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A Peer-Reviewed Journal that Brings Together the Global Interests of Special Operations' First Responders

The Continuing Threat of Intentional Mass Casualty Events in the U.S.

Observations of Federal Law Enforcement

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The mission of the Hartford Consensus is to develop basic principles to improve victim survival by promoting more effective local responses to active shooter incidents. From the inception of this project following the 2012 Sandy Hook Elementary School tragedy, physicians from the Federal Bureau of Investigation (FBI) have worked with the American College of Surgeons Committee on Trauma in applying what is known about these incidents to the guidance developed by the consensus group.

At the initial meeting in 2013, the Hartford Consensus participants collectively observed that the elements of a more effective response to these events already exist in many communities. These components fall within the responsibilities of law enforcement, emergency medical services, and rescue services, as well as the emergency and surgical services of receiving hospitals. To be effective, these elements of the response must be organized, coordinated, and deployed through plans compatible with the resources currently available in a given community.

The capabilities of local public safety agencies, along with the organizational philosophies and risk tolerance of these agencies, vary across the country. Hospital capabilities also vary widely with respect to the ability to receive multiple simultaneous trauma cases, a particularly challenging problem in rural locations. In spite of these challenges, what we know about active shooter incidents tells us that these violent acts occur in communities of all sizes throughout the country and appear to be increasing in frequency. This history supports the need for emergency action planning in every community. No single approach to improving survival in active shooter incidents is universally applicable; however, common principles apply to response in any community.

Although these incidents have been well publicized for almost a half century, the 1999 Columbine High School incident was a sentinel event resulting in major changes in police response to hostage situations involving armed perpetrators.^{1,2} Many departments have adopted a model

of rapid, dynamic engagement of active shooters as a lesson learned from Columbine. This approach by police, intended to minimize the number of victims by bringing the incident to a more rapid conclusion, alters the problems faced by the trauma care system that will receive casualties from the incident and has implications for both emergency medical services and receiving hospitals. In addition to ending the incident more quickly, this approach provides earlier access to victims requiring emergency hemorrhage control. The survival of this subset of victims presents challenges to all participants in the response system, from point of injury to definitive care in the surgical suite. The Hartford Consensus views hemorrhage control as second only to engaging and defeating the shooter and as key to improving the survival of victims of active shooter incidents.

The Hartford Consensus recommends that police departments train and equip their officers to perform initial hemorrhage control measures using hemostatic dressings and tourniquets. It also urges emergency medical and rescue services to train and equip their personnel to work more closely with the police in terms of both time and distance. The over-arching result envisioned is fewer injuries because of rapid termination of the active shooter threat, followed by rapid control of externally compressible hemorrhage by police and emergency medical and rescue services, with expedited identification and evacuation to surgical intervention of victims with suspected internal hemorrhage.

The law enforcement community has made substantial gains in training and equipping officers to rapidly engage the active shooter threat and provide emergency hemorrhage control when the threat is terminated. As part of a presidential directive 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 to reach a total of 80,000 officers within the

next 18 months. Since March 2013, the FBI has hosted response workshops for more than 64,000 police commanders from more than 4,000 agencies.⁶ The FBI's 56 field offices hosted active shooter workshops for more than 1,800 police agencies. More than 1,000 leaders of public safety agencies at all levels of government attended tabletop exercises in active shooter response. Within the FBI itself, first aid training emphasizing hemorrhage control has been extended to all 13,000 special agents. Similar programs by police organizations, such as the Major Cities Chiefs Police Association and others, have reached many tens of thousands more officers.⁷

These violent acts occur in communities of all sizes throughout the country and appear to be increasing in frequency.

The initiatives taken by the law enforcement community have encouraged similar work in the emergency medical and fire rescue services. In September 2013, following collaboration with leaders of public safety agencies and professional organizations, the U.S. Fire Administration released detailed operational guidance for local development of fire service and emergency medical and rescue services active shooter response plans.⁸ Following the Boston Marathon bombing in April 2013, this project expanded its scope to include similar contingencies.

In addition, the Department of Homeland Security sponsored collaboration by authorities in medicine, law enforcement, fire/rescue, and emergency medical services at all levels of government with specialists in the private and public sectors to develop consensus guidance for communities developing active shooter and mass casualty event plans. The Department of Homeland Security's Office of Health Affairs assembled more than 250 representatives working collaboratively on specifics of hemorrhage control, protective equipment, interoperability of responding authorities, and exploration of the role of citizen first responders in mass casualty events.⁹

The training provided to thousands of law enforcement officers and the planning principles defined by public safety and medical authorities demonstrate that improvements are achievable in many communities; however, applying these changes locally requires changing current operating procedures, interagency planning, and conducting periodic exercises to ensure success. The capability to respond cannot wait for the mobilization of special teams. As the police response to an active shooter has shifted from special weapons and tactics teams to patrol officers, emergency medical and rescue services are challenged with ensuring a rapid, coordinated response with the police that is available at all times on

every shift. Another challenge is how hospital emergency and surgical services will receive victims of active shooter incidents in areas of the country where trauma systems are resource or geographically challenged.

Changes of this magnitude require considerable support from public safety and health system authorities and other community leaders. As the sentinel events at Columbine, Fort Hood, Tucson, Sandy Hook, and Aurora each recede from the memory of the public and of government officials, there is a tendency to assign decreased priority to these low probability-high consequence incidents. This attitude is understandable, as the daily challenges of routine operations demand continued attention. However, it is important to remain mindful of the continued presence of the threat of intentional mass casualty attacks in the U.S.

Since Columbine in 1999, active shooter incidents have become more frequent. In the eight-year period after Columbine, an average of five active shooter 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 definition 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.

Characteristics of Active Shooter Incidents, 2000–2012

Locations	40% occurred in offices, 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 fire on officer arrival were fired upon by officers
Wounding of police	15% of officers engaging a shooter in exchange of fire 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.

The TSU study also observed that most active shooter incidents (40 percent) occurred in offices, stores, and industrial locations. Schools and colleges were the next most common locations for these events, at 29 percent. The assailant moved between multiple locations in almost one-fifth of incidents and had no apparent connection to the shooting location almost half of the time. Shooting was still in progress on arrival of the first responding officers half of the time. This initial response was often by one or two officers. Officers responding to shooting in progress engaged the shooter in 43 percent of cases. If the officer engaged the shooter, that officer was shot 15 percent of the time. All 110 incidents in the TSU study involved one attacker. In a study of 160 incidents, 98 percent involved a single shooter.¹² In both studies the median number of victims was five.

Similarly, the effect of improvised explosive device (IED) attacks in the U.S. is not fully appreciated. The Boston Marathon bombing of 2013 is rightly remembered as a signal tragedy, but the number of injuries received by victims of IEDs from criminal behavior is not widely recognized. In the period from 1983 to 2002 there were more than 36,000 explosive incidents, 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 installations of national infrastructure, these data indicate that any community of any size is at risk. No single preventive measure, such as hardening school buildings or training teachers in emergency response, will substitute as a comprehensive response plan. Active shooter incidents do not occur solely, or even pre-dominately, in schools and institutions of higher education.

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

Community leaders, including law enforcement officials, emergency medical and rescue service chiefs, and hospital-based clinicians, all play key roles in the survival of victims of intentional mass casualty events. It is fortunate that the basic elements of an effective response are already present in much of the country, but the reaction to these events is as much a problem of organization and

cooperative effort as it is a matter of police tactics and clinical acumen. It is also a test of community leadership and of common determination that knowing and dealing with a threat is far superior to dismissing it as unlikely to occur in one's presence. These events, fortunately, are rare. However, although the individual risk to citizens is small, the demonstrable increase in active shooter incidents in recent years and the disproportionate potential effect of IEDs represent a continuing collective threat. It is within our power to address the threat appropriately.¹⁵

References

1. McDowell K. Remembering the UT tower shooting 46 years later. Available at: <http://alcalde.texasexes.org/2012/08/remembering-the-ut-tower-shooting-46-years-later>. Accessed June 22, 2015.
2. Shepard C. The injured at Columbine High School. Available at: www.acolumbinesite.com/victim/injured.html. Accessed June 22, 2015.
3. The Office of the President. Training first responders and school officials on active shooter situations. Available at: www.whitehouse.gov/sites/default/files/docs/fact_sheet_training_first_responders_and_schools_on_active_shooter_situations.pdf. Accessed June 22, 2015.
4. Bureau of Justice Assistance, Department of Justice. Active shooter response training. Available at: www.bja.gov/ProgramDetails.aspx?Program_ID=106. Accessed June 22, 2015.
5. Schweit KW. Addressing the problem of the active shooter. *FBI Law Enforcement Bulletin*. May 2013. Available at: <https://leb.fbi.gov/2013/may/addressing-the-problem-of-the-active-shooter>. Accessed June 22, 2015.
6. Federal Bureau of Investigation Office of Partner Engagement. ALERRT/other training initiatives. Available at: www.fbi.gov/about-us/office-of-partner-engagement/active-shooter-incidents/alerrt-other-training-initiatives. Accessed June 22, 2015.
7. Eastman A. Trauma kits help police control severe bleeding. *Washington Post*. January 26, 2015. Available at: www.washingtonpost.com/local/crime/trauma-kits-help-police-control-severe-bleeding-saving-lives/2015/01/26/a6d0dcde-8ade-11e4-8ff4-fb93129c9c8b_story.html. Accessed June 12, 2015.
8. 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.
9. DHS Office of Health Affairs. Event summary: stakeholder engagement on improving survivability in IED and active shooter events. May 16, 2014. Available at: www.naemt.org/Files/LEFRTCC/Improving%20Survivability%20in%20IED%20and%20Active%20Shooter%20Incidents.pdf. Accessed June 22, 2015.
10. Attorney General Eric Holder delivers remarks at the International Association of Chiefs of Police annual conference. *Justice News*. October 21, 2013. Available at: www.justice.gov/opa/speech/attorney-general-eric-holder-delivers-remarks-international-association-chiefs-police. Accessed April 7, 2015.
11. 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.

12. A study of active shooter incidents in the U.S. between 2000–2013. Available at: www.fbi.gov/news/stories/2014/September/fbi-releases-study-on-activeshooter-incidents/pdfs/a-study-of-activeshooter-incidents-in-the-u.s.-between-2000-and-2013. Accessed June 22, 2015.
13. Kapur GB, Hutson HR, Davis MA, Rice PL. The U.S. twenty-year experience with bombings: implications for terrorism preparedness and medical response. *J Trauma*. 2005;59(6): 1436–1444.
14. McGuire C. Terrorism: the costs to an economy. Our Marathon: The Boston Bombing Digital Archive & WBUR Oral History Project. Northeastern University. Available at: <http://marathon.neu.edu/exhibits/show/terrorism-the-costs-to-an-eco/terrorism—the-costs-to-an-eco>. Accessed June 22, 2015.
15. Fabbri WP. The FBI's view to improving survival in active shooter event. *JEMS*. October 2014. Available at: www.jems.com/articles/2014/09/fbi-s-view-improving-survival-active-sho.html. Accessed June 12, 2015.

ACTIVE SHOOTER INCIDENTS: 2000–2013

- All but 2 incidents involved a single shooter
- In at least 9 incidents, the shooter first 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 committed suicide; 54 shooters did so at the scene of the crime
- At least 5 shooters from 4 incidents remain at large

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.

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 Blacksburg, VA: 49 (32 killed, 17 wounded)
April 16, 2007
- Fort Hood Soldier Readiness Processing Center in Fort Hood, TX: 45 (13 killed, 32 wounded)
November 5, 2009
- Sandy Hook Elementary School and a residence in Newtown, CT: 29 (27 killed, 2 wounded)
December 14, 2012

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.