

# HOSPITAL / SCHOOL / UNIVERSITY Campus Safety

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SECURITY • MANAGEMENT • PLANNING • TECHNOLOGY



## BYSTANDERS & MEDICAL EMERGENCIES

How Non-Medical Staff  
Can Save Lives



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# HOW BYSTANDERS CAN SAVE LIVES IN MEDICAL EMERGENCIES

The Med Tac training program teaches non-medical bystanders the life-saving steps they can administer to individuals experiencing health crises in the critical minutes before first responders arrive.

*By William Adcox, Dr. Gregory Botz, Charles Denham III & Dr. Charles Denham II*

**IT IS ONLY A MATTER OF TIME** before you encounter a medical emergency, either on campus or in your private life. When a health crisis happens — whether you are a teacher/faculty member, staff member, student, law enforcement officer, medical professional, administrator or just a concerned citizen — you are the first responder. On average, it will take 10 minutes for professional first responders to arrive.

The most common types of emergencies you or someone you know or love will face are sudden cardiac arrest, choking and drowning, opioid overdose, anaphylaxis and allergic reactions, major trauma and bleeding, common accidents, non-traffic related vehicular accidents, and bullying and workplace violence.

What would you do if you encountered one of these emergencies? Are you ready to respond appropriately? Are others in your organization prepared? Major

disaster and accident studies reveal that, when situations like these happen, we behave better — and worse — than we hope. In an emergency, humans sometimes fight, some take flight, but most often ... we freeze.

The purpose of this article is to introduce a global bystander care training program that focuses on responding to medical emergencies in the vital first few minutes before professional first responders arrive on scene. The training initiative is the Medical Tactical Certificate Program, called Med Tac for short. Many elements of the program may be found in other standalone individual initiatives. However, as a fully integrated program tackling the most common causes of preventable death together, it may be the first its kind.

While we were developing an active shooter program in the Texas Medical Cen-

ter, we consulted Michael Dorn, an internationally recognized authority on campus safety. He expressed his frustration with the focus on active shooter attacks and the lack of awareness of the many more deaths at schools and campuses from other causes, such as cardiac arrest, fatal allergic reactions, overdoses, choking and more.

Our research of the literature and consultation of leading experts confirmed the staggering number of deaths and injuries that can be prevented or mitigated by non-medical bystanders in the precious minutes *before* professional first responders arrive. Our integrated founding programs tackling these causes together began in schools, scout groups and the MD Anderson Cancer Center. The work has expanded to four states. We have an active R&D program, are producing a documentary and developing specialty programs for lifeguards, divers, aviation and corpo-

rations. We are looking for great partners and invite school district, university and healthcare leaders to join us.

#### HOW MED TAC BEGAN

It all started with Cub Scouts and elementary and middle school students when we tested whether children could learn CPR/AED and Stop-the-Bleed techniques. Then when David Beshk — an award-winning teacher and one of our instructors — saved a life during an emergency using a skill he learned and learned to teach just three days earlier, we knew we had something.

In Beshk's case, an unconscious victim was found lying on his back while vomiting, which significantly increased the risk for choking and aspiration. A crowd of bystanders, including several medical professionals, stood by, not knowing what to do. Relying on his training, Beshk used an intervention that reduces the risk for choking and aspiration called the "recovery position" — a method of saving an unconscious victim who is vomiting by keeping their airway clear.

As our momentum grew, we learned more about the first few minutes of emergencies and how medical evidence supports, in fact calls for, bystander care.

We expanded the program to older students, Boy Scouts and families wanting to improve their disaster preparedness skills. We were surprised by how fast they learned and became competent with such skills. We now deliver training to college students at some of our leading universities and faith-based organizations. We have developed a comprehensive program for law enforcement and security professionals at one of our global medical centers.

Our leadership team includes national medical leaders and educators, simulation experts and law enforcement threat experts who have tackled the most frequent, severe and preventable causes of harm to children and adults with one integrated approach.

#### VARIOUS ORGANIZATIONS PILOTED THE APPROACH

The initiative for children and youth is starting its second year with after-school and summer-school programs. Our Boy Scout program enables scouts to fulfill the

## The 8 Most Common Preventable Health Hazards

Med Tac students learn how to recognize and reduce harm from the most common preventable health hazards to children and adults. These hazards include:

- ◆ **Sudden Cardiac Arrest (SCA):** In the United States, more than two lives can be saved every hour with bystander care, and one quarter of the children who experience an SCA do so on the playing field. For SCA, students learn "hands only" CPR, how to use an automatic external defibrillator (AED) and how to make an effective 911 call. To fulfill the requirements to receive our certificate of completion, the participants must earn or provide documentation of successful completion of CPR/AED training such as the Heartsaver AED/CPR certificate offered by the American Heart Association or the equivalent from the American Red Cross. Med Tac trainers must maintain instructor status with these organizations. They can either provide the CPR/AED training themselves or enlist a local qualified instructor to deliver the course curriculum.
- ◆ **Choking and Drowning:** For choking, Med Tac students practice the lifesaving Heimlich Maneuver, which saves on average 13 U.S. lives per day. For drowning victims, they learn how to integrate water-related rescue practices, how to perform CPR, and how to work with lifeguards and first responders by providing supportive bystander care. These skills, on average, save more than eight lives every day in our country.
- ◆ **Opioid Overdose:** Students learn about prevention approaches and opioid-reversal agents. For young students, we cover opioids at a high level. For older youth and college students, we provide much more detailed content including the recent threats of fentanyl and carfentanil, and we describe the potency of these compounds as well as the risk of inhalation and dermal absorption. We also cover the use and mechanism of action of naloxone, the opioid-reversal agent, in detail.
- ◆ **Anaphylaxis:** For life-threatening allergies and anaphylaxis, students learn about using epinephrine auto-injectors such as EPI Pens. We address the issues regarding the need for more than one dose and why students need to keep epinephrine auto-injectors with them during drills, sports and offsite field trips.
- ◆ **Major Trauma and Bleeding:** Every hour in the United States a life can be saved by properly treating severe bleeding. For major trauma, as with all the high impact health hazards, students learn scene safety, especially in light of more frequent active shooter events. We teach the entire Stop-the-Bleed curriculum where students learn how to use pressure, pressure bandages, wound packing and tourniquets to address severe bleeding. Immersive simulation exercises are undertaken throughout the course to simulate time-critical, stressful and challenging situations in order to build "mental muscle memory" that students can fall back on during real events.
- ◆ **Common Accidents:** For certain common home and campus accidents, they learn scene safety and how to prevent injuries and infections.
- ◆ **Non-traffic Related Vehicular Accidents:** The frequency of drive-over accidents at schools prompted us to learn about how to prevent non-traffic drive-over accidents and teach bystander care at the scene.
- ◆ **Bullying and Workplace Violence:** Students will learn the importance of preventing and mitigating bullying and how it can lead to harm and even death. We take an age-appropriate and audience-appropriate approach to addressing "Bullycide," cyberbullying, and abuse of power by peers and staff.



PHOTO COURTESY DR. CHARLES DENHAM II



Med Tac began with Cub Scouts and elementary and middle school students who were taught CPR/AED and Stop-the-Bleed techniques.

requirements for important merit badges such as the First Aid, emergency preparedness and lifesaving badges.

We launched our program for young adults at Stanford University with students from medical schools and undergraduate programs, including student athletes from multiple sports. The program delivers content uniquely suited to college students with emphasis on the most common accidents occurring in their age group in campus communities and in membership organizations such as sororities and fraternities. Specific content areas include alcohol and substance abuse issues, as well as the most common causes of severe trauma in their age group. A recurring student-led program has been launched at the University of Florida.

The weekend family program trains families in disaster preparedness as well as



Med Tac launched a program for young adults at Stanford University with students from medical schools and undergraduate programs, including student athletes from multiple sports.

Med Tac Lifeline Behaviors where they earn CPR/AED and Stop-the-Bleed certificates for successfully completing the curricula in these lifeline behaviors. This program allows Boy Scouts to fulfill all their requirements for their emergency preparedness merit badge, which includes a family emergency preparedness plan and gear pack.

A program for law enforcement officers and first responders was launched with the University of Texas Police Department at the MD Anderson Cancer Center. It is the most tactical of our programs with comprehensive attention to active shooter events.

A special program for Eagle Scout candidates who want to launch a Med Tac program in their community is being developed to guide them in the implementation of this lifesaving program locally.

*KidLeaders* is a mentorship program including but not limited to scouts that will help grade school students understand the core values and behaviors of great leaders.

Med Tac students learn how to recognize and reduce harm from the most common preventable health hazards to children and adults. (See *Most Common Preventable Health Hazards on p. 13*)

#### THE 4 ELEMENTS OF THE PROGRAM

There are four major elements to our enterprise model that allow us to take Med Tac to a global scale. We leverage technology and leaders in communities to pro-

vide the program to grade schools, scouting groups and faith-based organizations at zero cost to them.

**1. Bystander Care:** Our global bystander care training program development focuses on the vital first few lifesaving minutes before professional first responders arrive. The curriculum is continually updated to mirror the latest evidence-based medicine guidelines and developments accepted by national emergency medicine and critical care organizations.

**2. Blended Learning:** We use a blended learning approach of online knowledge transfer, complemented by onsite skill training and deliberative practice led by local trainers. The program is designed to be free to grade schools, scouting organizations and faith-based institutions for the online component. The only costs to them are for local, qualified instructors who are engaged and paid directly by them. The online content can be taken anywhere and at any time through mobile technologies.

**FAST FACT: IF EFFECTIVE BYSTANDER CARE CAN BE DELIVERED TO VICTIMS EXPERIENCING A MEDICAL EMERGENCY WITHIN 3 MINUTES, SURVIVAL AND PERMANENT HARM CAN BE DRAMATICALLY AND POSITIVELY IMPACTED.**

**3. Immersive Simulation:** Simulation techniques using real-life scenarios improve reaction during high stress crises. Scenarios include making 911 calls, communicating with first responders, key task assignments, performing CPR and using AEDs, practice caring for severe bleeding, using epinephrine auto-injectors and us-

ing opioid-reversal agents.

**4. Team of Teams and Network of Networks:** Our model enables us to tap existing training networks of educators and membership organizations such as schools, scouts, clubs and faith-based platforms. We leverage a multigenerational team from local networks to meet the needs of the broad age range of our students.

Our funding support to date has been solely by founder philanthropy with no direct or indirect financial support from

healthcare device or pharmaceutical companies. We will be seeking funding from sources with a zero conflict of interest profile to allow us to scale globally without real or perceived conflict of interest.

#### DOCUMENTARIES PROVIDE SUPPORT FOR THE PROGRAM

Members of our team have produced global documentaries for the Discovery Channel including *Chasing Zero: Winning the War on Healthcare Harm* and *Surfing the Healthcare Tsunami: Bring Your Best*

*Board*. Our work calls on expert contributors to deliver a call to action that supports bystander care in the future film and media described below.

◆ **3 Minutes and Counting Documentary:** This film uses real-life stories to motivate the public and leaders of institutions to start and support programs in their own communities. We are taking real facilities and creating simulation models to identify the best combination of trained bystanders and properly positioned supplies

## Specialty Programs Target Specific Environments

Here are other environments where bystander care can have significant impact. These programs listed here are scalable and adjusted to the organization and environment. They are evidence based and data driven.

- ◆ **LIFEGUARD – SURF INITIATIVE:** Three of our R&D regions have extensive coastlines with millions of citizens exposed to dangers related to waterways and water sports every year. We have established R&D and training relationships with lifeguard organizations in Hawaii and California. This has led us to target injuries that occur and hazards that exist on our beaches. Lifeguards can be very effective Med Tac instructors, who welcome the opportunity to teach in their communities.
- ◆ **DIVERS INITIATIVE:** Scuba divers and dive instructors make excellent Med Tac students and teachers. Safety is the bedrock of scuba training. The principles we teach are entirely consistent with the world-class PADI core curriculum, and our online training program mirrors their learning management approach. It was natural to develop a Med Tac program specifically for divers and dive instructors that addresses the specific emergencies they will encounter. Two of our founders are PADI Certified Rescue Divers. The youngest, Charles Denham III, who is a Boy Scout, is one of our junior instructors and is introducing Med Tac to scout groups.
- ◆ **AVIATION:** Emergencies happen frequently during the more than 42,700 flights handled by the air traffic control system every day in the United States. Dr. Gregory Botz and colleagues at MD Anderson are pioneering a training program to address inflight emergencies. There are at least 70 inflight health emergencies involving a passenger or pilot every day that pose unique challenges and opportunities for bystander care that can be undertaken to support flight crews.
- ◆ **LAW ENFORCEMENT AND SECURITY:** Chief William Adcox and his team at the UT Police Department serving the University of Texas MD Anderson Cancer Center and the University of Texas Health Science Center at Houston are pioneering a Med Tac program to specifically address the needs of



Schools and universities that have surfing teams can apply Med Tac's Lifeguard-Surf Initiative.

major medical centers and healthcare institutions. It is the most robust blend

of the best medical practices and tactical practices of first responders. Alumni of the program have already saved lives with skills taught in the class.

- ◆ **YOUTH MENTORSHIP PROGRAM:** Given the high health hazard target of bullying, Charles Denham III, our youngest team member, is working with instructor David Beshk to create a curriculum developed for kids, by kids, called the KidLeaders program and a leadership program called LEAD to Serve. The core content will help build a mentorship network to combat the precursors to bullying and suicide. It will be taught with age-appropriate bystander care.
- ◆ **HEALTHCARE SECURITY MINISTRIES:** The team members are helping train security staff and healthcare volunteers at houses of worship. Although infrequent, active shooter and opioid overdose events have occurred enough to expose significant vulnerabilities. The Med Tac team is undertaking a Boy Scout project to identify what religious institutions need to do to be prepared and equip bystanders with the training and supplies needed to administer care within 3 minutes of victim discovery. The concept of a Rapid Response Team used by hospitals to rescue patients in distress is being explored for faith-based organizations that combines medical and security personnel who can respond together for certain emergencies.
- ◆ **CORPORATE PROGRAMS:** The Med Tac Team is exploring the opportunities to help enterprises serving the public, such as hospitality and restaurant businesses with what they need to care for their staff and patrons before professional first responders arrive. Some sectors are more common sites for mass casualty and active shooter events.



PHOTO COURTESY DR. CHARLES DENHAM II



Supply kits/care packs like the ones pictured here continue to be developed for any bystander care emergency, in addition to packs for specific use in the lifeguard-surf, divers, aviation and health ministries specialty programs. Med Tac is even developing modified golf carts with AEDs and emergency response gear onboard.

to enable delivery of lifesaving bystander care within 3 minutes of an event and until professional first responders arrive in 8-10 minutes.

♦ **Video Stories:** Our learning management approach uses the power of stories to communicate concepts, illustrate tools and describe resources. We are continuously capturing stories and adding them to our multimedia curriculum.

♦ **Immersive Simulation Scenarios:** The many stories used in our online training allow us to develop simulation scenarios, putting students in real-life situations that apply and reinforce key concepts. We use techniques pioneered in aviation and other industries to drive retention and competency impact.

START A MED TAC PROGRAM OF YOUR OWN

Although the Med Tac Team won the 2018 Pete Conrad Global Patient Safety Award for its work, we believe any community, inspired by the “all teach — all learn” mantra, can easily start a program like ours. We challenge others to start similar initiatives or join us in this cause.

We believe the CPR/AED/First Aid pro-

grams of the American Heart Association are excellent. Instructors of those programs are ideally suited to engage with campus programs. Further, the Stop-the-Bleed program sponsored by the American College of Surgeons is also excellent when it is taught as designed. The combination of these two programs can dramatically improve the



PHOTO COURTESY DR. CHARLES DENHAM II

The University of Texas Police Department serving the UT MD Anderson Cancer Center and the UT Health Science Center at Houston are pioneering a Med Tac program to specifically address the needs of major medical centers and healthcare institutions. Chief William Adcox and the security team at MD Anderson are pioneering the new study domain of inside and outside threats to the caregivers who serve, the patients they serve and the property they need to deliver their care.

frequency and effectiveness of bystander responses to emergencies.

Recent studies have shown that bystander skills degrade over time, so try to assure “competency-currency.” Regular, repeated training, with deliberate practice of bystander care skills, complemented by readily accessible emergency care supplies, is the winning combination for a campus team to help serve those entrusted in their care.

Remember, odds are that a medical emergency will happen on your campus and your students, clinicians, public safety officers, teachers, staff members and administrators will be the immediate responders until professional help can arrive. Med Tac can provide them with the skills they need to respond appropriately and save lives.

For more information about Med Tac visit [med-tac.org](http://med-tac.org) or email [info@med-tac.org](mailto:info@med-tac.org). **CS**

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**WILLIAM ADCOX** is the chief security officer for the UT MD Anderson Cancer Center and UT-Health Chief of Police; **Dr. GREGORY BOTZ** is a professor of anesthesiology and critical care and UT MD Anderson Cancer Center. **CHARLES DENHAM III** is a Junior Med Tac instructor. **Dr. CHARLES DENHAM II** is the chairman of the Texas Medical Institute of Technology.

Healthcare Facilities & Active Shooters - How to Implement 'Secure, Preserve, Fight'

HOSPITAL / SCHOOL / UNIVERSITY

# Campus Safety

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SECURITY • MANAGEMENT • PLANNING • TECHNOLOGY



## WHICH SOLUTIONS SHOULD YOU BUY?

Here's a Systematic Approach to Help You Decide





# Effectively Responding to ACTIVE SHOOTERS IN HEALTHCARE FACILITIES

‘Secure, Preserve, Fight’ has been proposed as an alternative way to respond to active shooters in healthcare settings when ‘Run, Hide, Fight’ is not possible. Here are the specific details of this approach. **By Dr. Charles Denham II, Dr. Gregory Botz, Charles Denham III and William Adcox**

**ACTIVE SHOOTER INCIDENTS** have been on the rise throughout the United States. The most recent FBI data has identified 250 active shooter incidents between 2000 and 2017, in which 799 people were killed and an additional 1,418 were wounded. In the first half of that period, there was an average of 6.7 incidents per year. That number has tripled to over 20 incidents per year in the second half of that period. Four percent (10) were in healthcare organizations.

Additionally, the *Annals of Emergency Medicine* published a 2012 study that examined all U.S. hospital shootings between 2000 and 2011 in which there was at least one injured victim. It identified 154 incidents in 40 states

causing death or injury to a staggering 235 people.

Active shooter events at healthcare facilities are different from schools, shopping malls and commercial businesses for several important reasons:

1. The active shooter’s motives usually are much more personal, targeted and focused.
2. Necessary security measures are often harder to undertake.
3. Healthcare providers feel compelled to stay with their patients.
4. Certain patients will die without continued life support in ICUs and operating rooms.
5. Certain areas of hospitals are not easy to harden or evacuate.
6. Most hospitals are organized vertically and rely heavily on elevators.

7. Emergency departments may lock down or shut down during an event.
8. The violence could end in less than 10 minutes, but the healthcare delivery disruption could be prolonged.
9. Many healthcare shootings occur at entrances or just outside buildings.
10. Healthcare facilities cannot easily shut down for training.

In last summer’s excellent article by K. Inaba et.al in the *New England Journal of Medicine (NEJM)* titled “Active-Shooter Response at a Health Care Facility,” the authors framed a number of key issues that are summarized and updated below. They say the “run, hide, fight” response to an active shooter may work in many venues and for certain areas of hospitals, but healthcare facilities should consider a different approach for areas where “run, hide, fight” is not possible. Certain caregivers who are caring for vulnerable patient populations such as children, the elderly and those relying on life support systems need an alternative approach. K. Inaba et. al’s proposed alternative is for



healthcare workers to “secure” the location, “preserve” the life of the patient and oneself and “fight” only if necessary.

### HEALTHCARE MUST FOCUS ON PREVENTION AND PREPAREDNESS

The term “left of boom” comes from our military leaders who were dealing with the terrible damage and carnage caused by improvised explosive devices (IEDs) in recent battle campaigns. They realized that they had to move upstream from the events because investing in protective body armor was not enough to save our troops. They began focusing on prevention and preparedness in addition to protection. They also learned from each event using performance improvement strategies. Healthcare organizations must take a “left of boom” approach, no matter what strategic framework they use for active shooter events.

Unfortunately, many hospitals and certain outpatient procedural centers are challenged to disrupt their day-to-day operations for this needed education and training; vital services often cannot be fully interrupted. Some of our healthcare leaders describe that trying to work a “left of boom” strategy into operations while they are providing continuous care is like trying to change a tire while driving down the highway. The “secure, preserve, fight” approach does offer a good strategic framework to reduce potential harm if the work is planned carefully, designed thoughtfully and recurrent training is prioritized. Some planning steps include:

- ◆ Getting entire leadership teams involved in planning.
- ◆ Generate accurate facility floor plans for response planning, training and execution. Develop checklists for necessary actions.
- ◆ Identify major ingress/egress points; identify likely pathways for active shooter travel and provide options for visitor/staff/patient evacuation.
- ◆ Identify areas that cannot be evacuated and must be defended, such as operating rooms, intensive care units, labor and delivery, and

procedural rooms where patients are most vulnerable.

- ◆ Undertake target hardening and resilience-building in non-evacuation areas to reduce harm to patients and caregivers.
- ◆ Integrate local police/fire/EMS with internal emergency personnel in planning/training.
- ◆ Identify internal and external rally points or locations where staff can meet for accounting and possible redeployment after the scene is safe.
- ◆ Develop advance communication procedures with local law enforcement and EMS assets; practice them periodically.

### The “run, hide, fight” response to an active shooter may work in many venues and for certain areas of hospitals, but healthcare facilities should consider a different approach for areas where “run, hide, fight” is not possible.

- ◆ Clarify public address announcement statements for when an event is occurring and when there is an “all clear” — use plain language; practice them periodically.
- ◆ Establish recurrent severe bleeding control training across the organization.
- ◆ Create and utilize active shooter multimedia materials for on-boarding and recurrent staff training to maintain readiness.
- ◆ Develop early warning mechanisms to act on behaviors of concern.
- ◆ Consider de-escalation training for staff who interact with patients and the public.

### SECURE

The “secure” step would entail immediately securing essential life-sustaining treatment areas by barricading or securing all access points from the inside, turning off nonessential lights and equipment; and silencing phones and pagers. Other important steps include:

- ◆ Train staff in situational awareness and decision-making during a crisis.
- ◆ Acquire and train with interior se-

curing or locking devices for access points.

- ◆ Deploy electronic or mechanical locking devices.
- ◆ Silence device alarms and equipment that may draw attention.
- ◆ Place adequate emergency care supplies such as AEDs within non-evacuation areas; practice with them regularly.
- ◆ Educate and train on evacuation and barricading skills; practice them regularly.
- ◆ Stage necessary emergency equipment — such as ballistic shields, evacuation equipment and Go Bags with essential supplies — in fixed

locations, in portable packs and on mobile units.

The layout of floors, open spaces and storage areas make every hospital, outpatient surgery center and clinic a unique planning challenge that requires security teams and caregivers to work together on the best solutions to secure specific areas.

### PRESERVE

The “preserve” step includes strategies that reduce the risk for injury, such as staying away from windows and doors, moving patients to shelter if possible, and providing only the essential medical care required to preserve life. The reality of a hospital active shooter event is chaos. Responding law enforcement face a real dilemma: attacking the threat despite the presence of those who cannot evacuate and the challenge of defending those areas if the threat is only contained. Real events never fit the plan. That is why planning and training are so important.

- ◆ Educate and train on appropriate triage to optimize survival and care, especially when the ED is not available.
- ◆ Practice bystander medical care — recurrent training is essential be-

cause certain skills decay rapidly.

- ◆ Establish protocols for any operative or imaging procedures using damage-control principles and an

### WHAT IS BYSTANDER CARE?

One important issue that must be addressed when a healthcare facility is training to respond to active shooters is medical care that can be provided by bystanders, be they clinicians or non-medical staff or others. Very often lives can be saved when bystanders quickly provide emergency medical treatment to injured individuals in the critical minutes before first responders arrive on scene. If treatment, such as Stop the Bleed care of a gunshot or stab wound, can be provided within 3 minutes, there is a much greater chance the victim will survive than if treatment is delayed.

Surprisingly, however, most healthcare providers only have rudimentary skills involving this type of care. Healthcare facilities are only now starting to realize the needed investments in recurrent training and the appropriate staging of life-saving supplies and defensive equipment. These items should be placed in strategic locations such as near or in locations that cannot be evacuated or where patients and caregivers might be trapped.

The best bystander emergency medical practices should be combined with the best current tactical practices for healthcare facilities. Education and training in effective bystander emergency care and recurring deliberate practice using immersive simulation with plausible scenarios should be planned and undertaken by every healthcare venue to address the unique challenges of dealing with an active shooter in their hospital, outpatient surgery or procedural facility, or clinic.

For more information on Med Tac or bystander medical care, read *How Bystanders Can Provide Med Tac Training to Save Lives* on [CampusSafetyMagazine.com](http://CampusSafetyMagazine.com).

approach to wean anesthetics.

- ◆ Truncate any nonessential procedures underway; halt non-emergent care.
- ◆ Move patients and caregivers to the most hardened, sheltered areas.
- ◆ Educate and train staff on appropriate communication and behavior when law enforcement assets arrive in their area.

Launched in 2015 by the White House, the *American College of Surgeons (ACS) Stop the Bleed* training program is excellent. All caregivers including clinical, administrative and support staff should receive this training.

Non-clinical adults, youth and children are very effectively taught through the Stop the Bleed program to use pressure, tourniquets and wound packing for severe bleeding, which is the leading cause of preventable death from active shooter events.

Most active shooter and stabbing events are over in less than 10 minutes; however, it could take much longer for first responders to get to victims. Victims can bleed out in 3-5 minutes; the majority of victims with severe extremity bleeding can be saved. Staff should be trained in severe bleeding control of injuries they themselves sustain, and how they can care for the severe bleeding of someone else, even if they themselves are injured as well.

Bleeding control kits should be located so that they may be obtained and used within 3 minutes of a major bleeding event. Ideally located next to AEDs and/or stored with pre-positioned emergency equipment, these kits are critical to life saving care.

The hospital's Code Team will likely not be able to respond to a call during a violent intruder or active shooter event. Learning and practicing bystander medical care is essential.

### FIGHT

As most authors agree, fighting an active shooter is a last resort. Only when one's life or the lives of others is in immediate danger should one attempt to fight off an attacker. If one must fight, some of the im-

portant issues are:

- ◆ Consider education and training in de-escalation communication principles that can prevent the escalation of physical violence, especially when the active shooter is a spouse or has a personal relationship with the target. Once violence starts, de-escalation techniques are rarely effective.
- ◆ Provide education and training in mental and physical preparation for the choices they will have to make if direct contact with an active shooter occurs.
- ◆ Consider training staff regarding use of available medical devices and equipment as barriers and defensive weapons.
- ◆ Train on evasion skills, and caregivers should be taught how to work with security and law enforcement officers when injured patients, caregivers or police must be moved before the threat is neutralized. If elevators are shut down, narrow stairwells become dangerous choke-points, and staff need to be aware that active shooters may exploit this issue.

### TRAINING SHOULD BE A COMMUNITY AND FAMILY AFFAIR

The best way to be prepared is to have a robust training program for the care of patients in non-evacuation areas and care of injuries inflicted in an active shooter event. These efforts should extend into the community through the relationship networks that make up its fabric.

- ◆ The best way to maintain competency is to have your security and medical personnel become bystander care trainers of children, youth and adults in their communities.
- ◆ Active instructors who regularly train others have the lowest competency decay. Offering free training for the public affords ongoing readiness in your staff.
- ◆ Regular deliberate practice using immersive simulation is critical to



maintaining competencies that will be required for the most common scenarios.

- ◆ Make sure the local community knows that if there is an active shooter or terrorism event at your clinic or hospital, they should go to the next nearest appropriate hospital for their emergency care.

Inaba, et.al remind us to make sure to have transition-of-care plans to help relieve those staff who have provided care during an active shooter event, to plan for care diversion for those who might need hospital care, and plans for properly moving patients to another facility when needed. They also make the very important case for the psychological first aid of the patients, families and caregivers who were present during the event.

**The “secure, preserve, fight” approach does offer a good strategic framework to reduce potential harm if the work is planned carefully, designed thoughtfully and recurrent training is prioritized.**

Today, we in healthcare intensely focus on preparedness for and protection during an active shooter event. However, new exciting areas in threat safety science is in primary and secondary prevention.

Primary prevention is preventing an event from ever happening by identifying behaviors of concern, early warning signals and the likely high impact scenarios. Secondary prevention is reducing harm far beyond the immediate injuries of victims, such as the potential harm to patients who have had care disrupted by an event.

By leveraging the tools of performance improvement, studying prior events, employing immersive simulation and deliberate training, we can all move “left of boom.”

There are many innovations on the

horizon that can save more caregivers and patients who are caught in the uniquely challenging environments of hospitals, outpatient care sites and clinics. **CS**

**WILLIAM ADCOX** is the chief security officer for the UT MD Anderson Cancer

Center and UT-Health Chief of Police; **DR. GREGORY BOTZ** is a professor of anesthesiology and critical care and UT MD Anderson Cancer Center; **CHARLES DENHAM III** is a Junior Med Tac instructor; **DR. CHARLES DENHAM II** is the chairman of the Texas Medical Institute of Technology.

## About the Authors



**William Adcox**

Chief William H. Adcox is a national leader in threat solutions development and threat safety science. It was his advisory input to the team that allowed them to expand their focus to the top eight causes of death of otherwise healthy people. With 37 years in municipal and campus policing, he serves as the Chief of Police at The University of Texas MD Anderson Cancer Center and The University of Texas Health Science Center. Chief Adcox holds an MBA degree from UTEP and is a graduate of the PERF's Senior Management Institute for Police and the Wharton School ASIS Program for Security Executives. The Med Tac Law Enforcement and Security Officer course has been developed and is undergoing R&D at MD Anderson under his leadership. Along with Dr. Denham and Dr. Botz, Chief Adcox will be a co-author of the International Med Tac Handbook in 2018 and will be featured in a Med Tac Documentary.



**Gregory H. Botz, MD**

Dr. Botz is the medical content leader for Med Tac. He is a Professor of Anesthesiology and Critical Care at The University of Texas MD Anderson Cancer Center. He inspired the initial focus of the team on active shooter events which led to the development of Med Tac. He completed an anesthesiology residency and critical care medicine fellowship at Stanford University in California. He has served on the faculty at Duke University School of Medicine, and is an Adjunct Clinical Associate Professor of Anesthesia at Stanford University School of Medicine. Dr. Botz serves as regional faculty for the American Heart Association Emergency Cardiovascular Care training programs, and he is a national consultant for the Society of Critical Care Medicine training programs. He was a senior editor for the American Board of Anesthesiology Joint Council on Anesthesiology Examinations, program director for the UTHSC-Houston Anesthesiology Critical Care Medicine Fellowship, and a member of The University of Texas System Health Care Components ICU Quality Improvement Collaborative. He and Dr. Denham have been the lead Med Tac instructors for the program for Stanford students. The Care Huddle Checklist was envisioned by Dr. Botz who is the clinical content leader for the team. He leads the Med Tac Aviation pilot program R&D.



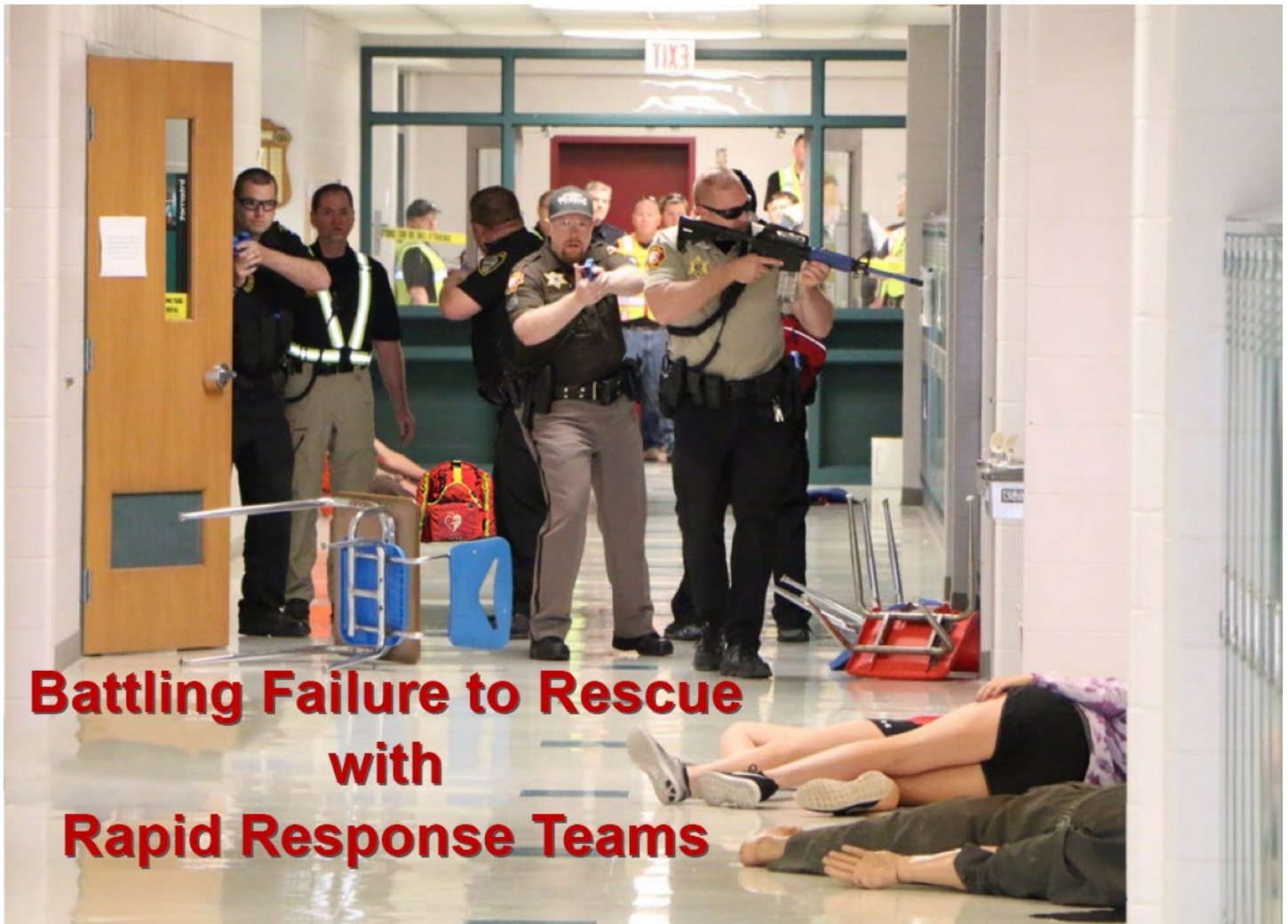
**C.R. Denham II, MD**

Dr. Denham has funded Med Tac and leads its development. He has served hundreds of innovation teams during his 35 year career. While in practice as a radiation oncologist, he taught biomedical engineering and product development. He has taught innovation adoption, technology transfer, and commercialization in both academia and industry. He has been an adjunct Professor of Health Services Engineering at the Mayo Clinic College of Medicine, and had teaching appointments as an Instructor at the Harvard School of Public Health and as a Lecturer with the faculty of Harvard Medical School. He was a Harvard Advanced Leadership Initiative Fellow in 2009 and a senior Fellow in 2010 and 2011. His work there led to the production of a series of global documentaries on the Discovery Channel. He has served as Editor-in-Chief of the global Journal of Patient Safety, and has more than 100 works including peer-reviewed papers and multimedia productions. He has been ranked in the top 50 Most Influential Physician Executives by Modern Healthcare in multiple years, and he has served as a regular columnist for The Wall Street Journal program The Experts: Journal Reports. Dr. Denham is an advisor to and collaborator with a number of Stanford University programs. He founded HCC Corporation, a for-profit innovation incubator, and TMIT, a non-profit medical research organization, in the early '80s. The companies work collaboratively on common innovation programs. He developed CareUniversity which is the content engine and learning delivery system for consumers and caregivers which serves Med Tac. It provides training in association with accredited institutions of higher education. He is a scout leader and a certified PADI Rescue Diver.



**C.R. Denham III**

Dr. Denham's 13-year old son Charlie co-founded Med Tac while pursuing his Cub Scout first aid requirements. His school in Southern California has piloted and fully adopted the Med Tac innovations. The first life was saved in the first school program which Charlie helped lead. He participates in all Med Tac programs and leads the scout education initiatives with his troop. An avid waterman, Charlie is an Advanced Open Water Scuba diver who is certified as one of the youngest Rescue Divers in the nation. He is a Junior Med Tac Instructor and helping develop the Med Tac Divers and Lifeguard-Surf Programs. He is the founder of the KidLeaders mentorship and leadership program for children and youth seeking behavioral solutions to deal with bullying being piloted in 2019.



## **Battling Failure to Rescue with Rapid Response Teams**

*Rapid Response Teams focus on the critical minutes before first responders arrive.  
by Dr. Gregory Botz, Dr. Charles R. Denham II, Charles R. Denham III, and William Adcox*

**IMAGINE THAT YOUR FAMILY** member is in a typical hospital bed and is rapidly deteriorating. You notify a caregiver who immediately activates a group that responds within minutes. They immediately act as a well-oiled team and know immediately what to do. They rescue your loved one. In the aftermath you learn that each team member works for different bosses, in different departments, yet they practice bringing their unique skills and knowledge together in those precious minutes when your family member is hanging between life and death. They are a “Rapid Response Team” (RRT). This story repeats

itself in hospitals across the country every single day.

If our hospitals are safe, why would rapid response teams be so necessary? Over the last 15 years, hospital leaders have learned that our complex healthcare systems are vulnerable to such “failure to rescue” events at an alarming rate. Well-resourced hospitals and small under-resourced hospitals alike were not immune to this patient safety threat. Recognizing this gap and implementing innovative solutions was necessary to begin saving lives with the Rapid Response Team approach. Many hospitals saw

their “failure to rescue” adverse outcomes drop by 80-90%.

The enormous onslaught of visible and invisible threats facing campus safety leaders makes them feel “overwhelmed and unprepared”. That is the title of the 2018 article describing the after-action analysis of the active shooter event at the Marjory Stoneman Douglas High School in Parkland, Florida. (<http://projectssun-sentinel.com/2018/sfl-parkland-school-shooting-critical-moments/>) When resources are stretched, innovations such as Rapid Response Teams can help us battle the most common causes of preventable



death in those we serve and those who serve.

### A David and Goliath Moment

In 2004, Dr. Don Berwick, CEO of the Institute for Healthcare Improvement, undertook a “David and Goliath” mission. He challenged healthcare leaders to save the greatest number of lives ever proposed in a national project. He challenged hospitals to save 100,000 lives in 18 months through six patient safety practices, one of which was Rapid Response Teams. Rapid Response Teams are a cross-functional team that anyone can call to immediately converge on someone in jeopardy. That team is equipped with the training and supplies they need to attempt to rescue that person. In hospitals, this meant anyone could call for the rapid response team for any patient in any bed for immediate response, without going through channels or asking for approval. The interventions of this program ultimately saved more than 122,000 lives as of June 2006. This David beat his Goliath...and you can too.

### Why Form a Rapid Response Team?

In the context of schools, universities, faith-based organizations, and companies with large campuses, a Rapid Response Team is a small group that can be mobilized rapidly to provide acute care for anyone in a health emergency. Their speed, proximity to the victim, and practiced skills are the magic. The aim is to prevent “failure to rescue” when every minute counts.



Whether you have an ample, well-equipped fulltime staff of security,

medical, and risk management personnel or you have a small church with a couple of staff and a few security and medical volunteers to respond to emergencies; the consideration of forming a rapid response team approach is well worth the effort. The following questions are critically important.

- ◆ **Have you learned from 9/11 and the latest active shooter events?**
- ◆ **Can you define the current and specific risks to those you serve and those who serve?**
- ◆ **Can you get care to any victim within three minutes?**
- ◆ **Are AEDs and care supplies positioned within three minutes of victims?**
- ◆ **Do players from your various departments regularly practice emergency response together?**

Any organization can benefit from regularly practicing the process of getting the right people and the right supplies to a victim within three minutes. Many of our campuses are a labyrinth of streets, buildings, and sites not easily understood by the professional first responders in the community. We must beat the clock in the face of these time eroding challenges.

### 3 Minutes and Counting: Lives Saved or Lives Lost

If the goal of rapid response teams is to prevent “failure to rescue”, what threats must you address? Over the last three years we have consulted medical specialty organizations, leading subject matter experts, and have continually reviewed the medical literature. We found eight target areas that are frequent, severe, and treatable with bystander care before professional first responders arrive.

In in the December Issue of Campus Safety, we addressed preventing events with our Med Tac Bystander Care Training Program. These events include sudden cardiac arrest treated by CPR and AEDs; severe bleeding treated by direct pressure,

tourniquets and wound packing; opioid overdose treated with naloxone; anaphylaxis treated with epinephrine; and choking treated with the Heimlich Maneuver. We also addressed the prevention of non-traffic related drive-over accidents, common accidents, and bullying leading to school and workplace violence, including self-harm.

If most of these events are treated within three minutes with bystander care, survival is increased dramatically compared to starting care when the professional first responders arrive, which is 10 minutes on average. For instance, the survival rate with sudden cardiac arrest drops 10% every minute without CPR and an AED. Victims of severe bleeding can die in three to five minutes. Opioid overdose, choking, and anaphylaxis cause vital organ failure in three minutes from the lack of oxygen.

The events you target at your organization may differ depending on the age, concentration and flow of people, geographic issues, and other security and medical circumstances. As described below, it will be valuable to review the lessons learned from others and consider if you could start a rapid response team.

### Lessons Learned and Opportunities



Active shooter, mass casualty, and terrorism events have taught us that when we are under stress, we fall to the level of our recurrent training. In

our study of threat safety science, we have come to understand that simple predictive analytics can help organizations zero in on their specific threats, vulnerabilities, risks, and harm. We have learned that the usual command and control structures inherent to our organizations adapt to usual circumstances, but often fail when stressed by crisis events; even more so when they must interface with professional first responders. One-time education and skills training are not enough. Regular deliberative practice with immersive simulation is critical to successful performance in a crisis. We believe in “competency currency” because there is a finite decay in skills over time. We can combat this with practice.

A retrospective analysis of the 9/11 terrorist attack by Simon and Teperman in the Journal of Critical Care revealed that “the lack of communication probably resulted in more problems than all other factors combined”. The authors further stated that plans must be “tailored to specific scenarios and locations, not preconceived generalized plans”.

The FEMA 1 October After-Action Report of the October 1, 2017 mass casualty active shooter event in Las Vegas resulting in 58 deaths and 850 injuries revealed: “The importance of coordinated planning across agencies cannot be understated in terms of its impact on this response. When agencies followed pre-established plans and procedures, they improved communication and strengthened the response. Where plans were not integrated or not widely known and understood by responders across all responding agencies, difficulties arose.” Key conclusions were that cross agency response, response training tailored to address an incident of mass violence is an especially valuable preparedness investment and coordinated cross-agency planning for such incidents is necessary for successful outcomes.

The recent mosque massacre in New Zealand, attacks on churches and synagogues, and the increase in death threats against church leaders should prompt worship center security teams to act. We are currently working with a number to help them gear up and assemble their Rapid Response Team approach.

### Developing a Rapid Response Team Strategy



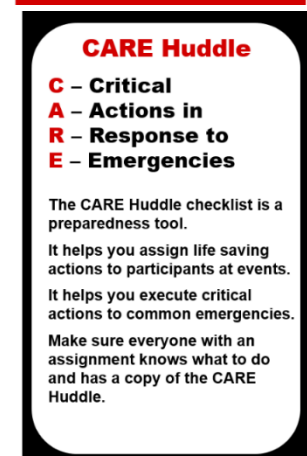
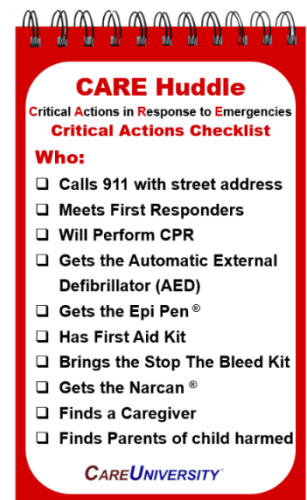
The goal in standing up a rapid response team (RRT) is to get the right people, with the right skills, and with the right equipment/supplies, to the right place at the right time.

The first task is to understand the vulnerabilities in your environment, then match the people, skills and supplies necessary to initially mitigate or manage those vulnerabilities. Starting with the Med Tac events as the foundation, you can tailor your needs effectively. The rapid response system has a detection limb and a response limb. The detection limb includes everyone in your organization. Education and training on the recognition of medical emergencies and activation of the team is essential; even if it’s only a sense that something is wrong. The activation of the RRT includes activation of local EMS resources, if appropriate, for definitive care and disposition. The response limb includes the RRT and its equipment/supplies. RRT members should have knowledge and training in the basic life-saving skills necessary to intervene until professional first responders arrive. There should be time allocated for

deliberate practice of those skills on a periodic, ongoing basis to assure team readiness. Think of a NASCAR pit crew! The equipment and supplies necessary for your RRT should include that necessary to address your vulnerabilities.

Again, the Med Tac equipment and supplies are a great start; they should cover almost all your medical emergency needs. The best solution is a combination of fixed gear that may be mounted on walls, portable gear that may be placed in the best location for surge events, and mobile gear such as that fitted to golf carts or bikes on large properties.

### The CARE Huddle Checklist



Remember to consider training aids, like CPR mannikins, simulated limb wound trainers, and medication trainers (such as Narcan and Epi Pen trainers), to facilitate training.



## FEATURE | RAPID RESPONSE TEAMS

The Med Tac CARE Huddle tool is especially helpful in performing ongoing or just-in-time risk-vulnerability assessments for special events or surge activities in your organization. Designed as a focused pre-briefing tool, it can be used at the beginning of every shift as a situational awareness multiplier, or before any special event where people cluster for any amount of time. It includes an introduction of key role players in any response to medical issues at the event. It further maps the key responsibilities of those role players should an event occur. And it gives guidance, like a cognitive aid, in how to activate the RRT and local EMS resources, how to locate and mobilize medical equipment and supplies; or even relocate them closer to the event ahead of time. It also serves as a repository of helpful information like location maps, key phone numbers, and medical treatment algorithms.



### “Teach Us and Train Us”

The message from our youngest author and our youth leaders, school children, and scout groups is: “Teach us, train us, and we can help support your teams”. The stories of rescues assisted by children and youth are rolling in every month.

We have engaged students, boy scouts, and athletic team members to help build Stop the Bleed kits, develop signage, and learn how to help adults in emergencies. Even oceanside communities are becoming involved in “adopt a cove”

programs to procure supplies and assemble the public for CPR, AED, and Stop the Bleed training for their favorite beaches.

### Your 3 Minute Count: Your Lives Saved...Or Lost

The ultimate measure of safety is to count lives saved...not lost. We challenge you to design your own team to do the same, and we invite you to join our community of practice through free webinars and online briefings OR start your own.

We are honored to be partnering with a K-12 independent school, a mega-church and smaller satellite churches, a remote island Boy Scout Camp, an expansive outdoor education center and regional Boy Scout Council, and with lifeguards in Hawaii and California at specific beaches to put together their 3 Minutes and Counting Strategy.

Whether your group is big or small, in an urban center, part of a beach community, or in a remote location, you can design a winning combination: leadership, training, a rapid response team, and critical fixed, portable, and mobile emergency care resources that are placed so that bystander care may be given to any victim at any time within 3 minutes.

Some say small schools or churches are “overwhelmed and unprepared” and they have to walk before they run. Without dedicated staff, a budget, or people to help they have to wait. We disagree. When David picked up those stones and proceeded down to the Elah Valley to take his shots at Goliath, it was his faith that powered him; not his resources.

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WILLIAM ADCOX is the chief security officer for the UT MD Anderson Cancer Center and UT-Health Chief of Police; DR. GREGORY BOTZ is a professor of anesthesiology and critical care and UT MD Anderson

Cancer Center; CHARLES DENHAM III is a Junior Med Tac instructor; DR. CHARLES DENHAM II is the chairman of the Texas Medical Institute of Technology.

# Inadequate Placement of AEDs and Bleeding Control Gear Could Cost You

**AEDs and bleeding control kits can save lives, but only if they are always accessible and staff members know how to use them.**

By Dr. Charles Denham II, William Adcox, Charles Denham III, and Dr. Gregory Botz



**AN EMERGING THREAT** to many organizations is “failure to rescue” children and adults experiencing sudden cardiac arrest or harm due to major trauma, such as active shooter events. The standard of care for these medical emergencies is rapidly evolving, and leaders need to act now to keep up or pay the price of harm to their constituents and the growing liability exposures that often accompany these types of medical emergencies.

The good news is that if a person experiencing cardiac arrest can be resuscitated with an automated external defibrillator (AED) within three minutes, he or she has a much better chance of surviving. If a gunshot victim can be provided treatment to stop their severe bleeding within three minutes, their chances of survival greatly increase as well.

That’s why in our upcoming documentary, *3 Minutes and Counting: Bystanders Care*, we focus on “three minutes from drop to shock” for sudden cardiac arrest and “three minutes from shot to stop” for gunshot wounds to stop severe bleeding. (For more information, visit [MedTacOC.org](http://MedTacOC.org).)

The takeaway – have AEDs and bleeding control gear together AND one minute away from ANY victim or you will lose the fight

against failure to rescue. Bystanders must beat the clock.

Who would have thought in 2019 that we would be citing a *New England Journal of Medicine* article by Valenzuela et al. almost 20 years ago? They reported the evidence of the success generated by placing AEDs in casinos that allowed 3 minutes from drop to shock. Yet we are because this metric has held firm for almost 20 years. It turns out – the house always wins even in cardiac liability.

These measures are becoming the bystander care goals of leading organizations who are closing the gap between when organs start to die without oxygen at 4 minutes and the average response time of professional first responders at 10 minutes. After 3 minutes, we begin counting lives saved or lives lost; our response is key.

However, the majority of lawsuits following out-of-hospital cardiac arrests and deadly force incidents revolve around organizations failing to have accessible emergency supplies and staff properly trained to use them. There are almost no lawsuits alleging improper bystander care or misuse of emergency supplies or AEDs.

Here’s how your campus can address this

emerging threat.

## AED Accessibility a Significant Challenge

Almost 1,000 out-of-hospital sudden cardiac arrests occur every day with 7,000 occurring every year in children and youth -- one-quarter happen on the playing field. When we look through the lens of those we serve, we now have some good metrics for getting the right care at the right time...every time.

There is clear consensus that the most effective way to improve survival of cardiac arrest victims is to strengthen the early links of the survival chain with bystander cardiopulmonary resuscitation and Public Access to Defibrillation (PAD). However, when most organizations review whether they can get CPR care and AEDs to sudden cardiac arrest victims within three minutes 24/7/365, most organizations come up short. Multiple studies show there may be only a one-in-five chance of an AED being near enough to a victim.

Not only are there not enough AEDs located close enough to victims in public places, but those that are nearby are inaccessible more than 50% of the time. They are either in buildings that are locked at night or there are barriers

ers to access them. AEDs also are often without clearly visible signage or are positioned out of reach at schools so those of small stature may not be able to retrieve them in an emergency.



There are other issues as well. Good Samaritans may fear liability, be confused regarding how to perform CPR while under stress and might not be familiar with how an AED works. A recent study found that women are 27% less likely to receive CPR because males are reluctant for fear of sexual harassment allegations when they touch their chest during CPR. They also fear hurting females with vigorous compressions, which underscores the need for training.

### Trauma First Aid Gear Saves Lives

The Stop the Bleed Campaign was developed after 20 first graders and six educators were killed at Sandy Hook Elementary School in 2012. As of September 2019, more than one million people have been trained in bleeding control. Now often called “the new CPR,” it educates bystander laypersons in the use of direct pressure, wound packing and tourniquet use for bleeding.

We believe that the standard of care to mitigate harm from active shooter and major trauma events is the adoption of the Stop the Bleed Campaign methods. This in turn drives the need for placement of major bleeding control supplies at multiple locations. Given that gunshot wound victims can bleed out in five minutes or less, the “3 minutes from shot to stop the bleeding” metric makes sense and speaks to the issue of co-locating AED and resuscita-

tion gear with major bleeding control supplies.

Dr. Peter Antevy, who was interviewed by *60 Minutes* regarding the Parkland High School mass casualty event, shared that although 34 people were shot and 17 were killed, “17 kids are alive today because of the quick action and quick work of those folks who put on tourniquets and chest seals.”

Stop the Bleed methods can also be applied to other types of medical emergencies stemming from other types of incidents, such as stabbings, car crashes and other accidents.

### The Solution – Leadership, Practice and Technology Systems

We can reduce vulnerability to threats with prevention, preparedness, protection and performance improvement. Such an approach can be organized by leadership systems, practice systems and technology systems.

**Leadership Systems:** When working with leaders, we like to use our 4 A Checklist:

- **Aware:** We need to make them aware of the performance gaps we are trying to close, as well as the liabilities and full-loaded cost of inaction.
- **Accountable:** We want them to determine who must be personally accountable for the work done to close the gap.
- **Ability:** We define ability as know-how as well as resource allocation, both cash and capacity or worktime (the compensated staff time). Leaders control budgets and new out-of-budget spending.
- **Actions:** These are the line-of-sight activities that, in aggregate, will produce the stated goals. The leaders within an organization need to understand why regulatory-compliant AEDs and appropriate major bleeding control resources need to be purchased and placed so that a bystander or staff member can get to any victim and begin care within three minutes.

Our job as safety and security leaders is to get other leaders onboard to drive these “4 A’s.”

**Practice Systems:** Here, concepts, tools and resources are critical to understanding and becoming competent in the best practices of CPR/AED use and the Stop the Bleed skills and methods.

The first best practice is to undertake an organization-wide assessment to determine the response time performance gap that must be

3 Minutes & Counting  
Assessment Plan

**Step 1 Is State Map**

- Create an “Is State” map of all AEDs and Bleeding Control Gear locations on the property.
- Describe access 24/7, location, positioning, and visibility.
- Identify new or better locations to position AEDs and Bleeding Control Gear within 1 minute of any victim.
- Identify population surge needs that typically occur.

**Step 2 Leadership Systems**

- Assess leadership systems of Awareness, Accountability, Ability, and Action issues to pass a 3 minutes to care test.

**Step 3 Practice Systems**

- Assess gaps in practice systems of state-of-the-art training in CPR/AED and Bleeding Control of staff and volunteers. Identify sources for regular practice.
- Define gaps in protocols, procedures, and standard operating procedures mirroring latest guidelines.

**Step 4 Technology Systems**

- Assess existing AED technologies for gaps in compliance, latest recommended algorithms, and condition.
- Determine the number of fixed, portable, and mobile co-located gear packs of AEDs and Bleeding Control gear.
- Identify the specific Bleeding Control gear requirements for placement with AEDs depending on surge and risk profiles of the location.
- Define regular standard of care maintenance programs for leadership, practice, and technology systems.

closed. The actions include determining the location and concentration of the populations you serve and those who serve them (your staff) 24 hours a day, 365 days a year. You must determine where gear needs to be located so that someone walking briskly at four miles per hour can get from a victim to the gear, retrieve it and initiate care within three minutes. Our approach is to place the gear 1 minute away from anywhere on the property. Factor in 30 seconds to assess the victim, 2 minutes to retrieve the gear, and 30 seconds to put the gear to action. Assess location, positioning, visibility and accessibility of the gear. You must consider surge events, such as graduation assemblies where you may need to move portable and mobile AEDs to meet the three minutes-to-care test.

Proper CPR/AED and first aid courses need to be taken from the *American Heart Association*, *American Red Cross*, or other equivalent training organizations. The Stop the Bleed programs are operating in most communities and the courses are free. Our *Med Tac Bystander Care Program*, which incorporates both certifications in addition to covering other leading causes of preventable death, can be reviewed in the November/December 2018 issue of *Campus Safety Magazine* as well as on [CampusSafetyMagazine.com](https://www.campusafetymagazine.com/public/med-tac-training-bystanders/) at <https://www.campusafetymagazine.com/public/med-tac-training-bystanders/>.

Best practices can be organized into prevention (primary prevention means to prevent an event from ever happening and secondary prevention means prevention of harm if an



**AED & Bleeding Control Gear Placement Checklist**

**PROXIMITY:**

- ❑ Existing fixed AEDs should be close enough to allow someone walking 4 miles per hour to retrieve the AED in time to enable 3 minutes from “drop to shock” for any victim.
- ❑ Bleeding Control Gear should be co-located with AEDs to enable 3 minutes from “shot to stop” of major bleeding for gun shot wounds.

**ACCESS:**

- ❑ All AEDs and Bleeding Control Gear supplies co-located so that they are available 24/7/365 and not locked behind closed doors.

**LOCATION:**

- ❑ New AEDs and Bleeding Control Gear may need to be placed close to high traffic and high-risk areas.
- ❑ AEDs and Bleeding Control Gear may need to be provided in portable backpacks or mobile on bicycles, golf carts, or patrol cards to meet the 3-minute-response test.

**POSITIONING:**

- ❑ The positioning above the ground should match the local requirements. Students of small stature may have to retrieve the gear to support bystander care.
- ❑ AEDs and Bleeding Control Gear should be placed following local regulatory statutes that evolve.

**VISIBILITY:**

- ❑ Signage must be clearly visible and the addition of Bleeding Control Gear to AED locations will require new signage.
- ❑ Signage must be visible from all directions to allow bystanders under stress to find the supplies.

event does happen), preparedness (in case of an event), protection (when an event occurs) and performance improvement (learning from other events to improve all the other activities).

**Technology Systems:** We define “technology” as the products, services and information technologies that will support our best practices and performance improvement. AEDs need to be assessed for regulatory compliance and be using the latest approved algorithms. Make sure you are following the manufacturers’ guidelines for inspections and readiness, battery replacement and recalls.

Ask the following questions:

- Are you following the evolving state regulatory statutes and guidelines?
- Do you have the proper protocols for reporting when an AED is used?
- Have you looked at the new product features of WiFi-enabled readiness-check systems and CPR coaching features, such as metronome commands for frequency of chest compressions?
- Do you have AEDs that are the best device for your operating environment, which might have unique weather or moisture issues? For example, we place AEDs and bleeding control kits in waterproof cases for our Adopt a Cove program in Southern California. <https://www.medtacoc.org/adopt-a-cove/>
- Have you considered outsourcing the management of your AED inspections and services that will provide loaner

AEDs if yours are used or damaged?

As for trauma and bleeding control supplies, the same issues of fixed, portable, and mobile deployment of this gear should be addressed. Ideally, AEDs and trauma gear should be together in the same location.

Once you have mapped the concentration of those you serve and those who serve over time, you must decide how much gear you might put in theaters and assembly halls. The good news

is that trauma gear has a very long shelf life and maintenance requires little extra effort if the gear is in the right location and accessible.

**Make Your Upgrades Now**

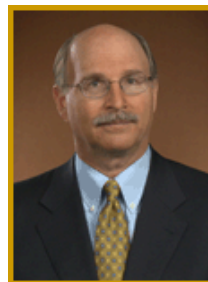
The emerging threat of lagging behind the rapidly evolving standard of care for training and technology is one you can tackle now. There is no better time to do it.

**TIMELINE OF AED FIRSTS**

- **1775:** Danish doctor proved that the hearts could be restarted by electricity.
- **1889:** Two Swiss physicians discovered electricity could stop fibrillation.
- **1928:** William Bennett Kouwenhoven, an American electrical engineer who later created CPR, applied electricity to restart hearts. This was developed to resuscitate power company workers after accidental electrocution.
- **1947:** The first life saved was of a 14-year-old youth during surgery.
- **1956:** First closed chest defibrillation was undertaken.
- **1966:** The first portable defibrillator was invented by Professor Frank Pantridge in Belfast and weighed 110 pounds and used a car battery.
- **1978:** Modern AED developed with sensors automatically detecting ventricular fibrillation and administering shock.
- **1972:** President Lyndon B. Johnson was saved by a portable defibrillator.
- **Early 1990s:** American Heart Association initiated a public access program for AEDs nationally.
- **2000:** In the *New England Journal of Medicine* article entitled Outcomes Of Rapid Defibrillation By Security Officers After Cardiac Arrest In Casinos, Valenzuela et al. reported optimal outcomes if victims defibrillated within 3 minutes.
- **2002:** In the *New England Journal of Medicine* article entitled Public Use Of Automated External Defibrillators Caffrey et al. reported that bystanders will respond if airports placed AEDs next to fire extinguishers. The long-term survival rate with a good neurologic outcome among all 18 patients with ventricular fibrillation was 56 percent (regardless of the location of cardiac arrest), and it was 67 percent among the 12 patients who underwent defibrillation within five minutes.

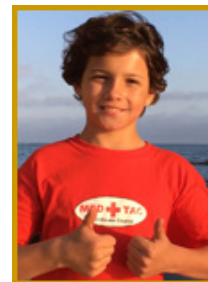
**About the Authors:**

**Dr. Charles Denham II**



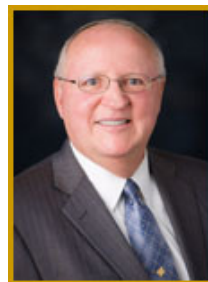
Chairman of TMIT, a non-profit medical research organization, he leads development of the Med Tac Bystander Care Program and R&D initiatives. He founded *CareUniversity*®.

**Charles Denham III**



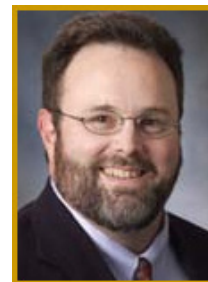
A middle school student, he is a co-founder of the Med Tac Bystander Care Program, and helps lead the Med Tac Lifeguard Surf Program and Scout Program as a Junior Med Tac Instructor.

**William Adcox**



Chief Security Officer and Chief of Police of the University Health Science Center at the MD Anderson Cancer Center, he is one of the pioneers of Threat Safety Science.

**Dr. Gregory Botz**



Professor of Anesthesiology and Critical Care at the University of Texas MD Anderson Cancer Center, he is also an adjunct faculty member at the Stanford School of Medicine.