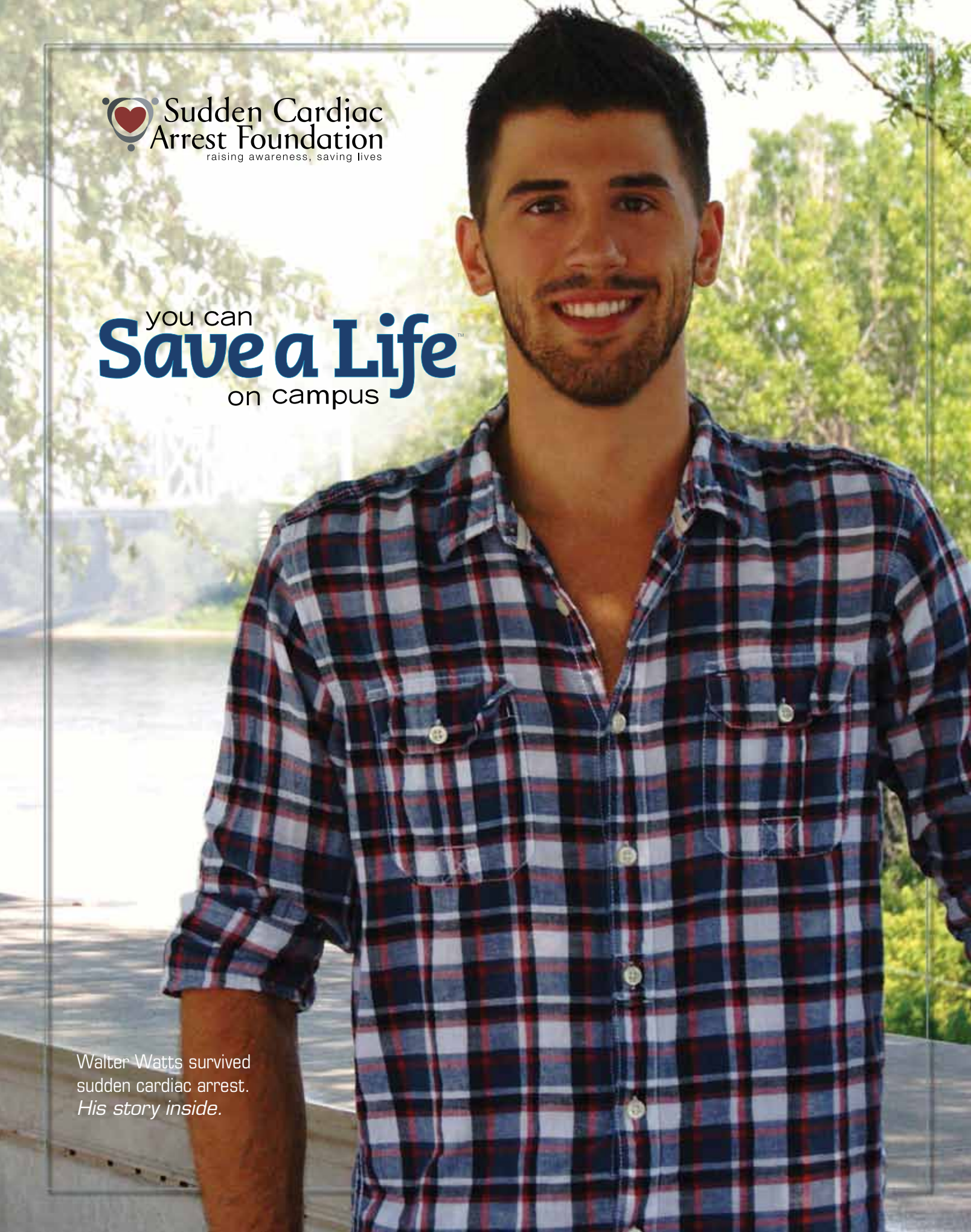
Sudden Cardiac Arrest Foundation
raising awareness, saving lives
you can
Save a Life™
on campus
Walter Watts survived sudden cardiac arrest.
His story inside.

Contents

SUSAN KOEPPEN, KDKA TV, PITTSBURGH

YOU CAN SAVE A LIFE ON CAMPUS

Sudden cardiac arrest (SCA), a sudden and unexpected pulseless condition, strikes more than 1,000 people outside hospitals (including about 16 youths <18 years old) every day in the U.S.—and most victims die.

The odds of survival improve greatly when someone recognizes the emergency, decides to help, calls 9-1-1, starts CPR, and uses a defibrillator to shock the heart back to a normal rhythm.

So many more could survive if they were treated in time. SCA victims need to receive CPR and defibrillation within a few minutes of collapse to maximize the chances for neurologically intact survival. Yet only one-third of SCA victims receive bystander CPR and only 2% are treated with an automated external defibrillator (AED) by a bystander. When bystanders do intervene by providing CPR and using the nearest AED, survival rates increase from 8% to nearly 40%.

SCA Foundation spokesperson Susan Koeppen, an award-winning TV journalist and a wife and mother of three young children, understands this first-hand. She was running with friends in preparation for a marathon when she collapsed in SCA. Fortunately, two medical students came upon the scene at exactly the right time and they gave her CPR until firefighter-EMTs arrived, continued CPR, and used their defibrillator to restore Susan's pulse.

"If it were not for the students and EMS who rushed to help me, I would not be here today," said Koeppen. "I can't stress enough the importance of learning CPR and how to use an AED."

Colleges are microcosms of the community at large. As such, they should be prepared to prevent death and disability from SCA among students, staff and visitors. This includes ensuring that students are trained in CPR and AED use and that AEDs are strategically placed on campus and with athletic teams.

Is your college ready? Are you? Take action today.

- Read this booklet for ideas and inspiration.
- Go to www.sca-aware.org/campus for additional information and resources.
- Join the SCA Network at www.sca-aware.org.
- Like us at www.facebook.com/youcansavealife and follow us at www.twitter.com/youcansavealife.
- Learn CPR and how to use an AED.

You can save a life. Get started now.

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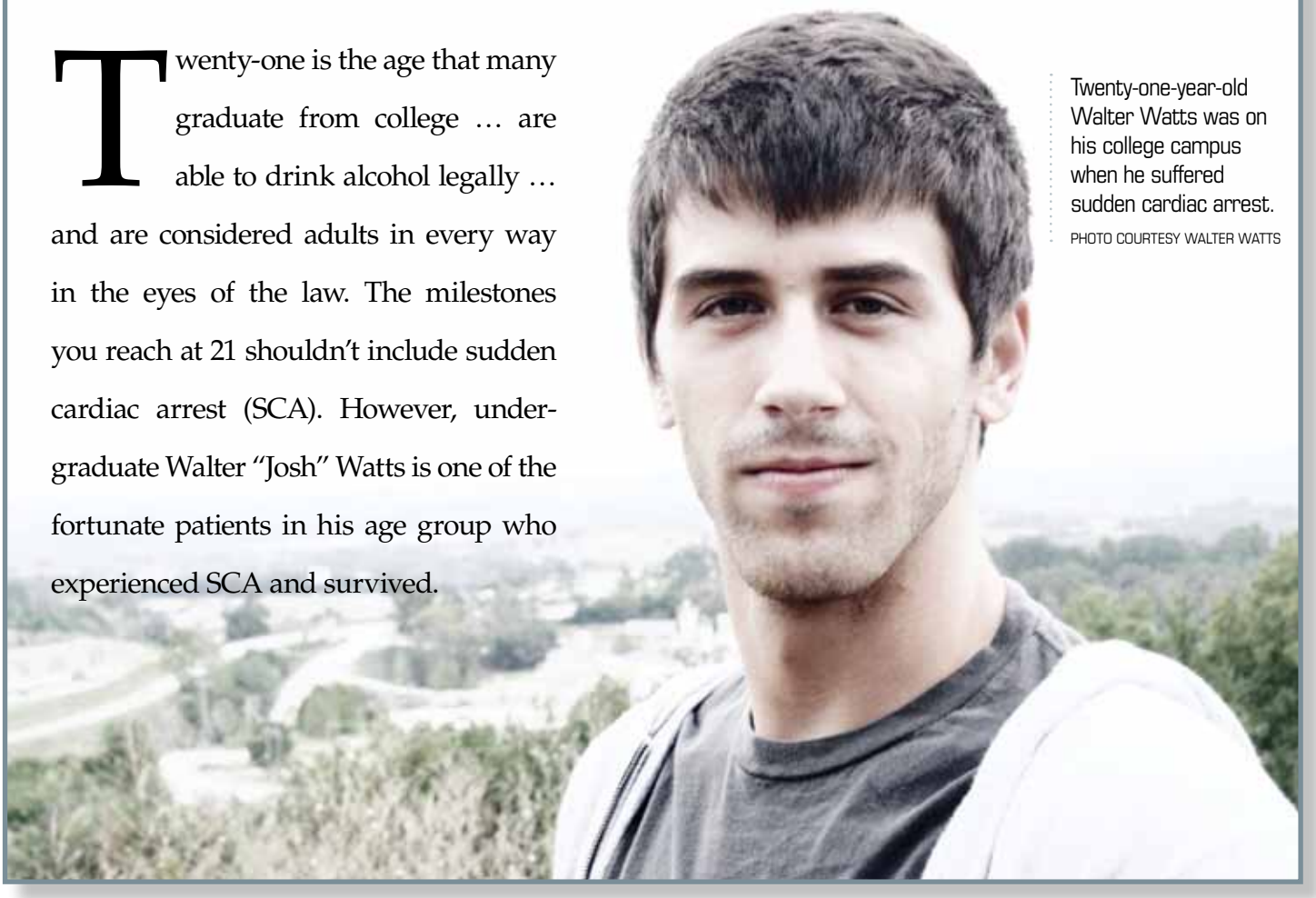
you can Save a Life on campus

Shocking Watts

A 21-year-old SCA patient beat the odds when resuscitated by his college peers

By Jane Jerrard

Twenty-one is the age that many graduate from college … are able to drink alcohol legally … and are considered adults in every way in the eyes of the law. The milestones you reach at 21 shouldn't include sudden cardiac arrest (SCA). However, undergraduate Walter "Josh" Watts is one of the fortunate patients in his age group who experienced SCA and survived.



Twenty-one-year-old Walter Watts was on his college campus when he suffered sudden cardiac arrest.

PHOTO COURTESY WALTER WATTS

The Timeline

The last thing Watts remembers happening on Tuesday, February 7, 2012, was walking into his first class of the day at College of the Ozarks in Point Lookout, Missouri—about an hour and a half before his heart went into ventricular fibrillation. He learned from his professors later that he was acting perfectly lucid and normal in class that day and when he arrived for work at the Pfeiffer Science Building. But his memory is a blank.

Watts had just started his work assignment, grading papers, when Associate Professor of Psychology Sheryl Haile, MEd, heard him hit the ground. Thinking he was having a seizure, she called the on-campus fire department, which is staffed entirely by students.

Her call came into the firehouse at 11 a.m., and Chief Gavin Harnstrom and Dakota Williams—both seniors at the college—responded in their rescue vehicle within three minutes, meeting fellow responders Jessica Messer and Dalton Trussell on the scene.

The responders knew instantly that the call was wrong—this was no seizure. Watts had turned blue, struggled to breathe and didn't have a pulse.

"For a few seconds, my thoughts were chaotic," admits Williams. "We were expecting a seizure, and I'd only seen something like this in an ambulance when there were paramedics around. It took me five or 10 seconds to gather myself."

Harnstrom says that on arrival he, too, immediately grasped the unexpected situation, "I froze for a second, and I said 'OK, it's time to go to work.'" He asked his crew to start CPR and turned on the AED as soon as Williams had attached the electrode pads to Watts. "When it advised a shock, we all looked at each other," says Williams. "We couldn't believe it. Here was a kid younger than we are, and he needed to be shocked."

After a single shock, Watts began breathing again, albeit with a bag and mask still on. At this point, the college's registered nurse had shown up with a second AED, and the local EMS service had arrived. They transported Watts to nearby Skaggs Regional Medical Center in Branson, Missouri. The total time from when the campus firehouse received the call to arrival at the emergency department was less than 15 minutes.

"I was glad the paramedics came and took over, because to tell you the truth, I was kind of sweating," says Harnstrom. "I was hoping I'd done the right thing. Here's a healthy, 21-year-old kid, and the AED wanted us to shock."

The school nurse later took the AED to a local ambulance company to get the readout, and it verified that Watts had, in fact, been in ventricular tachycardia (v tach). "So it would have been much worse if we *hadn't* shocked him," says Harnstrom.

Student Responders at Work

Of the student responders on the scene, some were trained volunteers, and others were working for college credit. All students at the College of the Ozarks participate in the unique Work Education Program, working 15 hours each week plus two 40-hour work weeks, rather than paying tuition. The campus Point Lookout Fire Department is "staffed" with four student officers who put in their time toward this program, and the remaining department members—all students—are volunteers.

"We typically have about 13 or 14 students in the department,

PHOTO STURTI/ISTOCK.COM

SCA Stats

Sudden cardiac arrest is one of the leading causes of death in the U.S. Although the reported incidence in youth is less than that in adults, SCA is not a rare occurrence. In fact, SCA affects about 16 people under the age of 18 every day. The following statistics show that SCA is a public health crisis—and bystander intervention with CPR and AEDs can mean the difference between life and death.

Risk and Warning Signs

- Family history of cardiac arrest in a first-degree relative: two-fold increase in risk of cardiac arrest.[1]
- EMS-treated, non-traumatic cardiac arrest victims who have symptoms within one hour of death: 33%.[1]

Annual Incidence

- Non-traumatic EMS-treated out-of-hospital SCA: 382,800;[1]
- SCA (all causes) among youth <18 years old: 5,760; and[1]
- SCA among students 17–24 participating in National Collegiate Athletic Association sports: one per 22,903
- athlete participant years. Higher among blacks than whites and higher among men than women.

Bystander Intervention in Cases of SCA

- Rate of bystander CPR: 32%; and
- Rate of bystander use of AEDs: 2%.[2]

Survival Rates

- Survival with bystander CPR, but no AED use before EMS arrival: 9%;
- Survival with bystander CPR, application of AED, and shock delivered before EMS arrival: 38%.[2]

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1. Roger VL, Go AS, Lloyd-Jones DM. Executive Summary: Heart disease and stroke statistics--2012 update: A report from the American Heart Association. *Circulation.* 2012;125(1):188–197.
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Student EMS providers responded to Watts' call (from left Gavin Harnstrom, Dakota Williams, Dalton Trussell and Jessica Messer).

PHOTO COURTESY GAVIN HARNSTROM

but that February we only had nine," says Gavin Harnstrom, who was chief of the fire department the semester they received the call about Watts' emergency. All students who join the department receive one semester of EMS training, after which the rest of the members vote on whether they'll continue. And all members undergo training every semester, including refreshers in CPR and using an AED, for which Williams says he is grateful after being faced with an unexpected SCA. "We all knew how to use the AED, although it's pretty foolproof," he says.

Student members of the department may decide to earn EMT certification as part of their training; Williams was one of the responders that day who had completed an EMT course through the Mercy medical system in nearby Springfield, Mo.

The SCA call was definitely out of the ordinary for the young responders, who aren't equipped to transport patients. "We mostly treat a lot of sprained ankles and wrists, and some cuts," explains Harnstrom. The 9-1-1 calls to the department are actually 3-3-3 calls. Anyone can pick up a landline on campus and dial "3-3-3" in an emergency, which is what Dr. Haile did when she believed Watts was having a seizure.

The College of the Ozarks campus is small enough that the firehouse is just one block from the science building where Watts was—and small enough that most of the students know each other. Watts says he knew three of the four responders and is good friends with two of them.

"I just can't believe what they did for me," he says. "They literally gave me the gift of life."

Diagnosis: TBD

The cause of Watt's SCA remains uncertain. He and his parents were unaware of any heart conditions, genetic defects or family history of sudden cardiac arrest, so the incident came as a complete surprise. However, Watts admits that for years, he had experienced heart palpitations and a fast heart beat (tachycardia) when exerting himself. He didn't realize it was abnormal, so he never mentioned it. He says he felt heart palpitations the morning of his brush with death.

It took two days for Watts to regain full consciousness in the hospital, after which he underwent an angiogram and other studies. The results were inconclusive, and after a week, he was

sent home with a wearable heart monitor and defibrillator as a temporary safety measure.

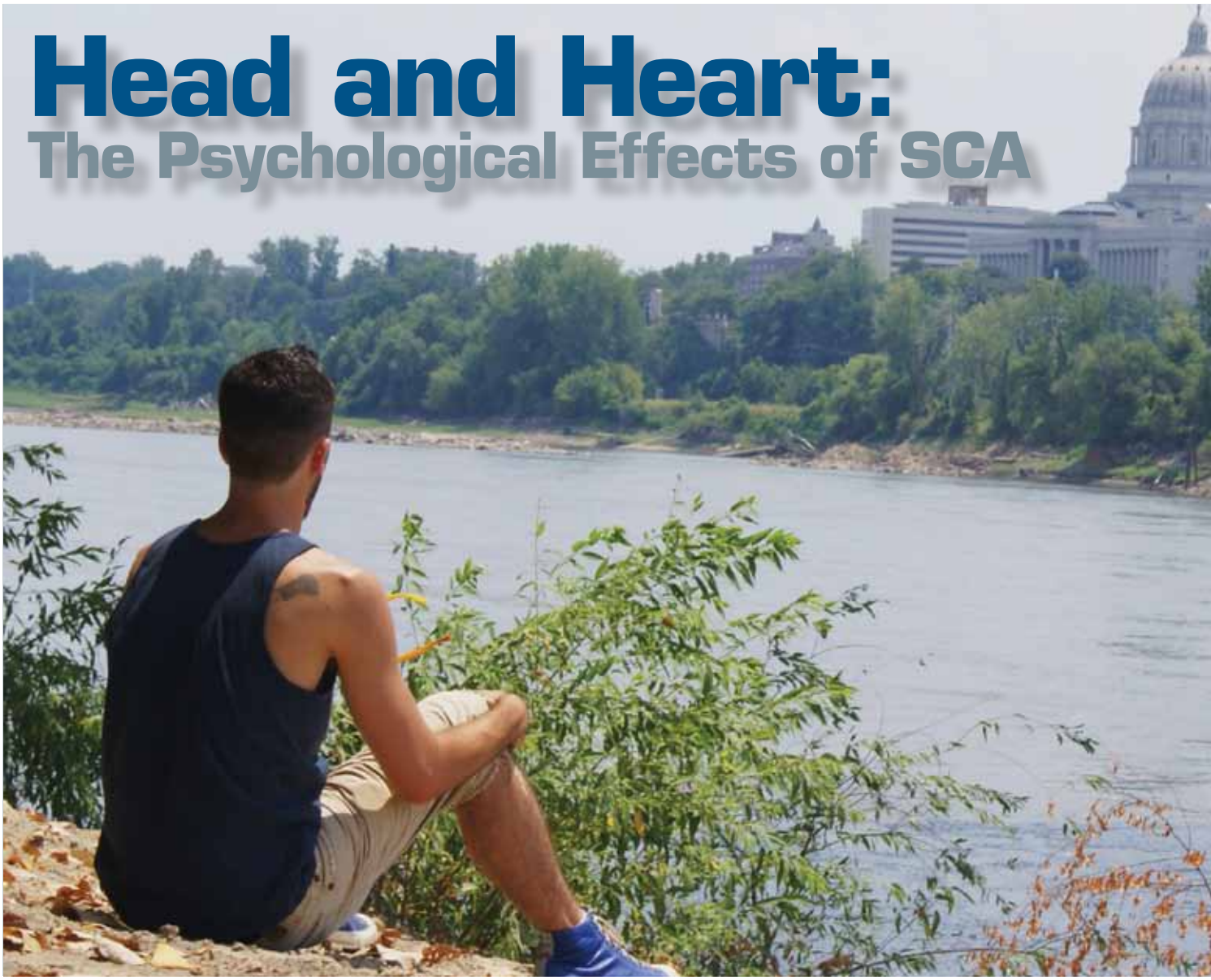
Four months after the event, Watts reported that his doctors are "still batting around ideas" about what caused his arrest. They're testing him, both parents and his 14-year-old brother Caleb for genetic diseases, such as Brugada syndrome, characterized by abnormal electrocardiogram findings. Another strong theory is that the arrest was a symptom of Wolff-Parkinson-White (WPW) syndrome, a heart condition in which an extra electrical pathway in the heart can cause a rapid heart rate. Watts did, in fact, have an extra pathway, and doctors performed a catheter ablation and used radio frequency to destroy the pathway's opening and prevent it from re-growing.

"I guess the extra accessory pathway was highly unusual," says Watts. "It went from the bottom of the heart to the top, which is rare. That's why my doctor, Dr. Arpana Chela, sent me to Barnes-Jewish Hospital in St. Louis for a second opinion."

Because of the high risk that an as-yet unidentified genetic disease would cause a recurrence, Watts underwent surgery to get an implantable cardioverter defibrillator (ICD), which will probably be permanent, depending on the ultimate diagnosis. He says six weeks after the surgery that he has recovered enough to raise his arms over his head. More importantly, he no longer has an irregular heartbeat and is able to be more active than he was before the event. He exercises every day, including frequent kayak runs on Binder Lake and hiking around the Jefferson City area. And without the heart palpitations that prevented him from running, he jogs regularly now.

"My only restrictions [with the ICD] are that I'm not allowed to swim or drive for six months because of the risk of having a second cardiac arrest," he says. "And I'll never be able to be a commercial driver or pilot and can't operate a jackhammer. I

Head and Heart:
The Psychological Effects of SCA



guess I'm also supposed to watch out for magnets."

Although most electromagnetic fields in the home environment will rarely affect the function of a pacemaker or ICD, patients are generally advised to keep items containing magnets six inches away from their implanted medical device.

Looking toward the Future

What does the future hold for this young SCA patient and his rescuers? Watts, currently home with his parents in California, Missouri, has one more year at the College of the Ozarks before he completes his bachelor's degree. Then, he plans to enter a master's program and ultimately work in the field of psychology.

"I'm so eager to be driving, and to be back in school," he says. "I just want to be more present in life. As soon as I can drive again, I'll go [to Springfield] to see what Gavin and Dakota are up to. I'm looking forward to catching up with them."

Williams graduated the spring after the SCA call and soon after was hired as an EMT at Springfield's Mercy medical system. As of June, Harnstrom was looking for a similar position. When asked about his interest in EMS, he said, "I'm trying to get a job in a fire/EMS service right now. I love this!"

The medical emergency that struck on February 7, was a milestone in the lives of all the students present. It cemented the certainty that Williams and Harnstrom had for entering the field of EMS and continuing to save lives. As for Watts, he is aware of the tremendous second chance he has been given and is eager to learn CPR and the proper use of an AED. He will push for more AEDs in Missouri's schools while continuing his college education.

Jane Jerrard is a freelance writer who has written about public safety for more than 10 years.

Walter Watts now enjoys regular exercise, including hiking around the Jefferson City area.

PHOTO COURTESY WALTER WATTS

Walter Watts and other young survivors of sudden cardiac arrest (SCA) face not only changes in their health and behavior, but also changes in their ways of thinking about themselves and about life. Lauren D. Vazquez, PhD, is a clinical psychologist at Ochsner Medical Center's Department of Psychiatry (New Orleans) who specializes in cardiac psychiatry.

"We think of cardiac events as being more in the experience of an old man than a young person. This incongruity really challenges a young patient's idea of life and prompts different ways of thinking," she says. "Like any other trauma, sudden cardiac arrest can have an impact."

It's easy, if not natural, to feel victimized by the event. A young person may mourn the loss of his or her previously healthy, normal life. Vazquez outlines three typical reactions a young SCA survivor may experience:

Emotional: Surviving the event results in a lot of anxiety. Survivors wonder, "Am I safe?" "Is it going to happen again?" "Do I need to start thinking about the end of life?"

Behavioral: There may be avoidance of the place where the SCA occurred. If the person was at the gym, he or she may avoid returning to the gym; if it was in the mall, he or she may resist going to the mall. Avoidance is an attempt to control the uncontrollable. By not returning to the scene, the survivor believes, at some level, he or she is avoiding a second SCA.

Social: There may be one of two extremes. Some SCA survivors isolate themselves and avoid contact with others, while others may not want to be alone, for fear it will happen again. Either way, this can limit their quality of life. It is also common to see sleep issues; many cardiac survivors have a fear of going to sleep.

Vazquez also identifies three "resiliency factors," or changes in outlook and attitude that can help survivors live happier lives:

1. ***Make the shift from victim to survivor.*** "They have to challenge their perspective of what happened and what they're still going through," says Vazquez. "All the medical investigations that occur afterward can be frightening and add to the trauma. You have to be able to view this as positive." This is not always easy, she warns.
2. ***Develop "quality of life prescriptions" and take them as regularly as you take medical prescriptions.*** Take time for the things that make life better. "People who have experienced sudden cardiac arrest have a second chance at life," says Vazquez. "Their focus is on making that life count and enjoying every moment."
3. ***Seek an active, positive approach.*** "People who manage this will do well. It's a process, to change your mindset," says Vazquez.

For more information, visit www.sca-aware.org/campus.

Emergency Action Plan

Prepare for sudden cardiac arrest on campus *By Mary Newman, MS*

Students participate in an AED training scenario.

PHOTO COURTESY RON COURSON/UNIVERSITY OF GEORGIA

Ron Courson, ATC, PT, NREMT-I, is the associate athletic director for sports medicine at the University of Georgia (UGA) and a strong proponent for emergency action plans (EAPs) on college campuses that feature deployment of automated external defibrillators (AEDs). He and his colleagues developed one of the first higher-education AED programs in the U.S., a model that has become a template for the National Athletic Trainers' Association (NATA) and has been emulated by countless colleges and universities nationwide. Following is an interview with the nationally acclaimed champion.

Why did you become involved in the cause to save lives threatened by sudden cardiac arrest (SCA)?

I was on an advisory board for an AED company in the early 1990s and helped develop protocols and educational materials. I had been personally involved in SCA incidents. In 1995, I was involved in a save with a Southeastern Conference (SEC) football official. In 1996, when I was serving on the medical staff with the Summer Olympic Games, I worked a cardiac arrest incident during opening ceremonies.

Most recently, in 2011, Al Schmidt, a track and field coach from Mississippi State, collapsed in SCA on the first day of the SEC Outdoor Track and Field Championships. Our track and field medical staff recognized what was happening right away and started CPR. We used the AED and were able to resuscitate him.

When did you first develop the Emergency Action Plan (EAP) at UGA?

In 1992, there was an incident in which a football player died from SCA. I believe that any time you have an adverse outcome, you should evaluate your program to determine if anything could have been done differently to affect the outcome. When I started working at UGA in 1995, I wanted to develop an AED program to have trained responders and equipment on site. We cover every athletic practice and competition at UGA with certified trainers. I met with Vince Dooley, our athletic director, to propose an AED program. As our local EMS average response time was 14 minutes, I felt that unless something was done, if we had another sudden cardiac arrest, we would have a death. By placing AEDs in the hands of our athletic training staff, we could cut our response time to two to three minutes. Our AED program was an easy sell. It just made sense. Everyone was on board.

Students and faculty conduct an EMS communications training scenario.

PHOTO COURTESY RON COURSON/UNIVERSITY OF GEORGIA

Why is an EAP important?

It's important not only to develop an EAP, but also to rehearse it regularly. The number one cause of litigation in college sports is the failure to have an EAP, or having one, but failing to implement it properly. It's important that everyone knows where emergency equipment is located and knows how to use it. Every August, we review the EAP. If we have an actual emergency, it's not the first time we put the plan into action.

Who is trained through the UGA emergency action plan?

At least once a year, all coaches and strength and conditioning

National Athletic Trainers' Association Consensus Statement


PHOTO COURTESY LAERDAL MEDICAL

1. Access to early defibrillation is essential. A goal of less than three to five minutes from the time of collapse to delivery of the first shock is strongly recommended.

2. Pre-participation physical examinations should include completion of a standardized medical history form and attention to episodes of exertional syncope or pre-syncope, chest pain, a personal or family history of sudden cardiac arrest (SCA), and exercise intolerance.

3. SCA should be suspected in any athlete who has collapsed and is unresponsive. A patient's airway, breathing, circulation and heart rhythm (using an AED) should be assessed. An AED should be applied as soon as possible for rhythm analysis.

4. Myoclonic jerking (brief, involuntary twitching) or seizure-like activity is often present after collapse from SCA and should not be mistaken for a seizure. Occasional or agonal gasping should not be mistaken for normal breathing.

5. Cardiopulmonary resuscitation should be provided while the AED is being retrieved, and the AED should be applied as soon as possible. Interruptions in chest compressions should be minimized by stopping only for rhythm analysis and defibrillation. Treatment should proceed in accordance with American Heart Association guidelines.[1]

Reference

1. Casa DJ, Guskiewicz KM, Anderson SA, et al. National athletic trainers' association position statement: Preventing sudden death in sports. *J Athl Train*. 2012;47(1):96–118.

Emergency Action Plan Checklist

1. Develop and post written EAP for each individual athletic venue.
2. Integrate EAP with local EMS response.
3. Establish efficient communication system to activate EMS and on-site responders.
4. Designate EAP coordinator and train targeted responders in CPR and AED use.
5. Strategically place AEDs and check them regularly.
6. Determine transportation route for ambulances to enter and exit each venue.
7. Practice and review EAP.
8. Establish catastrophic incident guidelines.

For more information, visit www.sca-aware.org/campus.

staff undergo CPR and AED training. We try to time our training sessions so they occur immediately prior to the sport season, so the information is fresh in their minds. For example, we conduct training with our football coaching staff in late July before the start of fall practice on August 1. Our athletic trainers take ACLS [advanced cardiac life support] with physicians. We use scenario-based training. We practice together; we work together as a team.

All athletic training students are required to be trained as well. By doing this, the overall number of first responders has increased. We have also started to train all student athletes, and we are about halfway there.

Every August, we rehearse our EAP. Since every venue—the swimming pool, track and field, basketball, volleyball, the campus rec center, etc.—is different, there are multiple EAPs. For football, there are four EAPs: one for practice, one for game day, one for scrimmage day and one for indoor drills.

Does the emergency action protocol advise calling 9-1-1 or an on-site emergency number in the event of an emergency?

It depends on the venue. Each setting is considered carefully.

Legal Concerns

Today, organizations find themselves having to justify the absence of an AED.

PHOTO DNY59/ISTOCKPHOTO.COM

On any given day, educational institutions house more than 20% of the U.S. population. As such, educational settings are ideal locations for AED deployment. In the past, concerns regarding legal liability and litigation have been perceived as a barrier to purchasing and deploying AEDs.

However, a shifting paradigm has occurred during the past few years. Due to the increasing availability of AEDs, coupled with their proven success rate and low cost, organizations are now finding themselves having to justify the absence or non-use of an AED. This recent trend has seen lawsuits filed when AEDs haven't been used, aren't available or are available but their presence isn't advertised to the general public. As such, many entities are now acquiring AEDs and developing policies and procedures related to their storage, use and maintenance.

From the onset, it's important to note that the overwhelming majority of jurisdictions afford some type of legal liability protection for AED users. Often, these protections are provided by Good Samaritan statutes. Typically, AED users are protected from liability so long as they act in a reasonable and rational manner. Liability protections generally don't cover gross negligence or willful or wanton conduct, such as consciously seeking to injure the patient or using an AED in a non-accepted, non-standard way.

In the educational setting, many different statutes can play a role in determining what liability exposure, if any, school employees and staff members would face. This is particularly true with public institutions, for which staff members are public-sector employees.

Educational facilities shouldn't allow liability concerns to dissuade them from instituting an AED program on their campus. Administrators should become familiar with the Good Samaritan and AED protections in their jurisdictions and structure AED programs to comply with statutory requirements. Given the recent trends in AED litigation, a facility without an AED may, arguably, be more at risk for a lawsuit than one with an AED. Although the likelihood of success on these types of lawsuits is slim, the institution's public image may be damaged.

—Andrew R. Roszak, JD, MPA, EMT-P

Generally, we advise calling 9-1-1 first. Campus police get all 9-1-1 calls through their scanners and are generally the first emergency service to respond to the scene, usually within two to three minutes.

Are AEDs deployed at all sporting events?

Any time there is an athletic event, including practices, an athletic trainer (AT) is there with an AED. ATs also carry 12-lead EKGs.

Does UGA conduct routine heart screenings for athletes?

The NCAA requires colleges to conduct PPEs [pre-participation examinations] for athletes, however cardiac screening policies vary greatly. Seventeen years ago, we began to conduct 12-lead EKG exams and echoes [echocardiograms] for all athletes. We test every athlete for every sport. We made a commitment to treat all athletes the same and not just screen high-risk individuals. We focus on prevention. The more information we have about an athlete, the better equipped we are to keep him or her healthy. We believe it's fundamental to conduct heart screening, but we know that despite our best efforts, we are not going to pick up everything.

Ron Courson is the associate athletic director for sports medicine at the University of Georgia.

PHOTO COURTESY RON COURSON/ UNIVERSITY OF GEORGIA

Has funding ever been an obstacle to developing the heart screening program?

Screening costs about $150 per person, or a total of $15,000–20,000 per year. Our annual athletic budget is $88 million, so that's a drop in the bucket. We are blessed to be at a place with tremendous resources and support from our administration.

When did you first start writing about the topic of SCA in athletes?

In 2002, I served as a co-author of NATA's position statement on emergency planning in athletics.[1] In 2006, Jonathan Drezner, MD, team physician at the University of Washington, published a review of nine cases of sudden death in NCAA student athletes. Subsequently, we worked together with NATA to raise awareness about sudden cardiac arrest in collegiate athletics. We formed an inter-association task force with multiple organizations—NATA, and various cardiac emergency medicine and sports medicine groups, which published recommendations in four professional journals in 2007.[2]

We found there were delays in taking action when someone collapsed suddenly and unexpectedly, especially in cases of commotio cordis [a disruption of the heart rhythm that occurs when there is a blow to the chest, directly over the heart]. One of the primary problems identified was a lack of recognition of sudden cardiac arrest. The most recent consensus statement was published earlier this year (see NATA consensus statement, p. 9 and www.sca-aware.org/campus.)

How common is sudden cardiac arrest among college athletes?

Sudden cardiac arrest is the leading medical cause of death and disability during exercise in NCAA student athletes. Current methods of data collection underestimate the risk of SCA. Accurate assessment of SCA incidence is necessary to shape appropriate health policy decisions and develop effective strategies for prevention.[3,4]

Mary Newman, MS, is the president and co-founder of the Sudden Cardiac Arrest Foundation.

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Survivors

The faces of sudden cardiac arrest

By Jeremy Whitehead

The Team Rules, OK!

Kayla Burt, 20, Seattle, Wa. (2002)

It was New Year's Eve, and Kayla Burt's basketball team was staying over to celebrate. But Kayla never saw the festivities. Instead, she had a brush with death. When Kayla fell face down between the bed and the TV, they all thought it was a joke. But it wasn't. None of her teammates knew CPR, although they'd seen it on TV. How hard could it be? Luckily the EMTs were there in minutes. Kayla is proud that she lived in Seattle. It's one of the best cities for cardiac arrest survival, chiefly because of their Medic One program.

Childhood Friendship Lives On

Brett Kuhn, 18, Mt Pleasant, Mich. (2010)

Brett and Chris are buddies from a young age. They had their differences, over football that is. Brett was a Chippewa (Central Michigan), and that day they were playing the Broncos (Western Michigan). Chris is a Michigan State Spartan, but that didn't stop him from saving Brett's life later that night in an unusual emergency. A fit and healthy 18-year-old track and field star isn't supposed to drop down dead at an after-game party.

"We were standing around, and my friend saw me fall, hitting my head on a table and it collapsed on top of me," Brett says. "Chris rolled me over and saw my face was pale and my eyes rolled back into my head."

Chris had taken a CPR class and knew what to do.

"He told someone to call 9-1-1, and after about 13 or 14 minutes of CPR, the police arrived," Bret explained. It took another seven minutes for the paramedics to appear, and they took over.

Running into Trouble

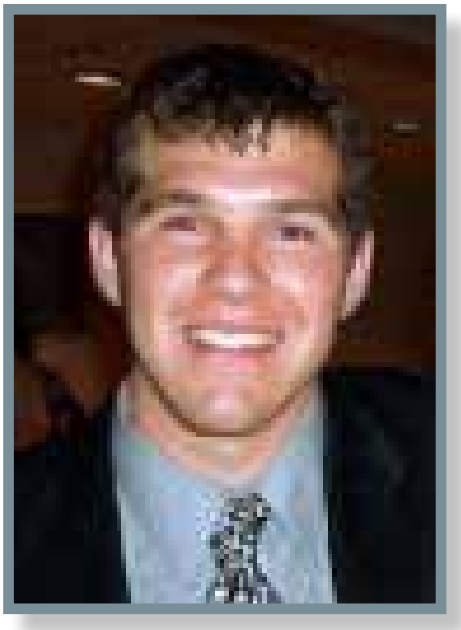
Paula Milliner, 20, Indianapolis, Ind. (2010)

How do you tell a fit, healthy, athletic teenager she cannot play sports? You explain how she might die.

"When I was sixteen I got diagnosed with a heart condition, called hypertrophic cardiomyopathy (HCM). It's a genetic disorder, and they told me I couldn't play any competitive sports," Paula says carefully. "They said there is a very minor chance of sudden death. Well, it happens—like—one percent of people."

Wind the clock forward to a healthy 20 year-old attending Purdue University. She's active and energetic, running most mornings to the workout facility from her sorority house.

"I never had any issues before. I mean, I definitely had symptoms of the disease but nothing major. So I was doing my normal morning routine, I remember going outside and thinking it was cool. Next I remember waking up in the ICU, trying to get out of my intubation," Paula says with a laugh.



I'm Much Safer Now

Evan Piekara, 24, Queens, N.Y. (2008)

Teach for America nearly lost one of their stars. Soon after his 24th birthday, Evan collapsed on the St. John's University basketball court. This was his first day off after 20 days straight, but it became a longer time-out than planned. That July afternoon, he fell to the ground after a particularly satisfying basket. Everyone stopped and stared. Security was called and brought the AED. Evan had no pulse, wasn't breathing and was just making a strange gasping sound. The AED could not restore a rhythm. Evan was dying. Fit, healthy and energetic, this young man was slipping away, and yet everything possible was being done to save him.

A Determined Chef Who Can't Stay Down

Doug Chrisman, 18, Hyde Park. N.Y. (2008)

Monday morning, 7:30 a.m., Doug was busy skimming the stock in preparation for that day's cooking class. The stock didn't make it. Doug did. His classmates at the Culinary Institute of America saw the freshman from Missouri collapse, and one of them ran to get the nurse. An AED was immediately brought to the scene. Doug was unresponsive and his pulse had disappeared. His face was turning blue; they had just minutes before he would die. In a textbook case of the "Chain of Survival," 9-1-1 was called, CPR was started, and the AED was used within just a few minutes. And finally, Doug was on his way to the hospital in time.

To read the complete stories and others, visit www.sca-aware.org/campus.

Circle of Life That Nearly Wasn't

Liz Pearlman, 20, Aurora, Ill. (2009)

What would you like for your 21st birthday? How about a wearable defibrillator? Liz had to wear one for three months. Think of a bullet-proof vest, add a canteen-sized battery, and you get the idea. Why would she need or even want that? A few weeks earlier, she had been practicing for the varsity basketball team and doing a "circle of life" sprinting exercise to earn her jersey. She had five seconds to go and suffered a cardiac arrest.

"I was on my back and Terry Smith [the athletic trainer] said 'Get up!' Then he saw my eyes roll into the back of my head. He immediately started CPR," Liz says. "And he called for an ambulance and an AED, which we had right outside our gym."

Master Swimmers Don't Die

Brian Duffield, 40, Tucson, Ariz. (2006)

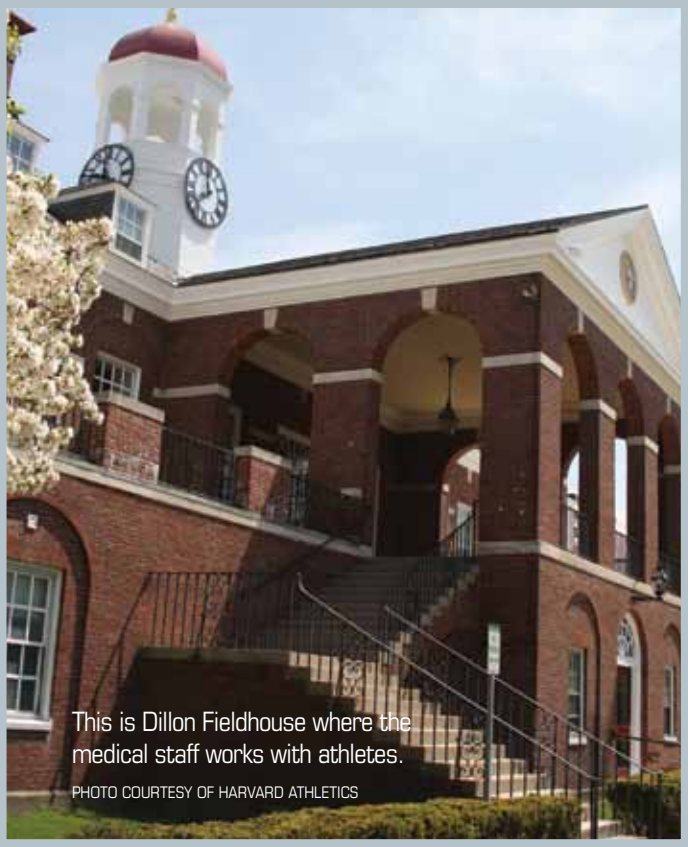
Brian is a member of a U.S. Masters Swimmer group. There are about 40 of them in Tucson that get together regularly and swim their hearts out at the University of Arizona pool. On this particular Tuesday morning, Brian nearly did. About halfway into the session, he didn't feel at all well and got out of the pool with an unusual fatigue. He decided to finish for the day and shower. That was when his chin hit the floor. He doesn't know anything about it as he was unconscious at the time. Luckily, a young man witnessed the fall and raised the alarm.

Easy Access

Model programs that place AEDs on campus

By Richard Huff, NREMT-B, Mary Newman, MS

One key to successfully fighting sudden cardiac arrest (SCA) on campus is having an automated external defibrillator (AED) program in place that makes AEDs as accessible as possible to campus students, staff and visitors. The following article chronicles different programs across the U.S.—big and small—that have made AED access a priority for their campus, a realistic and achievable goal that resulted in saving lives.



This is Dillon Fieldhouse where the medical staff works with athletes.

PHOTO COURTESY OF HARVARD ATHLETICS

Harvard

Harvard University is known for having some of the brightest students. But what many may not know is that helping protect these bright students is one of the best model AED programs in the country.

With 200 AED units deployed across the Cambridge, Massachusetts campus, the school is well covered. This strategy to have units strategically placed has already paid off.

"If we save one person, in my mind, it would be worth it," says Francis Wang, MD, medical director of the program and a clinical instructor in medicine and director of sports medicine at Harvard's Department of Athletics.

The school's AED program began in 2002 with the acquisition of 25 units, which were mounted in every police car, on each floor of the health center and in a handful of satellite health centers around the campus. Currently, Harvard has more than 200 units in service around the campus.

"The initial strategy when we first started this was to cover the athletic teams with defibrillators," Wang says. "Then we got a nice grant to put them in the highest risk areas, and we put them in many public areas."

So far, the system has proven successful. In 2007, a 67-year-old professor collapsed on a sidewalk. Someone called for help, and within three minutes, three AEDs were on the scene, and the man was saved. In 2008, a 20-year-old student suffered an SCA and was revived; although the student didn't survive. And in 2010, a 44-year-old visitor was playing soccer on campus when

he went down. He was saved.

Wang credits Harvard's administration with understanding the need for AEDs on campus and supporting efforts to increase the number of units spread around campus. "AEDs are like a life insurance policy. You need to have them, but you hope you don't need to use them."

Under the current system, AEDs are available at every sports practice and game. Each stand-alone unit is locally alarmed to an internal emergency response system. Students are also offered CPR training throughout the year.

"What we did is geographically spread them out a bit," he says. "We keep identifying areas without looking at specific yardage [apart]."

The next step in the program, says Wang, is getting AEDs into the dorms. "We plan to get AEDs into each of the 13 undergraduate residences in the yard by fall 2012. We will have a clear-cut emergency plan for each location. Houses will then promote training to student residents."

Once the units are in place, students will be trained to use them. "This is not something we've done in a vacuum," he says. "It's part of a campus-wide initiative, and that, plus good leadership that sees the need."

Maricopa County Community Colleges District

Maricopa County Community Colleges District (MCCCD), a collection of community colleges in Arizona, not only pumps out educated students, but it also makes sure it keeps their hearts pumping with a successful, widespread AED program.

The mission, says Bentley J. Bobrow, MD, FACEP, program medical director, is to make sure the school maximizes survival rates from SCA by having AEDs with working batteries and pads available to everyone. Moreover, says Bobrow, the medical director for the Arizona Department of Health Services Bureau of EMS and Trauma Systems, the goal is to have people trained to perform early defibrillation.

"Public Access Defibrillation [PAD] programs are an important means for providing defibrillation in settings where large numbers of people congregate," says Ruth Unks, ARM, director of Enterprise Risk Management at MCCCD. "With over 275,000 students and more than 11,000 employees, the MCCCD was well suited to implement a PAD program."

Although folks commonly think of colleges as places for younger people, they're microcosms of the larger community, and having an AED plan in place is critical, says Bobrow.

"SCA can occur in any age group and many older students and teachers are frequently on college campuses, and there are frequently other events—performing arts, sporting, and fairs associated with colleges," Bobrow says.

The MCCCD AED program began in 2002. There are approximately 100 AEDs in place today in 20 locations throughout the 10 community colleges and 10 other educational skill centers, according to Bobrow.

Unks says she measures the success of the program by the number of AEDs that the school has purchased, the number of people trained to use them, and the number of people saved.

Today, 247 AEDs are strategically placed across Pennsylvania State University.

PHOTO COURTESY OF PENN STATE PUBLIC INFORMATION

The plan is part of a larger Bureau of EMS and Trauma System and the University of Arizona Sarver Heart Center program, Save Hearts in Arizona Registry and Education (SHARE), says Bobrow. SHARE is designed to educate the public about SCA and the need for CPR and AED use.

Just placing AEDs in public buildings isn't enough. Training is a key component, Bobrow says. "It is a tragedy when someone dies from SCA, especially when they collapse in a public location where we have the opportunity to save them," Bobrow says.

"The SHARE program has over 1,000 survivors to date," added Bobrow. AZ SHARE is an affiliate of the Sudden Cardiac Arrest Foundation.

Unks says the program also sends a message to the MCCCD community. "Every time that I get an e-mail about a 'save,' it reinforces why we invested more than $200,000 over 10 years ago and were one of the first educational institutions to do so."

Pennsylvania State University

With 80,000 students and 18,000 employees at multiple campuses, the Pennsylvania State University (PSU) has a population about the size of West Palm Beach, Fla. Developing and executing an effective medical emergency response plan for SCA was no small task, especially when this was just one of many responsibilities of PSU's Department of Environmental Health and Safety (EHS). But Maurine Claver, EHS Director, was up for the challenge.

In the early 2000s, Claver spearheaded a campus-wide initiative to develop an emergency action plan that included deployment of AEDs. She worked with university police and EMS, staff and many others throughout the university.

When they started planning, there were no models to follow, so they created one. "We did not encounter any obstacles—none related to funding, liability concerns, culture or politics," says Claver. "Everyone was on board because they knew it was the right thing to do."

The program expanded rapidly in the ensuing years. The

plan is standardized for all campuses. To the extent practical, the selection of lifesaving devices and signage is consistent at each campus. "It just doesn't make any sense to have multiple brands with different batteries and pads, and to have to watch for recalls from several companies. It's just more efficient and effective," she says.

Before an AED is deployed, a minimum number of likely responders must be trained. More than 1,000 people have undergone CPR-AED training to date, according to Claver, including professional rescuers, employees and students. "We do everything we can to make training simple, streamlined and readily accessible."

Today, 247 AEDs are strategically placed university wide.

On average, there are two cardiac arrests a year on all campuses—excluding those occurring at the football stadium. All victims to date have been employees or visitors.

"We've had many successes, many saves," says Claver, thanks in large part to "amazingly quick recognition and response" by employees, students and other bystanders who call 9-1-1, and university police who carry AEDs and typically arrive at the scene within three to four minutes. If they are on bikes, response times are even quicker. Survival rates are well above the national average of 8%.

Allan Braslow, PhD, an emergency care and systems expert who attended PSU and worked on campus as an EMT, has the highest regard for Claver's program. "I like the fact that Penn State looks at sudden cardiac arrest as a public health problem," says Braslow. "They have a comprehensive systems perspective that considers the health and safety of the entire community, not only students. Their emergency response plan is active, dynamic, reviewed and adjusted on a regular basis."

The primary reason for the success of the PSU program, according to Claver, is that all players understand their roles and work as a team. The other reason for its success? As Claver admits, "It's hard to argue with me when I am passionate about something—especially something as important as AEDs, which can mean the difference between life and death."

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Mary Newman, MS, is the president and co-founder of the Sudden Cardiac Arrest Foundation.

It Takes a Team to Save a Life

It was early afternoon on Good Friday, April 13, 2012, in University Park, Pa. Daria Oller, DPT, ATC, PT, CSCS, a PhD candidate in kinesiology for the athletic training and sports medicine at Pennsylvania State University (PSU), and Alison Krajewski, MS, ATC, athletic training instructor, were in their academic offices when a squash instructor came calling for help. The instructor had already called 9-1-1, but he knew the athletic trainers could help.

From left, Dr. Danner, Daria Oller and Alison Krajewski. Photo courtesy of Ron Danner.

Oller rushed to the victim's side and Krajewski followed with a breathing mask. The 72-year-old man had been down for about five minutes. There was no normal breathing, no pulse, and his skin was "a deep shade of purple."

Oller gave two breaths and started compressions. "Although I was certified in CPR since middle school, this was the first time I gave CPR to a real person."

Within minutes, two AEDs arrived at the victim's side. Officer Mike Baker took over compressions, and Oller switched to breathing. Officer Randy Hoffman placed the AED electrode pads on the patient's chest and shocked him four times. Dave King, EMT-P, and the EMS crew administered advanced life support and transported the patient to the local hospital, where he was treated with mild therapeutic hypothermia to preserve brain function. He later received a pacemaker/implantable cardioverter defibrillator.

The rescuers would soon learn that the victim was Ronald P. Danner, PhD, emeritus professor of chemical engineering—a faculty member for 45 years. Dr. Danner has no recollection of the time surrounding the event, which is a common experience among sudden cardiac arrest (SCA) survivors.

"I don't even remember hitting the ground. But I understand that the way things fell in line was incredible. I'm doing great. They saved my life," he said, referring to the entire team of rescuers.

The cause of the arrest has not been determined, though Danner suffered a myocardial infarction in 1978. Heart attacks are often precursors of SCA. Remarkably, even though Danner was "down quite a bit of time before they could get my pulse back," he feels like his old self, a fact that he attributes in part to mild cooling.

"From what I understand, I was cooled for about 30 hours. My doctors say I've made a marvelous recovery. I came out of it with complete clarity. I feel perfectly normal," says Danner.

Although Danner is now technically retired, he's back to doing research and will teach a freshman chemical engineering seminar in the fall. He goes to cardiac rehab three times a week and hopes to return to playing squash soon.

On July 4th, Penn State celebrated its first Parade of Heroes. Danner had nominated Oller and Krajewski for the coveted award, and they were among a total of 19 nominees whose heroic actions were celebrated to great fanfare.

(More: www.sca-aware.org/campus)

Maggie's Legacy

Her family honors her by promoting SCA awareness & prevention

By Mary M. Newman, MS

Maggie Dixon coached the first Army team to make an NCAA appearance.

PHOTO COURTESY JAMIE DIXON

Jamie Dixon, head coach of the Pitt Panthers men's basketball team at the University of Pittsburgh, led his team to the National Collegiate Athletic Association (NCAA) Division 1 Men's Basketball Tournament in 2006.

The same season, his younger sister, Maggie Dixon, led her team to the NCAA Division 1 Women's Tournament in her first season as coach of the Army Black Knights team at the U.S. Military Academy. It was the first NCAA appearance for any Army team, and the Dixons became the first brother-sister pair to take teams to the NCAA basketball tournaments the same year.

When March madness subsided, Jamie was back on the road recruiting. The best of times turned quickly to the worst of times. "I was just getting off the plane in Virginia, when I got the call," says Jamie. Maggie had collapsed at a friend's house. Doctors said she had a heart arrhythmia. Jamie rushed back to be with his sister and was the first family member to arrive. Maggie died the next day, on April 6, at the age of 28. She's buried at West Point, an honor usually reserved for high-ranking officials and other heroes.

"Our family will never be the same," says Jamie. "There will always be a void. There has been a great deal of pain." Still, the Dixon family made a firm decision. They would remember Maggie by honoring her passion—women's collegiate basketball and their new cause—heart health issues, including sudden cardiac arrest (SCA). "We decided we would do everything we could to educate ourselves about sudden cardiac arrest, and then educate others," says Jamie.

Now

Since then, Jamie, their sister Julie Dixon Silva and parents Marge and Jimmy Dixon established the Maggie Dixon Foundation, which works to promote women's collegiate basketball and "to bring awareness to sudden cardiac arrest among young people, especially athletes." The Foundation hosts the Maggie Dixon Classic, which began at West Point and is now conducted annually at Madison Square Garden. "We wanted it to be the premier women's basketball event in the country, and it quickly became that," says Jamie.

They also host the Maggie Dixon Heart Health Fair. "Once we established the Maggie Dixon Classic and had a venue, we quickly recognized we should create a heart health fair. We saw an opportunity to promote heart health (diet and exercise), heart screening and SCA awareness, including CPR-AED training."

Today, all Pitt basketball players are trained in CPR-AED use and first aid. The University of Pittsburgh, under the direction of Dan Edmundowicz, MD, ensures that all Pitt coaches, athletic trainers and managers are also trained. In addition, all athletes undergo heart screening when they arrive on campus. Thanks to Dr. Edmundowicz, says Jamie, "Pitt was one of the first universities to implement heart screening for all athletes." He adds that teaching student athletes CPR and AED use will help ensure that lives will be saved in the future.

"Getting CPR-AED programs on campus is a great place to start," says Jamie. When they graduate, "Students can take their knowledge forward to the places they work and to their communities. It's a great way to spread the message and get it to grow."

Mary Newman, MS, is the president and co-founder of the Sudden Cardiac Arrest Foundation.

Note: Jamie Dixon is Honorary Chairman of the Sudden Cardiac Arrest Foundation Board of Directors.

Testing 1-2-3

Preventive screening for SCA saves lives

By Richard Huff, NREMT-B

Each year, 385,200 people experience EMS-assessed non-traumatic cardiac arrest in the U.S. and nine out of 10 victims die.[1] This is more than the number who die from concussions, assault with firearms, breast cancer, fires, motor vehicle accidents, suicides and other causes combined. Young people are not immune to the deadly condition.

According to the American Heart Association (AHA), there are an estimated 5,760 pediatric (<18 years old) arrests from all causes each year. Of those arrests, 6% survive. Therefore, approximately 16 youth suffer SCA each day, and 15 die.[2]

Cutting into that death rate is the goal of a growing movement within the medical community to reduce the number of SCA cases in the younger demographic.[3] At the heart of that effort is a push to get more young people screened with electrocardiograms (ECGs), which could identify potentially catastrophic heart problems before they occur.

Opponents of additional screening maintain that such testing would require massive changes in the medical system, starting with increased education on the part of those trained to read ECGs. Inexperience leads to higher false positives, which then leads to increased follow-up tests and other costs tied to that work.

Jonathan Drezner, MD, of the University of Washington is one of the leading advocates for more education for physicians providing general care. They need to be more aware of the specific heart issues facing younger patients and how to question them about family history to elicit better information, he says.

"There are obvious areas of education and we can do a better job," Drezner says. "We often ask if anyone in your family had medical problems. We end up hearing grandma had a heart attack or grandpa had hypotension. What we need to ask whether anyone had heart problems and died at an early age.

Early Warning Signs

Typically, but not always, some symptoms emerge before a young patient suffers an SCA. Those symptoms include fainting, chest pain, dizziness, lightheadedness and shortness of breath. Often times, those initial symptoms are ignored or go unreported, Drezner says.

Questions about those types of events should be part of well visits, according to Drezner.

Victoria Vetter, MD, MPH, attending cardiologist at the Children's Hospital of Philadelphia agrees. "We need to be asking patients if they have had any symptoms that could lead to sudden cardiac arrest. Do they get dizzy during exercise? Do they get out of breath easily? Do they have heart palpitations? It's important we ask if anyone in their family under 50 has died suddenly."

Any of those symptoms should alert doctors that something bad could happen, she says. SCAs in adolescents are typically caused by structural disorders, such as hypertrophic cardiomyopathy (HCM) and arrhythmogenic right ventricular dysplasia/

Three-quarters of SCAs in adolescents occur on the playing field.

PHOTO STRICKKE/ISTOCKPHOTO.COM

cardiomyopathy (ARVD/C) or coronary artery problems. Some adolescents have electrical malfunctions in their hearts, such as familial long QT syndrome (LQT) or Wolff-Parkinson-White syndrome (WPW).

"You hear stories of young people who had recurrent syncope [fainting] on the playing field, and this warning has just not been addressed or treated properly," Drezner says. "Then, the next time it happens, they die." Doctors asking specific questions can help, he says.

Athletes at Risk

But what if students have a clean slate? Some advocates suggest getting more of them screened using ECGs to identify potential heart problems before symptoms emerge, or worse, they suffer an SCA.

Some college-level programs use ECGs as part of the athletic screening process (see "Emergency Action Plan: Prepare for sudden cardiac arrest on campus" p. 8). There's a debate over whether widespread screening is useful. The AHA, for example, doesn't support widespread ECG testing because of the lack of an infrastructure to screen adequately and the potential for a high number of false positive results.

Drezner is an advocate for ECG testing, although not for everyone. The current medical system just isn't built to handle that level of testing, nor are there enough qualified people to read the ECG tests of the younger population, he says.

Student athletes have been the primary target for ECG testing because of the inherent risks involved. Some doctors note, however, that just because a student isn't part of a formal school athletic program, this doesn't mean they're not at risk. Many students are part of traveling sports teams and recreational leagues and participate in pick-up games that could be just as strenuous. Further, SCA strikes victims in classrooms and other sedentary environments, too (see "Shocking Watts," p. 4).

According to Drezner, however, three quarters of the SCAs among young people occur on the playing field, which makes it clear the risk factors are higher for athletes.

"This is the ethical debate that comes up," says Drezner. "How can you justify a screening program that's not available to all students? I would never discourage interested parents to request a thorough heart screening for their sons or daughters."

"It's a hot topic of debate," Vetter says. "There is a lot of controversy. I don't think everyone should be doing screenings if they're not evaluating them in a systematic way."

However, if the medical field can decrease the number of false positives and ensure patients get the proper follow up, Vetter envisions that the number of tests being done will increase. Better data is needed on typical ECGs for various age, gender and race groups.

Richard Huff NREMT-B, works as a volunteer EMT for Atlantic Heights in New Jersey and is the executive news director for CBS. Contact him via e-mail at richardmhuff@gmail.com.

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