



# PROTOCOL

## Inside

Page 2  
**Mechanizing CPR**

Page 3  
**MARS**

Page 4  
**EMS news**

Page 5  
**SFPA lectures  
& classes**

Page 7  
**LeadAmerica  
SFPA: Who's who**

Page 8  
**EMT grads  
at Adult School**

## Time for the SFPA Conference!

On **September 24-25**, the SFPA will host The ABCs of Emergency Medicine conference in San Francisco, focused on current issues and future prospects of EMS. Topics will include changes in cardiac arrest resuscitation, science and pitfalls of prehospital airway management, developing STEMI systems of care, chest trauma management, pediatric trauma, and the politics of EMS in California among many others. We have many distinguished speakers engaged for this event, so **save the date** on your calendar. Watch the SFPA web site and Facebook page for speakers, hotel and other information.

## SFPA receives AHA Award

At the sixth annual Bay Area Volunteer Appreciation Awards reception held at the Children's Hospital of Oakland Research Institute, the SFPA received the Community Partner's Award from the American Heart Association for its outreach efforts to the community through training, advocacy and involvement in the Heart Safe City initiative. Executive Director Theresa Farina accepted the award on behalf of the organization. The SFPA has also received the 2009 Lifesaver Heart Partner Award, and has been named Training Center of the Year two years in a row.

## National CPR Week a Success



On June 4 at noon, a strange site suddenly appeared in front of the SFPA building. Instructors and staff ran out to the sidewalk, threw down a few mats and manikins, and began stopping people passing by during their lunch hour. Why? The SFPA, along with countless other training organizations across the country tried to train one million people in CPR during National CPR and AED Awareness Week. Sponsored by the American Heart Association and formally recognized by the US Congress, the week was designed to bring greater awareness to the public about the critical nature of providing bystander CPR in the first

minutes after cardiac arrest. In San Francisco, SFPA instructors trained people in both free classes and the sidewalk CPR event using video and pounding music to help people perform high quality chest compressions. Overall nearly 100 people were provided CPR training in about 4 hours. Newspaper and television media were present, along with AHA regional staff.

## Mechanizing CPR

Steve Donelan

### Challenges with manual CPR

Instructors of AHA BLS and CPR courses strongly emphasize doing good chest compressions. It is well known that most CPR performance (as measured on recording manikins) is inadequate because compressions are either too shallow or erratic to circulate blood effectively, and that even the best manual CPR delivers only about a third as much oxygen to the brain as a functioning heart. There have been several attempts to develop mechanical replacements for manual chest compressions, and thus provide more effective and consistent CPR.

### History

A pneumatically powered chest compressor called the Thumper was first tested in 1961. It provides optimum and consistent chest compressions on the sternum, and a synchronized ventilator was added in 1968 (<http://www.medcompare.com/spotlight.asp?spotlightid=50>). Other devices tested in the 1990's included a hand-held device with a suction cup to lift the chest between compressions, and enhance venous return ([http://circ.ahajournals.org/cgi/content/full/112/24\\_suppl/IV-47](http://circ.ahajournals.org/cgi/content/full/112/24_suppl/IV-47)). Results of trials were mixed, however, perhaps because it was so cumbersome to use, and it was never approved by the FDA. Interestingly, a similar device was tried by Acklen in 1916, and an electrically powered version was tried by Eisenmenger in 1926. These are described and illustrated, along with other historic resuscitation techniques, in the 1974 *Supplement to JAMA*, along with the first Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC).

### LUCAS

The LUCAS Chest Compression System (<http://www.jolife.se/site.php?sid=c&ref=45&cat=45&lan=en>) is lighter and more compact than the Thumper, and can be carried in a backpack, but works on the same principle: simulating manual CPR by compressing the sternum. The device holds a compression down for 50% of the cycle, improving blood flow to the brain. To set up, slide a curved plastic base under the patient's back, snap the hinged side pieces to the base and start the compressor, which is mounted at the tops of the side pieces. It runs on a compressed air source or electricity.

### Autopulse

Zoll Medical's AutoPulse is an electro-mechanical device that performs chest compressions in CPR. It is about two feet wide, three feet long, and three inches thick, with the Tyvec covered LifeBand emerging from both sides that connects over the patient's chest with Velcro.

To use the AutoPulse, sit the patient up, slit the clothing down the back (coroner's cut), and slide the board into position. Lie the patient down on the board so that the yellow line is flush with the armpits. Connect the two halves of the LifeBand and push the button to size the patient. When the LifeBand is taut around the patient's chest, push the button again to start compressions.

The AutoPulse will reduce the volume of the chest by 20% per compression. Each compression is monitored by two separate computer processor controlled load sensing systems. Studies at Johns Hopkins and Stanford showed the device to provide 129% blood flow to the heart muscle and 131% to the brain. Besides validating the blood flow study from Hopkins, the Stanford study compared AutoPulse compressions to Conventional CPR (with Thumper) in a porcine model of survival at 24 hours post resuscitation. A Thumper was used instead of manual CPR for consistency and reduce any potential bias.

After 8 minutes of VF, 4 minutes of BLS CPR was provided with the Autopulse or Thumper (CPR followed prn defibrillation per AHA Guidelines) which was then followed by 4 minutes of ALS (weight appropriate dose of Epi followed prn defibrillation per AHA Guidelines). 24 hour Survival in the AutoPulse group was at 73% (all neurologically intact). There were no survivors in the Conventional CPR group.

Several clinical trials have also shown dramatic improvement in survival for out of hospital cardiac arrest where ambulance crews were trained to use the AutoPulse with no delays. These trials have been published in peer reviewed journals and have resulted in Poster and Oral Presentations at AHA Scientific Sessions and Resuscitation Science Symposia. Another advantage of the AutoPulse is that the LifeBand distributes the compression force over 100 square inches instead of being concentrated over a small part of the sternum.

## Autopulse in use



Autopulse applied by an ambulance crew



Autopulse maintaining circulation during hospital care of the patient.

## MARS

Steve Donelan

**Motivation, Association, Repetition**, use of all the **Senses**: This mnemonic for factors that affect learning is one of the first things we teach new instructors. We can find good examples of them all in the AHA BLS and CPR videos. They **motivate** students by showing scenarios of people having heart attacks who could be the students' family members, friends, or colleagues. And later they show survivors relating how the skills students will be learning saved their lives.

Two kinds of **Association** affect learning. First, associate what students do in the classroom with their own situations and experience. In the AHA First Aid course (and other courses), we can do this by asking students if they have experience with a problem they have just seen on the video or slides, e.g. diabetes or stroke. This makes the class more interactive as well as connecting classroom learning with life experience. Second, we need to help students associate the course topics with each other by making causal and logical connections, rather than just trying to memorize lists of signs, symptoms, and treatments. By making these connections in the classroom, they will be more likely to make them in a real situation.

**Repetition** reinforces learning and retention, and in skills practice develops muscle memory. But to avoid monotony, use the whole-part-whole technique (as the videos do), adding more components to a complex skill before putting it all together; then have students use the skill in a scenario.

In the AHA Practice While Watching BLS and CPR videos, students simultaneously **see** a skill component (e.g. chest compressions), **hear** the demonstrator and themselves counting, and **feel** themselves doing the skill. The only sense not engaged is smell (unless the students are sweating heavily). "I hear and I forget; I see and I remember; I do and I understand." And engaging as many senses as possible strongly reinforces learning.

So how can we use this principle in lessons that are not video-driven? When **demonstrating** a skill, have one instructor perform it **realistically**, talking only to the patient (not to the class), while another instructor provides vice-over narration, explaining what the first instructor is doing. If you are teaching alone, you can tell your **patient** what you are doing (as you would in a real situation), so that students will perform the skill realistically (including good patient communication) when they imitate you.

## EMS news

### Medicare Ambulance Relief

The NAEMT urges its members to contact their representatives in Congress to cosponsor the Medicare Ambulance Access Preservation Act (S. 1066, H.R. 2443), which would implement, starting January 1, 2010, a permanent 6% increase to base and mileage rates under the Medicare ambulance fee schedule, and permanently extend the bonus payment of 22.6% for transports originating in super rural areas. These increases are supported by the May 2007 report of the Government Accounting Office on the costs of providing ambulance services.

### Highway deaths fall in 2008-2009

One of the recession's few benefits is the lowest number of highway deaths in 2008 since 1961 (and a further 9% decline in this year's first quarter), because higher gas prices and the shaky economy meant fewer people driving. Other causes include a record 83% seat belt use, encouraged by tougher seat belt laws – in 30 states you can now get a ticket for driving unbuckled.

### EMS Disaster Fellowship at UCSF

A two-year program, starting this July, will help physicians who have completed an emergency medicine residency to gain experience in EMS disaster operations as well as clinical research techniques. The EMS Disaster Fellow will work with the Department of Public Health and the SF EMS Agency to lead several disaster related projects; work clinically at SF General Hospital Emergency Department; participate in the education of Emergency Medicine residents; and pursue a Masters level degree. Evan Bloom, MD, the first EMS Disaster Fellow, has prehospital experience as an EMT and in providing leadership for medical support to large events.

### Teen life saver honored

An Alamo girl who saved the life of a woman who had a sudden cardiac arrest on BART by doing CPR was interviewed on Channel 9 News. The news crew added interviews with others on SCA, and the importance of CPR and AED's. Watch the video at <http://cbs5.com/health/bart.cpr.girl.2.1039691.html>.

## AHA Volunteer of the Year



Elaine Rodahl, RN, MA, received the award in recognition of her 25 years of volunteer service to the American Heart Association as Regional Faculty, TCC at SFVA Medical Center, and in many other leadership roles.

### Stanford pandemic exercise

After dealing with hundreds of people in their Emergency Department during the swine flu scare, and getting a preview of what might happen in a real pandemic, Stanford Hospital tested a drive-through triage system that would keep potentially contagious people contained in their cars as doctors, nurses or pharmacists questioned them through the window. Using parking structures as triage centers avoids parking problems. To read more, go to: <http://news.stanford.edu/news/2009/june17/drive-thru-pandemic-screening-061709.html?view=print>.

### HEARTSafe communities

Connecticut was first to develop a HEARTSafe community program in collaboration with the AHA, to improve chances of surviving a sudden cardiac arrest by strengthening each link in the cardiac chain of survival. Communities qualify by accumulating points for CPR & AED training programs, permanent AED placements, first responders with AED equipped vehicles, ALS units, and an ongoing evaluation process. The SFPA is facilitating efforts to create a HEARTSafe region for the Bay Area. For additional information, contact Theresa Farina at [director@sfparamedics.org](mailto:director@sfparamedics.org).

# Lectures coming to the SFPA

## Pre-hospital Pain Assessment & Management

August 26, 6-8 pm Chris van Luen, EMT-P

Chris will bring us up to date on proper pain assessment and trends in pre-hospital pain management. He will discuss myths about pain assessment and pitfalls in pain management that leave many patients untreated. Geriatric and pediatric patients, and patients with cognitive impairment, are especially susceptible to under treatment because of inadequate assessment. Chris will also review the pre-hospital field trial fentanyl citrate he created, which was conducted at the Berkeley Fire Department, and the changes it could make to EMS in California.

Chris van Luen is a Paramedic Supervisor with the City of Berkeley Fire Department. His 23-year involvement in EMS includes service in the U.S. Coast Guard as an Aviation Survivalman and Rescue Swimmer. He started working as a paramedic in Alameda County in 2000, and continues to teach at local paramedic schools.

## Pre-hospital Treatment of Status Epilepticus

October 7, 6-8 pm Claude Hemphill, MD

As EMS veterans know, repeated seizures (status epilepticus) can lead to aspiration, anoxia, brain damage, fractures, hyperthermia, and cardiac muscle necrosis; and it can be very challenging to maintain the airway and prevent hypoxia, especially on scene or in the ambulance, while the patient is seizing. Dr. Hemphill will review the pathophysiology of the disease process, including possible causes, and describe current treatment approaches.

Dr. Hemphill is Associate Professor of Clinical Neurology and Neurological Surgery at the University of California, San Francisco, and Director of Neurocritical Care at San Francisco General Hospital. After completing medical school at Emory University, he did a Neurology Residency as well as fellowships in Critical Care and Neurocritical Care and Stroke at UCSF, where he has been on the faculty since 1996. He is co-director of the UCSF Brain and Spinal Injury Center at SFGH, whose mission is to promote research on mechanisms of injury and repair from acute central nervous system injuries. Dr. Hemphill is also a

founding director (and current Secretary) of the Neurocritical Care Society, has been Scientific Program Chair of their last five meetings, and is on the editorial board of their journal, *Neurocritical Care*.

## Dealing with Difficult Patients

November 11, 2009 Anthony Kastros

It's 3am on your fourth call after midnight, and this patient wants you to tell the aliens to stop using her toaster. She's also yelling at you for wasting taxpayer dollars, and has just called you a moron.

Everyone in EMS has encountered difficult patients. So how do you deal with them? Specifically:

- How do you keep from losing it in such situations?
- How do you manage to treat everyone with respect, even if they show you no respect?
- How do you continue to do a good job even when you don't feel up to it?
- How do you continue to enjoy your job?
- How do you make sure cell phone cameras don't capture images that make you look bad?

It isn't easy. However, you should have systems in place that will help you not only cope with, but even thrive in these challenging environments. Join us for a fun and interactive discussion of this topic.

Anthony (Andoni) Kastros is a Battalion Chief with Sacramento Metro Fire District. With 22 years in the fire service, he brings a wide variety of experiences, high energy and passion to his presentations. He teaches Fire Management, Rapid Intervention, and Incident Command for the State of California as well as leadership, team building and tactics to fire fighters throughout the United States. As a USAR Team Manager with Sacramento Task Force 7, he was deployed to Ground Zero on 9/11. Before all this, he spent 10 years on volunteer, private, and fire-based ambulances, transporting all kinds of fun and interesting people.

## To register for any of these lectures:

**Online:** [www.sfparamedics.org](http://www.sfparamedics.org)

**Fax** completed form to: (415) 543-0415

**Mail** completed form to: SFPA Registration  
657 Mission St. Ste 302  
San Francisco, CA 94105

**Call:** (415) 543-1161 ext 0

## Wilderness EMT & WFR

If you enjoy wilderness activities, this may be the course for you. EMT's and Paramedics who complete all requirements are certified as Wilderness EMT's; other participants are certified as Wilderness First Responders. Plus, you get CE's for every hour attended, at no extra cost!

WFR/WEMT trains you to understand and avoid wilderness hazards and cope with emergencies anywhere. You learn how to assess injuries and medical or environmental problems in remote situations, and do emergency care with whatever you have on hand or can improvise. You also learn skills not included in urban emergency care courses, such as reducing dislocations, building sleds and litters for wilderness evacuation, and herbal first aid. We use vivid slides and interactive teaching methods to bring the topics to life. Skills practice is intensive. Realistic simulated accidents help you put your skills together and develop your leadership abilities.

National certifications from the American Safety & Health Institute ([www.ashinstitute.org](http://www.ashinstitute.org)), valid three years, are recognized throughout the United States and in several other countries. **To be certified**, you must make up any skills training you miss, complete all skills logs, and pass the exams.

Steve Donelan (the lead instructor) is National Chairman of the Wilderness Emergency Care program he developed for the American Safety & Health Institute and author of the textbook. He is also a Master Instructor Trainer for ASHI, an Instructor Trainer for the National Ski Patrol, section editor on education for *Wilderness & Environmental Medicine* ([www.wms.org](http://www.wms.org)), editor of the SFPA newsletter, *Protocall*, and a peer reviewer of several standard textbooks. He has published many articles on emergency care and how to teach it.

We are currently planning our next WFR/WEMT class to start in January, which will be in an East Bay location, and meet Tuesday and Thursday evening from 7 to 10 plus some Saturday sessions for a total of about 80 classroom hours. For more information, see: <http://www.wildernessemergencycare.com/wfr/index.html>. When details are finalized, registration instructions will be posted on the SFPA web site.

## Scenes from WFR & WEMT classes



**LeadAmerica**

For 20 years, *LeadAmerica* (<http://www.lead-america.org/>) has offered academic and career-focused programs for students in grades 6 through 12. By interacting with successful leaders, they prepare themselves to be leaders in their future professions. On June 18, at the University of California Clark Kerr campus in Berkeley, a diverse group of high school students from around the country were introduced to the world of EMS and learned some basic life-saving skills with SFPA instructors. Here are some snapshots of our 20-minute workshops on trauma care and CPR.



**Protocol**

*A Publication of the SFPA,  
a non profit corporation*

**Editor:** Steve Donelan ([donelan@speakeasy.net](mailto:donelan@speakeasy.net))

**San Francisco Paramedic Association**

Tel (415) 543-1161 Fax (415) 543-0415

Web site: [www.sfparamedics.org](http://www.sfparamedics.org)

E-mail: [info@sfparamedics.org](mailto:info@sfparamedics.org)

**Board of Directors 2008-2009**

|                |                  |
|----------------|------------------|
| President      | Arthur Belton    |
| Treasurer      | Jorge Palafox    |
| Secretary      | Linda Buell      |
| Director       | Rich Pekelney    |
| Director       | Charlene Donahue |
| Past President | Jane Smith       |

**SFPA Staff**

|  |                  |
|--|------------------|
| Chief Executive Officer<br>& Director of Education | Art Hsieh        |
| Executive Director                                 | Theresa Farina   |
| Operations & Finance                               | Chris Zwior      |
| Education Manager                                  | Ed Sawicki       |
| EMT Program Manager                                | Scott Snyder     |
| Education Assistant                                | Karyn Freer      |
| EMT Instructor                                     | Carlos Melendez  |
| Registrar  | Don Lynne        |
| Assistant Registrar                                | Ranata Clark     |
| Office Assistant                                   | Julia Delgadillo |

**Advisory Board**

|                      |                   |
|----------------------|-------------------|
| Medical Director     | Preston Maxim, MD |
| CA EMS Commission    | Jane Smith        |
| National Faculty     | Mike Jacobs       |
| NAEMT Representative | Charlene Donahue  |

**Simulation Center Donors**

Our heartfelt thanks for their generous support to:  
Susan Hone, RN  
Christine Wachsmuth, RN

## EMT class graduates at the Berkeley Adult School



The SFPA recently completed its first EMT class taught at the Berkeley Adult School, in a unique partnership with the school and the Berkeley Fire Department to run an EMT program targeting residents of Berkeley and surrounding areas. In 11 weeks, the program combines rigorous study with an expanded clinical observation period of 50 hours. Our 15 graduates are now preparing to take the National Registry exam, and those who want to join the next class (beginning in September) can register through the Berkeley Adult School.

San Francisco Paramedic Association  
657 Mission Street Suite 302  
San Francisco, CA 94105

Return Service Requested