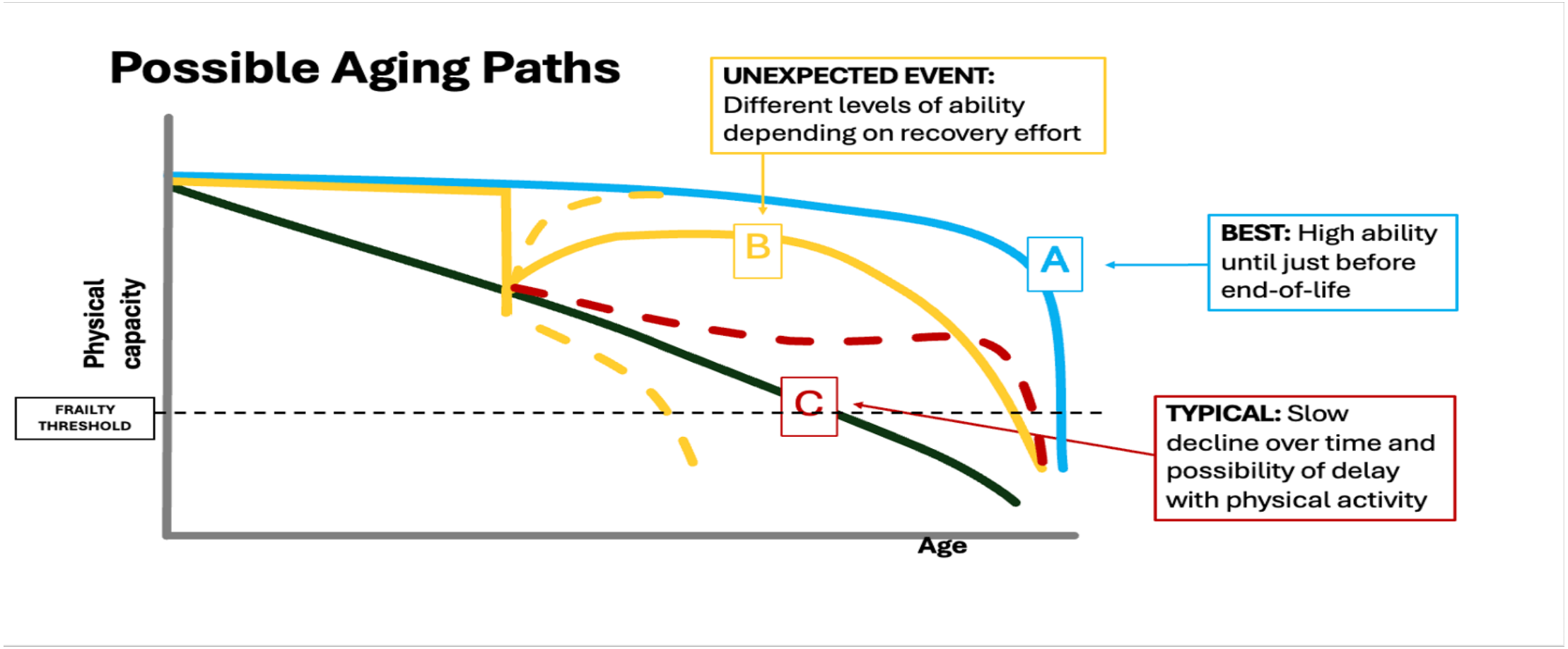
What do these conditions have in common?



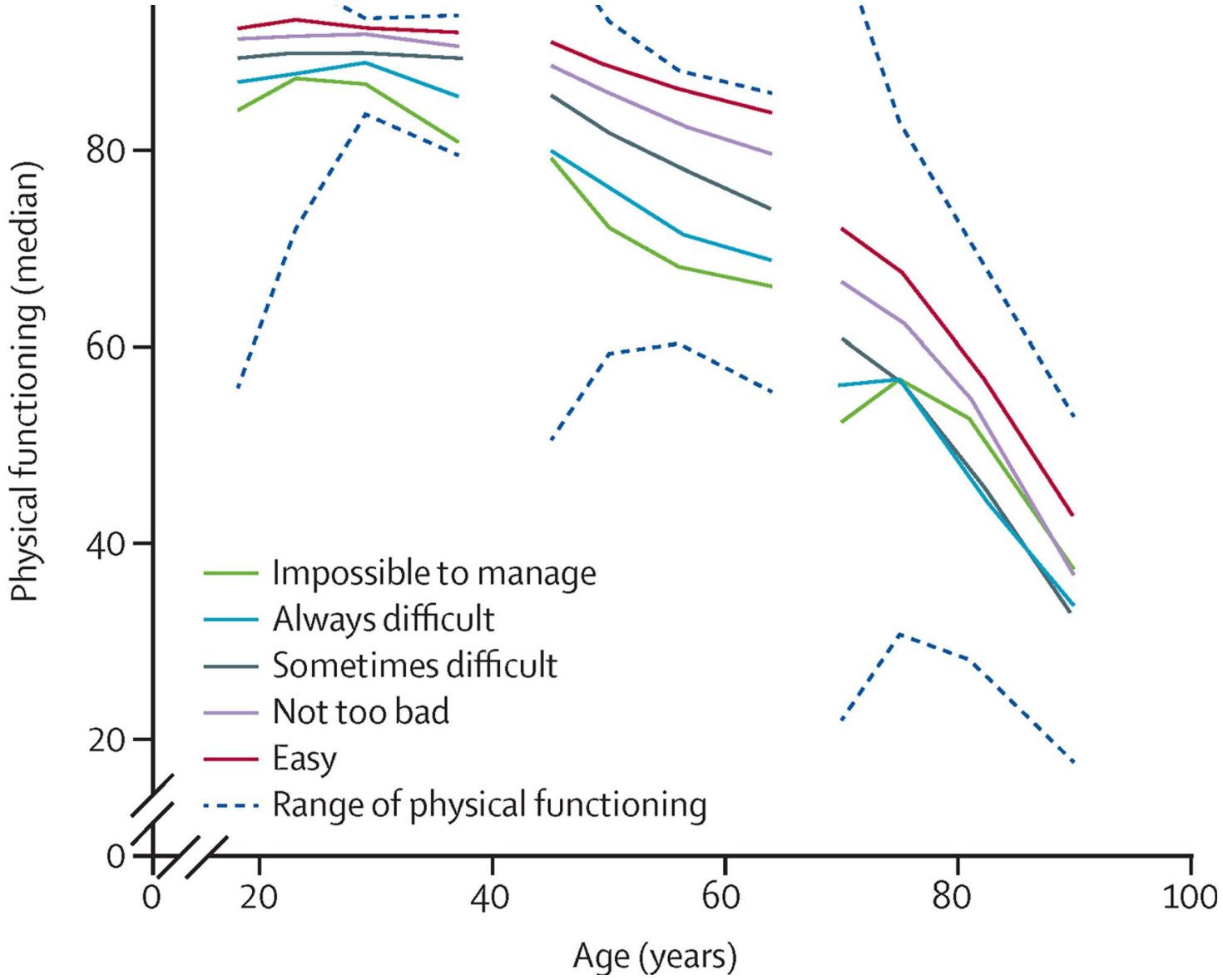




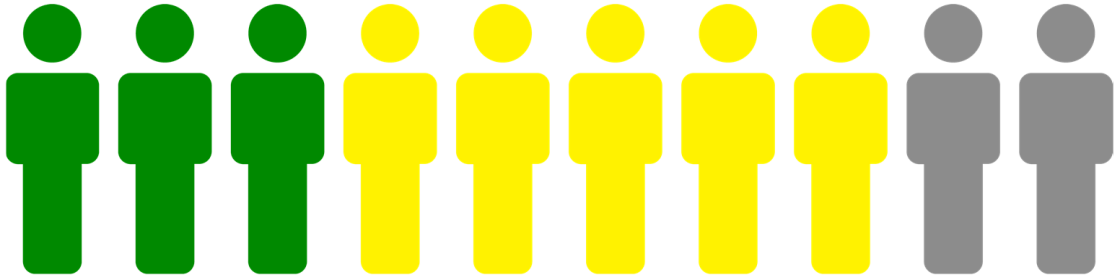
Trajectories of Aging



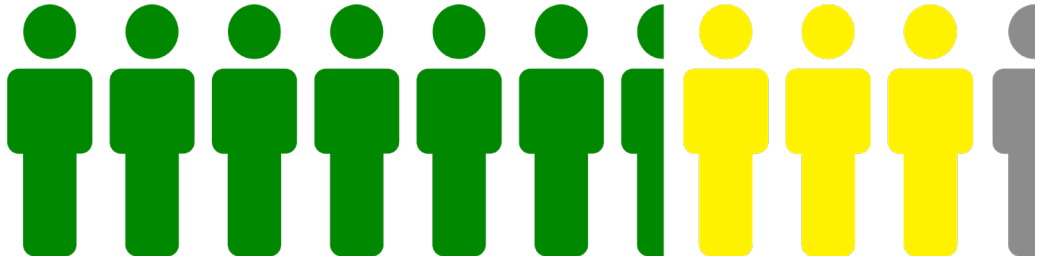
World Health Organization (WHO) Integrated Care for Older Adults (ICOPE)



Maxwell et al., 2016

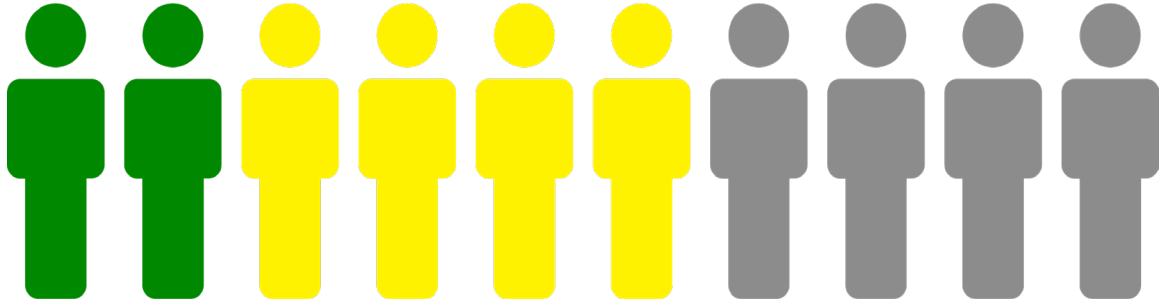


All patients: N=188



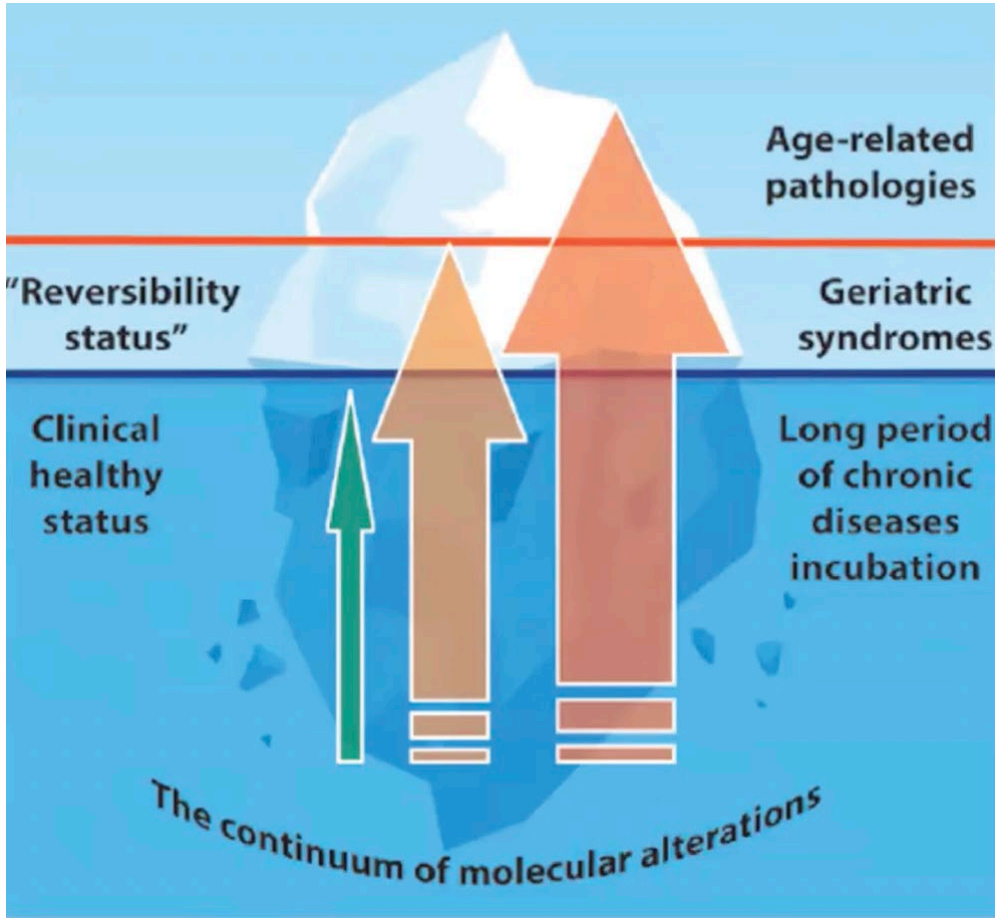
Non-frail patients: N=52

Frail patients: N=94



Fallacies about Aging

- Not binary
- Not based on chronological age
- Noncommunicable chronic diseases are not normal aging



Franceschi et al., 2018

Applying a Geroscience Lens

Understanding Aging's Impact

Examining aging processes reveals how they contribute to disease and disability, shifting focus from symptoms to root causes.

Targeting Biological Aging

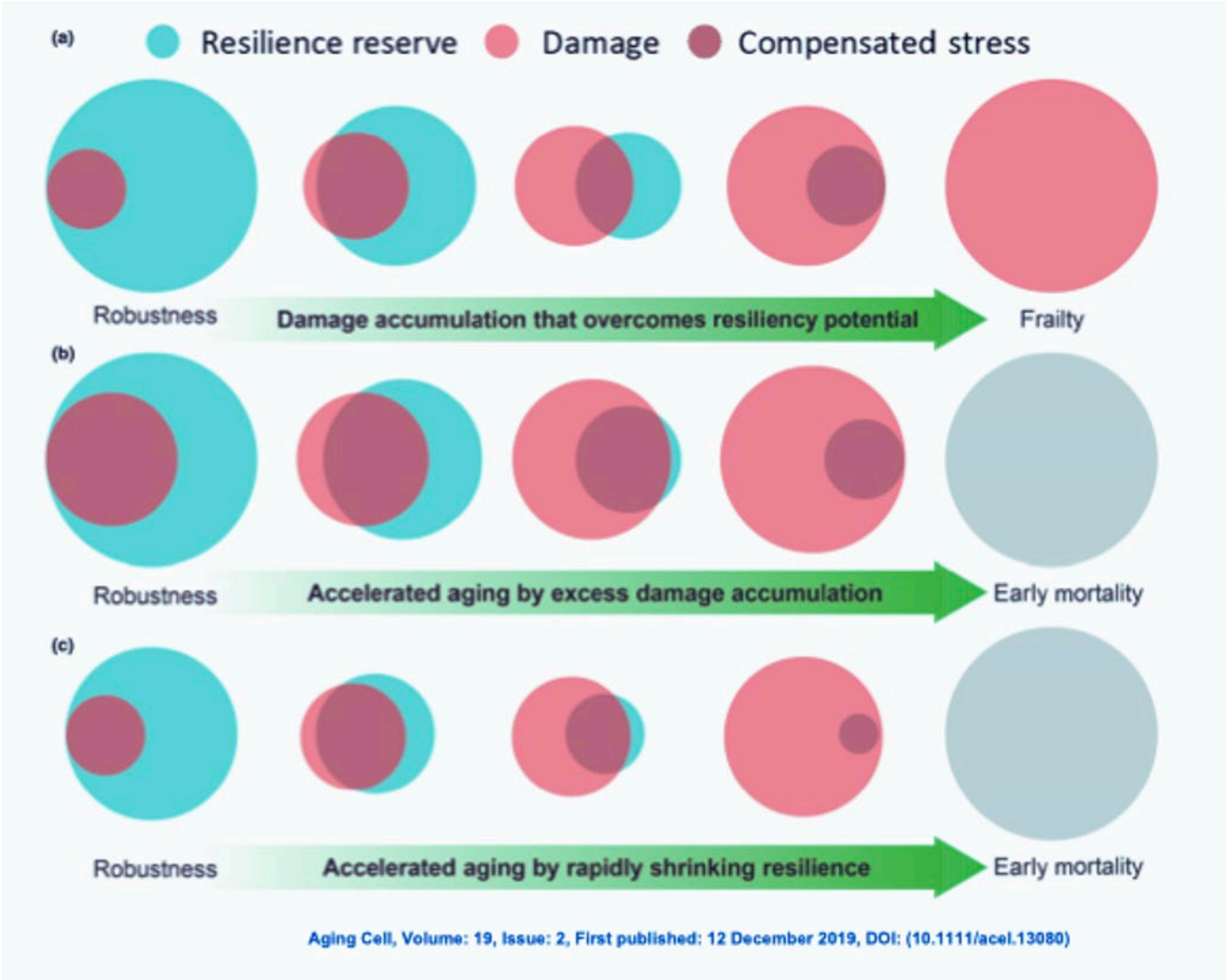
Interventions addressing biological aging offer potential to prevent multiple diseases, not just manage symptoms individually.

Promoting Healthier Longevity

Focusing on aging mechanisms may extend healthy lifespan and improve quality of life for older adults.

Measuring Biological Aging

- Genomic instability
- Telomere length
- Cellular senescence
- Epigenetics/DNA Methylation
- Mitochondrial dysfunction
- Proteostasis
- Stem cell exhaustion
- Deregulated nutrient sensing
- Altered intercellular communication

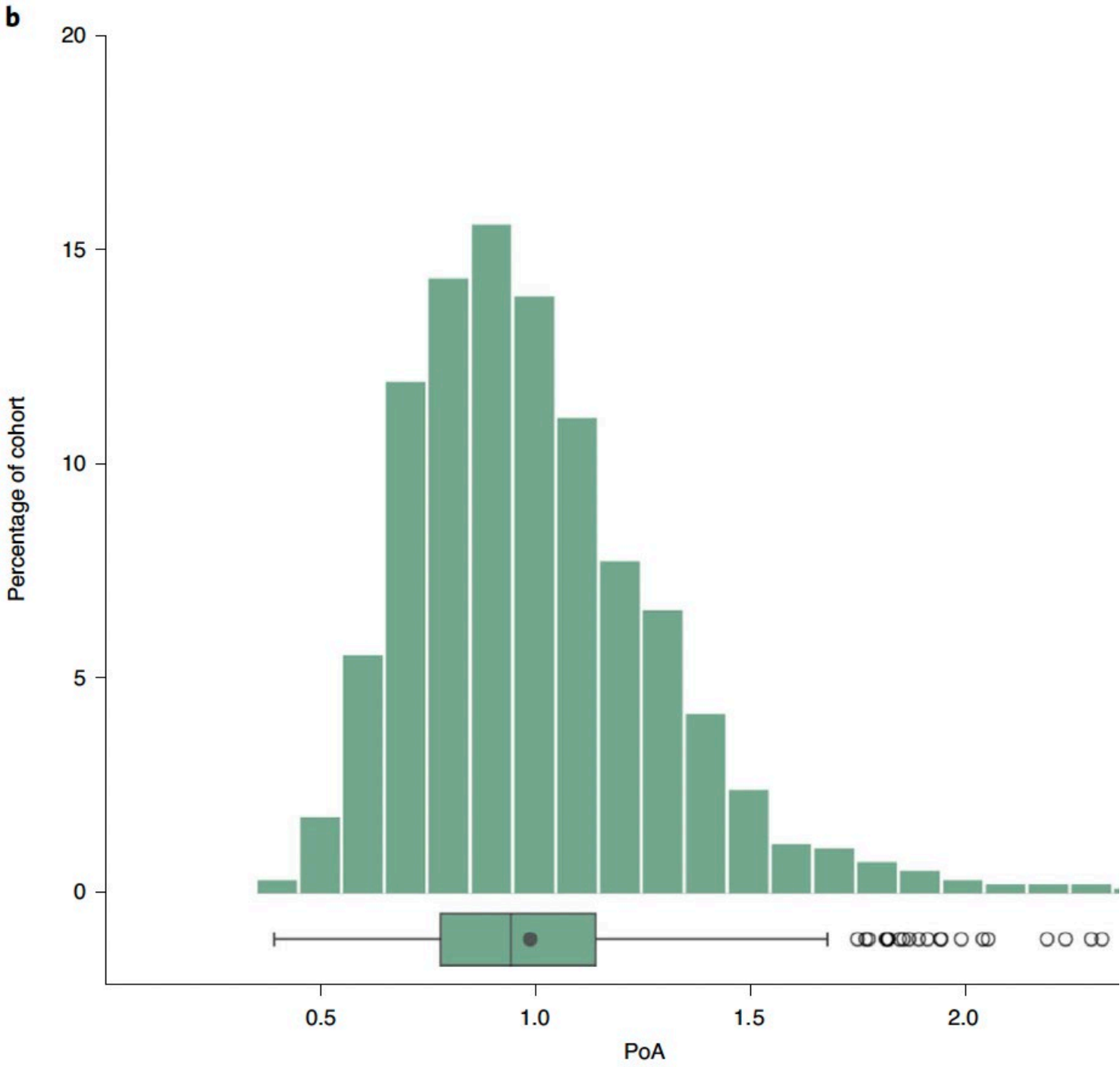


GEROSCIENCE & HALLMARKS OF AGING
Underlying biological mechanisms of aging

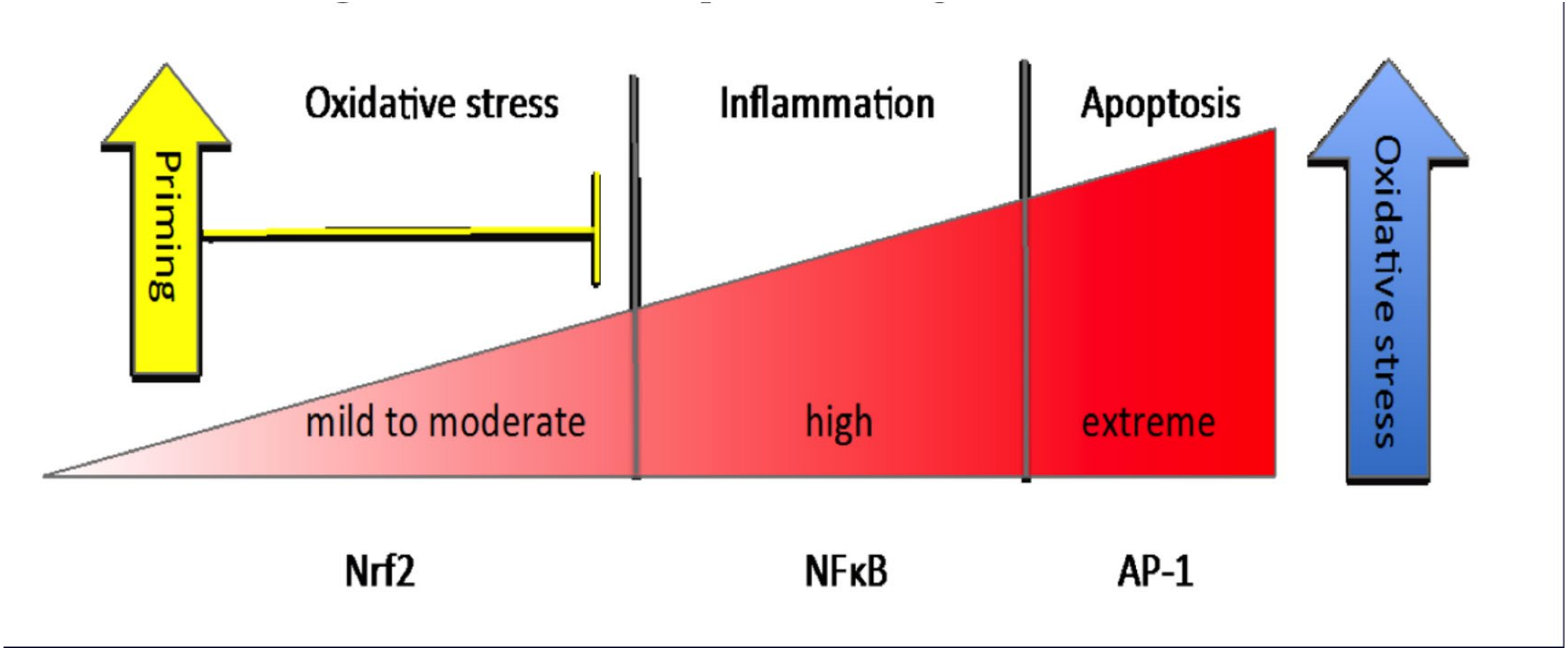
Lopez-Otin et al. (2023) Hallmarks of aging: An expanding universe. Cell, 186: January 19, 2023

How do we assess where an older adult is on the trajectory of aging?

Elliott et al., 2021 Disparities in the Pace of Biological Aging Among Midlife Adults of the Same Chronological Age

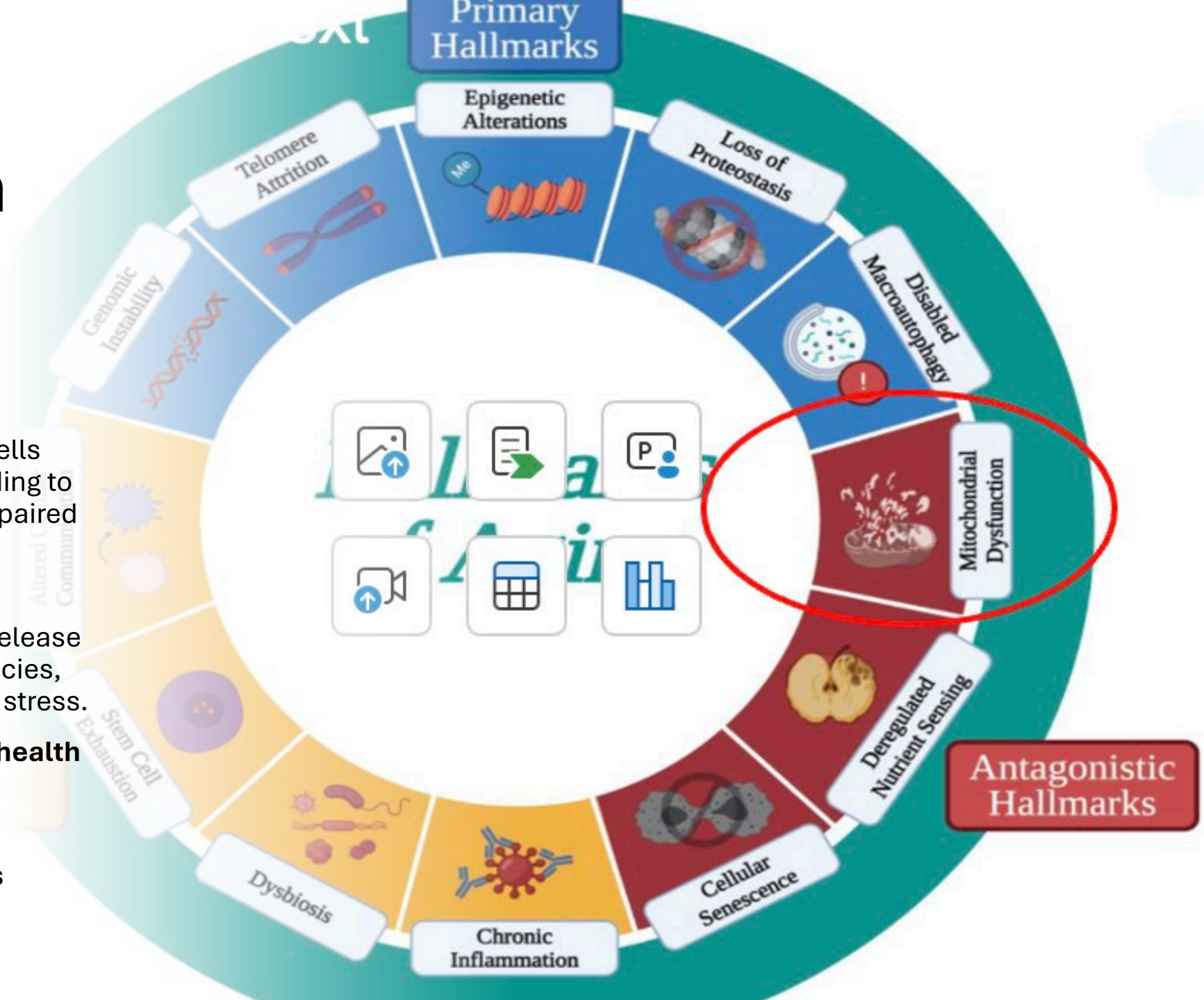


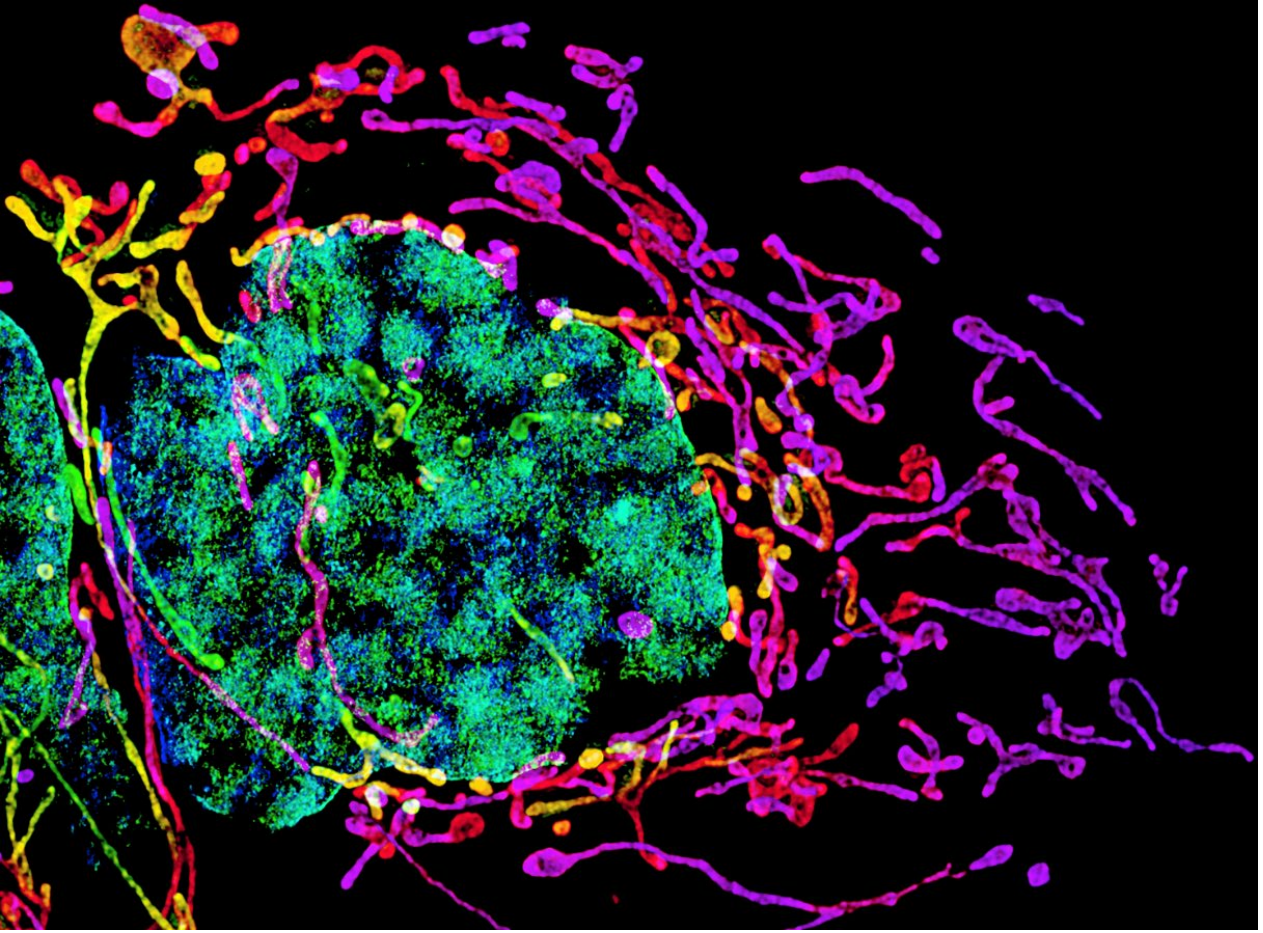
Cellular Stress & Chronic Inflammation



Mitochondrial Dysfunction in Aging

- **Reduced cellular energy**
  - As mitochondria become dysfunctional with age, cells produce less energy, leading to decreased vitality and impaired function.
- **Increased oxidative stress**
  - Damaged mitochondria release more reactive oxygen species, leading to more oxidative stress.
- **Strategies for mitochondrial health**
  - Lifestyle measures
  - Supplements
  - Small molecule therapies





Seminars in Cell and Developmental Biology xxx (xxxx) xxx

Contents lists available at ScienceDirect

Seminars in Cell and Developmental Biology

journal homepage: www.elsevier.com/locate/semcdb

Aging: All roads lead to mitochondria

Jyung Mean Son [a], Changhan Lee [a,b,c,*]

[a] Leonard Davis School of Gerontology, University of Southern California, Los Angeles, CA 90089, USA
[b] USC Norris Comprehensive Cancer Center, Los Angeles, CA 90089, USA
[c] Biomedical Sciences, Graduate School, Ajou University, Suwon 16499, South Korea

ARTICLE INFO

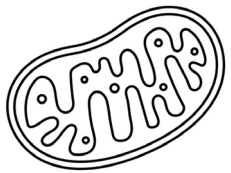
Editor - Dr. Mara Mather

Keywords:
Mitochondria
Genomic instability
Aging
Longevity
Mitonuclear
Communication
Mitochondrial-derived peptides
Oxidative stress
Immunity
Inflammation

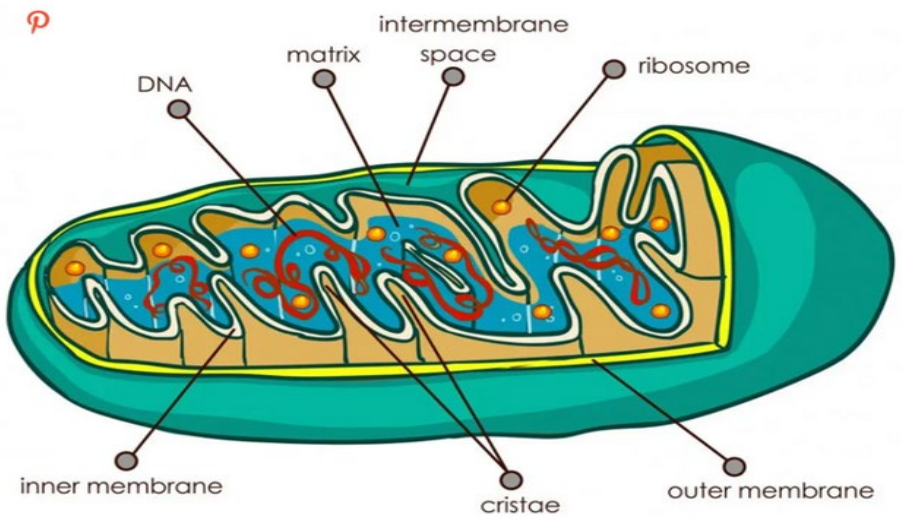
ABSTRACT

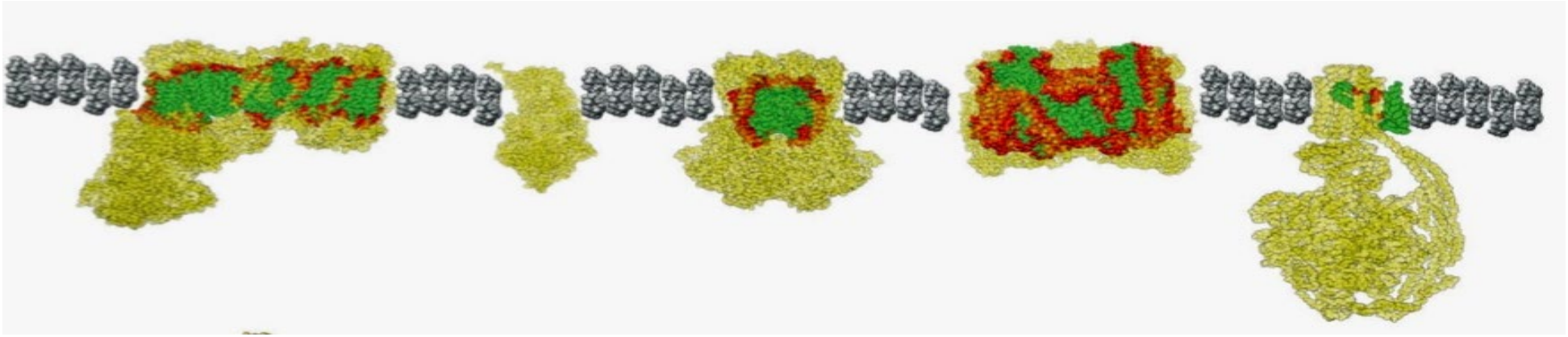
Mitochondria were described as early as 1890 as ubiquitous intracellular structures by Ernster and Schatz (1981) [1]. Since then, the accretion of knowledge in the past century has revealed much of the molecular details of mitochondria, ranging from mitochondrial origin, structure, metabolism, genetics, and signaling, and their implications in health and disease. We now know that mitochondria are remarkably multifunctional and deeply intertwined with many vital cellular processes. They are quasi-self organelles that still possess remnants of its bacterial ancestry, including an independent genome. The mitochondrial free radical theory of aging (MFRTA), which postulated that aging is a product of oxidative damage to mitochondrial DNA, provided a conceptual framework that put mitochondria on the map of aging research. However, several studies have more recently challenged the general validity of the theory, favoring novel ideas based on emerging evidence to understand how mitochondria contribute to aging and age-related diseases. One prominent topic of investigation lies on the fact that mitochondria are not only production sites for bioenergetics and macromolecules, but also regulatory hubs that communicate and coordinate many vital physiological processes at the cellular and organismal level. The bi-directional communication and coordination between the co-evolved mitochondrial and nuclear genomes is especially interesting in terms of cellular regulation. Mitochondria are dynamic and adaptive, rendering their function sensitive to cellular context. Tissues with high energy demands, such as the brain, seem to be uniquely affected by age-dependent mitochondrial dysfunction, providing a foundation for the development of novel mitochondrial-based therapeutics and diagnostics.

Aging: All Roads Lead to Mitochondria



MITOCHONDRIA

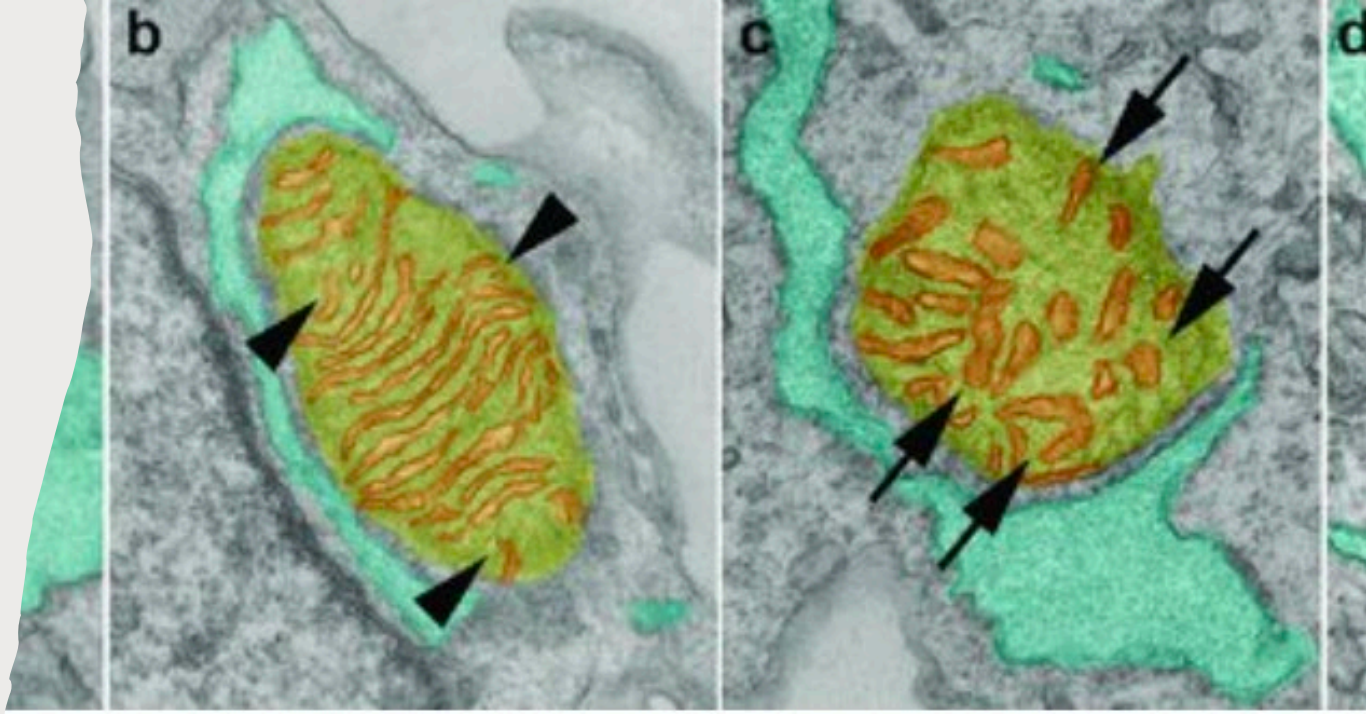


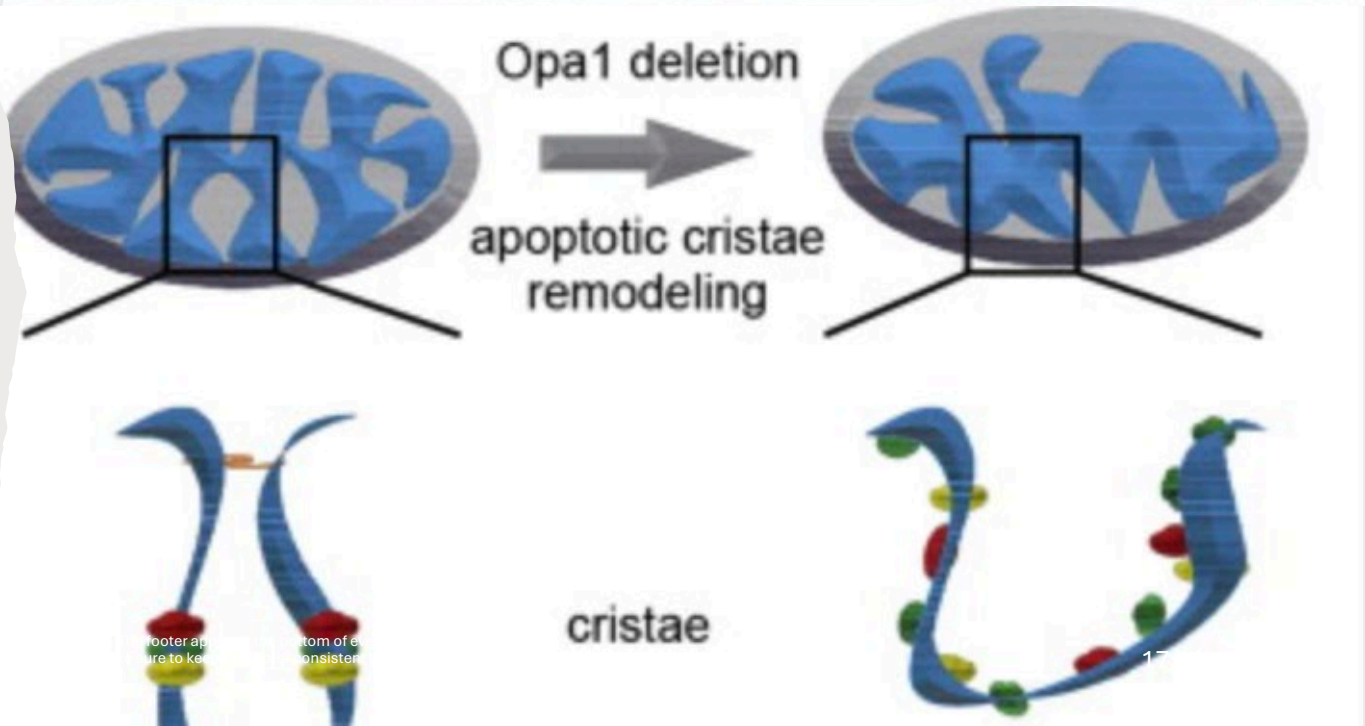


Mitochondrial Cristae Remodeling

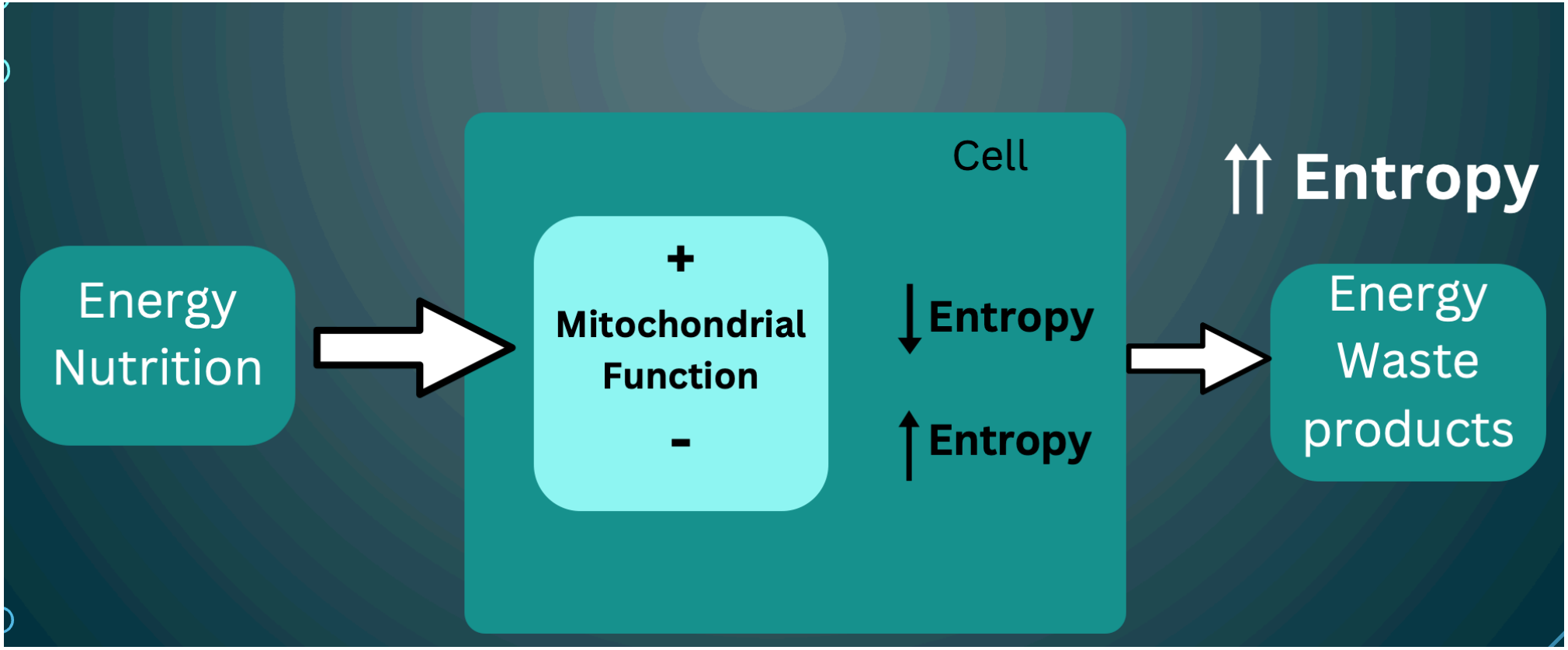
- Cogliati, S. et al., 2013. Mitochondrial cristae shape determines respiratory chain supercomplexes assembly and respiratory efficiency. *Cell*, *155*(1), pp.160-171.

- Costa, R.M.D., Karmirian, K. and Rehen, S.K., 2018. Deformation of mitochondrial cristae in human neural progenitor cells exposed to valproic acid. *Anais da Academia Brasileira de Ciências*, *90*(2 suppl 1), pp.2223-2232.





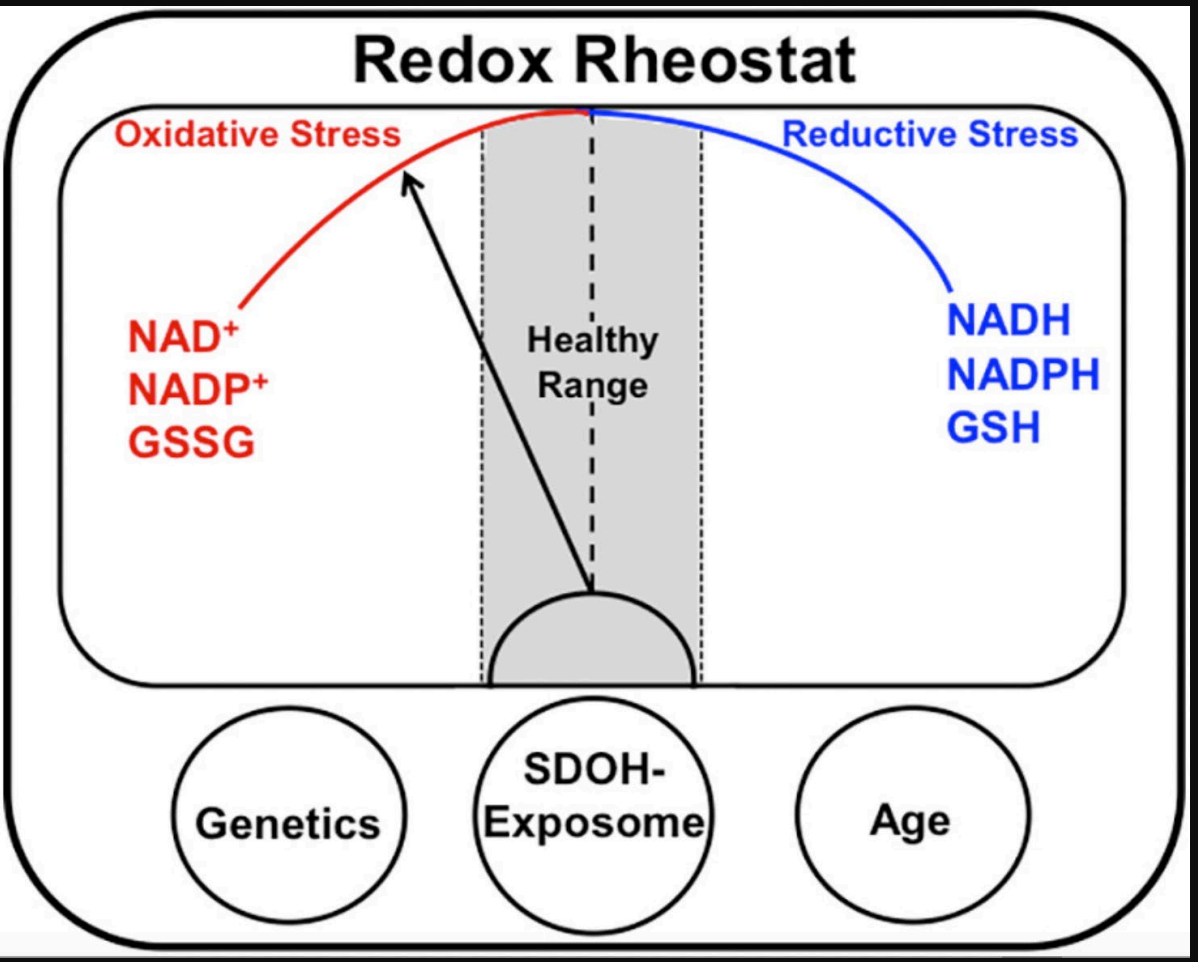
BIOENERGETIC HOMEOSTASIS



Oxidative Eustress vs. Distress

- **Eustress**
  - ROS act as signaling molecules
  - Beneficial adaptive responses (mitochondrial quality control)
  - Increased oxidative capacity
  - Improved muscle function
  - Disease tolerance
  - Cellular homeostasis
  - Balanced redox state

- **Distress**
  - Damage to proteins
  - Lipid peroxidation and compromised membrane integrity
  - mtDNA damage
  - mtDNA mutations
  - Chronic disease
  - Accelerated aging



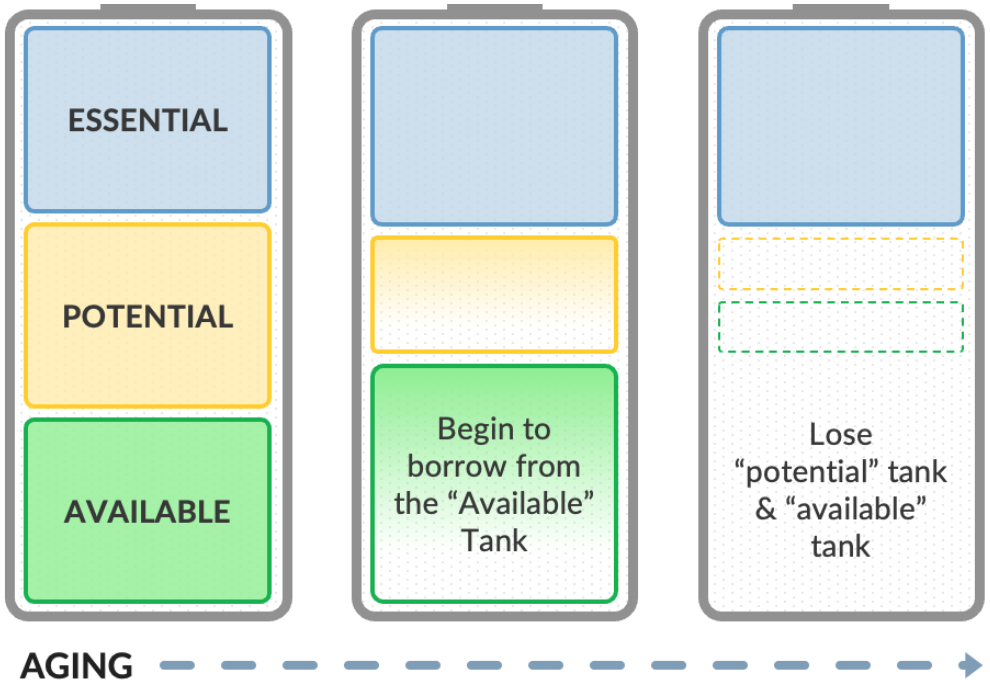
PHYSIOLOGY OF STRESS

- **ACUTE:** Sympathetic-Adreno-medullary System (SAM)
- **CHRONIC:** Hypothalamic-Pituitary-Adrenal Axis (HPA)

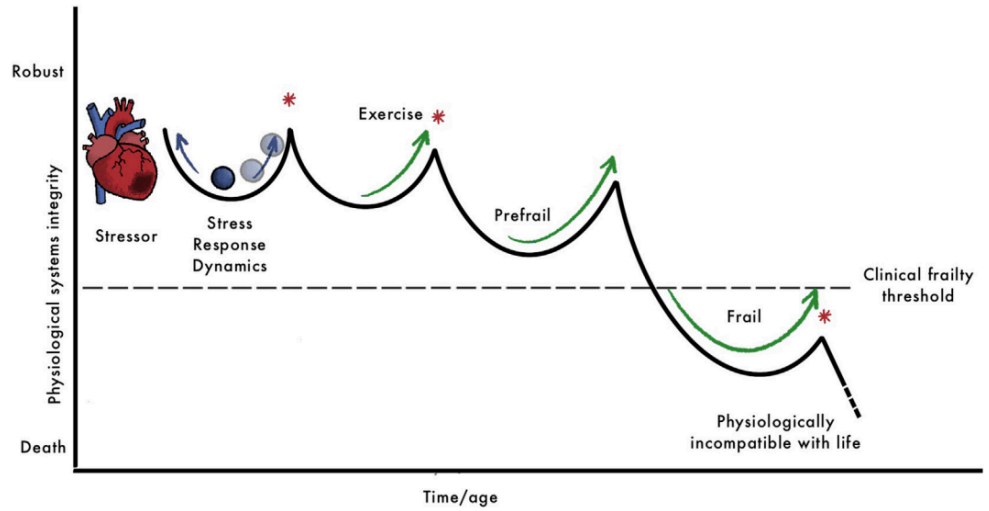
- **OXIDATIVE:** Energetic demand exceeds supply
- **REDUCTIVE:** Excess of reducing agents from substrates

Hospitalization as a Stressor

Loss of potential & available energy for recovery



Physiological incompatibility



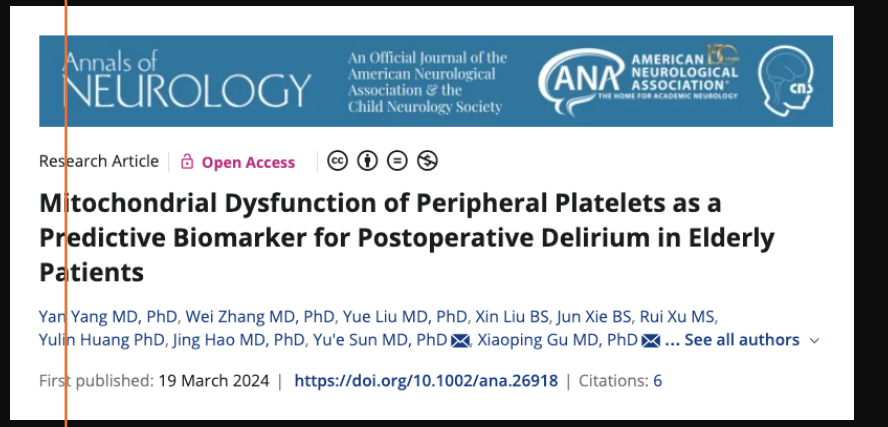
PSYCHOGERIATRICS
The Official Journal of the Japanese Psychogeriatric Society

ORIGINAL ARTICLE

Causal relationship between mitochondrial function and delirium: a bidirectional two-sample Mendelian randomisation analysis

Yun-Yang Han, Yu Tian, Lin-Fang Song, Quan Zhou, Yin-Hui Rong, Zai-Sheng Qin

First published: 10 December 2024 | https://doi.org/10.1111/psyg.13229 | Citations: 2



Annals of NEUROLOGY
An Official Journal of the American Neurological Association & the Child Neurology Society
ANA AMERICAN NEUROLOGICAL ASSOCIATION
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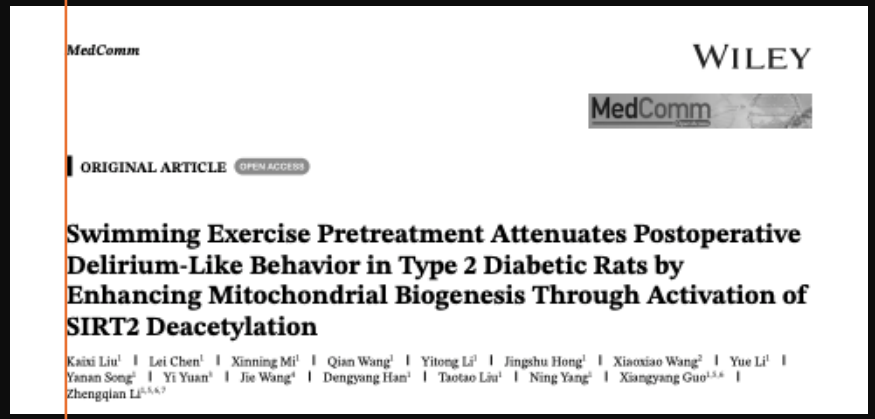
Research Article | Open Access

Mitochondrial Dysfunction of Peripheral Platelets as a Predictive Biomarker for Postoperative Delirium in Elderly Patients

Yan Yang MD, PhD, Wei Zhang MD, PhD, Yue Liu MD, PhD, Xin Liu BS, Jun Xie BS, Rui Xu MS, Yulin Huang PhD, Jing Hao MD, PhD, Yu'e Sun MD, PhD, Xiaoping Gu MD, PhD ... See all authors

First published: 19 March 2024 | https://doi.org/10.1002/ana.26918 | Citations: 6



MedComm

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ORIGINAL ARTICLE OPEN ACCESS

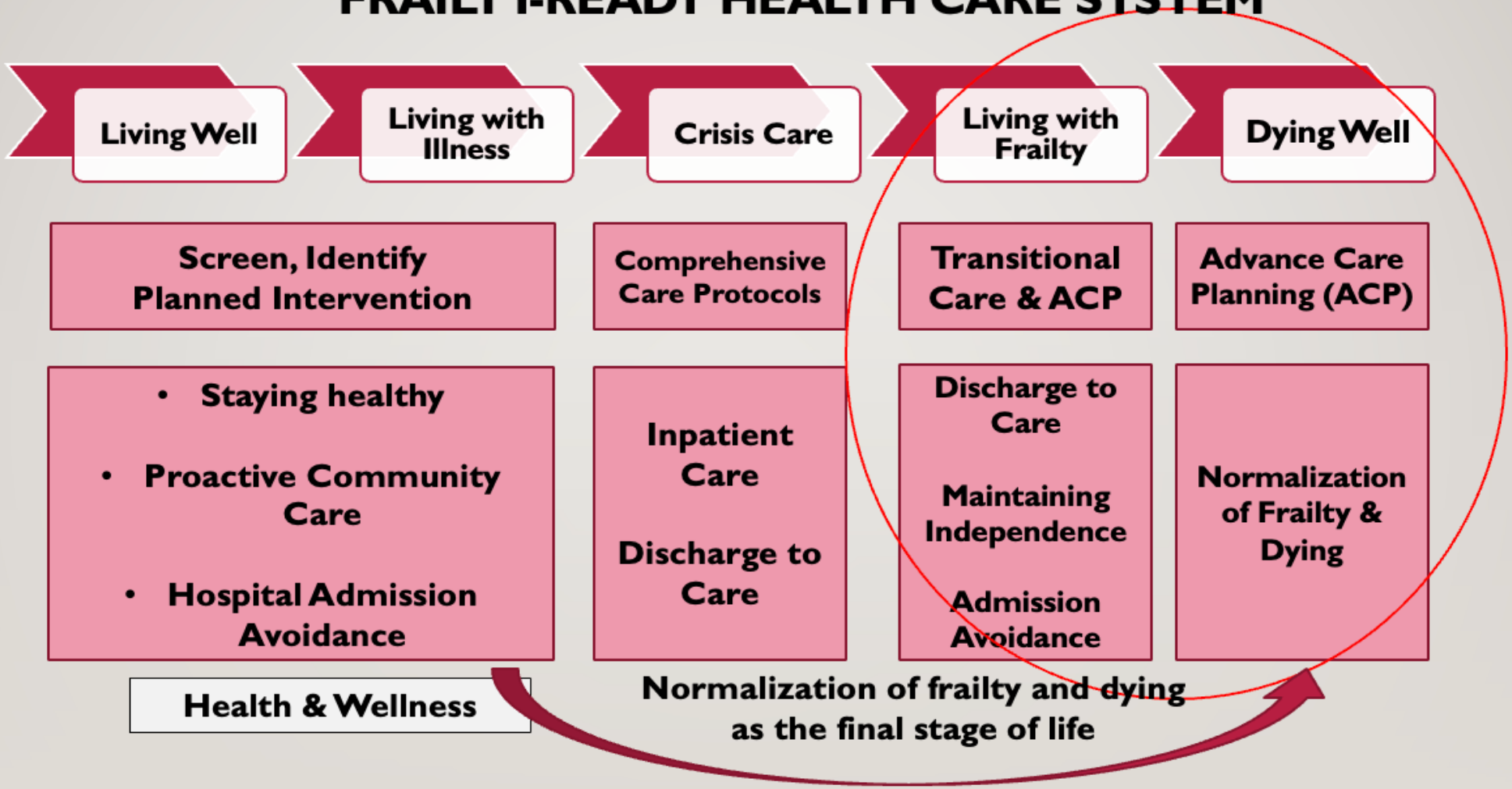
Swimming Exercise Pretreatment Attenuates Postoperative Delirium-Like Behavior in Type 2 Diabetic Rats by Enhancing Mitochondrial Biogenesis Through Activation of SIRT2 Deacetylation

Kaixi Liu[1] | Lei Chen[1] | Xinning Mi[1] | Qian Wang[1] | Yitong Li[1] | Jingshu Hong[1] | Xiaoxiao Wang[2] | Yue Li[1] | Yanan Song[1] | Yi Yuan[3] | Jie Wang[4] | Dengyang Han[1] | Taotao Liu[1] | Ning Yang[2] | Xiangyang Guo[1,5,6] | Zhengqian Li[5,6,7]

What About Delirium?

MANAGEMENT STRATEGIES

FRAILTY-READY HEALTH CARE SYSTEM



FRAILTY SCREENING

Fig 1. **Clinical Frailty Scale**

Source: Rockwood et al (2005)

The Simple "FRAIL" Questionnaire Screening Tool

Fatigue: Are you fatigued?
Resistance: Cannot walk up one flight of stairs?
Aerobic: Cannot walk one block?
Illnesses: Do you have more than 5 illnesses?
Loss of weight: Have you lost more than 5% of your weight in the last 6 months?

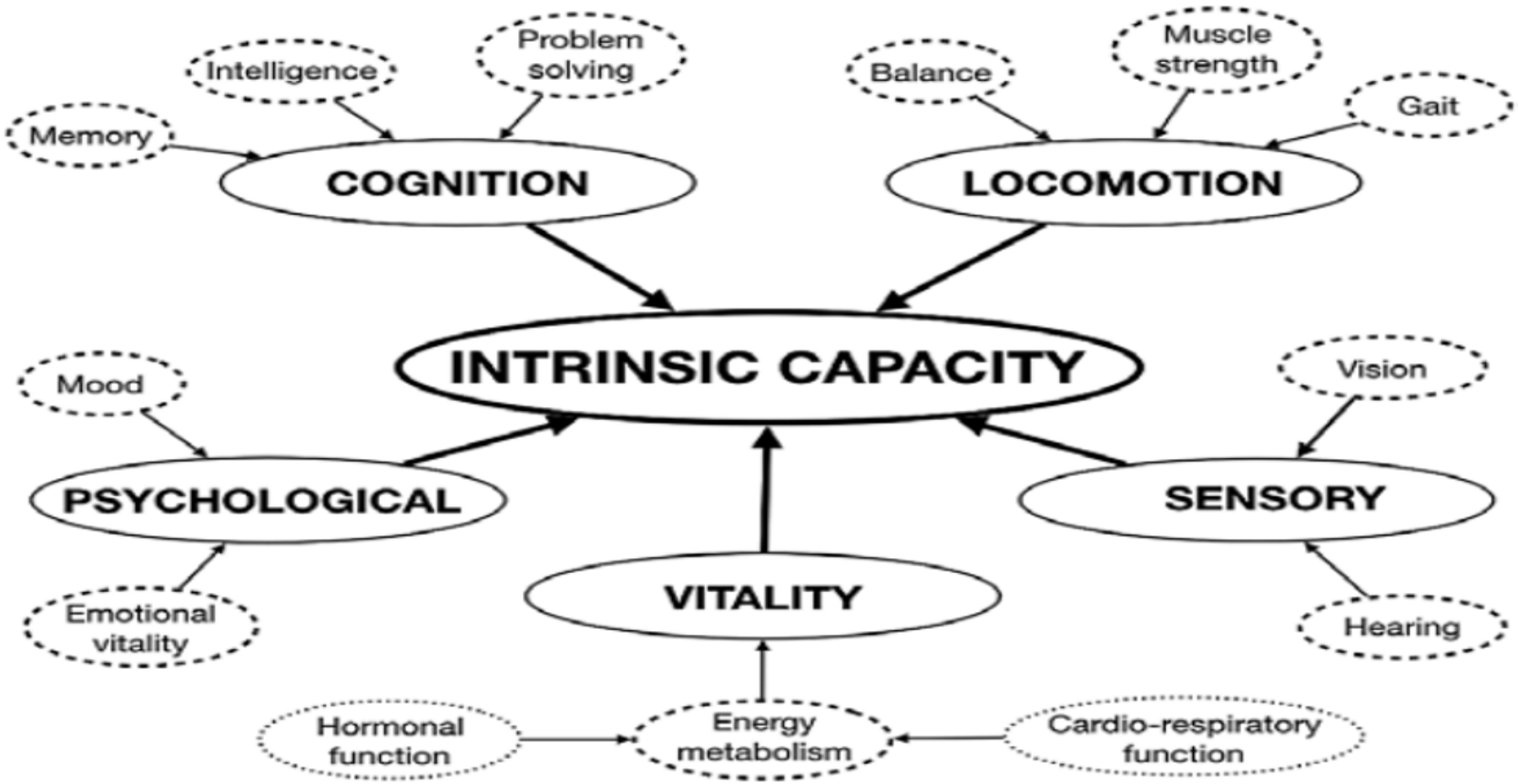
Scoring: 3 or greater = frailty; 1 or 2 = prefrail

From Morley JE, Vellas B, Abellan van Kan G, et al. J Am Med Dir Assoc 2013;14:392-397.

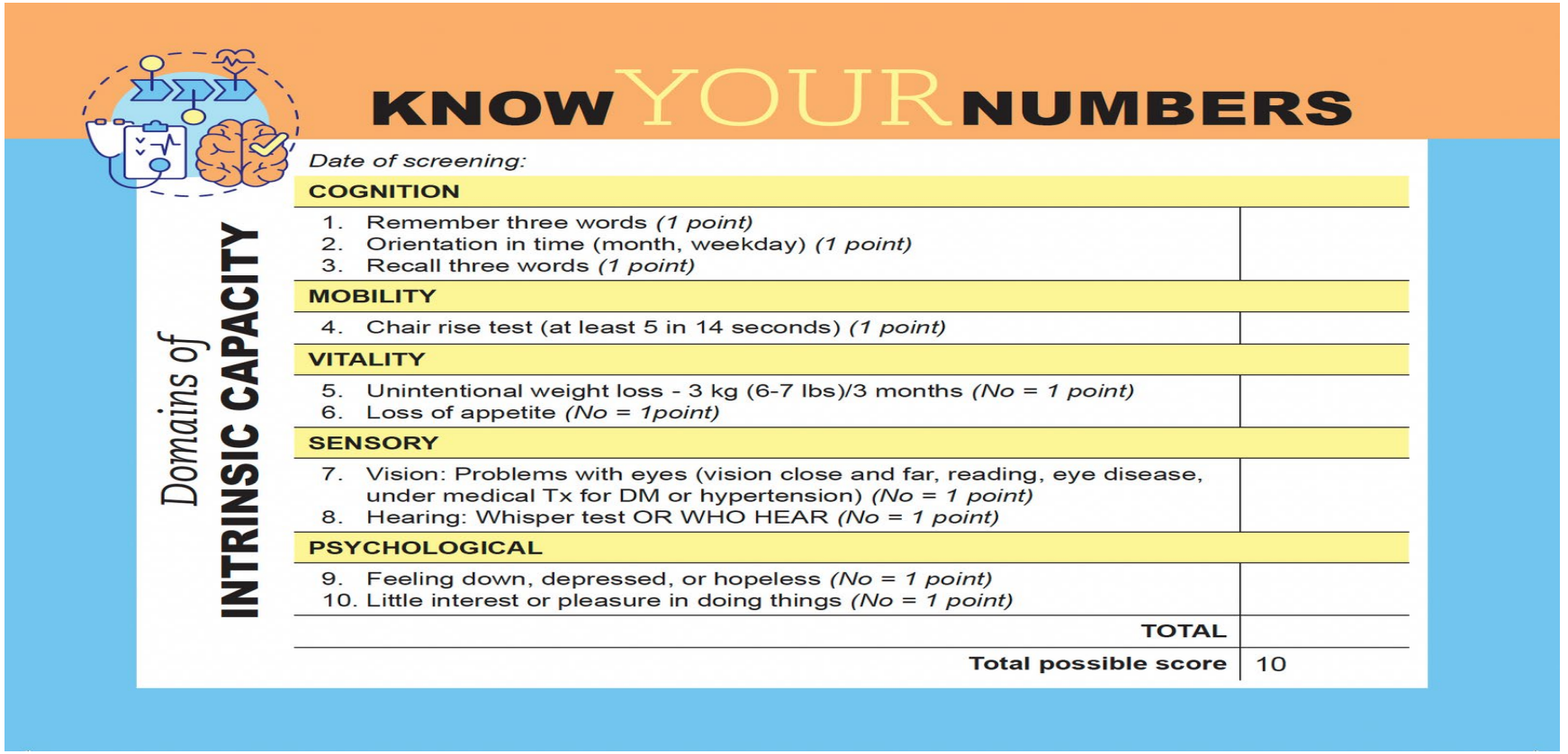
Models of Frailty

FRIED PHENOTYPE (physical)	ROCKWOOD FRAILTY INDEX	INTRINSIC CAPACITY
- Exhaustion - Muscle weakness - Slowness - Low levels of activity - Unintentional weight loss	- Accumulation of deficits - Physical, Psychological, Social	- A combination of a person's mental and physical capacities (explained biologically) - Shifts focus from disease to capacity - Person-centered

DOMAINS OF INTRINSIC CAPACITY



Screening for Intrinsic Capacity



KNOW YOUR NUMBERS

Domains of **INTRINSIC CAPACITY**

Date of screening:

COGNITION	
1. Remember three words *(1 point)* 2. Orientation in time (month, weekday) *(1 point)* 3. Recall three words *(1 point)*	
MOBILITY	
4. Chair rise test (at least 5 in 14 seconds) *(1 point)*	
VITALITY	
5. Unintentional weight loss - 3 kg (6-7 lbs)/3 months *(No = 1 point)* 6. Loss of appetite *(No = 1point)*	
SENSORY	
7. Vision: Problems with eyes (vision close and far, reading, eye disease, under medical Tx for DM or hypertension) *(No = 1 point)* 8. Hearing: Whisper test OR WHO HEAR *(No = 1 point)*	
PSYCHOLOGICAL	
9. Feeling down, depressed, or hopeless *(No = 1 point)* 10. Little interest or pleasure in doing things *(No = 1 point)*	
TOTAL	
Total possible score	10

AD8 Dementia Screening Interview

Patient ID#:_____
CS ID#:_____
Date:_____

Remember, "Yes, a change" indicates that there has been a change in the last several years caused by cognitive (thinking and memory) problems.	YES, A change	NO, No change	N/A, Don't know
1. Problems with judgment (e.g., problems making decisions, bad financial decisions, problems with thinking)			
2. Less interest in hobbies/activities			
3. Repeats the same things over and over (questions, stories, or statements)			
4. Trouble learning how to use a tool, appliance, or gadget (e.g., VCR, computer, microwave, remote control)			
5. Forgets correct month or year			
6. Trouble handling complicated financial affairs (e.g., balancing checkbook, income taxes, paying bills)			
7. Trouble remembering appointments			
8. **Daily** problems with thinking and/or memory			
TOTAL AD8 SCORE			

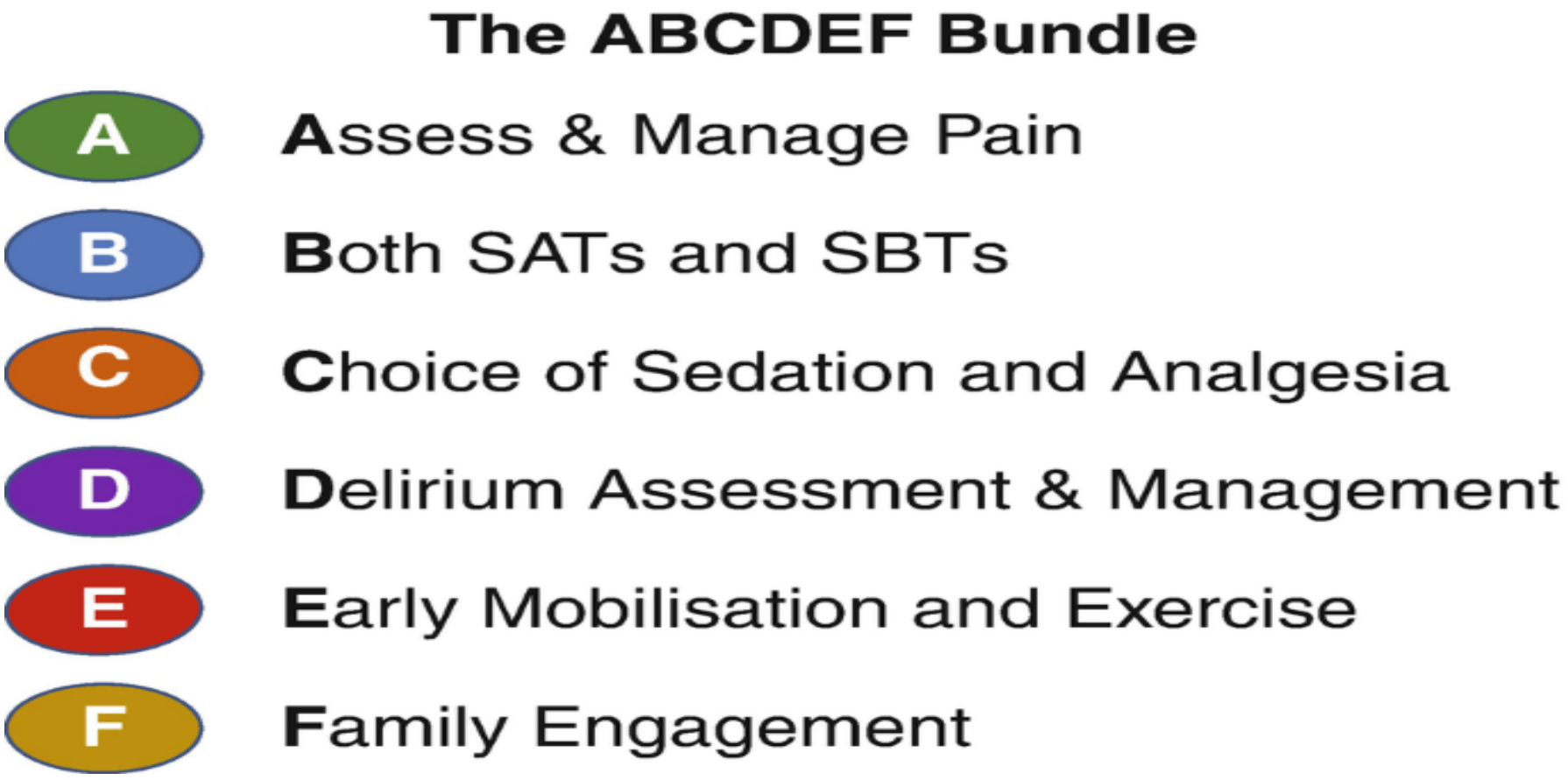
Adapted from Galvin JE et al, The AD8, a brief informant interview to detect dementia, Neurology 2005:65:559-564

Cognitive Screening

- Mini-Cog (5 min.)
- MoCA (10 min.)
- SAGE (early impairment- lengthy)
- AD8 (use with proxy) (2 min.)

Age-friendly Healthcare System

Patient Management in the ICU



Educating Patients and Families

- What is frailty?
- How does the body become frail?
- What does the final phase of life look like?
- What can we do to delay decline associated with aging?
- How can we proactively plan to mitigate problems?

Comments/Questions?

Contact Information:
Cathy A. Maxwell: cathy.maxwell@nurs.utah.edu
Office phone: 801-646-8286

DELIRIUM PREVENTION IS **EVERYONE'S JOB**

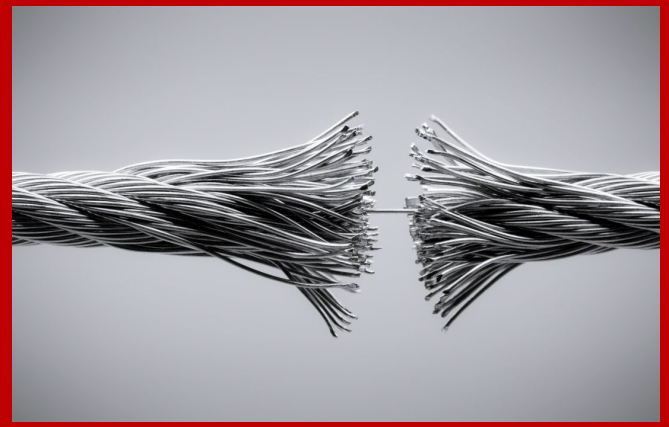
Chelsee Marshall, BSN, RN

Lauren Chamberlain, MS-GERON

HEALTH
UNIVERSITY OF UTAH

September 12, 2025

HOSPITAL ELDER LIFE PROGRAM



WHY "DELIRIUM PREVENTION IS EVERYONE'S JOB"

WORKING **TOGETHER**

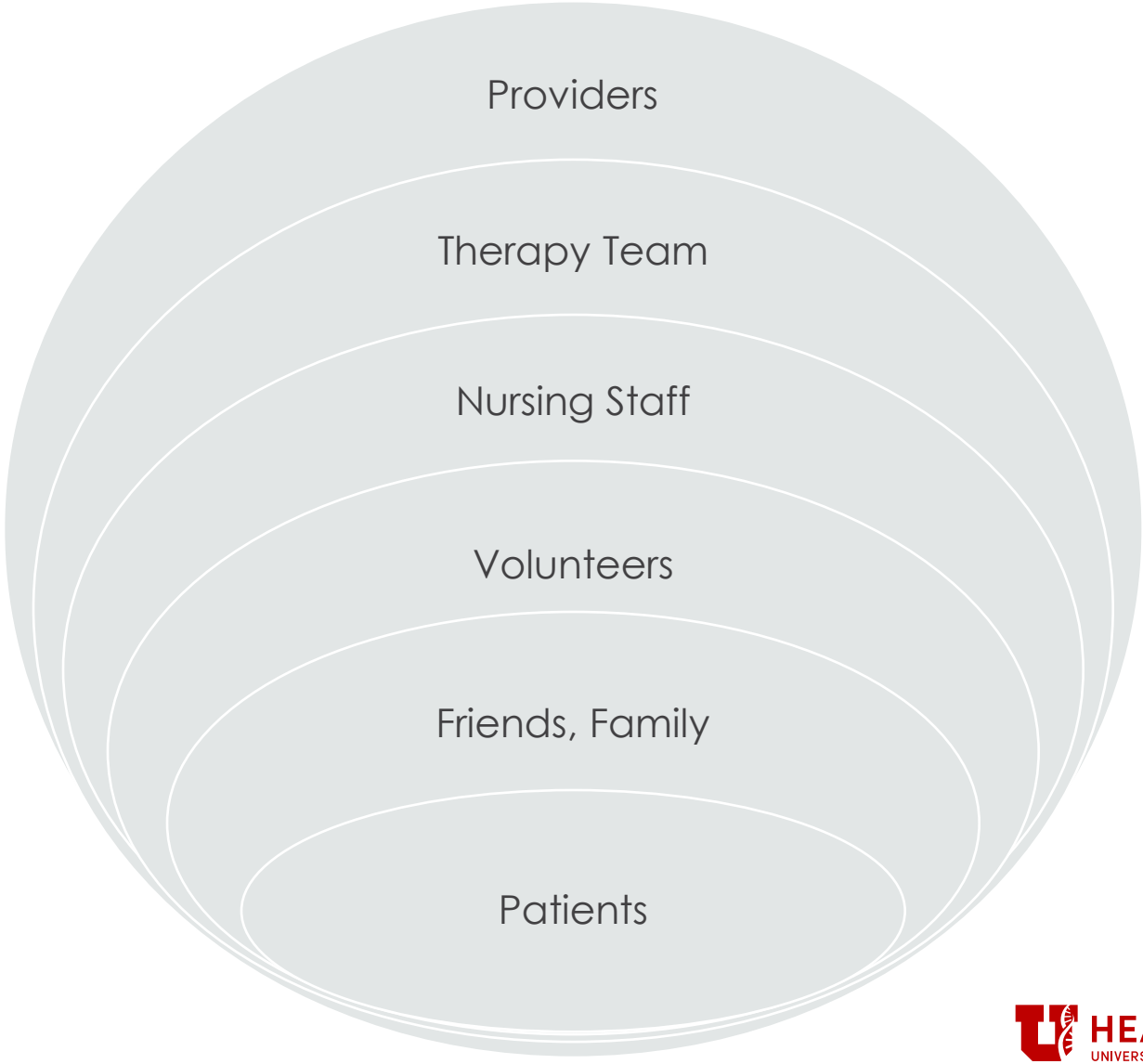
AS AN INTERDISCIPLINARY TEAM

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM

This presentation outlines each team member's role in delirium prevention. It offers some practical tips and resources.

- Education needed
- Tools needed
- Communication methods



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WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PATIENTS

Patients are the most important team members!

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PATIENTS

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PATIENTS

- Mentally and emotionally engage in articulating What Matters.
- Maintain routines.
- Stay oriented.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PATIENTS

- Get some physical exercise several times per day.
- Practice gentle breathing exercises.
- Be aware of your risk for delirium. Communicate about your needs.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PATIENTS

What might **patients** need as they perform their role on the team?

- Education prior to the hospitalization.
- Glasses, hearing aids, personal care items.
- Encouragement to stay active.
- Help setting up a guided breathing app, video, or audio.
- Effective and clear communication, especially regarding plans for the day.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: FRIENDS AND FAMILY

Informal caregivers

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: FRIENDS AND FAMILY

- Take care of yourself.
- Be aware of the patient's risk for delirium and functional decline.
- Have orienting conversations.
- Provide glasses, hearing aids, etc.
- Encourage the patient's participation in cognitive and physical activities.
- Communicate what you know about the patient's baseline.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: FRIENDS AND FAMILY

What might **friends and family** need as they perform their role on the team?

- Check-ins on their well-being. “Are you okay? What do you need?”
- Reassurance, appreciation, or acknowledgement.
- Education about risk and prevention of delirium and functional decline.
- Care team asking, “Is this the baseline for this person?”
- Materials for engaging with the patient, e.g. a deck of cards.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: VOLUNTEERS

The Hospital Elder Life Program supports the interdisciplinary team. They help patients engage in all previously mentioned strategies.

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WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: VOLUNTEERS

- This is Helena guiding range of motion exercise with a "patient."

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: VOLUNTEERS

- Delirium education for patients and families
- As appropriate:
  - Guided meditation exercises
  - Massage
  - Ambulating with patients or guiding ROM
  - Assistance with food and drink

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: VOLUNTEERS

- Engage patients (and care partners).
- Address immediate needs as appropriate.
- Communicate needs to next HELP volunteer, HELP staff, and RN as appropriate.
- Use UB-CAM to screen patients for active delirium; communicate this to HELP Staff immediately.
    - HELP Staff may take immediate action to assess and help the patient, call their nurse, and/or page their provider with an offer for geriatric consult.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: VOLUNTEERS

What might **volunteers** need as they perform their role on the team?

- Any information about working well with this patient
  - How best to communicate with the patient?
  - Can the patient engage in gentle exercise?
  - Is the diet order consistent with water refills, herbal tea, or snacks?
  - Let volunteers know how they can help!

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: NURSING TEAM (CNA)

Health Care Assistants spend a lot of time with patients, especially if they are assigned to sit with patients 1:1.

Could HCA's be better trained in delirium prevention?

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: NURSES

What might **nurses** need as they perform their role on the team?

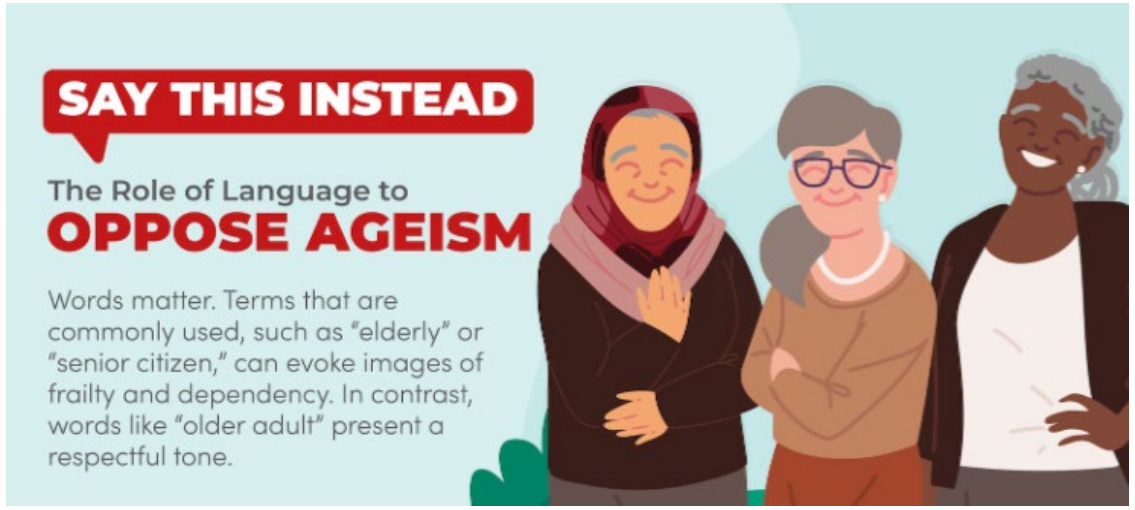
- Geriatric education to combat ageism
- Delirium screening tools to identify delirium.
- Institutional delirium protocol to give purpose to screening.

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: NURSES

Geriatric education and ageism in **nursing.**

- Geriatric nursing education
- Attitudes of nurses working with older adults
- Anti-Ageism projects



Univeristy of Utah Health (2024)

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WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: NURSES

Delirium screening tools for **nurses** to use.

- Institution wide delirium screening
- Different screening tools
- Are there other members of the team who could assist in delirium screening?

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: NURSES

Implementing a hospital-wide delirium protocol.

- Nurses resist screening if there is not a protocol in place.
- Example: Delphi Algorithms for Management of Delirium and Acute Encephalopathy

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: THERAPY TEAM

OT, PT, SLP, Cardiac Rehab, Respiratory Therapists

What might **therapists** need as they perform their role on the team?

- Time for education on delirium
- Culture of mobilization
- Delirium screening communication

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: THERAPY TEAM

Time for education on delirium

- Conferences
- Continuing Education
- In-services

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: THERAPY TEAM

Establishing a culture of mobilization.

- Early mobilization programs.
- Nurse mobility assessments.
- Patient safety vs. mobility
- Scheduling inpatient therapy visits

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: THERAPY TEAM

Delirium Screening Communication

- Does therapy have access to the results of delirium screening?
- Delirium risk scores
- Patient mobility communication tools

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: PROVIDERS

What might **Providers** need as they perform their role on the team?

- Preop communication
- Delirium recognition/diagnosis
- Delirium protocol
- Feedback from the other team members ("This is not my mom."

WORKING **TOGETHER**

AS AN INTERDISCIPLINARY TEAM: EVERYONE

What things can every member of the healthcare team do to prevent delirium?

- Hydration
- Orienting conversations
- Patient engagement
- Education and awareness
- Communication with the rest of the team

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AGE-FRIENDLY **DELIRIUM** CARE: FROM RECOGNITION TO RECOVERY

Megan Puckett, MD

Associate Professor, Division of Geriatrics
University of Utah

Haley V. Solomon, DO

Assistant Professor of Psychiatry
Adjunct Assistant Professor of Medicine, Division of Geriatrics
University of Utah

HEALTH
UNIVERSITY OF UTAH

September 12, 2025

DELIRIUM **RECOGNITION** AND **ASSESSMENT**

Megan Puckett, MD

Associate Professor, Division of Geriatrics

University of Utah

HEALTH
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I HAVE NO FINANCIAL DISCLOSURES

OUTLINE

1. Definition & Epidemiology
2. Differential Diagnosis
3. Causes & Risk Factors
4. Managing Reversible Causes
5. Take Home Points

DEFINITION & EPIDEMIOLOGY

WHAT IS DELIRIUM?

DSM-V

- Acute change in attention and awareness
- Develops over hours to days
- Fluctuates in severity
- Change in cognition (such as memory, disorientation, or language)
- Change from baseline
- Not better explained by a pre-existing neurocognitive disorder

Supportive Features

Sleep-wake cycle disturbance

Perceptual disturbances (hallucinations)

Delusions

Emotional lability

(Oh et al., 2017)

EPIDEMIOLOGY

Affects 33% of hospitalized adults >70

Under-recognized: <50% diagnosed in routine care

Up to 40% of cases are preventable with appropriate strategies

Delays in recognition and treatment increase the risk of adverse outcomes

Associated With

Mortality | Length of Stay | Institutionalization

Persistent Cognitive and Functional Decline

Hyperactive (25%)

Restless, agitated, easily recognized.

Hypoactive (Largest Group)

Somnolent, quiet, withdrawn; often missed with poorer prognosis.

Mixed

Fluctuating between states.

(Marcantonio, 2017)
(Damluji et al., 2023)

ASSESSMENT TOOLS

"Patients in the hospital often experience changes in their thinking such as brain fog, confusion, getting days/nights mixed up, seeing things other people don't see. Has that happened to you?"

Confusion Assessment Method (CAM)†

The presence of delirium requires features 1 and 2 and either 3 or 4:

Acute change in mental status with a fluctuating course (feature 1)

Inattention (feature 2)

Disorganized thinking (feature 3)

Altered level of consciousness (feature 4)

Table 2. 3-Minute Diagnostic Interview for Delirium Using the Confusion Assessment Method (3D-CAM).*

Type of Assessment	Feature 1: Acute Change in Mental Status with a Fluctuating Course†	Feature 2: Inattention	Feature 3: Disorganized Thinking	Feature 4: Altered Level of Consciousness
Patient responses: any positive symptom report, incorrect response, lack of response, or nonsense response indicates that the feature is present	Ask whether patient has experienced the following in the past day: Being confused Thinking that he or she is not in the hospital Seeing things that are not really there	Ask patient to do the following: Digit span (3 digits) backward Digit span (4 digits) backward Days of the week backward Months of the year backward	Ask patient to state the following: The current year The day of the week The type of place (hospital)	None
Interviewer observations: any "yes" indicates that the feature is present	Were there fluctuations in the level of consciousness? Fluctuations in attention? Fluctuations in speech or thinking?	Did the patient have trouble keeping track of the interview? Was the patient easily distractible?	Was the patient's flow of ideas unclear or illogical? Conversation rambling or tangential? Speech unusually limited or sparse?	Was the patient sleepy?‡ Stuporous or comatose? Hypervigilant?

* The CAM algorithm requires the presence of features 1 and 2 and either 3 or 4 to diagnose delirium. Adapted from Marcantonio et al.[33]

† A supplemental assessment of feature 1 is to be performed only if feature 2 and either feature 3 or 4 is present but feature 1 is not present: on the first 3D-CAM assessment, any evidence of an acute change in mental status from the medical record or from a family member or health care provider indicates that feature 1 is present; on the second or later assessment, any new incorrect answer or positive symptom or observation since the previous 3D-CAM assessments indicates that feature 1 is present.

‡ The patient must actually fall asleep during the interview.

DO WE HAVE THE RIGHT **DIAGNOSIS**?

DIFFERENTIATING FROM "LOOK-ALIKES"

Neurocognitive Disorders

Dementia +/- neuropsychiatric symptoms

Mild Behavioral Impairment (MBI)

Primary Psychiatric Disorders

Catatonia

Acute stress reaction

Psychosis

DIFFERENTIATING FROM "LOOK-ALIKES"

DEMENTIA

Features	Delirium	Dementia
Acute onset change	+	-
Fluctuating	+	±
Inattention	+	±
Altered Consciousness	+	-
Disorganized thinking	+	±

(Oh et al., 2017)

DIFFERENTIATING FROM "LOOK-ALIKES"

MILD BEHAVIORAL DISTURBANCE

Features	Delirium	MBI
Acute onset change	+	-
Fluctuating	+	-
Inattention	+	-
Altered Consciousness	+	-
Disorganized thinking	+	±

Definition: emergence at ≥50 years of age of sustained and impactful neuropsychiatric symptoms (NPS), as a precursor to cognitive decline and dementia

(Oh et al., 2017)

DIFFERENTIATING FROM "LOOK-ALIKES"

EXCITED CATATONIA

Definition: subtype of catatonia characterized by marked psychomotor agitation, excessive and often purposeless motor activity, emotional lability, and sometimes bizarre or disinhibited behavior

Features	Delirium	Catatonia
Acute onset change	+	+
Fluctuating	+	±
Inattention	+	-
Altered Consciousness	+	-
Disorganized thinking	+	±

(*Catatonia | New England Journal of Medicine*, n.d.)

DIFFERENTIATING FROM "LOOK-ALIKES"

ACUTE STRESS REACTION

Symptoms of anxiety, agitation, sleep disturbance, heightened arousal, dissociation from reality after a traumatic event

Features	Delirium	Stress Reaction
Acute onset change	+	+
Fluctuating	+	-
Inattention	+	-
Altered Consciousness	+	±
Disorganized thinking	+	±

DIFFERENTIATING FROM "LOOK-ALIKES"

PSYCHOSIS

Features	Delirium	Stress Reaction
Acute onset change	+	±
Fluctuating	+	±
Inattention	+	±
Altered Consciousness	+	-
Disorganized thinking	+	±

CAUSES & RISK FACTORS

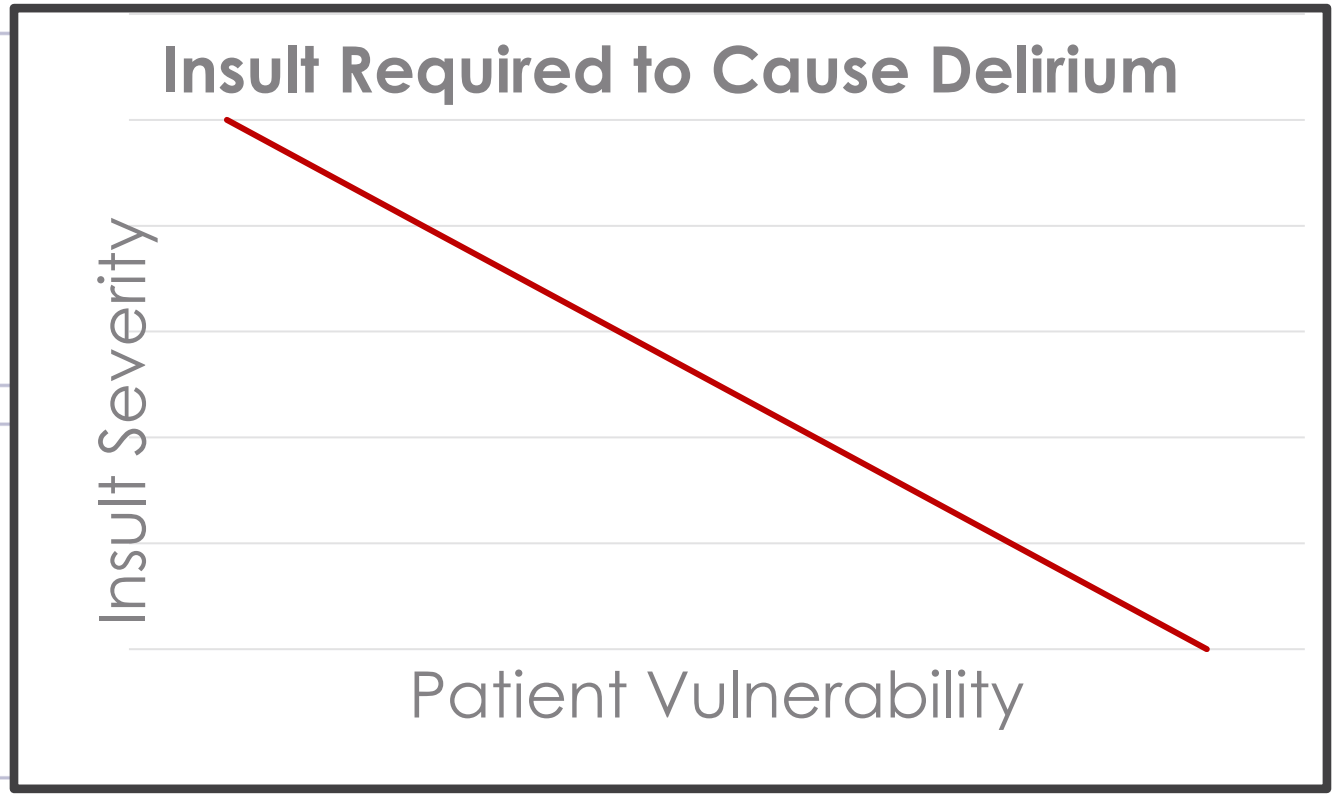
CAUSES & RISK FACTORS

Predisposing Factors

- Dementia, Advanced Age, Male Sex
- Frailty, Immobility, Malnutrition, Depression, Substance Abuse
- Sensory / Functional Impairment, Polypharmacy

Precipitating Factors

- Medications, Surgery, Uncontrolled Pain
- Hypoxia, Metabolic Derangement
- Sleep Deprivation, Dehydration



More predisposing factors mean fewer precipitating factors are needed to trigger delirium.

NONPHARMACOLOGIC **MANAGEMENT**

Individualize your management plan!

PREVENTION AND SUPPORTIVE CARE

01

Reorientation

Regular orientation

Visible clocks, calendars, familiar items

02

Sleep Protocol

Non-pharmacologic sleep promotion

Minimize nighttime disruptions

Maintain day-night cycle with lighting

03

Mobilization

Early and frequent ambulation

Avoid prolonged bed rest

Physical therapy when appropriate

04

Sensory Aids

Ensure glasses and hearing aids are used

Minimize sensory deprivation

05

Hydration & Nutrition

Encourage adequate fluid intake

Monitor for signs of dehydration / malnutrition

06

Avoid Physical Restraints

Often used to reduce the risk of self-harm, but are actually associated with increased injury

MANAGING REVERSIBLE CAUSES

MEDICATION REVIEW

New high-risk medications	Muscle relaxants, benzodiazepines, neuropathic pain agents, anticholinergics, corticosteroids
Change in dose or metabolism	Renal or hepatic impairment
Withdrawal of home medications	Benzodiazepines, opiates, neuropathic pain agents, SSRIs, SNRIs, sleep medications, alcohol

MANAGING REVERSIBLE CAUSES

HYDRATION

Clues:

- I/O
- Recent NPO
- Renal function
- Restrictions – food, fluids, consistency
- Dry mouth

Oral hydration

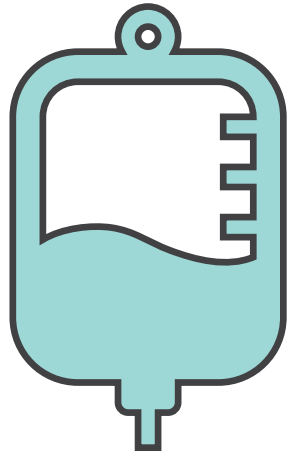
Focus on desirable liquids

IV fluids:

Bolus > maintenance

MANAGING REVERSIBLE CAUSES

Tethers



- Avoid maintenance fluids
- Minimize IV medications
- Nocturnal > continuous tube feeds
- Scheduled toileting > external urinary catheter > indwelling/condom catheter

MANAGING REVERSIBLE CAUSES

SLEEP DISRUPTION

- Increase daytime activity
  - Up in chair, scheduled ambulation, scheduled toileting
- Home CPAP
- Consider scheduling pain medication at bedtime

MANAGING REVERSIBLE CAUSES

SLEEP DISRUPTION

- Restart home sleep medications
    - Including “z drugs”
    - Consider 50% dose reduction if receiving concomitant sedating medications
- Retime medications
    - Clinical pharmacy can help
    - TID > q8hrs
    - Remember IV meds – they beep

MANAGING REVERSIBLE CAUSES

SLEEP DISRUPTION

- Melatonin
  - Data is mixed but largely positive
  - My practice:
    - Schedule 2-3 hrs prior to bedtime if having sleep issues
    - Do NOT use “as needed”
- Trazodone
  - Medication of choice for insomnia
  - Consider scheduling at bedtime
  - 25 – 50 mg

(Beaucage-Charron et al., 2023)

MANAGING REVERSIBLE CAUSES

UNCONTROLLED PAIN

Ability to characterize or identify pain may be impaired

Look for grimacing, bracing, non-verbal signs of pain.

Ask!

Uncontrolled pain is a bigger risk factor for delirium than opiates.

Can use liquid oxycodone 1.25 mg for very sensitive patients

Err on the side of comfort

MANAGING REVERSIBLE CAUSES

UNCONTROLLED PAIN

- High clinical suspicion: surgery, injury, chronic pain
  - Acute agitation → 1st line: IV pain medication
- Patients with delirium or cog impairment may not ask for pain medications
  - Scheduled low dose opiate
    - Oxycodone (2.5 mg QID) + prn to provide basal control
    - Taper plan
- Regional analgesia – truncal blocks, epidurals, etc

MANAGING REVERSIBLE CAUSES

URINARY RETENTION

High suspicion in patients:

- With prostates
- On opiates or anticholinergics

Consider holding home overactive bladder medications

If retaining:

- Deprescribe anticholinergics
- Scheduled toileting
- Consider twice daily straight cath rather than indwelling catheter
- Nightly bladder scan/straight cath

MANAGING REVERSIBLE CAUSES

CONSTIPATION

Evaluation:

Review last BM

Palpate abdomen

Consider KUB to evaluate stool burden

Treatment:

Deprescribe anticholinergics

Ask patients what works best for their constipation

Scheduled > prn bowel regimen if on opiates or on home regimen

MANAGING REVERSIBLE CAUSES

Inadequate food intake

- 1:1 feeding supervision
- Assisted feeding
- Liberalize diet
- Social eating

TAKE HOME POINTS

- If we don't screen for delirium, we may discover it too late to manage without sedation
- Not all "confusion" in older adults is delirium. Ensure you have the correct diagnosis
- Look for modifiable causes – be curious about timing, symptoms, non-verbal cues, triggers
- Prevention > treatment
- Early individualized intervention > reactive medication administration

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4. Ismail Z, Agüera-Ortiz L, Brodaty H, et al. The Mild Behavioral Impairment Checklist (MBI-C): A rating scale for neuropsychiatric symptoms in pre-dementia populations. *J Alzheimers Dis JAD*. 2017;56(3):929-938. doi:10.3233/JAD-160979

5. Catatonia | New England Journal of Medicine. Accessed September 4, 2025. https://www.nejm.org/doi/full/10.1056/NEJMra2116304?utm_source=openevidence

6. Beaucage-Charron J, Rinfret J, Coveney R, Williamson D. Melatonin and Ramelteon for the treatment of delirium: A systematic review and meta-analysis. *J Psychosom Res*. 2023;170:111345. doi:10.1016/j.jpsychores.2023.111345

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Age-Friendly Delirium Care: From Recognition to Recovery

Haley V. Solomon, DO
Assistant Professor of Psychiatry
Adjunct Assistant Profession of Medicine, Division of Geriatrics
University of Utah

SEPT 12, 2025

Delirium **Management**

Outline

1. Goals of Management
2. When to Prescribe
3. Selecting a Medication
4. Safety of Restraints
5. Take Home Points

Delirium Management Goals

- Facilitate safe / effective treatment for the underlying condition
- Prevent injury to patient and staff or caregivers
- Alleviate patient and family discomfort / suffering
- Support recovery and function

Table 3. American Geriatrics Society Clinical Practice Guidelines for the Prevention and Treatment of Postoperative Delirium[a]

Recommendation	Description
Strong: Benefits Clearly Outweigh Risks or Vice Versa	
Multicomponent nonpharmacologic interventions (for prevention)	Delivered by interdisciplinary team for at-risk older adults Includes mobility and walking, avoiding physical restraints, orienting to surroundings, sleep hygiene, adequate oxygen, fluids, and nutrition
Educational programs	Ongoing, provided for health care professionals
Medical evaluation	Identify and manage underlying organic contributors to delirium
Pain management	Should be optimized, preferably with nonopioid medications
Medications to avoid	Any medications associated with precipitating delirium (eg, high-dose opioids, benzodiazepines, antihistamines, dihydropyridines) Cholinesterase inhibitors should not be newly prescribed to prevent or treat postoperative delirium Benzodiazepines should not be used as first-line treatment of delirium-associated agitation Benzodiazepines and antipsychotics should be avoided for treatment of hypoactive delirium
Weak: Evidence in Favor of These Interventions, But Level of Evidence or Potential Risks Limit Strength of Recommendation	
Multicomponent nonpharmacologic interventions (for treatment)	Delivered by interdisciplinary team when older adults are diagnosed with postoperative delirium to improve clinical outcomes
Pain management	Injection of regional anesthetic at the time of surgery and postoperatively to improve pain control with the goal of preventing delirium
Antipsychotics	The use of antipsychotics (haloperidol, risperidone, olanzapine, quetiapine, or ziprasidone) at the lowest effective dose for shortest possible duration may be considered to treat delirious patients who are severely agitated, distressed, or threatening substantial harm to self, others, or both

[a] Adapted from American Geriatrics Society Expert Panel on Postoperative Delirium in Older Adults best practice statement[56] and abstracted clinical practice guideline.[23] Full guideline available at http://www.geriatricscareonline.org.

When to Prescribe

- Reserved for severe agitation where:
  - De-escalation strategies are ineffective
  - Contributing factors are being addressed
  - There is significant distress or risk of harm
- Not indicated for “routine” delirium without distress/agitation

Antipsychotics for delirium

Antipsychotics have historically been a common treatment for delirium. However, recent research has challenged their widespread use:

Girard et al, 2018

This study compared IV haloperidol, PO ziprasidone, and placebo in ICU patients with delirium.

- **Findings**: No difference in delirium duration, 30-day or 90-day survival, duration of mechanical ventilation, or time to ICU or hospital discharge.
- **Critiques**: Did not evaluate effectiveness for agitation, time in restraints, patient/family experience, or prevention of injuries. Majority (89%) with hypoactive delirium.

Agar et al, 2017

This RCT compared PO haloperidol, PO risperidone, and placebo in inpatient hospice/palliative care patients with delirium.

- **Findings**: Patients in both antipsychotic arms exhibited high delirium scores, more EPS, and shorter median survival compared to placebo.
- **Critiques**: Included patients with mild - moderate delirium. Did not distinguish hypoactive and hyperactive delirium.

Girard TD *N Engl J Med*. 2018;379(26):2506-2516.
Agar MR. JAMA Intern Med. 2017;177(1):34-42.

Antipsychotics for delirium

- **Guidelines (APA, NICE):** Antipsychotics have a role in delirium when symptoms are severe, distressing, or pose risk to self/others
- May not change the underlying course, but can relieve symptoms
- Always weigh risks vs. benefits and consider patient's goals of care

Antipsychotics for delirium: How to choose?

Table 5. Pharmacologic Therapy of Agitated Delirium.*

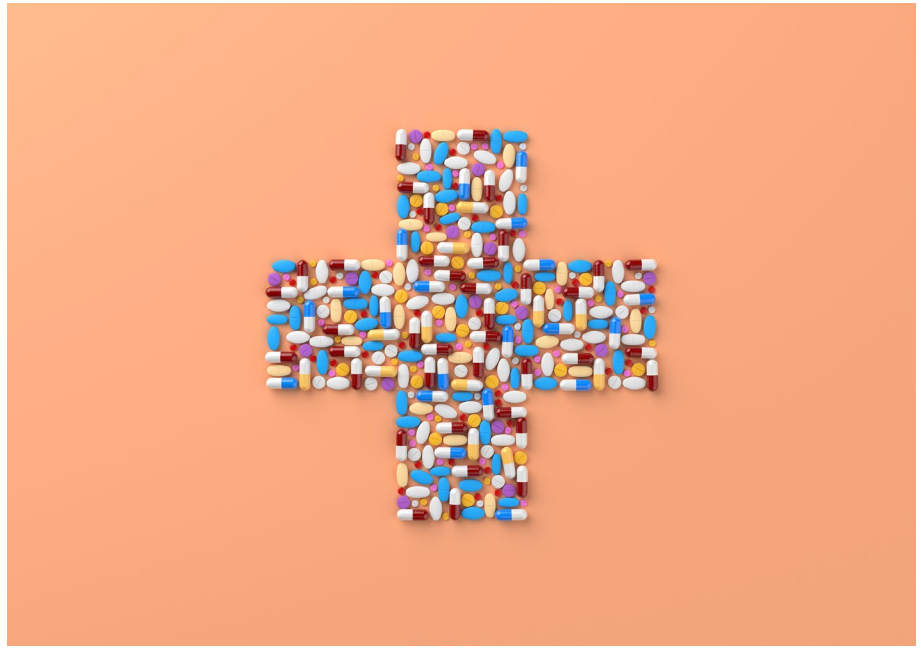
Agent	Drug Class	Dosing†	Routes	Degree of Sedation	Risk of EPS	Adverse Effects	Comments
Haloperidol	Typical antipsychotic	Initial: 0.25–0.5 mg Maximum: 3 mg	Oral, IM, or IV	Low	High	Risk of EPS increases if daily dose exceeds 3 mg	Longest track record in delirium; several large trials are ongoing
Risperidone	Atypical antipsychotic	Initial: 0.25–0.5 mg Maximum: 3 mg	Oral or IM	Low	High	Slightly less risk of EPS than with haloperidol at low doses	Small trials; considered to be very similar to haloperidol
Olanzapine	Atypical antipsychotic	Initial: 2.5–5 mg Maximum: 20 mg	Oral, sublingual, or IM	Moderate	Moderate	More sedating than haloperidol	Small trials; oral route is less effective than other routes for management of acute symptoms
Quetiapine	Atypical antipsychotic	Initial: 12.5–25 mg Maximum: 50 mg	Oral	High	Low	Much more sedating than haloperidol; risk of hypotension	Small trials; can be used, with caution, in patients who have parkinsonism
Ziprasidone	Atypical antipsychotic	Initial: 5–10 mg Maximum: 40 mg	Oral or IM	Moderate	Moderate	More sedating than haloperidol; risk of cardiac arrhythmia, heart failure, and agranulocytosis	Owing to risks, used primarily in ICU; large trial is ongoing
Lorazepam	Benzodiazepine	Initial: 0.25–0.5 mg Maximum: 2 mg	Oral, IM, or IV	Very high	None	More paradoxical excitation and respiratory depression than with haloperidol	Second-line agent; use in sedative and alcohol withdrawal or if patient has a history of the neuroleptic malignant syndrome

* Use of all these drugs for delirium is off-label in the United States. Atypical antipsychotic agents have been tested primarily in small noninferiority trials with haloperidol and recently in small placebo-controlled trials in the intensive care unit (ICU). The Food and Drug Administration (FDA) requires a "black box" warning for all atypical antipsychotics because of increased risks of cerebrovascular events (e.g., stroke) and death among patients with dementia. Typical antipsychotic agents have an FDA "black box" warning because of an increased risk of death among patients with dementia. EPS denotes extrapyramidal symptoms, IM intramuscular, and IV intravenous.

Marcantonio, E. N Engl J Med. 2017;377:1456-1466
Harrigan EP et al. *J Clin Psychopharm* 2004;24:62-69
Meyer-Massetti C et al. *J Hosp Med* 2010;5:E8-16.

A note about Quetiapine

- **α1-adrenergic blockade**: orthostatic hypotension, dizziness, syncope
- **H1 receptor antagonism**: sedation, somnolence, falls, cognitive impairment
- **Anticholinergic metabolite**, norquetiapine (dose dependent): constipation, dry mouth, urinary retention, even delirium



Badre N et al J Clin Psychopharmacol 2025;00:000-000
Hui RL. Drugs Aging. 2015 Feb;42(2):127-133

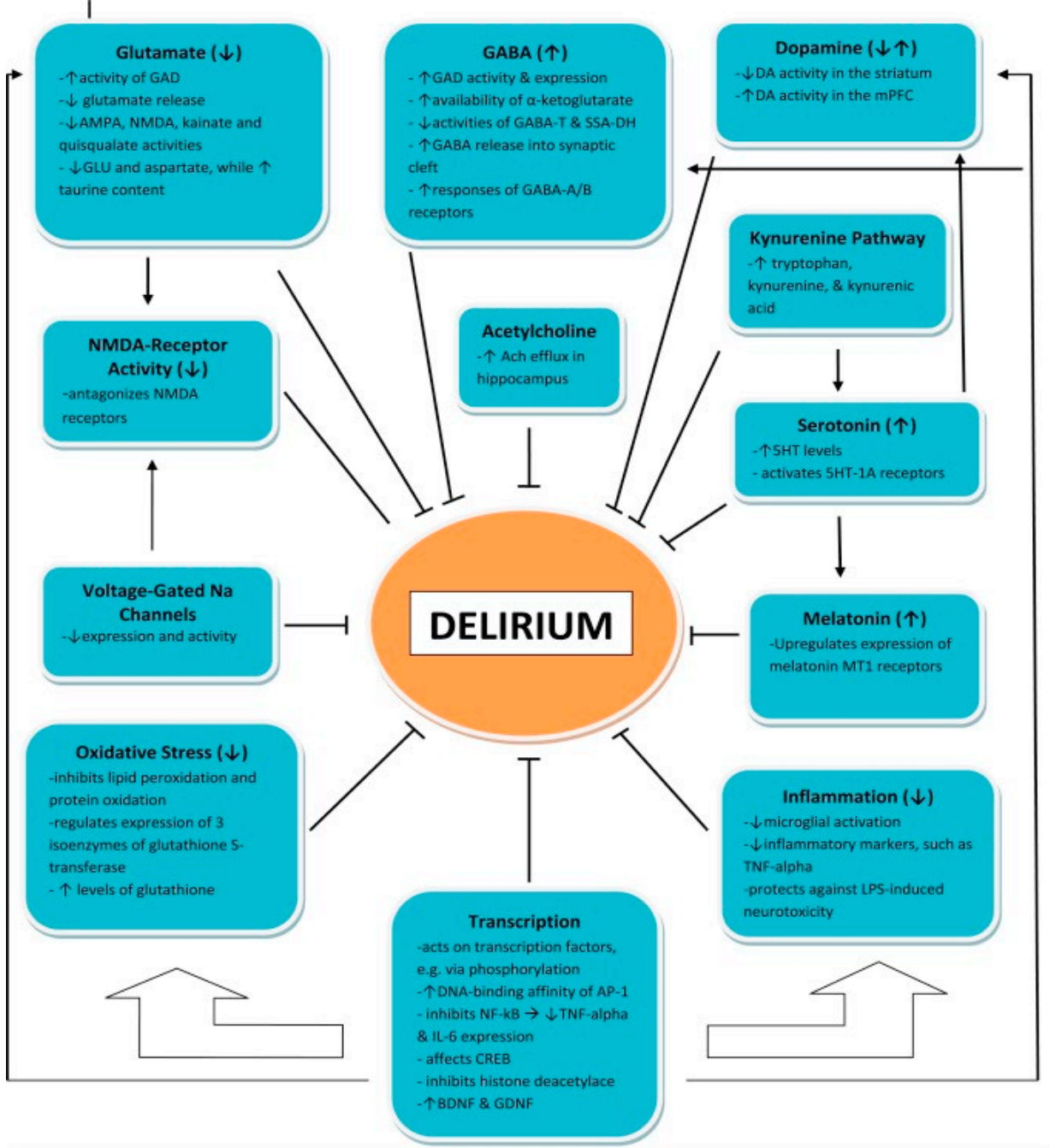
Antipsychotics & Dementia

- **Class warning for elevated risk of CVA**
- **FDA Warning on Mortality (2005):**
  - Atypical Antipsychotics used to treat dementia-related psychosis carry an "increased risk of death compared to placebo"
  - Pooled meta-analysis of 17 trials with 5377 patients. Rate of death **4.5%** in drug treated group vs. **2.6%** in placebo group.
    - Risk of death was 1.6-1.7 times higher vs. placebo
    - Causes of death were cardiac relation or infectious
- **FDA Warning on Mortality (2008)**

Review: Sacchetti et al. *Drug Saf* 2010; 33(4):273-288
Kales H et al. *Am J Psych* 2012; 169(1):71-9

Valproic Acid

- Data is limited but widely accepted
  - **No RCT**; multiple case reports & case studies[2,3]
- Multiple routes
  - IR formulations preferred, dose TID-QID
- No QTc risk
- Use cautiously in liver disease, thrombocytopenia



1 Sher Y et al. *Psychosomatics* 2015;56(6) 615-625
2 Sher Y et al. *J Neuropsychiatry* 2015;27(4) 365-370
3 Crowley K et al. *Clin Ther.* 2020;42(4) e65-e73

Melatonin for delirium

- Preventative role in RCT
  - Most positive studies used 3-5mg nightly
  - Ramelteon 8mg nightly

Al-Aama T et al. *Int J Geriatr Psychiatry*. 2011. 26(7):687-94.
Hatta K et al. *JAMA Psychiatry*. 2014;71(4):397-403
Chen S et al. Mol Neurobiol. 2016;53(6):4046-4053

Dexmedetomidine (Precedex)

Highly selective alpha-2 agonist in CNS used in ICU sedation

Very short half life, can be rapidly weaned

Less respiratory depression, shorten intubation time

Risks include bradycardia and hypotension

Compared to benzodiazepines and propofol, reduced risk of delirium in pts treated with dexmedetomidine

Shorter duration of delirium (2 days vs. 5 days in one study)

Riker RB et al. JAMA 2009; 301(5):489-99.
Jakob SM et al. JAMA 2012; 307(11):1151-60
Rosenzweig AB et al. J Comm Hosp Int Med Perspect 2015; 5(4):27950

A note about restraints

- Physical restraints, which staff often use to reduce the risk of patient self-harm, are associated with **increased** injury.
- If medically necessary, use restraints for the least amount of time possible and always inform the family about why they are needed

Young J et al. BMJ 2010;341:c3704-c3704

Take home points

- Prevention is really the best treatment
- Reserve medications for severe agitation
- Individualize your medication approach!
- If required, use antipsychotics at the lowest effective dose and for the shortest duration.

Behavioral & Psychological Symptoms of Dementia:

Non-pharmacological Management for the Care Team & Preventing Hospitalization

Michelle Sorweid, DO, MPH

Rebecca L. Shaw, DNP, PMHNP-BC

Liz Garcia-Leavitt, LCSW

Wendy Mohlman, Ed.D., MS, BSN

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September 2025

Objectives

Assessment and evaluation of the aging brain

Evaluating behavioral and psychological symptoms of dementia through the lens of preventing hospitalization

De-escalation techniques and advanced care planning

Future considerations – GUIDE overview

DIAGNOSTIC IMPLICATIONS OF SYMPTOM MANAGEMENT

MICHELLE SORWEID, DO, MPH
ASSOCIATE CLINICAL PROFESSOR, GERIATRICS
MEDICAL DIRECTOR, AGING BRAIN CARE PROGRAM

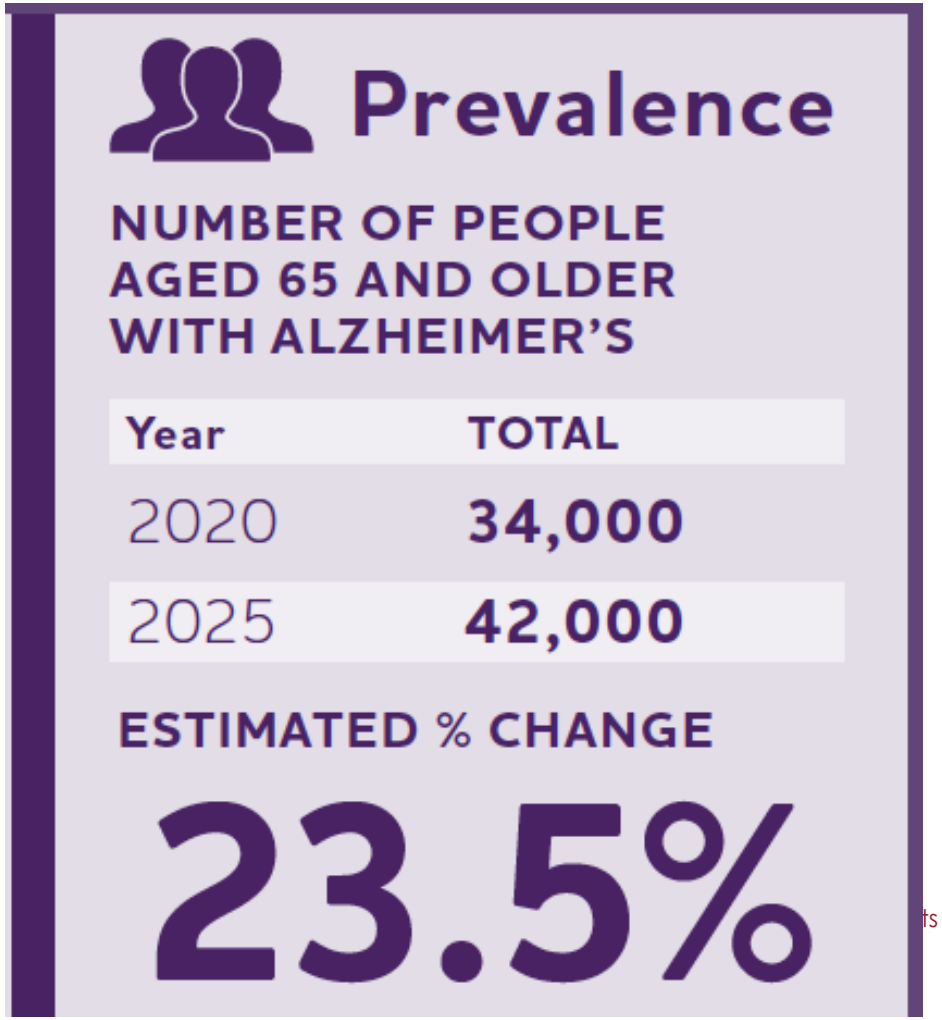
OBJECTIVES

- Discuss the importance of early detection
- Learn appropriate means of cognitive assessment
- Cognitive disorder etiologies and management implications

The Aging Brain
Assessment and Evaluation

THE AGING BRAIN

- Dementia is not 'normal', just common! (~1/3 older adults age >85)
- Mood disorders in dementia and cognitively normal older adults is common!



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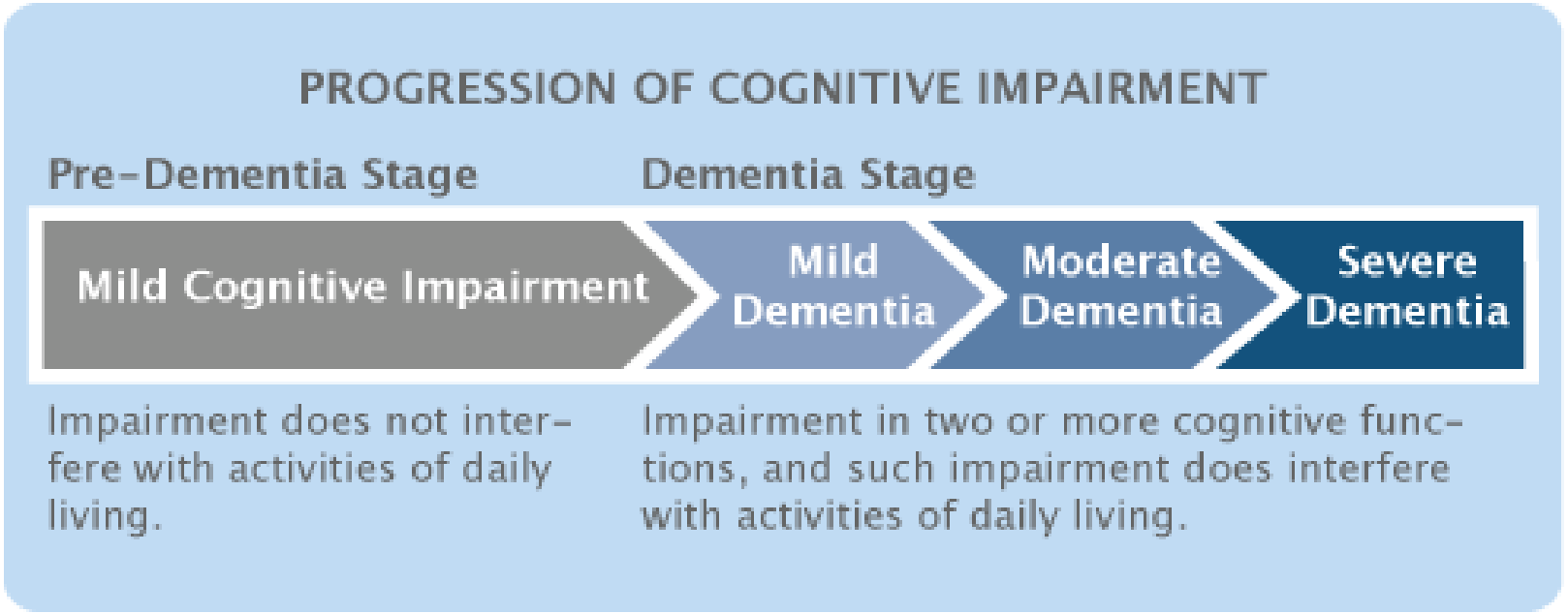
COGNITIVE SCREENING

- Widely accepted, easy to administer
  - Mini-cog (2 min), 100% accuracy with graphic
  - MOCA (10 min), most sensitive for MCI
  - SLUMS (10 min), less specific for exec function
- Necessary for distinguishing cognitive disorder from mood disorder and normal cognition
- Symptom treatment impacted

Borson, S. www.minicog.org
Boustani et al. (2005); Univ of Wash AD8; Borson S, Scanlan JGIM 2007

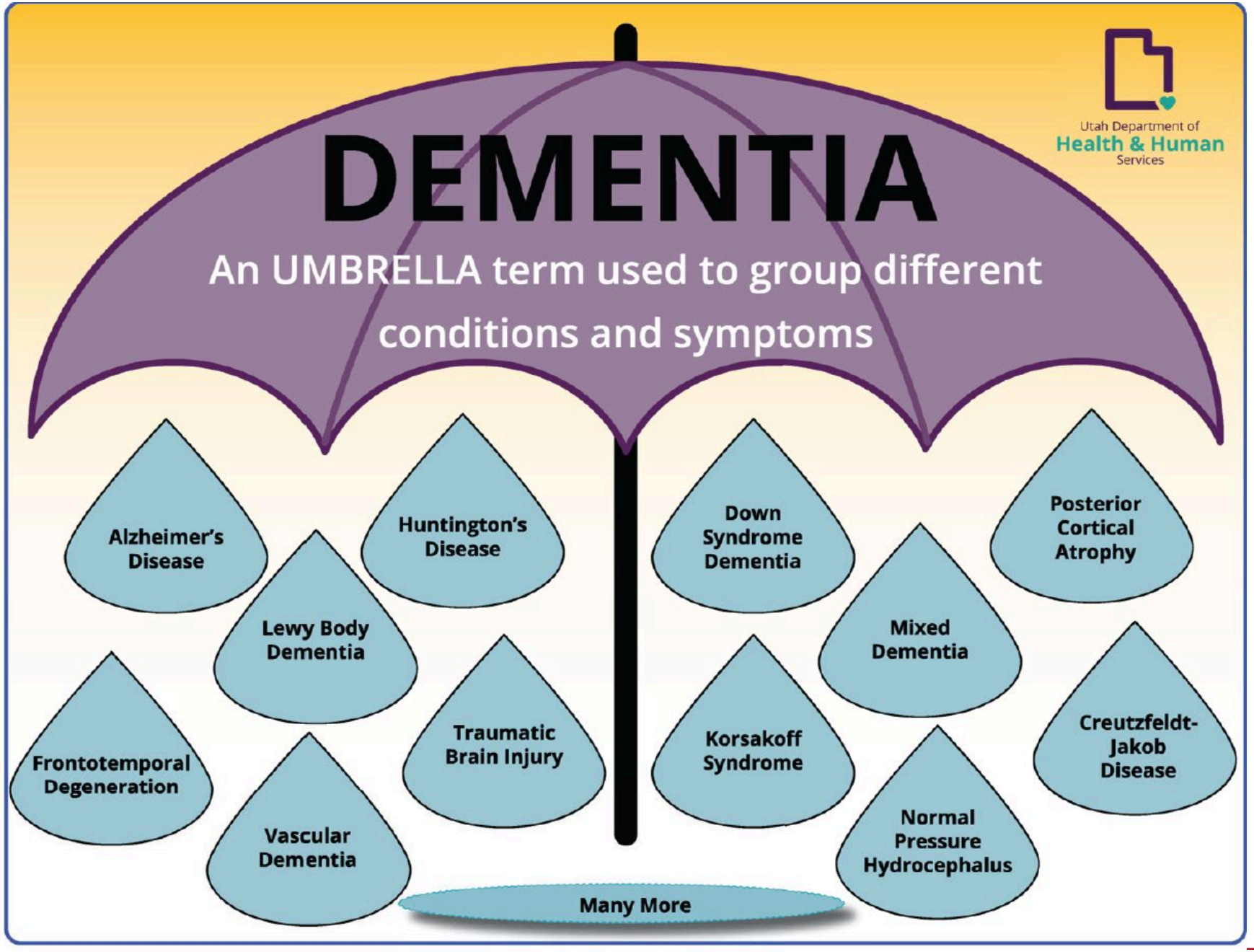
COGNITIVE CONTINUUM

Normal



FUNCTIONAL ASSESSMENT

- Confirm with informant
- Safety/ethical implications
- Necessary for distinguishing MCI from dementia
  - Katz/Lawton IADL/ADL
  - FAQ


DEMENTIA
An UMBRELLA term used to group different conditions and symptoms
Utah Department of Health & Human Services
Alzheimer's Disease
Huntington's Disease
Down Syndrome Dementia
Posterior Cortical Atrophy
Lewy Body Dementia
Mixed Dementia
Frontotemporal Degeneration
Traumatic Brain Injury
Korsakoff Syndrome
Creutzfeldt-Jakob Disease
Vascular Dementia
Normal Pressure Hydrocephalus
Many More

TREATMENT AND MANAGEMENT IMPLICATIONS

- Anti-amyloid therapies
- Antidepressant and antipsychotic choice implications
  - Dopamine antagonists
  - Insomnia management

BPSD: INTERVENTIONS FOR AVOIDING PREVENTABLE HOSPITALIZATIONS

Rebecca L. Shaw, DNP, PMHNP-BC
Geriatric Psychiatry & Cognitive Disorders, Geriatrics
Adjunct Assistant Professor, College of Nursing

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September 2025

DISCLOSURES

No financial relationships to disclose

OBJECTIVES

- Review the prevalence and impact of common Behavioral and Psychological Symptoms of Dementia (BPSD)
- Understand the definition of BPSD
- Outline contributing factors and associated risks of hospitalization in persons with dementia
- Review strategies for assessment and management of BPSD

KEY TAKEAWAY #1:
HOSPITALIZATIONS MAY BE PREVENTABLE WITH EARLY, NON-PHARMACOLOGICAL APPROACHES

KEY TAKEAWAY #2:
NON-PHARMACOLOGICAL APPROACHES SHOULD BE **FIRST-LINE**, AND ARE OFTEN **MORE EFFECTIVE** THAN MEDICATIONS IN REDUCING BPSD

WHY BPSD MATTERS

PREVALENCE

- 90%+ of persons with dementia are impacted by BPSD
- BPSD often co-occur, isolated symptoms are rare
- Symptoms often worsen over the course of the disease
- Mood disorders often appear first, may be a “red flag”

Lagana et al., 2022

WHY BPSD MATTERS

IMPACT

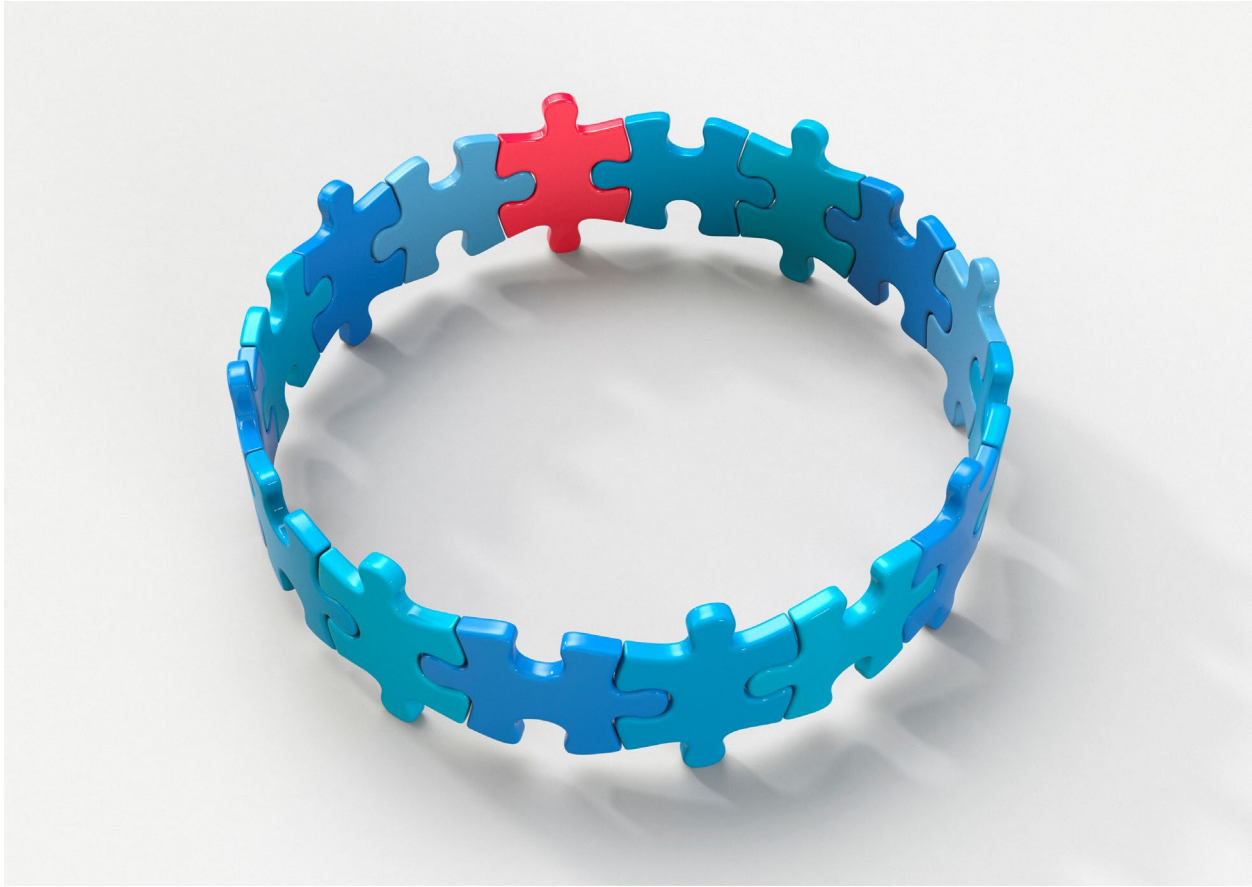
- Major contributors to disability and impaired ADLs, accelerated cognitive decline
- Increased caregiver burden
- Increased healthcare utilization
- Earlier institutionalization
- MORE DISTRESSING THAN COGNITIVE DEFICITS
- PRIMARY REASON FOR SEEKING MEDICAL CARE

American Psychiatric Association, 2013; Cerejeira et al., 2012

DEFINITION

BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS OF DEMENTIA

- Agitation
- Apathy, behavioral disinhibition
- Depression, anxiety
- Delusions, hallucinations
- Irritability
- Sleep disturbances
- Combativeness
- Wandering, aberrant motor behaviors



American Psychiatric Association, 2013

UNDERSTANDING BPSD

RISKS OF HOSPITALIZATION

- Delirium, falls, infections
- Accelerated cognitive decline
- Medical complications – dehydration, nutritional decline
- Institutionalization– discharge to SNF vs. community care
- Higher rates of in-hospital and 30-day post-discharge mortality

Fogg et al., 2018

UNDERSTANDING BPSD

MULTIFACTORIAL CONTRIBUTORS

- Neurobiological changes
- Environmental stressors
  - Unmet needs
  - Pain
  - Medical issues
- Caregiver-patient interactions

Cerejeira et al., 2012

ASSESSMENT STRATEGIES

COMPREHENSIVE, PERSON-CENTERED ASSESSMENT

- Thorough history to establish timelines
  - Pre-existing mental health diagnoses
  - Course and progression of current symptoms
- Rule out reversible causes
  - Pain, infection, constipation, dehydration, medication side effects, etc.

ASSESSMENT STRATEGIES

COMPREHENSIVE, PERSON-CENTERED ASSESSMENT

NPI-Q SUMMARY

	No	Severity	Caregiver Distress
Delusions	0	1 2 3	0 1 2 3 4 5
Hallucinations	0	1 2 3	0 1 2 3 4 5
Agitation/Aggression	0	1 2 3	0 1 2 3 4 5
Dysphoria/Depression	0	1 2 3	0 1 2 3 4 5
Anxiety	0	1 2 3	0 1 2 3 4 5
Euphoria/Elation	0	1 2 3	0 1 2 3 4 5
Apathy/Indifference	0	1 2 3	0 1 2 3 4 5
Disinhibition	0	1 2 3	0 1 2 3 4 5
Irritability/Lability	0	1 2 3	0 1 2 3 4 5
Aberrant Motor	0	1 2 3	0 1 2 3 4 5
Nighttime Behavior	0	1 2 3	0 1 2 3 4 5
Appetite/Eating	0	1 2 3	0 1 2 3 4 5
TOTAL			

- Validated Tool
  - NPI, NPI-Q
- Caregiver Collateral
  - History of behaviors
  - Triggers/Ameliorating factors

Jeon et al., 2011; Cummings, 1997

DICE APPROACH

MANAGEMENT OF BPSD

Describe

Investigate

Create

Evaluate

- Caregiver describes problematic behavior
  - Context (who, what, where, and when)
  - Social and physical environment
  - Patient perspective
  - Degree of distress to patient and caregiver

Massachusetts Alzheimer's Disease Research Center, n.d.

DICE APPROACH

MANAGEMENT OF BPSD

Describe

Investigate

Create

Evaluate

- Investigate possible causes of problem behavior
  - Medication side effects, pain, functional limitations, medical conditions, psychiatric comorbidity, severity of cognitive impairment, executive dysfunction, poor sleep hygiene, sensory changes, fear, sense of loss of control, boredom, etc.…
- Caregiver effects/expectations
- Social and physical environment
- Cultural factors

Massachusetts Alzheimer's Disease Research Center, n.d.

DICE APPROACH

MANAGEMENT OF BPSD

Describe

Investigate

Create

Evaluate

- Provider, caregiver, and team collaborate to create and implement treatment plan
  - Respond to physical problems
  - Strategize behavioral interventions:
    - Providing caregiver education and support, enhancing communication, creating meaningful activities, simplifying tasks, ensuring safe environment, increase/decrease stimulation, etc…

Massachusetts Alzheimer's Disease Research Center, n.d.

DICE APPROACH

MANAGEMENT OF BPSD

Describe

Investigate

Create

Evaluate

- Evaluate whether 'CREATE' interventions have been implemented by caregiver and are safe and effective

Massachusetts Alzheimer's Disease Research Center, n.d.

MANAGEMENT OF BPSD

ADAPTATIONS

- **Environmental modifications**
  - Reduce noise
  - Improve lighting
  - Provide a safe space to wander
  - Manage temperatures
  - Privacy
- **Communication strategies**
  - DO NOT quiz or correct
  - Calm tone
  - Validation
  - Redirection
  - Caregiver pearl – Help your person feel safe and understood

MANAGEMENT OF BPSD

SCHEDULE AND ROUTINE

Consistency and Predictability

- Personal hygiene
- Mealtimes
- Movement
- Socialization
- Rest

Meaningful Activity

- Art therapy
- Music
- Photo albums
- Reminiscence therapy
- Exercise!!!

PREVENTING HOSPITALIZATIONS

LEVERAGING THE TEAM

- Connect patients and caregivers with interdisciplinary support partners BEFORE you need them
  - Psychiatry, psychology, PT, OT, primary care, etc
- Monitor for early warning signs
  - Disrupted sleep
  - Increased irritability, anxiety, tearfulness, restlessness
  - Caregiver burnout

PREVENTING HOSPITALIZATIONS

PATIENT & CAREGIVER RESOURCES

- Disease-specific support resources and groups
  - Alzheimer's Association
  - Lewy Body Dementia Association
  - Parkinson's Foundation/American Parkinson Disease Assoc.
- Caregiver education groups
  - Stress Busters, etc.

KEY TAKEAWAY #1:
HOSPITALIZATIONS MAY BE PREVENTABLE WITH EARLY, NON-PHARMACOLOGICAL APPROACHES

KEY TAKEAWAY #2:
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NON-MEDICATION TOOLS FOR BPSD

Liz Garcia-Leavitt LCSW
Dementia Specialist Social Worker
Aging Brain Care Program
University of Utah Department of Geriatrics

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Red Flags that more help is needed

- Patient is losing weight
- Financial mismanagement
- Mismanaging medications
- Frequent Falls
- Wandering/ leaving the house at unusual times
- Caregiver not sleeping
- Aggression
- **Caregiver feels nervous leaving patient alone**
- **Patient's anxiety is increasing when they are alone**

LIVING SITUATION CONSIDERATIONS

- Patient must be safe first before the other goals can be accomplished
- This is the rainy-day people have been saving for.

Top Concerning behaviors for Caregivers

- Aggression-
  - **This is a medical emergency** and should be treated as such because it determines where the patient can live.
  - Should immediately be referred to Geriatric Psychiatry team or ER
- Sleep disturbance-
  - including wandering at night.
  - If the caregiver cannot sleep, it is not a long-term workable situation.
  - Make a respite plan and discuss medication options with physicians
- Caregiving Stress- beyond the caregiver's ability to provide or comfort level.
  - Every caregiver has a limit and it is important to respect that limit and let them know it is okay to express those limits without feeling guilty. "line in the sand"
- Psychosis/hallucinations/delusions-
  - Can be more upsetting to the caregiver than the patient.
  - Educate caregiver around difference between Weird and Dangerous
  - Need to decide if it is worth treating pharmacologically- Refer to Geriatric Psychiatry
- Depression and Anxiety
  - Can be assessed using scales such as GDS or by caregiver history for mood and affect. Be careful not to confuse with neurological apathy.
  - Generally best treated by increasing pleasurable activities and limiting sources of anxiety.
  - Traditional therapy is not appropriate past the Mild Stage of Dementia
- Agitation and disorientation
  - Patient will often mirror emotional state of those around them.
  - Ask clarifying questions and use validation and de-escalation techniques
  - Move at the pace that is comfortable for the patient.
- Repetitive behaviors and questions
  - Lots and lots of patience. Redirection.
  - Address the emotion behind what is being said.

Key therapeutic techniques

- De-escalation
- Redirection
- Validation
- Check for pain or personal care needs
- Pleasurable activities
- Identify triggers

States of Escalation

- Red
  - Completely out of control
  - Meltdown stage
  - At risk for harming self and others
  - Limited time due to energy expenditure
  - Only goal is to move them to yellow and hopefully green
- Yellow
  - Triggered, irritable, uncomfortable, fidgeting
  - Can be directed through simple steps/ tasks
  - You need to back off if you see them escalating
- Green
  - State of calmness
  - Able to hear and learn from others
  - Able to accept reason and communicate effectively
  - Able to consent and cooperate with interventions

PROACTIVE VS. REACTIVE PLANNING

- Proactive:
  - Acting and putting supports in place before the crisis
  - Allows for greatest amount of choice and autonomy
  - Allows designation of decision-making agents (who are willing and able)
  - Use resources effectively to preserve quality of life.
  - Can clarify wishes around quantity vs quality of life.

- Reactive:
  - Waiting until the crisis to act or plan
  - Choices are limited to whatever is easiest and available at the time of the crisis.
  - The Person you depend on for care may be unprepared or unsuitable for the task of care.
  - May not have the resources set aside to pay for care
  - Patient's voice is often lost.

The GUIDE Model

Wendy MohIman, EdD, MS, RN

Aging Brain Care Program - Madsen Geriatrics Clinic
555 S. Foothill Blvd Dr.
SLC UT 84112

guide@hsc.utah.edu

What is dementia?

How do we tell our family and friends?

Who are my caregivers?

Can I still drive?

How will I afford care?

What changes should we make to keep our home safe?

What support systems are available?

How can I stay connected and engaged in meaningful activities?

How will this affect my ability to live independently?

What medications or treatments are available?

How fast will the dementia progress?

When should we consider hiring extra help?

What legal and financial steps should we take now?

Will I need to move into Memory Care?

Is this genetic? Did I pass this on to my kids?

"Now what?"

PC: Adobe Stock

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GUIDE

Guiding an Improved Dementia Experience

New Payment Model for Comprehensive Dementia Care

- ★ Improve quality of life for people living with dementia
- ★ Reduce burden and strain on unpaid caregivers
- ★ Prevent or delay long-term nursing home care

SET THE STANDARD for Dementia Care Delivery

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GUIDE

Care Delivery Domains

1. Comprehensive Assessment
2. Care Planning
3. Ongoing Monitoring & Support
4. Medication Reconciliation & Management
5. 24/7 Access to Care Team
6. Care Coordination & Transitional Care Management
7. Referrals and Coordination for Services & Supports
8. Caregiver education & support
9. GUIDE Respite Services

Eligibility for GUIDE

Dementia diagnosis

Medicare Parts A & B

May be dually eligible for Medicare and Medicaid

NOT including Medicare Advantage

NOT receiving Hospice services

NOT residing in a skilled nursing facility (nursing home)

May live in an Assisted Living or Memory Care Facility

PC: National Institutes of Health

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Aging Brain Care & Madsen Geriatrics Clinic

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GUIDE Team

- Medical Director of Aging Brain Care
  - Dr. Michelle Sorweid
- Licensed Social Worker
  - Liz Garcia-Leavitt
- Program Manager & RN Navigator
  - Wendy Mohlman

Geriatrics Clinic

Geriatricians

Geriatric NP

Geri-Psych Providers

Geri-Psych Social Worker

Clinical Pharmacist

Care Management Team

UTAH

“Though those with Alzheimer’s might forget us, we as a society must remember them.”

Scott Kirshenbaum

Aging Brain Care Program - Madsen Geriatrics Clinic
555 S. Foothill Blvd Dr.
SLC UT 84112 | O: 801-581-2628
guide@hsc.utah.edu

AN ALTERNATIVE TO HOSPITAL AT HOME:
INCREASING HOSPITAL CAPACITY BY PARTNERING WITH A HOME HEALTH AGENCY

Abigail M. Papé MD / MBA, Stephanie Edwards RN, Jared Huber MD
Department of General Internal Medicine
University of Utah Health

CNS
COMMUNITY NURSING SERVICES

DISCLOSURES

Jared Huber, MD
Grants: None
Stocks: None
Consultant: None

All presenters and authors have nothing to disclose.

All presenters / authors **attest** that clinical recommendations are **evidence based and free of commercial bias**.

OBJECTIVES

Recognize value of vertical integration of a home health agency into a hospital/health system	• improves patient experience and outcomes • increases hospital capacity by improving throughput
Recognize the key roles and responsibilities of team members	• execute effectively transitions of care • Dynamic collaboration for operational efficiency

PROBLEM DEFINED

Hospital at Home is

- safe
- effective

And

- expensive
- complex
- uncertain future

Heal at Home

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HOSPITAL AT HOME VS **HEAL** AT HOME

	Hospital at Home	**Heal** at Home
Patient Status	Inpatient	Outpatient
Reimbursement	CMS Waiver	Home Health Benefit
Service Line	Mostly IM	Multi-specialty
Patient Enrollment	Unplanned	Planned + Unplanned
Cost / Overhead	$$$	$*

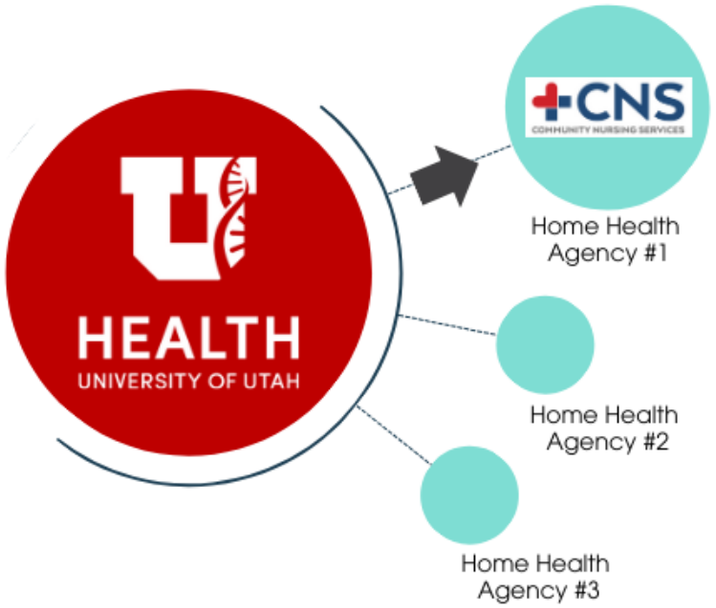
*Cost varies by specialty

HEAL AT HOME: **VERTICAL INTEGRATION**

CNS and UUH Partnership

As of April 2020, Community Nursing Services is a 501(c)(3) owned and operated by University of Utah Health

Discharge to CNS before April 2020
(patient leaves the health system)



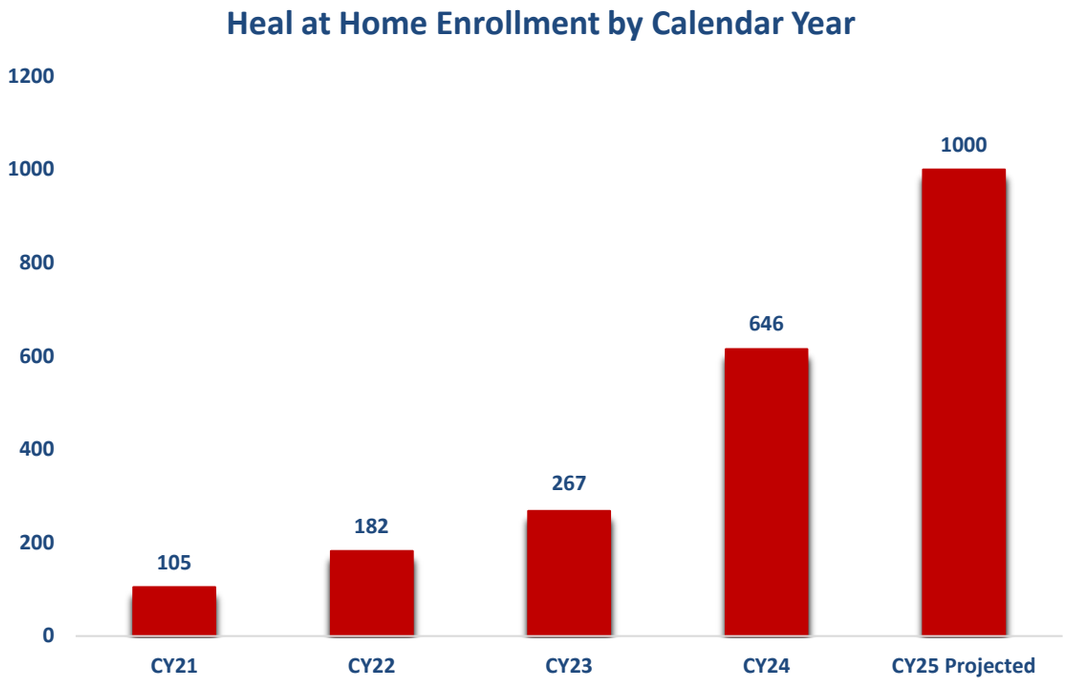
Discharge to CNS through Heal at Home (current)
(patient does not leave the health system)

HEAL AT HOME: **EXPERIENCE**

- Preoperative Clinic
  - Referral to Heal at Home
- Preservice
  - Check Home Health benefits
  - Schedule Home Health visits
- Day of Surgery
  - Discharge home
  - Home Health RN visit
- Postoperative Care
  - Protocolized & Adjustable
  - Virtual or clinic follow up

HEAL AT HOME: BY THE **NUMBERS**

AS OF DEC 31, 2024
1000+ PATIENTS HAVE BEEN ENROLLED,
CREATING AN ESTIMATED 850 BED DAYS



CURRENT PROGRAMS

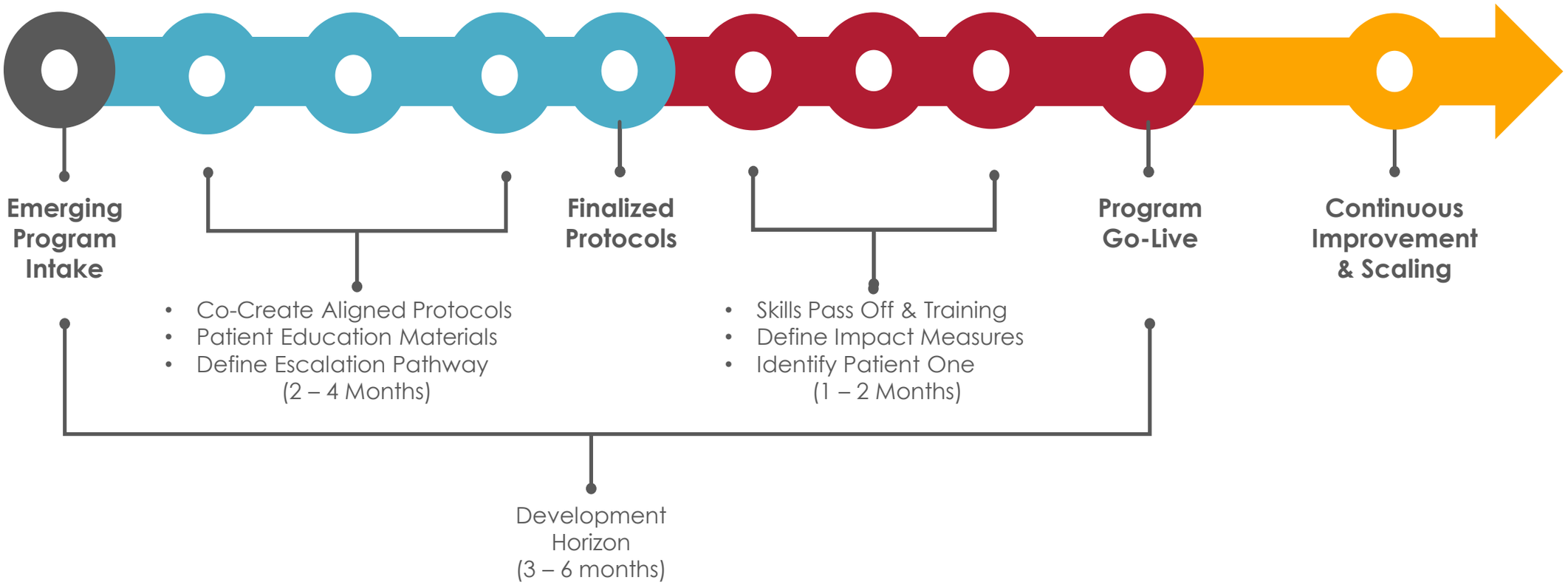
1. Breast Mastectomy
2. Colorectal Surgery
3. Emergency Department
4. Gynecology
5. Gynecologic-Oncology
6. Hospital Medicine
7. Neurosurgery (Spine)
8. Neurosurgery (Skull Base)
9. Ortho (Hip & Knee)
10. Ortho (Shoulder)
11. Ortho (Spine)
12. Ortho (Trauma)
13. Physical Medicine & Rehab
14. Post Partum (OB + Peds)
15. Surgical Oncology (Liver Resections)
16. Transgender Health
17. Transplant Surgery (Liver)
18. Urogynecology
19. Urology (Abdominal Reconstruction)
20. Urology (TURP)
21. Uro-Oncology (RALP)
22. Vascular Surgery

HEAL AT HOME: **OUTCOMES**

	CY2023	CY2024	2025 TO DATE (1/1/25-3/31)	TOTAL 2023 – 2025 (THROUGH MARCH 31, 2025)
HEAL AT HOME PATIENTS	267	646	228	1,141
ED VISITS	24	41	4	69
ED VISIT RATE	8.99%	6.35%	1.75%	5.70%
READMISSIONS	14	32	2	48
READMIT RATE	5.24%	4.95%	0.88%	3.69%

Home Health discharges in UT have 30-day ED visit rate of 10% and a 30-day Readmission rate of 19%. 98% of Heal at Home patients are "likely' or 'very likely' to refer a family member or friend (36% reporting).

HEAL AT HOME: **DEVELOPMENT**



Heal at Home:
Hospital Medicine

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HEAL AT HOME: **HOSPITAL MEDICINE**

Hospital medicine patients: unique challenges

- Lack of resources/ dynamic needs
- Heterogenous population
- Meeting homebound criteria

HEAL AT HOME: **HOSPITAL MEDICINE**

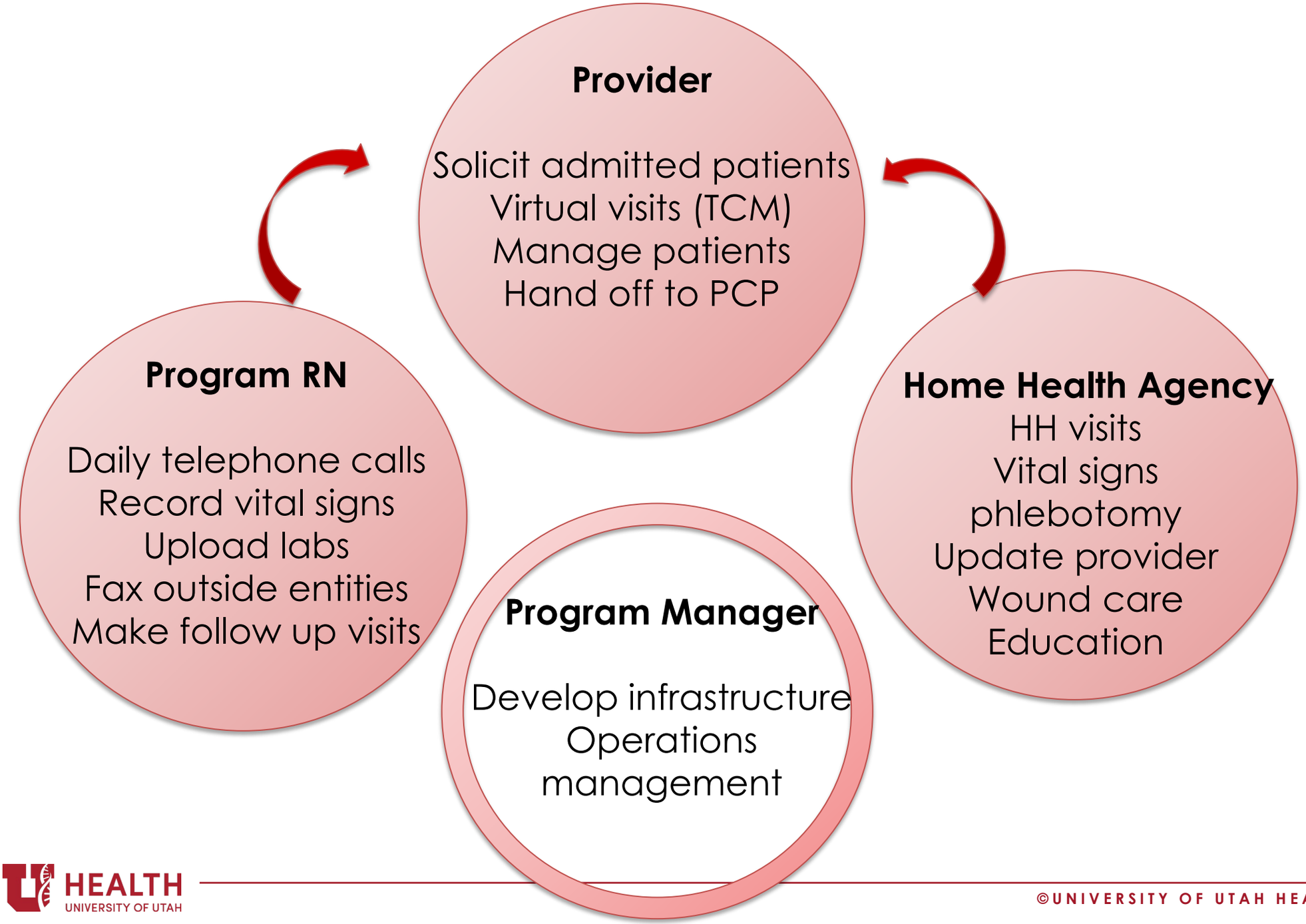
Transitions of Care Program

- Supported discharge at clinical stability
- Care continued at home
- Diagnosis agnostic

Unique from Surgical Specialites

- Patients are not identified before hospitalization
- Not everyone needs or qualifies for home health
- Requires more provider oversight
- Transitions of Care Management Codes

HOSPITAL MEDICINE: **OPERATING STRUCTURE**



HOSPITAL MEDICINE: **MEASURING SUCCESS**

- Patient experience
- Bed days saved
- 30 day readmission rate
- 30 day ED visit rate
- ROI

HOSPITAL MEDICINE: **PATIENT EXPERIENCE**

Octogenarian woman requiring close monitoring and continued medical management that typically would occur in an inpatient environment.

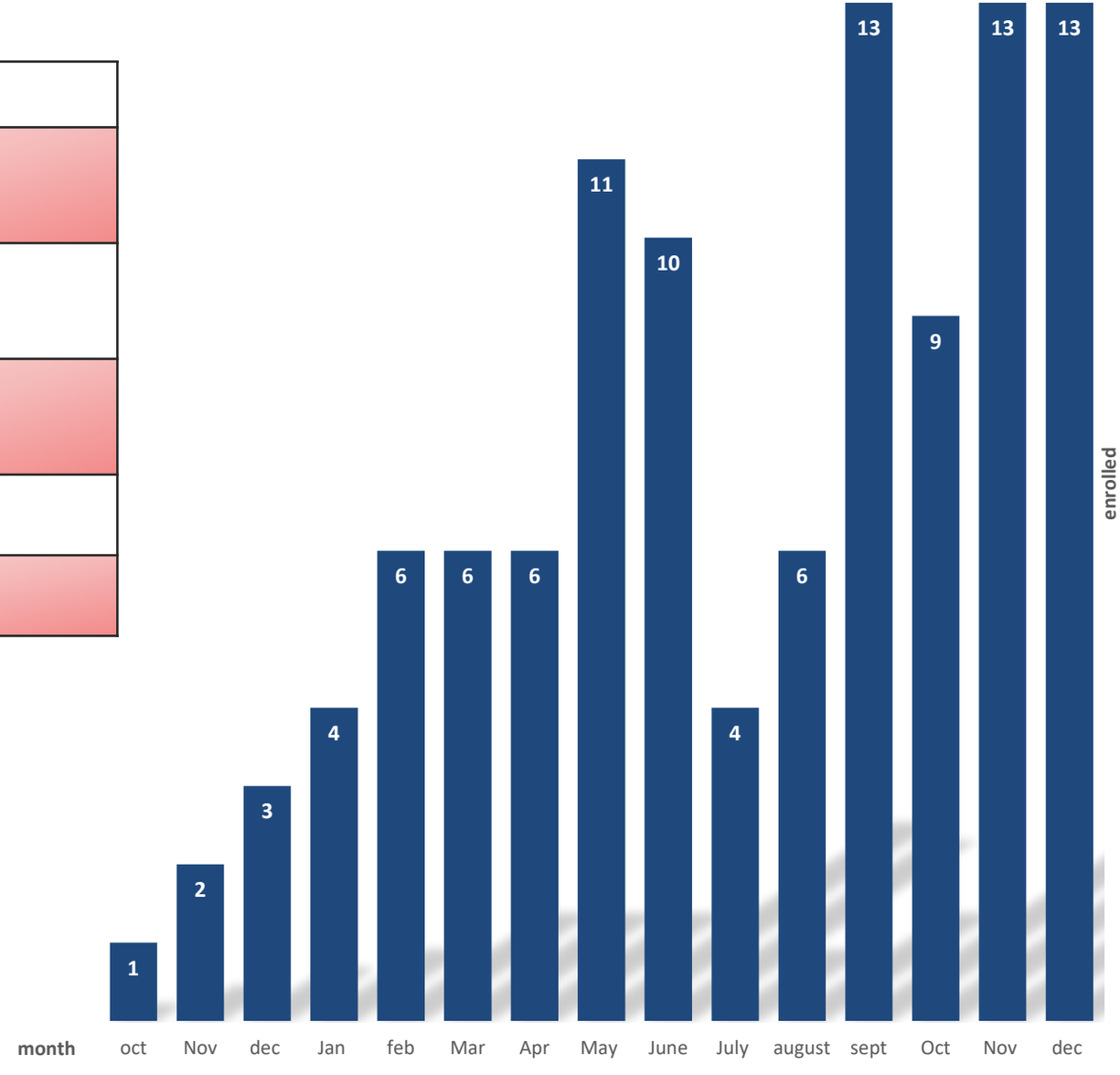
RN met with her prior to discharge, described the Heal at Home program; patient elected to discharge.

The next day, she was able to visit her spouse at his SNF and he passed away that evening.

She was thankful for the team as if she she not discharged, she would have never seen her husband before he passed away.

HOSPITAL MEDICINE: **2024 PEFORMANCE**

Total Patients enrolled	**119**
Estimated bed days saved	292
UQual RN support hours	72.7
30 day readmission rate	13%*
30 day mortality rate	0
ROI	461%**



*allcomers hospitalist section 30-day readmission rate of 16.21%. **Heal at Home 30-day readmission rate 15% BEFORE RN, 11% AFTER RN**

****In kind support**: UQual grant funding supports the RN FTE, Hospitalist section supporting FTE for MD physician lead, Hospitalist section paying fixed costs (Teams telephone line, fax machine, Helix office space)

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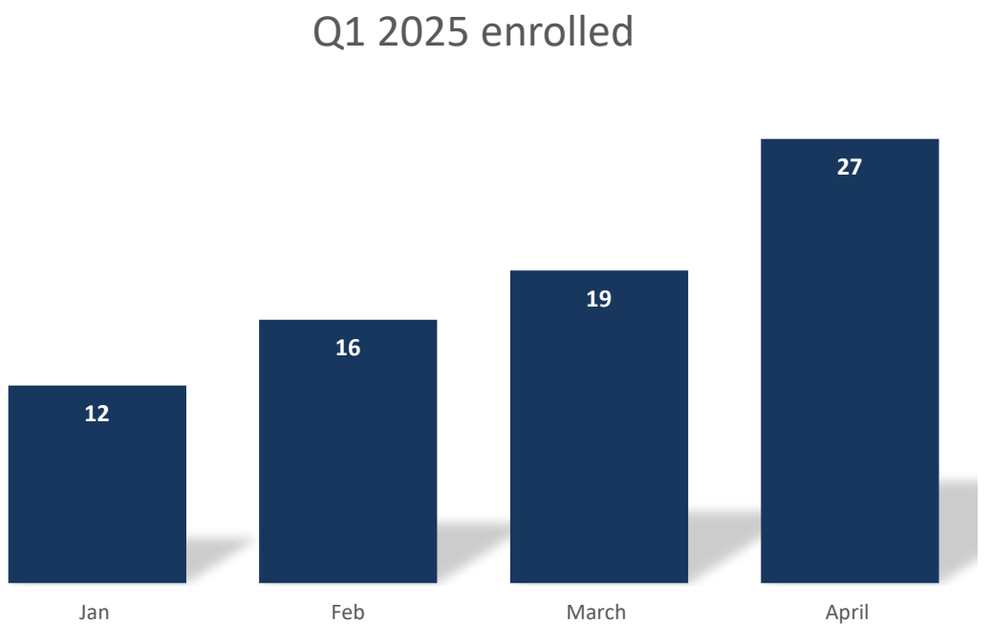
HOSPITAL MEDICINE: **Q1 2025 PERFORMANCE**

Patients enrolled Q1 2025	74
Estimated bed days saved	222
30 day ED visit rate	4%
30 day readmission rate	12%*
Avg daily census	10
ROI	270%



*these were in month of January and related to hypoxemic respiratory failure

GERIATRICS MODEL

- Acute Care Episode
  - Heal at Home Referral
- RN Visit (Med Rec)
- PT Eval (Fall Risk)
- OT Eval (MOCA, etc.,)
- Geriatrician (Virtual / In Person)
- Return to PCP

KEY ELEMENTS OF SUCCESS

- Trust
  - Experience + Expertise
  - Mutual Commitment
- Integration
  - Communication (EHR)
  - Logistics (Labs)

HEAL AT HOME: **CONCLUSION**

Vertical integration of a Home Health agency

Supports sustainable superior patient care and experience, cost efficiency, capacity and throughput optimization

and

opportunity for dynamic collaboration among the team and throughout the system.

Questions?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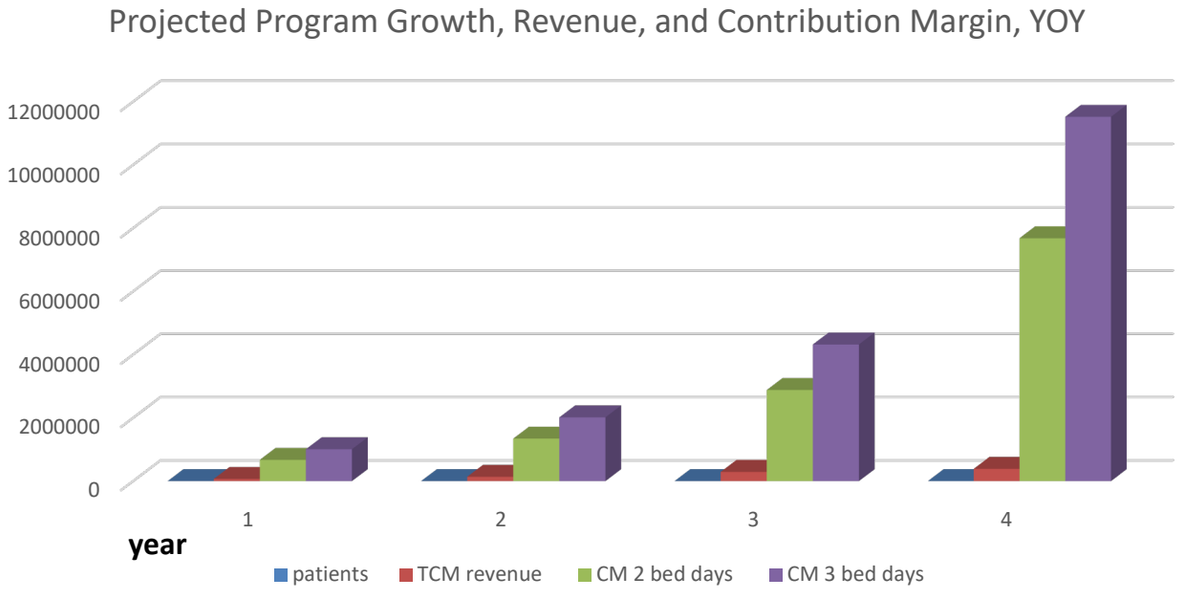
HEAL AT HOME: **STRATEGIC GROWTH**

HOSPITAL MEDICINE



Technology development

- EHR discharge order set build
- EHR discharge instruction build
- AI tool for patient identification
- Billing infrastructure

Personnel Development

- Operations manager
- RN care coordinator
- Provider (APC or MD)

Interdepartment collaboration

- ARUP/Uhealth lab operations
- CNS integration and cobrand
- Ambulatory care integration

***Caveats: complex medical or psychosocial patients may require care plans**

HEAL AT HOME: **MEDICINE SPECIALTIES**

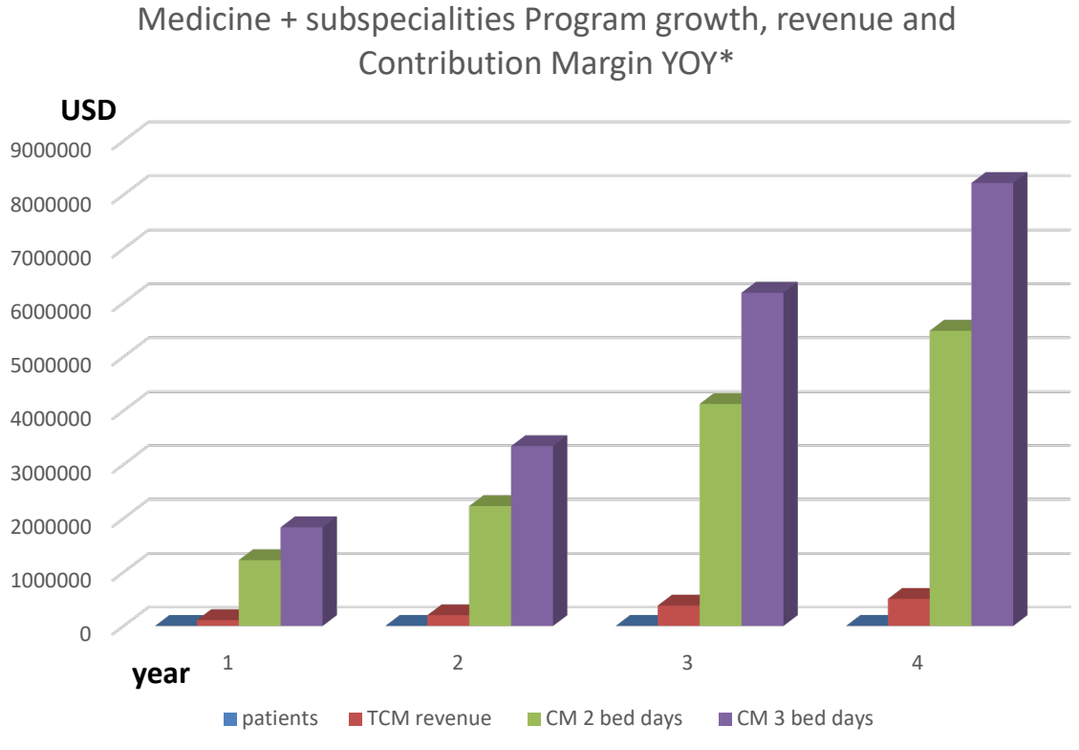
POTENTIAL GROWTH

Medicine Specialties

- Hospital Medicine (active)
- Cardiology (in development)
- Geriatrics (in development)
- Neurology – Q4 2025
- Pulmonology – Q1 2026
- Psychiatry (HMHI) – Q3 2026

Impact

- CY25 potential patients: 500, potential bed days: 1000
- CY26 potential patients: 985, potential bed days saved: 1970



*pending adequate support

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