

Neurocritical Care Systems in Geriatric TBI: A need for Multidisciplinary Teaming in Co-ordinated Systems of Patient-Centered Care from Triage to Recovery

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NASEM workshop on Addressing unmet research needs in TBI in older adults
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**Mount
Sinai**

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Writing and Editorial responsibilities

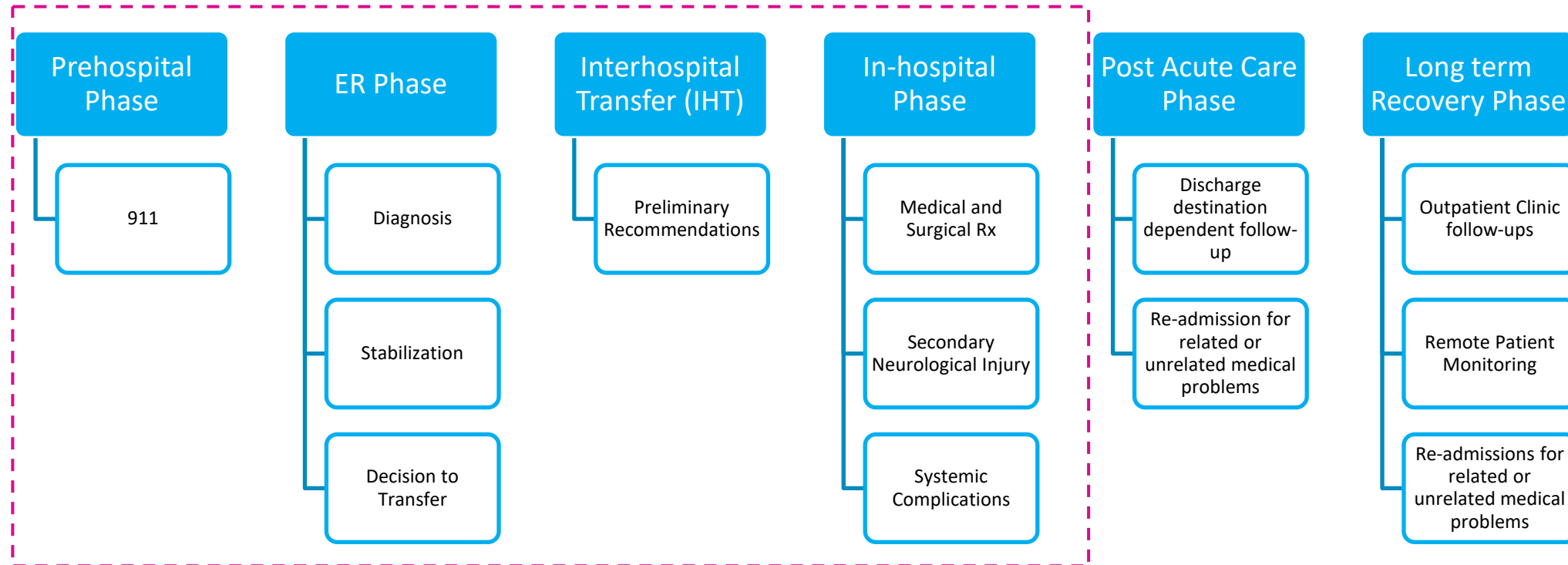
American Heart Association (AHA) Subarachnoid Hemorrhage Guidelines Writing Workgroup

Co-Vice Chair, Post Intensive Care Syndrome (PICS) and PICS-Family guidelines for Society of Critical Care Medicine (SCCM)

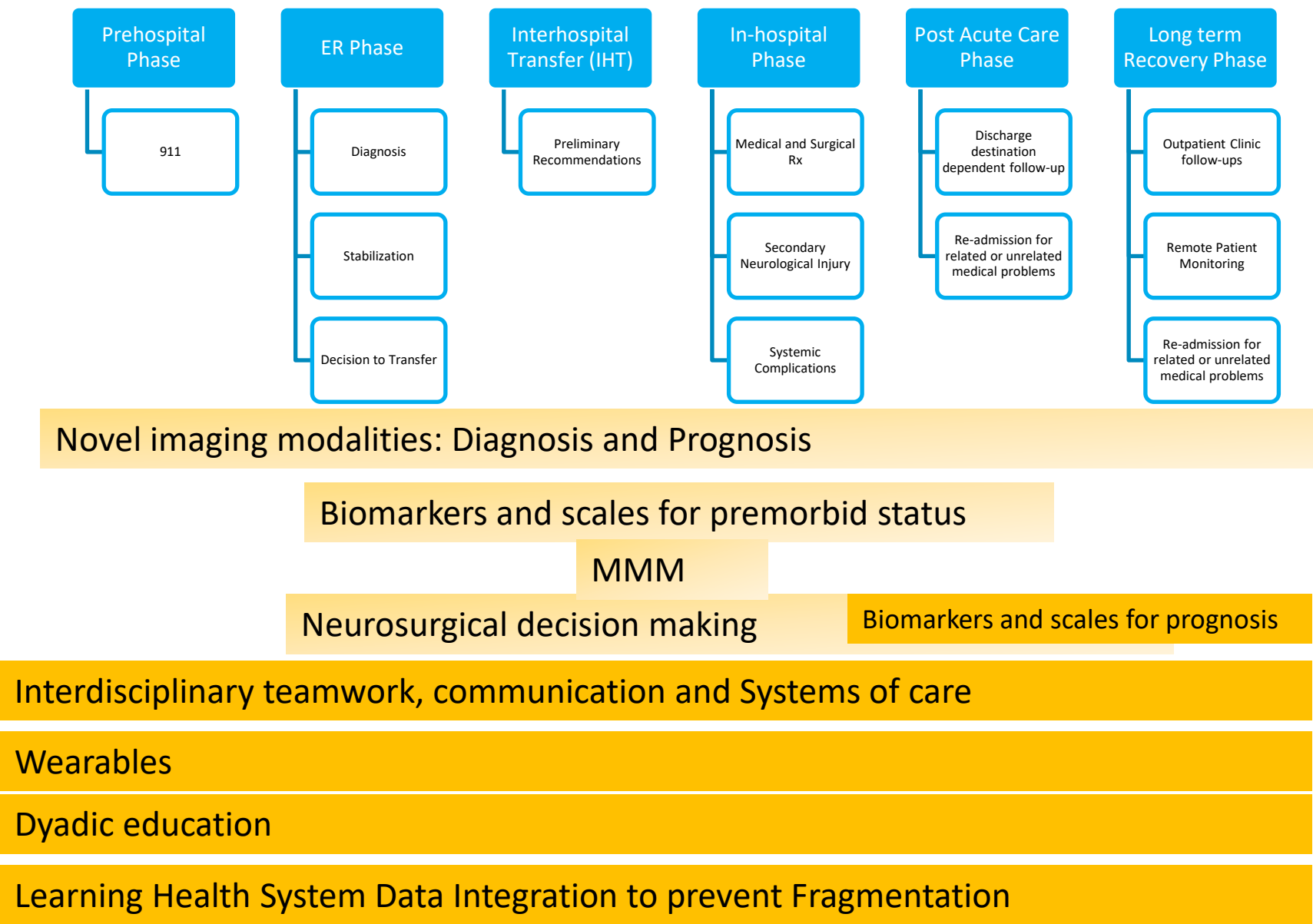
Social Media Editor, Editorial Board, Chest
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Co-Editor, Textbook on Neuroprognostication, University of Cambridge Press

Empiric Phases of care for Neuroemergencies like Traumatic Brain Injury (TBI)



Empiric Phases of care and Opportunities for Research



Fundamental Approach in Neurocritical Care

Time is Brain, Time is Perfusion
TIME IS LIFE

Primary Neurological Injury

Neuroprognostication

Secondary Neurological Injuries

Patient centered outcomes

Systemic Injuries

Preparing for the New Normal

Patient and family centered care (PFCC): Core principle

(Institute of Medicine Quality Health Care Committee, 2001)

Systems of Care: Are they set up for success?

REGIONALIZATION

National Academy of Medicine:

Stroke, STEMI, major trauma, pediatric care to improve quality of care and decrease variability

FRAGMENTATION

Associated with:

Higher cost

Lower quality of care

Higher mortality

Higher risk of readmissions

VARIABILITY in:

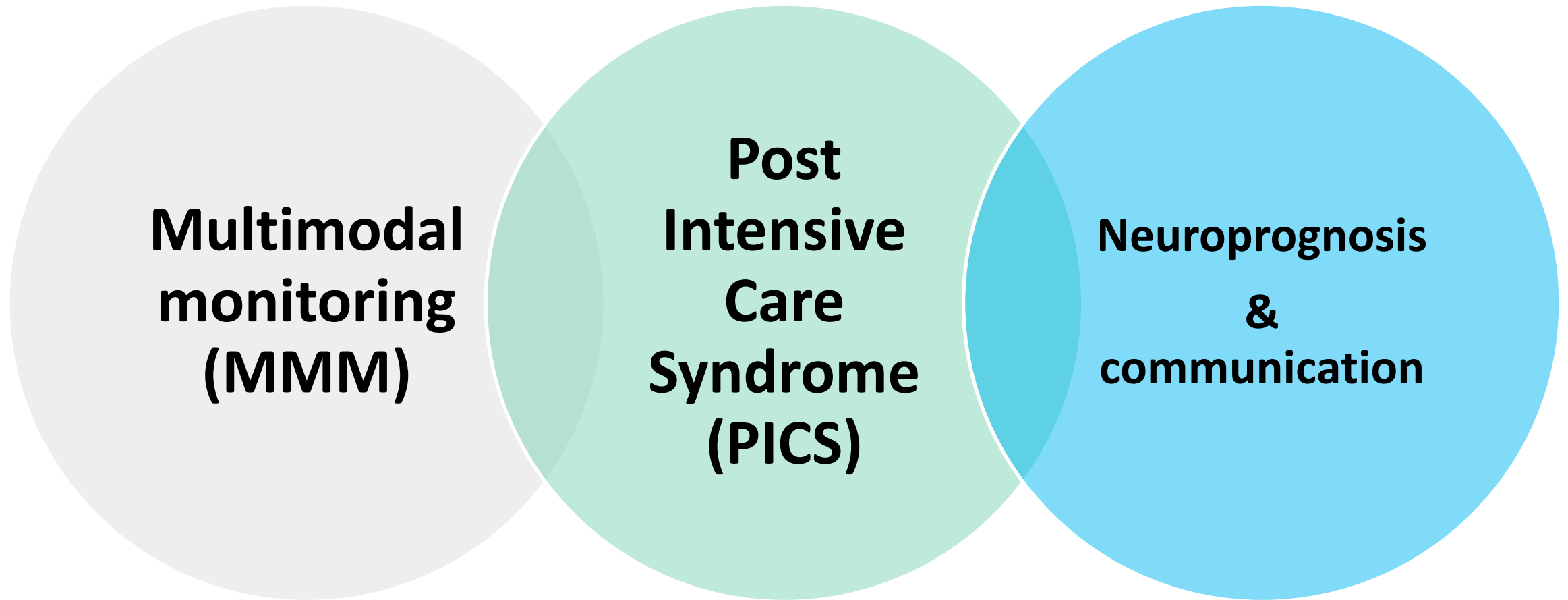
Care delivery

Adherence to guidelines

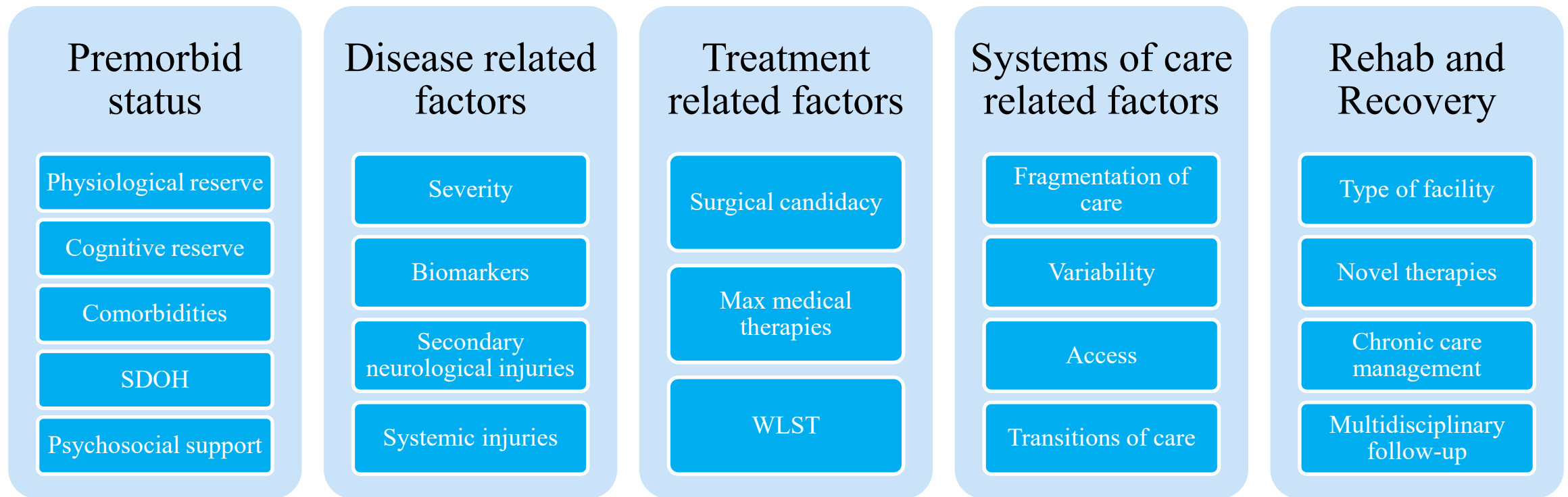
Access to care

Education

Roadmap for Research Approaches

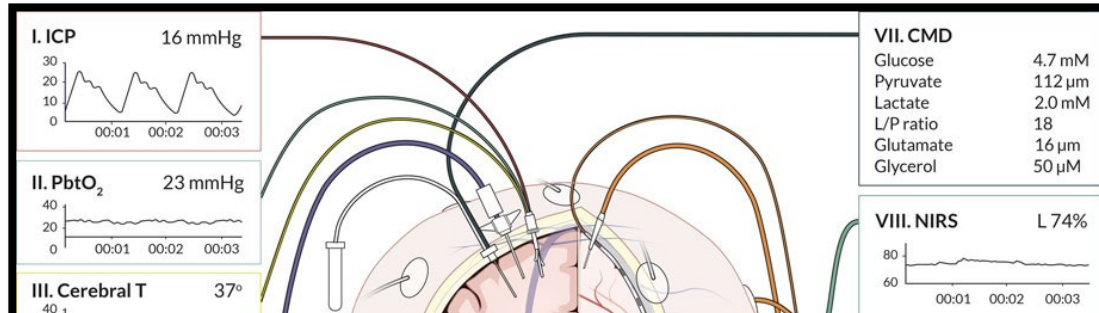


Older adults with TBI are not included in trials and fuels a self fulfilling prophecy. What factors have prevented us from designing from inclusive trials?



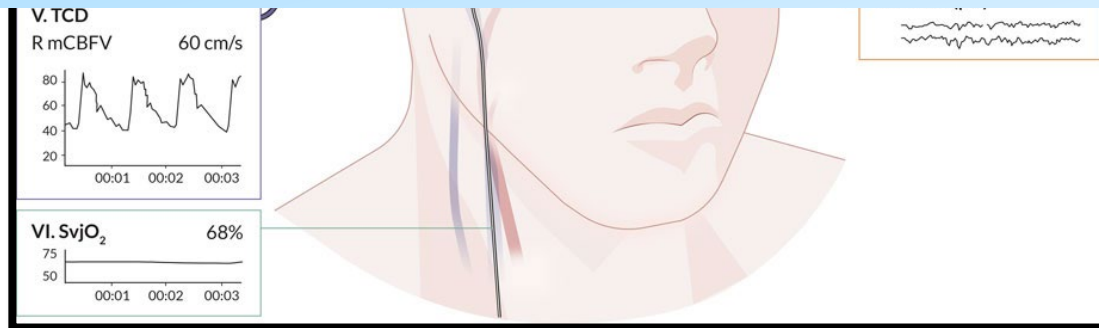
Multimodal monitoring (MMM) in the ICU for guiding brain and body specific therapies

Variability
Access
Interpretation
Data acquisition
Real time EHR
Outcomes
Safety
Interdisciplinary collab



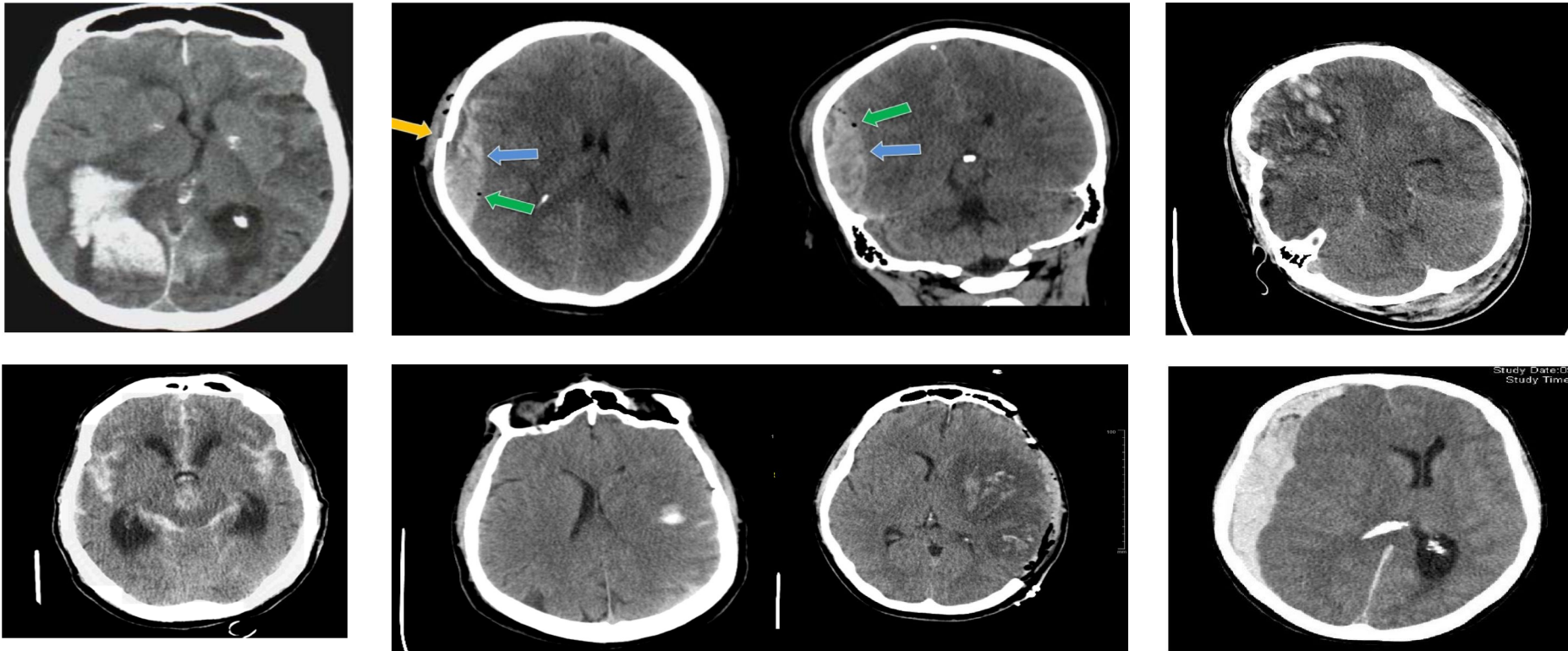
Ex. In older adults while ICP may not be elevated, cerebral autoregulation may still be abnormal leading to secondary neurological injury

Ex. Burden of spreading depolarizations may be higher but limited ways of assessing this at the bedside



Wearables
Wireless
Cost effective
Data Integration
Open source API: Pool, explore data and share insights
Shared Resources to leverage Data Science, ML/AI for PFCC

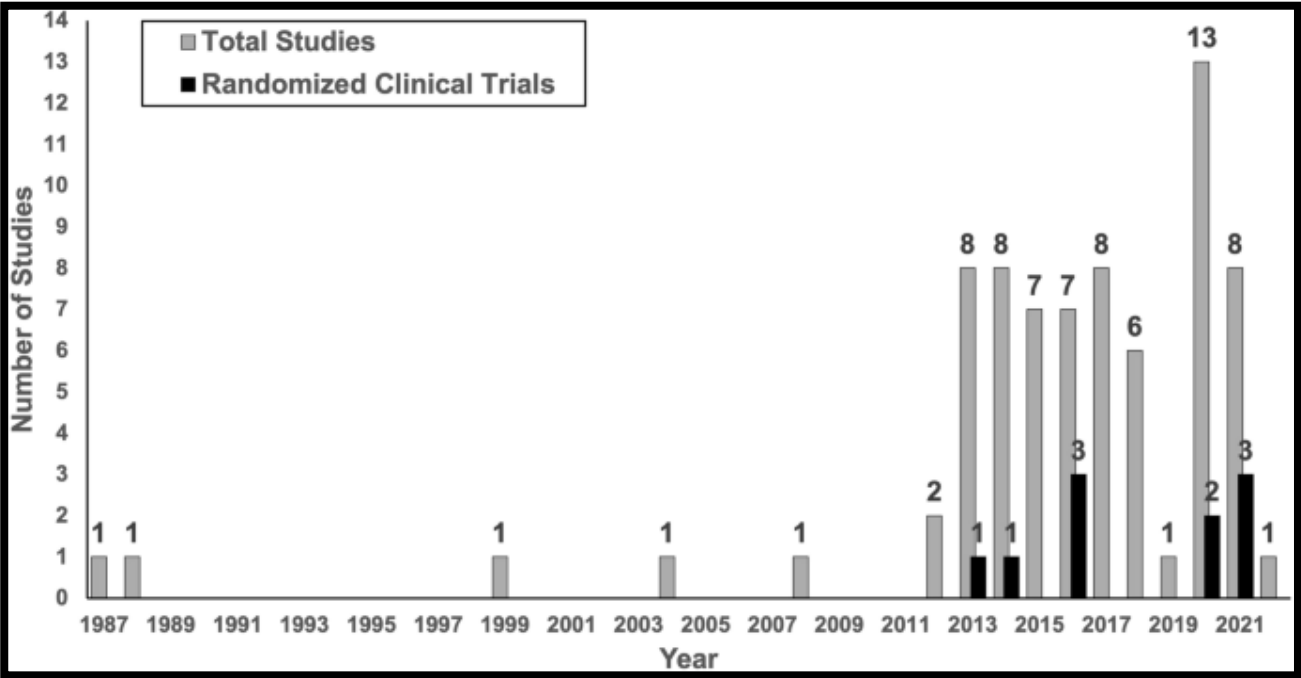
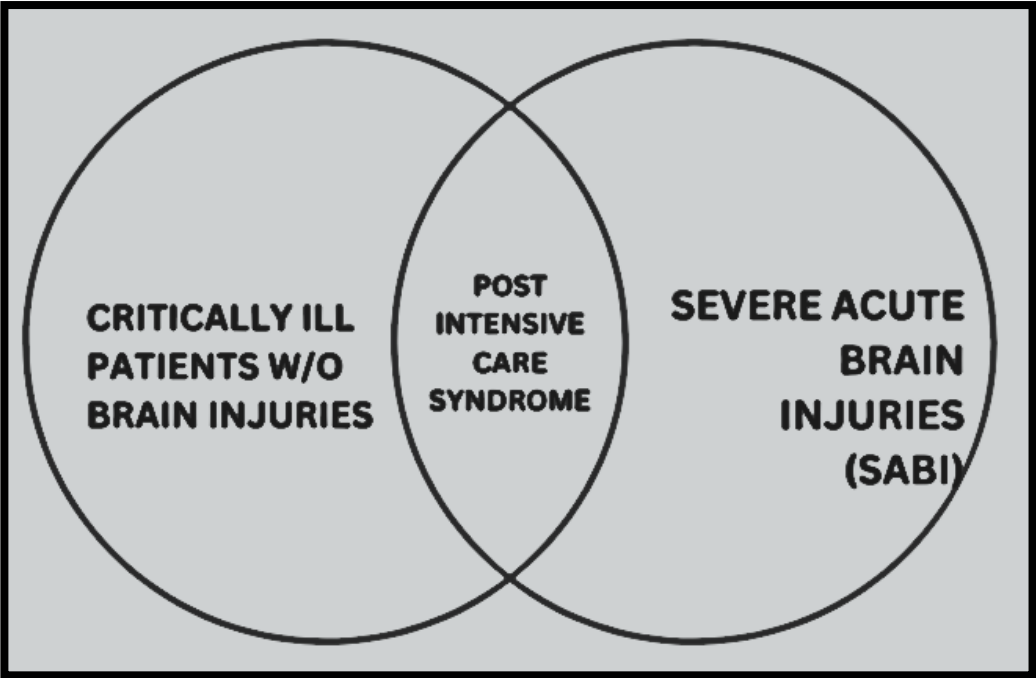
SABI=Severe Structural Injuries + ICU: Biggest challenge in understanding PICS in these patients is how do we differentiate impairments secondary to brain injury versus those due to interventions in the ICU



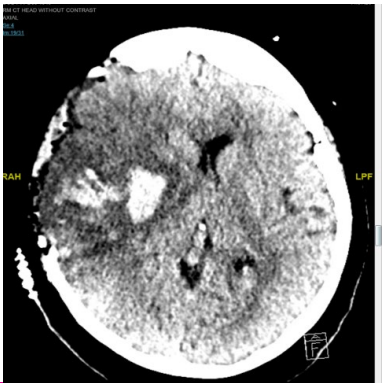
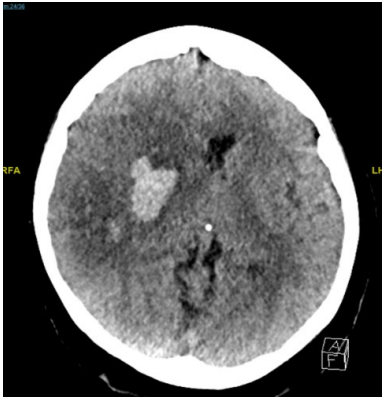
Dangayach NS, et al Seminars in Neurology 2024 Jun (Vol. 44, No. 03, pp. 398-411)
LaBuzetta JN et al Neurocritical care. 2019 Dec;31(3):534-45.

SABI=Severe Structural Brain
Injury + Effects of ICU=Additive
or Multiplicative Effect?

Multidomain outcomes: Physical, Cognitive, Mental Health, Sleep, Fatigue, Return to work, Pain...



American Heart Association Guidelines emphasize Multidisciplinary teamwork for management of acute brain injuries. Recently, PICS has been recognized as an understudied construct



Class I recommendations for multidisciplinary teamwork in acute and recovery phases of care

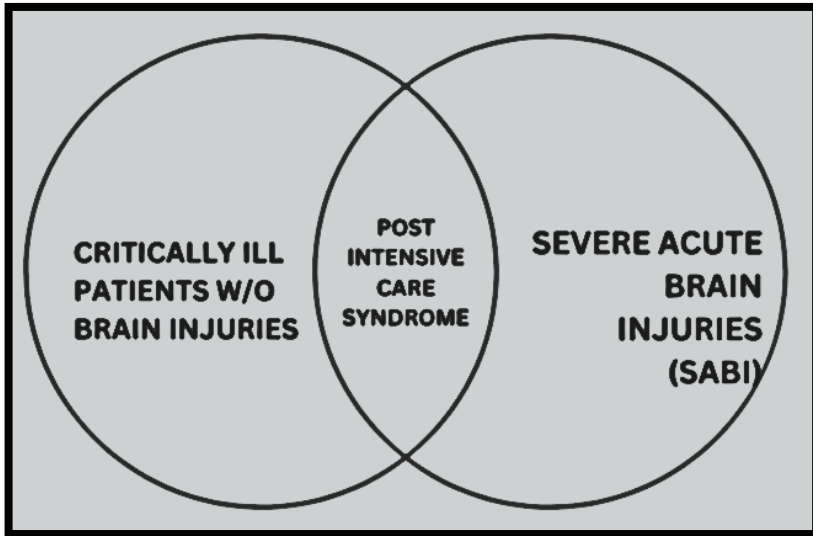
AHA Systems of care guidelines for Stroke, Stroke 2019

AHA Cardiac arrest survivorship guidelines, 2020

AHA ICH guidelines, Stroke 2022

AHA SAH guidelines, Stroke 2023

The approaches to the continuum of care for acute brain injuries can help us in managing PICS in non-brain injured patients and vice versa



Multi-domain outcomes

- Uncertainties in prognostication
- Need for long term follow-up and PROs
- Prevent Fragmentation of care

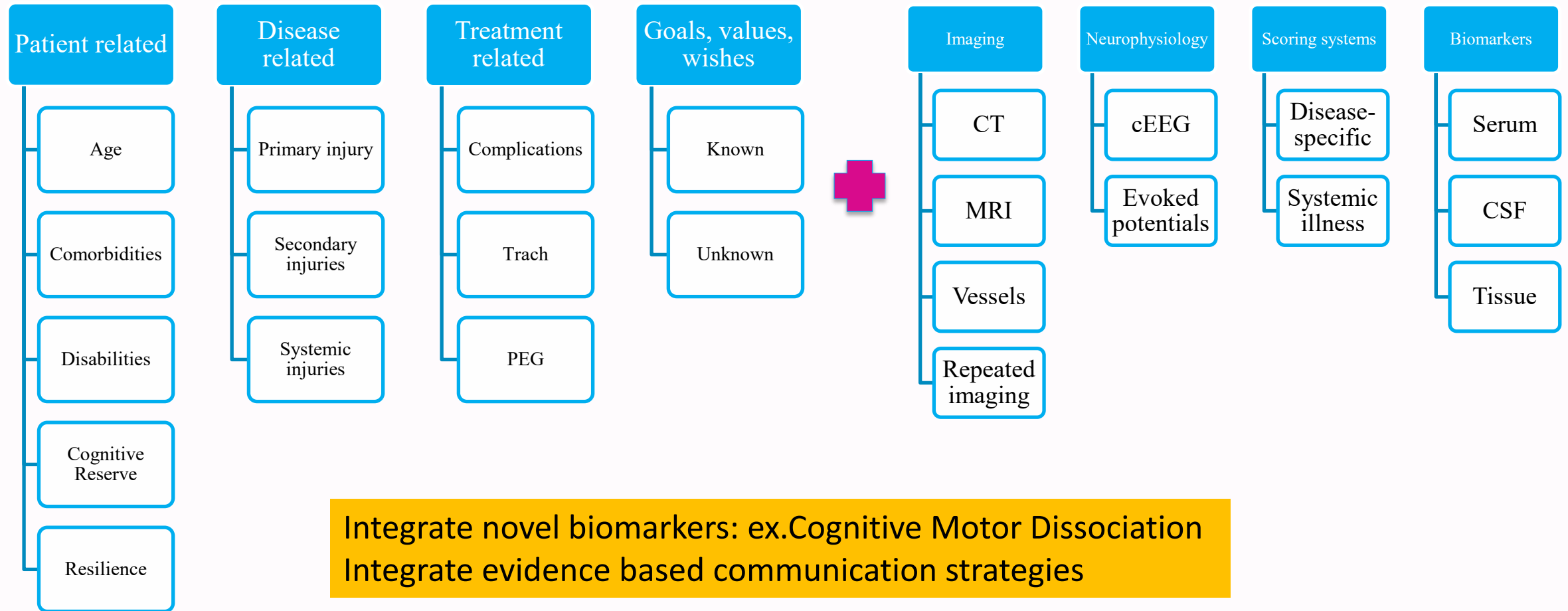
Multidisciplinary teams

- Triage to Recovery
- Challenges and opportunities in referral and follow-up
- Telehealth, Remote patient monitoring, Remote Therapeutic monitoring

Patient and Family/Caregiver Dyad

- Peer to Peer Support
- PICS and PICS-F screening and awareness

How do we prognosticate in SABI?



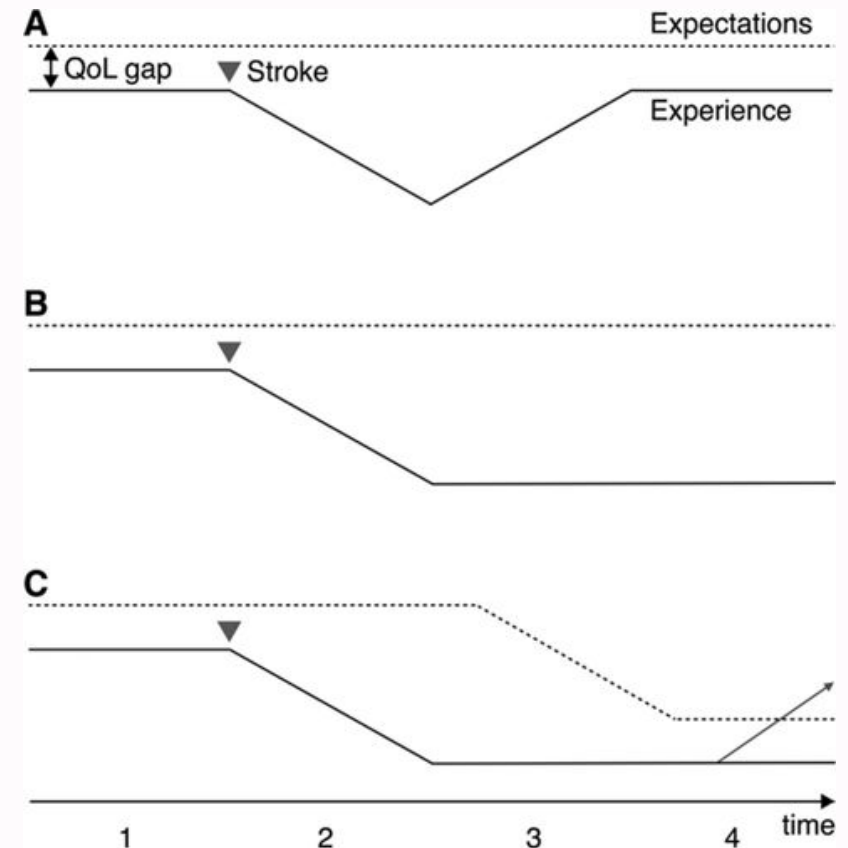
For life sustaining procedures:

Three things we should be able to predict. When in doubt, it is helpful to be aggressive early on, prevent therapeutic nihilism

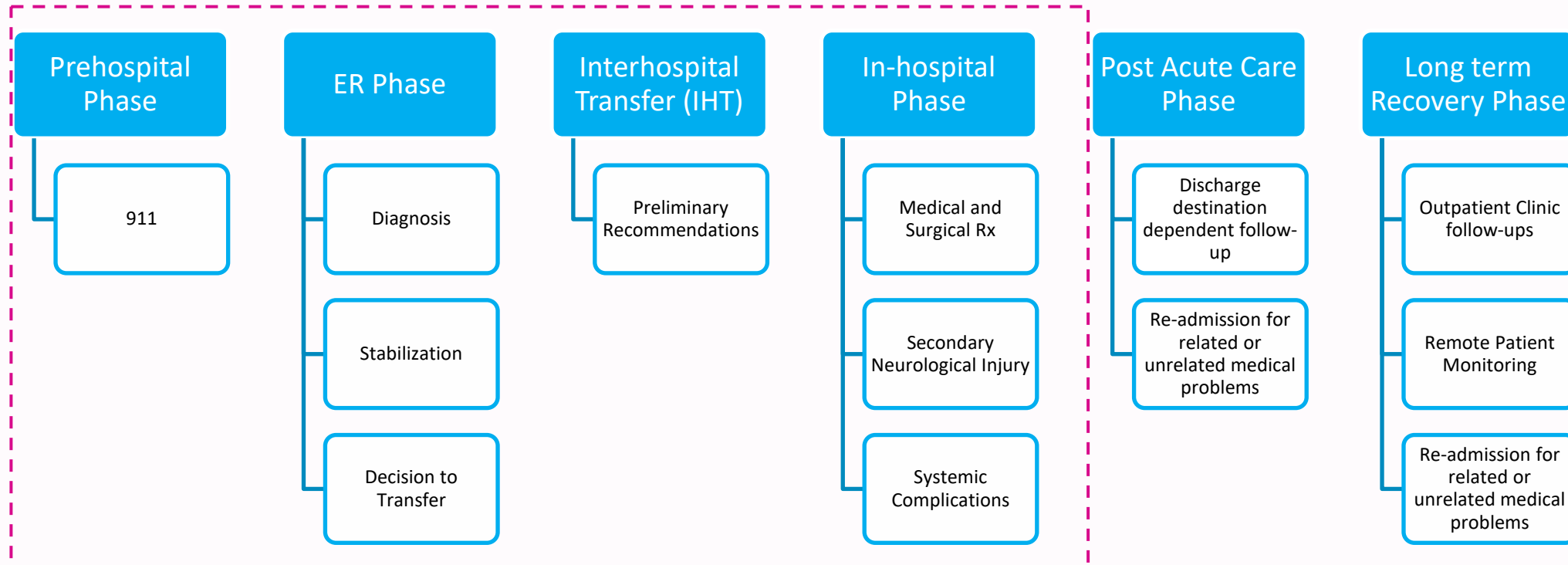
Survival with disability and extent of disability

Need for Trach

Need for PEG



Platform trial for different therapies and bundles of care from triage to recovery to truly study the continuum of care for older adults



Neuroprotective therapies
Bundles of care for ICP/CPP management, PbTo2 optimization
Bundles of care for mechanical ventilation
PICS prevention bundle
Communication and education strategies

To Our Patients and Families: You are the Source of Inspiration for Our Mission in Medicine

