



Three Common Issues in Surgical Patients.

Mackenzie Cook MD

OHSU Trauma, Critical Care and Acute Care Surgery

Objective

Review three commonly encountered problems you may face in surgical co-management:

- Bleeding
- Pre-operative Goal Setting and Care
 - Rib Fracture Pain Control

Questions from the Notecards

Do: Recognize Traumatic Injury
as a Public Health Crisis

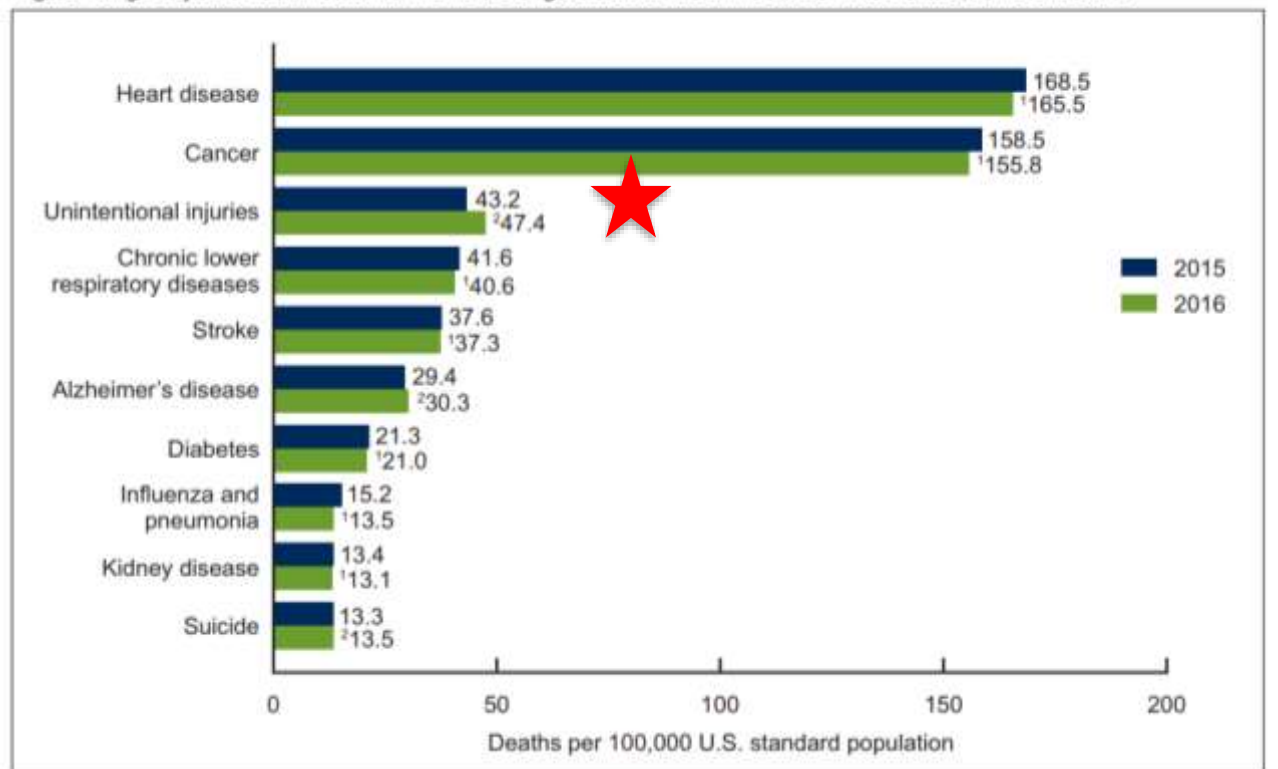
Don't: Forget About the Long
Tail of Injury

3rd Leading Cause of Death

2016: 231,954 deaths due to Injury



Figure 4. Age-adjusted death rates for the 10 leading causes of death in 2016: United States, 2015 and 2016



10 Leading Causes of Death by Age Group, United States – 2016

Rank	Age Groups										Total
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Congenital Anomalies 4,816	Unintentional Injury 1,261	Unintentional Injury 787	Unintentional Injury 847	Unintentional Injury 13,895	Unintentional Injury 23,984	Unintentional Injury 20,975	Malignant Neoplasms 41,291	Malignant Neoplasms 116,364	Heart Disease 507,118	Heart Disease 635,260
2	Short Gestation 3,927	Congenital Anomalies 433	Malignant Neoplasms 449	Suicide 436	Suicide 5,723	Suicide 7,366	Malignant Neoplasms 10,903	Heart Disease 34,027	Heart Disease 78,610	Malignant Neoplasms 422,927	Malignant Neoplasms 598,038
3	SIDS 1,500	Malignant Neoplasms 377	Congenital Anomalies 203	Malignant Neoplasms 431	Homicide 5,172	Homicide 5,376	Heart Disease 10,477	Unintentional Injury 23,377	Unintentional Injury 21,860	Chronic Low. Respiratory Disease 131,002	Unintentional Injury 161,374
4	Maternal Pregnancy Comp. 1,402	Homicide 339	Homicide 139	Homicide 147	Malignant Neoplasms 1,431	Malignant Neoplasms 3,791	Suicide 7,030	Suicide 8,437	Chronic Low. Respiratory Disease 17,810	Cerebro-vascular 121,630	Chronic Low. Respiratory Disease 154,596
5	Unintentional Injury 1,219	Heart Disease 118	Heart Disease 77	Congenital Anomalies 146	Heart Disease 949	Heart Disease 3,445	Homicide 3,369	Liver Disease 8,364	Diabetes Mellitus 14,251	Alzheimer's Disease 114,883	Cerebro-vascular 142,142
6	Placenta Cord. Membranes 841	Influenza & Pneumonia 103	Chronic Low. Respiratory Disease 68	Heart Disease 111	Congenital Anomalies 388	Liver Disease 925	Liver Disease 2,851	Diabetes Mellitus 6,267	Liver Disease 13,448	Diabetes Mellitus 56,452	Alzheimer's Disease 116,103
7	Bacterial Sepsis 583	Septicemia 70	Influenza & Pneumonia 48	Chronic Low Respiratory Disease 75	Diabetes Mellitus 211	Diabetes Mellitus 792	Diabetes Mellitus 2,049	Cerebro-vascular 5,353	Cerebro-vascular 12,310	Unintentional Injury 53,141	Diabetes Mellitus 80,058
8	Respiratory Distress 488	Perinatal Period 60	Septicemia 40	Cerebro-vascular 50	Chronic Low Respiratory Disease 206	Cerebro-vascular 575	Cerebro-vascular 1,851	Chronic Low. Respiratory Disease 4,307	Suicide 7,759	Influenza & Pneumonia 42,479	Influenza & Pneumonia 51,537
9	Circulatory System Disease 460	Cerebro-vascular 55	Cerebro-vascular 38	Influenza & Pneumonia 39	Influenza & Pneumonia 189	HIV 546	HIV 971	Septicemia 2,472	Septicemia 5,941	Nephritis 41,095	Nephritis 50,046
10	Neonatal Hemorrhage 398	Chronic Low Respiratory Disease 51	Benign Neoplasms 31	Septicemia 31	Complicated Pregnancy 184	Complicated Pregnancy 472	Septicemia 897	Homicide 2,152	Nephritis 5,650	Septicemia 30,405	Suicide 44,965

Data Source: National Vital Statistics System, National Center for Health Statistics, CDC.
Produced by: National Center for Injury Prevention and Control, CDC using WISQARS™.

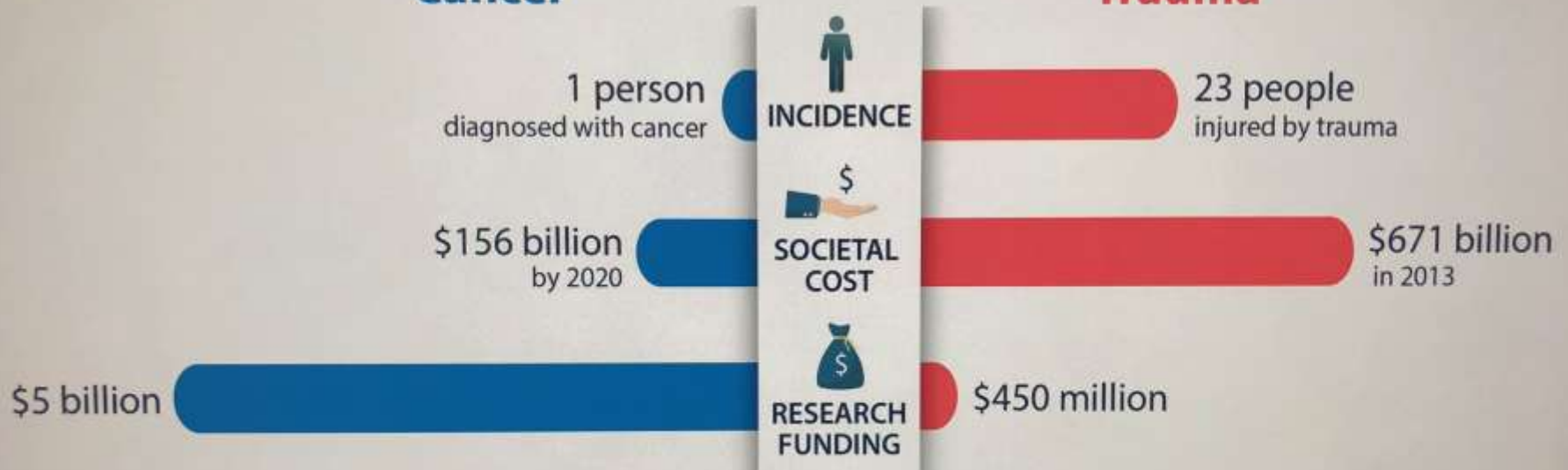


Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Traumatic Injury: Health Care Crisis

Cancer

Trauma



Traumatic Injury: Society Impact vs Research Funding Disparity



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

How Traumatic Injury Has Become a Health Care Crisis
Frydrych LM & Delano MJ.
THE CONVERSTATION May 15, 2019

Long-term Survival of Adult Trauma Patients

Giana H. Davidson, MD, MPH

JAMA. 2011;305(10):1001-1007

Christian A. Hamlat, MD, MPH

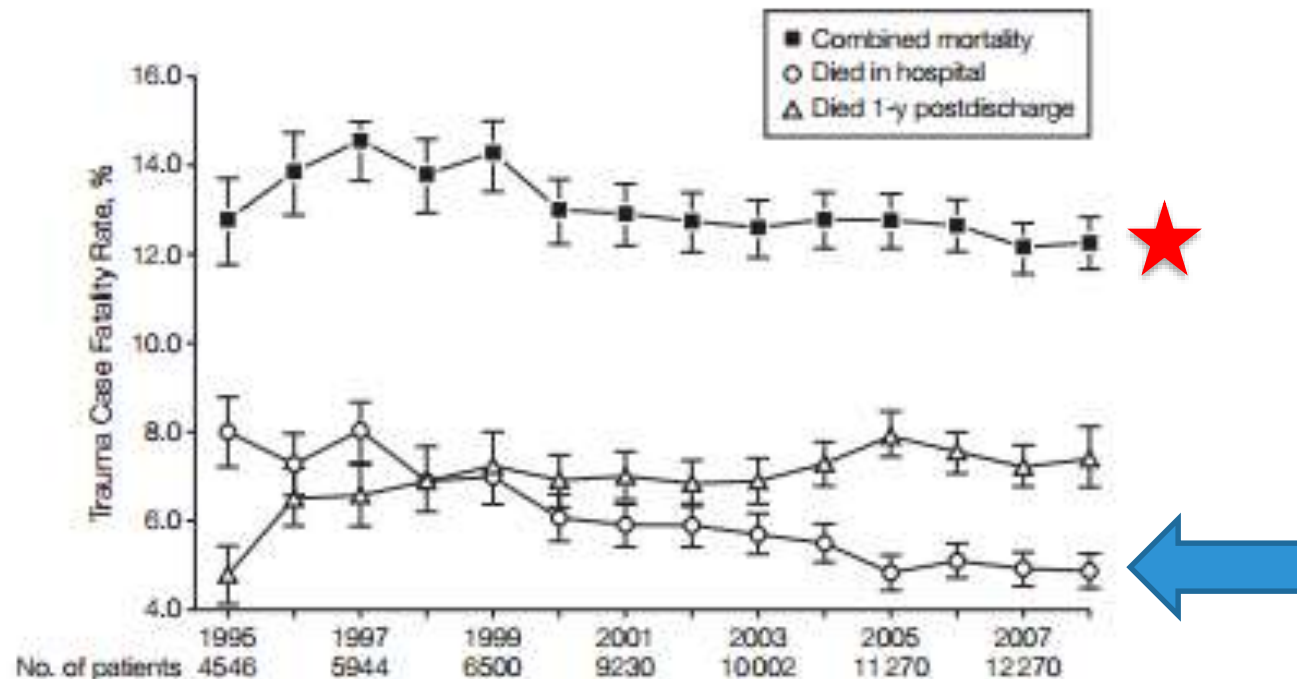
Frederick P. Rivara, MD, MPH

Thomas D. Koepsell, MD, MPH

Gregory J. Jurkovich, MD

Saman Arbabi, MD, MPH

Figure 1. Trauma Case Fatality Rate for Inpatients and 1-Year Postdischarge



Error bars indicate 95% confidence intervals.



Main Points : Mortality

- We are very good at resuscitation, damage control and critical care
- We are pushing patient who used to die in the ICU out to die at home/SNF
- Discharge is not the end of the story

REMEMBER THIS:

Traumatic injury is a life altering event that profoundly increases a patient's risk of death and long term disability. This risk likely extends for years after injury.

Scenario

Rapidly bleeding recently post-surgical patient.

Surgeon is at home and you are called to the
bedside.

Do: Balance Resuscitation

Don't: Trust Labs

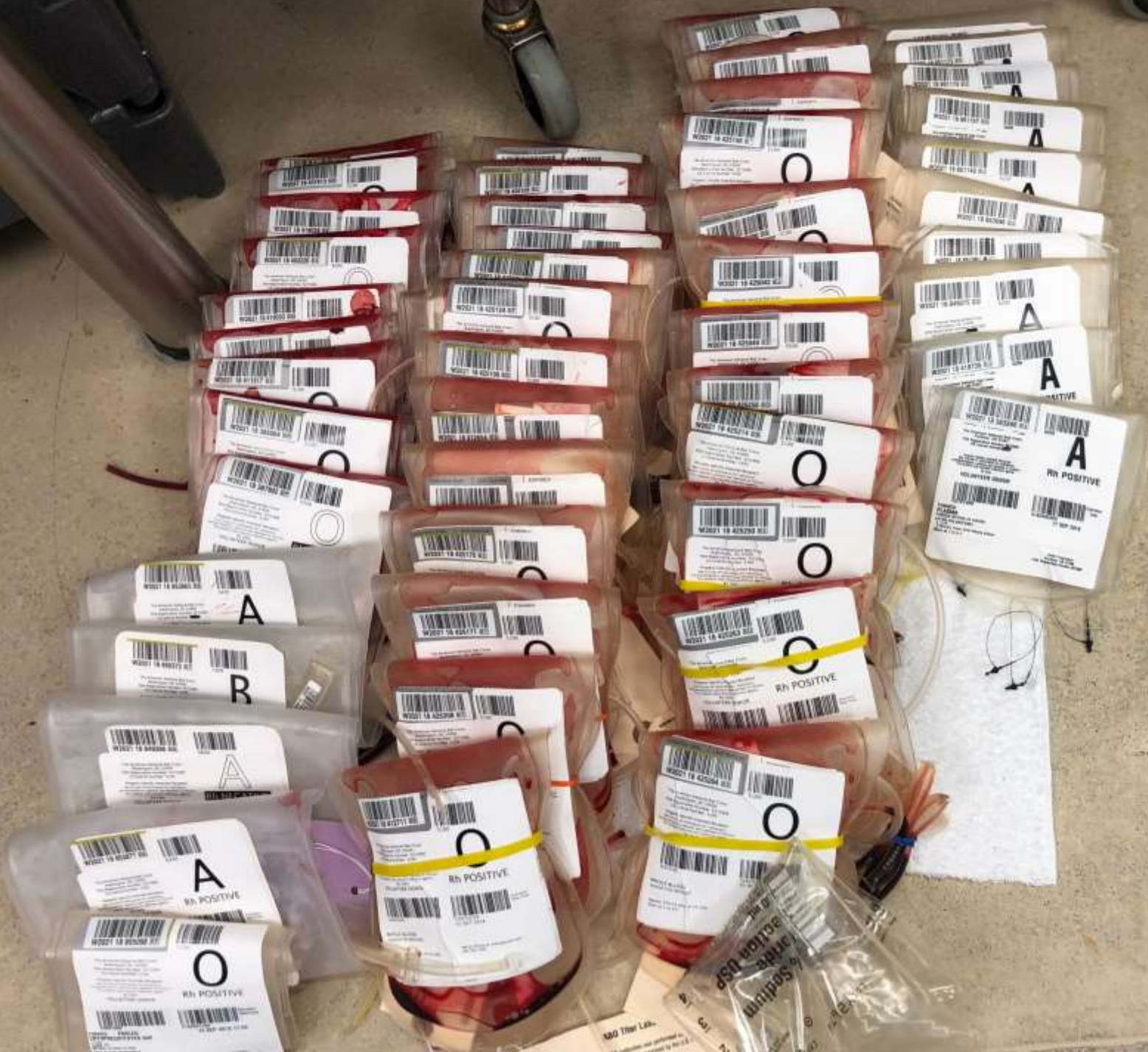
Blood Fractions are Good

Original Investigation

Transfusion of Plasma, Platelets, and Red Blood Cells in a 1:1:1 vs a 1:1:2 Ratio and Mortality in Patients With Severe Trauma The PROPPR Randomized Clinical Trial

John B. Holcomb, MD; Barbara C. Tilley, PhD; Sarah Baraniuk, PhD; Erin E. Fox, PhD; Charles E. Wade, PhD; Jeanette M. Podbielski, RN; Deborah J. del Junco, PhD; Karen J. Brasel, MD, MPH; Eileen M. Bulger, MD; Rachael A. Calcutt, MD, MSPH; Mitchell Jay Cohen, MD; Bryan A. Cotton, MD, MPH; Timothy C. Fabian, MD; Kenji Inaba, MD; Jeffrey D. Kerby, MD, PhD; Peter Muskat, MD; Terence O'Keeffe, MBChB, MSPH; Sandro Rizoli, MD, PhD; Bryce R. H. Robinson, MD; Thomas M. Scalea, MD; Martin A. Schreiber, MS; Deborah M. Stein, MD; Jordan A. Weinberg, MD; Jeannie L. Callum, MD; John R. Hess, MD, MPH; Nena Matijevic, PhD; Christopher N. Miller, MD; Jean-Francois Pittet, MD; David B. Hoyt, MD; Gail D. Pearson, MD, ScD; Brian Leroux, PhD; Gerald van Belle, PhD; for the PROPPR Study Group





320 Ther Lab.



Whole Blood is Better (probably)

Active Research: SWAT trial via LITES Network



About LITES

A research network for traumatic brain injury, whole blood, airway management, and emergency medical services.



LITES Projects

Ongoing trauma research areas include whole blood, Hemorrhagic shock, TBI, breathing and airway management, and prehospital



LITES Sites

Which hospitals and emergency medical services are performing the blood, breathing, and brain research.




Contact LITES

Request more information about LITES trauma research.

Whole Blood is Safe

No hemolysis in civilian setting

**Safety profile of uncrossmatched, cold-stored, low-titer, group
O+ whole blood in civilian trauma patients**

*Jansen N. Seheult ¹, Marshall Bahr,² Vincent Anto,³ Louis H. Alarcon,^{4,5} Alain Corcos,^{4,5}
Jason L. Sperry,^{4,5} Darrell J. Triulzi,^{1,6} and Mark H. Yazer^{1,6}*



Scenario

Frail, debilitated patient with planned operation
asked to risk-stratify and optimize.

Do: Ask surgeon to specifically
consider goal concordance in
operative planning.

Don't: Be swayed by push-back

Palliative Care is OUR Job

2005: Call to surgeons to provide high quality palliative care to ALL patients, not just those at the end of life.



100+years

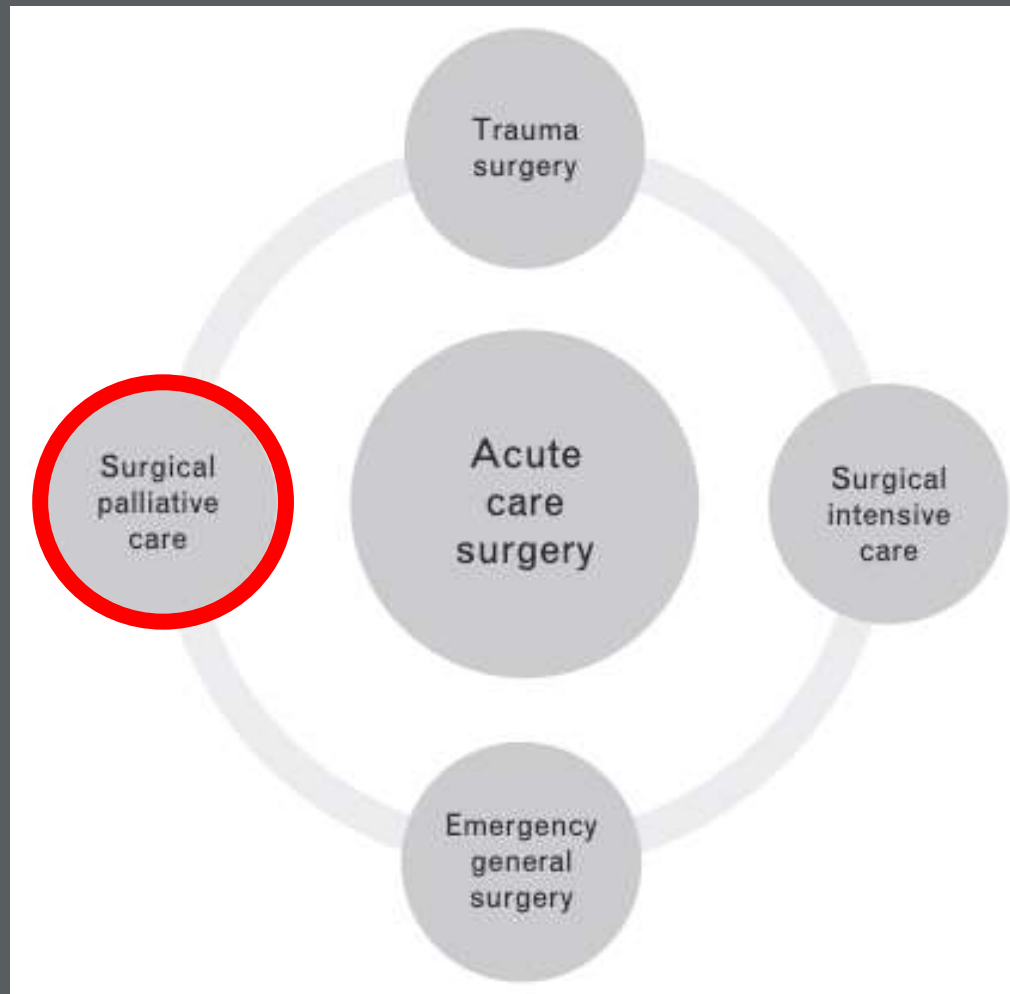
AMERICAN COLLEGE OF SURGEONS

Inspiring Quality:

Highest Standards, Better Outcomes



Palliative Care is OUR Job



O'Connell and Maier. 2016

Surgeon Reported Barriers to PC

1. Surgeons Specific
2. Family / Patient Specific
3. System Specific



Surgeons' Perceived Barriers to Palliative and End-of-Life Care: A Mixed Methods Study of a Surgical Society

Pasithorn A. Suwanabol, MD, MS¹ Ari C. Reichstein, MD² Z. Tuba Suzer-Gurtekin, PhD³
Jane Forman, ScD, MHS⁴ Maria J. Silveira, MD, MPH^{5,6}
Lona Mody, MD, MSc^{5,6} and Arden M. Morris, MD, MPH⁷

Surgeon Reported Barriers to PC

1. Surgeons Specific
2. Family / Patient Specific
3. System Specific



Surgeons' Perceived Barriers to Palliative and End-of-Life Care: A Mixed Methods Study of a Surgical Society

Pasithorn A. Suwanabol, MD, MS¹ Ari C. Reichstein, MD² Z. Tuba Suzer-Gurtekin, PhD³
Jane Forman, ScD, MHS⁴ Maria J. Silveira, MD, MPH^{5,6}
Lona Mody, MD, MSc^{5,6} and Arden M. Morris, MD, MPH⁷

ACS Palliative Care Triggers

1. Family request
2. Family disagreement with team, advance directive or each other (lasting >4 days)
3. Glasgow Outcome Scale score 3
4. Futility considered or declared by medical team
5. Death expected during same surgical ICU stay
6. A diagnosis with median survival less than 6 months
7. Carcinomatosis or unresectable malignancy
8. Presence of an advanced directive authorizing withdrawal of life-sustaining measures
9. Glasgow Coma Scale score less than 8 for greater than 1 week in a patient greater than 55 years old
10. Multisystem organ failure



Palliative Care is GOOD Care

- VA: 5,740 patients at 129 centers who died within 90 days of high risk surgery
 - 30% with palliative consultation
 - 6% Pre-operative palliative consultation
- **(+) PC = 47% more likely to rate care as “excellent”**
 - Better communication
 - Better support



Best Case / Worst Case

Shift Focus from Problem / Solution

to

Values & Range of Trajectories



Taylor et al. 2017



Kruser
et al.
2015



Best Case / Worst Case



Summary

- Palliative **MUST** be part of complex surgical care.
- Model of involvement is institution specific – **BUT** – improving primary palliative skills is key
- The newer generation of surgeons understand this and appreciate this.

Scenario

Patient admitted with rib fractures and you are asked to co-manage.

Do: Provide multi-modal analgesia
+/- epidural

Don't: Trust how they look on
admission

Rib Fractures

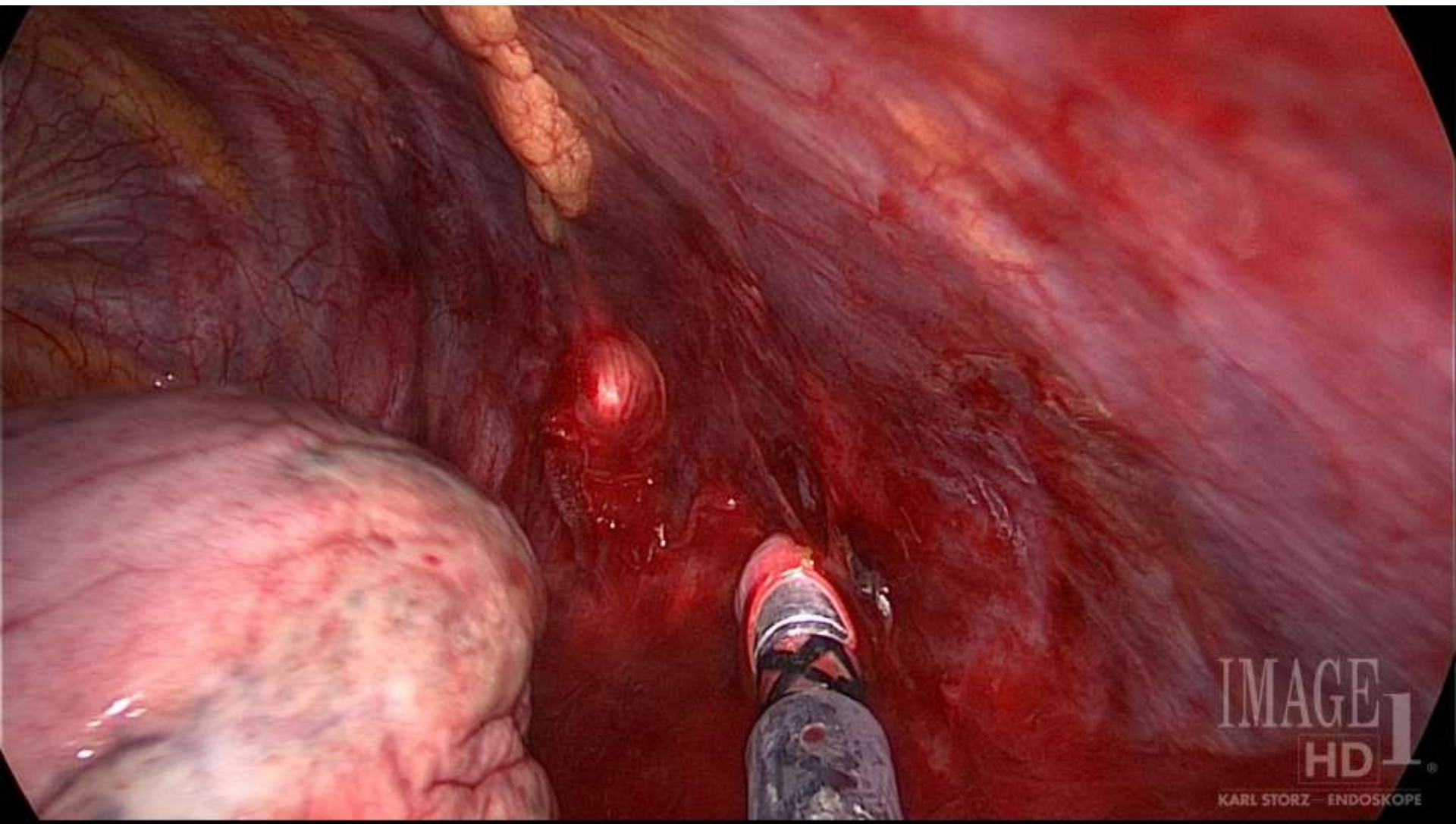
- Multi-modal analgesia
 - Opiates, NSAIDs, Tylenol, +/- Gabapentin
 - **REGIONAL AND NEURAXIAL**
 - **KETAMINE**

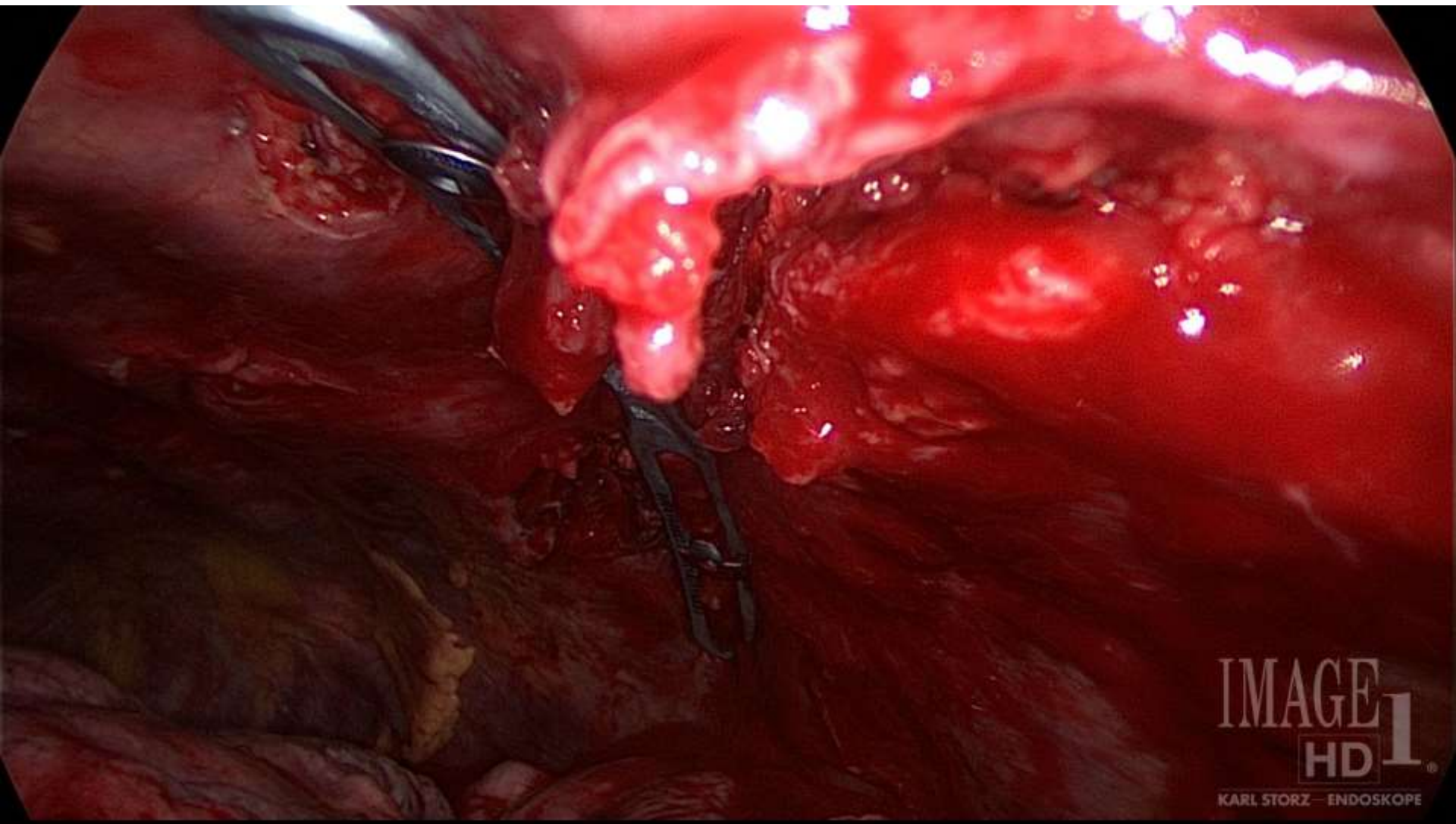
Use of regional analgesia and risk of delirium in older adults with multiple rib fractures: An Eastern Association for the Surgery of Trauma multicenter study

Kathleen M. O'Connell, MD, MPH, Kushang V. Patel, PhD, MPH, Elisabeth Powelson, MD, MSc, Bryce R.H. Robinson, MD, MSc, Kelly Boyle, MD, Jacob Peschman, MD, Ethan C. Blocher-Smith, DO, MS, Lewis Jacobson, MD, Justin Leavitt, MD, Marta L. McCrum, MD, MPH, Jessica Ballou, MD, MPH, Karen J. Brasel, MD, MPH, Joshua Judge, MD, Shannon Greenberg, MD, Kaushik Mukherjee, MD, Qian Qiu, MBA, Monica S. Vavilala, MD, Frederick Rivara, MD, MPH, and Saman Arbabi, MD, MPH, *Seattle, Washington*

Thoracic Trauma in 2021







IMAGE¹
HD¹
KARL STORZ — ENDOSKOPE



Scenario

Post-pancreatectomy / pancreatitis patient with a drain and:



Do: Obtain an URGENT CTA and
prepare for bleeding.

Don't: Minimize this finding

Questions Before I Close?

Palliative Care is OUR Job

2005: Call to surgeons to provide high quality palliative care to ALL patients, not just those at the end of life.



100+years

AMERICAN COLLEGE OF SURGEONS

Inspiring Quality:

Highest Standards, Better Outcomes





TRAUMA *Center*