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Preparation for World-Wide Conflict



Jeremy W. Cannon, MD, SM, FACS

Trauma, Surgical Critical Care & Emergency Surgery

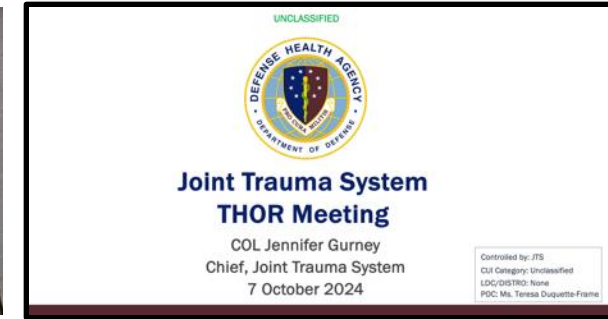
Perelman School of Medicine at the University of Pennsylvania

7 October 2024



Disclosure

- COL Jennifer Gurney, MD, FACS

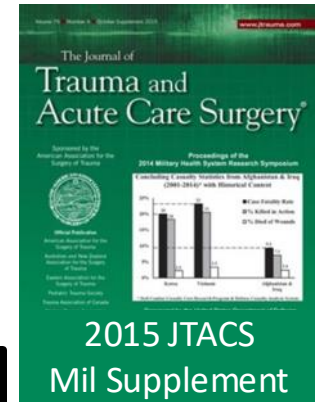


- JTS Director -- > Tireless CCC Advocate

The vital civilian-military link in combat casualty care research:
Impact of attendance at scientific conferences

Leopoldo C. Cancio, MD, Todd E. Rasmussen, MD, Jeremy W. Cannon, MD,
and Michael A. Dubick, PhD, San Antonio, Texas

J Trauma Acute Care Surg. 2015 Oct;79(4 Suppl 2):S221-6.



- Col (Ret) Jeremy Cannon, MD, FACS
 - Practicing Trauma Surgeon (I like to cut!)
 - Public Policy Fellow (Hoover)
 - Father of a Navy OC -- > Intel Officer





Bottom Line Up Front

- The US is NOT Prepared for LSCO --> National Threat
 - (Inexperienced, understaffed, demoralized -- > competing priorities)
 - JTS, CCCC --> “Orphan” Status, Needs Maneuver Space
- Mitigation Strategies Needed NOW
 - Quantify and Understand the Threat
 - 1K casualties x 100++ Days
 - Changing Face of Warfare
 - Define the Needed Response: Open Discussion
 - Org Partners: ASPR, BARDA, NASEM, USU (Woodson, Elster)
 - Civilian Partners: Denver, Pitt, UPenn, Many Others
 - Society Partners: ACS, SVS, THOR
 - International Partners: Norway, Israel, Ukraine, ALL ALLIES



NOT PREPARED FOR LSCO

In war, you win or lose, live or die,
and the difference is just an eyelash.

General Douglas MacArthur



Edward D. Churchill

“Surgeons in a current war never begin where the surgeons in the previous war left off – they always go through another long learning period. In every new war ... soldiers lose their lives and limbs because the doctor was ignorant of past experience.”

- COL Edward D. Churchill, MD



We are going to repeat the same mistakes we have made before. We are going to think our doctors are trained. They are not going to be trained. You have just got to pray your son or daughter...is not the first casualty of the next war.

- GEN Peter W. Chiarelli

Walker Dip -- > “Peacetime Effect”

Conflict:

WWII

KOREA

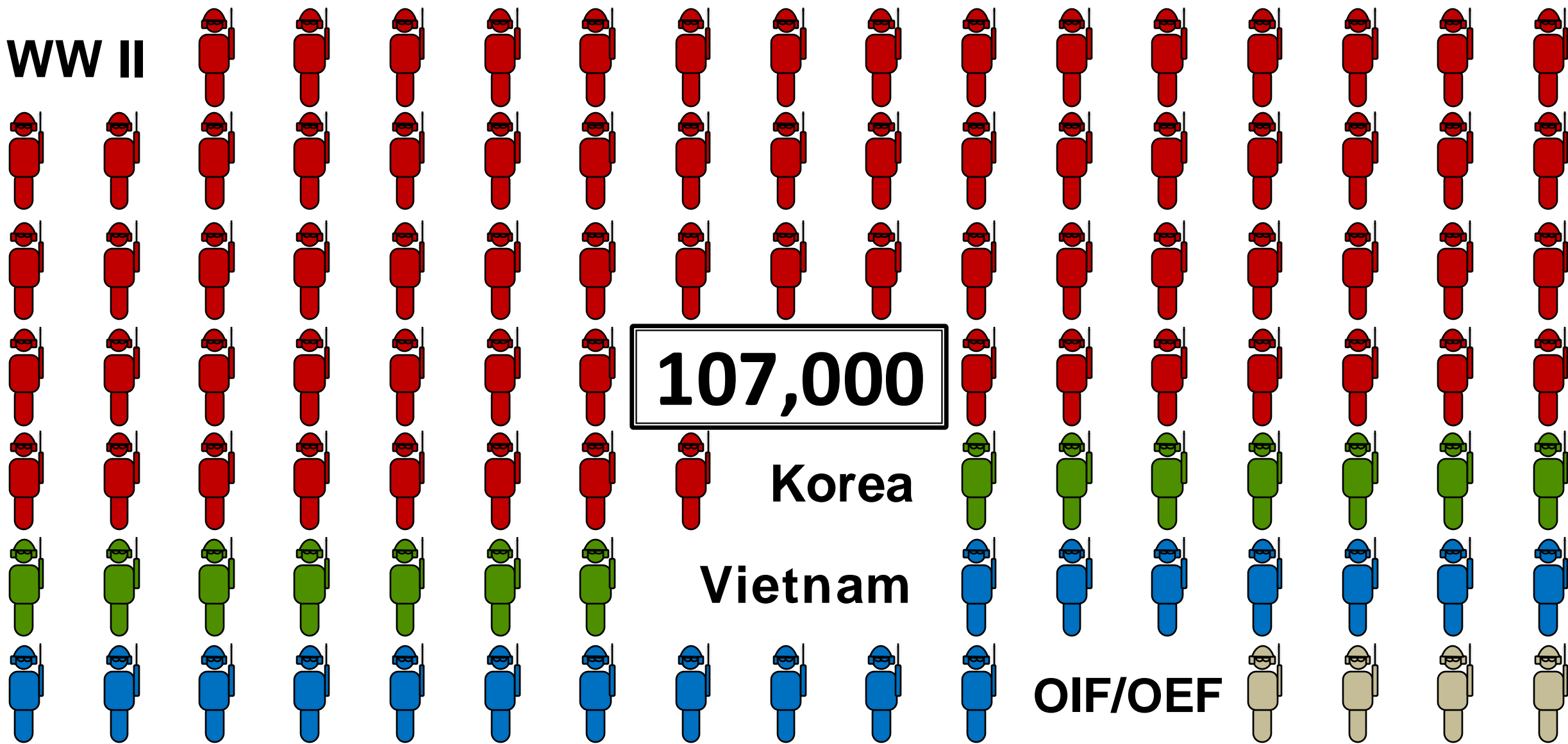
VIETNAM

OEF/OIF

Medical
Capabilities
and
Experience



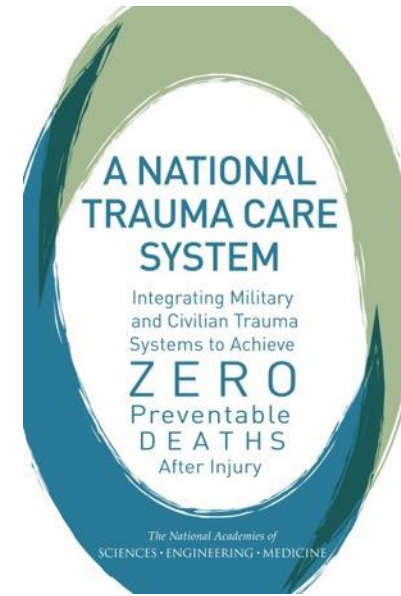
Cost of the Peacetime Effect: Preventable Death



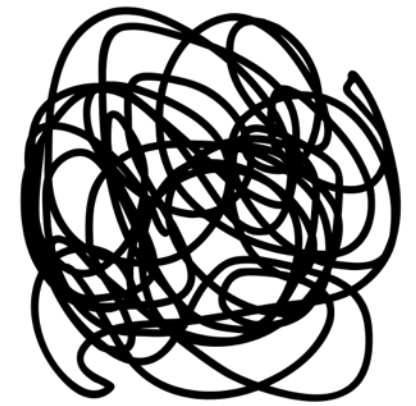
¹Cannon JW, et al. *J Trauma Acute Care Surg.* 2020; 89(2S Suppl 2):S8-S15.

Causes of the Peacetime Effect

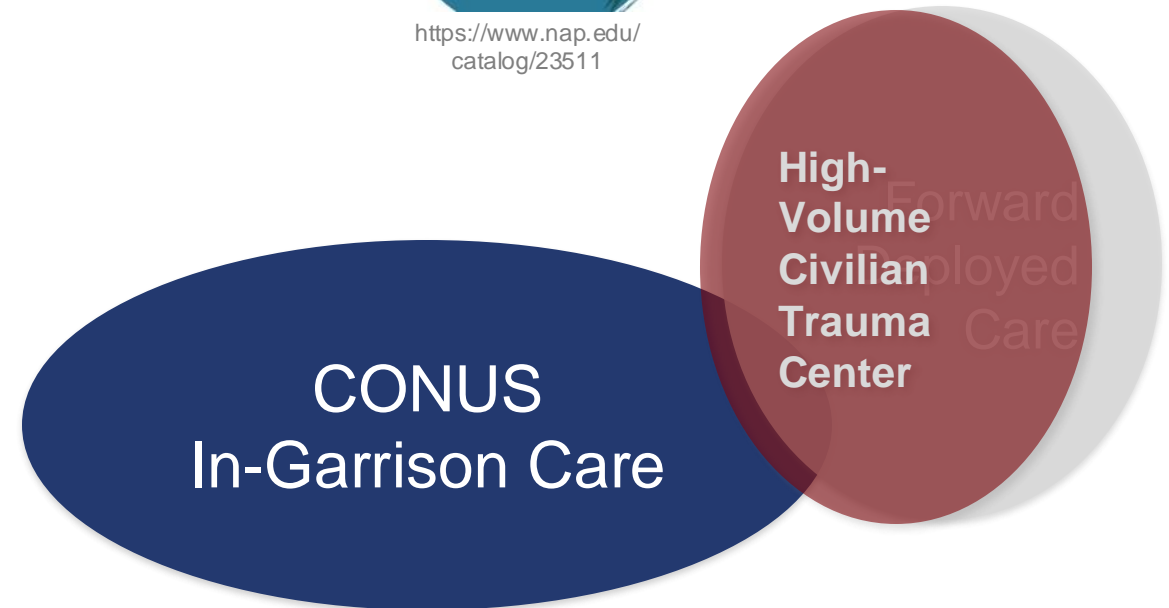
- Patient-Level Factors
 - Catastrophic injuries
- Physician-Level Factors
 - Young surgeons (36 yrs old, 2 yrs post-boards)
 - Unfamiliar w/extreme trauma care (chest, vasc...)
- Team-Level Factors
 - Variable (low) experience levels
 - No prior experience together
- Systems-Level Factors
 - Funding cuts between conflicts
 - CONUS/Forward mission disconnect
 - Split teams, limited specialists
 - Prolonged pre-hospital care



<https://www.nap.edu/catalog/23511>



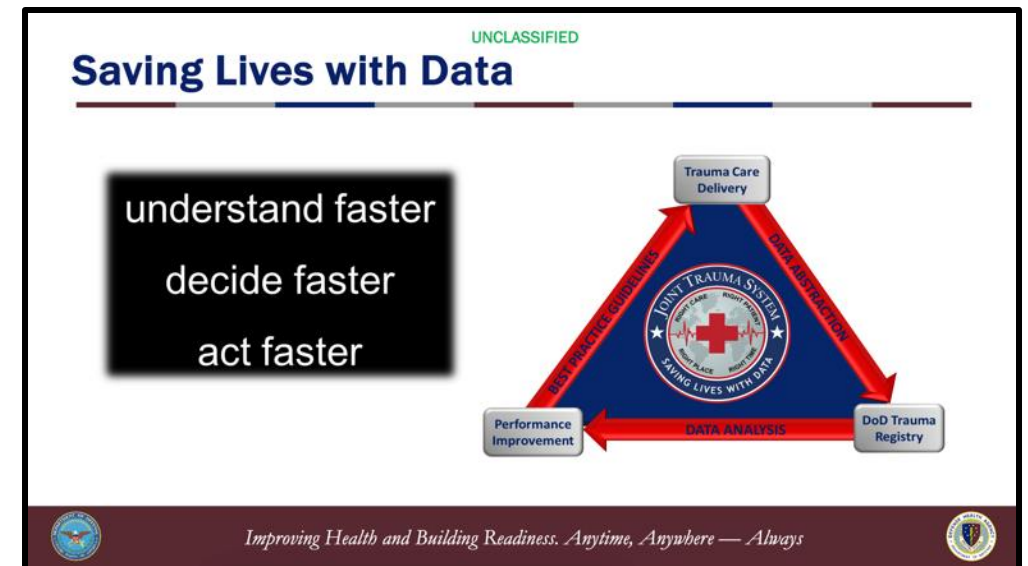
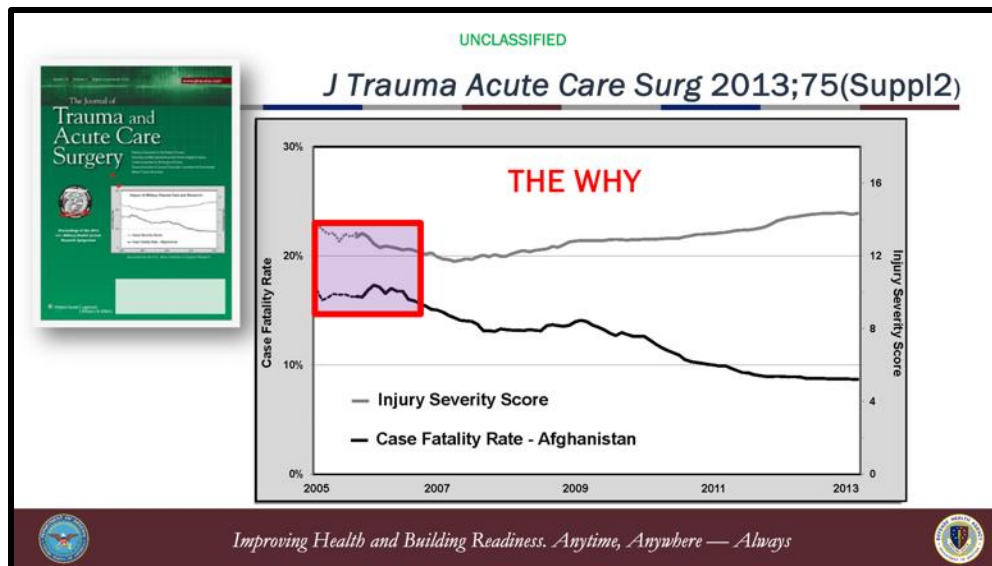
“Wicked Problem”





Current State: Uncomfortable Message

- Positive
 - JTS exists in policy
 - TCCC Training (unit/organic)
- JTS Move -- > Limited External Engagement, Maneuver Space
- Combat Casualty Care -- > Orphan Status
- CCC Mission Incapable

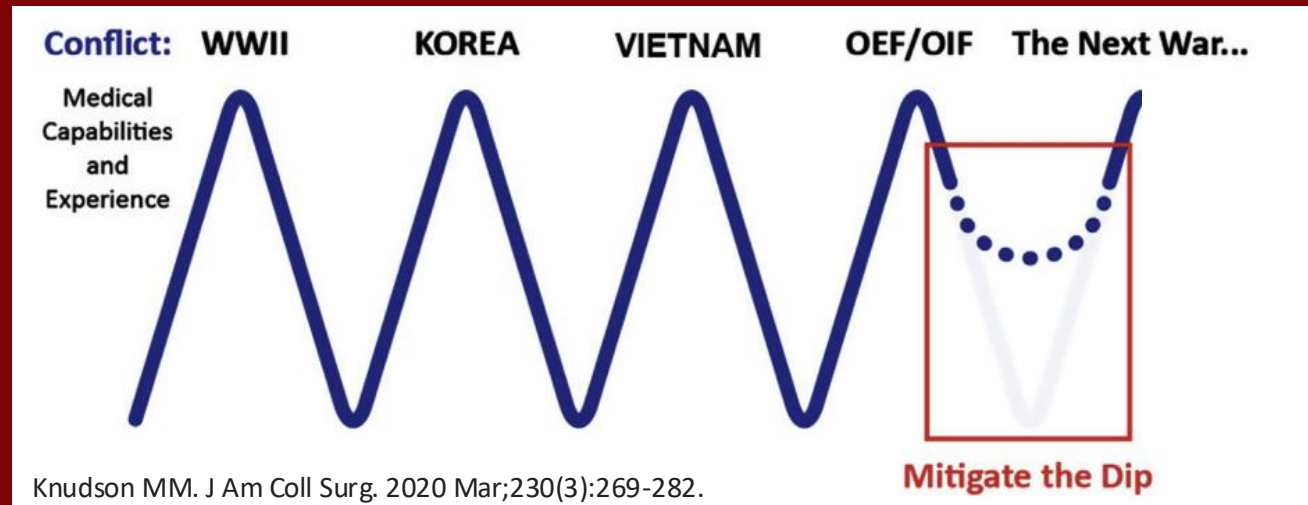




When three people are responsible for feeding the dog, the dog starves.

Major Vines as quoted by General McChrystal, *Team of Teams*

Mitigation Strategies





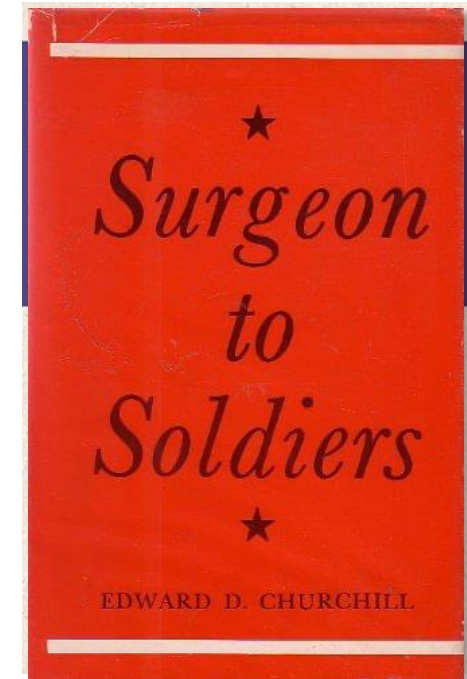
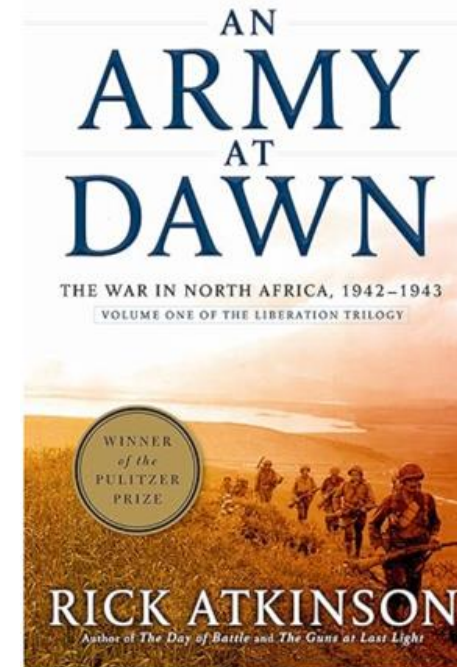
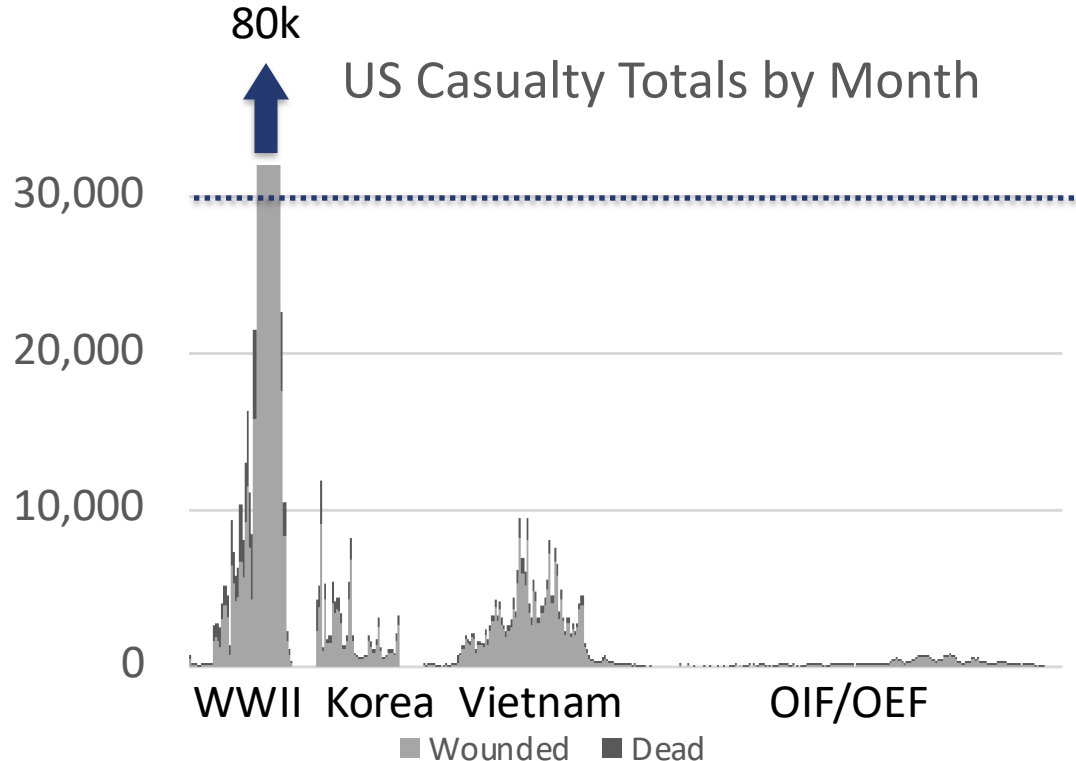
Quantify the Threat

History, the Torch That Illuminates: Lessons from Military Medicine

COL Michael E. DeBakey, USAR

MILITARY MEDICINE, 161, 12:711, 1996

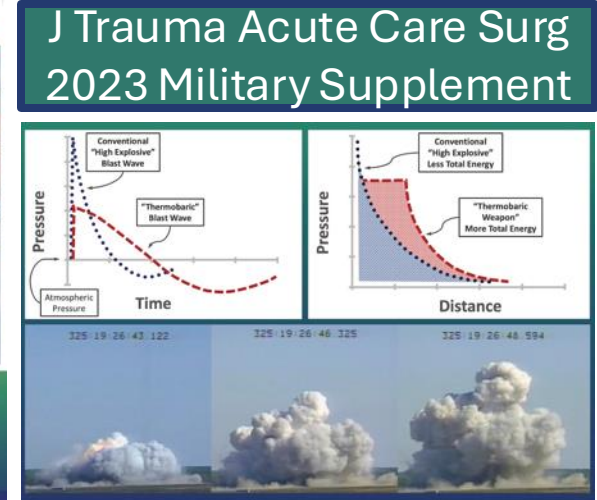
- NDMS Pilot: 1K/day x 100++ days == 30k/mo x ...





Understand the Threat

- Thermobaric Weapons
- Medical Units Targeted
 - Triple “Advantage”
 - Degrade Force, Eliminate Force Multipliers, Demoralize Units
- Drone Warfare



America Isn't Ready for the Wars of the Future
And They're Already Here
By **Mark A. Milley and Eric Schmidt** September/October 2024
Published on August 5, 2024

FOREIGN AFFAIRS

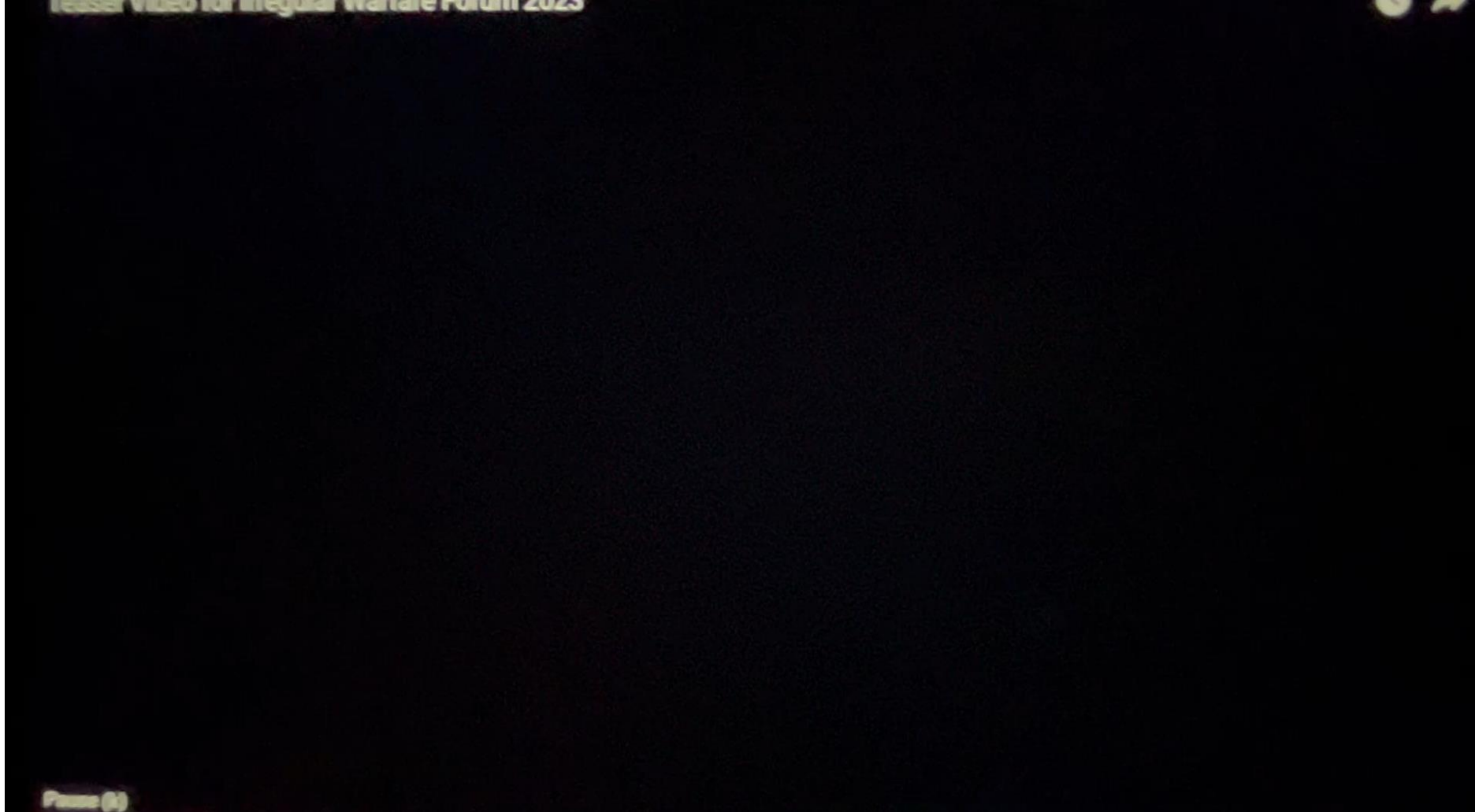
THE WALL STREET JOURNAL.

TECHNOLOGY ESSAY
Drone Swarms Are About to Change the Balance of Military Power
On today's battlefields, drones are a manageable threat. When hundreds of them can be harnessed to AI technology, they will become a tool of conquest.

By **Elliot Ackerman and James Stavridis**
March 14, 2024 10:00 am ET



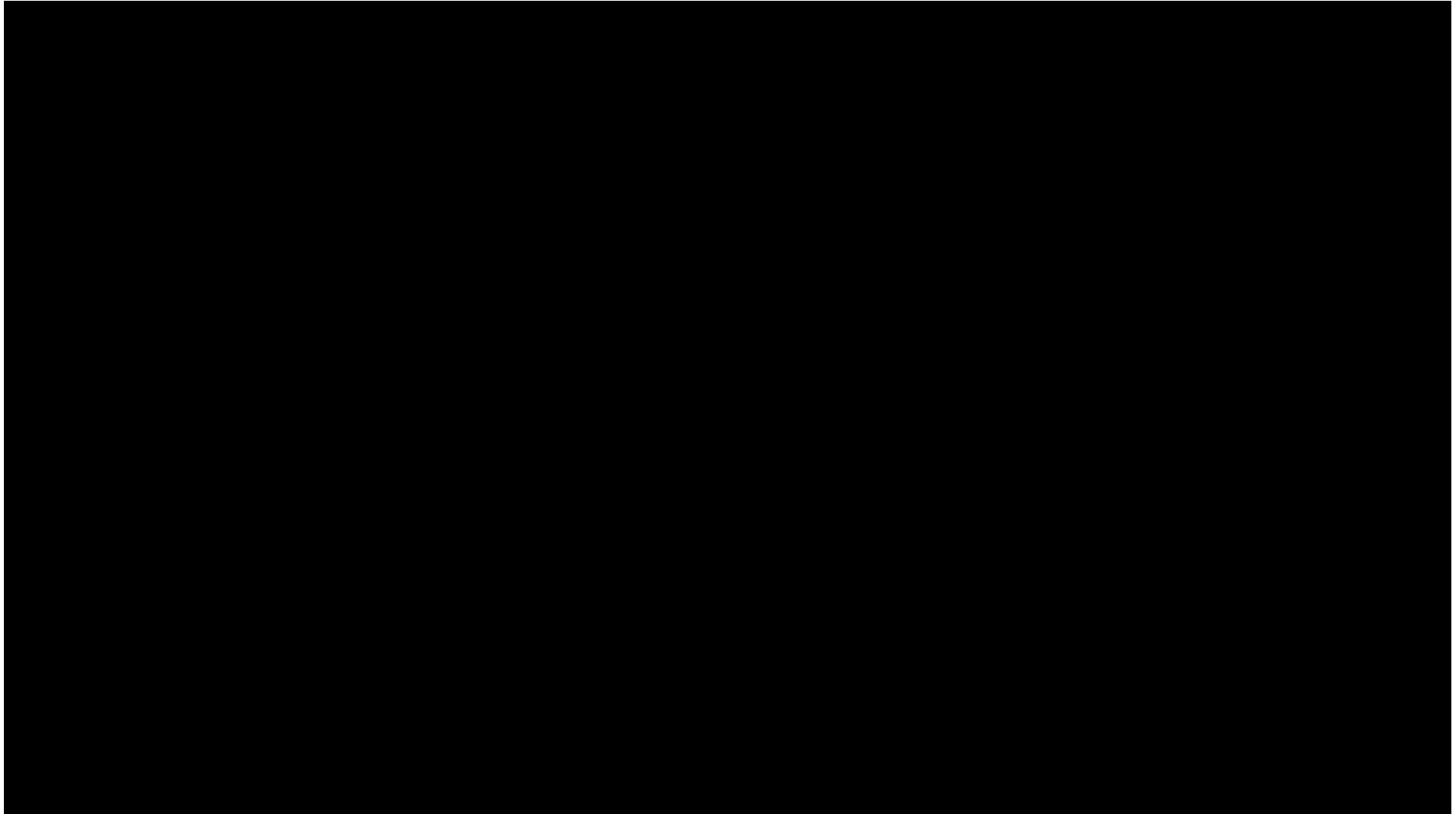
World-Wide War in 2024 == Irregular Warfare





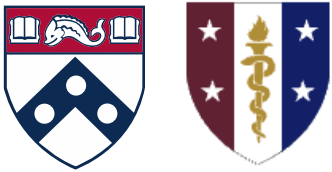
Laser Focus on Combat Casualty Care

....it's why the MHS exists

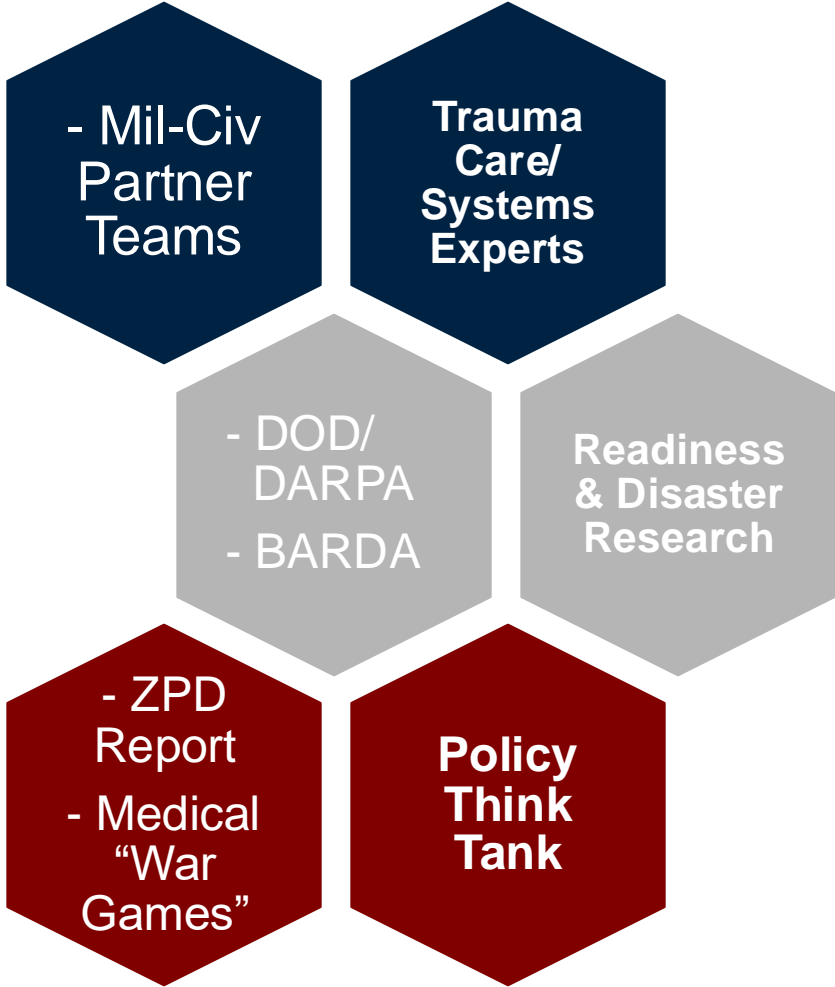




Define the Response (Open Discussion): Strategic Medical & Disaster Readiness Coalition



INSERT
LOGO HERE





Clinical Experience

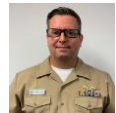
Experience saves lives.

COL Jennifer Gurney, MD, FACS

Clinical: Trauma/Systems Experts

πολύ τε διαφέρειν οὐ δεῖ νομίζειν ἄνθρωπον ἀνθρώπου, κράτιστον δὲ εἶναι ὅστις ἐν τοῖς ἀναγκαιοτάτοις παιδεύεται.²

Archidamus II to Spartans: What sets you apart is the intensity of your training.



CDR Derek Foerschler
Department Head
Anesthesiologist



CDR Jay Yelon
Trauma Surgeon



LCDR Mary Decoteau
General Surgeon
*Feb 2022



CDR Robert Oldt
Emergency
Medicine Physician



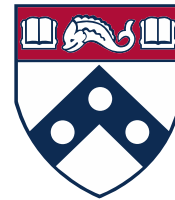
LT Natasha McClinton
Perioperative
Nurse



LT Demerce Young
Critical Care
Nurse



LTJG Hyun Kyoung Na
Emergency
Trauma Nurse



LCDR Bill Lawson
Healthcare
Administrator



LCDR Zachary Hare
Physician
Assistant



HM2 Brett Adkins
Search and
Rescue Medical
Technician



HM2 Navy Nguyen
Surgical
Technician



Pryor Trauma Bay

**Penn Presby Trauma Ctr
(Feb 2015 – present)**



Video Review



Blood Fridge

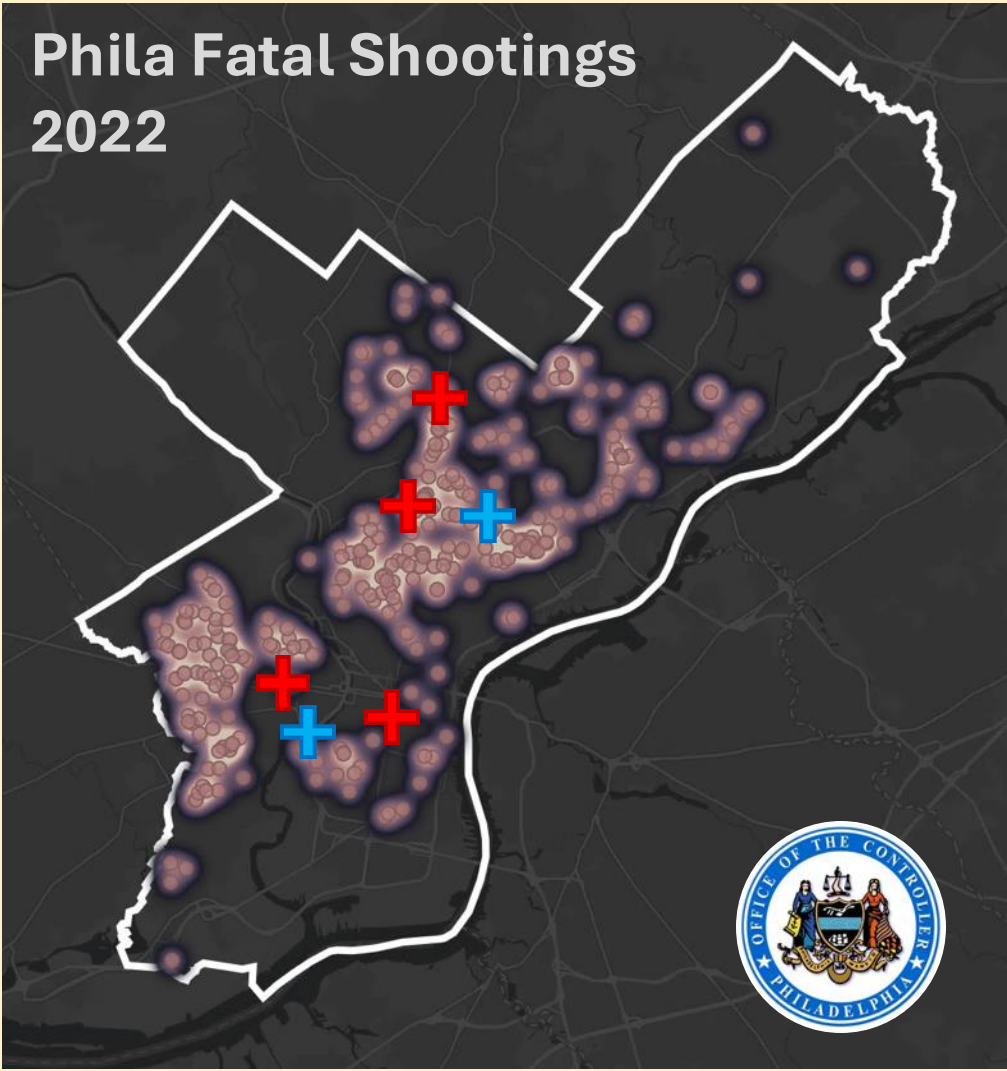


MAY 2016 JPP STAR Unit Dedication



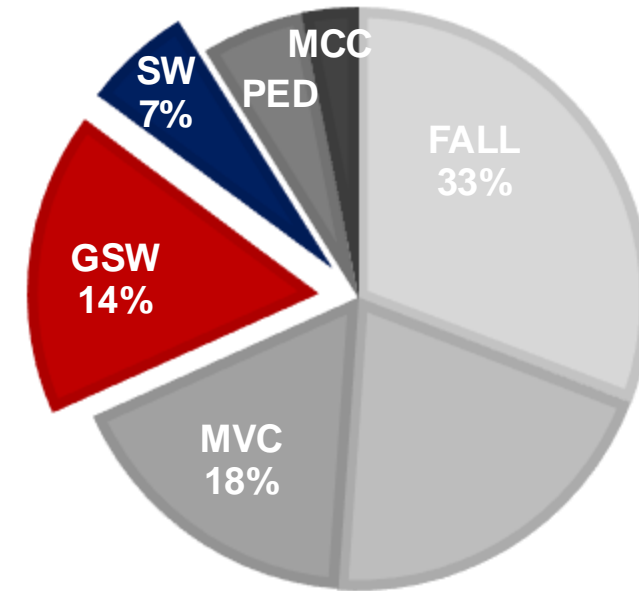
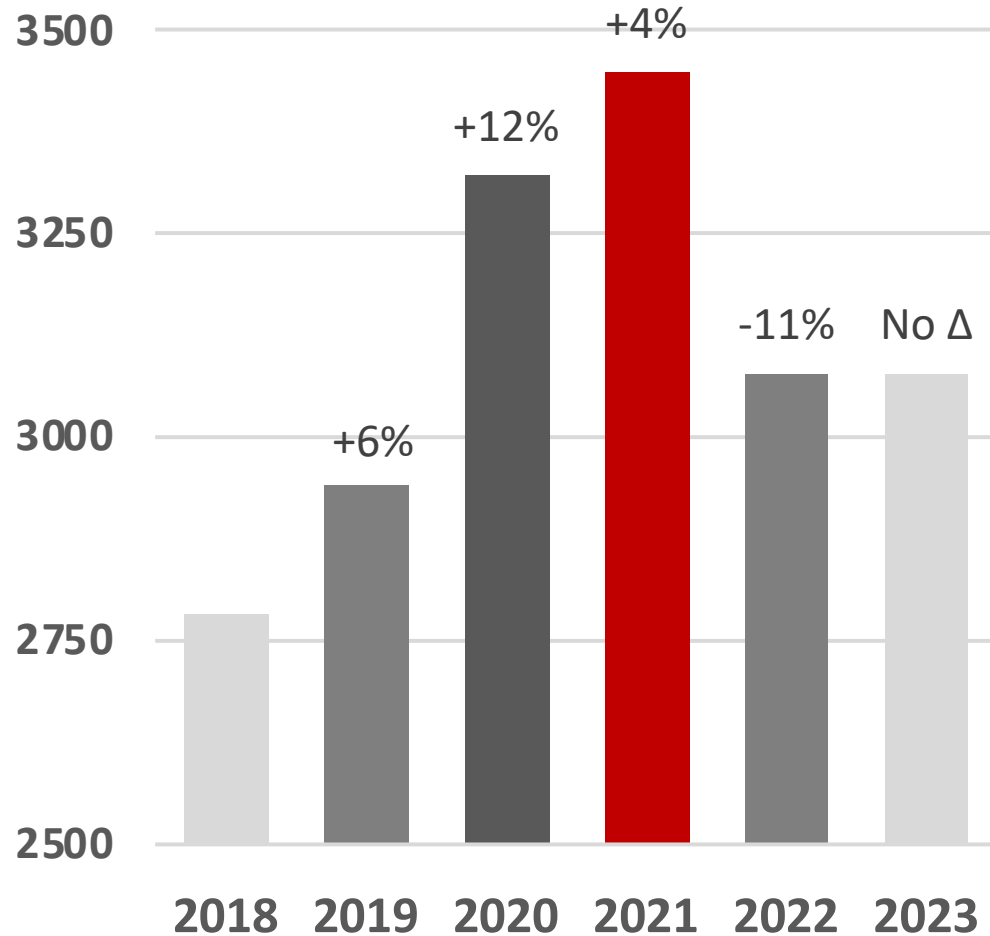
MAJ John P. Pryor, MD

Phila Fatal Shootings 2022



+ Adult Level 1 TC **+** Pediatric Level 1 TC

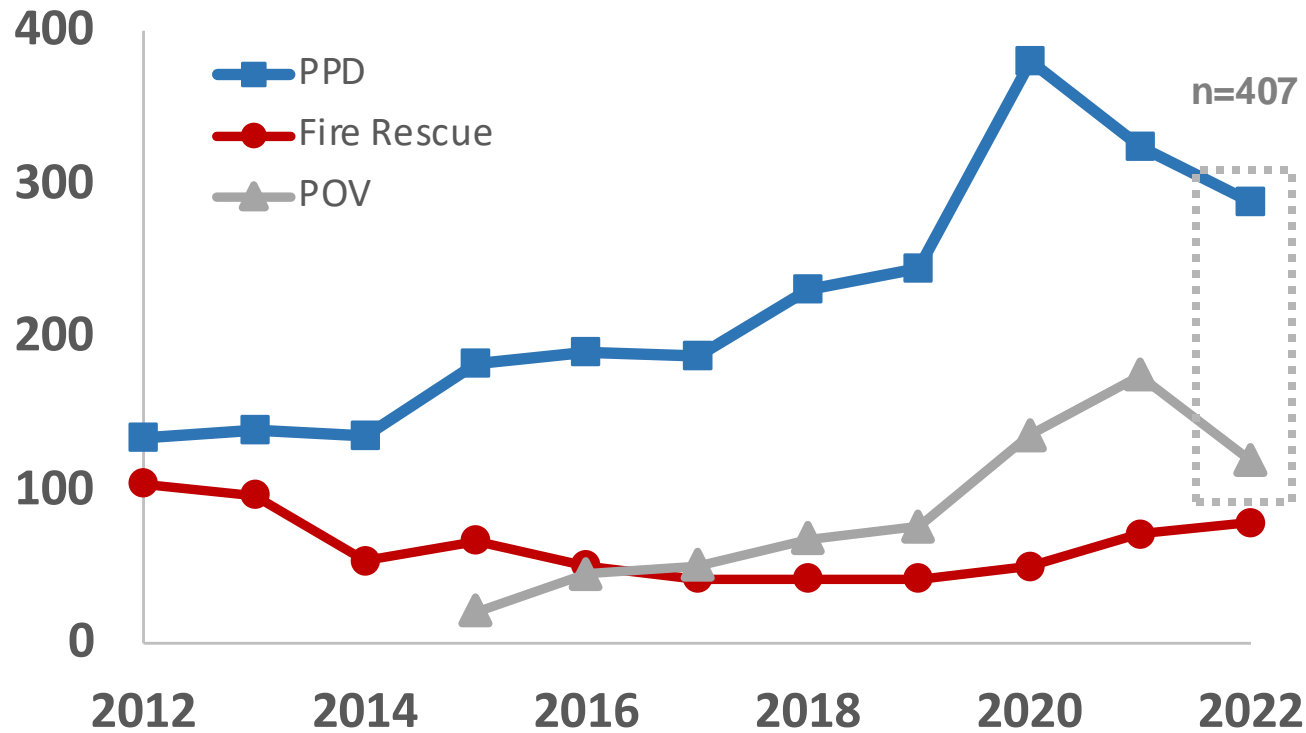
UPenn Trauma Volume and Mechanism of Injury: 2018-2023



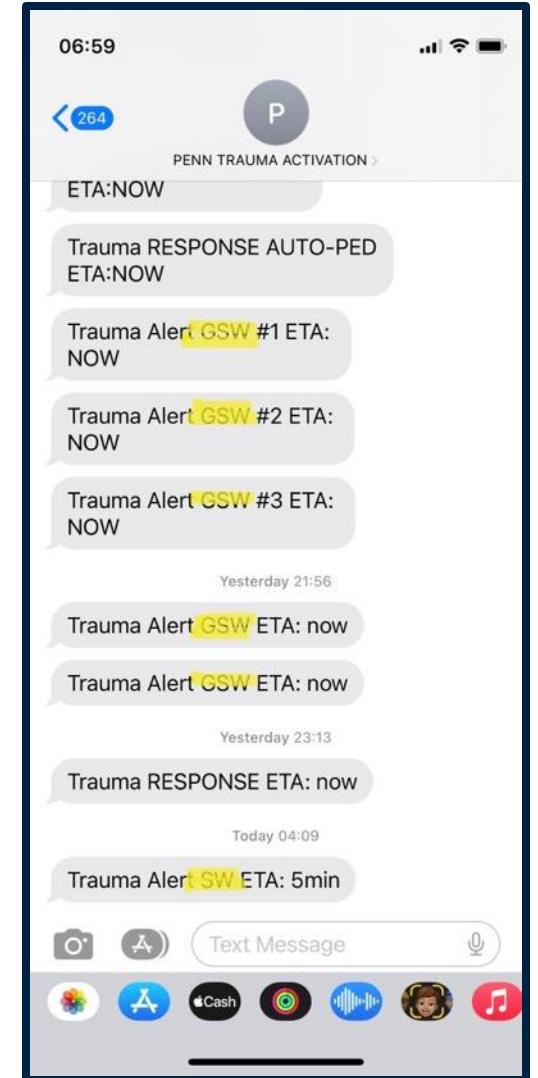
	2020	2021	2022	2023
Any Transfusion	254	276	267	278
MTP	69	71	77	87
Whole Blood	108	114	132	160
TEG Pts	314	389	474	583

Police Transport: Maximal Team Stress

GSW From Scene



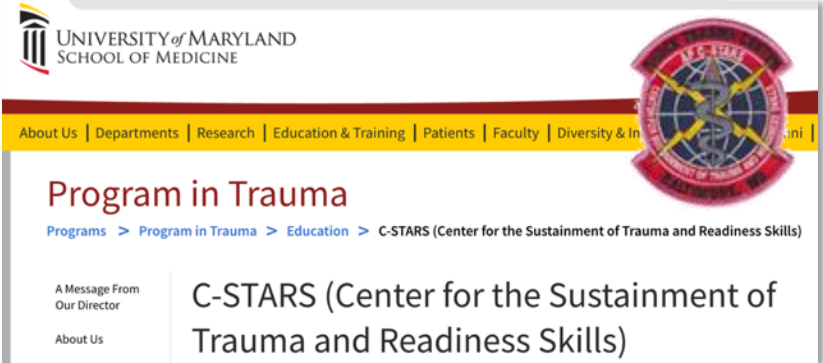
@Penn Trauma Typical Call Night



Clinical: Trauma/Systems Experts



Strategic Medical Asset Readiness Training (SMART) Program
<https://www.cooperhealth.org/services/serving-our-military-and-veterans>



<https://www.medschool.umaryland.edu/trauma/education/c-stars-center-for-the-sustainment-of-trauma-and-readiness-skills/>



J Am Coll Surg. 2015 Aug;221(2):235-54.



All 2022 MZA
Recipients



Experience saves lives

.....not just for the individual patient

System improvements from wartime experience

- Tourniquet use / revival / TCCC
- **Prehospital transfusion**
- Faster transport times
- In-hospital transfusion
- **Whole blood**
- Damage control surgery



High-Volume,
High Acuity,
High Complexity

Synergy Disaster Preparation

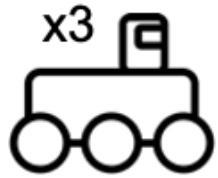




Research Innovation

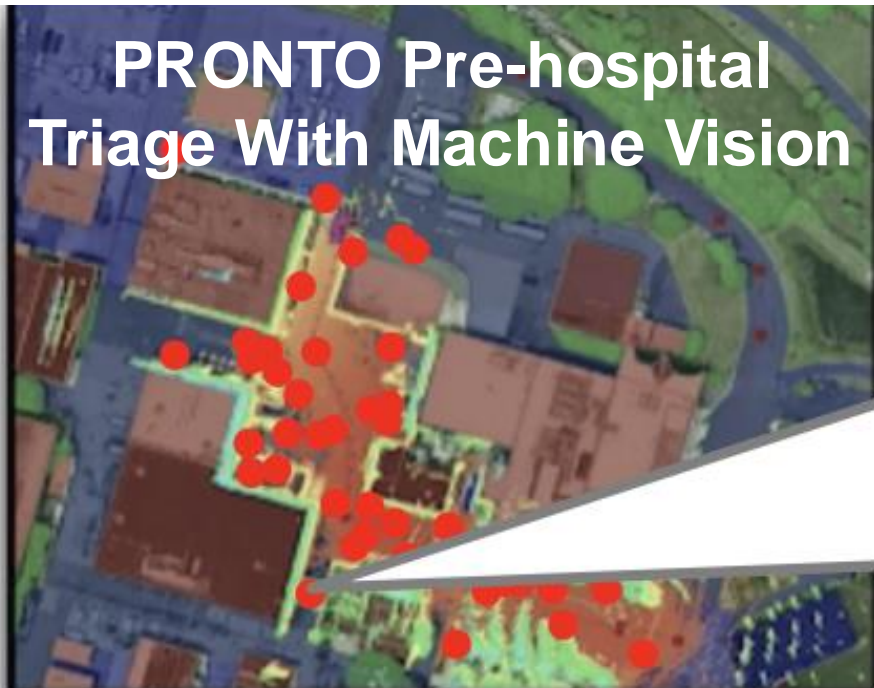


Research: Readiness & Disaster Innovation



visual audio
infrared 3D

event
cameras



<https://www.seas.upenn.edu/~eeaton/index.html>

<https://penntoday.upenn.edu/news/pioneering-robotic-triage>



Research: Combat Casualty Care Innovation



University of Colorado

Anschutz Medical Campus

Center for Combat Medicine and
Battlefield Research (COMBAT)



Home > News > U.S. Assistant Secretary of Defense for Health Affairs Visits CU Anschutz

U.S. Assistant Secretary of Defense for Health Affairs Visits CU Anschutz

<https://medschool.cuanschutz.edu/emergency-medicine/research/center-for-combat-research>



University of
Pittsburgh

Center for Military Medicine Research



CMMR Director, Dr. Ron Poropatich visits
Warsaw, Poland

Center for Military Medicine Research Director, Dr. Ron
Poropatich visited Warsaw, Poland on October 22-28, 2023.

<https://www.cmmr.pitt.edu/>



Policy Development



Policy Development



Veteran Fellowship Program



► Capstone Project Key Questions

- Underpinnings of the Peacetime Effect/Walker Dip
- Identify Key Stakeholders in this Wicked Problem
- Collaborate with DOD Entities (USU, DHB)
- Define a Solution Set, Way Forward

Policy Development

Proposal: Round Table Discussion

- Org Partners: USU (Woodson, Elster), NASEM, BARDA, ASPR
- Civilian Partners: Denver, Pitt, UPenn, Many Others
- Society Partners: ACS, SVS, THOR
- International Partners: Norway, Israel, Ukraine, ALL ALLIES

NATIONAL

After downsizing health care for years, Pentagon says medical readiness was a casualty

MAY 2, 2024 · 5:00 AM ET

 Quil Lawrence

<https://www.npr.org/2024/05/02/1246636334/pentagon-military-healthcare>

NATIONAL ACADEMIES *Sciences
Engineering
Medicine*

MEETING

MULTIDAY EVENT | OCTOBER 16-17, 2024

Forum on Medical and Public Health Preparedness for Disasters and Emergencies - Meeting 48 >

OCT 16

<https://www.nationalacademies.org/our-work/forum-on-medical-and-public-health-preparedness-for-disasters-and-emergencies/events>



Next Steps: Take Action, Break the Cycle

The Medical Corps, like most other branches, entered [the next war] as unprepared as at the outbreak of [the last war].



- COL Michael DeBakey, MD



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