

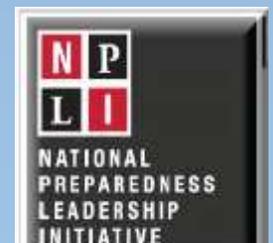


PUBLIC ACCESS BLEEDING CONTROL

An Implementation Strategy

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Introduction

In December, 2012, 20 students and six adults in Newtown, Connecticut's Sandy Hook Elementary School, became victims of an active shooter incident. The Sandy Hook tragedy spurred efforts by both the medical community and the federal government to identify options for improving survivability during active shooting incidents. In 2015, following two years of independent progress made by the medical community and the federal government, the efforts merged with a unified message that civilian bystanders should be empowered to act as immediate responders (Jacobs, 2015). No longer would it be adequate for a citizen to *see something, say something*, a citizen as an immediate responder, would need to *see something, do something*. (Jacobs, 2015).

One month following the incidents at Sandy Hook, President Obama signed into law the *Investigative Assistance for Violent Crimes Act of 2012*, allowing the Federal Bureau of Investigation (FBI) to better assist partner law enforcement agencies in the investigation of active shooter and mass killing incidents occurring in public places (FBI, 2015). To support this new partner engagement role, the FBI conducted a comprehensive study of active shooter incidents that occurred in the United States between 2000 and 2013 (Blair, 2014). Defining an active shooter incident as “[a]n incident involving an individual or individuals actively engaged in killing or attempting to kill people in a populated area,” the FBI identified 160 incidents during the timespan of the study. Impacting 1,043 individuals, (not including the shooters themselves), 486 of whom died, 70% of the incidents occurred in business or educational settings and more than 70% occurred in areas open to public pedestrian traffic (Blair, 2014). The study concluded that the frequency of active shooter incidents increased during the study period, from an average of 6.4 incidents in each of the first seven years of the study, to an average of 16.4 in the second seven years (Blair, 2014).

Military experience and clinical research demonstrates the primary concern with the types of wounds encountered with active shooter incidents is hemorrhage. Research demonstrates that approximately 25% of people who died from explosive or gunshot wounds had potentially survivable injuries (AAFP, 2015). Trauma care techniques and equipment used for more than a decade by the U.S. military have had a dramatic impact on the control of hemorrhage in these patients, and on their ultimate survivability (Jacobs, 2013). Research has demonstrated that active shooter incidents are increasing in frequency. Survival of people injured during these incidents is dependent upon rapid hemorrhage control interventions, like those utilized by the military on the battlefield.

In support of the National Preparedness Leadership Initiative (NPLI), a joint initiative between the Harvard School of Public Health and Harvard Kennedy School of Government, Cohort XIII, *Team: You*

Can Act, sought to identify strategies to improve victim survivability following an active shooter incident. The following planning factors and considerations provided a foundation for the development of the *Team: You Can Act* project:

- Active shooter incidents are increasing in frequency.
- Most active shooter incidents occur in public areas.
- Survival of injured people during these incidents depends on rapid hemorrhage control interventions.
- Early hemorrhage control techniques and equipment are used effectively by the military on the battlefield.

Stakeholder Identification

Following the Sandy Hook tragedy, the American College of Surgeons (ACS) recognized the need for a coordinated response strategy, aimed at developing policies to enhance the survivability of active shooter incidents. The ACS founded the Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass-Casualty and Active Shooter events. The committee included representatives from medicine, law enforcement, fire/rescue, and emergency medical services (EMS). On April 2, 2013, ACS convened a joint committee conference in Hartford, Connecticut. The purpose of the conference was to develop a consensus regarding strategies to increase survivability in mass-casualty events. Deliberations from the committee became known as the Hartford Consensus when the group developed the concept document, *Improving Survival from Active Shooter Events: The Hartford Consensus* (Butler, et. Al, 2013).

The consensus indicated that current law enforcement and EMS approaches to active shooter incidents are not ideal for maximizing the survivability of wounded victims because early hemorrhage control often is not achieved. The consensus further stated that initial hemorrhage control should be part of the law enforcement response. Control of bleeding from extremities should be addressed through the use of tourniquets, while torso penetrating wounds should be addressed through rapid extraction and transport to a hospital (Jacobs, 2013).

The Hartford Consensus concluded with recommendations for identifying and teaching appropriate hemorrhage control skills to first responders (Jacobs, 2013). The Hartford Consensus (Jacobs, 2013) developed the THREAT acronym, described below as a way to recall the critical actions required in an active shooter response:

- **T**hreat suppression
- **H**emorrhage control

- **Rapid Extrication to Safety**
- **Assessment by medical providers**
- **Transport to definitive care**

Two weeks following the Hartford Consensus I, terrorists detonated two bombs along the Boston Marathon route, killing three people and injuring 264 others (MEMA, 2014). A notable, and heartening, aspect of this tragedy was the rapid response of bystanders in the immediate aftermath of the explosions. Marathon spectators and other bystanders assisted in the triage and transport of wounded victims (MEMA, 2014).

In July of 2013, the Hartford Consensus II, an expanded Hartford Consensus group, including representatives of the White House National Security Council (NSC), met to define educational resources and identify ways the representative organizations could help responders implement bleeding control concepts in the field (Fabbri, 2014).

Presidential Policy Directive 8, National Preparedness, called for strengthening the security and resilience of the United States through a shared responsibility of all levels of government, the private and nonprofit sectors, and individual citizens (White House, 2011). Embracing the notion outlined in PPD-8 that everyone has a role in protecting the Nation, the White House hosted a physician’s roundtable, *Bystanders: Our Nation’s Immediate Responders* on February 10, 2015. The goal of the roundtable was to identify ways to enhance national resiliency by providing the general public with the capability to control life-threatening bleeding (ATS, 2015). The NSC (White House, 2015) believed that controlling life-threatening bleeding following an active shooter incident strengthened the Nation’s resiliency because of the following:

- Bleeding results from natural and manmade disasters and everyday emergencies.
- If severe enough and if uncontrolled within minutes, bleeding can result in death.
- A focus on uncontrolled bleeding provides an opportunity to bring knowledge from military medicine to the homeland and place it in the hands of our citizens.
- Simple actions can save lives.

On April 14, 2015, Hartford Consensus III convened to address implementation strategies for bleeding control. The Hartford Consensus III advocated for empowering the public to provide emergency care as Immediate Responders. Immediate Responders (Jacobs, 2015) are those individuals already on scene that can potentially provide immediate control with their hands and equipment that may be available.

On April 29, a second bystander's roundtable was conducted with representatives of EMS, fire/rescue, law enforcement and federal agencies, along with the original physicians and other stakeholders. This second meeting reviewed progress and continued the emphasis on preparing the general public to save lives through the use of bleeding control techniques and equipment (ATS, 2015). The Hartford Consensus principles, which included educating the public as Immediate Responders, were unanimously approved by the bystander roundtable participants. Convening in the spring, 2015, the NPLI Cohort XIII, *Team: You Can Act*, sought to identify strategies to improve victim survivability following an active shooter incident. The goal and primary focus for *Team: You Can Act* was to develop an implementation strategy to support the findings and recommendations of the workgroup by developing, implementing and maintaining a public access bleeding control kit program at a public site.

Performance to Date

As most active shooter incidents occur in public spaces and survival is dependent upon rapid hemorrhage control interventions, *Team: You Can Act* examined the implementation strategy for placement of Public Access Automated External Defibrillators (AEDs). Public access bleeding control kits, like AEDs, would need to be easily, rapidly accessible and utilized in public areas. AED programs are designed to deliver a shock to a victim within three to five minutes after the person collapses (American Heart Association, 2015). Access and ability to deliver a shock within three to five minutes helps stakeholders to determine how many AEDs are needed and placed in a public area. *Team: You Can Act* explored the placement of public bleeding control kits in public areas, possibly collocated with AEDs, as a viable implementation strategy.

Cohort XIII, *Team: You Can Act*, consulted with representatives of the Hartford Consensus and the White House *Bystander "Stop the Bleed"* working group to discuss a model for implementation that would support the initiative objectives. As a result and in a collaborative effort, *Team: You Can Act* worked extensively with Dr. Richard Hunt, member of the *Bystander "Stop the Bleed"* initiative and author of the Hartford Consensus III, and Dr. Lenworth Jacobs, Joint Committee to Create a National Policy to Enhance Survivability from International Mass-Casualty and Active Shooter Events Chair, to ensure the Cohort XIII *Team: You Can Act* project aligned with the *Bystander: "Stop the Bleed"* campaign. After consultation, *Team: You Can Act*, focused its project on the development and piloting of a public access bleeding control program in a public area. The development of the public access bleeding control program for the subsequent pilot required consideration in five primary areas: Pilot location, medical, public access bleeding control kit placement, training, and awareness.

Pilot Location

Charlotte Douglas International Airport (CLT), the seventh busiest airport in the world, based on takeoffs and landings, was identified as a pilot location for the public access bleeding control program. The airport provides services to over 110,000 passengers daily. Implementation of the public access bleeding control program at a mass transportation location with a large number of daily visitors, such as that at CLT, would provide a substantive opportunity to identify best practices and lessons learned for public access bleeding control program implementation not only regionally, but also nationally.

Medical

EMS coverage at CLT airport is provided by the Mecklenburg EMS Agency or MEDIC. Medical direction is under the care of the Carolinas Medical Center Medical Director, Dr. Douglas Swanson. While Hartford Consensus III provided recommendations for public access bleeding control kit contents, there was a hesitancy from the local medical community to utilize hemostatic dressings due to costs, shelf life and application. The main concern was determining whether a bystander would be able to properly apply the dressing. After several meetings and using guidance from Hartford Consensus III, recommendations for inclusion of the following contents in the bleeding control kits were agreed upon:

- Pressure bandages
- Safe and effective hemostatic dressings
- Effective tourniquets
- Personal protective gloves

Public Access Bleeding Control Kit Placement

Team: You Can Act determined placement of the public access bleeding control kits would be modeled after the public access AED implementation strategies. A discussion with Hartford Hospital revealed they had successfully deployed bleeding control kits throughout their hospital facility by placing them in medical cabinets that had been co-located with AEDs. CLT determined locally the placement of public access bleeding control kits would be within the existing AED cabinet. Dr. Jacobs supported the placement of the kits within the AED cabinets and indicated that this was in alignment with the Hartford Consensus.

Training

Hemostatic dressing and tourniquet packages used for this pilot contained instructions for product use. With the support of Dr. Jacob's staff, development of an educational poster, containing a Quick Response (QR) code that links a mobile device to web-based literature published by the Hartford Consensus, is in development for placement at each bleeding control station.

Awareness

Cohort XIII, *Team: You Can Act*, continued to work with Hunt and Jacobs to ensure that the Hartford Consensus Initiative and the White House Bystander initiatives were aligned throughout the pilot. There were several discussions surrounding the implementation of the pilot program at CLT and to determine the value of launching the pilot prior to or following the launch of the *Bystander: "Stop the Bleed"* campaign in the fall, 2015.

The White House Bystander Workgroup is utilizing a logo developed by the U.S. Department of Defense (DOD). *Team: You Can Act* wanted to ensure branding at CLT would facilitate all national rollout efforts, so permission was obtained from DOD and the Hartford Consensus to use the logo at CLT. In addition, the team worked with Dr. Jacob's staff to obtain permission to reprint and distribute the Hartford Consensus III documentation.

Implementation

CLT conducted an Active shooter exercise on September 16, 2015. Prior to the exercise, law enforcement personnel provided training to airport emergency staff on responding to active shooter incidents. During the three separate training sessions, CLT staff provided an overview of the public access bleeding control kits and their locations. During the exercise, use of the public access bleeding control kits by first responders was simulated. The exercise after-action reporting indicated first responders were able to locate and use the public access bleeding control kits in a simulated environment.

CLT decided to strive for alignment of the implementation of the pilot program with the official launch of the *Bystander: "Stop the Bleed"* campaign. CLT has purchased bleeding control kits for placement in 15 of the AED cabinets located throughout the airport terminal building and concourses. CLT worked with Z-Medica, a private developer and distributor of hemostatic devices, to provide the necessary resources for the bleeding control kits, signage, and a custom training program. Z-Medica had

established relationships with Hartford hospital and Dr. Jacobs through the installation of their public access bleeding control kits. To that end, Z-Medica was very supportive of the initiative and was aligned with the intent of the Hartford Consensus.

Challenges Encountered

A number of challenges were identified during the development and implementation of the pilot public access bleeding control strategy as noted below:

Location

There were no challenges noted with the identification of a location for the pilot implementation.

Medical

Of note was obtaining the approval from the medical director, Dr. Sanders, for the use of hemostatic dressings. However, this challenge was easily overcome by sharing research findings from Dr. Jacobs and Hartford Consensus III.

Another challenge involved the naming of the bleeding kits and stations. A concern was raised by the CLT Public Affairs office that signage indicating *Bleeding Control Stations* might be confusing. Public Affairs was concerned that without adequate knowledge of the *Bystander: "Stop the Bleed"* initiative, the intended purpose of the *Bleeding Control Stations* could be misinterpreted.

Training

The final most significant challenge was the development of training. A wide range of variables in contents of a kit, kit placement, and delivery options made it difficult to determine a holistic, national recommendation based on this pilot. For the purposes of the pilot, *Team: You Can Act*, recommended simple messaging and pictograms inside the AED cabinets with the public access bleeding control kits.

Team: You Can Act is currently examining an audible strategy that would provide a level of standardization in delivery, while ensuring flexibility for local customization. AED training is delivered step by step with an audible voice coaching the user quickly and efficiently. Audible training is highly effective, but costly to develop. *Team: You Can Act*, is reviewing multiple options including the use of recordable voice modules, such as those used in greeting cards, to deliver just-in-time audio instruction

for users of a public access bleeding control kit. This level of modification and development will take time and research to ensure a successful product.

Awareness

There were no challenges noted with awareness during the pilot program.

Factors Impacting Leadership Effectiveness

This project demonstrates a strategy for implementing public access bleeding control kits for use by Immediate Responders to mitigate the effects of an active shooter incident. There were a number of leadership factors impacting the implementation of this project.

FACTORS MAKING THE PROJECT IMPLEMENTATION EASIER

The Hartford Consensus III document made the implementation of the public access bleeding control kit pilot much easier as it provided the necessary framework for what should be in bleeding control kits. The project was fully supported by the medical director with oversight of CLT. Without this support, implementation would not have been possible. The fact that CLT had existing AED cabinets for early access in the incident of a person in cardiac arrest, made the placement of the bleeding control kits a natural fit. The people that work in close proximity are already familiar with the locations of the AED cabinets, and this was a great use of what is already known as a place to retrieve needed equipment in the event of a medical emergency.

The opportunity for *Team: You Can Act*, to interact with representatives of the Hartford Consensus and the Bystander Workgroup was tremendously helpful. Mr. Serino connecting the group with Dr. Jacobs, and others, meant the team was able to focus on the right issues, not duplicate effort, and get relatively real time input from experts.

FACTORS MAKING PROJECT IMPLEMENTATION MORE DIFFICULT

The distance between work group members obviously made working on some items a challenge, but did not have a negative impact on the product. Having the heavy lift portions of the project residing with one member of the workgroup was an unintentional product of having selected the pilot location. The location was an excellent choice for many reasons, but it did cause one person to carry a tremendous amount of the load.

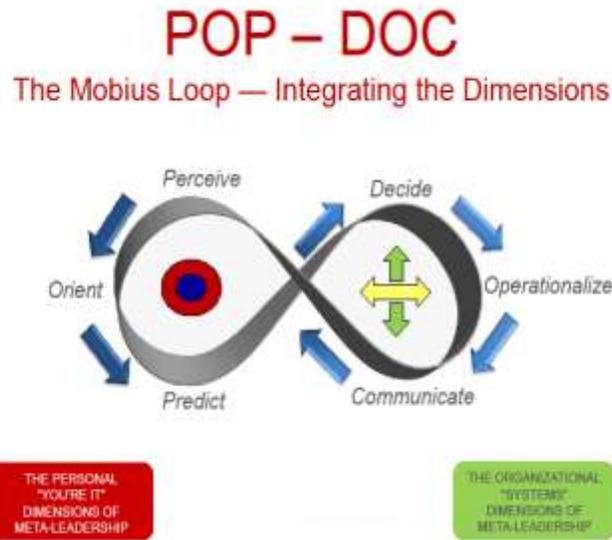
Future Impacts of the Project

This project demonstrates a strategy for implementing public access bleeding control kits for use by Immediate Responders to mitigate the effects of an active shooter incident. The success of the *Bystander: “Stop the Bleed”* campaign is dependent on overcoming the following factors:

Location

Careful selection for the initial placement of public access bleeding control kits may be a challenge that will require meta-leadership. Specifically, leading up, down, and across to ensure all stakeholder’s needs are met in a collaborative manner. Considerations such as public perception versus need based on a community’s threat and hazard analysis should be taken into consideration as a part of the decision making process. Utilization of the POP-DOC process (Marcus and McNulty, 2013), which incorporates six steps: Perceive, Orient, Predict, Decide, Operationalize, and Communicate, can promote collaboration and prevent stagnation of decisions and/or actions relative to determining where a community can place bleeding control kits.

Figure 1. POP-DOC Process



Medical

The overall cost of bleeding control kits will play a factor in the implementation of this campaign. There is an initial cost for acquisition of kits and installation of cabinets, if necessary. Additionally, the cost to sustain and maintain the kits will play a role in a cost-benefit analysis.

Awareness

Implementation should focus on the urgency of this issue by detailing the increased frequency of active shooter incidents and the value of not only this bleeding control kit, but the empowerment of acting in time. Specifically, those visceral school shooting incidents will play a tremendous role in selling this initiative to the public. Raising these types of incidents to the level of *epidemic* would result in public buy-in at all levels. This would also quiet the naysayer argument of using a *no-cost* alternative instead of the bleeding control kits.

Implementation

One cannot predict *when* the next attack may come from, since these incidents are senseless, random and unpredictable. However, from research we can relatively predict *where* these attacks may occur in the future. Focusing efforts on those locations (public areas) is imperative for plan implementation. As the

numbers of these unpredictable incidents increase, plan implementation needs to be both swift and simplistic, with a clear understanding of the program.

Conclusion

In support of the National Preparedness Leadership Initiative, a joint initiative between the Harvard School of Public Health and Harvard Kennedy School of Government, Cohort XIII's *Team: You Can Act*, sought to identify how we could apply lessons learned on the battlefield to the typical active shooter venue to improve victim survivability. *Team: You Can Act*, considered placement of public access bleeding control kits in public areas, collocated with AEDs, a viable implementation strategy.

Bleeding control kits were co-located with AEDs at Charlotte Douglas International Airport during a full scale active shooter exercise. Lessons learned through overcoming challenges encountered during the pilot may prove useful in supporting other communities considering how to implement the *Bystander: "Stop the Bleed"* campaign within their own communities. .

Remaining Work

A *Bystander: "Stop the Bleed"* Planning Guide, focused on supporting stakeholders in achieving the objectives of the initiative could be developed using the best practices and lessons learned during the development of this pilot. A planning guide would walk the stakeholder through identifying funding, planning assumptions, communication to the public, education strategies, operational considerations such as placement of the kits, and an implementation check-list to help implement the initiative.

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Appendix A: Timeline of Incidents

Activity	Date
Presidential Policy Directive 8	March 30, 2011
Sandy Hook Elementary School Shooting	December 14, 2012
Investigative Assistance for Violent Crimes Act of 2012	January 14, 2013
Hartford Consensus Conference	April 2, 2013
Boston Marathon Bombing	April 15, 2013
Hartford Consensus II	July 11, 2013
Washington Navy Yard Shooting	September 16, 2013
FBI Active shooter study released	September 24, 2014
White House roundtable on Bystanders: Our nation’s immediate responders	February 10, 2015
Harford Consensus III	April 14, 2015
Second White House Roundtable on Bystanders: Our nation’s immediate responders	April 29, 2015
NPLI Cohort III: <i>Team: You Can Act</i> Proposal	May 17, 2015
Charlotte Douglas International Airport Active shooter Exercise	September 16, 2015
<i>Bystander: “Stop the Bleed”</i> campaign launched by the White House	October 6, 2015
NPLI Cohort III: <i>Team: You Can Act</i> Final Report	October 12, 2015