There's More to Working in the ICU Than Just Taking Care of Patients

Society of Critical Care Medicine

The Intensive Care Professionals

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- Research funding from NIH and Immunexpress
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Learning Objectives

- **Discuss the three elements of a learning healthcare system, namely best patient care, clinical research, and an interdisciplinary educational model**
- **Advocate that in addition to deriving evidence to inform best practice, a learning healthcare environment also facilitates resiliency and well-being among all members of the interdisciplinary care team as well as patients and families**

Scope of Practice in Critical Care

- Ensure rapid and accurate diagnosis and treatment
- Provide support for dysfunctional/ failed organ systems
- Prevent complications of critical illness and its treatment
- Foster a learning healthcare environment

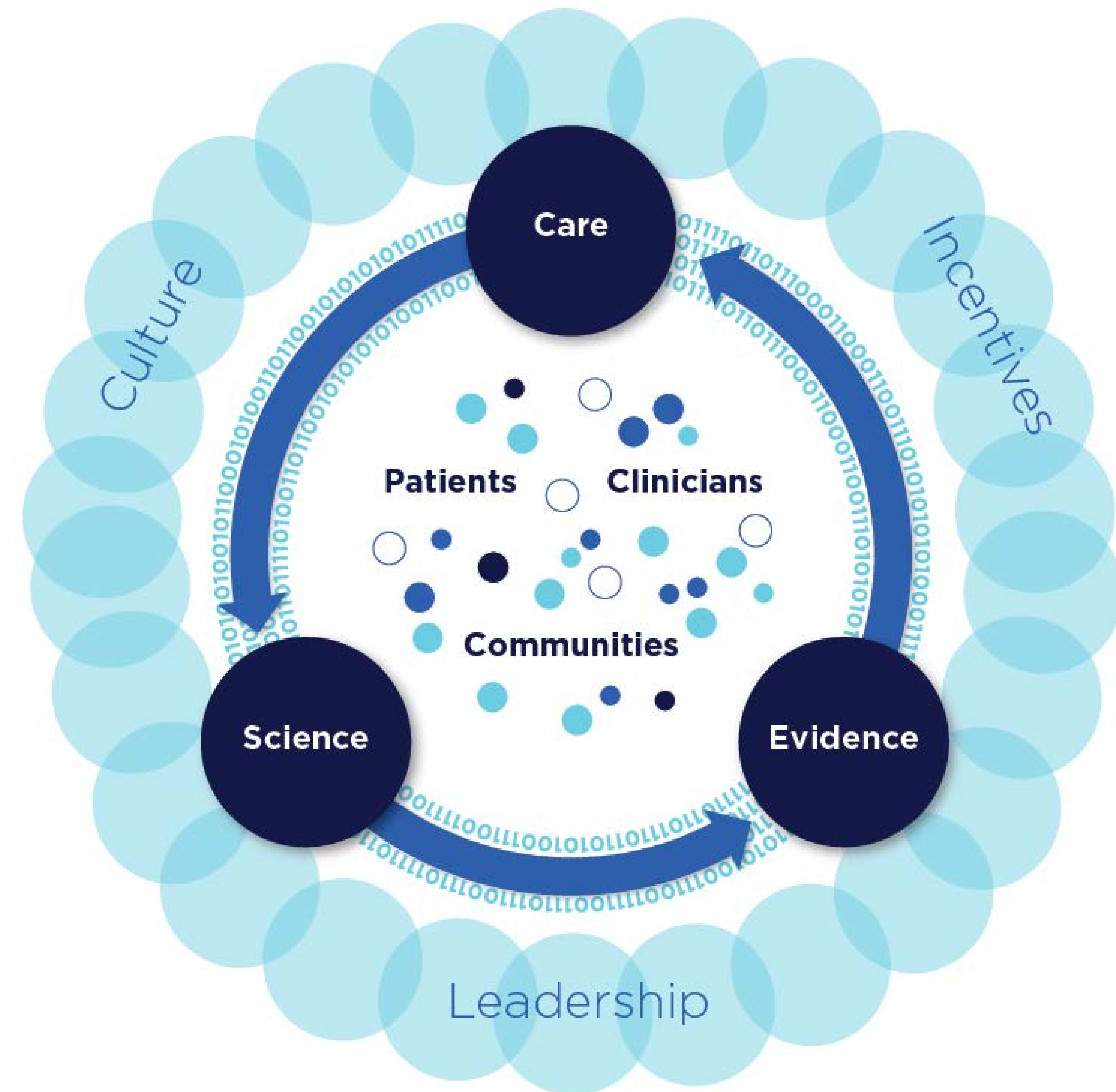
Institute of Medicine: Crossing the Quality Chasm: A New Health System for the 21st Century
Washington, DC, National Academy Press, 2001

Learning Healthcare System

"One in which knowledge generation is so embedded into the core of the practice of medicine that it is a natural outgrowth and product of the healthcare delivery process and leads to continual improvement in care."

To succeed as learning health systems, a spirit of continuous learning and knowledge translation should infuse and inform patient care, creating synergies between clinical, research, and educational endeavors.

Smith MD, et al, for the Committee on the Learning Health Care System in America
Best Care at Lower Cost: The Path to Continuously Learning Health Care in America.
National Academy of Medicine, 2013. National Academy Press, Washington DC



Continuously Learning Health Care System

Smith MD, et al, for the Committee on the Learning Health Care System in America

Best Care at Lower Cost: The Path to Continuously Learning Health Care in America. National Academy of Medicine 2013 National Academy Press, Washington DC

www.nap.edu/catalog.php?record_id=13444

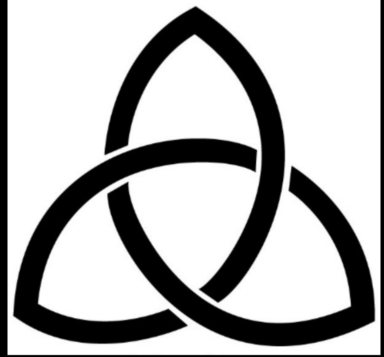
Intensive Care Unit
Learning Healthcare Environment

Best Practice
Clinical Care

Clinical
Research

Interdisciplinary
Education

Professionalism



ICU Learning Healthcare Environment

Foundation of Professionalism

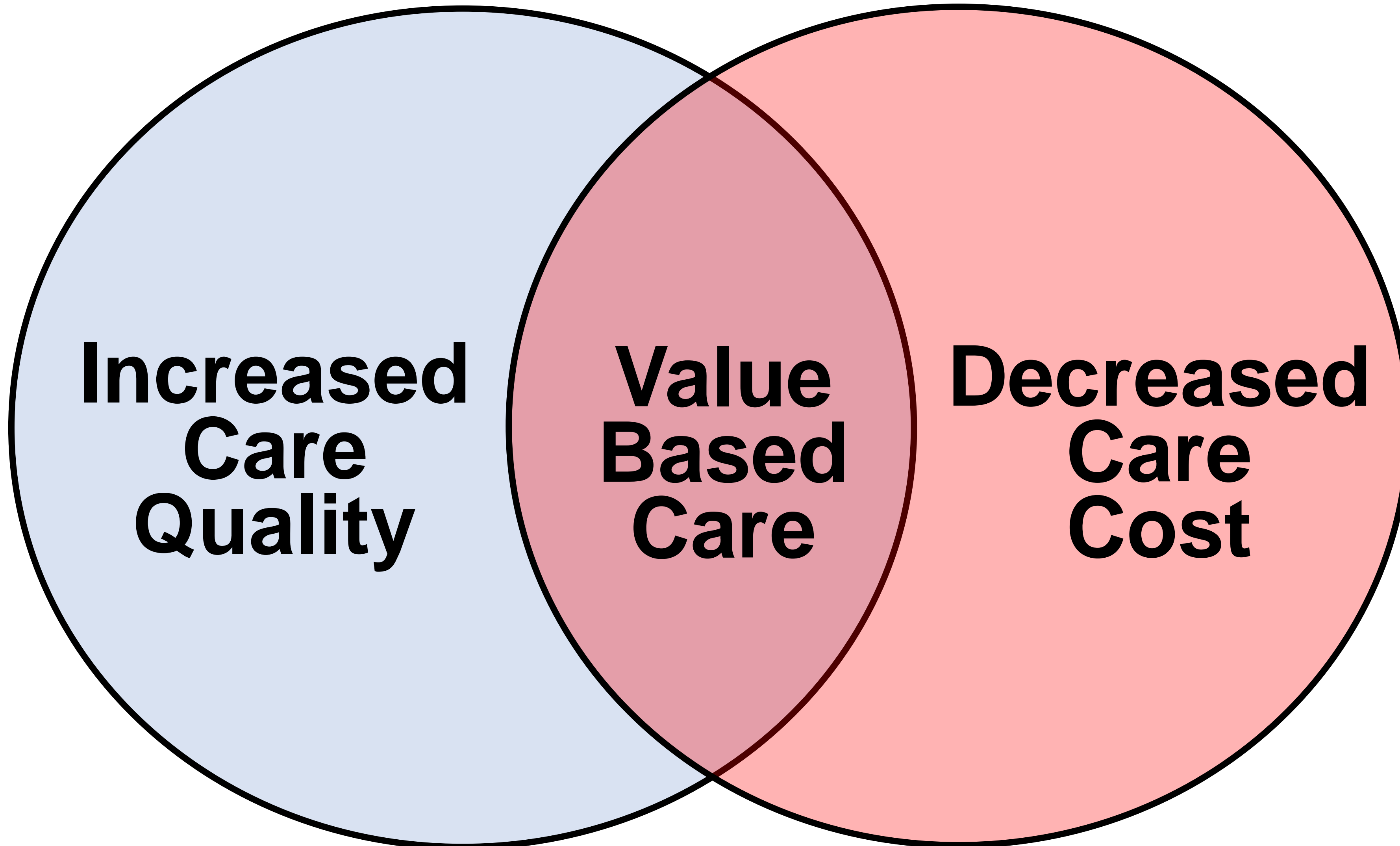
Professionalism in Critical Care

- Accountability
  - → Practicing value-based care
  - → Demanding a culture of safety

- Respect
  - → Embracing inclusion, diversity

- Teamwork
  - → Acknowledging patients and families first
  - → Celebrating an interdisciplinary care team
  - → Including clinical research personnel
  - → Promoting wellness and resiliency

Practicing Value Based Care

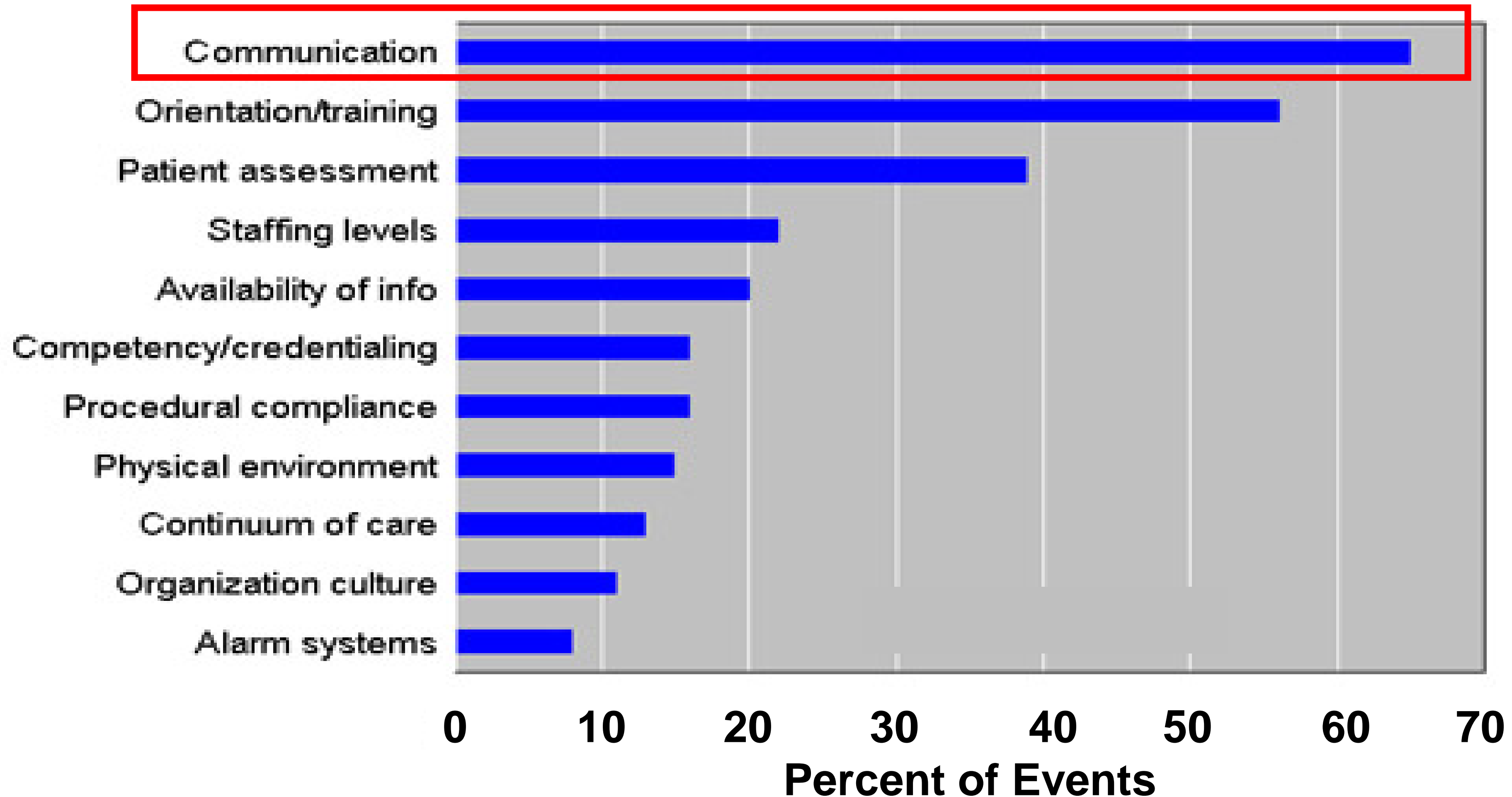


Challenges/Solutions For A Culture of Safety

- ❖ No scrutiny of performance
  - Rx → being accountable
- ❖ Excessive autonomy of caretakers
  - Rx → practicing clinical standard work
- ❖ Craftsman attitude
  - Rx → engaging multidisciplinary teams
- ❖ Focus on the individual
  - Rx → focusing on systems
- ❖ Invisibility of risk
  - Rx → anticipating unintended consequences

Leape L, Berwick D. Five years after To Err is Human. What have we learned? JAMA 2005; 293: 2384-2390.

Breakdowns in Communication Are Involved In the Root Cause of 65% of Sentinel Events



Piazza O, Cersosimo G. J Anaesthesiol Clin Pharmacol. 2015;31(3):382-3.

Communication Tools

S Situation

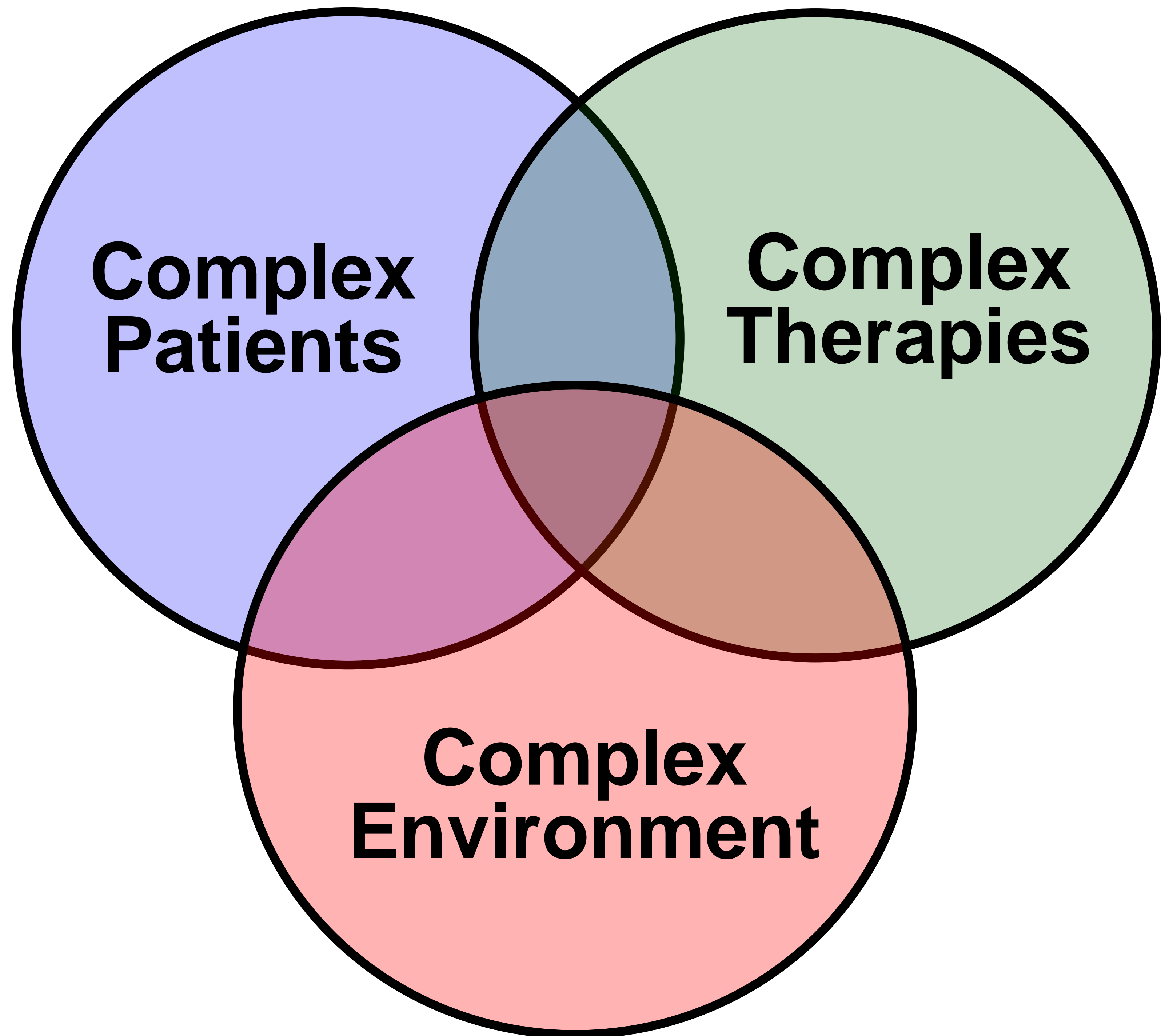
B Background

A Assessment

R Recommendation

Urgencies, emergencies, rounds, huddles, handoffs

Challenges And Mandates For A Culture Of Safety In The Intensive Care Unit



The Case For A Diverse Healthcare Workforce

- Advancing cultural competency
- Increasing access to high-quality health care services
- Strengthening the medical research agenda
- Ensuring optimal management of the health care system

Racial and ethnic diversity in the educational setting is paramount to a student's ability to effectively live and work in a diverse society.

Cohen JJ, et al. Health Affairs 2002; 21 (5): https://doi.org/10.1377/hlthaff.21.5.90

National Academy of Medicine

Action Collaborative on Clinician Well-Being and Resilience

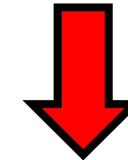
Well-being supports improved patient-clinician relationships, a high-functioning care team, and an engaged and effective workforce.

https://nam.edu/initiatives/clinician-resilience-and-well-being/

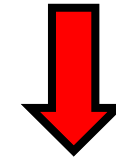
Well Being And Resilience In The ICU

SOCIO-CULTURAL FACTORS
HEALTH CARE ROLE
PERSONAL FACTORS
SKILLS AND ABILITIES
LEARNING/PRACTICE ENVIRONMENT
ORGANIZATIONAL FACTORS
REGULATORY, BUSINESS & PAYER ENVIRONMENT
CLINICIAN WELL-BEING
CLINICIAN-PATIENT RELATIONSHIP
PATIENT WELL-BEING

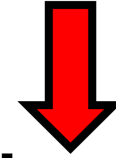
Individual Factors



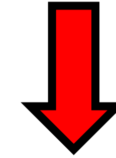
Environmental Factors



Clinician Well Being



Clinician Patient Relationship

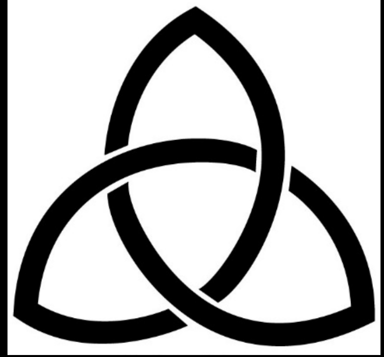


Patient Well Being

https://nam.edu/initiatives/clinician-resilience-and-well-being/

Donovan AL, et al. Crit Care Med 2018; 46 (6): 980-990.

CRITICAL CARE™



ICU Learning Healthcare Environment

Best Practice Clinical Care

Elements of Clinical Standard Work

- Consciously developed and documented
- Evidence based whenever possible
- Consensus derived when evidence absent
- Followed by everyone performing the work
- “Owned” by someone
- Describes a clinical pathway/patient trajectory
- Measureable
- Represents the basis for improvement

Womack JP, Jones, D.T. Lean Thinking. Second Ed. New York: Simon & Schuster, Inc, 2003.

Standardization Facilitates

- Identifying and eliminating waste
- Communicating between providers
- Establishing a baseline for continuous improvement
- Minimizing noise/controlling for nuisance variables

Standardization represents the foundation for iterative improvement and without standardization, measurements of improvement are not possible.

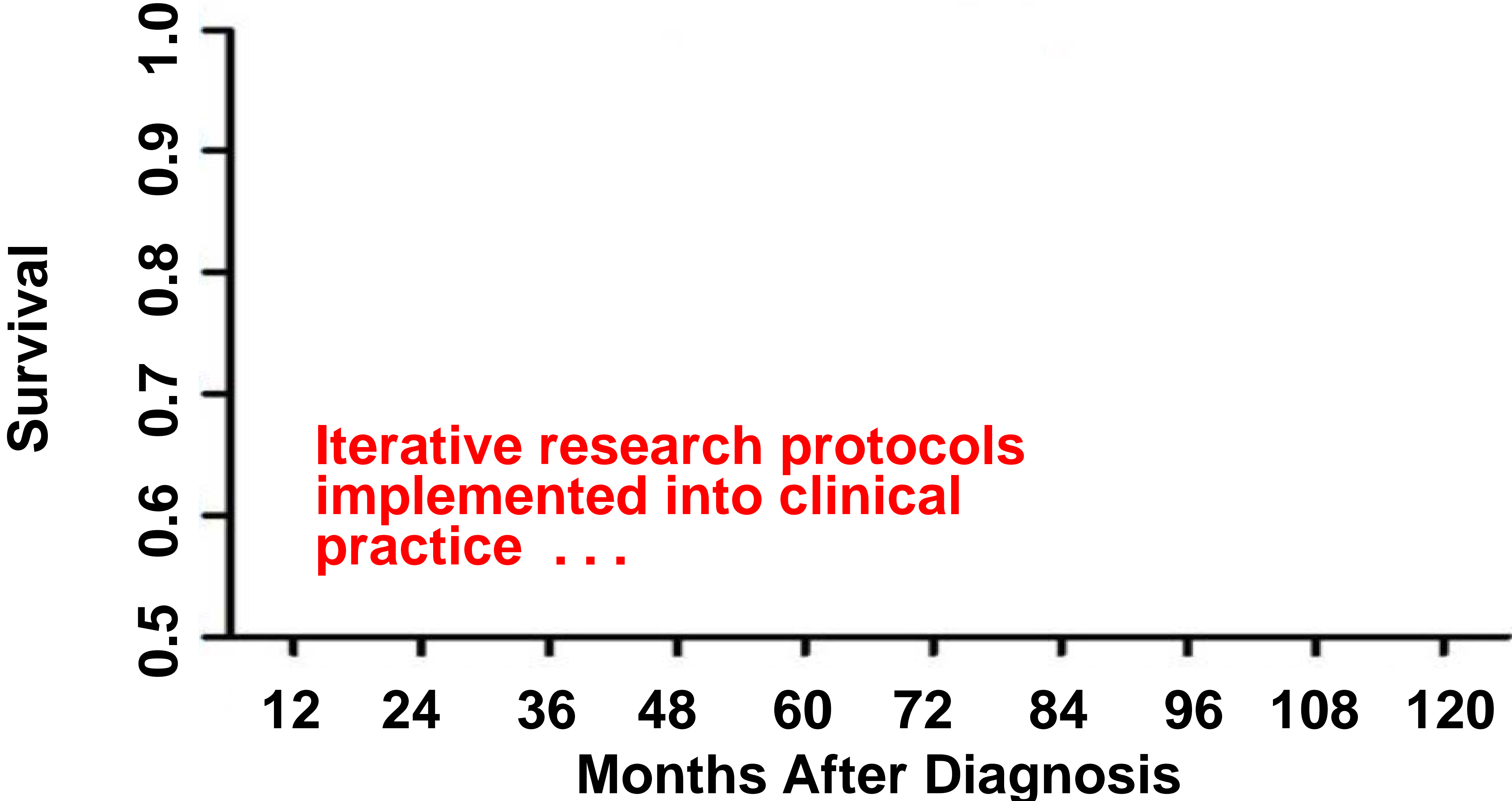
Ohno T. Toyota Production System: Beyond Large-scale Production. Portland, OR. Productivity Press, 1988.

Kaisen: Continuous Process Improvement

PDSA

https://www.leanproduction.com/kaizen.html

Survival For Childhood ALL Over 3 Decades

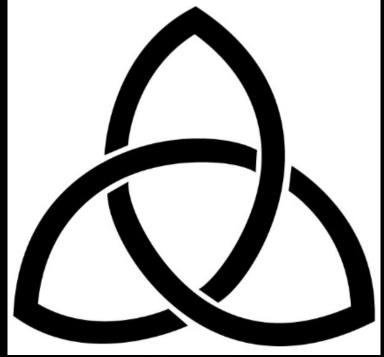


Ma H, et al. Sci Reports 2014; 4: 4227.

Advantages of Protocols For Care Delivery in the PICU

- Avoid errors of omission
- Improve PICU efficiency
- Decrease cost → improve value
- Maintain/improve the standard of care

Meade MO, Ely EW. JAMA 2002; 288 (20): 2601-2603.



ICU Learning Healthcare Environment

Clinical Research

Research

“Research at its best is elegant, clean, provocative, and enlightening, but for the most part is messy, chaotic, and contradictory.

The truth may be out there, but it is rarely easy to find. We engage in research because we question the *status quo*, knowing that tomorrow must be better than the present.”

Fein A.
Sepsis—It ain’t so much what you don’t know that get you into trouble, it’s what you know for sure that just ain’t so—with Apologies to Mark Twain.
Crit Care Med 2011; 39 (5): 1214-1215

Anecdotes is not the plural of evidence

"It is said: medicine is the *art of healing.*

Rather, one should say that medicine is the *science of healing.*

The aim of medicine is to arrive at a cure scientifically and not empirically.

Bernard C. Pensées: Notes Detachées". Bailliere et Fils, 1937

Clinical Research Is Everyone's Future

- ❖ Physician scientist
- ❖ Bedside physician
- ❖ Bedside nurse
- ❖ Research coordinator
- ❖ Patient/family
- ❖ Trainees
- ❖ Allied care professional
- ❖ Research network

What better place than the ICU?

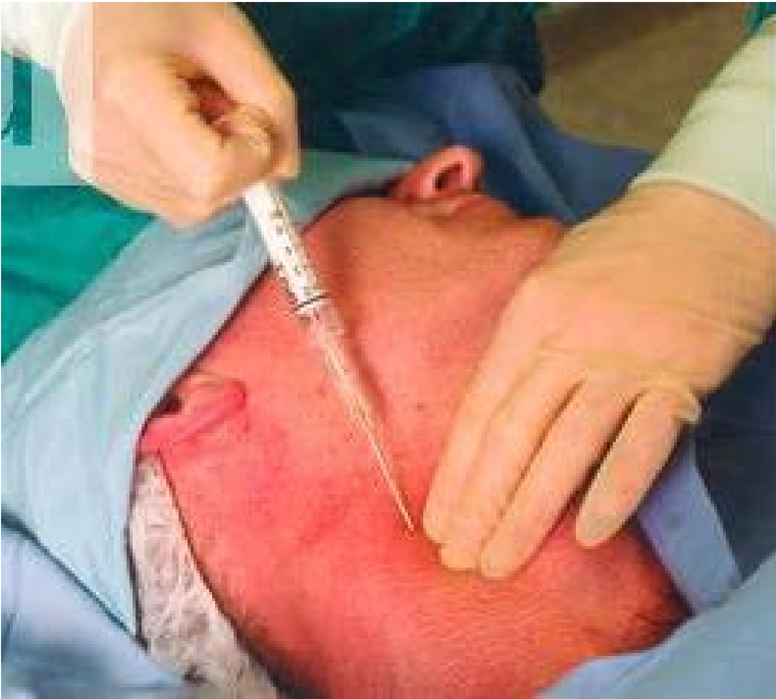
Goldstein JL. J Clin Invest 1986; 78: 848.

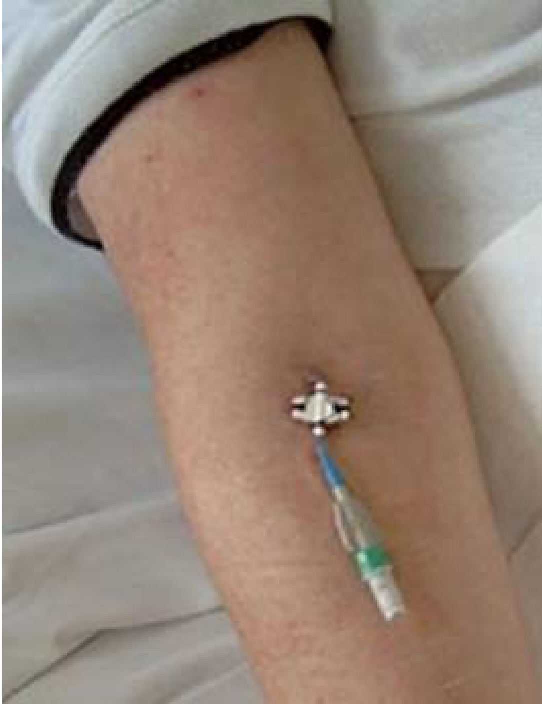
Research In A Learning Healthcare Environment

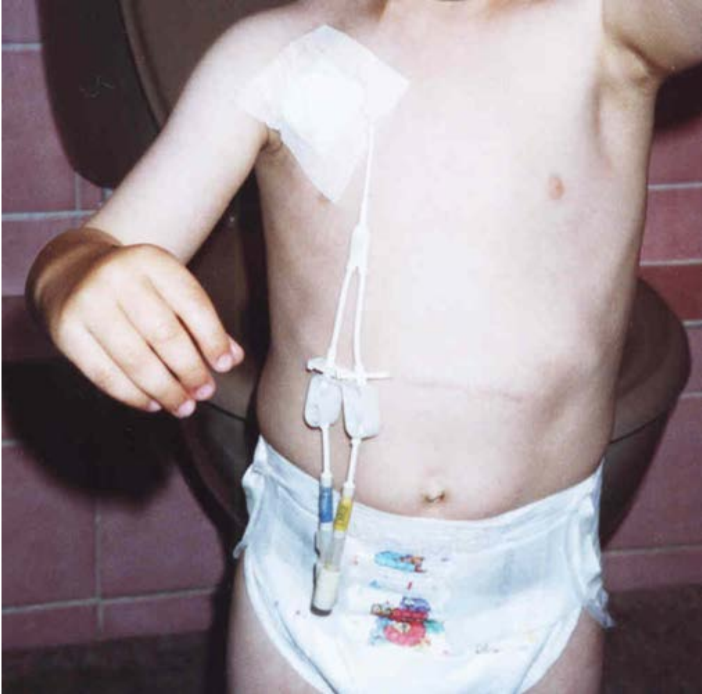
Focused on:

https://humanizandoloscuidadosintensivos.com/en/
humanizing-the-intensive-care-unit-a-matter-of-all-stakeholders/

Central Line Associated Blood Stream Infections





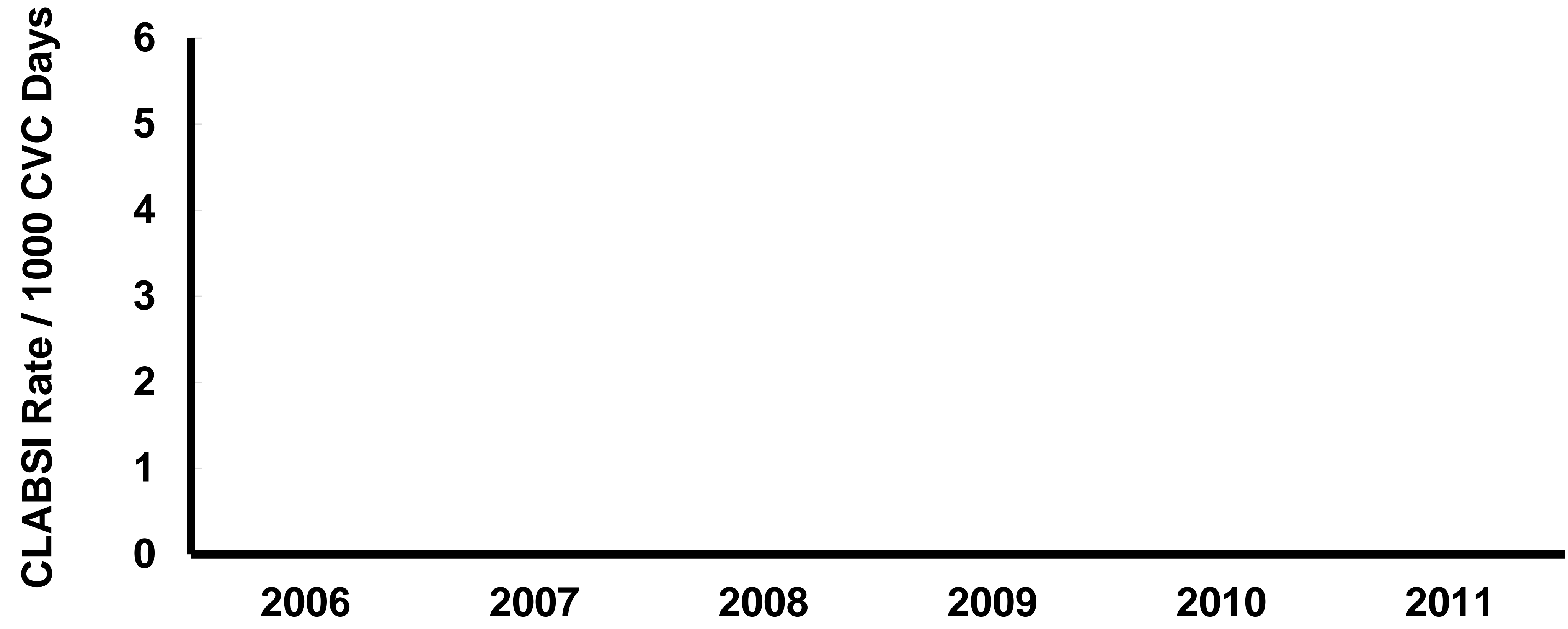


Clinical Consequences of CLABSI

- Increased length of stay
- Need for prolonged antibiotic therapy
- Need for ongoing venous access
- Increased morbidity and mortality
- Increased costs of health care

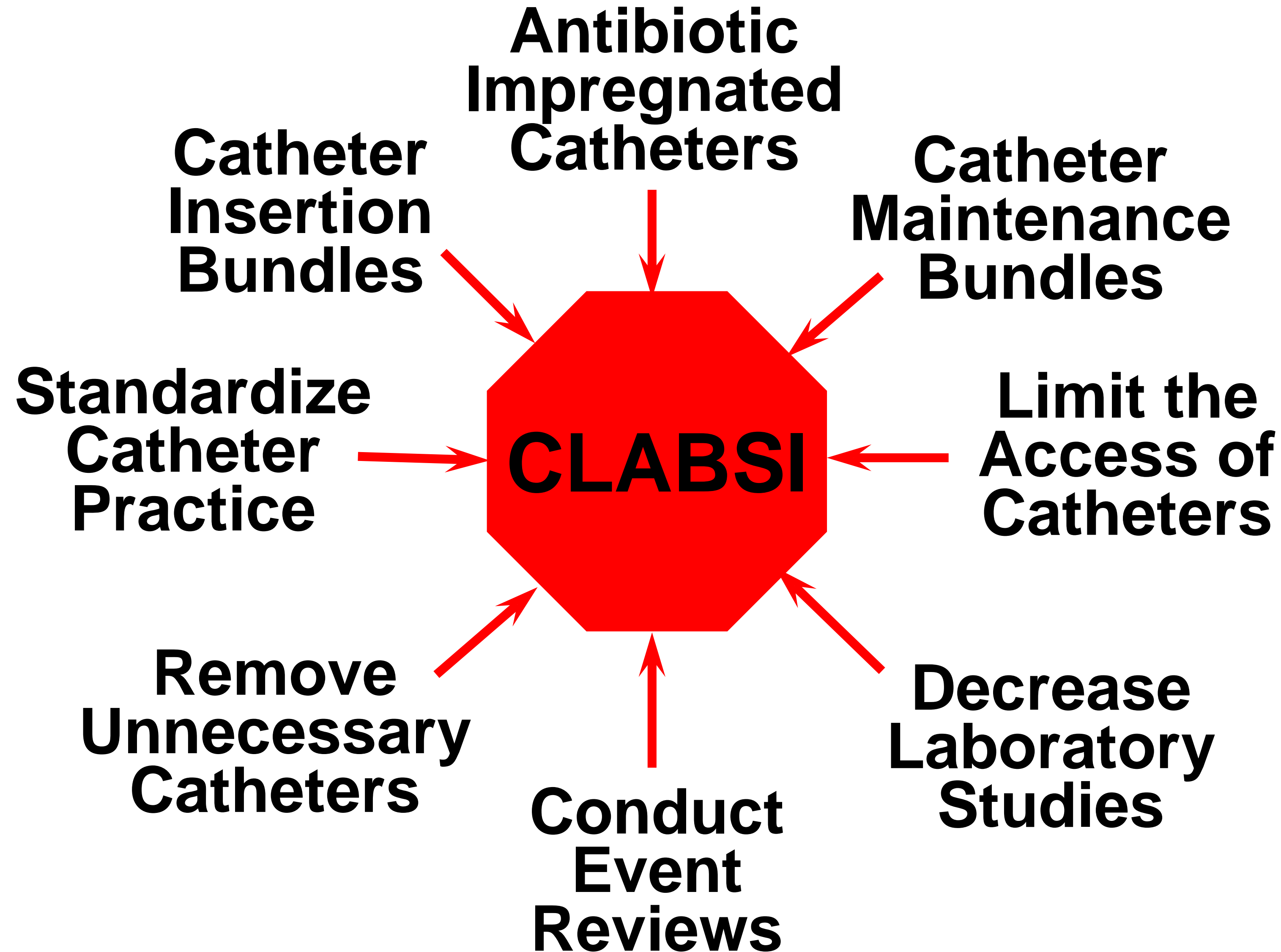
Nowak JE, Brilli RJ, Lake MR, et al.
Reducing catheter-associated bloodstream infections in the pediatric intensive care unit: Business case for quality improvement.
Pediatr Crit Care Med 2010; 11 (5): 579-587.

Central Line Associated Blood Stream Infections: Longitudinal Trends and Compliance With CLABSI Bundle Strategies Among USA PICUs



Edwards JD, et al. Am J Infect Control 2015; 43 (5): 4889-493.

Multiple Strategies to Reduce CABSI in the PICU



Clinical standard work for “usual care” in the ICU

ICULiberation.org

Elements Of The ABCDEF Bundle

A. Always prioritize treatment of pain.

B. Undertake scheduled daily spontaneous breathing trials and spontaneous awaking trials.

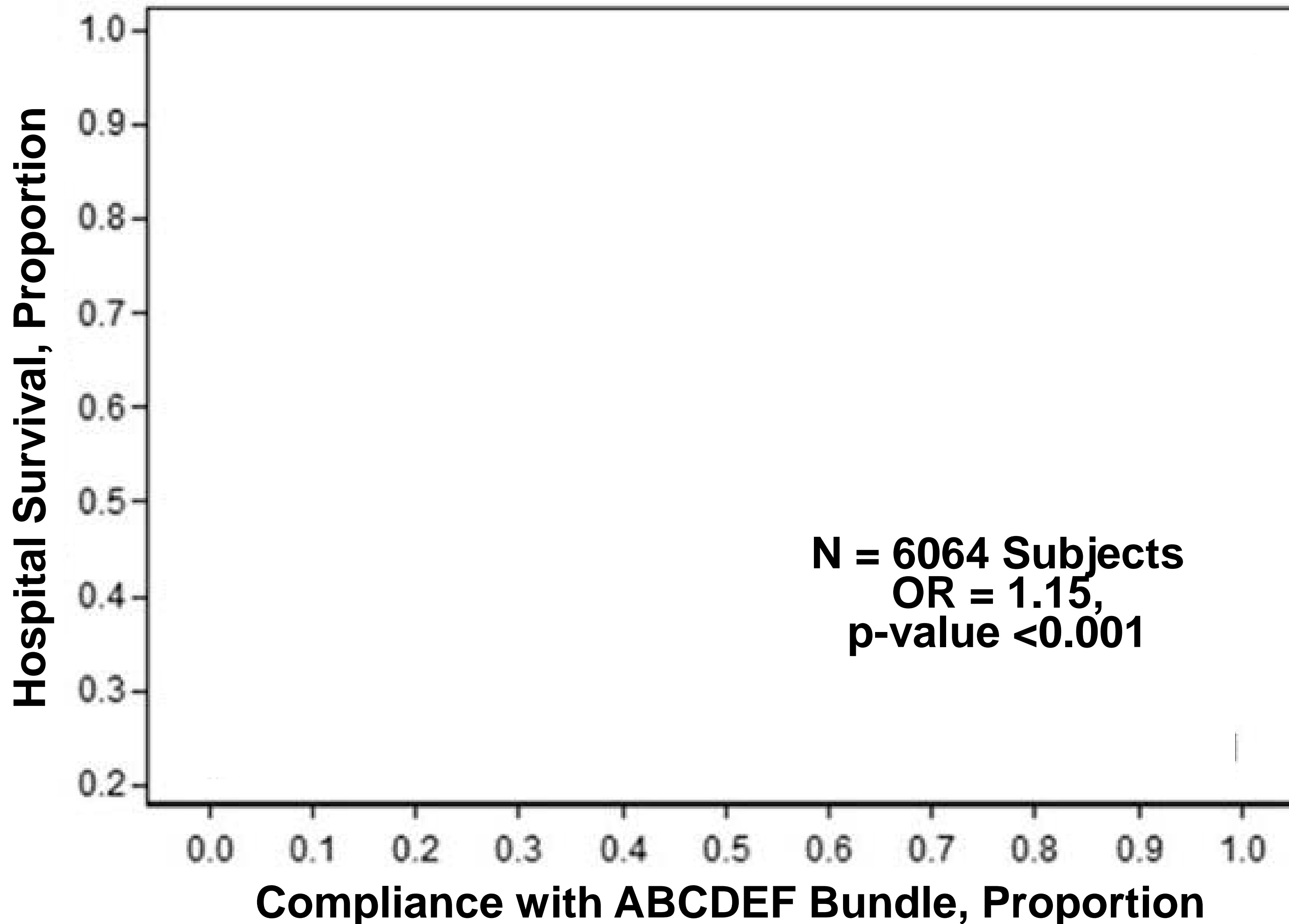
C. Be cognizant of the choice of drug classes utilized for sedation.

D. Monitor for and minimize delirium.

E. Facilitate early mobilization.

F. Empower and engage families in the care plan.

Outcomes With ICU Liberation ABCDEF Bundle

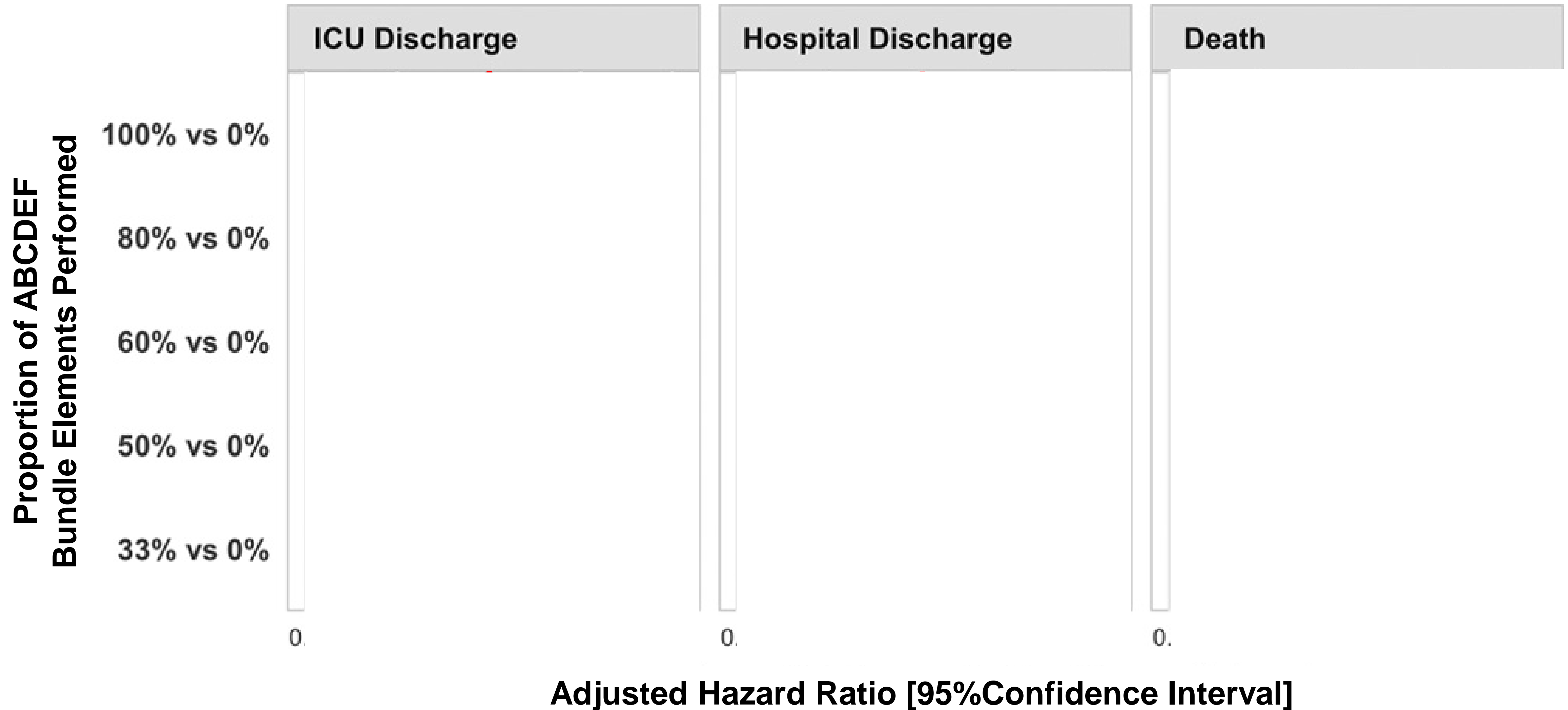


Hospital survival plotted in relation to partial compliance with the ICU Liberation ABCDEF bundle after adjusting for patient age, APACHE III, and proportion of mechanical ventilation days.

Patients experienced more days alive and free of delirium and coma with partial bundle compliance in a dose-response fashion (incident rate ratio, 1.15; 95% CI, 1.09–1.22; $p < 0.001$).

Barnes-Daly MA, et al. Crit Care Med 2017; 45(2): 171-178.

ABCDEF Bundle Compliance and Outcomes



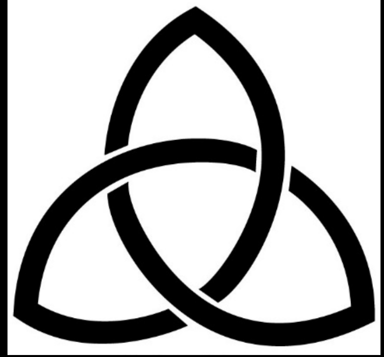
Pun BT, Balas MC, Barnes-Daly MA, et al. Crit Care Med 2019; 47 (1): 1-14.

ICU Liberation Infrastructure for Usual ICU Care

This cohort analysis from the ICU Liberation Collaborative demonstrates that the performance of the ABCDEF bundle results in significant and dose-related improvements in outcomes:

- **Better survival**
- **Duration of mechanical ventilation**
- **Neurological organ dysfunction (i.e., delirium and coma)**
- **Physical restraint use**
- **ICU readmission rates**
- **Discharge disposition of ICU survivors**

Pun BT, Balas MC, Barnes-Daly MA, et al. Crit Care Med 2019; 47 (1): 1-14.



ICU Learning Healthcare Environment

Interdisciplinary Educational Model

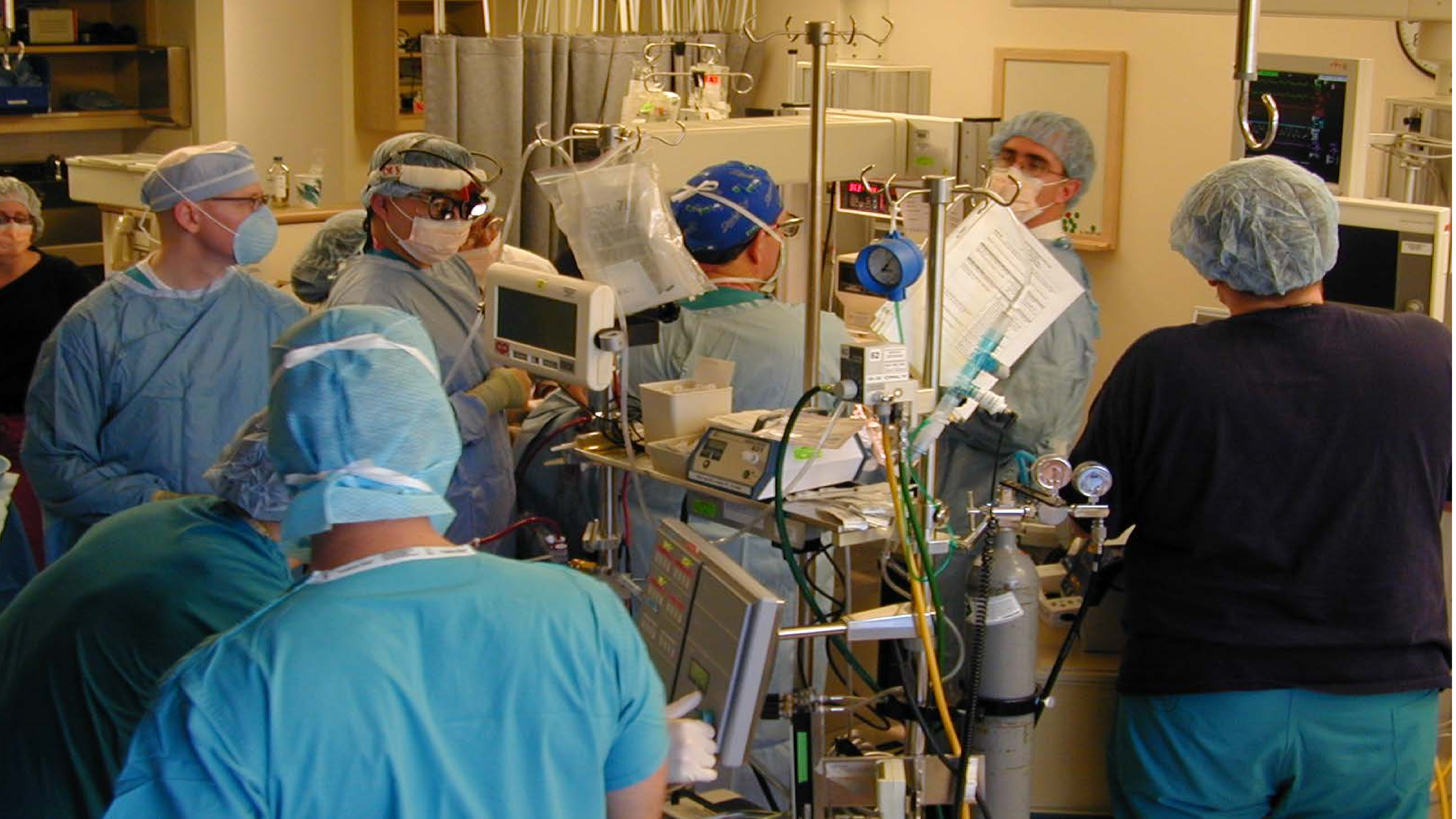
We are all teachers . . .

We are all students . . .

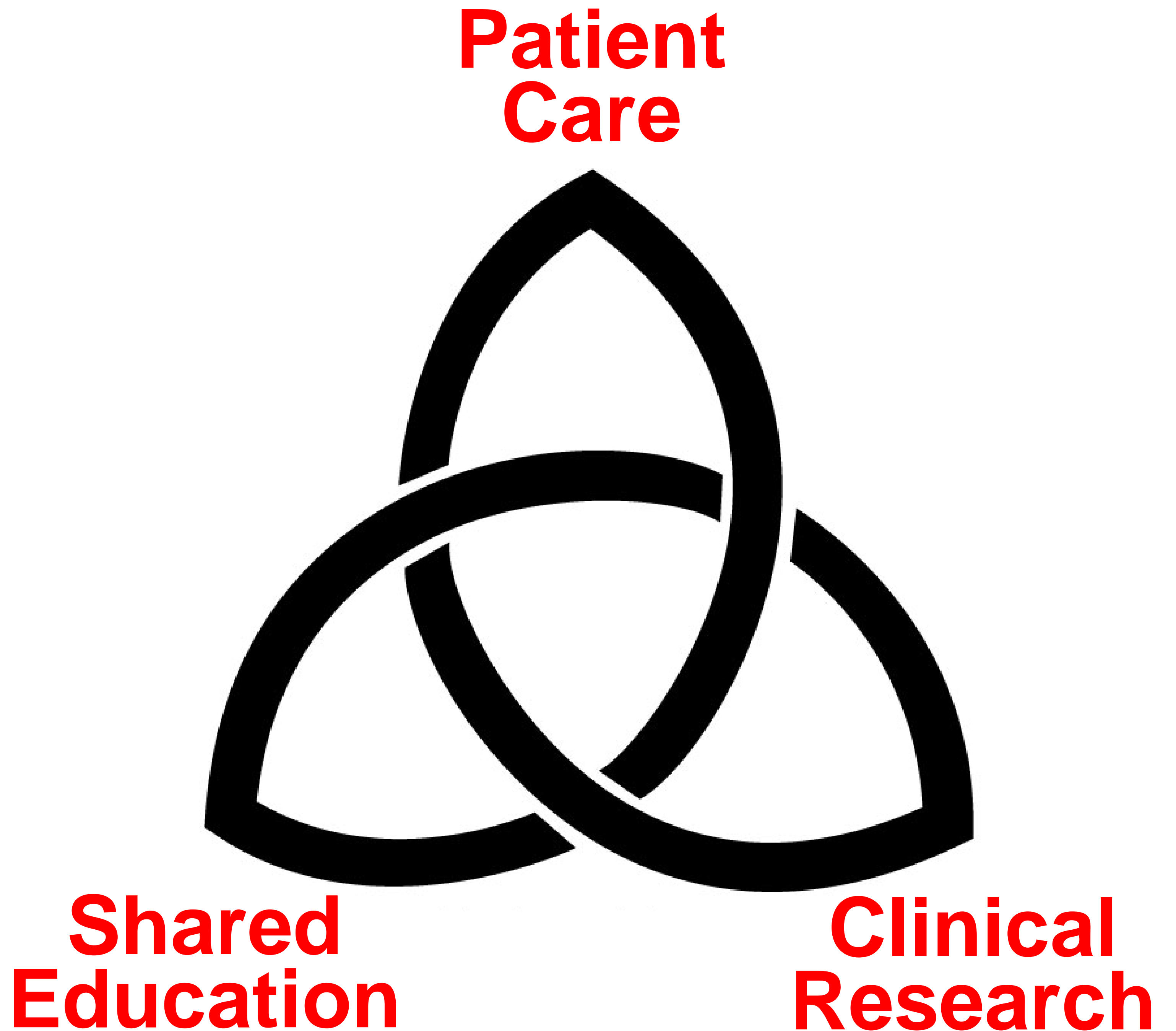
Benefits of an Interdisciplinary Model for Teaching / Education

- Teamwork development
- Realistic simulations
- Other perspectives; tolerance; respect
- Complex communication practice
- Patient and family perspective
- Trust, value, power sharing
- Systems thinking

Walrath JM, et al. Academic Medicine 2006; 81 (8): 744-748.
Orchard CA, et al. Medical Education Online 2005 10:1, 4387, DOI: 10.3402/meo.v10i.4387



The Three Essential Elements Of A Learning Healthcare System



Facilitates identification, delivery of high value patient and family care

Promotes wellness for the community ICU practitioners and patients

Learning Assessment Question #1

- Which of the following provides the foundation for a learning healthcare environment?
  a) Professionalism
  b) Best patient care
  c) Clinical research
  d) Shared education

- Answer A is the correct answer because unless the interdisciplinary team practices professionalism, highlighted by accountability, respect and teamwork, the elements B, C, and D cannot integrate into a learning healthcare environment.

Learning Assessment Question #2

- What group primarily benefits from a learning healthcare environment?
  a) Providers
  b) Researchers
  c) Patients
  d) Everyone

- Answer D is the correct answer because fostering a learning healthcare environment will not only facilitate identification and implementation of best practice to incorporate into clinical standard work to improve patient outcomes, but shared education and clinical research will provide a constructive alternative to the constant stress of patient care, that ultimately will benefit not only care providers, but patients and families as well.

Learning Assessment Question #3

- Which of the following best describes ICU Liberation?
    a) Clinical standard work
    b) CMS mandate
    c) Communication tool
    d) Sleep quality program

- Answer A is the correct answer because ICU Liberation stresses six bundled elements of care for usual care in the ICU. It can be considered a clinical pathway or clinical protocol or clinical standard work. This approach benefits from a large beneficial effect size substantiated in two high quality independent studies, but is currently not mandated by CMS. It is not a communication tool like SBAR, but clinical standard work facilitates communication, because everyone is on the same page about how things are done. Sleep quality is currently not an element of ICU Liberation, but may be in the future.

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