



REFRESHER

From the Editor

After reading the articles for this issue of *The Refresher*, I'm reminded why I honestly enjoy this profession called EMS. The answer is in three short words: "It's the people." This is truly a "people profession." Most of our work is accomplished through interaction with others — co-workers, patients, families, bystanders, and allied health care personnel. This variety of contacts is what keeps the job fresh, challenging, and interesting.

The People - The Proof

For 15 years, I've worked side by side with some of the best prehospital care providers anywhere — the kind of individuals who ALWAYS come through when the chips are down. There are probably such individuals in your own communities of whom you've thought, "If I were critically ill or injured, I'd want *that person* taking care of me. (See article page 2.)

In the classroom, our skilled and knowledgeable assistant instruc-

tors have taught me much about staying dedicated to the profession and keeping a fresh perspective. Our assistant instructors come from varying EMS backgrounds to help us teach students in our small-group skills practices. Recently, I assumed a part-time teaching job where no assistant instructors are used. Needless to say, my appreciation for the magnitude of work performed by our assistant instructors has increased greatly. (See article page 4.)

For the past year, my office has been in the same building in

which the Hyperbaric Medicine staff treats patients with a variety of problems and a wide range of acuity. I've had the privilege of observing the seemingly effortless grace with which these patients are so expertly cared for. Their medical and emotional needs are met with genuine professionalism. (See article page 2.)

Without question, it's the people who make this EMS profession great. Thanks to all of you for doing what you do so very, very well!

Editor's note:

As this issue of the *Refresher* was going to press, a very traumatic motor vehicle crash occurred near HCMC that required the heroic team effort of a number of EMS providers. A tremendously difficult and

painstaking extrication was undertaken to save the life of a patient trapped in a semitrailer on I-35W. Please look for an article chronicling these life-saving efforts in the Winter issue of the *Refresher*.

Controversies in Helmet Removal

by Mendee Bayless, NREMT-P, EMS Education Specialist

It's that time of year again. Fall — the smell of burning leaves, the chill in the air, and the sharp crack of helmets and pads on the gridiron. That's right, it's also football season. And even as we enjoy watching football, our line of work often leads us to thoughts of sports injuries and the unique challenge they pose to EMS workers. The types of injuries can be wide and varied, from simple lacerations or fractures, to those of a more complex nature such as head, neck, or back emergencies.

Fortunately, serious injury on the football field is becoming a less common occurrence, in large part due to the amount and proper use of protective equipment. Each sport has its own unique set of protective equipment, which is specifically designed to protect the participant from injuries inherent



in that activity. However, protective gear often limits access to an injured area due to the large surface area that is covered. For example, football helmets and pads eliminate and/or reduce the severity and number of injuries, but they also make assessing and treating patients difficult.

Shoulder pads can be cumbersome and may include a "neck roll," which is intended to reduce excessive neck extension. Football helmets in particular have cage-like face masks and are intended to fit the wearer tightly. They can be challenging to remove without causing additional spinal manipulation.

So, what do you do when faced with an athlete with possible spine injuries who is wearing protective gear? That very topic was recently discussed by a task force comprised of nationally certified athletic trainers, sports

continued page 3

Officer's Life Saved

by Bob Treague, B.A., NREMT-P, EMS Education Specialist

On Saturday, July 3, 1999, police officers Daniel Rusch and Carter Staaf responded to a call for help at a local Food-N-Fuel store in Greenwood, Minn. To these first responders, this call didn't seem much different from other calls for help. When the officers approached the scene, they found a man sitting in the front seat of a car in full cardiac arrest.

The strange twist to the call came when the officers recognized that the victim was one of their own. The person in cardiac arrest was fellow officer Chester Jorgenson, a 46-year-old father of two teenagers, who had no history of heart disease. Officer Jorgenson was off duty at the time he developed chest pain and was being driven to the hospital by a friend. When Jorgenson's condition worsened, the friend stopped to call 911.

There's always a chance that first responders could be called to help a seriously ill or injured friend or family member. "For a split second, I thought 'Oh, my gosh,'" said Rusch, who has known Jorgenson for 20 years. "And then the training takes over." Officers Rusch and Carter maintained their composure during this difficult situation and followed the appropriate protocol for this type of medical emergency.

The officers removed the victim from the car and assessed breathing and pulse. When no signs of life were detected, the officers began CPR with the help of a citizen and Excelsior Fire Rescue. Officer Rusch set up the automatic external defibrillator (AED), which analyzed Chester Jorgenson's heart rhythm and delivered five shocks prior to the arrival of the HCMC paramedics. After the shocks from the defibrillator and CPR, Jorgenson's pulse and breathing were restored.

HCMC paramedics Paul Peterson and Bruce Hanson had arrived on the scene while Officer Jorgenson was in full arrest. As they set up their equipment and took over responsibility for the patient, the police officers delivered the fourth and fifth shocks with the AED, and Jorgenson's heart responded and generated a pulse. As the paramedics started the IV, the patient again reverted into a V-fib. The paramedics defibrillated the patient one additional time with their manual defibrillator.

Jorgenson had now been defibrillated a total of 6 times. Jorgenson's heart responded after the sixth shock with a rapid V-tach. Peterson stabilized the patient's heart with Lidocaine. Within minutes, the patient started to regain consciousness but he became combative due to the hypoxia. The paramedics gave Jorgenson 3 mg. of Versed and followed that with an additional 2 mg. to calm him. Jorgenson was transported to Methodist Hospital, where he was admitted to coronary care. He is currently recovering at home.

According to Jorgenson, "All I can remember is having a heart attack and waking up in a hospital. I never expected this to happen." Whether Jorgenson returns to work or not, he was given a second chance at life — one he may not have had without the use of the AED in the hands of skilled providers.

According to South Lake Minnetonka Police Chief Bryan Litsey, who was nearby and came to the scene to assist his officers, "It seemed surreal that the first use of our two AEDs since being placed into service on May 20, 1999, would be on one of our

own officers. Like all the other officers on our police department, Chester Jorgenson had gone through the required training and was certified in the operation of the device.

"I witnessed firsthand the professionalism displayed by officers Rusch and Staaf and the Excelsior Fire Department under this very trying situation," Chief Litsey was quoted as saying in the *Lakeshore Weekly News*. "This event has really made us believers as to the effectiveness of AEDs, not only for our entire force, but for the community at large."

The four AEDs were purchased through a Minnesota State Grant and a private grant from the Foundation Health System of Minnesota. AED training was conducted by Paul Finney, R.N. of the HCMC EMS Education Department. The four-hour class involves lecture and manikin skill practice. HCMC provides ongoing AED training programs throughout Hennepin County. If your department would like this type of training, please contact Finney at HCMC at (612) 347-5681.

Hyperbaric Medicine Unit

Are You Ready? Can You Hear Me?

by Ellen Holmes Lafans, R.N., B.S.N., Manager, Hyperbaric Medicine Unit, and the Hyperbaric Team: Caren Chaney, R.N.; Janet Schreiner, R.N.; Bill Gossett, CHT, RCP; and Jim Bell, CHT, EMT.

Emergency patients are brought to the Hyperbaric Medicine Unit at Hennepin County Medical Center (HCMC) for treatment in the hyperbaric chamber for such things as deadly carbon monoxide poisoning, decompression sickness, air embolism, or serious wound infections. The Hyperbaric Medicine Unit treats patients from a five-state area as well as parts of Canada. Emergency patients are first sent to the Emergency Department at HCMC, where they are assessed by emergency medicine physicians for treatment in the chamber.

After consent, chest x-ray, labs, electrocardiogram, or other tests, the ambulance crew delivers the patient to the unit that is located at 5th and Portland. There the staff prepares the patient to go into the hyperbaric environment with specially trained nurses or physicians.

"Are you ready? Can you hear me?"

This is what the hyperbaric technician asks the nurse or physician inside the chamber as the heavy door closes. The technician, who is outside the chamber, communicates with the people inside the closed chamber by use of a camera, intercom system, or phone. As the chamber is pressurized, the air molecules become closer together, making the inside of the chamber feel warm, but it is quickly cooled off inside by use of a cooling system.

continued page 3

Hyperbaric Medicine

continued from page 2

During the pressurization of the chamber, the patients and attendants (nurses or physicians who are with the patients at all times while in the chamber) are working to clear their ears by swallowing or chewing gum. The sensation is much like being on an airplane but occurs more quickly and requires more effort to clear the ears.

The unit, which has been in operation since 1964, is staffed 24 hours a day with specially trained nurses, certified hyperbaric technicians, and physicians. Many people refer to the unit as the Hyperbaric Chamber because there really is a chamber here. The chamber is made of steel and weighs 60 tons. It is 66 feet long and consists of four interconnected chambers, which can be used separately or all at one time. We are able to use one chamber to treat certain patients, while at the same time, use another chamber to treat other patients. Thirteen is the most patients that we have treated simultaneously.

What is Hyperbaric Medicine? Hyperbaric oxygen therapy (HBO) is a medical treatment in which the patient breathes 100 percent oxygen while inside a chamber at increased atmospheric pressure. The patients breathe 100 percent oxygen via a type of special mask, oxygen hood, or ventilator while inside the chamber. When a patient is in the hyperbaric condition, the 100-percent oxygen inhaled at three atmospheres of pressure produces an arterial oxygen partial pressure as high as 2200 mm Hg, rather than the normal range of 70 to 100 mm Hg. While a patient is in this environment, high concentration of oxygen is dissolved into the patient's blood and tissue.

Put simply, HBO is used for complicated wounds because the increased oxygen helps the tissue to heal. For gas embolism or decompression sickness known as "the bends," the pressure in the chamber decreases bubble size in the tissues or circulatory system, and along with the increased oxygen, can eliminate the bubble altogether.

For carbon monoxide poisoning, the goal of HBO is to rapidly increase the amount of oxygen dissolved in plasma to supply the heart and brain. The carbon

continued page 4

Helmet Removal

continued from page 1

medicine physicians, and pre-hospital personnel. In answer to the question, "Is it really necessary to remove equipment in order to adequately treat the patient?" the task force said *usually no*, though it recognized that each situation presents its own unique challenges. While the presence of a helmet may indeed interfere with the ability to visualize injuries, it may well prove unnecessary and more detrimental for the patient to remove it. Especially if the mechanism of injury or signs and symptoms lead you to suspect a possible neck injury.

It is important to remember, too, that the shoulder pads worn by a player will raise the torso by several inches when that patient is placed on a backboard. Keeping the helmet in place and taping it to the board will counterbalance that effect and keep the cervical spine in alignment. This method of stabilization does not require a cervical collar, and indeed, it would prove impossible to apply one. In the rare event that a helmet must be removed in order to manage the airway, the pads must also be removed and a cervical collar placed for spinal alignment to be maintained.

Studies have shown that even in the presence of respiratory or cardiac arrest, it is possible to perform lifesaving procedures without removing protective equipment and still maintain cervical spine alignment. Following proper placement on a long backboard, resuscitation can be accomplished by removal of the face mask portion of the helmet and by opening the front of the shoulder pads. This will allow access to the airway for ventilation, and to the torso for CPR and defibrillation. In fact, the task force guidelines recommend removal of the face mask prior to transportation, regardless of current respiratory status.

Under what conditions should a helmet be removed? According to the task force guidelines, the helmet and chin strap should only be removed when:

1. The helmet and chin strap do not hold the head securely, even when the helmet is secured to the board.
2. The airway cannot be controlled despite removal of the face mask, or
3. The helmet prevents immobilization in an appropriate position.

Should helmet removal prove necessary, it is important to do so

properly. After the face mask and chin strap have been removed, it may be helpful to remove cheek padding and/or deflate air padding, depending on the age and model of the helmet. Coaches, players, and athletic trainers at the scene will likely be more familiar with specific aspects of equipment that you are dealing with. Don't be afraid to enlist their assistance.

Increasing numbers of schools are becoming aware of the need for the presence of medical personnel during athletic events. Additionally, the American Medical Association recently recommended placement of certified athletic trainers in all U.S. high schools. This means you are more likely than ever to encounter an athletic trainer when responding to an athletic event.

Most colleges, and many high schools may also have physicians in attendance. This can often lead to confusion at the scene regarding who is the medical authority. The best way to avert confrontations *after* an event is to anticipate potential problems *before* they occur.

I have heard many a horror story from fellow paramedics who have had disagreements with an athletic trainer during a call. And having been a former athletic trainer, I hear the same stories, with a different slant, from other trainers. There has long been a misconception that athletic trainers and EMTs receive conflicting training, specifically in regard to spinal immobilization. The National Athletic Trainers Association guidelines, as stated above, are in keeping with most EMT and First Responder curriculum.

The crucial time following a potentially serious injury is not the time for a power struggle. Create a good working relationship between athletic trainers, coaches, and members of your service. Be certain that everyone is aware of the protocol to which you are bound, particularly if that protocol conflicts with the procedures of team medical staff. Attempt to develop specific policies and procedures in advance that can help avoid conflicts at the scene, and make certain everyone is on the same page. Of course, local protocol must be followed, but remember — everyone has the best interest of the athlete in mind.



Kudos to our Assistant Instructors

by Sandy Varberg, EMS Education Specialist

What goes into making a quality teaching program? Many things. But one of the most important factors is having quality instructors. And that is something we have plenty of here at EMS Education. Besides seven full-time and two half-time EMS education specialists who are outstanding,

we also have 40 intermittent assistant instructors (AIs).

Our AIs come from all walks of life as EMS providers: fire fighters, police officers, pilots, paramedics, nurses, nursing assistants, and hospital technicians. Despite their varied backgrounds, they all have one thing in common — they

provide excellent skills teaching in every one of our classes. These folks provide instruction in our small-group skills practices for all of our basic-level classes. I just want to take this opportunity to say, “Well done!!” And, if you ever get the chance, please tell them the same.

Thank to all of EMS Education’s assistant instructors, including:

Top photo, left to right, Steve Mach, Kris Lemon, Kelly Munn, Bruce Hanson, Gwen Martin, Steve Luitjens, Melissa Carlson, and Chris Herrlin.

Bottom photo, front row, left to right, Paul Redmond, Dean Anderson, Deb Koreen, Tim Wilmes, Rick Pfeiffer, and Dirk Bjornson. Back row, left to right, are Shelley Petersen, Sherry Johnson, Bill DeRoche, Chris Fuller, Dan Malmgren, and Gretchen Hurr.

Not pictured are: Andrew Bancroft-Howard, Craig Blechta, Ron Bombeck, John Daher, Elizabeth Darling, Dana de Clovet, Judy Demers, Shanna Hanson, Dave Hildebrandt, Mark Holden, Wendy Johnson, Becky Kopka, Theresa Leonard, Jim Levi, Dan Levie, Chris Maca, Tom MacFarlane, Ben Moore, Brad Patrick, Dave Pickford, Laurie Pyle, Troy Schmitz, Mike Trullinger, Steve Turner, and Berisha Wilson-Chamberlain.



Hyperbaric Medicine continued from page 3

monoxide molecule has a 240 times greater affinity for hemoglobin than does oxygen. Carbon monoxide poisoning makes the patient hypoxic because it “ties up” the hemoglobin from carrying oxygen. Hyperbaric oxygen can displace the tightly bound carbon monoxide much faster than the usual 100% oxygen treatment. Also with HBO, oxygen is dissolved in plasma, so one could say that while in the chamber, oxygen can be delivered independently of hemoglobin. Thus, the hypoxic state is terminated shortly after initiating HBO treatment. Typically, patients poisoned by carbon monoxide are treated in the chamber once, unless determined otherwise by the hyperbaric physician. Advanced life support services should obtain a carboxy-hemoglobin level at the earliest convenience. Services deliver 100% oxygen either by partial non-rebreather or non-rebreather masks.

Last year, nearly 1,400 patient treatments took place in the Hyperbaric Chamber. The unit cares for a broad range of patients including routine daily patients as well as extremely critically ill patients. The routine daily patient arrives on the unit every morning for treatment. An example of our routine patients is someone with radionecrosis. These patients have a breakdown of bone or tissue from radiation therapy. The usual treatment protocol is most often around 30 treatments. Patients are treated once a day, Monday through Friday, for six weeks. The daily treatments in the chamber last 90 minutes. While in the chamber, the patients relax in comfortable chairs or on stretchers. If stable, they read or listen to music.

“Are you ready to come up now?” At the end of the treatment, the technician asks the nurse if the group inside the chamber is ready to depressurize. During the last few minutes of the treatment, the

pressure inside the chamber is gradually decreased to normal atmospheric pressure. The chamber gets very cool inside as the air decompresses. The patients are covered with quilts. A fog often forms within the chamber. The door to the chamber opens. The fog clears. Our emergency patients are transported back to HCMC’s emergency department by the ambulance crew. The staff performs a number of cleaning and maintenance tasks to ready the chamber for the next HBO patients.

The Hyperbaric Medicine Unit is located approximately two blocks from the hospital at 5th and Portland. If you would like to tour the chamber, would like more information, or would like a copy of our guidelines for treatment of patients with carbon monoxide poisoning, please call us at (612) 337-7420.