
Tactical vs. Civilian EMS: The Changing Paradigm



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Objectives

- **Discuss the limitations of current EMS training and practice in the high threat environment**
- **Demonstrate knowledge of the principles of tactical emergency casualty care**
- **Take the lessons learned and return to communities to educate fellow EMS providers and law enforcement officers**

- **In accordance with the Accreditation Council for Continuing Medical Educations (ACGME) Standards, the American Nurses Credentialing Center’s Commission on Accreditation and the Continuing Education Coordinating Board for Emergency Medical Services and the policy of the ACEP, ENA and CECBEMS, presenters must disclose the existence of significant financial interests in or relationships with manufacturers or commercial products that may have a direct interest in the subject matter of the presentation, and relationships with the commercial supporter of this CME activity. These presenters do not consider that it will influence their presentation.**
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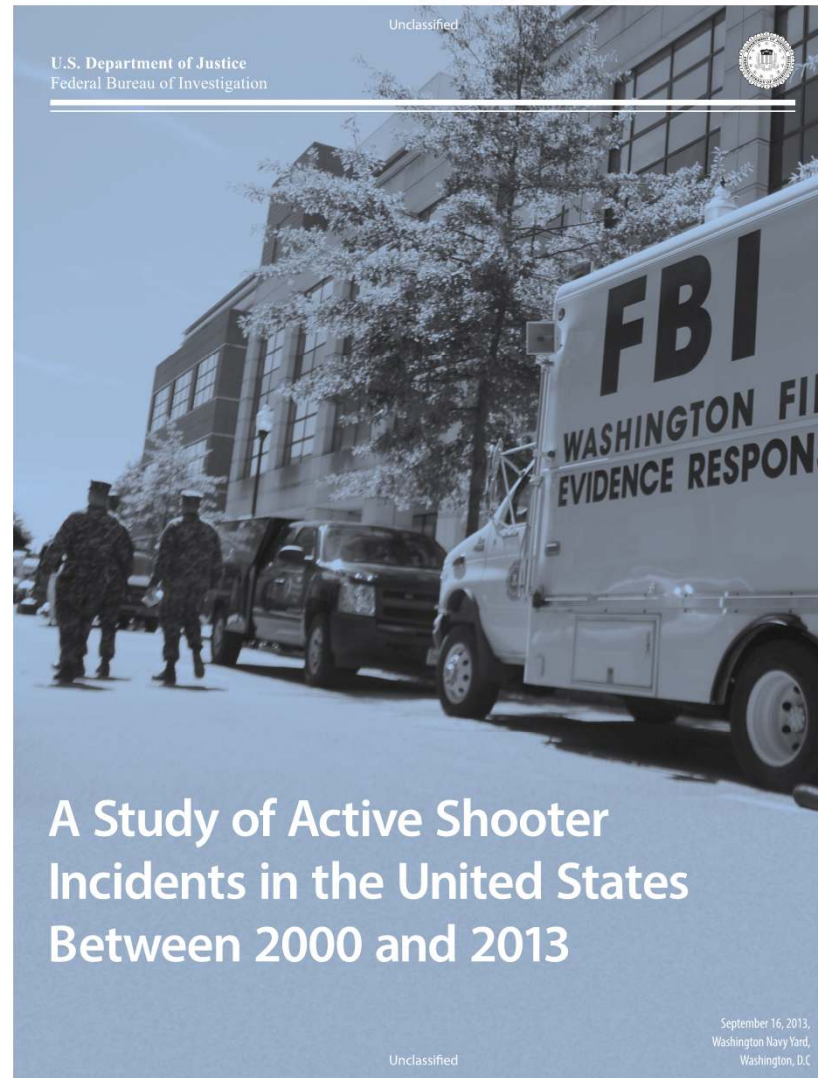






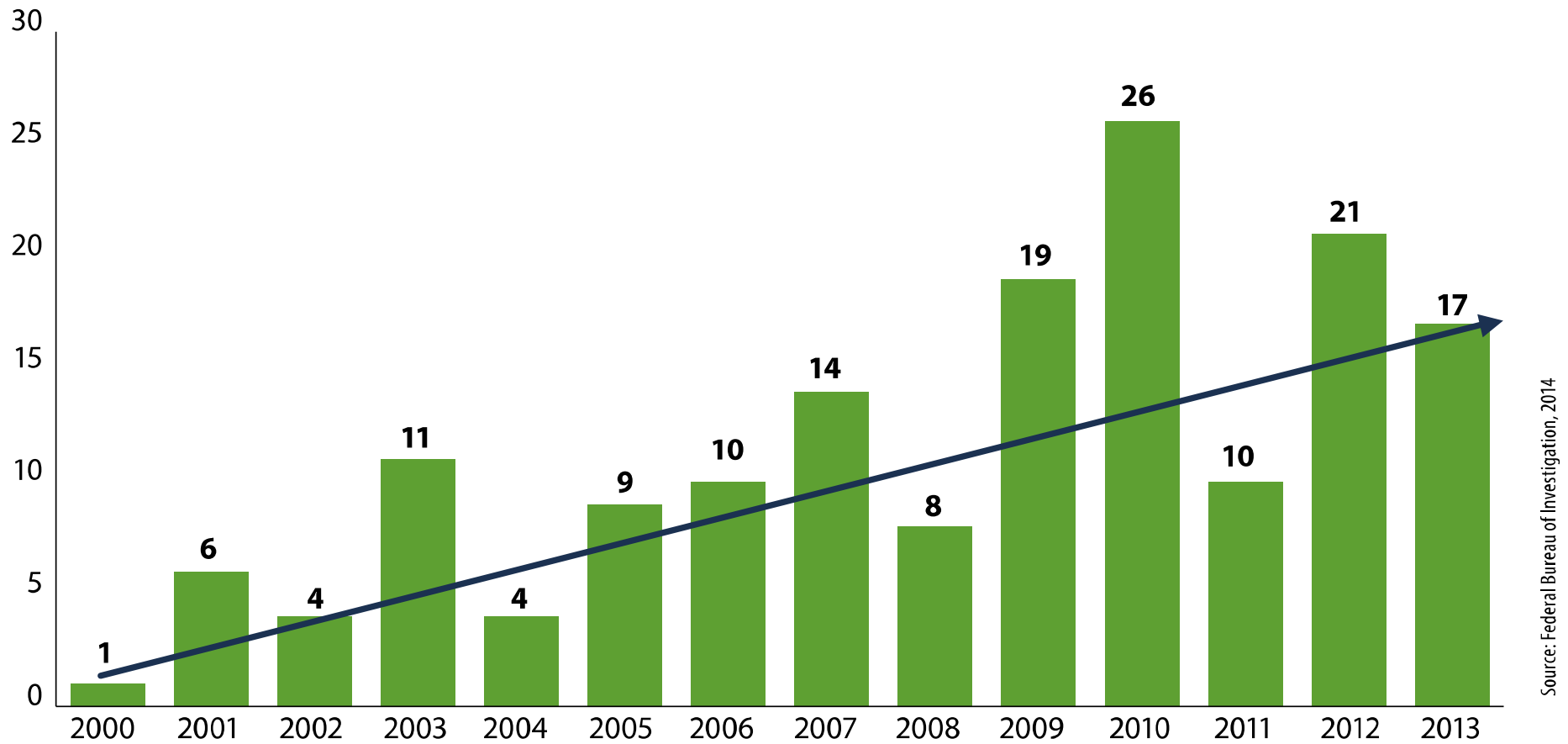


FBI Data



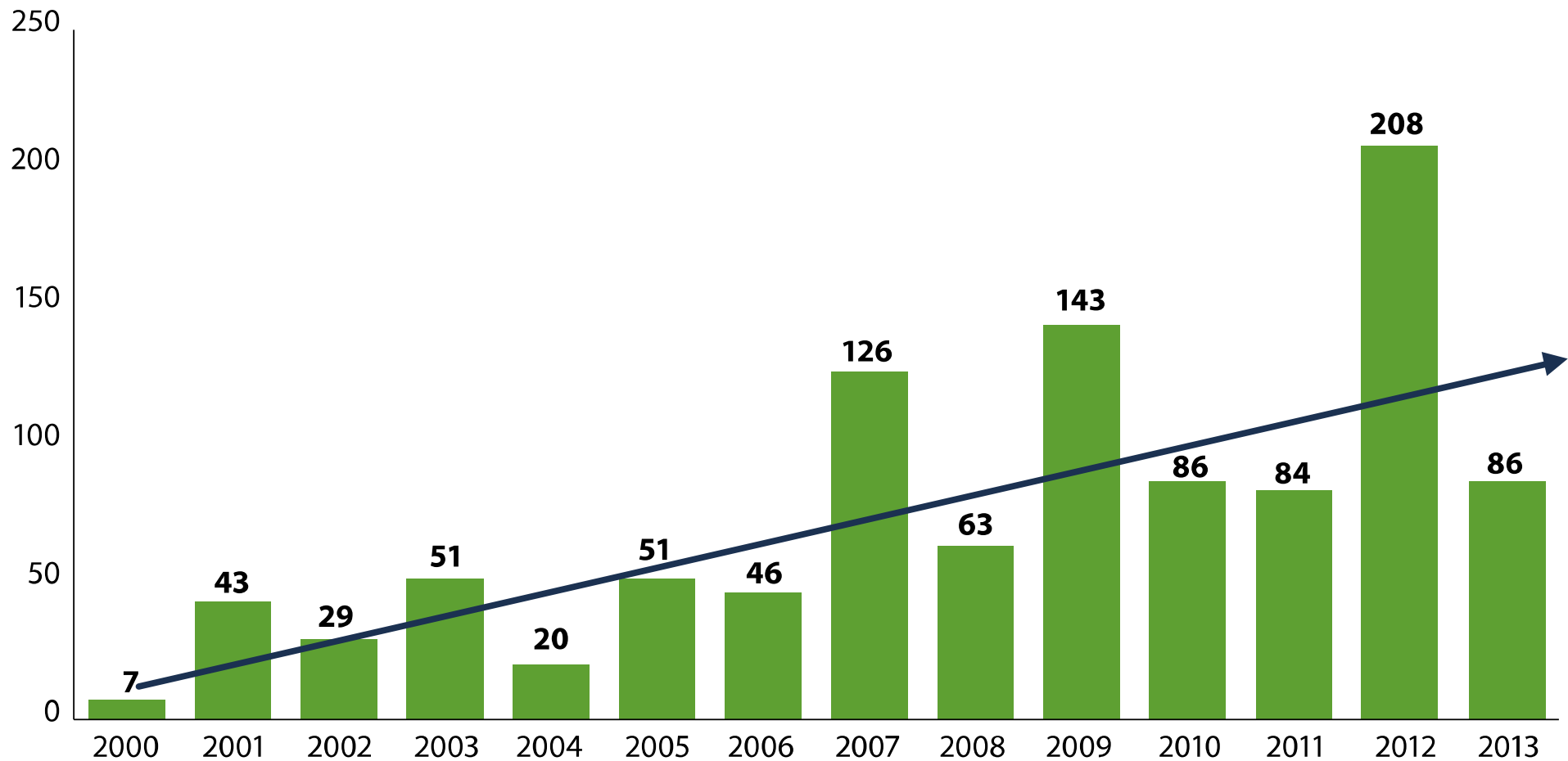
A Study of Active Shooter Incidents in the United States
Between 2000 and 2013, FBI, September 2014

A Study of 160 Active Shooter Incidents in the United States Between 2000 - 2013: Incidents Annually



A Study of Active Shooter Incidents in the United States
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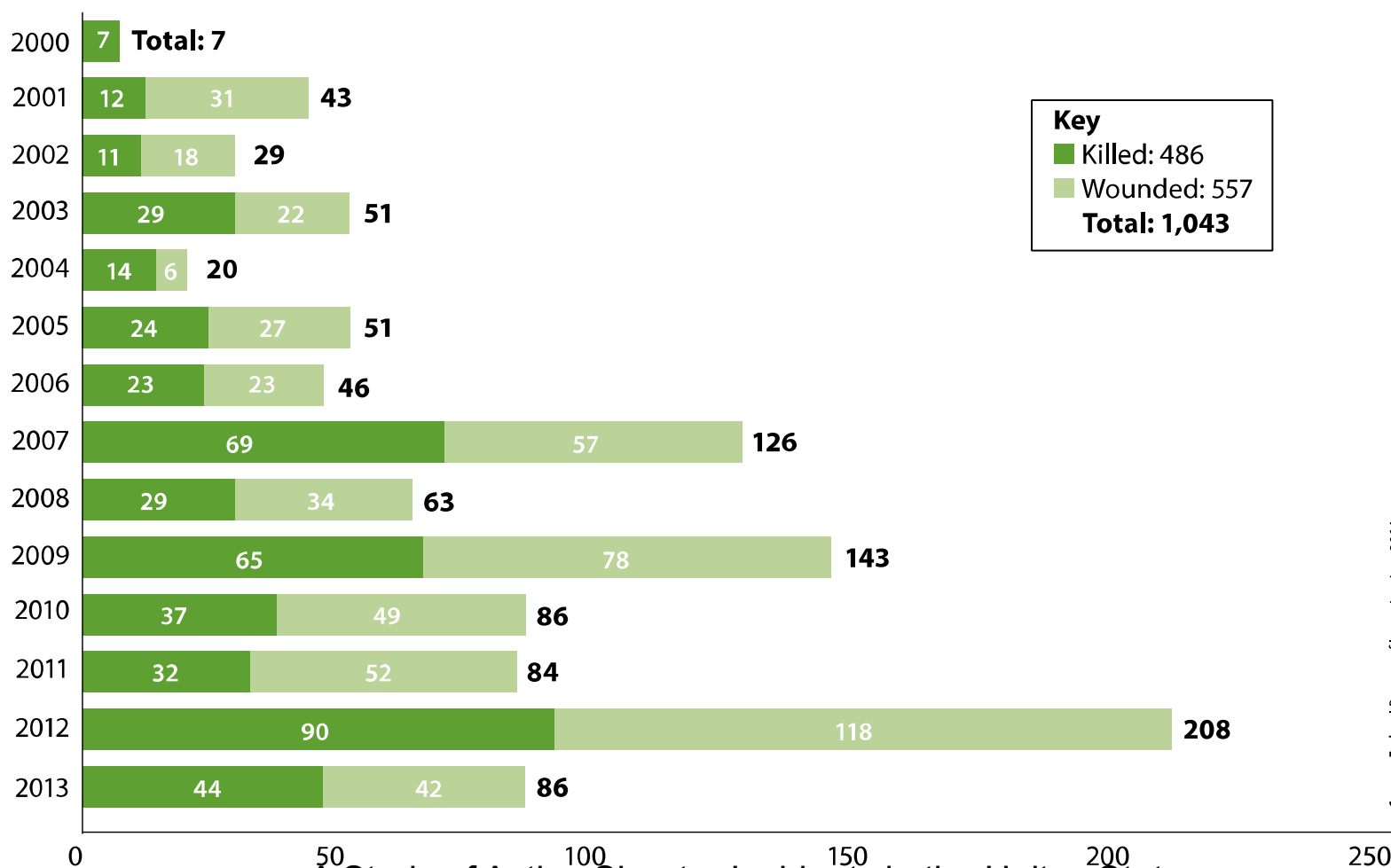
A Study of 160 Active Shooter Incidents in the United States Between 2000 - 2013: **Annual Totals of 1,043 Casualties**



Source: Federal Bureau of Investigation, 2014

A Study of Active Shooter Incidents in the United States
Between 2000 and 2013, FBI, September 2014

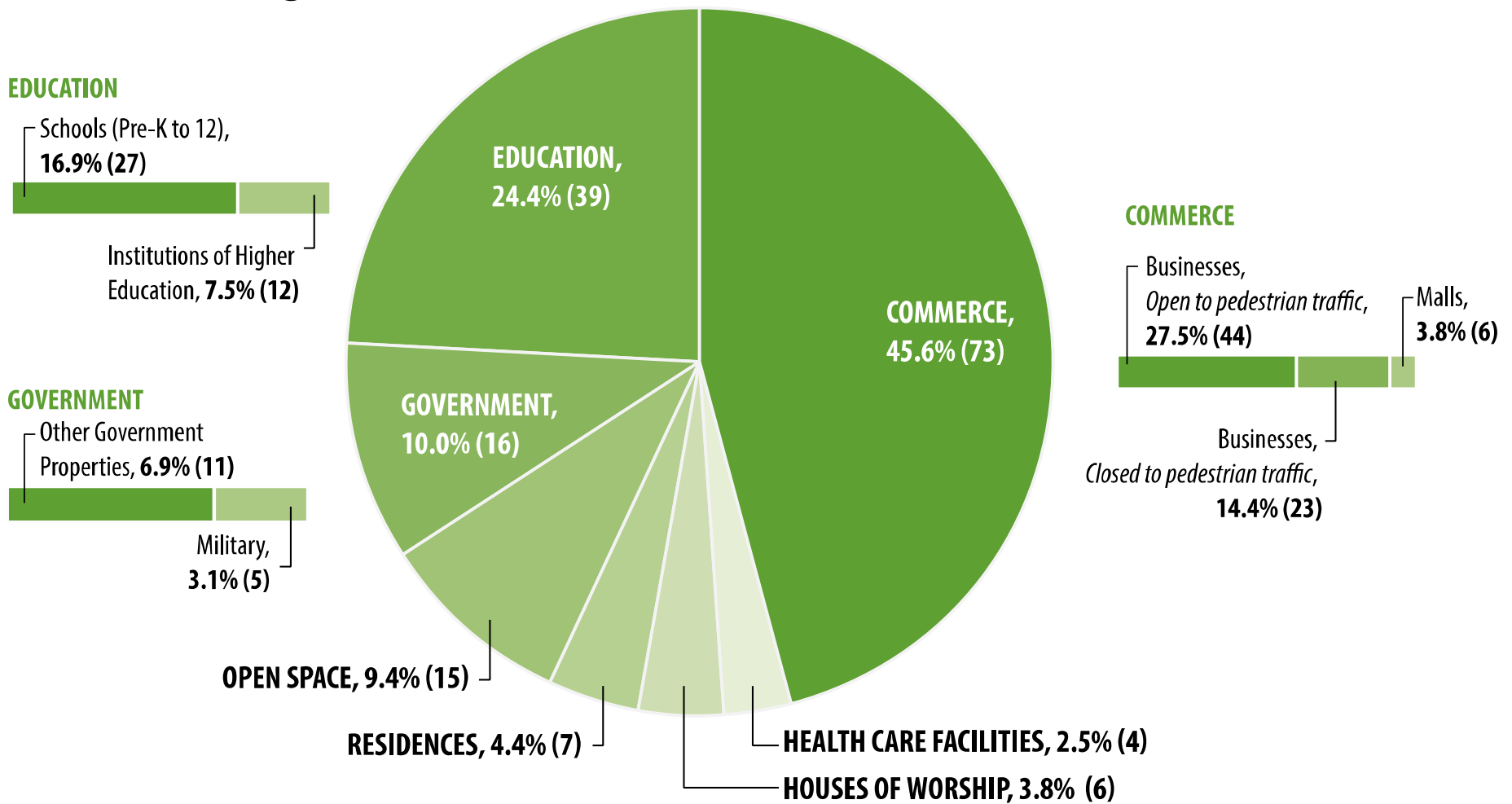
A Study of 160 Active Shooter Incidents in the United States Between 2000 - 2013: Broken Down by Casualty Type; Killed or Wounded



Source: Federal Bureau of Investigation, 2014

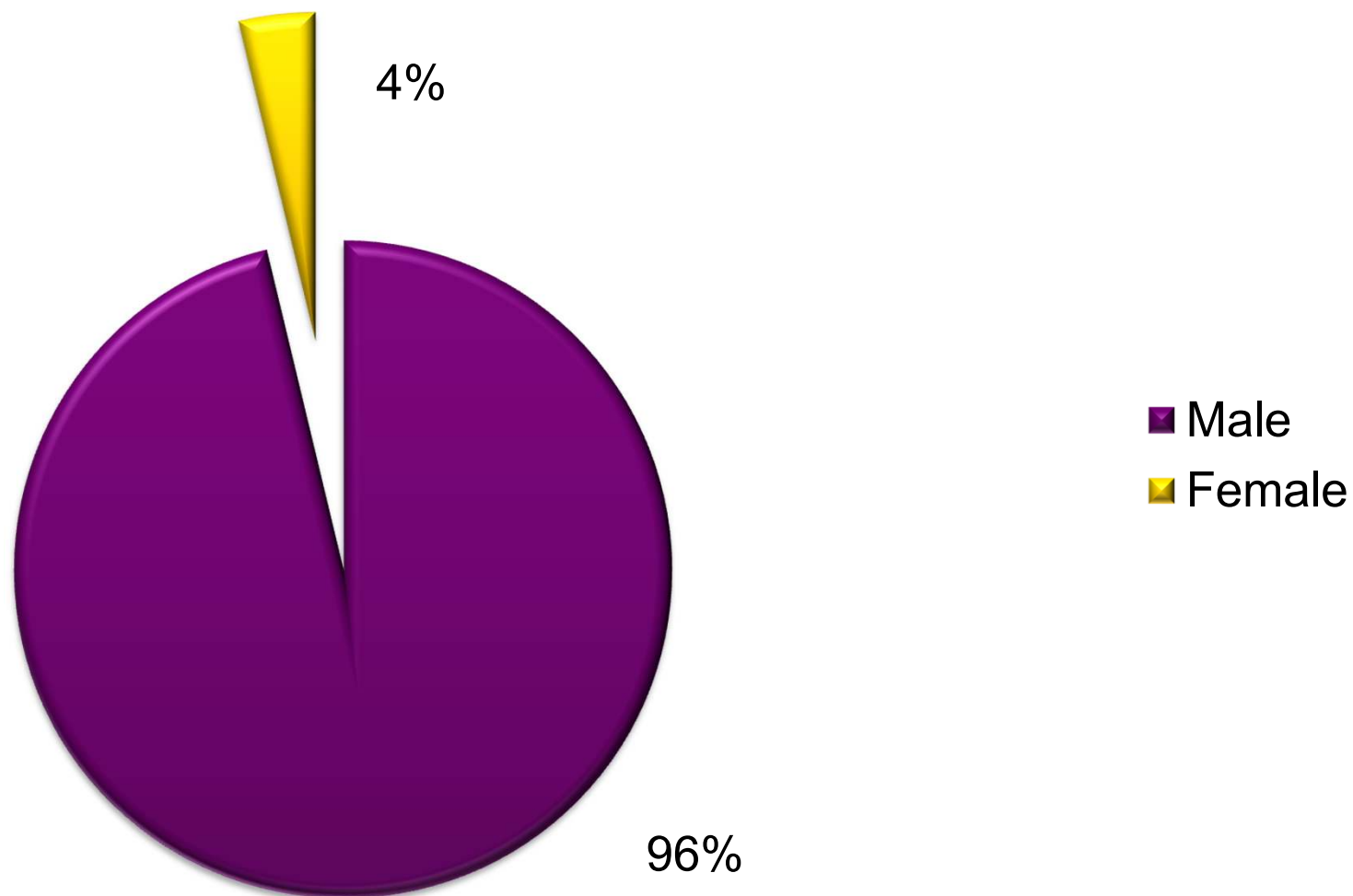
A Study of Active Shooter Incidents in the United States
Between 2000 and 2013, FBI, September 2014

A Study of 160 Active Shooter Incidents in the United States Between 2000 - 2013: Location Categories



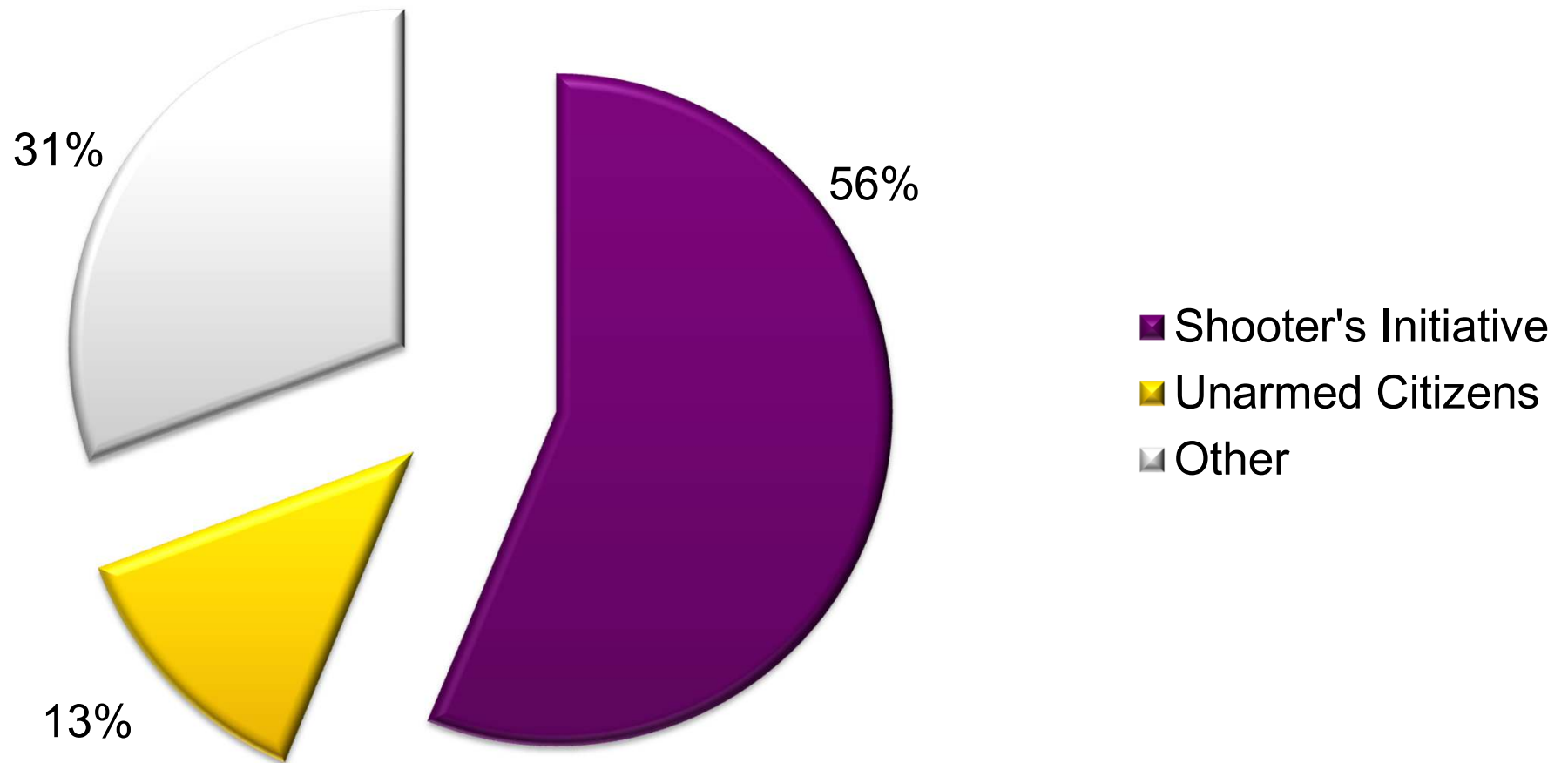
A Study of Active Shooter Incidents in the United States Between 2000 and 2013, FBI, September 2014

Gender



A Study of Active Shooter Incidents in the United States
Between 2000 and 2013, FBI, September 2014

Outcomes



A Study of Active Shooter Incidents in the United States
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■ Frequency

- “Mass Killings Happen About Every Two Weeks”
 - 172 cases of mass killings between 2006 and 2011
 - 57% accuracy rate for FBI data

■ **Demographics**

- Majority of mass killings are family related
 - Family 52%
 - Other/unknown 21%
 - Public killings 15%
 - Robbery/burglary 12%

- **Characteristics of the Killer**
 - 1/3 of mass killers don't leave the scene alive
 - 95% of mass killers are male
 - Average age of 32

- **Characteristics of the Victim**
 - 57% of victims knew their killers
 - 1/3 of victims are under the age of 18

- **Weapons**

- 77% of mass killings involve a gun
- 75% of involved guns were handguns
- 0/4% were automatic rifles

Current Teachings in Paramedic Education



Scene Safety?



Scene Safety?



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Wagons of the 57th New York's ambulance corps remove wounded from the field after the Battle of Fredericksburg.

Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care



Evolution of Trauma Care

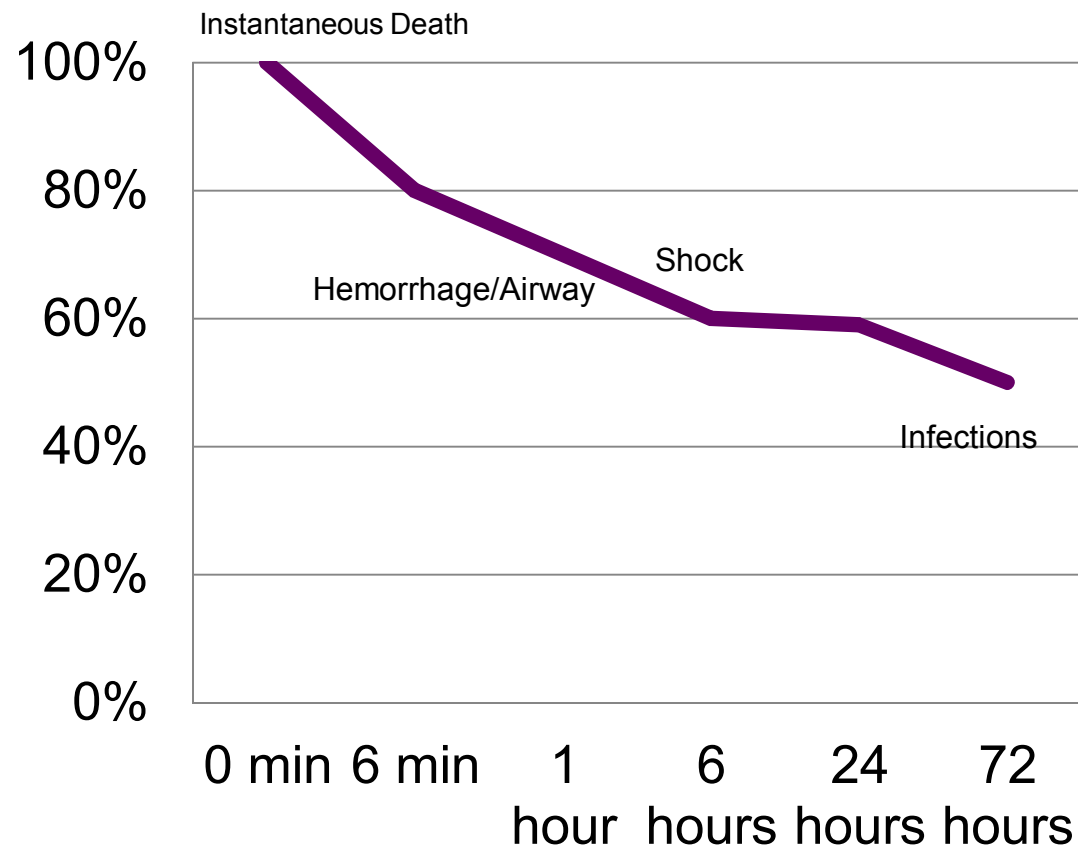


Evolution of Trauma Care

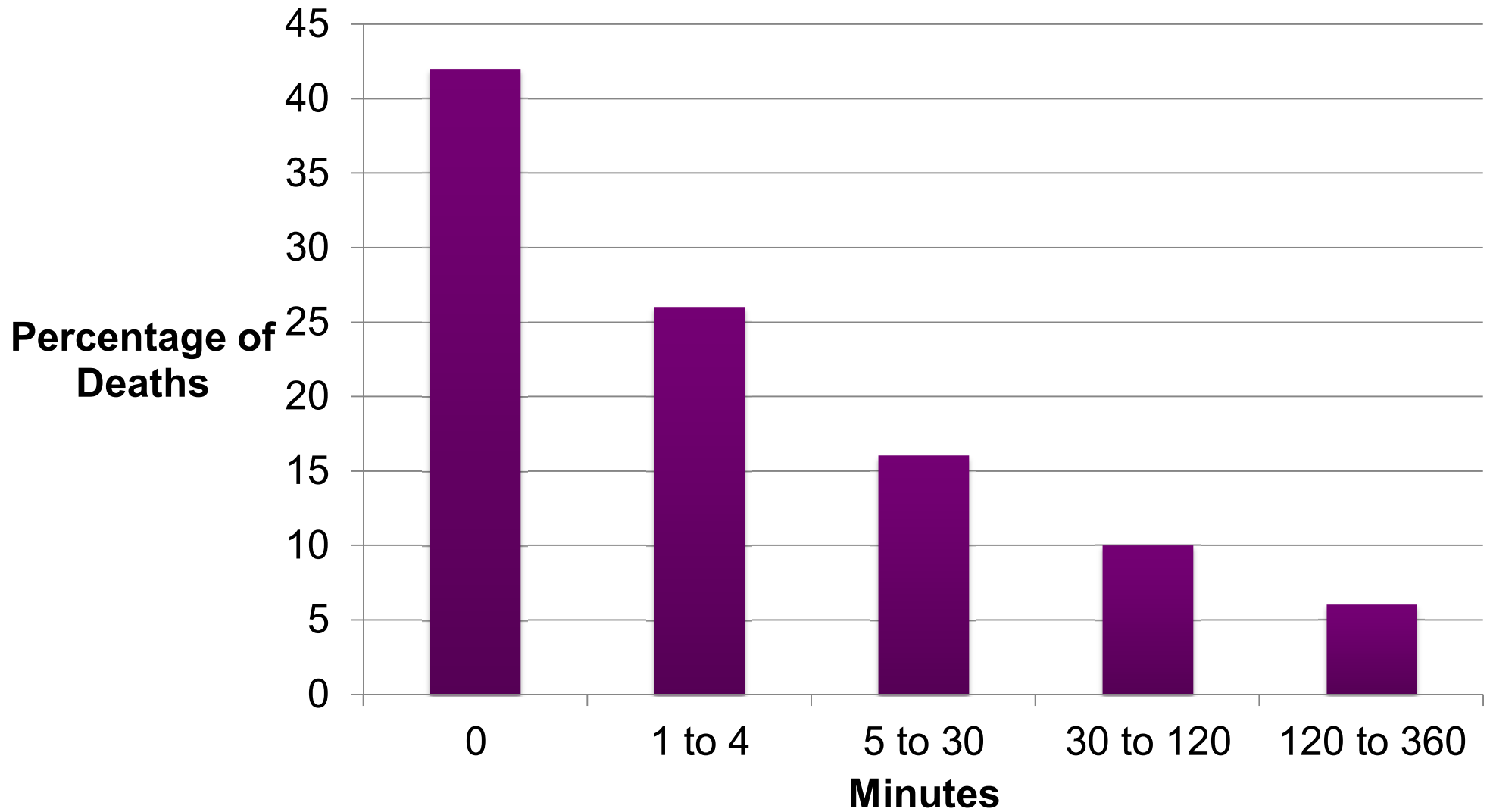


Death Curve for Penetrating Trauma in Combat

Mortality

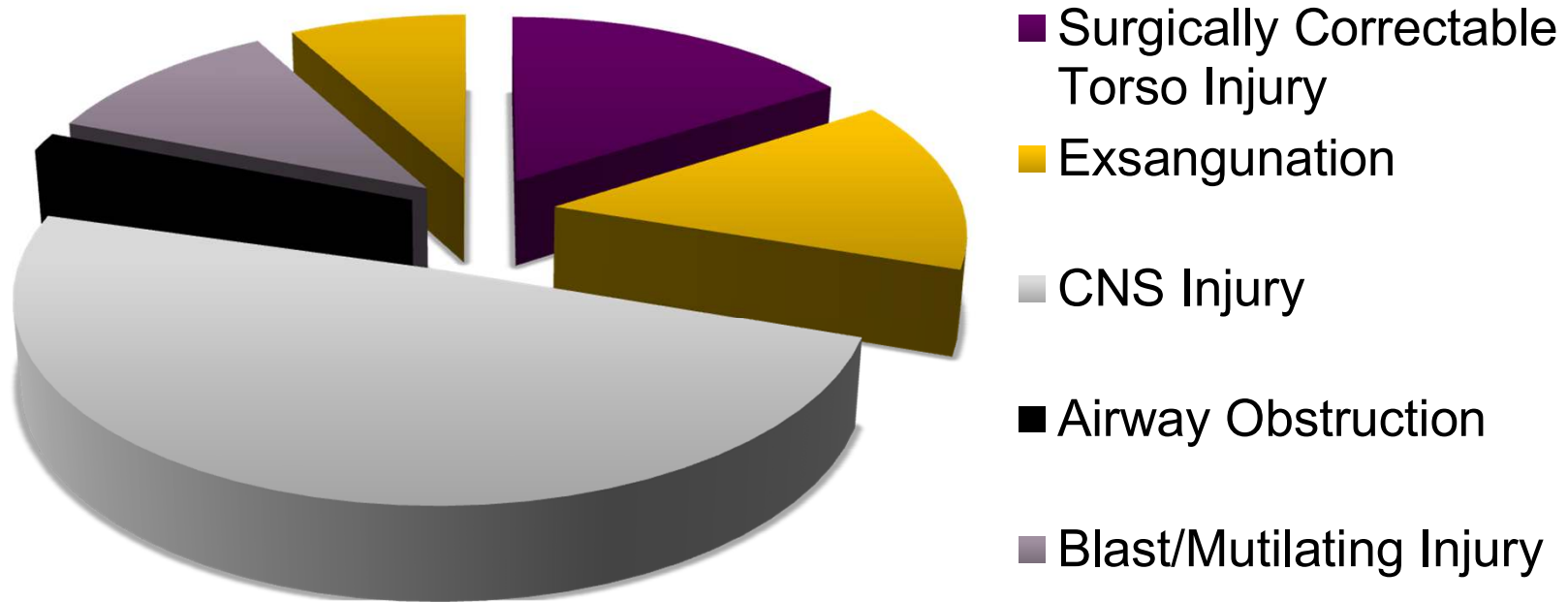


Time to Death in Combat Environment



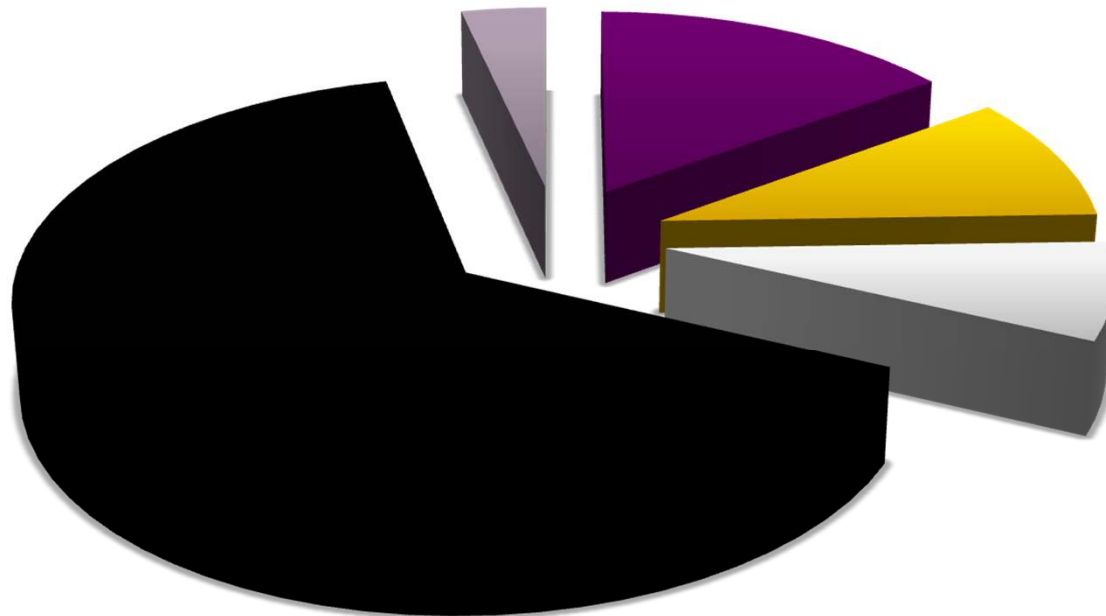
Causes of Death in Warfare

Cause of Death



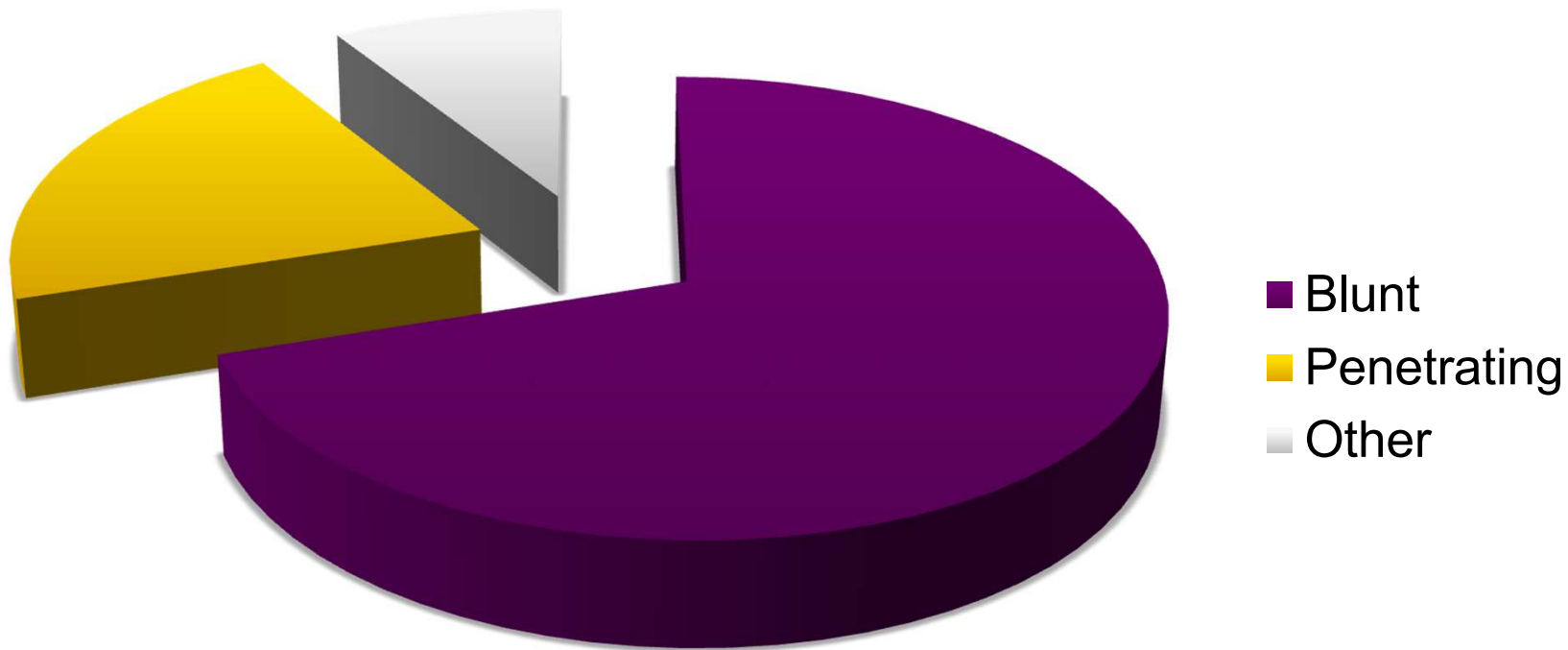
Anatomical Distribution of Wounds in Combat

Wounds



- Head and Neck
- Thorax
- Abdomen
- Limbs
- Other

Epidemiology of Civilian EMS



What is TCCC?

- **“Conventional civilian medicine was not appropriate for optimizing casualty care within the tactical environment.”**
 - Butler, et. Al. Military Medicine 2006



TCCC Summary

- **Top Three Causes of Preventable Death on the Battlefield**
 - Hemorrhage
 - Tension Pneumothorax
 - Airway Obstruction



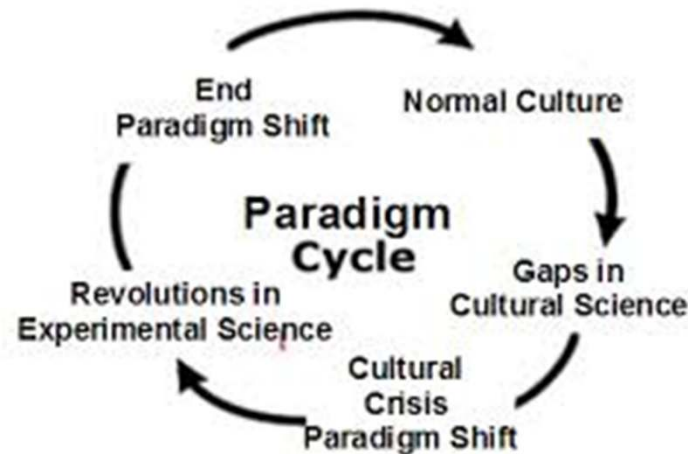
TCCC Summary

- **Principals guiding trauma response in a combat environment**
 - Care Under Fire (Hot Zone)
 - Tactical Field Care (Warm Zone)
 - Tactical Evacuation Care (Cool Zone)



A Paradigm Shift

- There must be a change in protocols from what **CAN** be done
- To what **MUST** be done
- A new standard of care specific to the environment



What is TECC?

- **The TECC guidelines are a set of best practice recommendations for casualty management during high threat civilian tactical and rescue operations**



TECC Goals

- **To establish a medical care framework that balances the threat, civilian scope of practice, differences in civilian population, medical equipment limits, and variable resources for ALL atypical emergencies and mass casualty**
- **To provide for aggressive forward deployment of stabilizing medical interventions**



What's Different

- **Scope of practice**
- **Liability**
- **The old and the young**
- **Transport assets**
- **Baseline population health**
- **Wounding patterns**



- **Phases of Care**
 - Direct Threat Care (DTC) – Hot Zone
 - Indirect Threat Care (ITC) – Warm Zone
 - Evacuation Care (Evac) – Cold Zone



Direct Threat Care

- **The external, ongoing threat to life is as or more dangerous than the injury sustained**
 - Risk of further injury is extremely high
- **Minimal medical intervention**
 - Evacuation and operational mitigation of threat
 - Immediate life rescue



Direct Threat Care

- **Hemorrhage control**
 - Tourniquet



Indirect Threat Care

- **Risk exists but is not direct or immediate**
 - Dynamics of scene safety
- **Assessment and management of the immediate life threats**



Indirect Threat Care

- **At or near the point of injury**
 - Scene is clear but not secure
- **At a casualty collection point**
 - Cover and security presence
- **Render weapons safe**



- **M**ajor **B**leeding
 - 2-4 minutes
- **A**irway
 - 4-6 minutes
- **R**espiration
 - 15-20 minutes
- **C**irculation, **H**ead/hypothermia, **E**verything **E**lse
 - 60 minutes

Indirect Threat Care

■ **Bleeding**

- Pressure Dressing
- Wound Packing
- Hemorrhage Control Devices
- Hemostatic agent when not amenable to tourniquet use or as adjunct
- Junctional tourniquets
- TXA



Pressure Dressings and Wound Packing

- Pressure can be applied with or without gauze
- Continuous application of pressure and wound packing is the key factor in stopping bleeding



Tourniquets

- Commercial Tourniquets
 - Designed for significant extremity trauma
 - Ineffective for junctional bleeds
 - Provides circumferential pressure
 - Application may cause significant pain
 - Despite proper training, approx. 80 % are not tightened adequately



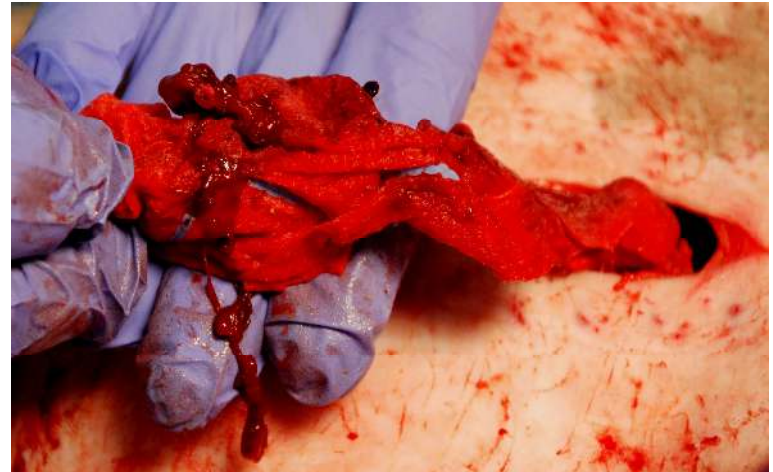
Trauma Clamp

- Rapid application and hemorrhage control
- Cessation of blood flow at the point of injury in seconds
- Maintains distal flow
- Minimal pain



Hemostatic Agents

- **Kaolin Agents**
 - Key ingredient – kaolin clay
 - Absorbs water from wound which increases concentration of clotting factors
- **Chitosan Gauze**
 - Key ingredient – chitosan
 - Swells, gels and clots
- **All Hemostatics**
 - Should be packed into the wound, ideal for cavitating wounds
 - Require 3-5 minutes of direct pressure
 - Are generally 80% effective with a 30% rebleed rate



Junctional Tourniquets

- Combat Ready Clamp (CRoC)
 - Designed for inguinal and axillary bleeds
 - Occludes distal circulation with built-in compression disk
 - Requires device specific training and assembly
- Junctional Emergency Treatment Tool (JETT)
 - Designed for massive inguinal groin injuries
 - Only effective for lower extremity trauma
- SAM Junctional Tourniquet
 - Inguinal and axillary hemorrhage
 - Pelvic Fractures



Anti-Fibrinolytics

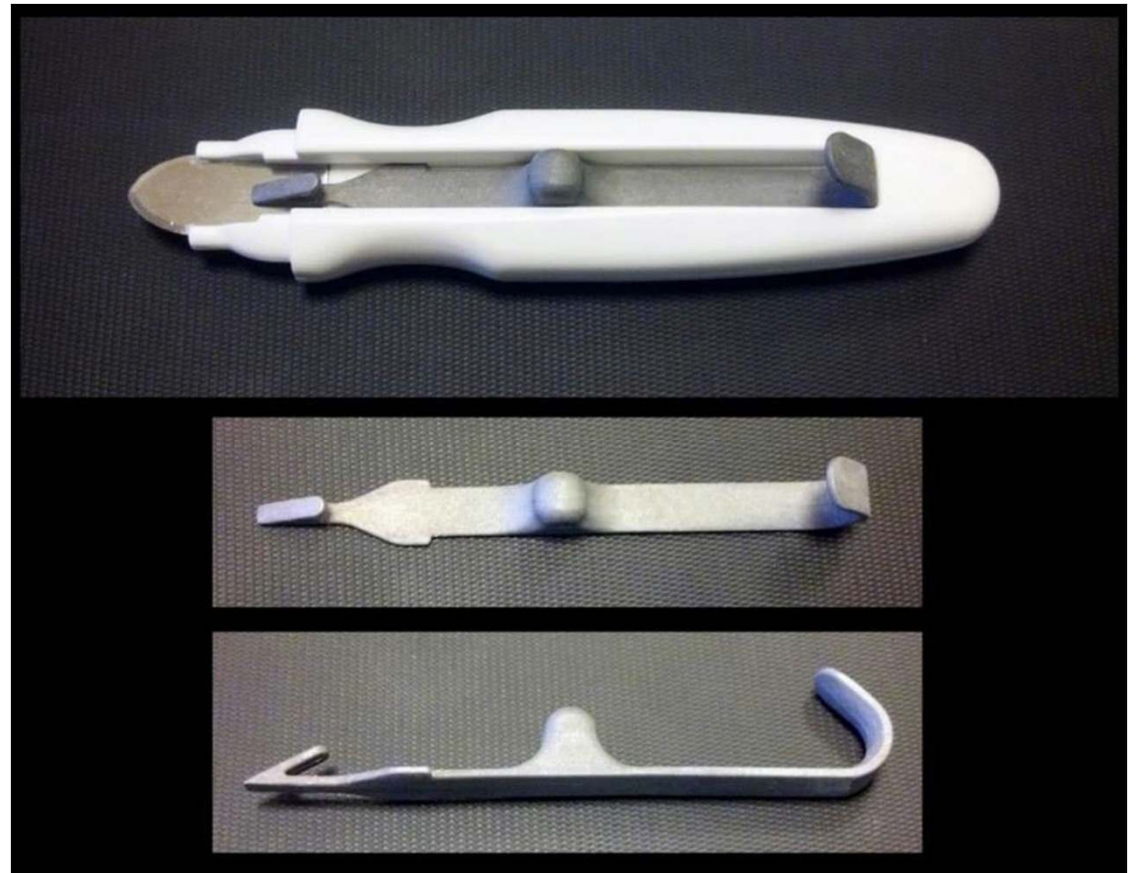
- Tranexamic Acid (TXA)
 - For use in suspected or confirmed internal bleeding
 - Inhibits clot breakdown
 - Must be administered within 3 hours of injury
 - Not shown to increase risk of a clotting event (heart attack, stroke, or pulmonary embolism)



Indirect Threat Care

■ Airway

- Unconscious
 - Chin lift or jaw thrust, NP, recovery position
- Obstruction
 - Supraglottic Devices
 - Cricothyroidotomy
 - Intubation
- Oxygen



Indirect Threat Care

■ Breathing

- Open sucking chest wound
 - Occlusive dressing
- Tension pneumothorax
 - 14-gauge, 3.25 inch needle/catheter



Indirect Threat Care

- **IV access**
 - 18-gauge saline lock
 - IO
- **Fluid resuscitation**
 - Only if in shock
 - 500 cc boluses
 - PRBC:FFP 1:1



Indirect Threat Care

- **Hypothermia prevention**
 - Leave gear on if able
 - Replace wet clothing
 - Warming devices, blankets
 - Warm IV fluids



Indirect Threat Care

- **Penetrating Eye Trauma**
 - Check visual acuity
 - Cover with rigid eye shield
 - No pressure
- **Reassess**
- **Analgesia**
- **Burn care**
- **CPR?**



Evacuation Care

- **No external threat**
- **Consistent with conventional pre-hospital care**
- **Continued on through the continuum of trauma care**



Evacuation Care

- **Cold Zone**
- **Responsibilities of the Cold Zone medic**
 - Communication with the tactical command and/or lead medic
 - Establishment of safe corridor between warm zone casualty collection point and point of evacuation
 - Staging of triage location
 - Number and type of victims
 - Communication with medical control
 - Appropriate destination selection
 - Triage
 - Continuous reassessment and treatment

Evacuation Care

- **Continuum of Care**

- Monitoring
 - SBP 80-90
- Immobilization
- Hypothermia management
- Pain control

- **Advanced Care Possibilities**

- RSI
- Chest Tube Insertion
- Blood Products



Evacuation Care

■ Transport

- Selection of appropriate destination based on established trauma criteria
- Working with medical control when the situation will not allow for the following of established protocols
 - Transport assets
 - Capabilities of receiving hospitals



EMS Response to High Threat Environment

- **Columbine High School**
 - Self-inflicted wounds within 45 minutes
 - No law enforcement entry for 1 hour
 - No medical operations for 4 hours



Arlington Virginia Response

- **“Initial EMS/Fire medical responders should work with Law Enforcement assets to rapidly deploy into areas that have been cleared but not secured to initiate treatment and effect rescue of injured victims.”**
- **Development of the Rescue Task Force concept**



Rescue Task Force Concept



- **Non-SWAT Operation**
 - First arriving medical personnel
 - Patrol officers
- **Warm Zone Operations**
 - Initial treatment and evacuation

- **Clear But Not Secure**

The Rescue Task Force Medic

- **MUST have appropriate tactical gear**
- **Limited medical supplies consistent with TECC guidelines**
- **Initial treatment and extraction of the victim only**



The Hartford Consensus



- **Focus on early hemorrhage control**
- **THREAT**
 - T – Threat suppression
 - H – Hemorrhage control
 - RE – Rapid Extrication
 - A – Assessment by medical providers
 - T – Transport to definitive care

The Hartford Consensus II



- **It is no longer acceptable to stage and wait**
- **Training must include hemorrhage control techniques**
- **Training must include assessment, triage, and transport of victims to definitive trauma care**
- **Incorporate TCCC and TECC concepts into training**

U.S. Fire Administration

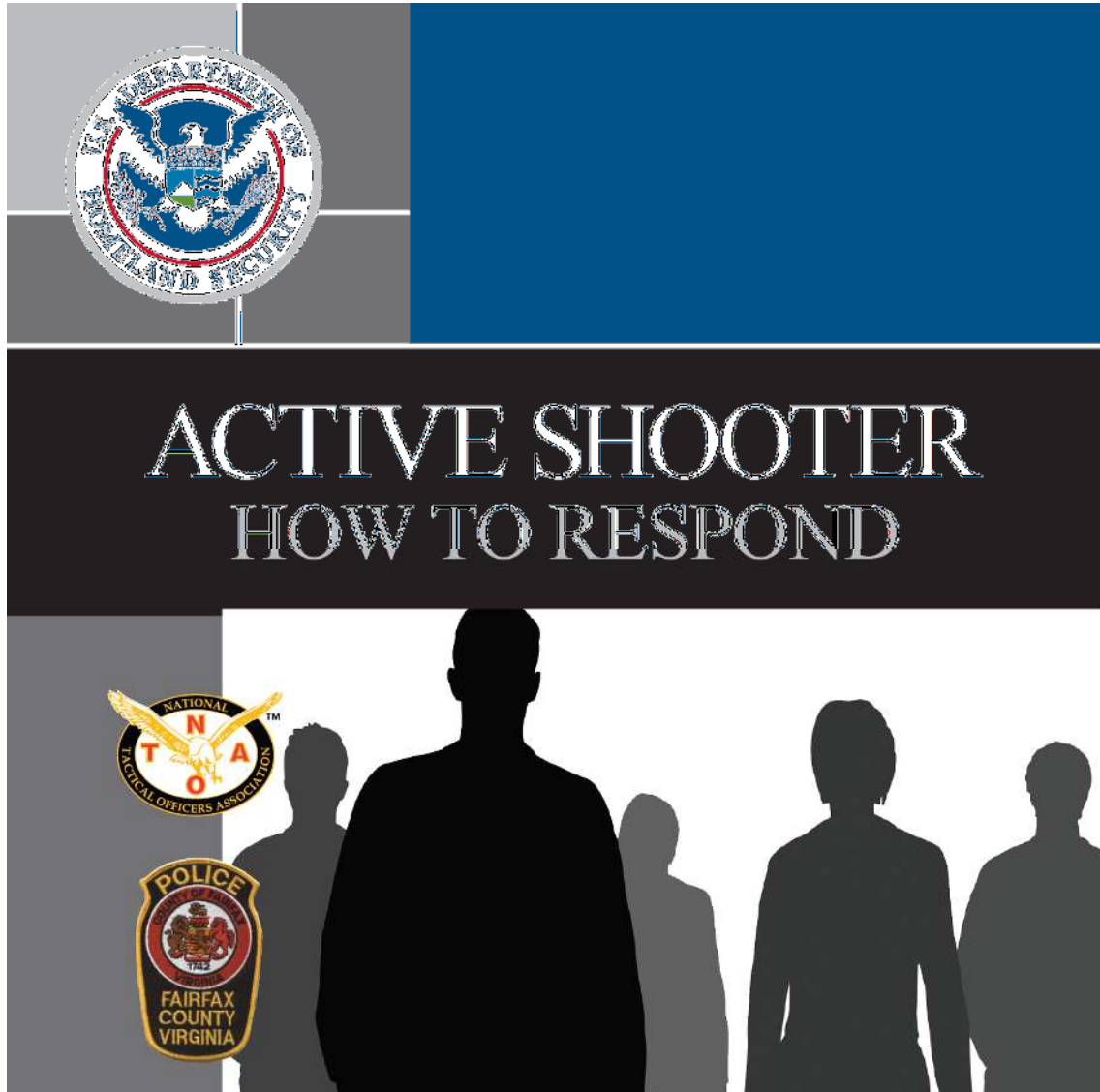
Fire/Emergency Medical Services Department Operational Considerations and Guide for Active Shooter and Mass Casualty Incidents

September 2013



FEMA

All Aboard





IAFF Position Statement: Active Shooter Events

The emerging threat of terrorism and asymmetric warfare, specifically small unit “active shooter” and improvised explosive device (IED) attacks, is a concern for the fire service. An attack by radicals armed with weapons in public areas, such as schools, shopping malls, churches or any other locations where people congregate is a real threat to a sense of security and daily lives.

An Active Shooter event is an event involving one or more suspects who participate in an ongoing, random, or systematic shooting spree, demonstrating an intent to harm others with the objective of mass murder.

Given the recent spate of what has become known as “active shooter” scenarios unfolding across the nation, fire and law enforcement departments, regardless of size or capacity, must find ways to marshal appropriate and effective responses to these events. Therefore, local jurisdictions should build sufficient public safety resources to deal with active shooter scenarios.

It is imperative that local fire and law enforcement departments have common tactics, common communications capabilities and a common lexicon for seamless, effective operations. Local fire and law enforcement departments should establish standard operating procedures to deal with these unusual, highly volatile, and extraordinarily dangerous scenarios. Standard operating

Summary

- **Current EMS training and practice is inadequate to address the high threat environment**
- **TCCC/TECC have provided a framework to address the medical care of victims in this environment**
- **EMS and law enforcement must work and train together in order to mitigate the effects when this events occur**
- **Fire and EMS agencies must provide personnel with training and equipment in order to bring care into the warm zone**