

From the Editor

Dramatic Rescue is EMS Team Effort

Editor's note: The following article recounts the rescue of Chad Trenhaile, a 25-year-old semi driver who was trapped in his rig following a motor vehicle accident on Interstate 35W last November, and Ellen and Brian Ross who were also injured in the accident. Updates on how they are doing now are included in a separate story in this issue.

"It was as though someone had thrown a fly into an aluminum can, crushed it, and then said, OK, now get it out alive." That's how Capt. Mike Seide of the Minneapolis Fire Department described the daunting task ahead of him and dozens of others on Nov. 2 of last year.

At approximately 12:20 p.m., Seide and his crew on Ladder 1 witnessed the aftermath of a horrendous crash on Interstate 35W. A semitrailer truck had overturned and slid approximately 150 feet. It took out nearly 50 six-by-six guardrail posts as it crossed the center median and traveled across to the other side of the freeway. Seide immediately ordered a full assignment response to the scene — three engines, two ladders, HazMat team, ambulance, law enforcement, and two large tow trucks. "Mike's response in getting the proper equipment and personnel to the scene quickly was the first crucial part of having a successful outcome," said Firefighter Shanna Hanson, who was the driver on Ladder 1.

Mike Rogers and Glen Wolters were the first HCMC Paramedics to arrive. "The scene was like no other I've ever experienced," said Rogers. Diesel fuel and radiator fluid covered the roadway, the semi's engine had been ejected 20 feet from the truck, there were two people trapped in an SUV, and at least one person trapped in the semi.

Wolters assessed the people in the



SUV while Rogers approached the semi. The two people in the SUV — Brian and Ellen Ross — were critical. Both were rapidly extricated by MFD personnel and transported to HCMC, code 3, by paramedics Wolters and Earl Boisjolie. "As I approached the semi, I have to admit, I didn't think anyone inside could be alive," confessed Rogers.

What he and the other rescuers saw amazed them all. Twenty-five-year-old Chad Trenhaile was trapped in the mangled wreckage. His body was entangled and surrounded by twisted metal, fiberglass, guardrails, and a cement pillar. His torso was supine with his body visible only superior to his umbilicus. His right leg was bent into a position directly over his head.

Paramedic Randy Elledge was on the second ambulance to arrive at

the scene and described what he saw this way. "My first thought was that we had two victims. My second thought was that we must be looking at an amputation," he said. Other rescuers describe similar reactions upon their initial observations. Further inspection revealed that there was indeed only one victim and that his right leg had not been amputated but rather twisted into that precarious position.

Patient care began as Rogers assessed the patient and found that miraculously Chad was alert and oriented. His B/P was 138/ systolic and he was tachycardic. He had a laceration at his left temple and his abdomen was tender, but not firm or distended. A cervical collar was placed, oxygen applied, and two large bore IVs established. Medical control was called and apprised of

Rescue continued from page 1

the situation. "I was concerned that we might be dealing with a compression syndrome situation. I was concerned that he might immediately exsanguinate if we removed the wreckage encasing his abdomen and legs," explained Rogers. Rogers contacted medical control and spoke with Dr. Jeff Ho regarding the situation. Dr. Ho ordered that the patient receive two liters of normal saline prior to extrication.

The additional personnel and equipment were now arriving to assist with the painstaking extrication that would take nearly three hours to complete. "Mike [Seide] and I met, had a brief conversation regarding how we were going to attack this, and then went to work," said Elledge. Both worked closely with tow truck operators, fire personnel, and law enforcement to provide an efficient and safe operation.

A hole was cut in the top of the cab to secure the chains that were hooked into three different tow trucks. A three-way system was in place that allowed Elledge to keep in constant view of the patient while Seide and a tow truck driver gave signals to the three drivers to pull and stop based on signals from Elledge. Seide described a procedure that literally was to move less than an inch of debris at a time. "When the metal was moved in one direction, there would be a counteraction of movement in the opposite direction," explained Seide.

In order to protect the patient from further injury, metal that was moved by the tows needed to then be spread out and cut. Another problem was that there was little or no tensile strength left and often the tow chains would simply shred metal. A long backboard supported by a guardrail on one end and counterweight on the other was placed over the patient to protect him from falling debris. It was also used as a plank support for Firefighters Andre Sewell and Steve Dziedzic as they took turns operating the Hurst tool above the patient.

Patient care efforts continued throughout — blood was drawn and sent to the hospital for cross match in anticipation of Chad's needing several units. Two units of whole blood were transported to the scene and administered to the patient. Firefighter Shanna Hanson provided constant verbal

contact with Chad throughout most of the event. This continuous patient contact led to early detection of hypothermia and warm IV fluids were administered.

The rescuers reported several "magical" moments. One such event was when a toolbox from the cab fell into Sewell's arms as he was using the Hurst. It contained a wrench that Hanson used to loosen a bolt, which was a final step in releasing the right leg from its entangled position.

Rescuers spent more than two hours freeing the majority of Chad's body from the wreckage. The left leg, however, could not be disentangled and Chad's condition was beginning to deteriorate further. Emergency Medicine Physicians Brian Mahoney, Jeff Ho, and Marc Conterato were on the scene and made the decision that an amputation of the left leg was necessary to save the patient's life. Dr. Mahoney ordered that a tourniquet be placed on Chad's left leg. Oxygen tubing was the only thing both firm and flexible enough to thread around his leg through the debris.

Chad was still awake and understood that an amputation was necessary to save his life. Just prior to giving Chad the general anesthetic, ketamine, "I remember telling him I wouldn't let him die in the truck," recounts Ho. Five-foot, seven-inch Dr. Ho of HCMC performed the surgery and five-foot, eight-inch Boisjolie assisted. Ho operated while prone and propped on his elbows. Boisjolie was on top of Ho with his knee digging into his back.

The amputation took approximately 20 minutes. There wasn't enough room in the hole where the leg was trapped to get leverage to operate the surgical tools.



The Rosses SUV was surrounded by garbage spilled from the semi truck.



Modifications were made in the tools, but nothing seemed to work until Chief Mike Carswell suggested a battery operated reciprocating saw. "Ho turned it on and a smile flashed across his face," reported Seide, "then he said, this is going to work." A few moments later Chad was pulled from the truck and transported to HCMC, but the story doesn't end there.

On arrival at the stabilization room, Chad's body temperature was 90 degrees. Within minutes, he experienced a cardiac arrest resulting from blood loss and hypothermia. Resuscitation measures began and a pulse was obtained after 20 minutes. "Thank goodness no one quit," said Dr. Mahoney. "Chad was in a Pulseless Electrical Activity (PEA) rhythm. He needed to be warmed and given blood transfusions prior to us even thinking about discontinuing resuscitation."

Doctors Mahoney and Ho both credit the teamwork involved for making this a successful rescue.



Staff Receives Meritorious Service Awards

On Jan. 12, the Minneapolis Fire Department (MFD) honored nearly 50 public service individuals who were involved in this dramatic rescue. It was the largest award ceremony ever for a single rescue.

Those from HCMC who received the MFD's Meritorious Service Award were:

- Dr. Brian Mahoney and Dr. Jeff Ho, Emergency Medicine
- Paramedics Earl Boisjolie, Randy Elledge, Mike Rogers, and Glen Wolters, Ambulance Service
- Ambulance Service Duty Supervisor Tom Ward
- Paramedic Student Angela Anderson

Additional EMS professionals from HCMC who were instrumental in the rescue effort were Ambulance Service Dispatch staff Joe Blank, Steve Luitjens, and Peter Narow.

"Law enforcement — Minneapolis Police, Hennepin County Sheriff, and State Patrol — kept the scene safe from traffic and provided easy access for shuttling blood, equipment, and personnel," Dr. Ho said. "Minneapolis Fire did a tremendous job as did the paramedics, dispatchers, and Miller towing. It was an excellent example of utilizing all the appropriate resources. The amputation was a small part of this rescue; it would have been useless without first extricating the rest of his body. It was the painstaking effort of dozens of EMS personnel that made this rescue a success."

"But this was only the beginning," added Dr. Mahoney. "Then it took many more surgeons, nurses, and others to carry Chad through days of critical care at HCMC. Every rescuer at the scene, in the Emergency Department, in the operating room, in the intensive care unit, and beyond played a vital role in this successful story."

Cindy Anderson, Editor
EMS Education Specialist
cindy.anderson@co.hennepin.mn.us



Accident Updates

by Shannon Kelly, HCMC Public Relations

Chad Trenhaile:

Following the I-35W accident, Chad Trenhaile was in the hospital for 17 days being treated for his injuries. He was transferred to HCMC's Knapp Rehab Center on Nov. 18 for about a month of rehabilitation. In addition to the amputation of his left leg, he suffered soft tissue injuries to his right leg and ligament injuries to his right knee, for which he wore a knee immobilizer.

Chad was discharged to his home in Iowa in mid-December after modifications such as wheelchair ramps, etc., were made to his home. At discharge, Chad was able to independently propel his wheelchair on even and uneven surfaces. He could independently transfer himself from his wheelchair to a bed or to a car seat, etc. And he could independently perform all of the exercises needed

to get ready for the fitting of his prosthesis, according to Sarah Lundgren, who was one of his physical therapists at Knapp.

"He has a very good supportive family," said Lundgren. "His parents and sister came to Knapp to learn how they could best assist him. He is very motivated to return to as independent a life as possible."

Chad is currently receiving follow-up care in the HCMC Amputee Clinic and in the Orthopaedic Clinic. He has moved out of his parents' home and now shares living accommodations with a roommate. One of the most immediate goals for him is to become weight-bearing on his right leg, in part with the help of a knee brace, perhaps with additional ligament surgery in the

continued page 4

Accident Updates

continued from page 3

future. Eventually, he'll be referred to a prosthetist who will work with him to fit a prosthesis for his left leg. He can then decide whether to continue future prosthetic care at HCMC or closer to home in Iowa.

The Ross Family:

The couple in the SUV — Ellen and Brian Ross — suffered many injuries in the accident as well. They were initially admitted to the intensive care units at HCMC. Ellen suffered a broken back and ribs, and serious internal injuries. Brian was treated for skull fractures; broken left ankle, wrist, and fingers; shattered left knee; and eye injuries. Ellen was later discharged to their home; Brian was discharged to North Memorial Medical Center for further treatment and rehabilitation.

Today, both are recuperating at home. Brian spends six hours a day in assistive

rehabilitation exercises to strengthen his left leg. He is not yet weight-bearing on that leg, and so must get around on crutches or in a wheelchair. A home health care aide visits three times a week to assist them with activities of daily living. Neither of them can drive, and neither has been able to go back to work because of the injuries.

Still, they look on the bright side. "It's been wake-up call for our family," Ellen says. "There are frustrating moments, but we know we're lucky to be here, and I think our children have developed a new appreciation for their parents!"

"We especially want everyone to know how much we appreciate the help they gave us," says Ellen of all the EMS professionals involved in their rescue. "They are the reason we are still alive."



Chad and his parents review his discharge exercises with his physical therapist Sarah Lundgren.



The Beat Goes On . . .

"The Beat Goes on" Program was instituted to recognize EMS professionals who used the Automated External Defibrillator in the field with successful results. Those recognized receive a specially designed pin and certificate acknowledging their achievements. Congratulations to these recent 'Beat Goes On' honorees:

Carlos First Responders

Cyndi Dirks
Ruth Nodsle
Andrew Schackel
Dave Schackel
Rick Severson
Terry Toenjes

Chatfield Ambulance

Shane Fox
Sue Kester
David Sovinski
Cherie Stevens
Josh Thompson
Dale Wright

Columbia Heights Fire Department

Matt Field
Steve Hall
John Larkin
Linda Shabel-Ryan

Detroit Lakes Police Department

Tim Eggebraaten
Paul Goecke
Robert Wirtz

Lake Benton First Responders

Kris Christensen
Bev Martinson
Tom Miller
Larry Neuberger
Shirl Serie

Minneapolis Fire Department

James Bailey
Shanna Hanson
Mark Olson

Tri-County EMS

Tammy Blazek
Brianna Geer
Stephen Holm
Mark Stromsodt

Treasure Island Casino Medical Department

Wendy Flum
Peter Freeberg

Washington County Sheriff's Department

Rick Gruber

White Bear Lake Fire Department

Robert Flick
Jon Rasch
Eric Stannard

White Bear Lake Police Department

Steve Clark
Duane Siedschlag

New ACLS for Experienced Providers

by Judy Everson, EMS Education Manager

Advanced Cardiac Life Support — how can we forget our first ACLS provider course? Two days of defibrillators, drugs, intubation, rhythm recognition, and megacode. I remember completing the course for the first time some 18 years ago. It was quite nerve-racking at the time, but there was a great sense of accomplishment and confidence when it was over. And then there were years of faithfully attending renewal training every two years. At first this was a great opportunity to fine-tune skills and knowledge, but as my experience grew so did the desire for something a bit more challenging.

Toward that end, the American Heart Association recently introduced its latest contribution to emergency cardiovascular care in the newly developed ACLS for Experienced Providers (ACLS-EP) course.

ACLS for Experienced Providers is designed for health care practitioners who have completed ACLS Provider training and are experienced in the knowledge and skills of Advanced Cardiac Life Support. Whereas the traditional ACLS course focuses on the first minutes of resuscitation following cardiac arrest, the ACLS-EP course helps the experienced provider to anticipate and prevent cardiac arrest. The premise of ACLS-EP emerged from these two questions:

1. If you knew what caused a person to go into cardiac arrest, would that change the way you tried to resuscitate the person?
2. If you got to the patient 10 minutes before cardiac arrest and you knew the cause, could you prevent the arrest from occurring?

ACLS-EP provides an alternative for ACLS providers who want to maintain their ACLS provider status by attending renewal training every two years. ACLS-EP includes verification of the standard ACLS core skills plus new information on how to assess and manage additional critical cardiovascular emergencies. ACLS-EP can also be attended as a CME offering for those participants who are not required to document successful completion of ACLS training.

The course is approximately 10 hours in length. A typical class begins with CPR and Automated External Defibrillator skills

verification and verbal assessment of core ACLS actions. The bulk of the day is spent in small groups. Case studies are presented and discussed focusing on prearrest and arrest management for the following clinical conditions: Cardiovascular Emergencies, Electrolyte Abnormalities, Environment Emergencies, and Toxicological Emergencies.

HCMC EMS Education's Community Training Center is proud to announce the introduction of ACLS-EP to our region on March 3, 2000. Dr. Richard Gray from the Department of Emergency Medicine at HCMC serves as the course medical director. Several health care professionals from around the area have attended ACLS-EP

Instructor training in Chicago and will be involved in the upcoming March course. The course will be held at HCMC and is sponsored by the American Heart Association. An additional class will be held during 2000.

Participants in the instructor training were challenged by the program and are enthusiastic about the introduction of the course in Minnesota. If you are interested in additional information, please call Rachel Druker at the American Heart Association at (612) 835-3300 or HCMC EMS Education at (612) 347-5681.



The Unseen Side of EMS

by Corey Sargent, EMS Education Specialist

There is a bad car accident on the interstate. Someone slips off the roof. The elderly woman next door collapses on her sidewalk. All these incidents warrant a call to 911. Every resident across Minnesota can call 911 and reach one of the 112 local public safety answering points or 10 state patrol communications centers for access to emergency services.

But what happens with that call? What happens between the time the public calls with these emergencies and our response to them? Herein lies the unseen side of EMS.

Calls to 911 are answered by Emergency Medical Dispatchers (EMD). There is probably no medical professional that has, potentially, more at stake on a case-by-case basis than the EMDs. The core time for the EMD's patient evaluation and decision-making is routinely around one minute. Unfortunately, the EMD is not generally accepted as a medical professional by EMTs, paramedics, and other members of the medical team. Therefore, Emergency Medical Dispatchers tend to occupy an ambiguous role within the medical profession and

public safety agencies. Their role is unclear, and it is often questioned whether the EMD's responsibilities are truly medical in nature.

Early in the evolution of emergency medical dispatching, dispatchers were often seen as little more than public safety clerks. Their function for EMS was limited to finding a scene location, identifying the emergency, and sending a unit to it. In 1978, the first set of comprehensive medical protocols was developed, and the professional Emergency Medical Dispatcher was born. This also opened the door for the "zero minute response" concept developed by Dr. Jeff Clawson of the National Academy of Emergency Medical Dispatch. This concept refers to the idea of bringing immediate medical care to the patient via the telephone. EMDs became emergency medical response by "remote control."

Properly trained Emergency Medical Dispatcher performance is based on protocols similar to other medical professionals, with two exceptions: the short decision-

continued page 6

Come Train with a **Leader in the Field**

Hennepin County Medical Center's EMS Education Department offers a wide range of educational opportunities for the year 2000, including:

Advanced Cardiac Life Support

The ACLS two-day Provider Course teaches advanced methods of cardiopulmonary resuscitation and emergency cardiac care as established by American Heart Association guidelines.

Advanced Pediatric Life Support

This two-day APLS course is designed to teach physicians and nurses the skills and knowledge necessary to manage pediatric emergencies of a medical or traumatic nature.

Advanced Trauma Life Support

The ATLS course is a two-day course designed to teach physicians a systematic approach to assessment and treatment of the trauma patient.

Basic Trauma Life Support & Pediatric BTLS

The BTLS Provider Course is a two-day course that provides training in the skills of patient assessment, management, and packaging of the trauma patient. It is designed for all pre-hospital providers, i.e. paramedics, EMTs, and nurses. Pediatric BTLS applies the same principles to the pediatric population.

Emergency Nurses Pediatric Course

The ENPC is a two-day course that provides training in pediatric core-level knowledge and skills for registered nurses.

Trauma Nursing Core Course

The TNCC is a two-day course developed by the Emergency Nurses Association that provides training in trauma management principles for registered nurses.

Hennepin County EMS Education also offers a variety of other educational opportunities including First Aid and CPR, EMT, First Responder and Automated External Defibrillator (AED) training. For more information or registration assistance, contact Michelle at (612) 347-5681.



The Unseen Side of EMS continued from page 5

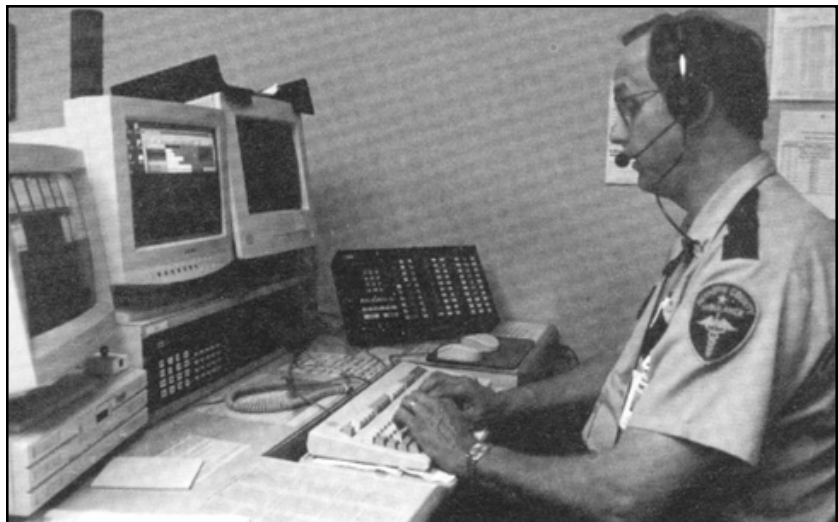
making time frame and a lack of direct patient contact. This means dealing non-visually with someone who is often not the patient. The dispatcher must rely heavily on interrogative skills laced with protocol-driven questioning. From this questioning, the EMD is able to determine and ensure scene safety, then dispatch appropriate personnel at the appropriate response level while providing adequate patient and location information.

In addition to answering 911 calls and dispatching EMS vehicles, dispatchers serve as a vital communication link with police, fire, sheriff, ambulance, and other public safety units in the field. They are an essential part of the team for effective public safety.

We should consider EMDs not only as our co-workers, but also as medical professionals and our medical colleagues. They receive

tools and training to do their jobs just as the medical responders do. We shouldn't lose sight of the importance of their role in the delivery of EMS as a whole.

Rather, we should consider them an extremely effective front line in our customer service-oriented business.



HCMC Emergency Medical Dispatcher Steve Luitjens.