



EMS NEWS

AUGUST 2005

VOLUME 20

ISSUE 4

Fremont Fire Department's AutoPulse Field Evaluation

By Division Chief Bob O'Brien, FFD

In 2002, Revivant Corporation of Sunnyvale conducted a nationwide search to find first responder agencies interested in beta testing their new automated CPR device called the AutoPulse resuscitation system. The Fremont Fire Department (FFD) was chosen as a beta site because of its long history of field testing pre-hospital medical equipment and its cardiac arrest study which was published in JEMS Magazine, May 1996. Each site was provided with equipment and extensive training for its personnel in exchange for feedback and data collection. After completion of the beta testing, Fremont became one of only five AutoPulse Centers of Excellence (ACE) sites in the country.

Initially, our personnel were skeptical about the product. Once they received the orientation and used it in mock-codes, they embraced the AutoPulse and have contributed many ideas that have been incorporated into product enhancements. In addition, the feedback we have been able to share with other ACE sites has changed the way we approach cardiac arrest patients. As an example, our personnel start cardiac work-ups by using a standardized three-person approach. One crew member faces the patient and sits him or her up while a second crew member comes behind the patient and removes all clothing with a one scissor maneuver called the "coroner's cut" (the cut starts at the

bottom of the upper garment and proceeds up to the neck). Once this is done, the first crew member pulls the garments off, while simultaneously the third crew member slides the AutoPulse behind the patient. The patient is then lowered into position, is secured to the board, defibrillator electrodes and AutoPulse Life Band are applied. In all, the procedure takes an average of 45 seconds.



Fremont Fire Department personnel training with the AutoPulse

We were issued three AutoPulse devices initially and have purchased three additional units, which are strategically located throughout the City. Our goal is to equip the remaining six ALS companies with the device once funding is secured. Since February of 2003, we have used the device more than 80 times with very good success. Our Department is credited with having the first walk-out save worldwide. The 47% return of spontaneous circulation (ROSC) we see is significant. Paramedics are reporting that most patients regain vital signs within moments of activating the device. While it is difficult to find out the disposition on each patient, we know

of several patients that have walked out of the hospital, neurologically intact.

It became apparent to us, and our partner ACE sites, that when applied correctly to the patient meeting the identified criteria, it performs flawlessly. Based on scientific information, when manual CPR is done properly, the best manual chest compressions only provide 30-40% of normal blood flow to the brain, and only 10-20% of normal blood flow to the heart. When an interruption (e.g. switching rescuers) occurs, a sudden cardiac arrest (SCA) victim quickly loses the benefits of the blood flow resulting from chest compressions. Even the most seasoned EMS professionals will admit that manual CPR is difficult to do for long periods of time. Maintaining the proper rate and depth of compressions can only be done for so long, and studies show significant degradation, due to fatigue, after only one minute. The quality of human-generated chest compressions also varies widely due to training, experience, and the physical characteristics of both the rescuer and SCA victim.

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Two prehospital AutoPulse clinical studies were published in the January edition of *Prehospital Emergency Care*. Both studies showed a significant increase in return of spontaneous circulation with the AutoPulse when compared to manual CPR. ROSC increased 74% in Dr. Ornato's study in Richmond VA and 35% in a study by Dr. Casner and Dr. Isaacs in San Francisco.

Here's how the AutoPulse works: The affected person is laid onto the board, which extends from the head to the waist. The Life Band is attached to the board and is placed around the person's chest. With the push of a button, the band automatically adjusts to the patient's chest size. Another button push starts chest compressions. Microprocessors then automatically estimate a person's size and calculate the force necessary to compress the chest wall by 20 percent - the optimal amount of chest displacement. The AutoPulse delivers 80 compressions a minute across the whole anterior chest, rather than just the area of a human hand. It circumferentially compresses the chest, and as one of our captains put it after seeing it used for the first time on a patient, "It sure doesn't look natural, but boy does it work!"

The AutoPulse is effective for several reasons:

- ✓ Reinstates normal levels of blood flow to and from the heart.
- ✓ Provides non-stop, properly timed and effective whole chest compressions.
- ✓ Allows emergency responders to focus on other needs during a rescue operation and eliminates the pauses that usually occur during a code.
- ✓ Provides the oxygen needed for resuscitative drugs and defibrillation to be effective.

- ✓ Continues effective CPR even if the patient is being moved a great distance.
- ✓ Improves safety as prehospital personnel can wear seatbelts in the back of the ambulance.

The FFD paramedics have noticed an immediate and profound change in the patient's ECG and coloring once medications are administered. They are actually getting high oxygen saturation readings, normal CO₂ readings, strong pulses and blood pressures with the board operating. In most cases, a shockable rhythm develops immediately following medications such as epinephrine.

As an ACE site, the Fremont Fire Department is committed to continued sharing of data and product enhancement information with our partners at Revivant and their parent company, Zoll Medical Corporation. It has been an honor for our organization to be involved in this revolutionary product's short history. In my 33-year fire service career, I've never seen a product that performs as well, nor have I seen such enthusiasm from firefighters about an EMS product.



The AutoPulse has been commercially available for well over a year and is now used in EMS systems throughout the country. In the Bay Area, departments using the AutoPulse include Alameda County Fire, San Mateo Fire, Santa Clara County Fire, San Ramon Valley Fire, South San Francisco Fire, and Woodside Fire. San Mateo County Fire will soon have seven in place.

For more information contact me at bobrien@ci.fremont.ca.us or (510) 494-4223.

Senior Injury Prevention Conference Hits the Road in 2005

By Colleen M. Campbell, SIPP Coordinator

The 5th annual statewide Senior Injury Prevention Project (SIPP) Conference, held May 19th in Sacramento, established this conference as "a statewide event." The conference was also significant in that it was co-hosted through a partnership between the Alameda County SIPP, the California Department of Health Services and UC Davis Medical Center.

This year's theme was "The Tools of Prevention." With help from SIPP partners and funding from Archstone Foundation, the event garnered rave reviews from the 100 individuals in attendance.

Presentations included information on falls prevention, mental health, driving safety and mobility, physical fitness, and marketing and motivation.

Each attendee also received:

- A video, *Taking Steps to Prevent Falls*
- The American Automobile Association CD "Roadwise Review"
- "Sit and Be Fit" - exercise video for falls prevention
- Tip sheets, assessment forms and other practical and useful tools to help in the work of preventing older adult injuries.

This year's conference was designated as an *Independent Aging Event* for the 2005 White House Conference on Aging (WHCoA). Attendees had the opportunity to make suggestions and recommendations that will be submitted in a report to WHCoA. Delegates will be meeting in October to decide on a number of recommendations that will be sent to the President and Congress to guide national aging policy for the upcoming decade.

If you would like more information about the Annual Senior Injury Prevention Conference or SIPP, contact Colleen Campbell at (510) 577-3535 or ccampbel2@acgov.org.

Alameda County Trauma Center Data 2004

Bill Sugiyama, EMT-P, Trauma Coordinator

What is the importance of trauma data? Cheryl A. Anderson, the Director of the Trauma – EMS Systems Program for the Department of Health and Human Services states:

“Quality data allows health care providers, policy makers, researchers, and both community and professional organizations to further establish a coordinated approach to trauma care and injury prevention. Trauma data will provide important information at the local, State, and national levels to:

- ✓ Evaluate and improve the timeliness, appropriateness, and quality of patient care.
- ✓ Provide a system for comparing patient outcomes across service areas and provider groups.
- ✓ Identify environments in which individuals are at high risk for traumatic injuries.
- ✓ Prioritize and evaluate public health interventions related to injury prevention.
- ✓ Provide data for trauma care and systems benchmarking.
- ✓ Support the improvement of processes in health care delivery.”

Comparing Alameda County trauma center activation numbers for 2003 vs. 2004, we found an overall increase of 18%. Individual trauma center’s data breaks down as follows:

- ✓ Highland Hospital saw a 5 % increase from 1838 to 1942
- ✓ Children’s Hospital - Oakland had a 25% increase from 457 to 573
- ✓ Sutter Eden Medical Center 30% had the most significant increase from 1609 to 2084

Blunt trauma was the predominate traumatic injury with a combined 86% for all activations. Injuries from motor vehicle accidents accounted for 44% of the total while falls came in second at 15%. Comparing our numbers to the National Trauma Data Bank we find that 48.5% are from motor vehicle collisions and 16.7% are from falls.

The breakdown for penetrating trauma, with 73% being transported to Highland Hospital, was as follows:

	Gun	Stabbing
Highland	250	181
Eden	63	84
Children’s	7	5

- Additional trauma data from 2004:
- ✓ Traumatic injuries from assaults totaled 11% overall or 490 patients out of 4599 trauma activations.
 - ✓ Of all the trauma activations in 2004, the majority were male, 69%, with the most significant

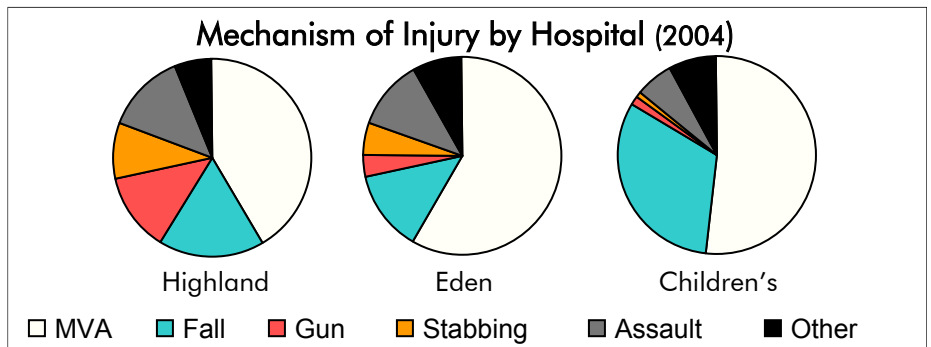
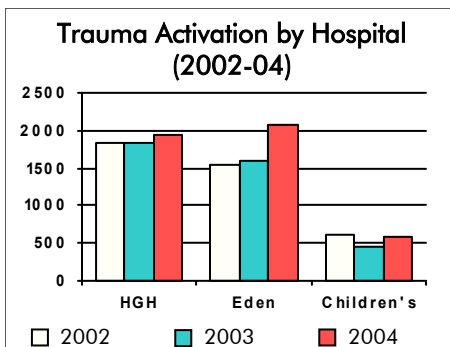
portion falling between the ages of 14 to 35.

- ✓ The survival rate for all trauma activations in 2004 was 96%, or 4268 out of 4432 patients.

Helicopter transports increased 16% in 2004 to 125 compared to 107 in 2003. The regions requiring the most helicopter responses were Livermore – Pleasanton and unincorporated southeast Alameda County totaling 86% of all helicopter volume. Motor vehicle and motorcycle accidents provided 74% of all helicopter requests for 2004 with males accounting for 74% of the patient volume. Helicopter response times to the scene averaged 21 minutes with on-scene times averaging 7 minutes and helicopter to trauma center transport times averaging 12 minutes.

We hope this article has expanded your understanding of the most common traumatic injuries being encountered in our county and why. Hopefully this brief summary of trauma data has piqued your interest to look more deeply at specific problems in the field of traumatic injury and strive to improve the quality of care provided to our patients.

Contact Bill Sugiyama if you have any questions or comments at william.sugiyama@acgov.org or (510) 618 – 2033.



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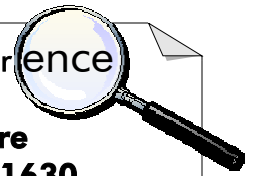
Newsletter Production
John Vonhof, Editor
Kris Helander-Daugherty, Design & Layout

What's New on the Web



- Final version of the 2006 revised policies
- More information on the EMS Prehospital Care Conference

Alameda County EMS Prehospital Care Conference



Terrorism, Trauma, Smoke, CSI & More
Wednesday, November 9, 2005 0800 – 1630

- * **A Case of Tubes and Ties: What's Current about Airway and Cervical Spine Management** - Arthur Hsieh, MA, NREMT-P, EMS Educator, Director, Hospital Consortium Education Network
- * **The Israeli Response to Terrorist Bombings** - Mike Petrie, San Francisco EMS Administrator, EMT-P, MA, Visiting Associate Professor at The Center for Homeland Defense and Security at the Naval Post Graduate School
- * **Where There's Fire... There's Smoke** - Rob Schnepf, EMT-P – Alameda County Fire Department
- * **Introduction to Forensic Pathology** - Brian Peterson, MD, Forensic Pathologist, Forensic Medical Group, Inc.
- * **Dealing with Facial Trauma - A Patient's Perspective** - DeeDe Vultaggio, RN – Alameda County Fire Department & Eden Medical Center, and Marty Koblis
- * **The Impact of Good CPR** - Jim Pointer, MD, Alameda County EMS
- * **Crime Scene Incidents** - Detective Sergeant Linda Gibbons, Supervisor Major Crimes Unit, San Mateo County Sheriff's Department.

7.0 hours of continuing education for EMTs and paramedics (#01-0001).
7.0 hours of continuing education for RNs (pending).

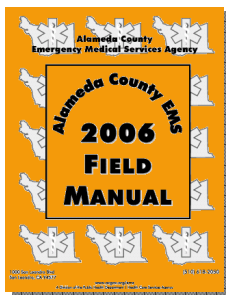
Location: Marina Community Center, 15301 Wicks Blvd., San Leandro, CA
Registration & Information: Complete information including registration, cost, schedule, and maps can be found at <http://www.acgov.org/ems/conf>



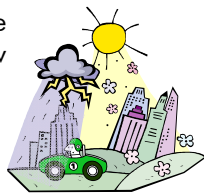
News & Announcements . . .

2006 Policy Review Process has come to an end. Thirty-three policies were revised or updated, and three new policies/procedures were added:
✓ Smoke inhalation
✓ Intra-nasal naloxone
✓ Intraosseous infusion
New policies go into effect December 1, 2005.

The **2006 Field Manual** will be available in the Fall, just in time for the mandatory policy update training offered by your provider agency. Manuals will also be available from the EMS Agency



for \$7.25 each. For more information go to the EMS website.



New driving law began July 1, 2005 that requires a driver of a vehicle to turn on his/her headlights during

inclement weather, defined as a condition that:

- ✓ prevents a driver from clearly discerning a person or other motor vehicle from a distance of 1000 feet, or
- ✓ requires the continuous use of windshield wipers due to rain, mist, snow, fog, or other precipitation or atmospheric moisture.

For more information on this law check out AB 1854, Simitian.

Four Alameda County Fire Departments welcome new Chiefs. They are:

- * Berkeley Fire Department: Chief Deby Pryor
- * Fremont Fire Department: Chief Bruce Martin
- * Livermore/Pleasanton Fire Department: Chief Bill Cody
- * Newark Fire Department: Chief Demetrious Shaffer

EMS website:
www.acgov.org/ems