Increasing Survival from Active Shooter and Intentional Mass Casualty Events

Vice President, Academic Affairs
Hartford Hospital
Professor of Surgery
University of Connecticut
Cinemark Century 16 Theater in Aurora, Colorado:
70 (12 killed, 58 wounded), July 20, 2012.
Virginia Polytechnic Institute and State University in Blacksburg, Virginia:
49 (32 killed, 17 wounded), April 16, 2007.

ACTIVE SHOOTER INCIDENTS WITH THE HIGHEST CASUALTY COUNTS: 2000 – 2013
(Cont’d)

Ft. Hood Soldier Readiness Processing Center in Ft. Hood, Texas:
45 (13 killed, 32 wounded), November 5, 2009.

Sandy Hook Elementary School and a residence in Newtown, Connecticut:
29 (27 killed, 2 wounded), December 14, 2012.


Other incidents, in descending order were located in:

<table>
<thead>
<tr>
<th>Location</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open spaces</td>
<td>15</td>
<td>9.4%</td>
</tr>
<tr>
<td>Government properties</td>
<td>16</td>
<td>10.0%</td>
</tr>
<tr>
<td>Other (non-military) government</td>
<td>11</td>
<td>6.9%</td>
</tr>
<tr>
<td>Military properties</td>
<td>5</td>
<td>3.1%</td>
</tr>
<tr>
<td>Residences</td>
<td>7</td>
<td>4.4%</td>
</tr>
<tr>
<td>Houses of worship</td>
<td>6</td>
<td>3.8%</td>
</tr>
<tr>
<td>Health care facilities</td>
<td>4</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

LOCATION OF INCIDENTS OF ACTIVE SHOOTER EVENTS: 2003 - 2013

73 (43.6%) Occurred in areas of commerce
44 (27.5%) Areas open to pedestrian traffic
23 (14.3%) Areas closed to pedestrian traffic
6 (3.8%) Malls

EDUCATIONAL ENVIRONMENT

39 (24.4%)
ACTIVE SHOOTER INCIDENTS: 2000 - 2013

DURATION OF ACTIVE SHOOTER INCIDENT

44 (69.0%) ended in 5 minutes or less. 23 ended in 2 minutes or less

Civilians had to make life or death decisions and therefore, should be engaged in training and decision making.

ACTIVE SHOOTER and INTENTIONAL MASS CASUALTY EVENTS

Requires variable resources
• Immediate responses
• Integration of multiple agencies
• Multiple jurisdictions
• Multiple responsibilities
• Integration of prehospital and hospital systems
IMPORTANCE OF TIME

Active Shooter Event

Usually concluded in 15 min

Initial response is from the public

First responder is usually law enforcement

Next responder is EMS

Critical action must be implemented immediately
## IMPORTANCE OF TIME

### Duration of Event

<table>
<thead>
<tr>
<th>Location</th>
<th>Duration</th>
<th>Rounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA Tech</td>
<td>8-9 min</td>
<td>174 rounds</td>
</tr>
<tr>
<td>Fort Hood</td>
<td>10 min</td>
<td>214 rounds</td>
</tr>
<tr>
<td>Newtown</td>
<td>5 min</td>
<td>154 rounds</td>
</tr>
</tbody>
</table>

### Response Time

- Columbine: 40 min EMS response
ZONES OF ACTIVITY

Hot: Danger, Active Shooter Threat Suppression

Warm: Not Secure, Hemorrhage Control, Treatment and Extrication

Cold: Safe, Assess and Triage, Transportation to Hospital
CIVILIAN

Hot

DANGER

Law Enforcement
SWAT Teams

Warm

NOT SECURE

Fire Rescue

Cold

SAFE

EMS
HISTORICALLY DIFFERENT RESPONSIBILITIES

Law enforcement
EMS
Fire, Rescue
LAW ENFORCEMENT

- Suppress the threat
- Minimize further damage to victims or responders
- Secure the scene
- Preserve the crime scene
THREAT SUPPRESSION

By Mike Krumboltz | The Upbeat – Tue, Apr 16,
HEALTH

- First responders
- Identify injured patients
- Assess for life-threatening injuries
- Assess severity
- Triage
- Treatment
- Transportation
- Distribution of patients for optimal treatment
IMPROVISED TOURNIQUET
PUBLIC HEMORRHAGE CONTROL

Scrape TV .com
Mike Michaels, American Correspondent, April 20 2013
Jimmy Plourde, the firefighter with whom Mendelsohn worked, on April 15 – Ken McGah/Metro West Daily News/ZUMA

People.com 04/18/2013 at 11:30 AM EDT
SCENE RESPONSIBILITIES

- Establish control of scene
- Manage resources
- Establish command structure
- Maximize immediate medical response
- Prevent exacerbation of the injuries
- Triage and transport to appropriate hospitals
TRANSPORTATION

http://hereandnow.wbur.org/2013/04/16/boston-marathon-bombing,
Tuesday, April 16, 2013
HOSPITAL RESPONSIBILITIES

• Prepare to receive variable number of patients of unknown severity
• Implement disaster Plan
• Multiple response teams from
  • ED, Surgery, Radiology, Anesthesia, OR
ACS CREATES COMMITTEE

ACS Regents, COT, PHTLS
FBI, FEMA, ACEP, Hospitals
Dept of Defense  TCC
International Fire Chiefs
Major Cities Police Chiefs
National Security, Exec Office of the President
17th U.S. Surgeon General
Hartford Consensus I
Published, ACS Bulletin and J Trauma

Hartford Consensus II
Published, ACS Bulletin
Initial management of mass-casualty incidents due to firearms:

Improving survival

by Lenworth M. Jacobs, MD, MPH, FACS;
Karyl J. Burns, RN, PhD;
Norman McSwain, MD, FACS;
and Wayne Carver, MD
The Journal of
Trauma and
Acute Care
Surgery

American Association for the Surgery of Trauma
Australian and New Zealand Association for the Surgery of Trauma
Eastern Association for the Surgery of Trauma
Trauma Association of Canada/Association Canadienne de Traumatologie
Western Trauma Association

- Improving Survival from Active Shooter Events: The Hartford Consensus
- Special Report: Hurricane Sandy and the Greater New York Health Care System
- Presentation and Outcomes in Patients with Traumatic Diaphragmatic Injury: A 15-Year Experience CME
- A Natural Immune Modulator Attenuates Stress Hormone and Catecholamine Concentrations in Polymicrobial Peritonitis
- Tranexamic Acid in Trauma: How Should We Use It?
THREAT

Hot

DANGER

Threat Suppression

Warm

NOT SECURE

Hemorrhage Control
Rapid Extrication

Cold

SAFE

Assess Patient
Transport to Hospital
CIVILIAN RESPONSE

- Multiple missions
- Variable structure
- Variable response
- Delayed implementation
- Siloed response
MILITARY RESPONSE

- Solitary mission
- Integrated command structure
- Immediate response
- Immediately scalable
- Buddy system
MILITARY

HOT DANGER

WARM NOT SECURE

COLD SAFE
PREVENTABLE COMBAT DEATHS FROM NOT USING TOURNIQUETS

Frank Butler, MD, Chairman
Tactical Combat Casualty Care Committee

Maughon – Mil Med. 1970: Vietnam 193 of 2600. 7.4% of Total

Kelly. J Trauma 2008: 77 of 982. 7.8% of Total

Eastridge. J Trauma 2012: 119 of 4596. 2.6% of Total
THREAT SUPPRESSION and HEMORRHAGE CONTROL
TOURNIQUET

Windlass Strap

Self-Adhering Band

Windlass Rod

Windlass Clip
TOURNIQUET
ONE HANDED APPLICATION
ONE HANDED APPLICATION
ONE HANDED APPLICATION
ONE HANDED APPLICATION
ONE HANDED APPLICATION
ONE HANDED APPLICATION
ONE HANDED APPLICATION
THE EFFICACY OF COMBAT GAUZE IN EXTREME PHYSIOLOGIC CONDITIONS

- First Application
- Second Application

Police and 1st Responders practicing the skills
Training Results

The Wound Packing Trainer, when used in conjunction with the WPT app on your smartphone or tablet, provides real-time, PSI measurement of the force being applied to the source of the bleeding. The results can be saved and used for further training or to certify competency. Students are engaged, curious and motivated to “get it right.” Now, you can take the guess work out of your training, and start getting results that work!

Biofeedback Value

1. Positive reinforcement shapes behavior
2. Competency assessment validates training
3. Learn by doing
4. Learn for your workplace environment

BIOFEEDBACK TRAINING GETS RESULTS!

To effectively stop and control bleeding, a trainee must continually build digital compression force during wound packing—the WPT builds the confidence and muscle memory to apply correct technique in the field.
RESPONSE MUST BE

Immediate
Appropriate
Scalable
Organized
BALANCE OF LAW ENFORCEMENT AND EMS RESPONSE

Safety of the scene
Avoid additional shootings
Avoid excessive hemorrhage
Immediate medical response
Access and triage
Balance proximity vs safety
Share traditional roles
President’s Directive

To build national resilience by preparing the general public to save lives by raising awareness of techniques that can save lives by taking such basic actions as stopping life-threatening bleeding.
President’s Directive

Our national preparedness is the shared responsibility of all levels of government, the private and nonprofit sectors, and individual citizens. As we have seen in such recent tragic incidents as the Boston Marathon bombings, anyone can contribute to safeguarding the Nation from harm.
CALL TO ACTION BY THE HARTFORD CONCENSUS
NO ONE SHOULD DIE FROM UNCONTROLLED BLEEDING

Public:
Design educational programs and implement training for the public to respond
Preposition equipment
“Run – Hide – Fight”
National Security Council preparing the nation for increased resilience in Mass Casualty Events

Physicians’ Roundtable
Bystander Roundtable
Corporate Roundtable

National implementation

September 2015
Joint Committee
To Create A National Policy To
Enhance Survivability From
Intentional Mass Casualty And
Active Shooter Events

Hartford Consensus III

Implementation of
Bleeding Control
Levels Of Responders in a Mass Casualty Event

- Immediate Responders
  the Public
- Professionals First Responders
  EMS/Fire/Police
- Trauma Professionals
  Hospital based
HARTFORD CONSENSUS III
JUNE 2015
Contents of the Bleeding Control Bags Should Include:

- Pressure Bandages
- Safe and Effective Hemostatic Dressings
- Effective Tourniquets
- Personal Protective Gloves
Placement of Bleeding Control Bags should be:

- Next to AEDs
- Immediately Recognizable
- Secure But Accessible
- Able To Be Used in 3 Minutes
Citizen First Responder

- Bleeding Control Bag
- Inventory Sheet
- Gloves 50 Pair
EMS/FIRE/RESCUE

- Response must be fully integrated
- Traditional role limitations revised
- Not acceptable to stage and wait
- Utilize tourniquets and hemostatic dressings
- Triage and transport
- Transport patient with internal hemorrhage to definitive hospitals
THREAT

Hot

DANGER

Threat Suppression

Warm

NOT SECURE

Hemorrhage Control
Rapid Extrication

Cold

SAFE

Assess Patient
Transport to Hospital
THREAT

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AMERICAN COLLEGE OF SURGEONS

COMPRENDIUM

Strategies to Enhance Survival in Active Shooter and Intentional Mass Casualty Events
CONCLUSION

• Engage public, law enforcement
  EMS/Fire/Rescue
  Hospital community
• Modify initial responses
• Broad educational strategy
• Comprehensive Evaluation
• Implement THREAT