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See Something,

Do Something:

Improving Survival

Strategies to Enhance Survival in Active Shooter and Intentional Mass Casualty Events: A Compendium

HARTFORD CONSENSUS

THREAT

IMPROVING SURVIVAL

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The story of the Hartford Consensus illustrates very well this famous quote from Margaret Mead.

Following the events at Sandy Hook Elemen

Letter from the Vice-President

by Joseph R. Biden, Jr., Vice-President of the United States

The common sense recommendations within this report have the potential to equip citizens with the skills to respond, and the con dence to know they can—and must—make a difference.

> The national preparedness system shall include recommendations and guidance to support preparedness planning for businesses, communities, families, and individuals.

If resolution on a particular matter called for in this directive cannot be reached between or among executive departments and agencies, the matter shall be referred to me through the Assistant to the President for Homeland Security and Counterterrorism.

This directive replaces Homeland Security-Presidential Directive (HSPD)-8 (National Preparedness), issued December 17, 2003, and HSPD-8 Annex I (National Planning), issued December 4, 2007, which are hereby rescinded, except for paragraph 44 of HSPD-8 Annex I. Individual plans developed under HSPD-8 and Annex I remain in effect until rescinded or otherwise replaced.

Definitions

For the purposes of this directive:

- The term "national preparedness" refers to the actions taken to plan, organize, equip, train, and exercise to build and sustain the capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from those threats that pose the greatest risk to the security of the Nation.

- The term "security" refers to the protection of the Nation and its people, vital interests, and way of life.

- The term "resilience" refers to the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.

- The term "prevention" refers to those capabilities necessary to avoid, prevent, or stop a threatened or actual act of terrorism. Prevention capabilis

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The American College of Surgeons (ACS), through its Committee on Trauma, has worked for more than 40 years to improve the outcomes without such kits. However, the public bystander who happens to be at the scene will not have immediate access to a formal tourniquet even if a kit could be placed in the trunk of every car or on the wall beside every automatic electrical de brilla

A number of roundtable meetings were convened by the National Security Council to educate and generate a discussion from more than 50 organizations representing organized medicine, emergency medical services, re services, law enforcemen

FEBRUARY 10, 2015 INVITEES

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resilience by better preparing the general public to save lives by raising awareness of techniques such as stopping life-threatening bleeding. Our national preparedness is the shared responsibility of all levels of government, the private and not-for-profit sectors, and individual citizens. As we have seen in such recent tragic incidents as the Boston Marathon

The military experience and integration with the civilian sector

by Jonathan Woodson, MD, FACS, Assistant Secretary of Defense for Health Affairs, Department of Defense

A famous dictum, attributed to Hippocrates, is well known in the medical community: “Above all, do no harm.” But I am partial to another one: “He who wishes to be a surgeon should go to war.”

For thousands of years the battle eld, unfortunately, has been the classroom where the greatest medical advances have been made—in trauma care, aeromedical evacuationD0(t)-38.p568T60/3 1 . (a)7.2g74U29.6 g0n0 Tc 0.001.7 (r)-8.1 (og)-3h/3

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coordinates with other rst responder stakeholders on a wide range of training and public outreach initiatives for active shooter response in collaboration with interagency partners, rst responders, and community and private-sector organizations.

Recent IED and active shooter incidents have shown us that some tra

ACTIVE SHOOTER INCIDENT CASUAL 2000–2013

- Casualties (victims killed and wounded) totaled 1,043. The individual shooters are not included in this total
- A total of 486 individuals were killed
- A total of 557 individuals were wounded
- In 64 incidents (40%), the crime would have fallen within the federal de nitiolI8.3 1as0dI8.D81(d9 (I41)09>)

Initial management of mass-casualty incidents due to rearms: Improving survival

by Lenworth M.hmproles

HIGHLIGHTS

- Defines mass casualty incidents due to firearms as a public health problem.
- Discusses the phases of mass-casualty events and the factors influencing injury.
- Describes aspects of mass-casualty firearm events that require careful examination, such as medical scene management and tactical emergency medical support.
- Authors suggest that TEMS teams be used more frequently to deliver emergency care at the scene of the shooting.
- Introduces readers to the Joint Committee to Create a National Poli m ncresrality

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ntroduction

Statement of the problem

Concept to action

– Internal hemorrhage control
  - Rapid transportation and access to a trauma center
  - Prompt access to the operating room
  - Incorporation of new concepts in hemostatic resuscitation and damage control surgery that have been used successfully in recent military conflicts

Evaluation

With this significant change in approach to an active shooter or an intentional mass-casualty event, a carefully conceived evaluative process to determine the efficacy of THREAT is warranted. Scientific evaluation of the implementation of Hartford Consensus concepts must ensure that future efforts are focused on ideas that are effective.

The evaluation process should include measurement of the following:

- Accessibility of field hemorrhage control equipment for law enforcement, EMS/fire/rescue, and the general public
- Documentation of the use of hemorrhage control equipment by law enforcement, EMS/fire/rescue, [illegible]
- [illegible]

- Identify legislative priorities
- Engage in the legislative process at the national and state levels
- Engage in funding initiatives
- Implement pilot projects to demonstrate the effectiveness of the action principles of the Hartford Consensus
- Partner with relet

Editor's note: The Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass-Casualty and Active Shooter Events

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Building equipment capabilities

Immediate responder hemorrhage control

Conclusion

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The mission of the Hartford Consensus is to de-following the Sandy Hook Elementary School incident[3], the Department of Justice sponsored an initiative based on standardized officer training for active shooter incident response.[4,5] This program has provided training for approximately 50,000 officers nationally, across all jurisdictions and without cost to their departments. The program is expected

CHARACTERISTICS OF ACTIVE SHOOTER INCIDENTS, 2000–2012	
Locations	40% occurred in of ces, stores, and industrial sites 29% occurred in schools and colleges
Shooter	All involved a single shooter
Shooting	51% were still in progress on arrival of police
Engagement of shooter	43% of attackers continuing re on of cer arrival were red upon by of cers
Wounding of police	15% of of cers engaging a shooter in exchange of re were shot

Source: Blair JP, Martaindale MH, Nichols T. Active shooter events from 2000 to 2012. FBI Law Enforcement Bulletin. January 2014. Available at: http://leb.fbi.gov/2014/january. Accessed June 22, 2015.

Note: N = 110. In a 2000–2013 study (N = 160), less than 2 percent of incidents involved more than one shooter.

Blair JP, Schweit KW. A Study of Active Shooter Incidents, 2000–2013. Texas State University and Federal Bureau of Investigation. U.S. Department of Justice, Washington, DC. 2014. Available at: www.fbi.gov/news/stories/2014/september/fbi-releases-study-on-active-shooter-incidents/pdfs/a-study-of-active-shooter-incidents-in-the-u.s.-between-2000-and-2013. Accessed June 22, 2015.

events occurred per year. Since 2009, that figure has increased threefold.[10] A recent study by the Texas State University (TSU), San Marcos, conducted in concert with the Department of Justice, was based on police reports, public records, and media reports for 2000–2012.[11] The increased frequency of incidents seen in this study is not explained by changes in case de nition or solely on the basis of increased case reporting. Characteristics of active shooter incidents from 2000 to 2012 are presented in the table on this page.

The TSU study also observed that most active shooter incidents (40 percent) occurred in o ces, stores, and industrial locations. Schools and colleges were the next most common locations for these

Within the FBI itself, first aid training emphasizing hemorrhage control has been extended to all 13,000 special agents.

causing almost 6,000 injuries and 699 deaths.[13] Relatively unsophisticated IEDs can have serious effects, as was the case in Boston, where 264 victims included 70 hospitalizations, 16 amputations, and three deaths.[14] One estimate of the damage resulting from the Boston attack placed the economic impact at $400 million.[14]

Unlike the threat of terrorist attacks envisioned after 9/11, which were thought more likely to occur at high-profile events in major urban areas or at instal-

ACTIVE SHOOTER INCIDENTS: 2000–2013

- All but 2 incidents involved a single shooter
- In at least 9 incidents, the shooter rst shot and killed a family member or members in a residence before moving to a more public location to continue shooting
- In at least 6 incidents, the shooters were female
- In 64 incidents (40%), the shooters commiie shooters w%
  - InA-4 ( )](e)7.3 6at 6 ioo w%

ACTIVE SHOOTER INCIDENTS WITH THE HIGHEST CASUALTY COUNTS: 2000–2013

- Cinemark Century 16 Theater in Aurora, CO:
  70 (12 killed, 58 wounded)
  July 20, 2012
- Virginia Polytechnic Institute and
  State University in Blacksb79eTw 16.868 0 (s)76.851 0.155 0.15
-16.868 -1.286 (s)76.t
0 0 c 0.0d5 Tw (k)-0 0 (b)7rCL119 Rcn9 Tw (k)- Tw -10.106 Td [(9.3 (sn<</Acs-2504 Tc9 0

Public health education: The use of unique strategies to educate the public in the principles of the Hartford Consensus

by Richard H. Carmona, MD, MPH, FACS
17th U.S. Surgeon General

The devastating events of September 11, 2001, have been a disruptive force that has challenged our nation to appreciate our emergency response systems and their strengths and de ciencies. Since 9/11, billions of dollars have been spent on edu cating, training, and equips f unged . 58. 05. 19 Tc (,)-. 15 Tc 51005e have been characterized by the Hartford Consensus group. The basic essential skills that we recommend to the public for active shooter events will also prove to be essential for other catastrophic all-hazards events facing our nation.

Skills needed for immediate responders to an active shooter event

The skills needed by a civilian immediate responder are simple but need to be executed in a complex, evolving, and sometimes unsecure environment. The immediate responder first should understand the threat of the active shooter and how law enforcement will tactically try to eliminate that threat. Immediate responders must be aware of their own safety and that of the injured. Without a thorough understanding, the immediate responder could become a liability or, worse, yet another casualty. First and foremost, the immediate responder must listen to direction from professional first responders as they arrive on scene.

The goal of the immediate responder is to stop exsanguinating hemorrhage by the simplest methods available, beginning with direct pressure and including the use of tourniquets when needed. The patient should be moved as soon as possible to a place of relative safety so as to prevent further injury.

The immediate responder, as soon as feasible, The CPR model has matured over decades and, at a minimum, can inform this discussion. In addition, Israel has a very mature and robust immediate responder model in which most citizens are prepared to serve as immediate responders; we can learn from our Israeli colleagues.

The path forward

Educating the public, the media, first responders, and medical and public health organizations is essential to ensure the need for an engaged, educated, and well-trained public to become an immediate responder asset when and if needed.

Developing health literate and culturally competent content for this immediate responder

Authors have described some of the components of a comprehensive law enforcement medical support program. They have described the role of law enforce-

The Hartford Consensus and the Major Cities Chiefs Association

From its inception, the agencies represented by the Major Cities Chiefs Association (MCCA) and many other law enforcement agencies around the U.S. and the world have been supporters and contributors to the Hartford Consensus. In addition to the adoption of the response concepts represented by the acronym THREAT (

ACTIVE SHOOTER INCIDENTS:
2000–2013

LAW ENFORCEMENT/SECURITY
PERSONNEL CASUALTIES

that potentially preventable deaths from extremity hemorrhage had dropped from the 7.8 percent noted in the previously mentioned Kelly study to 2.6 percent, a decrease of 67 percent.[9] The studies by Kragh and Eastridge and other U.S. military authors established the benefit of battlefield tourniquets in combat casualties. Eastridge's paper documented that as of June 2011, there were 4,596 total U.S. combat fatalities. Of these deaths, 119 servicemen and servicewomen died from isolated extremity hemorrhage. If the incidence of death from extremity hemorrhage had continued at the 7.8 percent rate observed in the Kelly study, the number of deaths from extremity hemorrhage would have been 358. In considering this number, it should be noted that Kelly's 7.8 percent incidence of death from extremity hemorrhage included fatalities up to the end of 2006 and so reflected at least some decrease in extremity hemorrhage deaths as a result of the 2005 push to expand the use of tourniquets in the U.S. military.

Holcomb, Champion, and others have documented that casualty survival in Afghanistan and Iraq was significantly higher than that observed in World Wars I and II and the Vietnam conflict.[10] This increased survival was the product of both increased use of personal protective equipment and improvements all along the continuum of care from point of wounding to discharge from the hospital. However, in a military with the highest survival rate in our nation's history, the 75th Ranger Regiment demonstrated that further improvements were possible. Kotwal and his colleagues reported an 87 percent reduction in potentially preventable deaths (3 percent compared with 24 percent in the U.S. military as a whole) through the establishment of a command-directed casualty-response program that included TCCC training and expertise for every person in the regiment—not just medics.[11]

At this time, the U.S. military has more experience with combat tourniquets than any military force in history, and U.S. servicemen and servicewomen no longer step onto the battlefield without an individual first aid kit that contains one or more tourniquets.

Hemostatic dressings

Hemostatic dressings were not part of the original TCCC guidelines. These agents were developed shortly after the onset of hostilities in Afghanistan. Both the HemCon bandage and QuikClot granules were developed commercially, and other options soon followed. The challenge to the U.S. military was to decide which of the available hemostatic options to field. Comparative studies were carried out both at the USAISR and the Naval Medical Research Center in Bethesda, MD. These studies showed that both agents improved survival compared with control groups in animal models of

Newer hemostatic dressings became available in 2008 and underwent testing at the USAISR and the Naval Medical Research Center. These studies found that both Combat Gauze and WoundStat were consistently more effective than HemCon and QuikClot granules. As a result, the CoTCCC modified the TCCC guidelines to recommend Combat Gauze as the first-line option for the treatment of life-threatening hemorrhage not amenable to tourniquet placement because the combat medics involved in the decision expressed a strong preference for a gauze-type hemostatic agent rather than a powder or granules. WoundStat was recommended for use when Combat Gauze was not successful in controlling the hemorrhage. Subsequent safety testing at the USAISR found that WoundStat produced thromboembolic complications in animal models.[14] These findings caused the CoTCCC to remove WoundStat as a recommended agent, and its use was subsequently discontinued in the U.S. military.

Combat Gauze is now the hemostatic dressing most widely used by U.S. forces on the battlefield. The first report of Combat Gauze use in combat noted a 79 percent success rate in 14 uses among Israeli Defense Force personnel.[15] Large U.S. retrospective studies of Combat Gauze effectiveness in U.S. casualties have not yet been done.

Newer hemostatic dressings are the subject of ongoing research. A study from the Nad0 (e)-6.1

At this time, the U.S. military has more experience with combat tourniquets than any military force in history...

nor ChitoGauze have been tested in the USAISR hemostatic safety model described by Kheirabadi.[13] The U.S. military also does not have as much successful experience with these two agents as it has with Combat Gauze. For these reasons, the two agents are recommended by the CoTCCC as backup choices to Combat Gauze.

Conclusion

Never in its long and distinguished history has the U.S. military been so successful at saving the lives of individuals wounded in combat. Many dedicated professio8 (f)-(n)-2.5< (k)-24(v)-27.7 (i)6.2 (d)-w.5 (et27.7 (i0 0 s

ACTIVE SHOOTER INCIDENTS: 2000–2013
DURATION OF ACTIVE SHOOTER INCID

- 44 (69%) ended in 5 minutes or less
- 23 ended in 2 minutes or less
- Civilians had to make life-or-death decisions and therefore need to be engaged in training and decision making

*Note: This is in 64 incidents in which the duration could be ascertained.

Blair JP, Schweit KW. A Study of Active Shooter Incidents, 2000–2013. Texas State University and Federal Bureau of Investigation. U.S. Department of Justice, Washington, DC. 2014.

Hemorrhage control devices: Tourniquets and hemostatic dressings

by John B. Holcomb, MD, FACS
Committee on Tactical Combat Casua>8N-3 (C)-22.7 (o)-1.5 (n>8N-12.5 (s)-38 Co)- (iq)1.4 (o) 0 Td ( )0.5 36

of modern tourniquets and hemostatic dressings on
the battle eld and aggressive training of all levels of

- There was prior bleeding, and the patient is now in shock (unconscious, confused, pale).

When treating an individual who is in obvious shock from bleeding wounds, hemorrhage control should be the rst priority, before uid resuscitation. E ective hemorrhage control does not stop with the initial tourniquet application. The military experience with tourniquets has provided some key teaching points about their use:

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information should also be recorded on the individual's run sheet and total tourniquet ischemia time recorded in the hospital chart. Finally, all manufactured tourniquets are designed for a single use. A separate group carry tourniquets and hemostatic dressings in a kit on their person when responding. EMS equipment in the ambulance or helicopter should include hemorrhage control kits. All trauma centers should have these devices in their emergency departments. Training is paramount. Larger pre-positioned trauma kits should be placed at optimal locations for medical coverage of local events or locations. These larger kits would supply immediate needs in an active shooter event or mass casualty situation. Examples of locations where pre-positioned trauma kits would be of value are malls, movie theaters, schools, and sporting events. There is a growing recognition that the hemorrhage control kits should be positioned next to automated external de brillators.

Recommendation

External hemorrhage control can be accomplished easily by well-trained and well-equipped people, whether they are professional rst responders or civilians. Tourniquets and hemostatic dressings should reduce preventable deaths from external hemorrhage in the civilian sector, just as they have done in the military. The recommendations for early e ective hemorrhage control with commercial devices are important and similar to those of the

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LOCATION OF INCIDENTS OF ACTIVE SHOOTER EVENTS: 2003–2013

must maintain situational awareness of the dynamic nature of these incidents, including the possibility of ambush and secondary devices intended to harm

center and the expertise of the trauma surgeons and trauma center personnel, the bleeding control program can rapidly become credible in the mind of the public, and promulgation will be encouraged.

EDUCATIONAL ENVIRONMENTS
WERE IDENTIFIED AS THE SECOND LARGE

Integrated education of all responders

by Norman E. McSwain, MD, FACS
Medical Director, Prehospital Trauma Life Support

The Hartford Consensus issued a call to action that outlined specific activities that the public, law enforcement, emergency medical services (EMS)/fire/rescue, and definitive care need to enact to increase survival from active shooter and intentional mass casualty events. An acronym, THREAT, summarizes the recommendations: T is for threat suppression, H indicates hemorrhage control, RE denotes rapid extrication to safety, A is for assessment by medical providers, and T indicates transport to definitive care.

To answer this call to action, education of all responders in THREAT is needed. The specific educational needs of each responder group will be presented. However, it should be noted that a major tenet of The Hartford Consensus is that education should be multidisciplinary and emphasize an integrated response. All responders should consistently train and drill together.*

Public response

As was demonstrated at the Boston Marathon bombings, the uninjured or minimally injured members of the public will act as immediate responders. The public should be officially recognized as a resource in the response to mass casualty incidents and be included in planning and training for active shooter and intentional mass casualty incidents.* For details of training the public in bleeding control, please see the contribution by Richard Carmona, MD, MPH, FACS, the 17th Surgeon General of the U.S., in this compendium regarding unique strategies to educate the public in the principles of the Hartford Consensus.

Law enforcement response

The Hartford Consensus recognized that law enforcement and EMS/fire/rescue traditionally have had diverse responsibilities. Law enforcement has the responsibility for control of the scene, suppressing the perpetrator, and preserving evidence, whereas EMS/fire/rescue has the responsibility to preserve life and limb. To increase survival from active shooter and intentional mass casualty events, it is important that hemorrhage control be used as soon as possible and that first response law enforcement officers have the training necessary to be proficient at hemorrhage control. External hemorrhage control also must be regarded as a core responsibility of law enforcement. Officers must know how to use direct pressure, hemostatic dressings, and tourniquets to stop bleeding. In addition, law enforcement officers need to move the wounded as quickly as possible to areas where they can be assessed and treated by responding medical providers. EMS/fire/rescue must be integrated into the process as early as possible.*

EMS/fire/rescue response

The U.S. Fire Administration of the Federal Emergency Management Agency, U.S. Department of Homeland Security, has issued *Fire/Emergency Medical Services Department Operational Considerations and Guide for Active Shooter and Mass Casualty Incidents*.[†] This document is a resource for response planning and preparation for active shooter and mass casualty incidents. It calls for fire and EMS agencies to incorporate the THREAT principles into their standard operating procedures while developing protocols together and engaging in mutual education. A specific

*Jacobs LM, Wade DS, McSwain NE, et al. The Hartford Consensus: A call to action for THREAT, a medical disaster preparedness concept. *J Am Coll Surg.* 2014;218(3):467-475.

[†]U.S. Fire Administration, FEMA. *Fire/Emergency Medical Services Department Operational Considerations and Guide for Active Shooter and Mass Casualty Incidents.* September 2013. Available at: https://www.usfa.fema.gov/downloads/pdf/publications/active_shooter_guide.pdf. Accessed June 30, 2015.

*Jacobs LM, Wade DS, McSwain NE, et al. The Hartford Consensus:

skill session. More information is available at www.naemt.org/education/PHTLS/whatisPHTLS.aspx.

Tactical Combat Casualty Care (TCCC)

The NAEMT Tactical Combat Casualty Care (TCCC) course is designed to teach strategies for the best trauma care on the battle eld. TCCC guidelines are endorsed by the ACS and the NAEMT through the PHTLS program. The NAEMT TCCC course is o ered under the auspices of the PHTLS program. It is designed for combat EMS/military personnel. The course can be adapted for law enforcement special weapons and tactics and special response teams. TCCC guidelines, available at www.naemt.org/education/TCCC/TCCC_home.aspx, provide a foundation for the standardization of tactical emergency medical support protocols.[‡]

Tactical Emergency Casualty Care (TECC)

The Committee for Tactical Emergency Casualty Care (C-TECC) was formed in 2010 to adapt military TCCC principles to civilian high threat prehospital environments. The C-TECC does not offer courses but directs that its principles be used as written by educational partners. The C-TECC is a not-for-profit organization. Representatives from several federal agencies, including the Federal Emergency Management Agency, Department of Homeland Security Office of Health Affairs, and multiple federal law enforcement agencies, are involved with C-TECC. TECC is included in the Joint Counter Terrorism Workshop Series, which is a program to assist urban areas to prepare for mass casualty incidents. More information is available ath 0.022 Tw 11lehsn/s a p0.4 (-(i)7n)6 (c.6 (t( )]TJ 0cc26.8 (.-6 (a)o8.1 (e)r0.5 (g)

[‡]McSwain NE, Pons PT, eds. Prehospital Trauma Life Support. 8th ed. Burlington, MA: Jones and Bartlett Learning; 2014.

ACTIVE SHOOTER INCIDENTS: 2000–2013

- The study results identi ed 73 of 160 incidents (45.6%) that occurred in areas of commerce. These areas included businesses open to pedestrian traf c (44 [27.5%]), businesses closed to pedestrian traf c (23 [14.3%]), and malls (6 [3.8%]). These distinctions were made to determine whether the public was more at risk in areas where pedestrian traf c was likely.

Blair JP, Schweit KW.

Implementation of the Hartford Consensus initiative to increase survival from active shooter and intentional mass casualty events and to enhance the resilience of citizens

by Lenworth M. Jacobs, Jr., MD, MPH, FACS
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Vice-President, Academic Affairs, Hartford Hospital
Member, Board of Regents, American College of Surgeons

The Joint Committee to Create a National Policy to Enhance Survivability from Active Shooter and Intentional Mass Casualty Events was founded by the American College of Surgeons (ACS) in collaboration with representatives from the federal government, the National Security Council, the U.S. military, the Federal Bureau of Investigation, and police, re, and emergency medical organizations. The committee recognized that a strategic response to active shooter and intentional mass ca

curriculum and practicum for combat casualty survival training and skills. The education includes tourniquet training and the correct placement and use of-hemo static dressings.

and triage of victims, selection of appropriate ground and air transportation, and communications between prehospital medical personnel and personnel in the resuscitation suite of the trauma center. Full integration, including the handover from the prehospital arena to the emergency department and then to surgical intervention in the trauma center, is practiced. Members of the military, including the Navy and The National Guard also train in the simulation center.

Involvement of the nonmedical corporate and university sectors

An increasing threat

Blair JP, Schweit KW. A Study of Active Shooter Incidents, 2000–2013. Texas State University and Federal Bureau of Investigation. U.S. Department of Justice, Washington, DC. 2014.

Summary

by Lenworth M. Jacobs, Jr., MD, MPH, FACS
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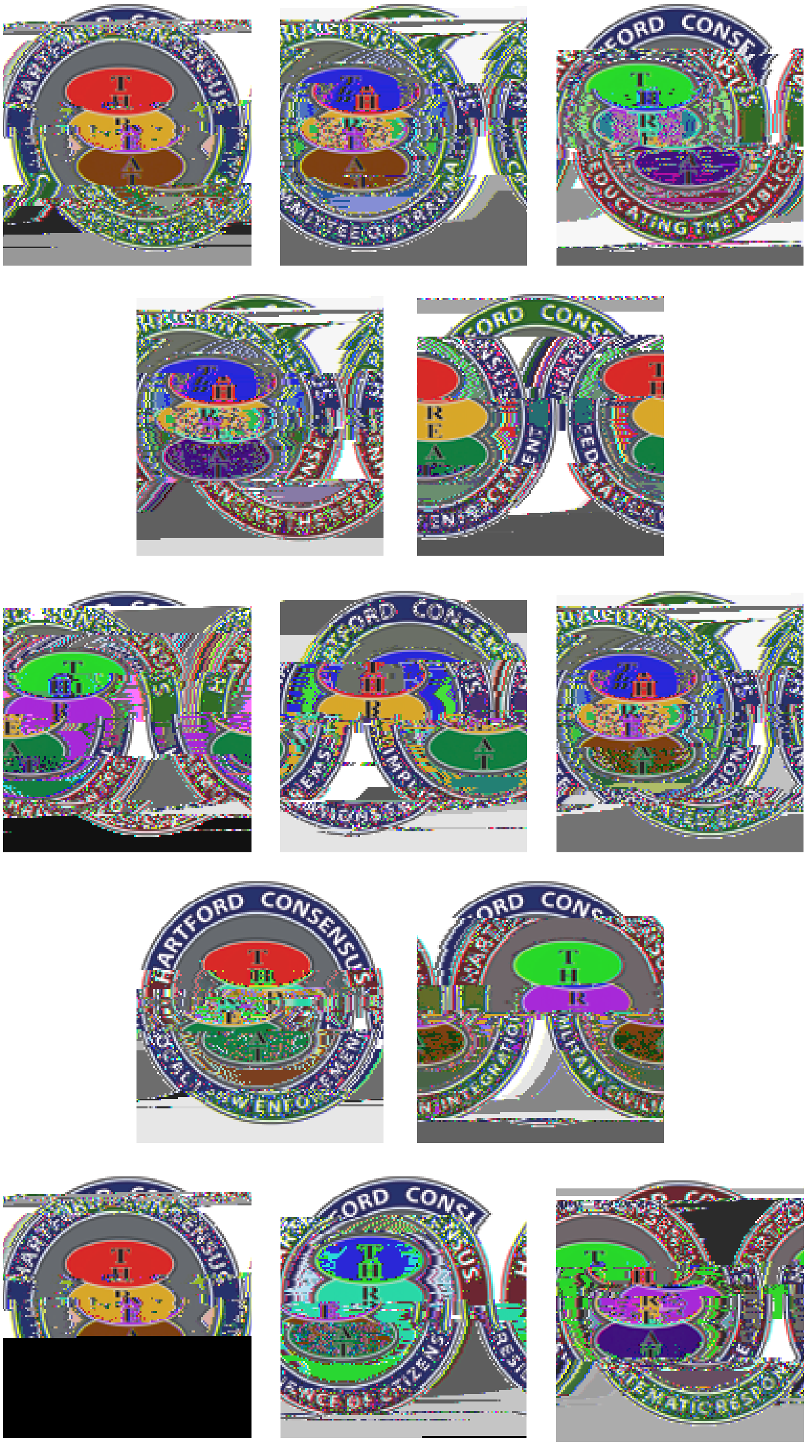
Member, Board of Regents, American College of Surgeons

The Presidential Directive aimed at strengthen


HARTFORD CONSENSUS
EDUCATING THE PUBLIC