



Failure to Rescue I: Back to the Future



Welcome



Charles Denham, MD

Chairman, TMIT Global

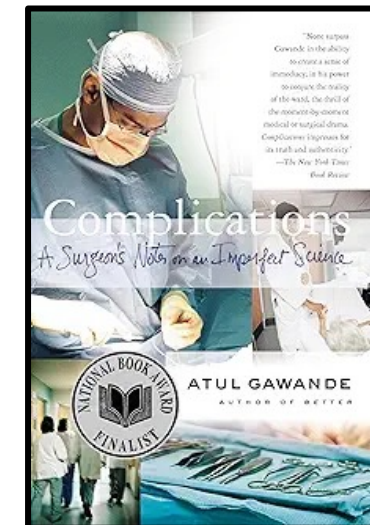
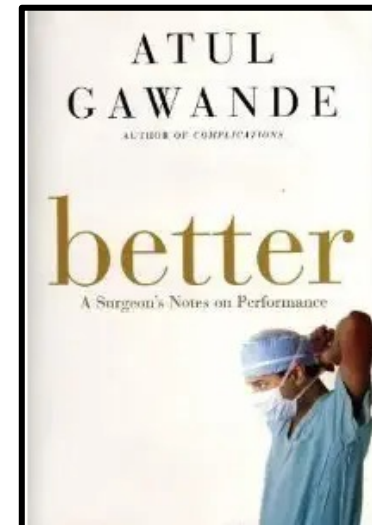
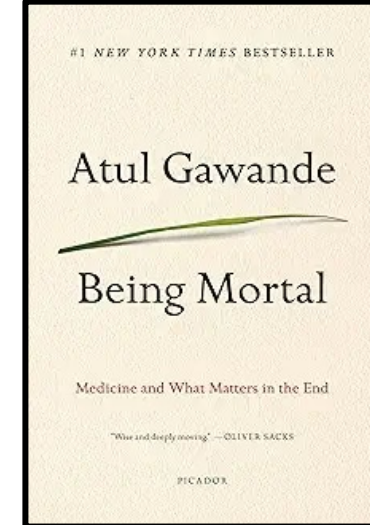
TMIT High Performer Webinar
July 18, 2024

Webinar 218



Atul Gawande MD

**Best Selling Author
Assistant Administrator for Global
Health at the U.S. Agency for
International Development**



“Failure to Rescue”



Hospital and patient characteristics associated with death after surgery. A study of adverse occurrence and failure to rescue

[J H Silber¹](#), [S V Williams](#), [H Krakauer](#), [J S Schwartz](#)

Med Care 1992 July 30

Jeffrey Silber, MD, PhD

Professor, Pediatrics, Perelman School of Medicine

Professor, Health Care Management,

Wharton School

Nancy Abramson Wolfson Endowed Chair

in Health Services Research,

Children's Hospital of Philadelphia

**Director, Center for Outcomes Research, Children's
Hospital of Philadelphia**

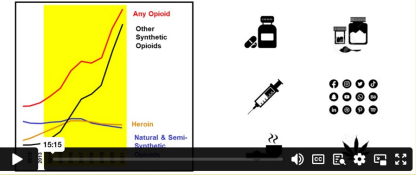

TMIT Research Test Bed



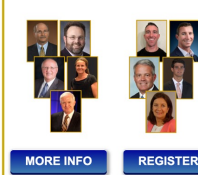
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The Opioid Crisis: Survive and Thrive Guide



Failure to Rescue Back to the Future



Surfing the Healthcare Tsunami Hospital Leaders Toolbox

The **Surfing the Healthcare Tsunami Hospital Leaders Toolbox** has been released online! Go deeper into the subject matter of the documentary by exploring the 5 Rights of Imaging™, the Boardroom, Racing & Aviation, and much more. [Click here](#) for more details.

[Click here](#) to watch the entire 58-minute documentary online.



Med Tac Bystander Rescue Care Program

Join us at Med Tac Global to learn from our experts how the public can battle failure to rescue of friends and loved ones from the most common emergencies. [Click Here](#)



High Performance 5 Rights Collaboratives

We are undertaking high impact research activities in the fields of Imaging of Adults and Children, Pain Care, Back Care, Testing, and Surgery to convert Waste to Value and Harm to Healing. For more information on each collaborative, click [Imaging, Imaging Children, Back, Pain, Testing, Cancer, or Surgery](#).

Trademarks and Tools

The **Information Power Grid™** is a repository and continuously updated decision support system that provides network partners and customers with the information they need to make good decisions. Information obtained through TMIT National Research Test Bed surveys, expert presentations, interviews, and data pertaining to specific topics allow HCC Global and its affiliates to continuously improve the data and evidence that its network partners and customers use for optimal decision-making. Such affiliates include TMIT Global and CareUniversity®. Such projects include the Med Tac Certificate advanced first aid program and communities of practice including a Threat Safety R&D Community. Information Power Grid™ is a registered trademark of HCC Global.

External Sources

AHRQ Pt. Safety Network (PSNet)
 Assoc. for Prof. In Infection Control
 American Hospital Association
 AHRQ
 Centers for Medicare & Medicaid Services
 WHO Collaborating Centre for Patient Safety Solutions
 Governance Institute
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High Performer Webinar

July 18, 2024

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Failure to Rescue Back to the Future

Session Overview

Much of the institutional memory of best practices in Failure to Rescue (FTR) patients in pre-hospitalization, hospital, and post-discharge has been lost. Natural attrition, lack of investment in patient safety, and the impact of the COVID pandemic have led to the opportunity to update our knowledge about historical innovations such as Rapid Response Teams and the process, technology, device, and pharmaceutical examples that can refresh our focus.

Join us to address:

- Frequency & Severity of Failure to Rescue (FTR): We will summarize evidence that demands action.
- Readiness: Learn how to maintain a state of readiness for FTR Scenarios.
- Response: Learn about what we know about responding to common FTR Scenarios.
- Rescue: Learn about what is known about FTR best practices.
- Recovery: Learn about what we know about recovering from harm FTR scenarios.
- Resilience: Learn how all stakeholders can "harden the target" of organizations for FTR scenarios.

We offer these online webinars at no cost to our participants.

Webinar Video, and Downloads

The webinar video will be available within five (5) business days after the webinar.

Speaker Slide Set:

The slides will be posted here before the webinar begins.

Learning Objectives:

- Awareness: Participants will become aware of the past safety successes in failure to rescue and those we can implement in the future.
- Accountability: Participants will understand who may be accountable to implement innovations targeting failure to rescue.
- Ability: Participants will learn about process, technology, device, and pharmaceutical examples that illustrate evaluation of innovations targeting failure to rescue.
- Action: Participants will learn about line-of-sight examples that can be implemented to tackle failure to rescue scenarios.

CE Participation Documentation

TMIT Global, approved by the California Board of Registered Nursing, Provider Number 15996, will be issuing 1.5 contact hours for this webinar. TMIT Global is only providing nursing credit at this time.

To request a Participation Document, please [click here](#).

Session Speakers and Panelists



C. R. Denham, II, MD

[BIO](#)



John Nance

[BIO](#)



Gregory Botz

[BIO](#)



William Adcox

[BIO](#)



Perry Bechtle III

[BIO](#)



Perry Bechtle

[BIO](#)



Christopher Coy

[BIO](#)



David Coy

[BIO](#)



Heather Foster

[BIO](#)



Jennifer Dingman

[BIO](#)

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TMIT Global 

Voice of Patient and Family



Jennifer Dingman

Founder, Persons United Limiting
Substandard and Errors in Healthcare
(PULSE), Colorado Division
Co-founder, PULSE American Division
TMIT Patient Advocate Team Member
Pueblo, CO

Speakers & Reactors on Failure to Rescue



Jennifer Dingman



Randy Styner



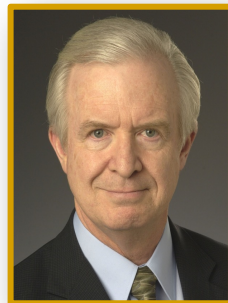
Paola Yépez González, MD



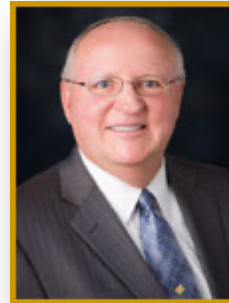
Heather Foster RN



Perry Bechtle II DO



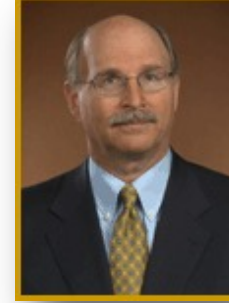
John Nance JD



Chief William Adcox



Gregory Botz MD



Charles Denham MD

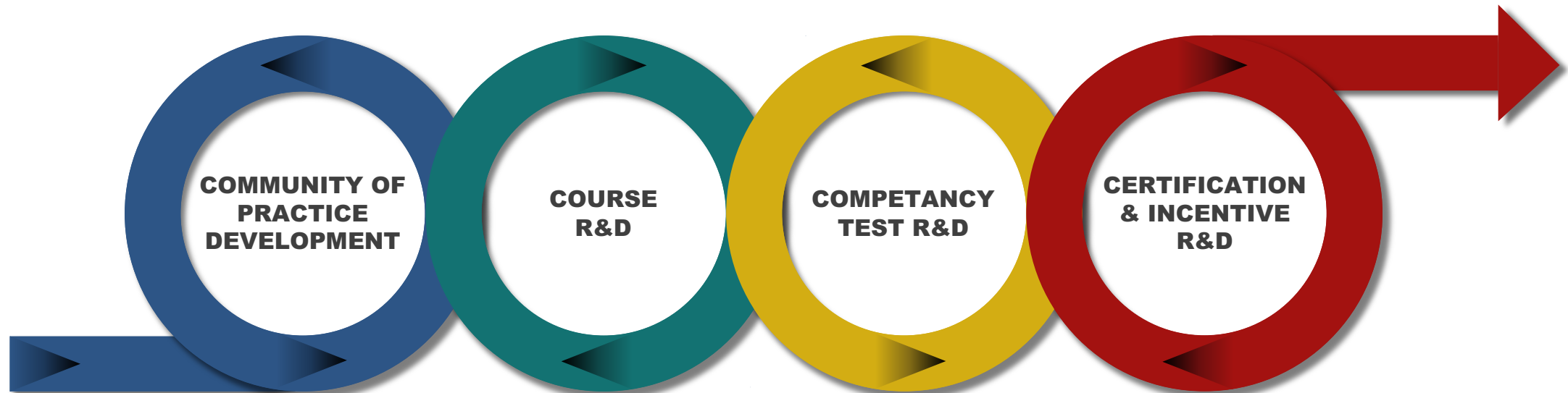


**TMIT Global
Research Test Bed**



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Certificates for Med Tac Program



100+years

AMERICAN COLLEGE OF SURGEONS
*Inspiring Quality:
Highest Standards, Better Outcomes*



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TMIT Global Research Test Bed

3,100 Hospitals in 3,000 Communities

500 Subject Matter Expert Pool Developed over 39 Years



Turn the Science into Safety™

High Impact Care Hazards to Patients, Students, Educators, Employees, and Visitors



Cardiac Arrest

Choking & Drowning

Opioid Overdose

Anaphylaxis

Major Trauma

Infections

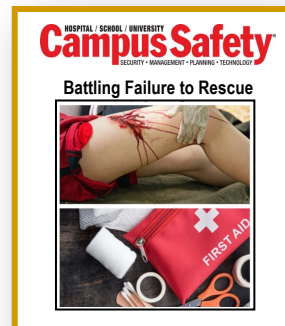
Transportation Accidents

Bullying

Active Shooter
Healthcare Article



Rapid Response
Teams Article



AED & Bleeding
Control Gear Article



Family Safety
Plan Article



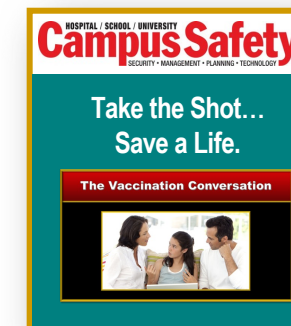
Med Tac
Story Article



A **Medical-Tactical Approach** undertaken by clinical and non-clinical people can have enormous impact on loss of life and harm from very common hazards:

- **High Impact Care Hazards** are frequent, severe, preventable, and measurable.
- **Lifeline Behaviors** undertaken by anyone can save lives.

Take the Shot...
Save a Life



Coronavirus Community of Practice

MED + TAC **Coronavirus Care Community of Practice** **Bystander Rescue Care CareUniversity Series**

John Nance JD, Dr. Gregory Bott, Chief William Adcox, Heather Foster, Dr. Charles Denham, Dr. Casey Clements, Beth Ulfen, Dr. McDowell, Dennis Guaid, Preston Head II, Fred Halse, Dr. Steve Swensen, Tyler Sant, Avanie Pettit, Dr. Mary Foley, Bob Chapman, Perry Bechtel II, Becky Martins, Betsy Denham, Charlie Denham II, Dr. C. Peabody, Dr. Chris Fox, Randy Snyder, Tom Renner, David Beahk, Ann Rhoades, Nancy Conrad, Dr. Chopra, John Little, Debbie Medina

MED + TAC **Coronavirus Care Community of Practice** **Bystander Rescue Care CareUniversity Series**

Contributions Through Segments of our *Discovery Channel* Documentaries

Chasing Zero, Surfing the Healthcare Tsunami, 2:53 3 Minutes & Counting Bystanders Care!

Family Rescue R&D

The 5 R's of Safety

PRINCETON UNIVERSITY, HARVARD UNIVERSITY, Stanford University, NYU, Tufts University, Yale, UCI, UCLA, UF UNIVERSITY of FLORIDA, UCSB, UC San Diego, Berkeley, USC University of Southern California, CHAPMAN UNIVERSITY

Coronavirus Care Results

- Established National Community of Practice
- Launched Multi-center 1,000 Family Household R&D Study
- 60 Ninety Minute Broadcasts and Online Programs
- 30 *Survive & Thrive Family Training* Programs
- Produced a National Campus Safety Summit
- Published Multiple Articles Providing Guidance
- Established Student Led College & Alumni Programs
- Delivered Free Continuing Education for Caregivers
- Short Videos for Mobile Viewing
- Rapid Response to Family Gatherings
- National Vaccine Hesitancy Student Outreach
- Smart Phone Mobile Applications

Survive & Thrive Guide™ Program Road Map

Survive & Thrive Guide Series: Creating Home Safety, Keeping Our Kids Safe, Creating Your Family Safety Plan, Safety Plan Templates for Everyone, Providing Care at Home, Updating Your Family Safety Plan, Emergency Rescue Skills, What To Do - They're in the ICU, Vaccines, Variants, and Victory, Long Haulers & Severe COVID Recovery, 10 Best Practices for Reopening, The New Normal & The 4 P's

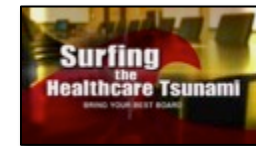
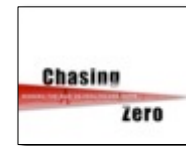
Survive & Thrive Guide™ Program Road Map

Dealing with Delta: The Critical FAQs, Essential Worker Toolbox, Special Care for Special Populations, Safer Holidays & Safer Families, Omicron and Back to Work, Bystander Rescue Care & Omicron, Testing to Navigate Care, Our Stressed Emergency Safety Net, The Next Normal, 1,000 Household COVID Study, Faith-based COVID Leadership, Fraud in the COVID Ecosystem

If you wish to follow us on Twitter,
go to: <http://twitter.com/TMIT1>
or use **#safetyleaders** hashtag



Also, go to:
www.facebook.com/SafetyLeaders
and related sites





Our Purpose, Mission, and Values



Our Purpose:

We will measure our success by how we protect and enrich **the lives of families...patients AND caregivers.**

EMERGING THREATS
COMMUNITY OF PRACTICE

Our Mission:

To accelerate performance solutions that **save lives, save money, and create value** in the communities we serve and ventures we undertake.

CAREUNIVERSITY®

Our ICARE Values:

Integrity, **C**ompassion, **A**ccountability, **R**eliability, and **E**ntrepreneurship.

Disclosure Statement

The following panelists certify that unless otherwise noted below, each presenter provided full disclosure information; does not intend to discuss an unapproved/investigative use of a commercial product/device; and has no significant financial relationship(s) to disclose. If unapproved uses of products are discussed, presenters are expected to disclose this to participants. None of the participants have any relationship medication or device companies discussed in their presentations.

Randy Styner has nothing to disclose

John Nance has nothing to disclose

David Grinsfelder has nothing to disclose

Chief William Adcox has nothing to disclose

Dr. Botz has nothing to disclose

Perry Bechtle has nothing to disclose

Perry Bechtle DO

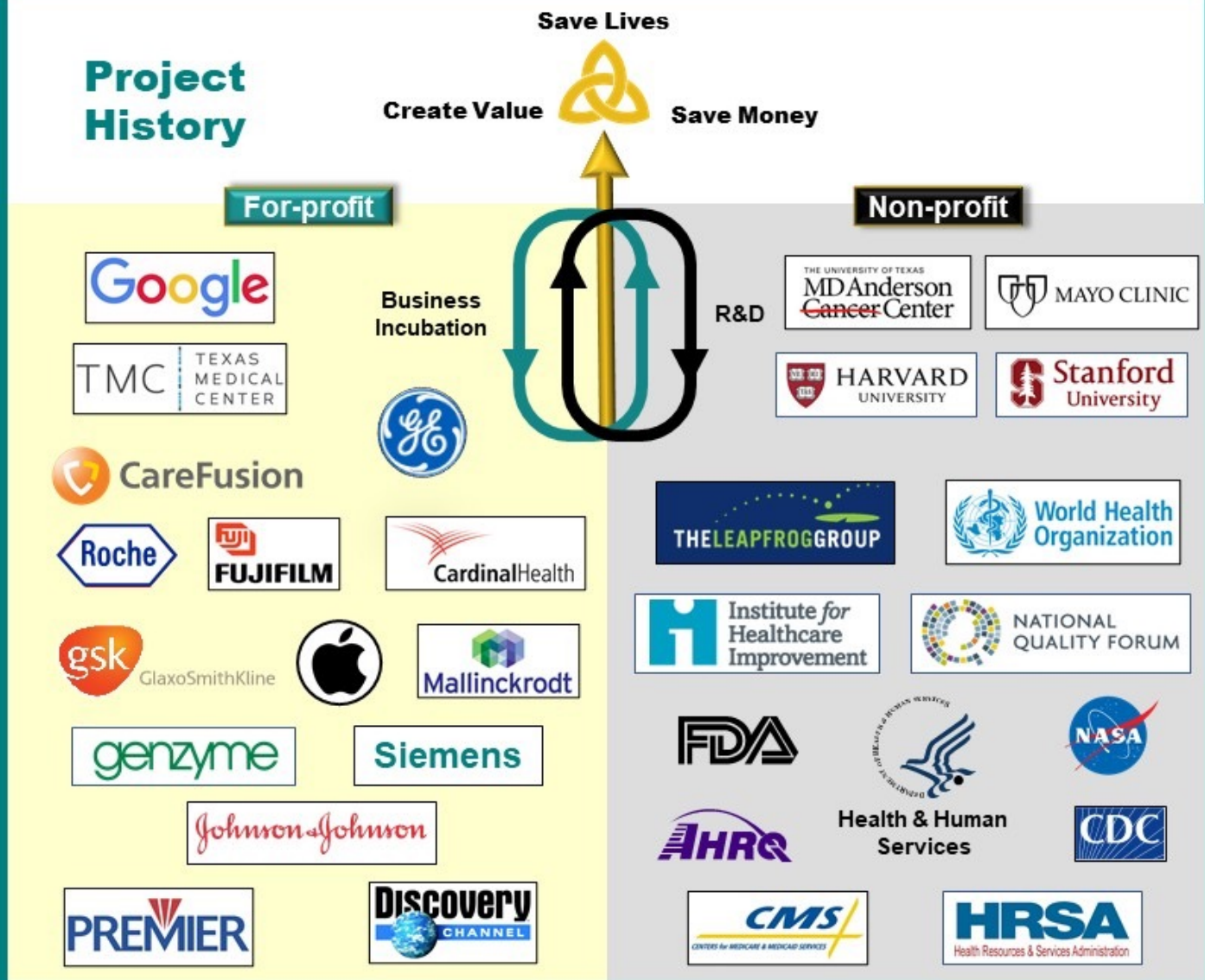
Heather Foster RN

Jeni Dingman has nothing to disclose

Dr Gonzales has nothing to disclose

Charles Denham, MD, is the Chairman of TMIT; a former TMIT education grantee of CareFusion and AORN with co-production by Discovery Channel for *Chasing Zero* documentary and Toolbox including models; and an education grantee of GE with co-production by Discovery Channel for *Surfing the Healthcare Tsunami* documentary and Toolbox, including models. HCC is a former contractor for GE and CareFusion, and a former contractor with Siemens and Nanosonics, which produces a sterilization device, Trophon. HCC is a former contractor with Senior Care Centers. HCC is a former contractor for ByoPlanet, a producer of sanitation devices for multiple industries. He is currently working on failure to rescue projects that may include working with pharmaceutical and device companies such as InflaRX. His current area of research is in threat management to institutions including conflict of interest, healthcare fraud, and continuing professional education and consumer education including bystander care. Dr. Denham has been a collaborator with the late Professor Christensen at Harvard Business School.

Project History



Emerging Threats

Community of Practice



0:00:02



0:09:08



Global Patient Safety Forum

Global Patient Safety Forum

The GPSF is a convening alliance with a mission to save lives, save money, and build value in the community it serves. The Forum was expressly founded to make available important content that the collaborators want to share more broadly. This website is not intended to compete with any other initiative and will meet its objectives if collaborators and those interested in the topics share the information with their communities. There are no financial requirements of users of the site. Certain communities are private in order to protect those we serve and those who serve. Those we serve are patients and their families. Those who serve are the caregivers, administrators, researchers, educators, and staff in the healthcare industry.

Global Innovators Network

We are a global network of leaders from academia, industry, NGOs, philanthropy, and faith-based organizations who are best practices in leadership of innovation. Spawned from a network of innovators in healthcare and patient safety, our work has multiple sectors with a focus on mentorship and development. There is no specific commercial purpose of this website. There is no financial support of any type from the healthcare industry or communities of practice served here. The website is entirely free.

Featured
Leaders

Global Webinars
& Summits

Patient Safety
Community Of Practice

Med Tac Bystander
Care Program

Emerging Threats
Community Of Practice

CareUniversity &
Continuing Education



Thomas Zeltner, MD
Expert leader in Public Health
Former Special Envoy of the WHO
Former Secretary of State for Health
Swiss Federal Office of Public Health, Bern, Switzerland

[Read bio...](#)

[View video clip](#)



The private community of practice addresses a number of sensitive topics and subject matter that should not be made public for security reasons.

- **Brand Damage** from Outside, Inside, and or Mixed Outside-Inside Threats including cyberterrorism.
- **Workplace Violence** including physical, verbal, sexual, or emotional harassment, bullying or harm to caregivers, staff, students, or patients.
- **Active Shooter, Violent Intruder, and Deadly Force Incidents** including events causing physical harm to staff, caregivers, students, or patients.
- **Domestic Terrorism** such as organized attacks using chemical, biologic, radiologic, nuclear, and explosive weapons as well as weaponization of transportation & vehicles (CBRNET)
- **Violent Acts Against Leadership** where administrative, clinical, or governance leaders are specifically targeted by insiders or outsiders.
- **Intentional Harm of Patients** by caregivers who commit harmful acts against patients with or without enablers who do not report such harm.
- **Unintentional Patient Harm** through errors of omission from systems failures such as those identified by mortality reviews including diagnostic errors or NQF Never Events.
- **Failure to Rescue** in pre-hospital, hospital, and post-hospital continuity of care.
- **Preventable Death or Severe Injury** of staff or students on or off campus or site.
- **Financial Harm** to patient families by aggressive payment policies and actions.
- **Hospital Optimization & Flow** with overcrowding & boarding/transfer issues.
- **Readiness for Epidemics** including preparedness for volume care need surges.
- **Sexual Misconduct** including sexual harassment, abuse of power, and or harm to caregivers, staff, students, or patients.
- **Racial and or Sexual Discrimination** against those we serve including patients and their families and or those who serve in the organization.

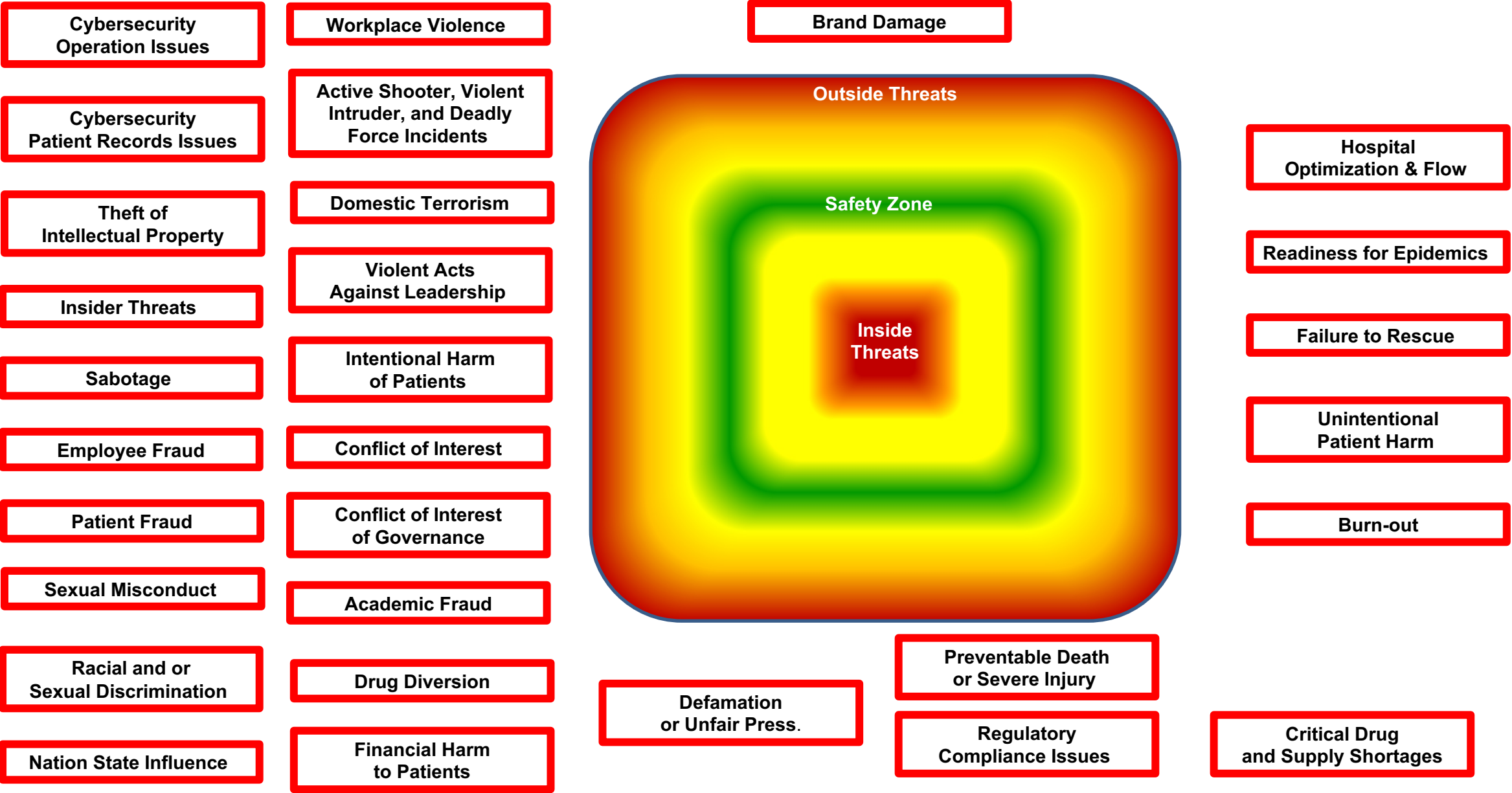
- **Cybersecurity Patient Records Issues** including breach, theft, and contamination of medical records leading to patient and caregiver harm.
- **Cybersecurity Operation Issues** including breach, theft, and contamination of operational records, invasion of data systems, and ransom crimes.
- **Insider Threats** of intentional clinical, operational, or financial harm.
- **Theft of Intellectual Property** by insiders, outsiders, or nation-states.
- **Sabotage** of service, information systems, clinical care, and property.
- **Employee Fraud** including false identity/credentials, testing/vaccinations, attestations of truth, or false witness against patients or staff.
- **Patient Fraud** including false identity, testing/vaccinations, attestations of truth, or false witness against other patients or staff.
- **Nation State Influence** through academic espionage, financial conflicts of interest, or other means.
- **Drug Diversion** by staff including caregivers and pharmacists who divert medications for themselves or others.
- **Conflict of Interest** of staff including physicians, researchers, staff, or administrators including undisclosed as well as disclosed financial relationships.
- **Conflict of Interest of Governance** including undisclosed financial as well as disclosed financial relationships.
- **Academic Fraud** including fabrication, falsification, or plagiarism in publications or dishonest grant documentation including applications or reports.
- **Defamation or Unfair Press** by investigative reporting, false whistleblowers, or harm due to misinformation, disinformation, or mal-information publicized.
- **Burn-out** of caregivers, leadership, and staff.
- **Critical Drug and Supply Shortages** such as I.V. fluids, medications, and key supplies.
- **Regulatory Compliance Issues** including evolving risks of non-compliance.



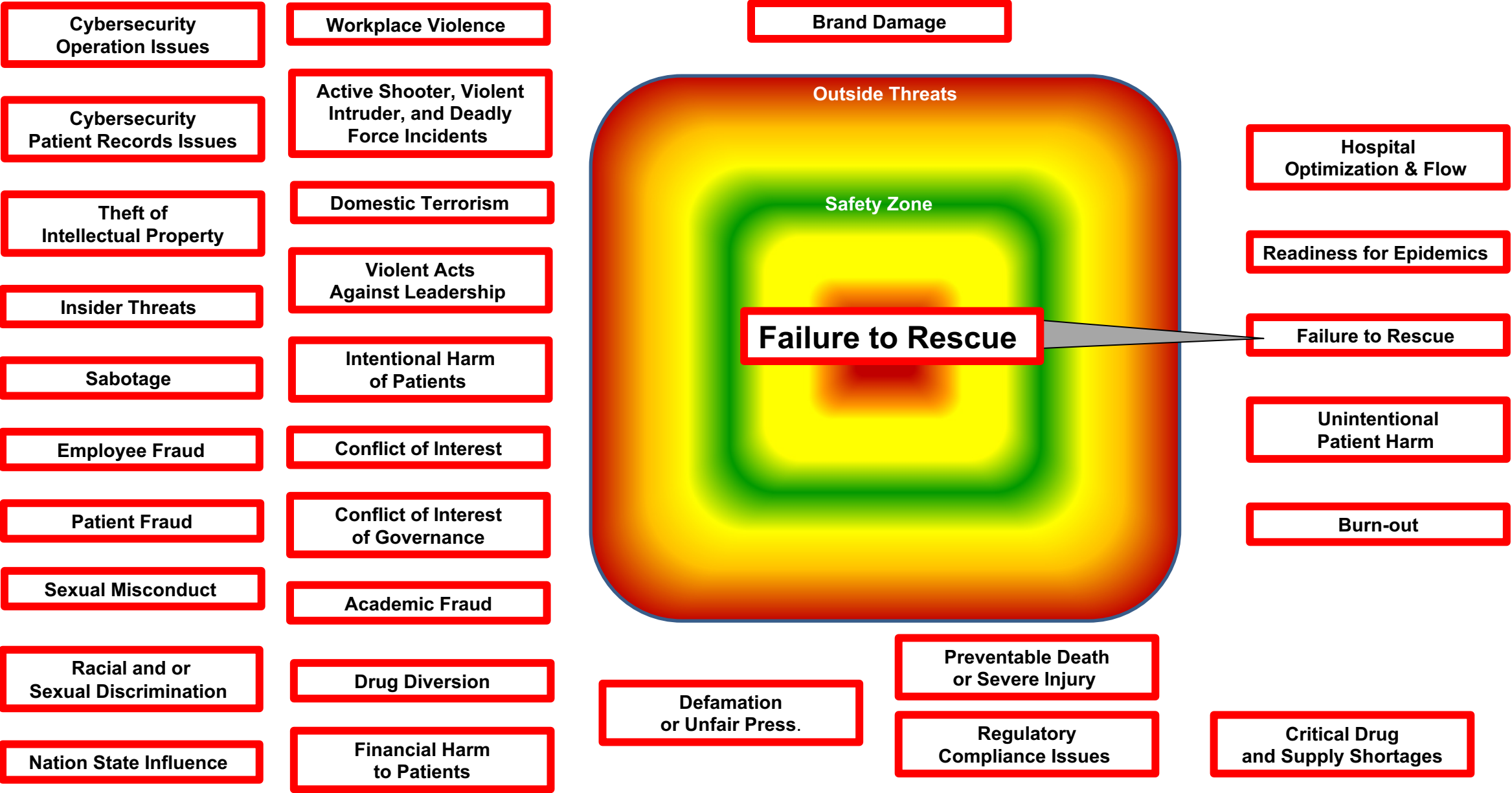
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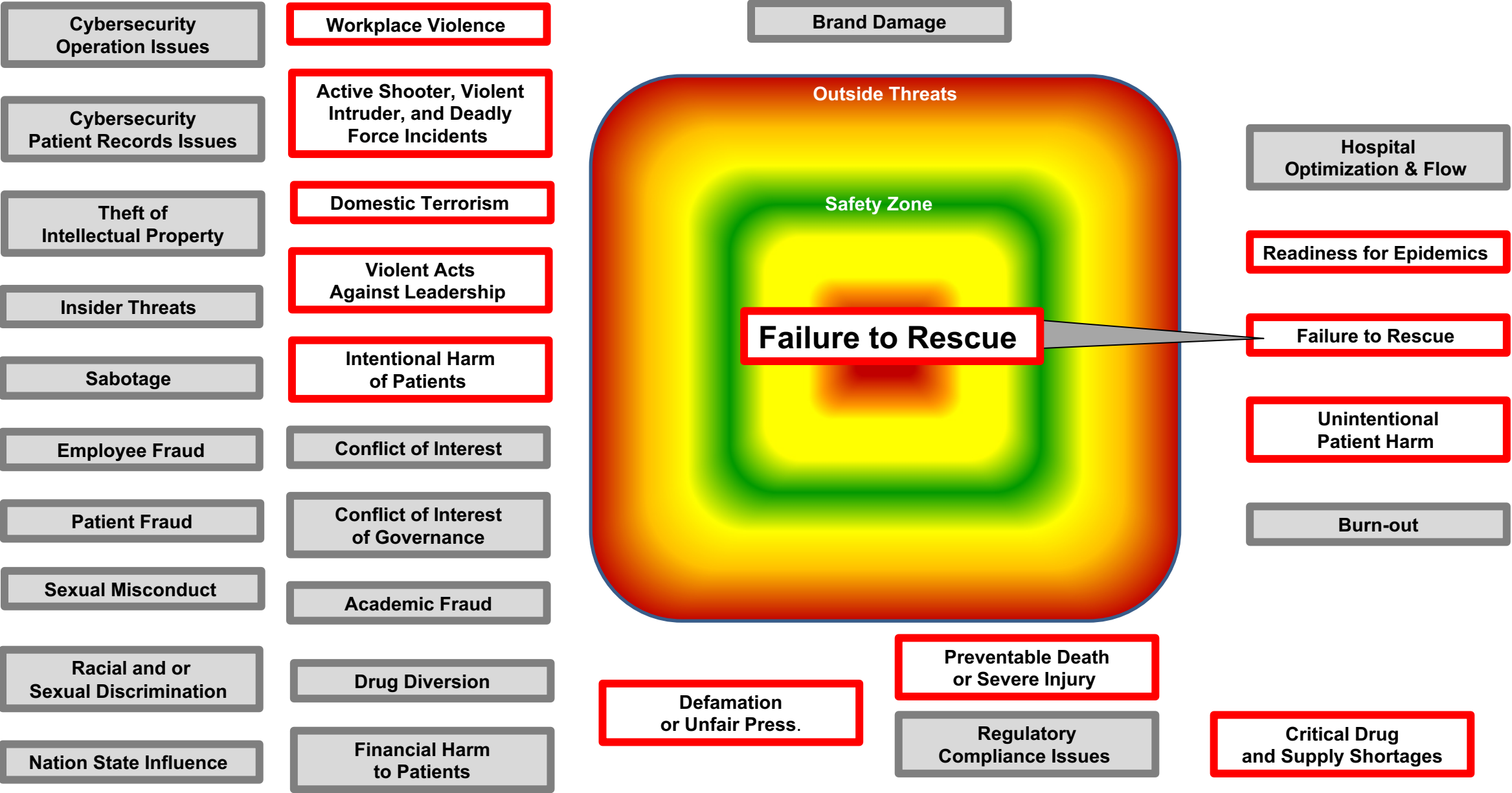
Inside & Outside Threats and Resilience Building



Inside & Outside Threats and Resilience Building



Inside & Outside Threats and Resilience Building



Failure to Rescue: **“What’s Old is New Again!”**



Gregory H. Botz, MD, FCCM

**University of Texas Distinguished Teaching
Professor**

Professor of Critical Care Medicine

UT MD Anderson Cancer Center

Adjunct Clinical Professor of Anesthesiology

Stanford University School of Medicine

Failure to Rescue: What's Old is New Again!



GREGORY H. BOTZ, MD, FCCM

University of Texas Distinguished Teaching Professor

Professor of Critical Care Medicine

UT MD Anderson Cancer Center

Adjunct Clinical Professor of Anesthesiology

Stanford University School of Medicine

No relevant conflicts of interest or financial relationships to disclose

The views and opinions expressed herein are my own.

They do not necessarily represent the views and opinions of the MD Anderson Cancer Center, the University of Texas System or the State of Texas





Landmark Events in Perioperative Medicine



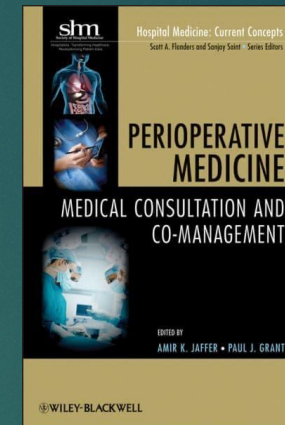
PJ Deveraux
McMaster University



William T. G. Morton
MGH Ether Dome



Anesthesia Patient
Safety Foundation

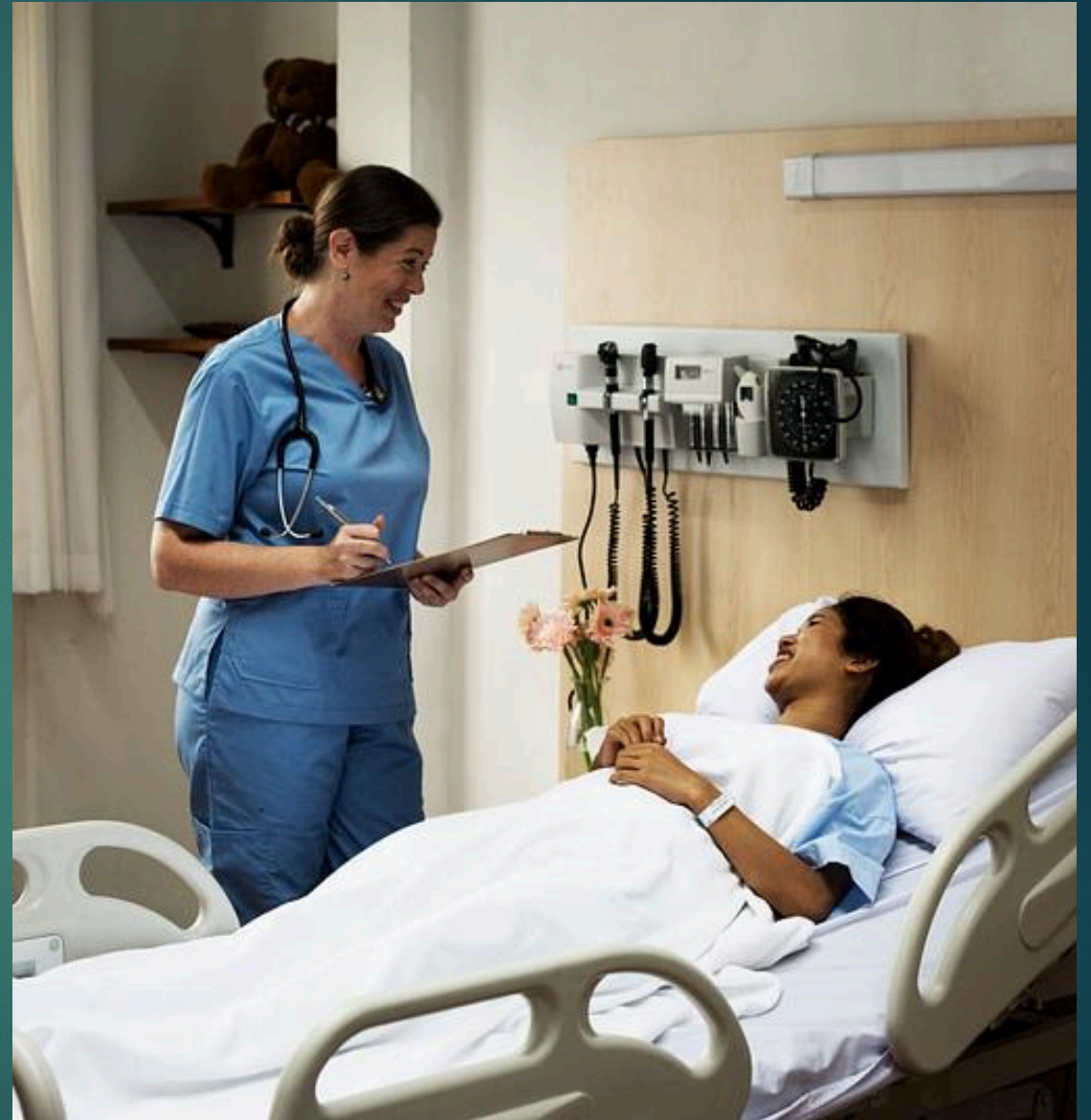


Perioperative
Medicine Service

Ether day : J. M. Fenster : Free Download, Borrow,
and Streaming : Internet Archive

Anaesthesia Patient Safety Symposium 2023 –
Anesthesia Patient Safety Foundation (apsf.org)

Perioperative Medicine: Medical...
book by Paul Grant (thriftbooks.com)





November 30, 1999:

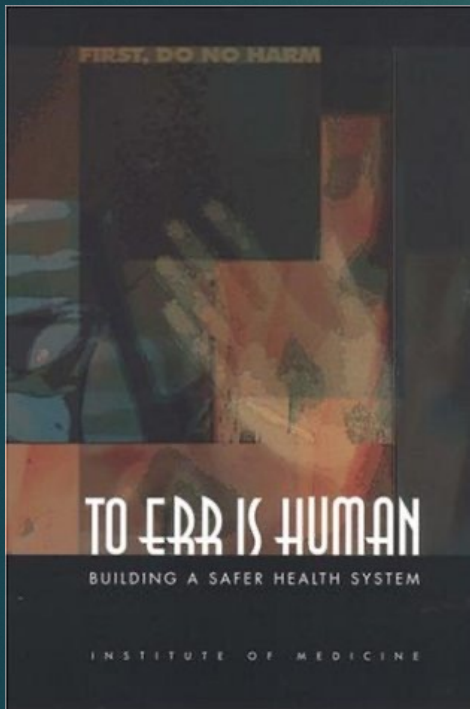
Medical Injuries in the U.S. account for:

44,000 - 98,000 deaths per year

*More people die from medical errors than from
breast cancer or AIDS or motor vehicle accidents*

Direct health care costs:

\$9 - 15 billion per year

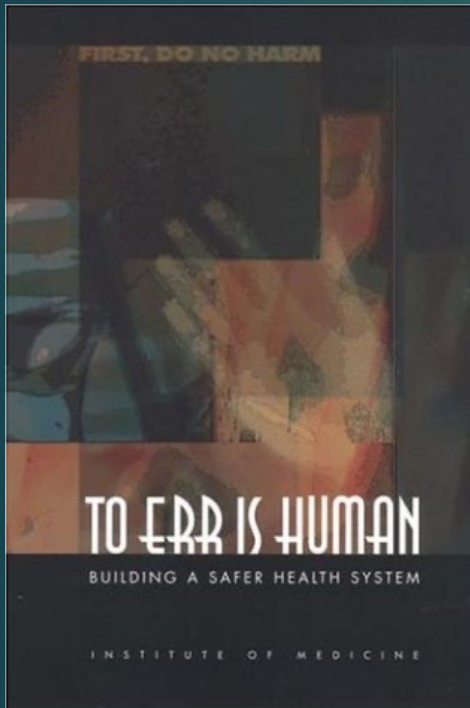


Committee on Quality of Health Care in America.
To Err is Human. Institute of Medicine, 2000.



Key Findings:

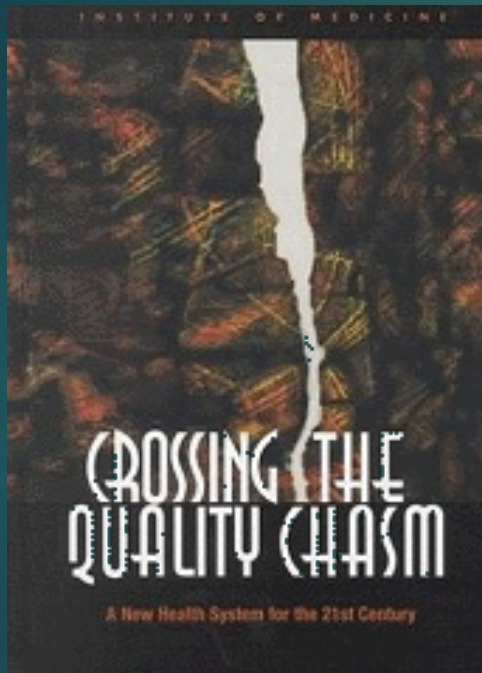
- ✓ *Errors occur because of system failures*
- ✓ *Preventing errors means designing safer systems of care*
- ✓ *Organizations, not individual physicians and nurses control those systems of care*



Committee on Quality of Health Care in America.
To Err is Human. Institute of Medicine, 2000.



“Trying harder will not work!
Changing systems of care will”



Committee on Quality of Health Care in America.
Crossing the Quality Chasm. Institute of Medicine, 2001.



ANALYSIS



Medical error—the third leading cause of death in the US

Medical error is not included on death certificates or in rankings of cause of death. **Martin Makary** and **Michael Daniel** assess its contribution to mortality and call for better reporting

Martin A Makary *professor*, Michael Daniel *research fellow*

Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD 21287, USA

Modern Healthcare

The BEST the world has ever seen!

- ✓ From 1900 to 2000: Average life expectancy at birth
Increased from only 49 years to almost 80 years.
- ✓ Since 1960: Age-adjusted mortality from heart disease
Decreased by 56%. (from 307.4 to 134.6 deaths / 100,000)
- ✓ Since 1950: Age-adjusted mortality from stroke
Decreased by 70%. (from 88.8 to 26.5 deaths / 100,000)

Centers for Disease Control. Decline in deaths from heart disease and stroke--United States, 1900-1999. JAMA 1999; 282:724-6.

National Center for Health Statistics. Health, United States, 2000 with Adolescent Health Chartbook. Hyattsville, MD: U.S. Dept. of Health and Human Services, Center for Disease Control and Prevention, 2000; pg. 7 (DHHS Publication No. (PHS) 2000-1232-1).

U.S. Department of Health and Human Services, Public Health Service. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Washington, DC: U.S. Government Printing Office, 1991 (DHHS Publication No. (PHS) 91-50212).

SO, WHAT'S THE PROBLEM?

The science and technology of our current healthcare system is the best the world has ever seen; (and continues to improve rapidly) while the performance of American Healthcare delivery leaves much to be desired.

It's a Failure of Execution!

Adapted From Brent James: Managing Clinical Processes: Doing Well by Doing Good

Advanced Training Program in Healthcare Delivery Improvement. IHC

Chassin, MR, Galvin, RW, and the National Roundtable on Health Care Quality. The urgent need to improve health care quality. JAMA 1998; 280(11):1000-1005.

Chassin, M. Is health care ready for six sigma quality? Milbank Quarterly 1998; 76(4):1-14.



Modern Medicine!

Healthcare Delivery

Every system is perfectly designed to get the results it gets...

So, design a system that gets the *right* results.



Dr. Paul Batalden

Modern Healthcare

Twenty-First Century
Medical Science and
Technology superimposed
on a Nineteenth Century
Medical Framework!





Perioperative Complications

“When patients have postoperative complications, we send the LEAST trained to care for the MOST vulnerable”

Intensive Care

“The most sophisticated intensive care often becomes unnecessarily expensive terminal care when the pre-ICU system fails”

Safar 1974



Failure To
Rescue!

Hospital and Patient Characteristics Associated With Death After Surgery

A Study of Adverse Occurrence and Failure to Rescue

JEFFREY H. SILBER, MD, PHD,*† SANKEY V. WILLIAMS, MD,†‡
HENRY KRAKAUER, MD, PHD,§ AND J. SANFORD SCHWARTZ, MD†‡

We asked if the factors that predict overall mortality following two common surgical procedures are different from those that predict adverse occurrences (complications) during the hospitalization or death after an adverse occurrence, which we refer to as "failure to rescue." We examined 5,972 Medicare patients undergoing elective cholecystectomy or transurethral prostatectomy using three outcome measures: 1) the death rate (number of deaths/number of patients); 2) the adverse occurrence rate (number of patients who developed an adverse occurrence/number of patients); and 3) the failure rate (number of deaths in patients who developed an adverse occurrence/number of patients with an adverse occurrence). The death rate was associated with both hospital and patient characteristics. The adverse occurrence rate was associated primarily with patient characteristics. In contrast, failure to rescue was associated more with hospital characteristics, and was less influenced by patient admission severity of illness as measured by the MedisGroups score. We concluded that factors associated with hospital failure to rescue are different from factors associated with adverse occurrences or death. Understanding the reasons behind variation in mortality rates across hospitals should improve our ability to use mortality statistics to help hospitals upgrade the quality of care. Key words: quality of care; outcomes research; failure rate; adverse occurrence rate; death rate. (Med Care 1992; 30:615-629)

What is “Failure to Rescue”?

The failure to timely *RECOGNIZE* and *MANAGE* signs and symptoms of clinical deterioration to *AVOID* preventable morbidity and mortality.

Failure to Rescue

September 7, 2019

Background

The concept of failure to rescue captures the idea that, although not every complication of medical care is preventable, health care systems should be able to rapidly identify and treat complications when they occur. As with many key concepts in patient safety, this one began with work outside of health care, including [Reason's](#) organizational accident theory, [Perrow's](#) normal accident theory, and other foundational work in human factors and complex systems. Around the same time, Karl Weick and others articulated the notion of high reliability organizations (HROs) and identified resilience as a defining characteristic of HROs.

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HHS Public Access

Author manuscript

J Trauma Acute Care Surg. Author manuscript; available in PMC 2020 September 01.

Published in final edited form as:

J Trauma Acute Care Surg. 2019 September ; 87(3): 699–706. doi:10.1097/TA.0000000000002365.

FAILURE TO RESCUE IN SURGICAL PATIENTS: A REVIEW FOR ACUTE CARE SURGEONS

Justin S Hatchimonji, MD, MBE¹, Elinore J Kaufman, MD, MSHP², Catherine E Sharoky, MD, MSCE¹, Lucy Ma³, Anna E Garcia Whitlock, MD¹, Daniel N Holena, MD, MSCE²

¹Department of Surgery, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA

²Division of Traumatology, Surgical Critical Care and Emergency Surgery, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA

³College of Arts and Sciences, University of Pennsylvania, Philadelphia, PA

Abstract

The Failure to Rescue (FTR) rate is defined as the mortality rate among patients who experience one or more complications. It has been used as an outcome metric for approximately 25 years, primarily in elective surgery populations, and has been shown to be associated with factors that are modifiable on the institutional level. Although the FTR metric was derived in elective surgical populations, modifications have been made in attempts to refine the metric and apply it to broader populations, including medical patients and non-elective surgical patients. However, study among emergency general surgery patients has been limited. In this review, we summarize the current knowledge surrounding FTR, including established risk factors and potential limitations of the metric in emergency general surgery (EGS) populations. We then discuss a conceptual model for FTR events and review strategies to minimize rates. Finally, we provide a brief overview of current areas of study and potential future directions in acute care surgery.

Perioperative Complications

Patient

- ✓ Co-morbidities
- ✓ Medications
- ✓ Frailty

Procedure

- ✓ Invasiveness
- ✓ Intraoperative Events
- ✓ Expected Postop Course

Institution

- ✓ Staffing
- ✓ Competencies
- ✓ Case Load/Frequency
- ✓ Monitoring
- ✓ “Agility”
- ✓ “Teamness”



Review

The Emerging Role of “Failure to Rescue” as the Primary Quality Metric for Cardiovascular Surgery and Critical Care

Dimitrios E. Magouliotis ^{1,*}, Andrew Xanthopoulos ², Prokopis-Andreas Zotos ³, Arian Arjomandi Rad ⁴, Evangelos Tatsios ³, Metaxia Bareka ⁵, Alexandros Briasoulis ⁶, Filippos Triposkiadis ², John Skoularigis ² and Thanos Athanasiou ⁴

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⁴ Department of Surgery and Cancer, Imperial College London, St Mary's Hospital, London W2 1NY, UK; arian.arjomandi-rad16@imperial.ac.uk (A.A.R.); tathanasiou@imperial.ac.uk (T.A.)

⁵ Department of Anesthesiology, University of Thessaly, Biopolis, 41110 Larissa, Greece; barekametaxia@hotmail.com

⁶ Department of Therapeutics, Faculty of Medicine, National and Kapodistrian University of Athens, 10679 Athens, Greece; alexbriasoulis@gmail.com

* Correspondence: dimitrios.magouliotis.18@ucl.ac.uk

RESEARCH

Open Access



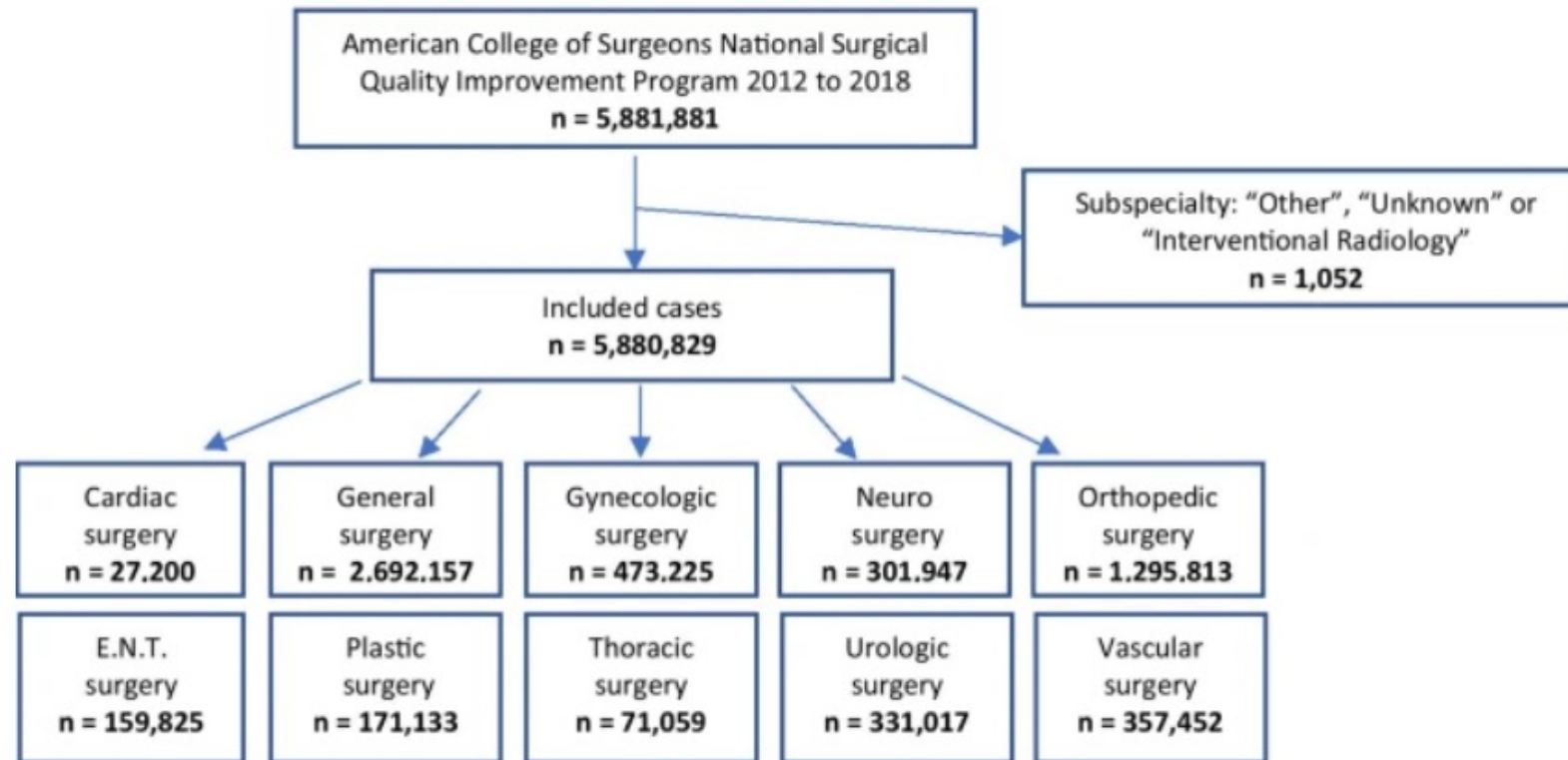
Postoperative complications: an observational study of trends in the United States from 2012 to 2018

Emilie Even Dencker^{1,2}, Alexander Bonde^{1,2}, Anders Troelsen^{3,5}, Kartik Mangudi Varadarajan⁴ and
Martin Sillesen^{1,2,5*}

Abstract

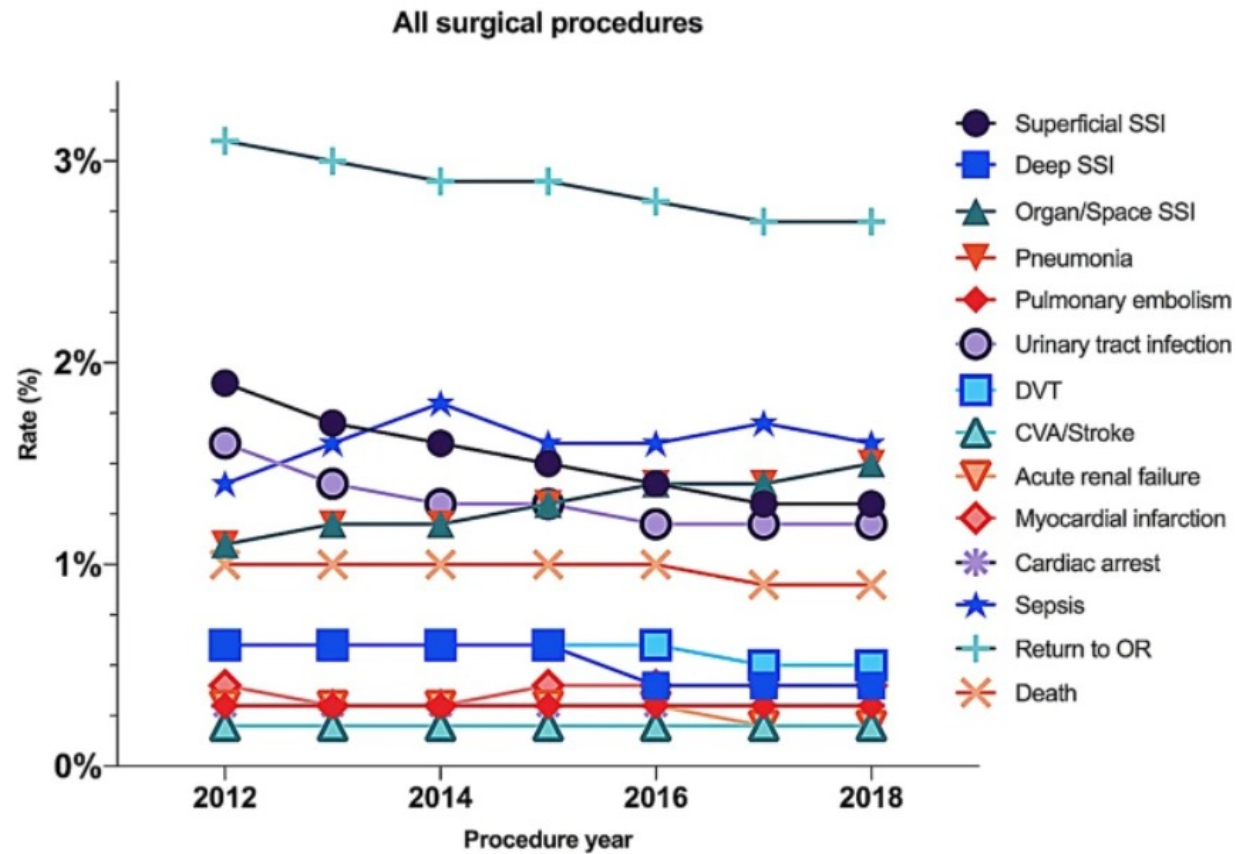
Background: Postoperative complications continue to constitute a major issue for both the healthcare system and the individual patient and are associated with inferior outcomes and higher healthcare costs. The objective of this

Fig. 1



Flowchart of patient cases from American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) included in the study. All cases with available information on sex, age and surgical subspecialty were included

Fig. 2



Incidence rates (%) over the study period for the 14 studied postoperative complications for all surgical procedures combined. *SSI* surgical site infection; *DVT* deep venous thrombosis, *CVA* cerebrovascular accident, *OR* operating room

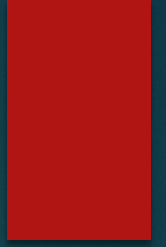


Strategies to address Failure to Rescue



Where
Do We
Start?

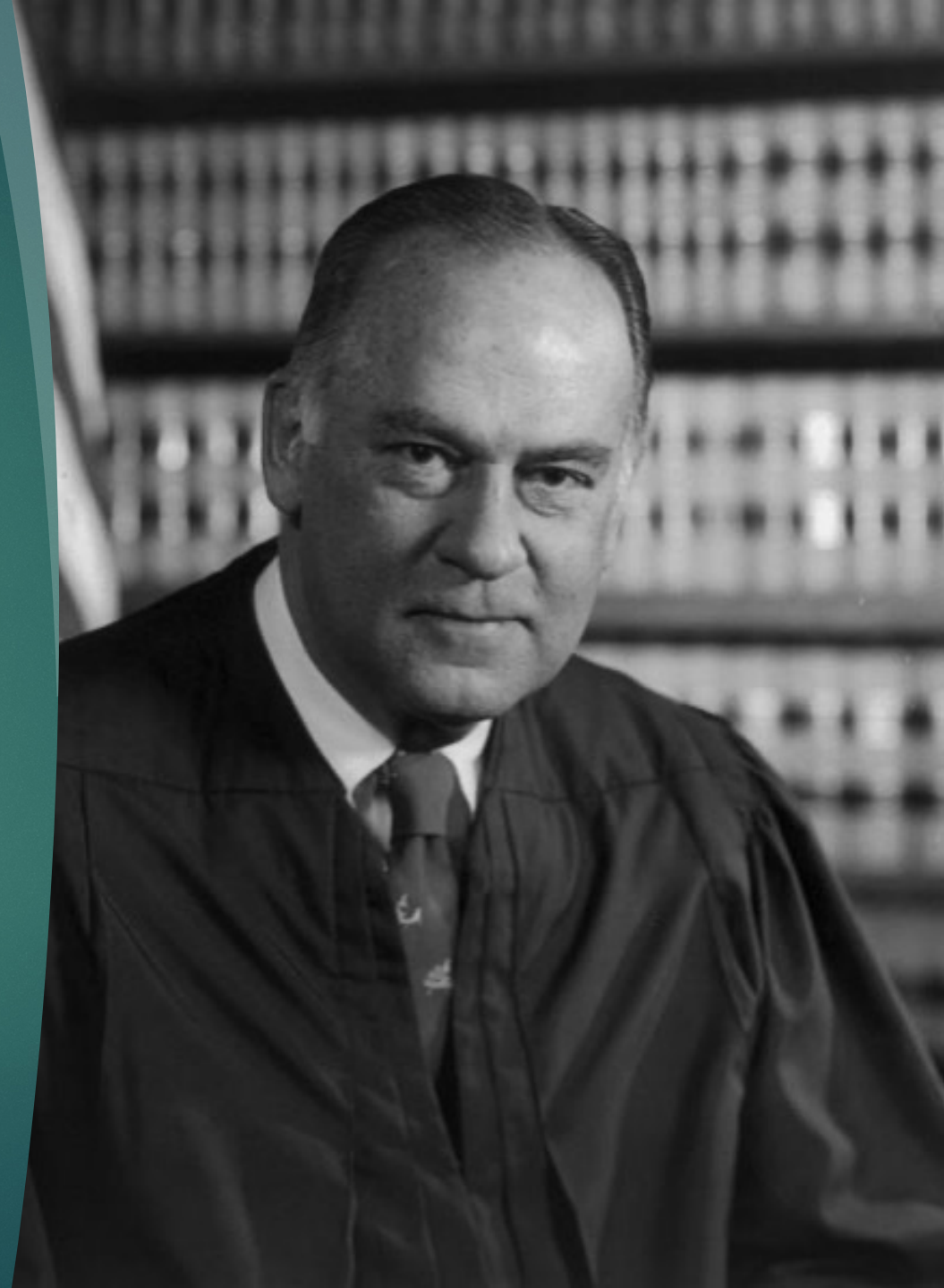
My Quality and Safety Experience



HEALTHCARE SAFETY & QUALITY

“I know it when I see it...”

Potter Stewart
Associate Justice
US Supreme Court



Healthcare Delivery Improvement



Institute for Health Care Delivery Research

Executives & QI Leaders – Advanced Training Program (ATP) in Healthcare Delivery Improvement

A practical, in-depth course for health care professionals who need to teach, implement and investigate quality improvement, outcome measurement and management of both clinical and non-clinical processes.

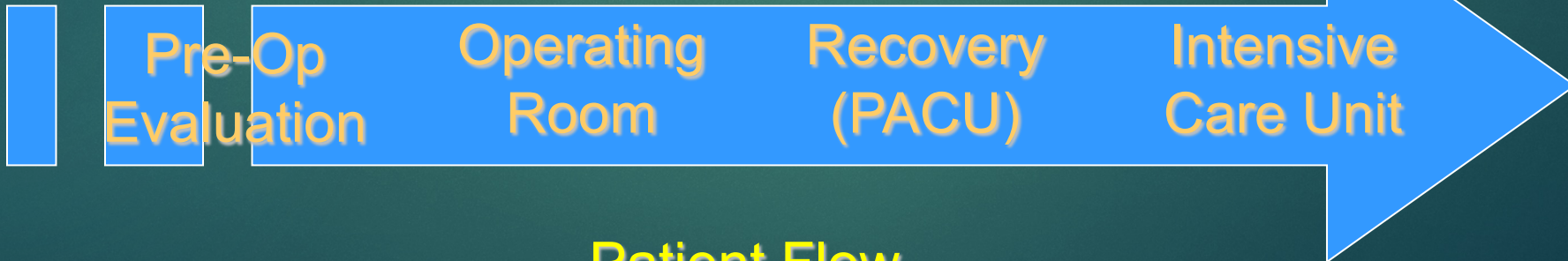
Healthcare Delivery Improvement



Clinical Safety and Effectiveness Training Program

QUALITY IMPROVEMENT IS THE SCIENCE OF PROCESS MANAGEMENT

(Health care delivery is a system made up of thousands of interlinked processes)



Patient Flow

Quality Improvement

- ✓ Process Improvement
- ✓ Rapid Cycle Improvement
- ✓ Healthcare Delivery Improvement
- ✓ Toyota Production System/Lean
- ✓ Six Sigma
- ✓ The Improvement Roadmap-PDSA
- ✓ Total Quality Management
- ✓ Industrial/Systems Engineering

SECTION 1: EVIDENCE-BASED QUALITY IMPROVEMENT, PRINCIPLES, AND PERSPECTIVES

Quality Improvement Methods in Clinical Medicine

Paul E. Plsek, MS

ABSTRACT. This article surveys the methods and tools of quality improvement used today in health care. Specifically, we describe how clinicians can use these methods to affect the clinical practice of medicine. Improvement efforts from a variety of health care organizations have resulted in the successful use of basic methods such as group problem solving, flowcharting, data collection, and graphical data analysis. In addition to these incremental, problem-solving methods borrowed from the industrial practice of improvement, we have also seen the use of specific process design methods in health care applications such as care path development. The pace of change in health care has also led to the practical development of newer methods for rapid cycle improvement. We will review the basic approach behind these methods and illustrate key elements such as the ideas of change concepts and small-scale tests of change. Unfortunately, whereas these methods have been very successful in industry, highly appealing to improvement practitioners, they have also have inadvertently widened a gulf between these practitioners and traditional health-services and clinical researchers. We offer an assessment of this issue and suggest ways to narrow the communication gap. Measurement has

Structured quality improvement—the use of systems thinking, data analysis, and teams focused on better outcomes, higher satisfaction, improved processes, and reduced variation—has been widely practiced in health care. Whereas early efforts were primarily directed at administrative and support processes, the techniques are increasingly being applied to clinical issues as well.¹⁻⁵

In this article we will examine how clinicians can use the methods of quality improvement to affect the practice of medicine. We will survey the methods of improvement science from general industry to health care, describe the newer models of rapid cycle improvement. We will also show how clinicians are using statistical methods associated with control charts to improve care for patients. Finally, we will describe how health care leaders are using benchmarking and multiorganizational collaboratives to take advantage of existing variation in practice as an opportunity for learning.

Healthcare Delivery Improvement

Paul E. Plsek; Quality Improvement Methods in Clinical Medicine. *Pediatrics* January 1999; 103 (Supplement_E1): 203-214. 10.1542/peds.103.SE1.203

WHY MEASURE QUALITY?

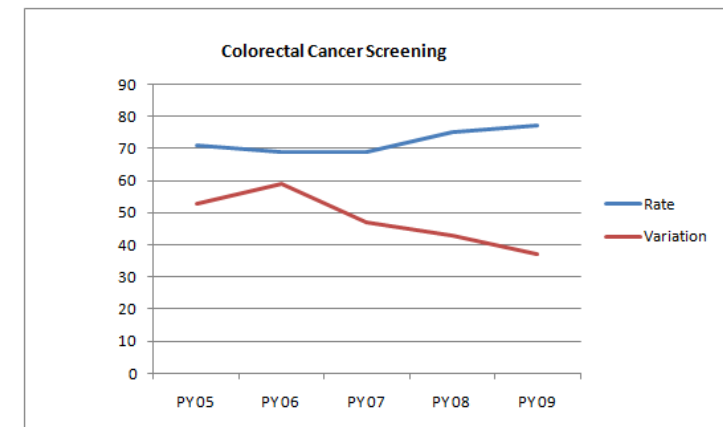
- ✓ “You can’t manage what you don’t measure.”

-W. Edwards Deming

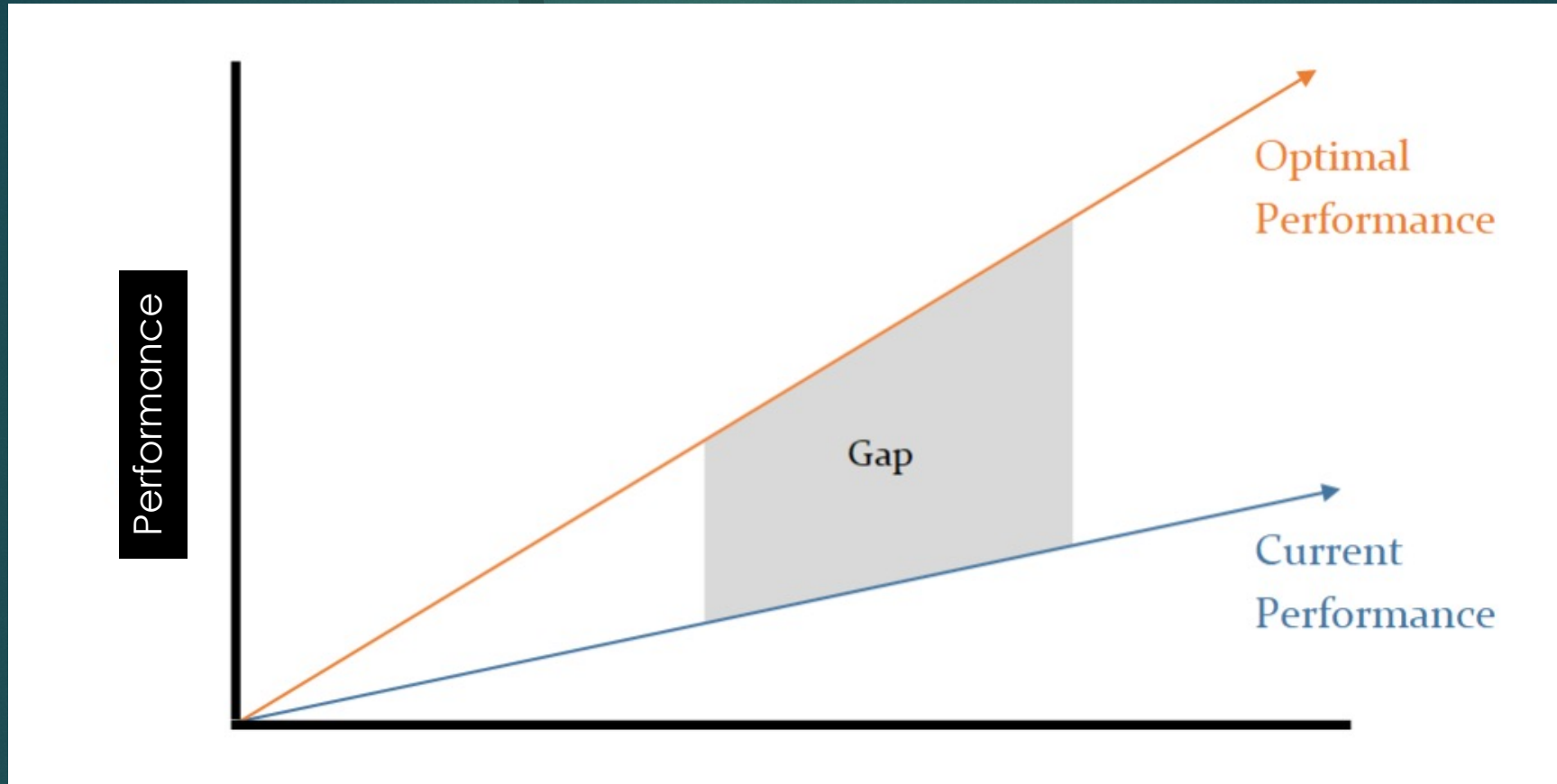
- ✓ To improve performance
- ✓ To be accountable
- ✓ To better inform decisions



W. Edwards Deming



Performance Gaps



The gap between how we THINK we perform and how we ACTUALLY perform

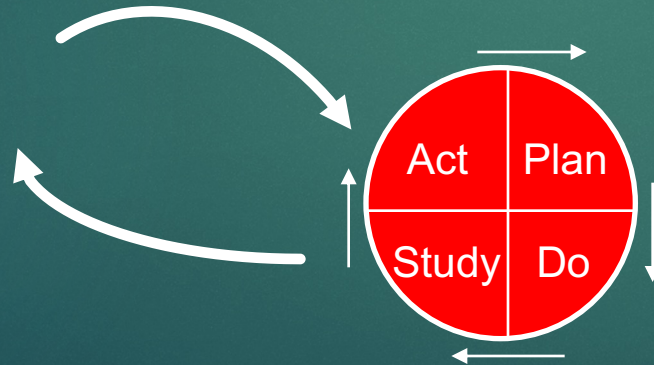
Rapid Cycle Improvement

AIM: WHAT ARE WE TRYING TO ACCOMPLISH?

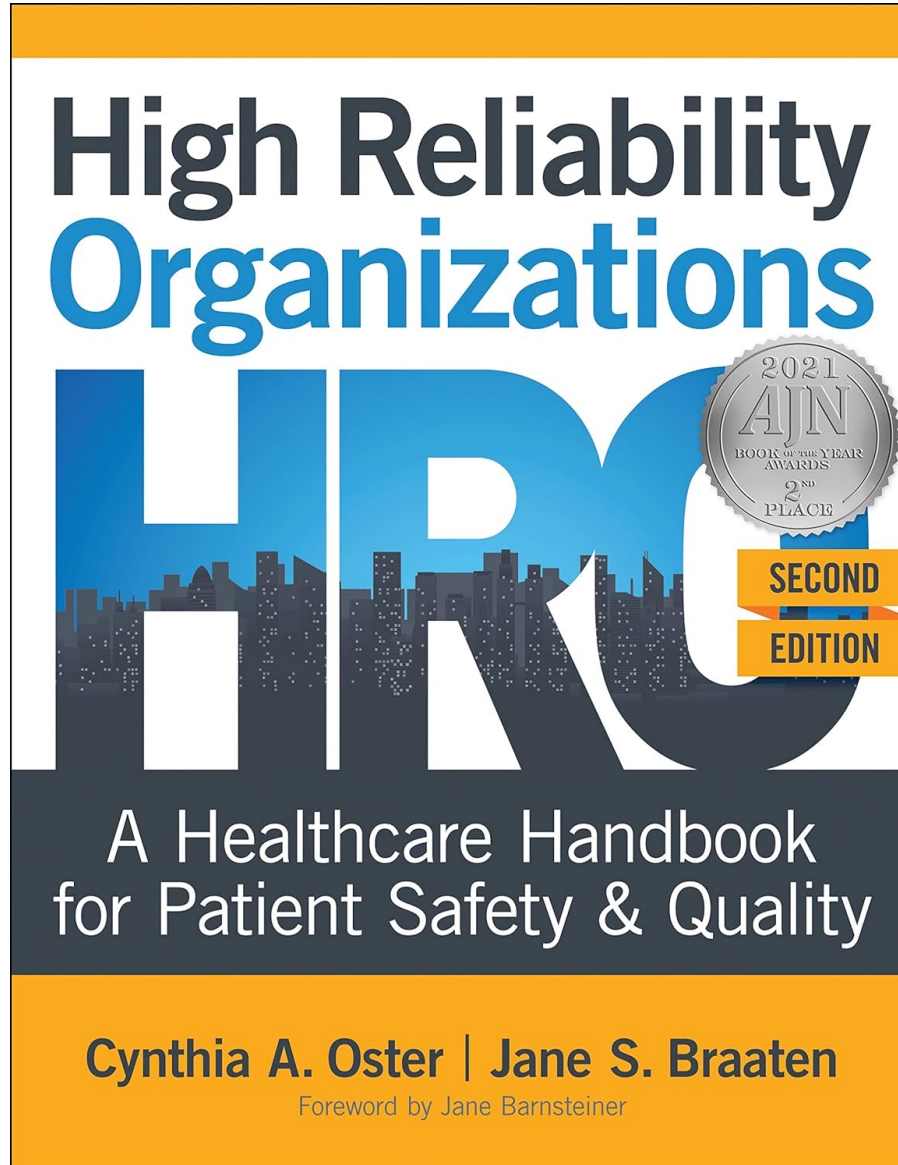
MEASURE: HOW WILL WE KNOW THE CHANGE IS AN IMPROVEMENT?

CHANGE CONCEPT: WHAT CHANGE CAN WE MAKE THAT WILL RESULT IN AN IMPROVEMENT?

TEST:



Langley, Nolan, Nolan, Norman & Provost
'The Improvement Guide'



Preoccupation with Failure

✓ HROs cannot ignore failures because they can snowball into tragedy. It's important to address any level of technical, human, or process failure.

✓ This means employees at every level in a high-reliability organization are tasked with thinking of ways their work processes might break down.

Reluctance to Simplify

HRO

Defere

Expertise

✓ Leaders must know who in the organization possesses specialized knowledge. They must also encourage people to become experts and also help employees keep their skills sharp.

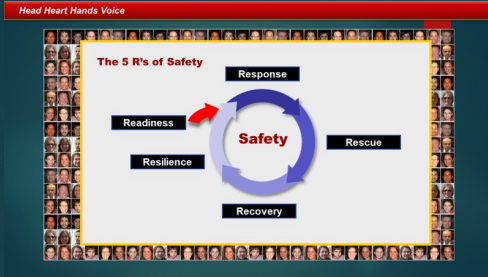
✓ HROs value expertise over authority. In high-risk conditions, it's important to adapt to circumstances that rapidly change which requires expertise to understand and respond to.

Commitment to Resilience

Sensitivity to Operations

The 5 R's of Safety



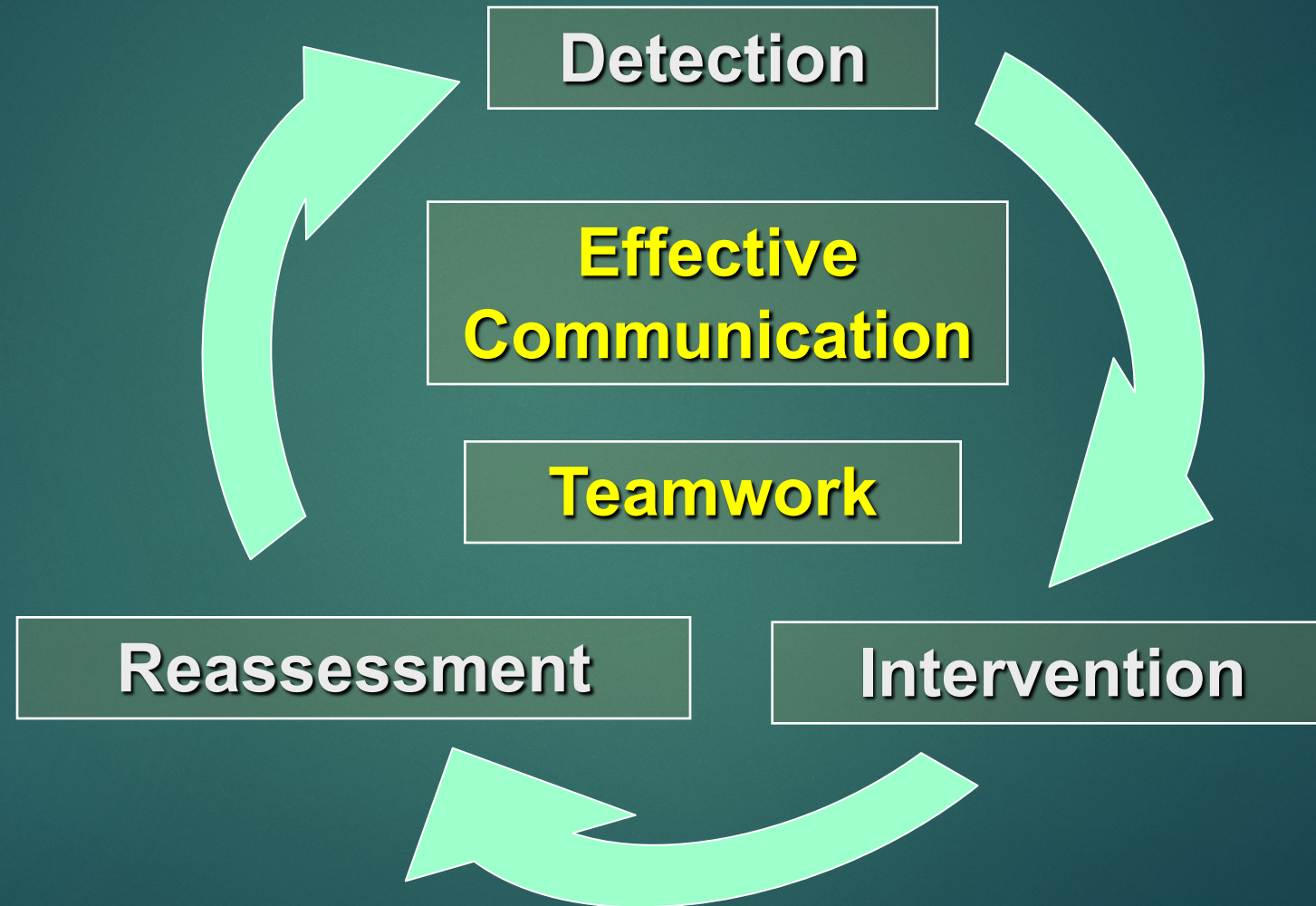


Failure to Rescue

Failure to:

- Recognize
- Respond
- Resuscitate
- Reassess
- Resource
- Remain Ready
- Remember

Principles of Rapid Assessment



Failure to Recognize



Detection

- ✓ Rapid Change- Easier Detection
- ✓ Gradual Change- More Difficult
- ✓ Intermittent Data Collection
- ✓ “Signal to Noise”
- ✓ Disruptions
- ✓ Normalization of Deviance



Early Warning System

- ✓ Multiple Patients
- ✓ Consolidated Data
- ✓ Algorithm-driven
- ✓ Situation Awareness
- ✓ Remote Monitoring
- ✓ Configurable Thresholds



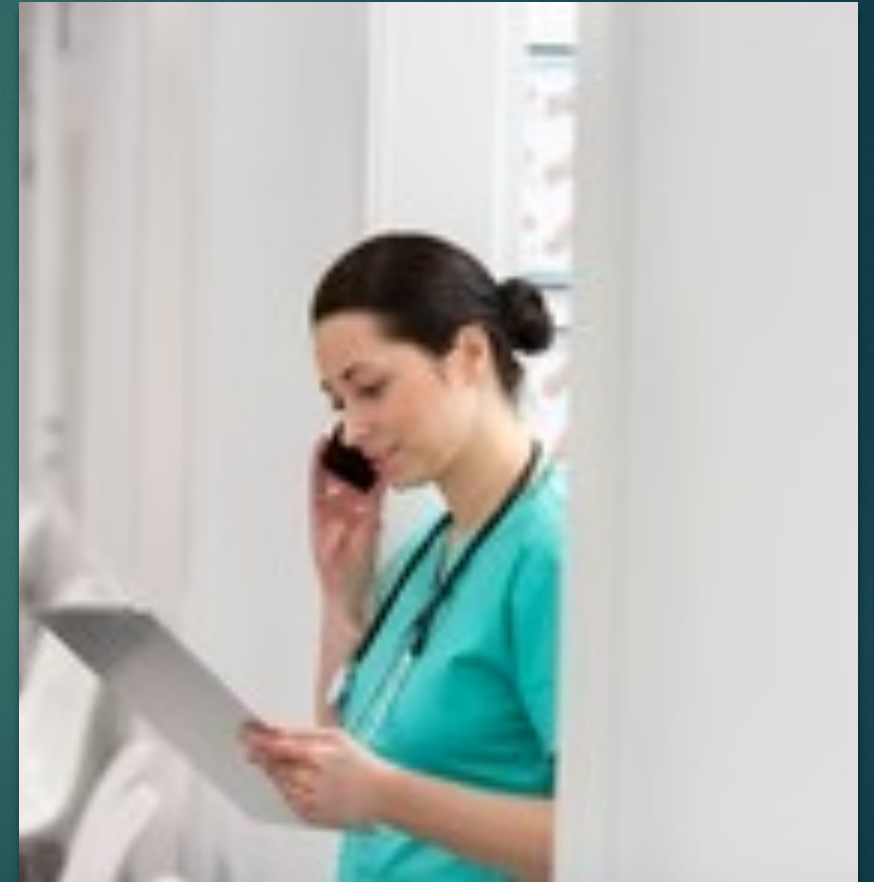
eClinicalWorks Electronic Medical Records (ducknetweb.blogspot.com)

Failure to Respond



Intervention

- ✓ Standing Orders
- ✓ Escalation to Unit Resources
- ✓ Escalation to Providers
- ✓ Escalation to Emergency Response
- ✓ Rapid Response Teams



Nurse- Public Domain Pictures



Rapid Response Team!

Activation Criteria

- Acute change in HR <40 or >130
- Acute change in systolic BP <90
- Acute change in urine output <50 ml/4 hrs
- Acute change in resp. status <8 or >30
- Acute change in pulse oximetry <90 despite O₂
- Acute change in consciousness
- Qualitative deterioration in clinical status
- Any new organ system failure

Prospective controlled trial of effect of medical emergency team on postoperative morbidity and mortality rates*

Rinaldo Bellomo, MD; Donna Goldsmith, RN; Shigehiko Uchino, MD; Jonathan Buckmaster, MD; Graeme Hart, MD; Helen Opdam, MD; William Silvester, MD; Laurie Doolan, MD; Geoffrey Gutteridge, MD

Objective: To determine whether the introduction of an intensive care unit-based medical emergency team, responding to hospital-wide preset criteria of physiologic instability, would decrease the rate of predefined adverse outcomes in patients having major surgery.

Design: Prospective, controlled before-and-after trial.

Setting: University-affiliated hospital.

Patients: Consecutive patients admitted to hospital for major surgery during a 4-month control phase and during a 4-month intervention phase.

Interventions: Introduction of a hospital-wide intensive care unit-based medical emergency team to evaluate and treat inpatients deemed at risk of developing an adverse outcome by nursing, paramedical, and/or medical staff.

Measurements and Main Results: We measured incidence of serious adverse events, mortality after major surgery, and mean duration of hospital stay. There were 1,369 operations in 1,116 patients during the control period and 1,313 in 1,067 patients during the medical emergency team intervention period. In the control period, there were 336 adverse outcomes in 190 patients

(301 outcomes/1,000 surgical admissions), which decreased to 136 in 105 patients (127 outcomes/1,000 surgical admissions) during the intervention period (relative risk reduction, 57.8%; $p < .0001$). These changes were due to significant decreases in the number of cases of respiratory failure (relative risk reduction, 79.1%; $p < .0001$), stroke (relative risk reduction, 78.2%; $p = .0026$), severe sepsis (relative risk reduction, 74.3%; $p = .0044$), and acute renal failure requiring renal replacement therapy (relative risk reduction, 88.5%; $p < .0001$). Emergency intensive care unit admissions were also reduced (relative risk reduction, 44.4%; $p = .001$). The introduction of the medical emergency team was also associated with a significant decrease in the number of postoperative deaths (relative risk reduction, 36.6%; $p = .0178$). Duration of hospital stay after major surgery decreased from a mean of 23.8 days to 19.8 days ($p = .0092$).

Conclusions: The introduction of an intensive care unit-based medical emergency team in a teaching hospital was associated with a reduced incidence of postoperative adverse outcomes, postoperative mortality rate, and mean duration of hospital stay. (Crit Care Med 2004; 32:916–921)

Research

Open Access

Effect of the medical emergency team on long-term mortality following major surgery

Daryl Jones¹, Moritoki Egi², Rinaldo Bellomo^{1,3} and Donna Goldsmith³

¹Australian and New Zealand Intensive Care Research Centre (ANZIC-RC), Department of Epidemiology and Preventive Medicine, Monash University, Commercial road Melbourne, Victoria, 3004, Australia

²Department of Anesthesiology and Resuscitology, Okayama University Medical School, 2-5-1 Shikata city, Okayama, 700-8525, Japan

³Department of Intensive Care and Department of Medicine (Melbourne University) Austin Hospital, Studley Road, Heidelberg, Melbourne, Victoria, 3084, Australia

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Critical Care 2007, **11**:R12 (doi:10.1186/cc5673)

This article is online at: <http://ccforum.com/content/11/1/R12>

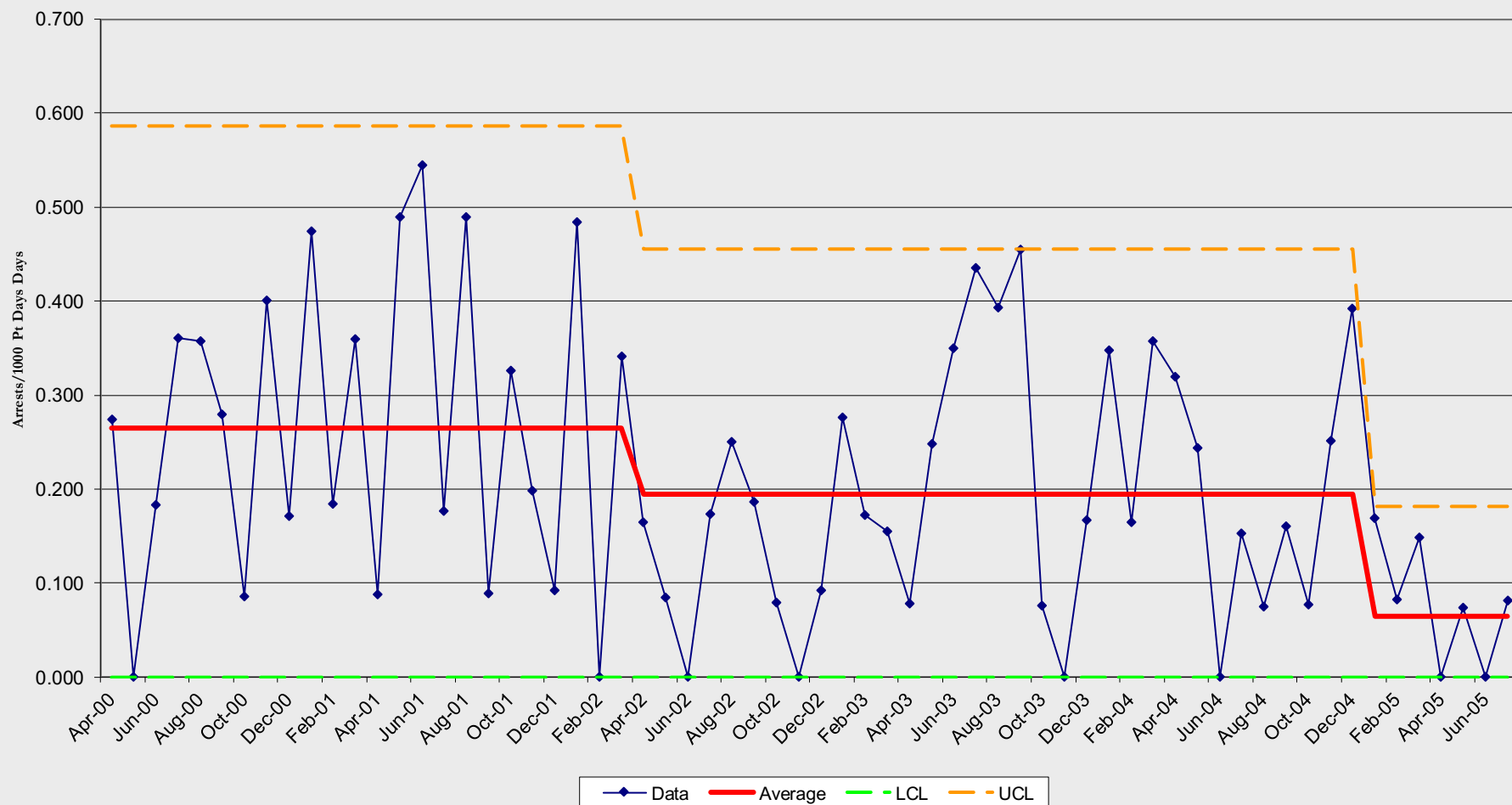
© 2007 Jones *et al.*; licensee BioMed Central Ltd.

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Jones D, Egi M, Bellomo R, Goldsmith D. Effect of the medical emergency team on long-term mortality following major surgery. *Crit Care*. 2007;11(1):R12. PMID: 17257444; PMCID: PMC2151897.

MD Anderson MERIT Team

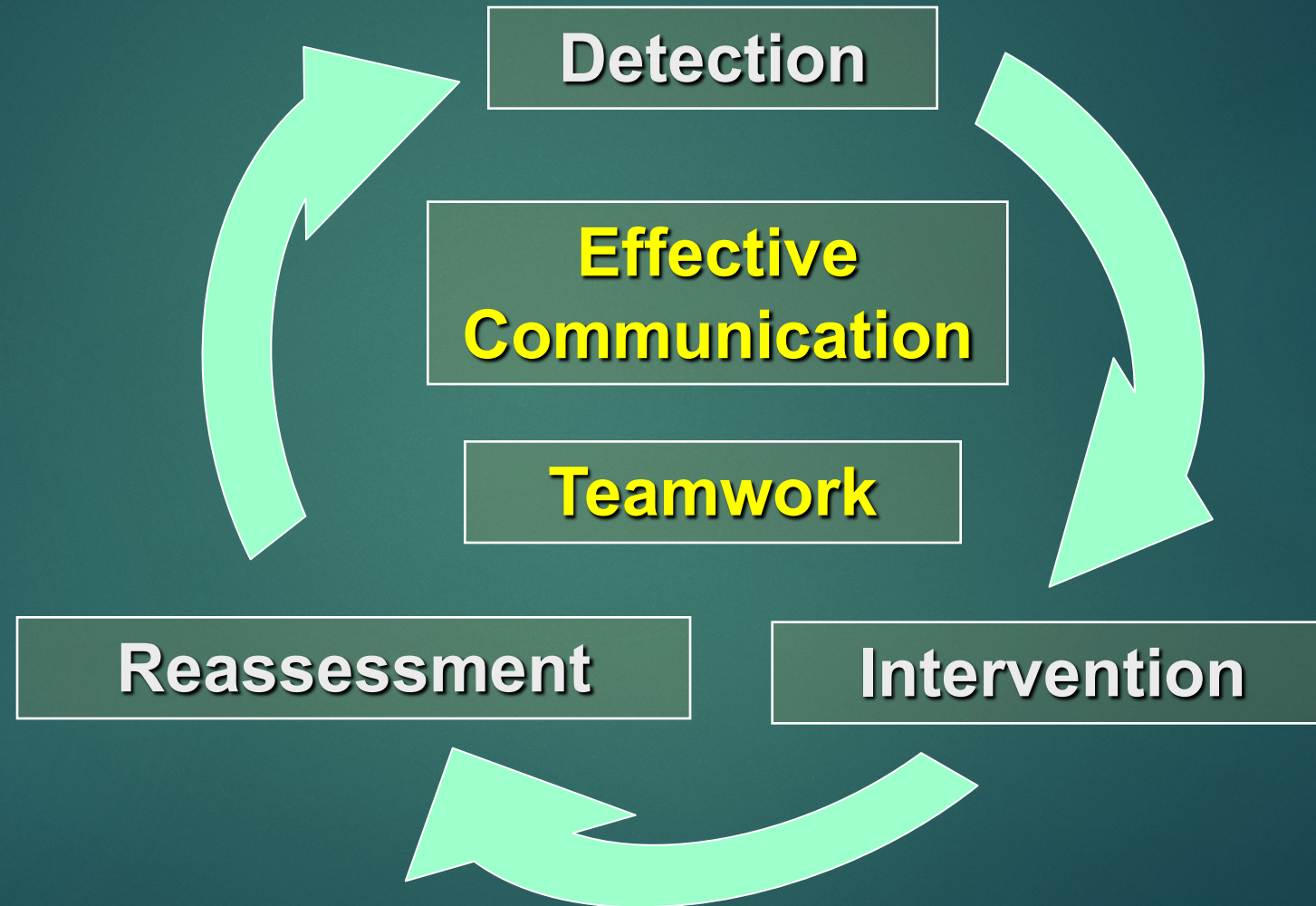
Cardiac Arrests / 1000 Pt Days (Non-ICU)



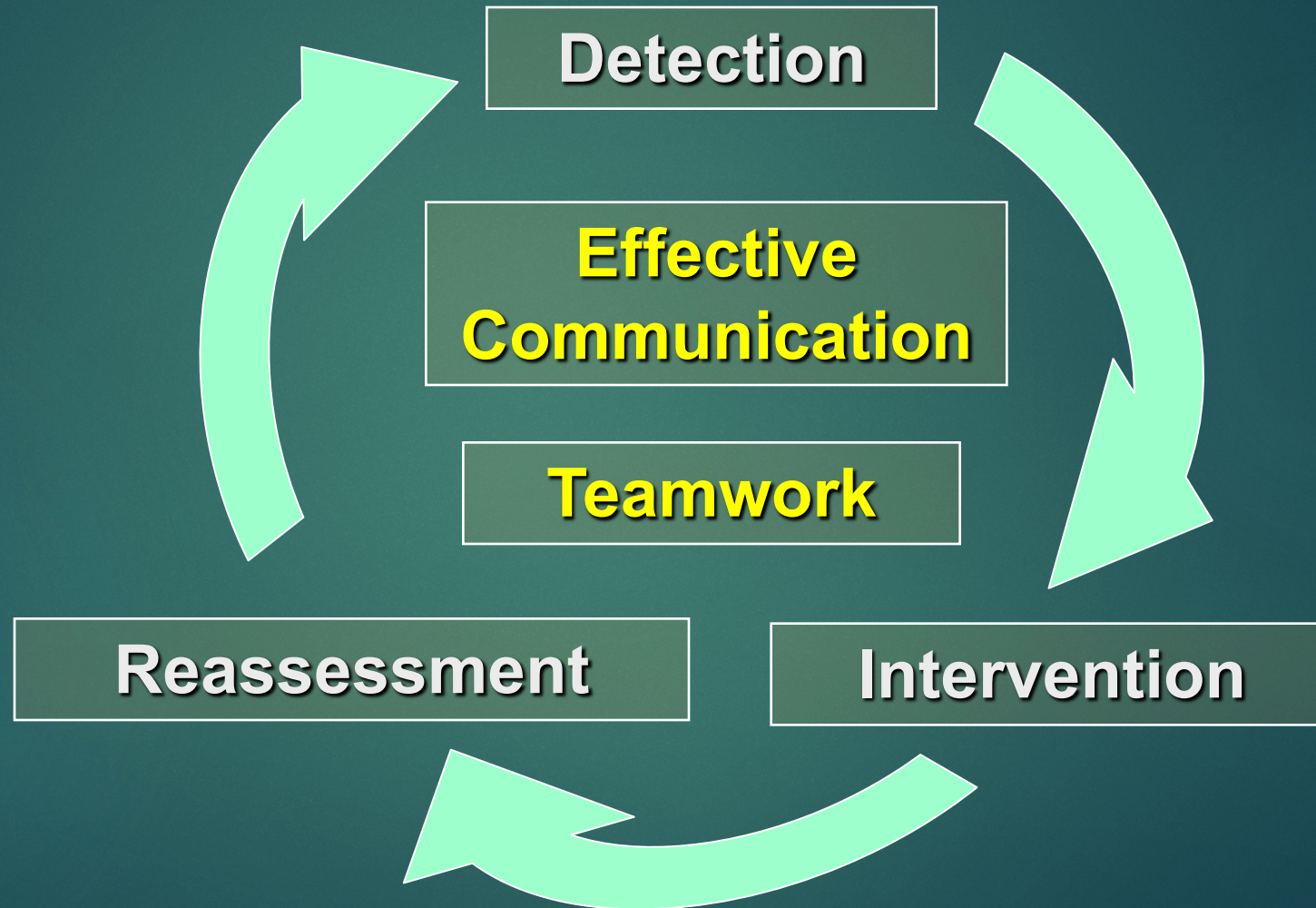
Failure to Resuscitate



Principles of Rapid Assessment

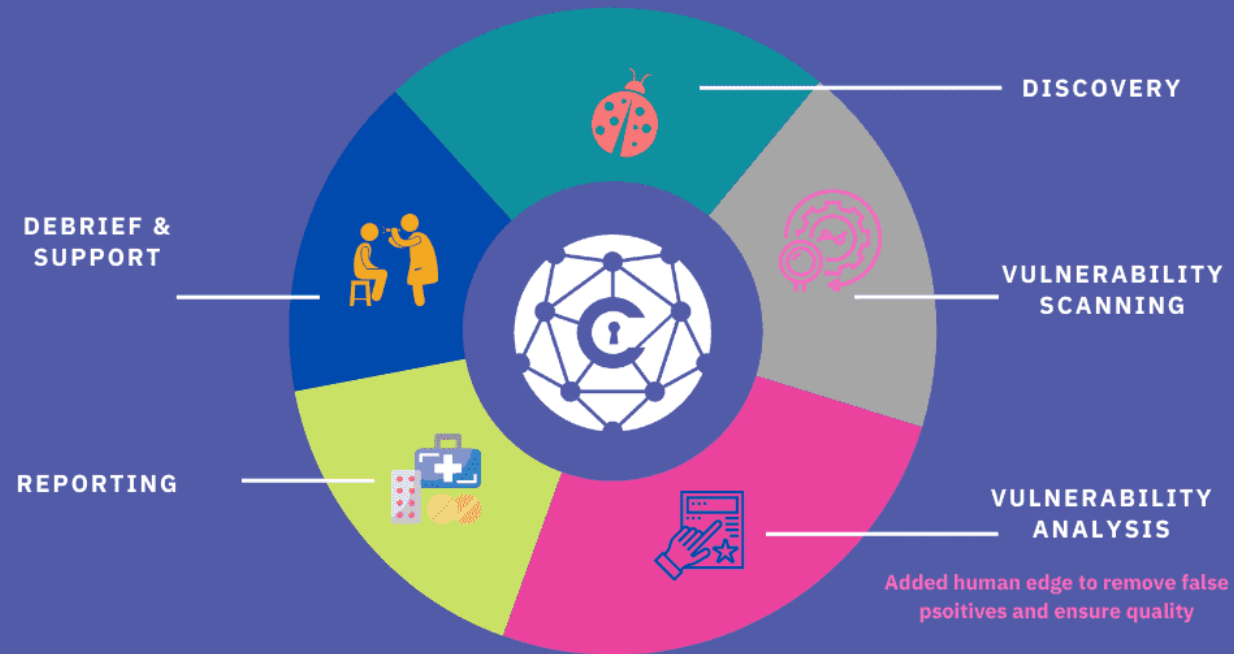


Failure to Reassess



Failure to Resource

VULNERABILITY ASSESSMENT



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Failure to Remain Ready



Medical simulation gives students hands-on experience (yorkdispatch.com)

Immersive Learning



- ✓ Realism
- ✓ Clinically Relevant Scenarios
- ✓ Repeatable Learning Opportunities
- ✓ Complexity Scaled to the Learner
- ✓ Freedom to Make Mistakes
- ✓ Detailed Feedback and Assessment

“Simulation is a ‘Technique’ NOT a ‘Technology’!

The Role of Deliberate Practice in the Acquisition of Expert Performance

K. Anders Ericsson, Ralf Th. Krampe, and Clemens Tesch-Romer

The theoretical framework presented in this article explains expert performance as the end result of individuals' prolonged efforts to improve performance while negotiating motivational and external constraints. In most domains of expertise, individuals begin in their childhood a regimen of effortful activities (deliberate practice) designed to optimize improvement. Individual differences, even among elite performers, are closely related to assessed amounts of deliberate practice. Many characteristics once believed to reflect innate talent are actually the result of intense practice extended for a minimum of 10 years. Analysis of expert performance provides unique evidence on the potential and limits of extreme environmental adaptation and learning.

Our civilization has always recognized exceptional individuals, whose performance in sports, the arts, and science is vastly superior to that of the rest of the population. Speculations on the causes of these individuals' extraordinary abilities and performance are as old as the first records of their achievements. Early accounts commonly attribute these individuals' outstanding performance to divine intervention, such as the influence of the stars or organs in their bodies, or to special gifts (Murray, 1989). As science progressed, these explanations became less acceptable. Contemporary accounts assert that the characteristics responsible for exceptional performance are innate and are genetically transmitted.

The simplicity of these accounts is attractive, but more is needed. A truly scientific account of exceptional performance must completely describe both the development leading to exceptional performance and the genetic and acquired characteristics that mediate it. This account must specify the critical differences between exceptional and ordinary performers. It must also show that any postulated genetic differences can be hereditary and are plausible from an evolutionary perspective. Theoreticians in behavioral genetics (Plomin, DeFries, & McClearn, 1990) now argue that this is a very challenging task

because observed behavior is the result of interactions between environmental factors and genes during the extended period of development. Therefore, to better understand expert and exceptional performance, we must require that the account specify the different environmental factors that could select, promote, and facilitate the achievement of such performance. In addition, recent research on expert performance and expertise (Chi, Glaser, & Farr, 1988; Ericsson & Smith, 1991a) has shown that important characteristics of experts' superior performance are acquired through experience and that the effect of practice on performance is larger than earlier believed possible. For this reason, an account of exceptional performance must specify the environmental circumstances, such as the duration, structure of activities, and necessary minimal biological attributes that lead to the acquisition of such characteristics at a corresponding level of performance.

An account that explains how a majority of individuals attain a given level of expert performance might seem inherently unable to explain the exceptional performance of only a small number of individuals. However, if such an empirical account could be empirically supported, then the extraordinary characteristics of experts could be viewed as having been acquired through learning and adaptation, and studies of ex-



Low Frequency, High Impact Events

- ✓ Massive Transfusion Protocol
- ✓ Malignant Hyperthermia
- ✓ Anaphylaxis
- ✓ Refractory Hypotension
- ✓ Refractory Hypoxemia
- ✓ Unplanned Extubation
- ✓ Cardiac Arrest
- ✓ Aspiration
- ✓ Blood Transfusion Reaction
- ✓ Medication Error
- ✓ Tension Pneumothorax
- ✓ Emergence Delirium
- ✓ Laryngospasm
- ✓ Admission Surge
- ✓ Equipment/Power Failure
- ✓ Internal/External Disaster
- ✓ OR/ICU Fire
- ✓ Workplace Violence

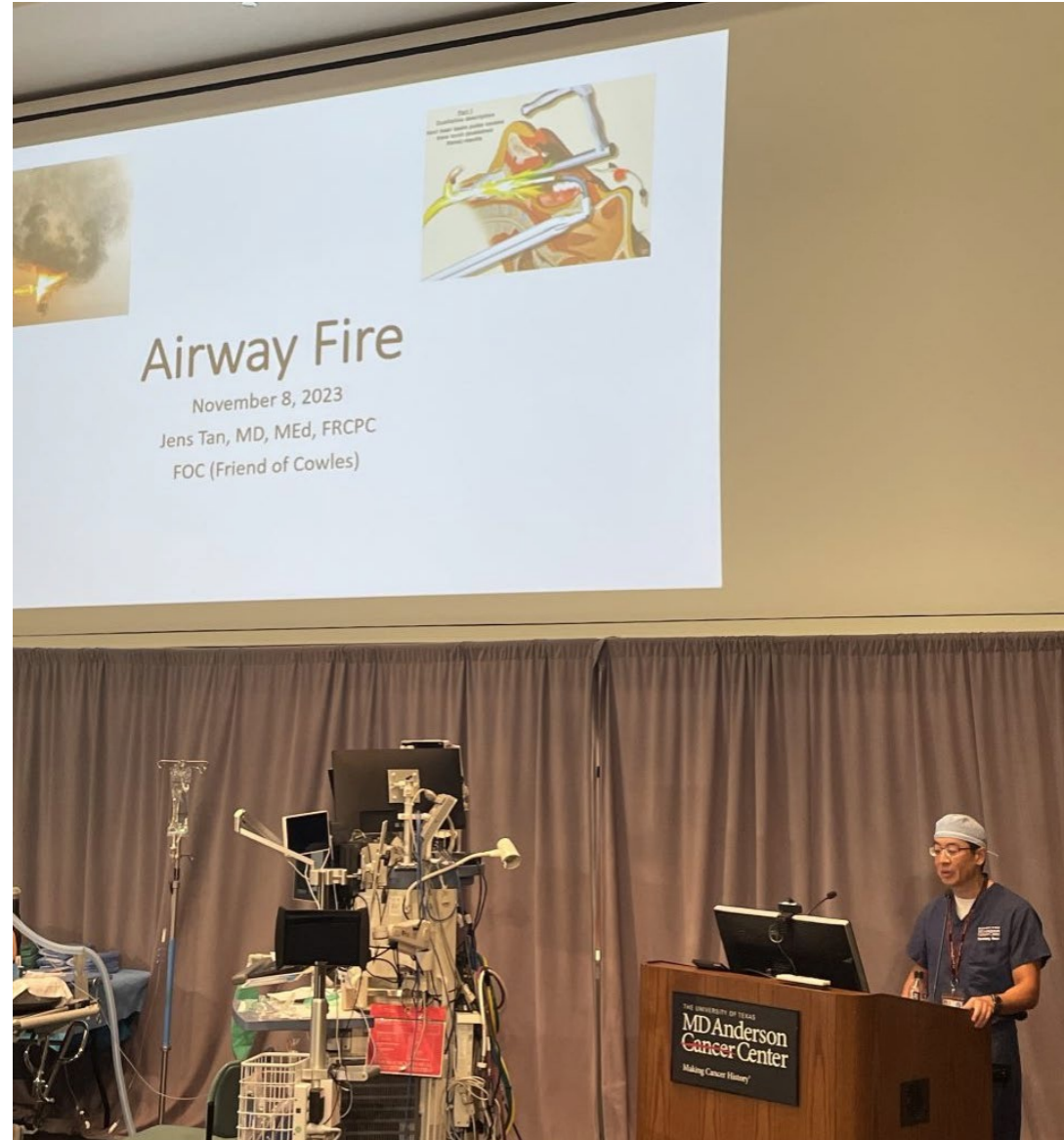
High Frequency, High Risk Events

- ✓ Patient Identification
- ✓ Scheduled Medications
- ✓ Transfer/Positioning
- ✓ Handoffs
- ✓ Unplanned ICU Admission
- ✓ Difficult Intubation
- ✓ Infrequent Procedures
- ✓ Multiple Team Procedures
- ✓ Emergency Equipment Use
- ✓ Medication Error/Delay
- ✓ Sterile Field Break
- ✓ Estimated Blood Loss
- ✓ Medication Reconciliation
- ✓ EHR Errors
- ✓ Protocol Errors
- ✓ Normalization of Deviance
- ✓ Miscommunication
- ✓ Coverage for Breaks















Failure to Remember

DON'T FORGET TO
REMEMBER



Summary

- ✓ Healthcare can be Dangerous
- ✓ Failure to Rescue
- ✓ Quality Improvement Strategies
- ✓ The 5 R's!
- ✓ Performance Gaps
- ✓ Immersive Learning
- ✓ Deliberate Practice!
- ✓ Stay Ready

“Three Important Failure to Rescue Issues”



Casey Clements, MD, PhD

**Emergency Department Clinical Chair
Staff Safety Officer, Occupational Safety
Mayo Clinic
Rochester, MN**

Hand Injuries from Snow Blowers

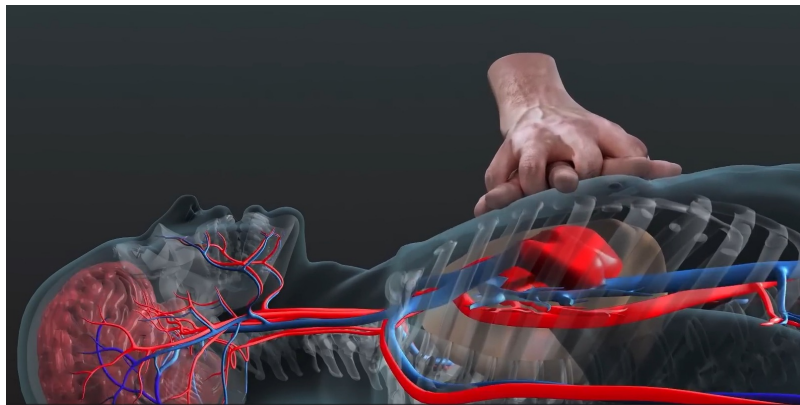


- Wet and packed snow frequently jams consumer snowblowers.
- As soon as the blower is unjammed the sharp blades immediately spin.
- Frequent serious hand injuries occur including amputations.
- Users must learn to safely unjam the blowers to prevent harm.

CPR MUST be performed on the FLOOR



- Bystander CPR is frequently reported to ED doctors to have been performed on a bed or soft surface.
- Adequate circulation does not occur unless compressions are done against a firm surface.
- It is vital to perform proper vigorous compressions following AHA Guidelines to achieve the best outcomes.



Asthma Inhalers are Mis-used Without a Spacer



- Inhalers must be used with spacer.
- A spacer is a holding chamber allowing the patient to breath deeply and move the medication into the lungs.
- Without a spacer, the medication is sprayed into the back of the throat.
- Everyone of all ages should use spacers to get adequate therapy.

Failure to Rescue: **Reaction & Update from Frontline**



Dr. Perry Bechtle II

**Physician and Consultant in
Anesthesiology**

**Board Certified in both Anesthesiology
and Neuro-Critical Care Medicine**

**Former Division Chair Neurosurgical
Anesthesiology**

Mayo Clinic, Jacksonville, Florida

Failure to Rescue: **Reaction & Update from Frontline**



Paola Yépez González, MD

**Research Assistant
Department of Anesthesia
and Critical Care
MD Anderson Cancer Center
Houston, Texas**

Failure to Rescue: **Reaction & Update from Frontline**

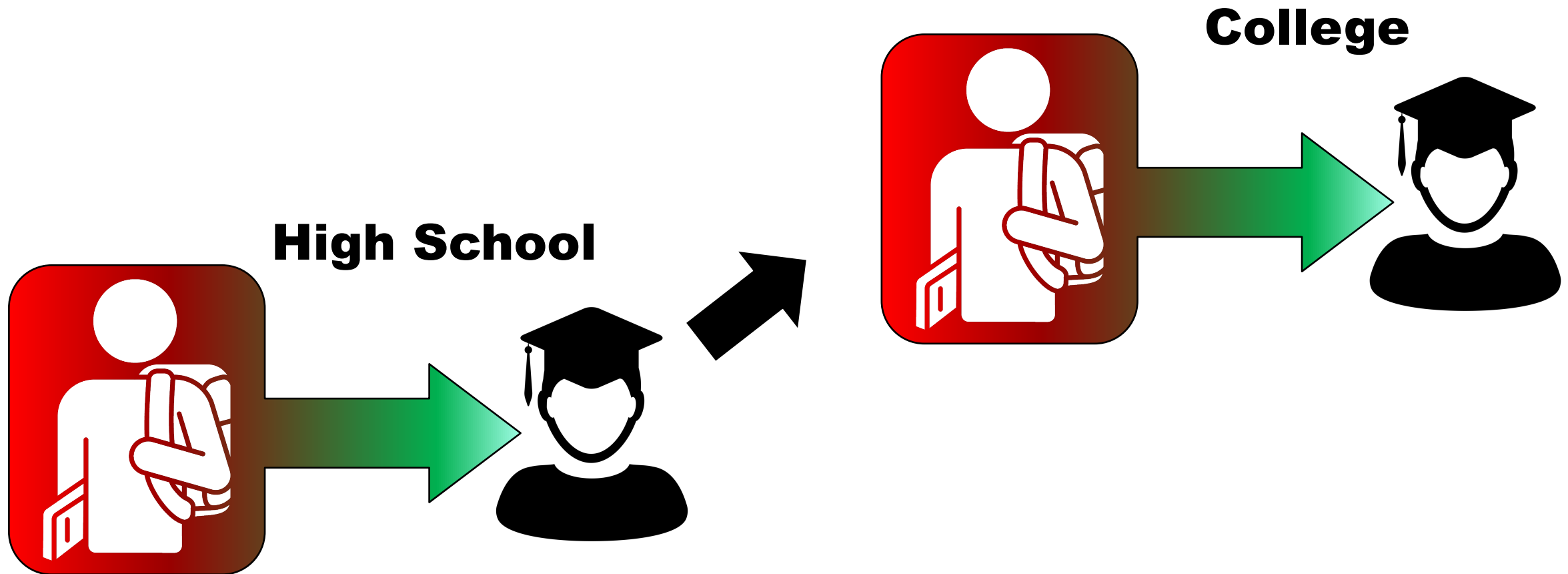


Heather Foster, RN

**Patient Safety Expert
TMIT RN Advisor
Infection Control Leader
Frontline Nursing Care**



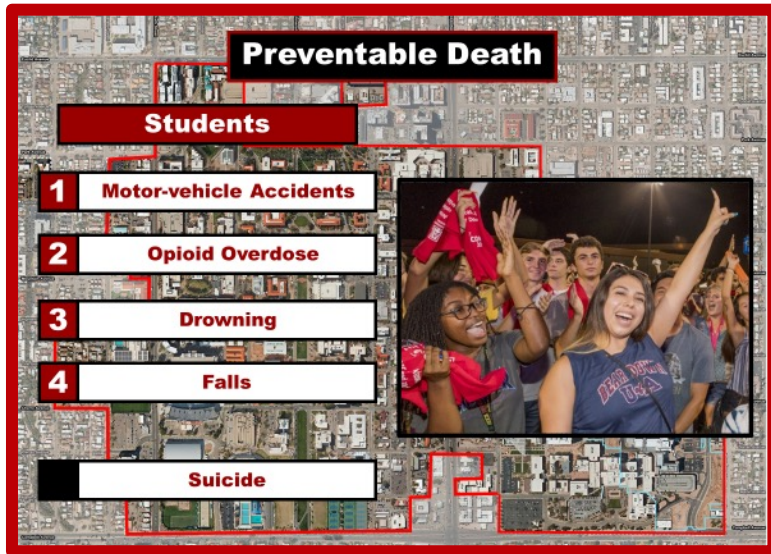
Safety of Rising Freshmen: Battling Failure to Rescue



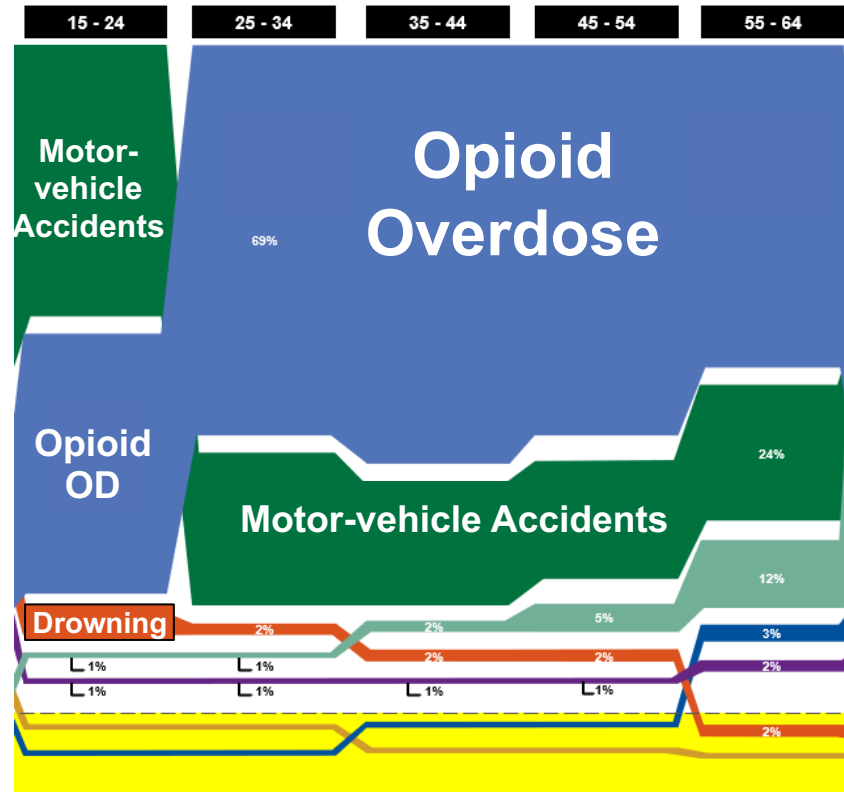
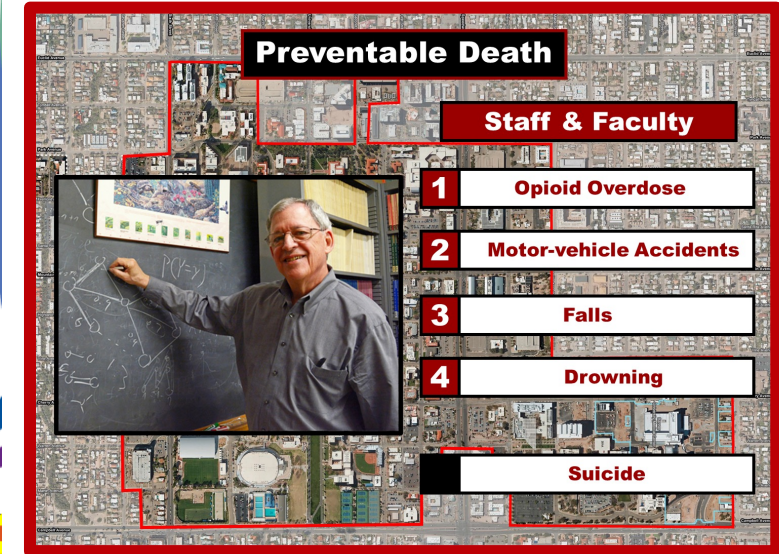
Top Causes of Unintentional Death By Age - 2020

2020 Data

Students

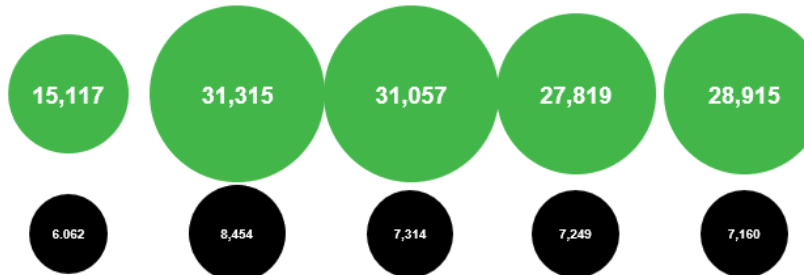


Faculty & Staff



Total unintentional deaths by age group

Total Suicide Deaths: 44,298

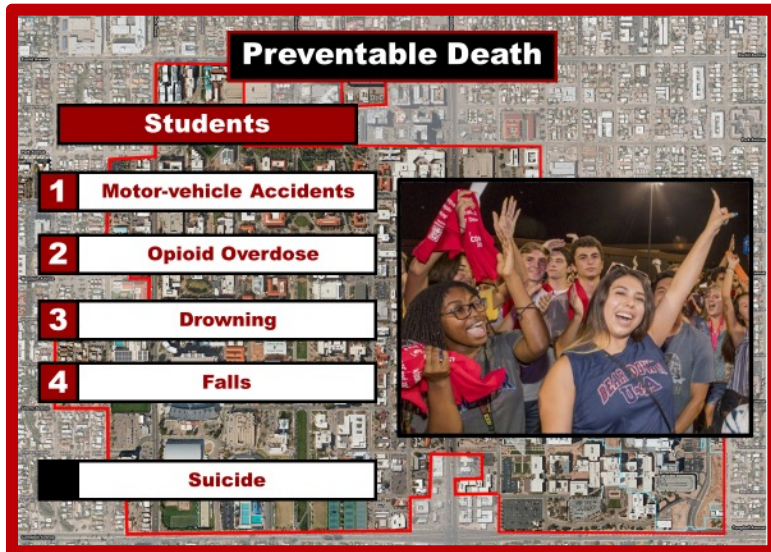


Source: Adapted from the National Safety Council Injury Facts, 2020 Edition

Top Causes of Unintentional Death By Age - 2020

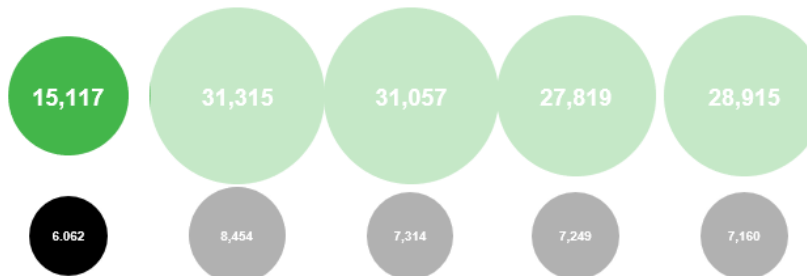
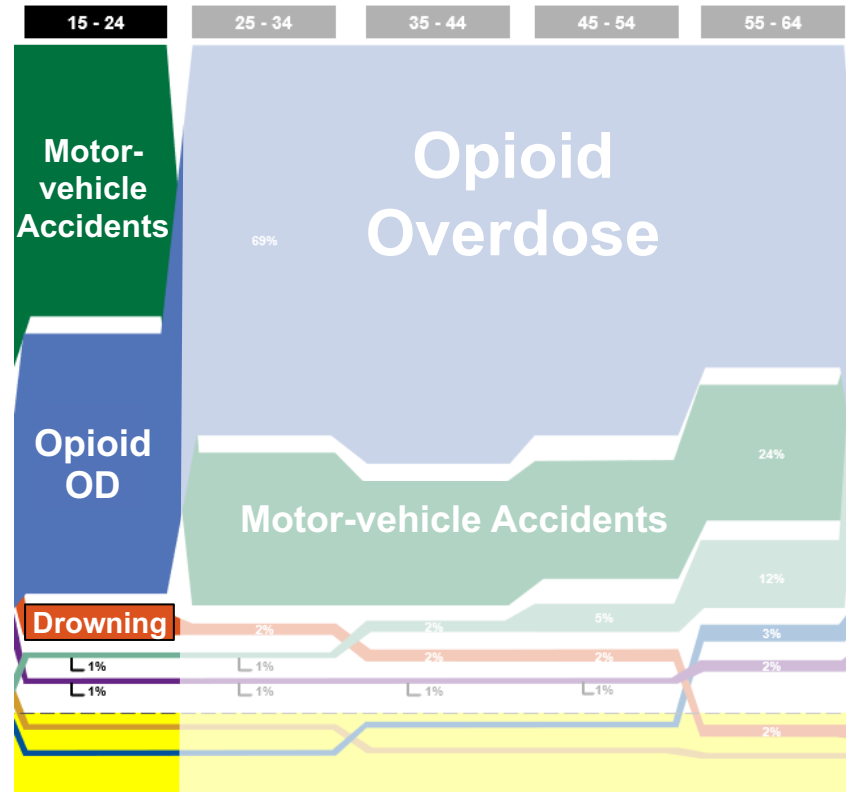
2020 Data

Students



Total unintentional deaths by age group

Total Suicide Deaths: 44,298



Safety of Rising Freshmen: Battling Failure to Rescue



Source: Adapted from the National Safety Council Injury Facts, 2020 Edition

**Wired
Magazine
Summer
2024**

The US Is Being Flooded by Chinese Vapes

The US government vowed to crack down on the sale of illegal nicotine vapes. They only got cheaper, fancier, and more potent.



Preventable Death

Students

1 Motor-vehicle Accidents

2 Opioid Overdose

3 Drowning

4 Falls

Suicide



Freshmen Survive & Thrive™ Checklists

High School Freshmen:

Basic Actions:

- ❑ Phone 911 – Automatically call ICE Parents
- ❑ Know Local Hospitals – Level 1 Trauma Centers
- ❑ Review Family FEMA Checklist for Disasters

Sudden Cardiac Arrest:

- ❑ Consider Cardiac Screening – EKG & Ultrasound
- ❑ Get CPR-AED Certified

Choking & Drowning

- ❑ Learn Heimlich Maneuver & Rescue Position

Life Threatening Allergies

- ❑ Venom, Meds, Food Allergies and Epinephrine Auto-injectors

Opioids and Poisoning

- ❑ Counterfeit Pills, Fentanyl, THC, and Nicotine Poisoning
- ❑ Vaping Dangers
- ❑ Narcan, “Tranq” and Rescue Skills

Major Trauma

- ❑ Stop the Bleed Training
- ❑ Understanding Concussions

Infections

- ❑ Clean a Cut Save a Life
- ❑ COVID, Flu, and Pandemics

Transportation Accidents

- ❑ Non-traffic Drive-over Accidents
- ❑ Traffic Accidents, Risk Taking, and Substance Impairment

Bullying & Suicide

- ❑ Physical, Emotional, and Cyber-bullying
- ❑ Suicide Risk, Online Harm, and Rescue

College Freshmen:

Basic Actions:

- ❑ Medical Power of Attorney – college, home, and recreation US States
- ❑ Phone 911 – Automatically call ICE – Parents or Another Adult
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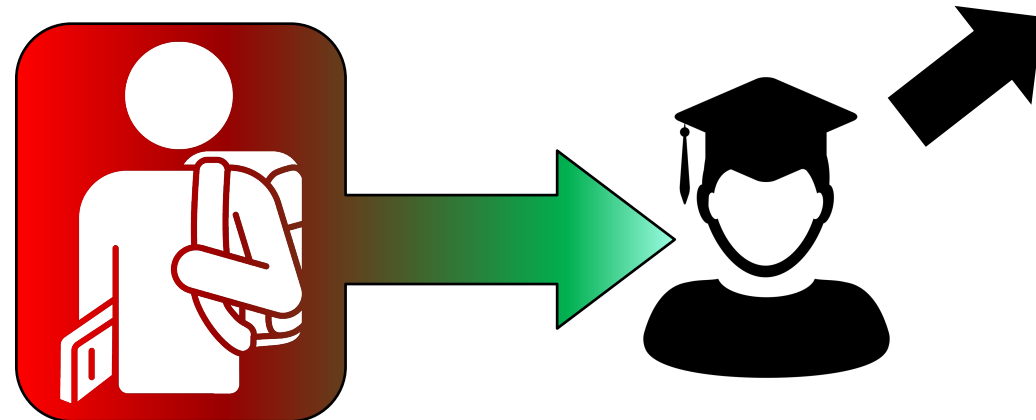
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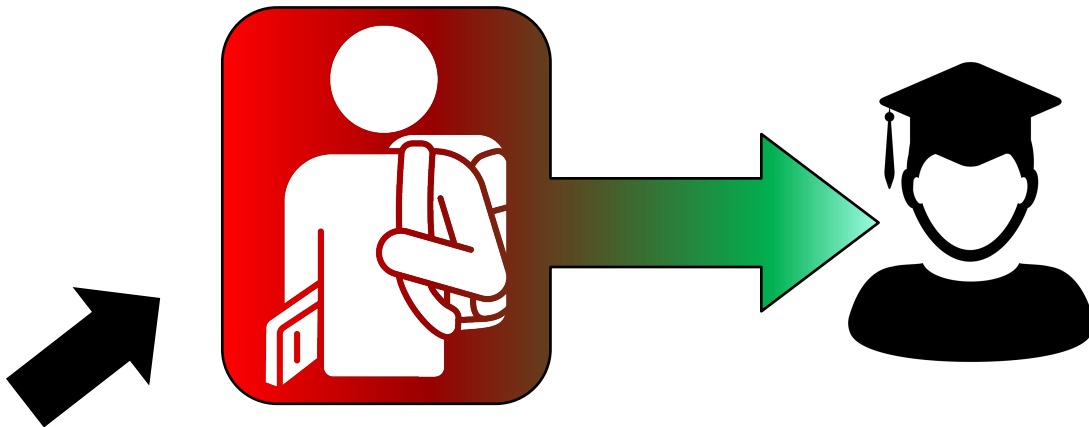
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High School Freshmen



College Freshmen



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Voice of Patient and Family



Jennifer Dingman

Founder, Persons United Limiting
Substandard and Errors in Healthcare
(PULSE), Colorado Division
Co-founder, PULSE American Division
TMIT Patient Advocate Team Member
Pueblo, CO

Fight the Good Fight...

Finish the Race...

Keep the Faith...



ADDITIONAL RESOURCES

Bystander Rescue Care at www.MedTacGlobal.org

 [About & Blog](#) [Values & Team](#) [Med Centers & Schools](#) [Recorded Broadcasts](#) [Specialty Programs](#) [Student Outreach](#) [Research & Development](#) [CARE UNIVERSITY](#)

Med Tac Bystander Rescue Care

Med Tac is short for "Medical Tactical" and is an advanced first aid platform to battle failure to rescue. We train all ages critical bystander care skills that can save lives before EMS arrives during the most common life threatening emergencies. To enquire about participating with Med Tac [click here](#).

In response to the Coronavirus pandemic we have asked our panel of experts to produce a series of free webinars to help the public, professional first responders, security and medical volunteers, and families deal with the critical issues. [Click here for all Coronavirus Content & Video Summaries](#)

Video Library

Med Tac Story

- Adopt a Cove Program
- Lifeguard & Surf Program
- 3 Minutes & Counting Broadcasts
- Water Safety Message
- 5 Rights of Emergency Care
- Opioid Overdose Briefing 2023
- Coronavirus Progress Report



The Battle Against Failure to Rescue

Our team originally focused on active shooter events. There is no other integrated program to train the public to prevent "failure to rescue" before EMS arrives for the 8 leading causes of preventable death from emergencies. It has been funded by philanthropy through TMIT Global, a 501c3 medical research organization that leads a global patient safety community of practice found at [www.SafetyLeaders.org](#). We have published multiple articles and have developed pilot programs in five states. [Click here](#) to download a PDF of our articles.



- Cardiac Arrest
- Choking & Drowning
- Life Threatening Allergies
- Major Trauma
- Opioids & Poisoning
- Infections
- Transportation Accidents
- Bullying

Bystander Care Training is a critical need in all communities. The preventable deaths we see in the news are the tip of the iceberg. Our program is a Good Samaritan support system to help everyone learn life-saving actions that will save lives.

High Impact Care Hazards are conditions that are frequent, severe, preventable, and measurable. We have identified the leading causes of death that strike children, youth, and those in their workforce years. We provide evidence-based bystander care training that can have the greatest impact.

Bystander Rescue Skills are the competencies that bystanders can learn that will save lives in the few precious minutes before the professional first responders arrive. Such behaviors can be learned by children, adults, and entire families. We have programs for children, adults, law enforcement, educators, lifeguards, and caregivers.

Med Tac is the only integrated program addressing the leading causes of death of otherwise healthy children, youth, and adults. Med Tac partners with terrific local trainers from great organizations already in the community. The entire program can be delivered remotely by Zoom.

The 5 R's of Safety



Family Health Safety Plans

Readiness: Preparation, regular review, and updating of a plan based on the latest science. Regular deliberate practice of roles and skills each family member undertake.

Readiness

Resilience

Resilience: Fortify response, rescue, and recovery actions in plan. In law enforcement and healthcare, we call this “target hardening”.

Response

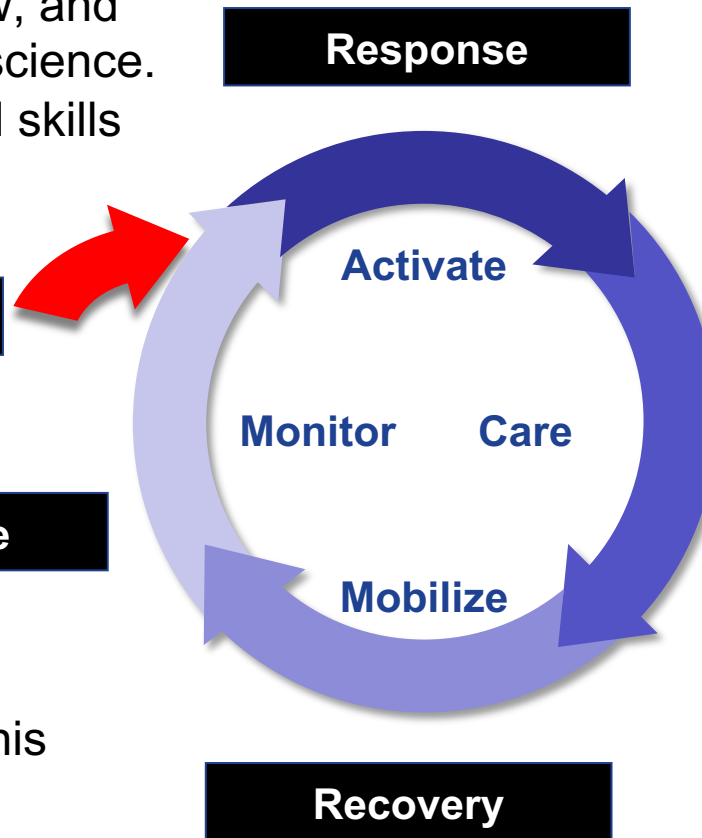
Response: Family moves to action to respond to an emergency. Safeguards are put in place. The family may respond to a member being impacted by threats.

Rescue

Rescue: Regular deliberate practice of roles and skills that can impact failure to rescue.

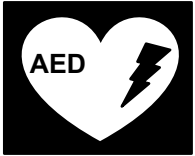
Recovery

Recovery: Follow up care of the family member after an event. Returning to normal family activities after a family member has received care for high impact emergencies.



The Problem: Failure to Rescue

Cardiac Arrest



Choking & Drowning



Opioid OD & Poisoning



Anaphylaxis



Major Trauma



Infection Care



Transportation



Bullying



The Solution: Bystander Rescue Care

Cardiac Arrest



Sudden Cardiac Arrest: There is an epidemic of SCA with one quarter of the SCA events in children and youth occurring at sporting events. CPR and AED use have a dramatic impact on survival.

Possible Lives Saved in the US: 41 adults every hour and 19 children per day. 25% of SCA deaths in children occur at such events – 4 per day.

Choking & Drowning



Choking: More than 100,000 lives have been saved with the Heimlich Maneuver. Most choking deaths are preventable.

Possible Lives Saved in the US: 13 per day

Drowning: By population, drowning and near drowning events are very common. Since much of the OC population is near water, the numbers are likely much greater.

Possible Lives Saved in the US: 11 per day

Opioid OD & Poisoning



Opioid Overdose and Poisoning: An exploding opioid OD crisis is gripping our nation with a great toll on families. Narcan opioid reversal agents, rescue breathing and positioning, and rapid EMS response saves lives. Awareness drives prevention.

Possible Lives Saved in the US: There are 293 OD deaths per day. Up to 11 lives may be saved per hour.

Anaphylaxis



Anaphylaxis & Life Threatening Allergies: Many events are unreported; however 22% occur in children without a prior diagnosis of allergies. More than one in twenty adults will have an anaphylactic event in their lifetime. Epinephrine auto-injectors save lives within minutes.

Possible Lives Saved in the US: 2 per day

Major Trauma



Major Trauma & Bleeding: Bystander care especially for major bleeding using Stop-The-Bleed techniques of wound pressure, bandages, and tourniquets can have an enormous impact on survival.

Possible Lives Saved in the US: 14 per hour

Infection Care



Infection Care: Epidemics, pandemics, and seasonal infections are a leading cause of death. Prevention, preparedness, protection, and performance improvement strategies and tactics are critical to save lives and inform all Med Tac efforts. They are a feature of all Med Tac Bystander Rescue Care.

Possible Lives Incalculable – More than 1 Million from COVID alone. Almost 1,000 per day from sepsis.

Transportation



Non-traffic Related Vehicular Accidents: The incidence of non-traffic related drive-over accidents near schools and home is greater than 50 per week. More than 60% of the drivers are a parent or friend.

Possible Lives Saved in the US: Including adults, there are 1,900 deaths per year; many are preventable.

Bullying



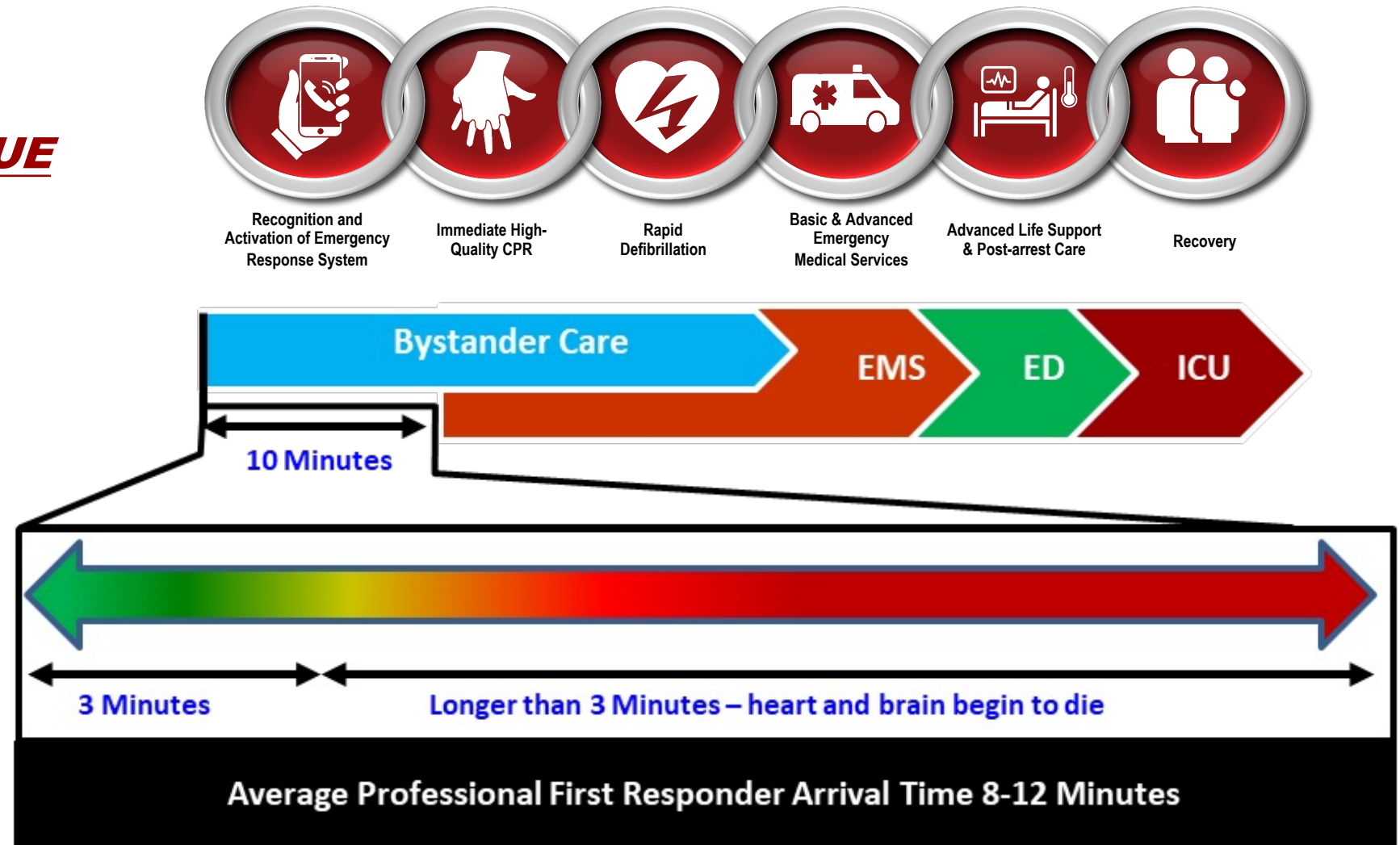
Bullying & Workplace Violence: Bullying and abuse of power in schools and at work can lead to suicide, workplace violence, violent intruders, and active shooter events.

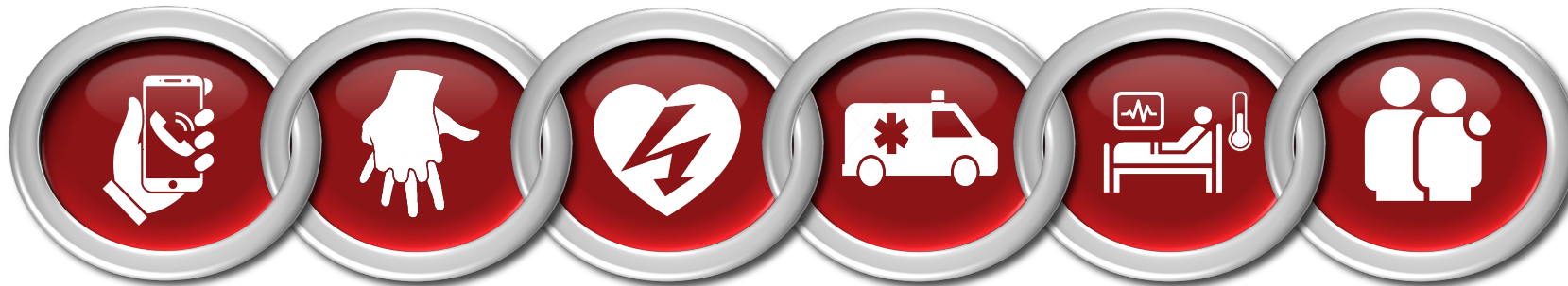
Possible Lives Saved in the US: Difficult to estimate, however the consensus is that they are likely to be very significant.

Sources: CDC and Other Sources

The Problem: ***FAILURE TO RESCUE***

The Solution: ***Bystander Care***





Recognition and
Activation of Emergency
Response System

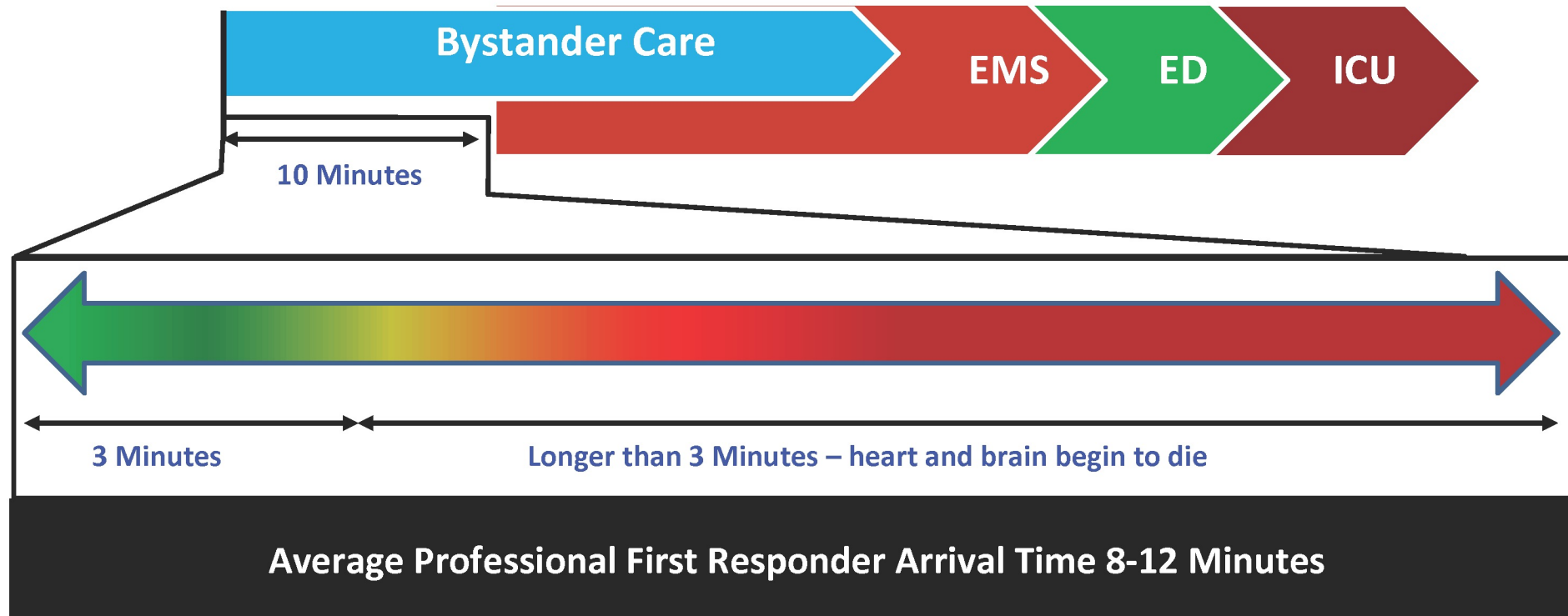
Immediate High-
Quality CPR

Rapid
Defibrillation

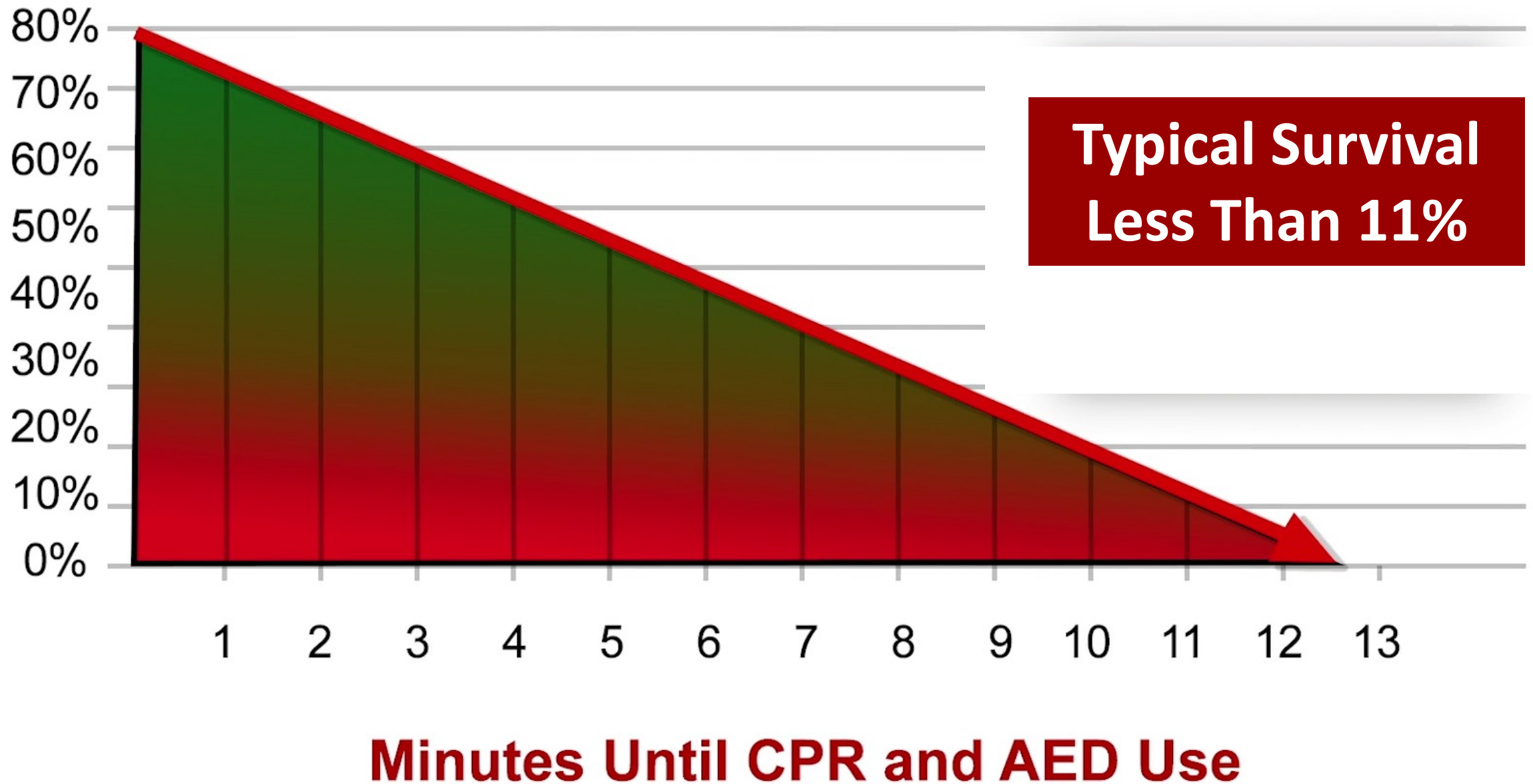
Basic & Advanced
Emergency
Medical Services

Advanced Life Support
& Post-arrest Care

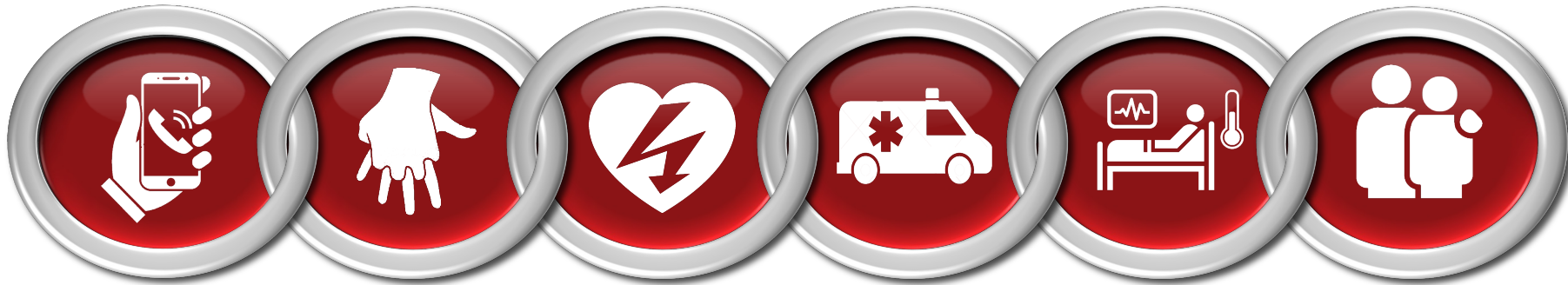
Recovery



Survival Loss Over Time for Sudden Cardiac Arrest



Cardiac Arrest Chain of Survival



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Activation of Emergency
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Basic & Advanced
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Recovery

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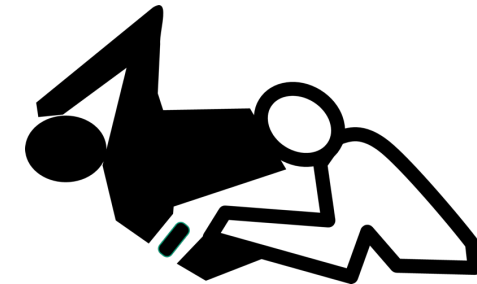


3 Minutes from Drop to Shock

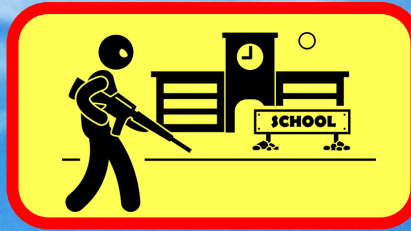
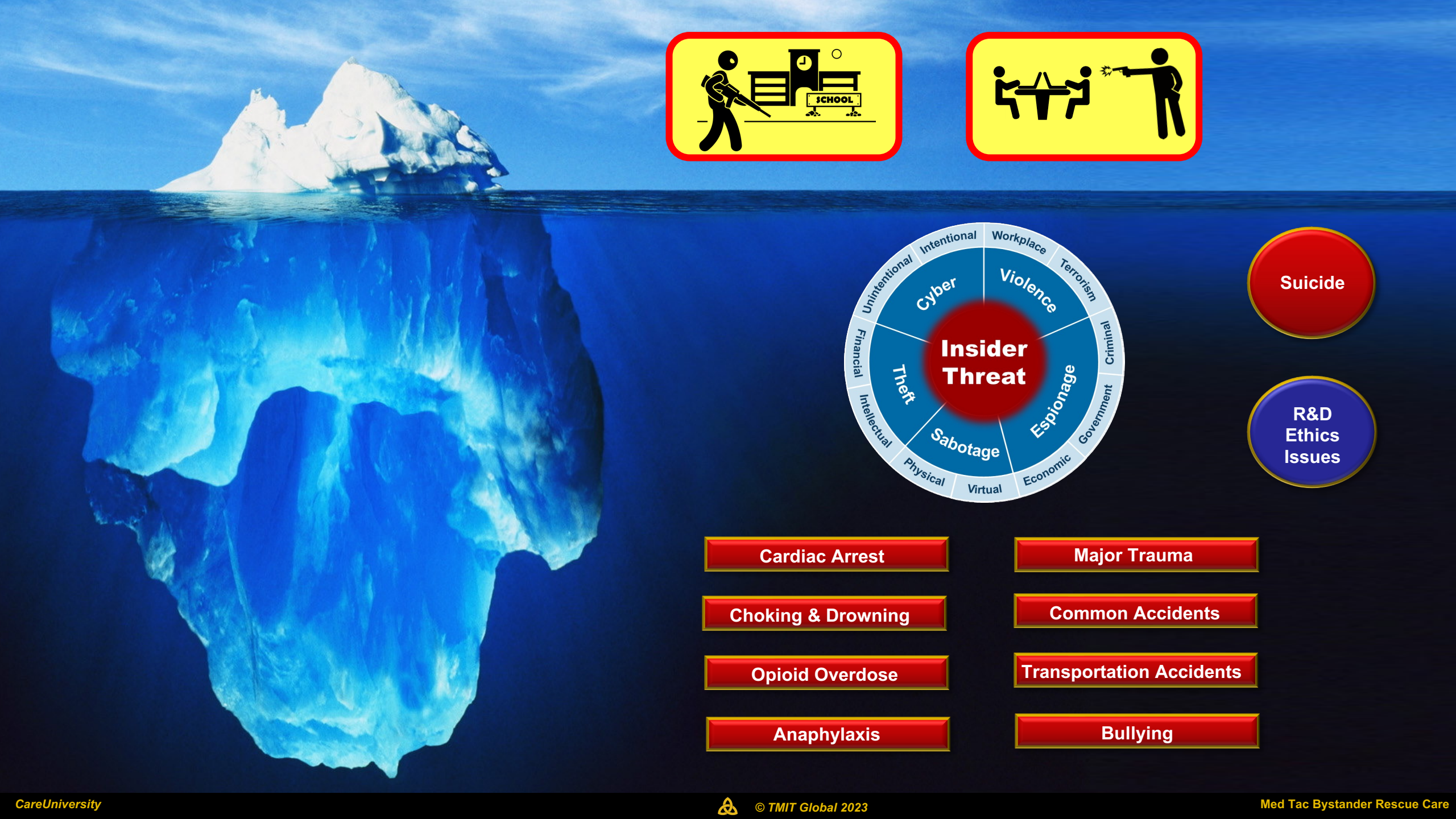
Trauma Chain of Survival



Bystander Care



3 Minutes from Gun Shot to Stop the Bleed



Suicide

**R&D
Ethics
Issues**

Cardiac Arrest

Major Trauma

Choking & Drowning

Common Accidents

Opioid Overdose

Transportation Accidents

Anaphylaxis

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