FLIGHT ROUNDS
WINTER 2010

Case Study:
Carbon Monoxide Poisoning after Grain Explosion

by Justin Klis, NREMT-P
***FLIGHT FOR LIFE*– Fond du Lac Base**

Last fall, two Flight For Life (FFL) helicopters responded to a local farm, where two men with unknown injuries were trapped in a grain silo following a grain dust explosion. Multiple agencies were in the process of extricating the victims. This process lasted approximately one hour. Initial reports from inside the silo were that both patients were unresponsive and had no obvious external trauma.

Background

Carbon monoxide (CO) is a colorless, odorless gas produced by burning material containing carbon. Carbon monoxide poisoning can cause brain damage and death. Commonly overlooked or misdiagnosed, CO intoxication often presents a significant challenge as treatment protocols, especially for hyperbaric oxygen therapy, remain somewhat controversial.

Carbon monoxide is formed as a by-product of burning organic compounds. Although most fatalities result from fires, stoves, and portable heaters, automobile exhaust causes approximately one third of all carbon monoxide deaths. This third is often associated with malfunctioning or obstructed exhaust systems and suicide attempts. Natural gas contains no CO, however improperly vented gas water heaters, furnaces, kerosene space heaters and charcoal grills all emit CO. Other sources of carbon monoxide exposure include propane-fueled forklifts, gas-powered concrete saws, inhaled spray paint, and fires.

Pathophysiology

Carbon monoxide toxicity causes impaired oxygen delivery and utilization at the cellular level. It aggressively competes with oxygen for the limited oxygen-binding receptor sites on hemoglobin in the red blood cell. Because it has a greater affinity to the blood cell than oxygen, a CO molecule will bind to hemoglobin 230-270 times stronger than oxygen. As a person is exposed to more CO, the level of CO attached to the blood—carboxyhemoglobin—increases. This makes the red blood cell incapable of transporting oxygen throughout the body. Once the ability to transport oxygen is lost, the body cannot survive without medical intervention.

Carbon monoxide poisoning has adverse effects on all systems of the body. Simply put, the body needs oxygen. That critical element (O2) is being displaced in the hemoglobin by CO. One of the most important systems impacted is the central nervous system. A person exposed to CO may have symptoms such as headaches, confusion and dizziness. As the level of CO increases, the person may have seizures or even become comatose. It is also important to know that CO can impact cardiovascular systems, which would present such symptoms as chest pain, dysrhythmias, myocardial ischemia and possibly ventricular fibrillation.

Signs and Symptoms - ACUTE

CO affects several different sites within the body but has its most profound impact on the organs with the highest oxygen requirement, such as the brain and heart. Symptoms are often vague and can cover a broad spectrum.

- Altered level of consciousness
  - Coma
  - Feeling sleepy
  - Confusion
- Vital signs
  - Tachycardia
  - Hypertension or hypotension
  - Changes in the 12-lead ECG indicative of myocardial ischemia
  - Marked tachypnea (rare; severe intoxication often associated with mild or no tachypnea)
- Skin: Classic cherry red skin is rare (“When you’re cherry red, you’re dead”); pallor is present more often

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Carbon Monoxide Poisoning

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- Non-cardiogenic pulmonary edema
- Neurologic symptoms
  - Memory disturbance (most common), including amnesia
  - Headache
  - Poor coordination
  - Seizures
  - After recovery from the initial incident, patients may present several days to weeks later with neuropsychiatric symptoms like those just described

Pulse Oximetry and Carboxyhemoglobin

A source of light originates from the probe of a pulse oximeter at two wavelengths (650nm and 805nm). The light is partly absorbed by hemoglobin, by amounts which differ depending on whether it is saturated or desaturated with oxygen. By calculating the absorption at the two wavelengths the processor can compute the proportion of hemoglobin which is oxygenated. The pulse oximeter can not differentiate between different forms of hemoglobin (such as carboxyhemoglobin or methemoglobin). Since Carboxyhemoglobin (COHb) is also absorbed at similar wavelengths, it is of no value in patient assessment in the presence of high concentrations of CO and may even read 100%.

Pulse CO-Oximetry

Pulse CO-oximetry uses advanced technology that is able to collect more information than a traditional pulse oximeter and allows providers to accurately monitor CO continuously and noninvasively. Pulse CO-oximetry technology combines multiple wavelengths of light for analysis. Processing of this data permits pulse CO-oximeters to accurately measure carboxyhemoglobin in the field. These devices may improve treatment and transport decisions.

It's important to note that COHb/SpCO levels often do not reflect the clinical picture, yet symptoms typically begin with headaches at levels around 10%. Levels of 50-70% may result in seizure, coma and death.

Treatment

Treatment of patients with symptomatic CO poisoning is relatively straightforward.

- A non-rebreather mask supplies100% oxygen to quickly clear CO from the blood. This therapy reduces the half-life of CO by 400-500%
- Support blood pressure with fluids and vasopressors as needed
- Rule out hypoglycemia
- Seizures occasionally occur, requiring routine administration of benzodiazepines
- 12-lead ECG monitoring for signs of myocardial ischemia
- Continuous monitoring with pulse CO-oximetry
  - In non-smoking patients, a COHb level greater than 5% confirms exposure if 100% oxygen therapy has been administered for no more than one hour
  - Patients who smoke more than two packs per day may have a baseline level approaching 10%
  - Any patient with a high COHb level (>25%) or serious symptoms (e.g., syncope) may need more treatment beyond routine oxygen therapy

Hyperbaric Chamber

Once a patient with acute carbon monoxide poisoning has been identified and is receiving initial treatment, a transport/transfer decision must be made. The patient may benefit from hyperbaric oxygen (HBO). The utility of hyperbaric oxygen has been best studied in the realm of CO poisoning with the most obvious effect on reducing CO half-life to around 15-23 minutes.

CO levels alone should not be used as the only basis for treating carbon monoxide poisoning. Hyperbaric oxygen therapy should be considered for patients who do not initially meet the criteria for such therapy but have persistent neurologic symptoms despite several hours of 100% oxygen therapy. This is especially true in patients with a severe headache or impaired mental function. The final considerations regarding use of hyperbaric oxygen should be the stability of the patient's condition and the distance to the nearest chamber or appropriate facility, based on local policies and protocols.

Flight For Life Case Report

While numerous rescue teams worked to free the trapped men, the silo was found to have over 400 parts per million (ppm) of carbon monoxide inside the confined space. Crews ventilated the space and provided the patients with 100% oxygen until removal from the silo. Once both patients were brought out of the silo, EMS teams and Flight For Life crews went to work. The first patient was semi-conscious and confused. The second was unconscious with clenched teeth. Both flight crews secured IV's, promptly intubated the patients, using rapid sequence intubation (RSI), and administered 100% oxygen.

Flight For Life crews were able to determine that the first patient had no evidence of trauma and had no trauma complaints. Therefore, they elected to transport the patient to the regional hyperbaric center hospital for rapid hyperbaric therapy. The other Flight For Life crew could not accurately rule out trauma on the second patient, so they elected to transport to the nearest trauma center for possible head trauma. Both patients had continuous EKG, capnography, blood pressure and pulse oximetry readings monitored during the flight. After the second patient was evaluated at the trauma center,

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FLIGHT FOR LIFE Celebrates with 2009 Scene Call of the Year Award Winners

Waukesha/Milwaukee Base

On Tuesday, July 20th, 2010, the **City of Brookfield Fire Department** was presented with Flight For Life's 16th Annual Scene Call of the Year Award for a full time department.

The scene call chosen occurred in June, 2009, when an automobile collided with a motorcycle on a busy city highway. Early recognition of indicators for potentially seriously injured patients enabled prompt triage of the most critical victims. Rapid mobilization of mutual aid from a variety of agencies, including two Flight For Life helicopters, was crucial to ensure the best possible care to be rendered to all patients in a timely fashion. Adding to the complexity of the call was the presence of a large gasoline spill at the site of the crash. One patient was trapped in the automobile, and required extrication utilizing the "Jaws of Life;" this victim was identified as the least critical, and was transported by ground to a local hospital. Both riders on the motorcycle sustained serious injuries, and were airlifted to a Level I Trauma Center.

The award presentation was held outdoors at the Brookfield Civic Plaza. Representatives from all agencies involved in the call were present, along with the Mayor of Brookfield and city council members. The two critically injured patients, a husband and wife, were invited to attend the ceremony. They were unable to attend, having relocated to Florida during their year-long recovery. But they were both doing well, and extended their very sincere thanks to all of the caregivers who helped give them the opportunity to survive and continue to enjoy life.

North Lake and Stone Bank Volunteer Fire Departments were co-recipients of Flight For Life's 16th Annual Scene Call of the Year Award for a combination department, and received their awards on Wednesday, September 29th, 2010.

Late October, 2009, two vehicles collided at a rural intersection. Multiple agencies responded to the scene, which involved four patients, including two children. Utilization of skills recently acquired during SAFE extrication training enabled pre-hospital care providers to efficiently remove a trapped pediatric patient from the rear passenger compartment of one automobile. Excellent medical stabilization of the three "red" patients was provided by responding agencies in a tiered EMS response. Two Flight For Life helicopters were requested to the scene. Ultimately, the two children were airlifted to a Level I Pediatric Trauma Center, and the adult patients were transported by ground ambulances.

The award ceremony was held at the Town of Merton Town Hall; the Town of Merton Chairman and members of the Town Board were present to honor representatives from multiple agencies involved in this call. What made the event very special was the attendance of the two children, Matt and Rebecca—now completely recovered from their injuries—and their grandmother, Carol (the driver of their car), who had also recuperated very well. The positive outcome for all of these former patients brought big smiles to the faces of all the caregivers who attended—and reinforced their ongoing commitment to serving their communities.

McHenry Base

Congratulations to **Carpentersville Fire Department** who received the Scene Call of the Year Award (SCYA) for 2009 for a full time department in the Flight For Life-McHenry service area. This was a very challenging scene on a number of different levels as the patient was a member of the law enforcement community.

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Scene Call of the Year Awards

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The presentation was held on June 1, 2010 at the Village Board meeting to a standing room only crowd. Many of the department members and a large contingent from the community turned out for the event. The FFL-McHenry aircraft landed in the field behind the village hall and Flight Nurse Sharon Purdom, who was on the transport, made the presentation to Chief John Schuldt. After the presentation the department personnel and members of the community were able to do a tour of the aircraft and ask questions of the flight crew.

On June 17th Flight For Life-McHenry Base presented the **Twin Lakes Volunteer Fire Department and Rescue Squad and Town of Randall Fire Department** with its 16th Annual Scene Call of the Year Award for a combination department. The event was held at the St. John's Church in Twin Lakes. Representatives from all of the agencies who assisted Twin Lakes and Randall in this call; Twin Lakes Police Dispatch, Twin Lakes Police, Kenosha County Sheriff, Kenosha County Joint Services, Silver Lake Rescue Squad, Salem Rescue Squad, Richmond Fire/Rescue and Flight For Life-McHenry and Waukesha/Milwaukee personnel were in attendance. The patients and their families were also in attendance at the award presentation.

For fire and EMS agencies in small rural communities, it is very common to know the patients you are treating and their families. The teenage girls and their families were well-established in the community and the girls were classmates, all attended Wilmot High School. This complicated an already challenging call and stressed the resources of the department by adding an additional emotional component for all involved. In this case the call brought the entire community together which helped in the recovery of those affected by the accident.

The Twin Lakes V.F.D. and Town of Randall F.D. call highlights the extraordinary teamwork that exists among EMS, fire departments, law enforcement agencies, dispatchers, and air medical services as they work together to provide the best possible patient outcome. The personnel from Twin Lakes and Randall displayed the teamwork, professionalism and decision-making skills that were necessary to make a difference in the patients' outcome and survival. All of the ingredients required to complete the "chain of survival" for these patients were present that day.

Fond du Lac Base

The **Beaver Dam Fire Department** was presented with the Flight For Life-Fond du Lac Scene Call of the Year Award for a full time department on Monday, June 21 at the Beaver Dam Common Council Meeting. Representatives from all of the responding agencies were present for the presentation.

This challenging call involved a motor vehicle vs. tractor crash that included multiple critically injured patients, including one patient who had crawled to a nearby house. Along with managing the patients at the scene, the crew had to coordinate the safe landing of multiple aircraft. Two landing zones were set up, and both patients were able to be transported to a trauma center in minimal time. Assisting the Beaver Dam Fire Department was the Lowell-Reeseville First Responders, the Reeseville Fire Department, and the Dodge County Sheriff's Department. In addition to the multiple agencies on the scene, three Beaver Dam paramedics, returning from an EMS class in Madison, were able to respond within minutes.

Brooks Ambulance, Inc and the Waupun Fire Department were jointly presented the FFL-Fond du Lac Scene Call of the Year Award for a combination department on Wednesday, June 23 at Tanner Park in Waupun.

This call involved an overturned bus carrying 25 athletes on their way back from a Special Olympics event. Both of the departments, along with the Waupun Police Department, Dodge County Sheriff's Department, Fond du Lac County Sheriff's Department, and the State Patrol,

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Scene Call of the Year Awards

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did a tremendous job managing this difficult scene. Members of law enforcement and the fire and EMS teams on scene had to climb into the overturned bus to extricate many of the patients. Thanks to the quick actions of all involved, every patient in the bus was able to make a full recovery.

The highlight of the awards presentation was hearing each department share their role in the call, with the common theme being how extraordinary the Special Olympic athletes were during the entire ordeal. They were very calm, tough, and only wanted to show off the medals they had won, despite their injuries. It was truly inspiring story for all in attendance.

Flight For Life Goes "Pink!"

by Tammy L. Chatman, CMTE
Professional Relations/Marketing Manger
McHenry Base

So have you ever heard of the "Pink Heals Tour?" Most of our hospitals and departments in Illinois are familiar with the tour and what it means—but many of our Wisconsin customers were saying "What is Pink Heals?"

Pink Heals was the brain-child of Glendale, Arizona Firefighter Dave Graybill. He began the nonprofit organization to raise awareness and support for women who were battling all types of cancer by donning pink turnout gear and driving a pink fire truck around the country spreading the message of "Cares Enough to Wear Pink." He developed "Pink Heals" merchandise that is sold on the Tour and on their website which funds their efforts. The program started with one fire truck, and has now expanded to multiple trucks that spend the summer traveling around the US. Each truck is named after a woman who has become special to the organization. Survivors, those who are battling cancer and their loved ones, sign the trucks with heartfelt messages and notes of love.

Firefighters from departments throughout the US take vacation time and volunteer to drive the trucks to different cities around the country. One of our local firefighters, Steve Rusin of Buffalo Grove F.D. and Nunda F.P.D., volunteered his time to drive for two weeks this summer. Fire departments, law enforcement agencies, hospitals and even entire communities have embraced the concept and host fundraisers centered on their own Pink Heals merchandise to benefit the women in their communities. Centegra Hospital-McHenry and Centegra

Hospital-Woodstock hosted the "Pink Heals Tour" in August in honor of Woodstock Emergency Department Manager and former FFL-McHenry flight nurse Laurie Parisi.

The idea for Flight For Life (FFL) to participate in the "Pink Heals Tour" by selling t-shirts, hoodies, and baseball hats with the FFL/ Pink Heals logo came from one of the flight crew. All proceeds for the items will stay within the communities in which the money was raised. Each of the FFL bases has chosen a charity that cares for women who are battling this terrible disease. Our efforts to date have generated over $6,000 to support the women in our communities who are battling cancer. None of us have gone untouched by the wrath of the disease called cancer; cancer does not discriminate. Flight For Life is proud to have been a part of this very important campaign to help the women who are struggling with the disease. We are also extremely grateful to the countless agencies, hospitals and individuals who have supported us in supporting "Pink Heals." Together we can all make a difference!

To learn more about the Pink Heals Tour visit their website at www.pinkfiretrucks.org and see them on Facebook as well.

Cardio-Cerebral Resuscitation (CCR)

by George Blankinship, EMT-P
Fond du Lac Base

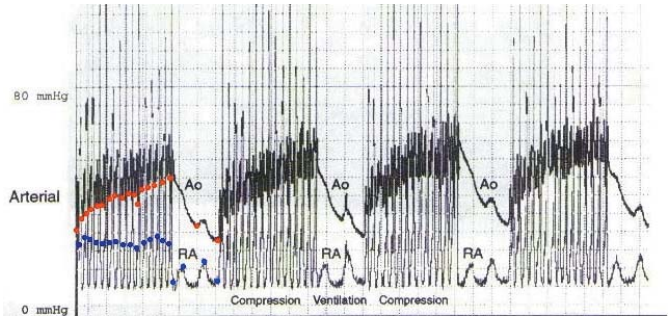
"CCR,"
"Continuous chest compression CPR,"
"Compression only CPR,"
"Call and Pump,"
It has many names but the aim is clear …. "Push fast, Push hard and *don't stop Pushing*."

Why has there been such a focus and emphasis on continuous chest compressions for adults presenting with Sudden Cardiac Arrest? Because **IT WORKS!** Every study performed shows a marked increase in return of spontaneous circulation (ROSC) when interruptions in compressions are kept to an absolute minimum.

"The importance of all other interventions for an adult in Sudden Cardiac Arrest pale in comparison to high quality chest compressions." *(American Heart Association Advanced Cardiac Life Support training video 2005)*

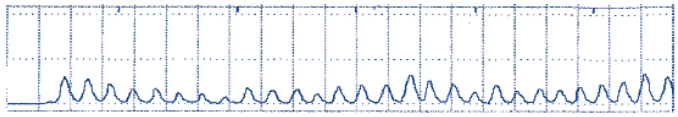
"Most victims of out-of-hospital SCD (sudden cardiac death) are potentially salvageable because their cardiac arrest is *initiated by* ventricular fibrillation (VF). Defibrillation, the definitive treatment, is obtainable in most communities and it is potentially *very* effective. The problem is that defibrillation is seldom available when and where they begin the dying process; it must be brought to them and that takes time. Some die because treatment never arrives, others die because VF deteriorates into more lethal rhythms, and still others die because defibrillation fails—it becomes progressively less effective with each passing minute. The tragedy is that many of these deaths are unnecessary because the decay in the effectiveness of defibrillation is preventable – simply by providing blood flow to the heart. Coronary perfusion is more than important, it is crucial." *(Richard Barney, MD, et al. "Rock and Walworth Sudden Cardiac Death Demonstration Project, 2004" http://callandpump.org/assets/Proposal_Current.pdf)*

The problem with any interruption in chest compressions is the immediate loss of perfusion to the heart and brain. As seen in the following diagram, when compressions are stopped to administer two breaths the perfusion pressure drops to zero. It then takes several compressions in the following sequence to once again gain a minimum circulation pressure.



Berg RA, Sanders AB, Kern KB, Hilwig RW, Heidenreich JW, Porter ME et al. "Adverse hemodynamic effects of interrupting chest compressions for rescue breathing during cardiopulmonary resuscitation for ventricular fibrillation cardiac arrest." Circulation 2001:104(20):2465-2470

What part does oxygenation play in SCD? During the initial phase of an arrest, blood remains sufficiently saturated with oxygen to support life. In addition, the metabolic demands of the body have diminished as systems are shutting down, which further enhances the oxygen content. As the arrest continues and PH drops, any additional bound oxygen will be more easily disassociated and available for tissue use. The capnograph below also shows that during chest compressions, there is a small amount of tidal volume being exchanged. By simply applying high concentrations of oxygen (i.e. NRB) to a person during chest compressions, additional oxygen can be delivered to the respiratory system, further enhancing the level of circulating oxygen.



Blankinship, G, Actual intubated patient capnograph April 2007

The American Heart Association (AHA) guidelines support these concepts. Go to the following website for a review of the current AHA recommendations: http://circ.ahajournals.org/cgi/content/short/122/18_suppl_3/S685

Where do we go from here? I am sure that many medical directors will be establishing protocols that will address the timing, doses and method of administering medications, use of electrical therapy interventions, and the use of visualized and non-visualized airways. But one thing you can be sure of - the over-riding recommendation will be "Push fast, push hard, allow full chest recoil and don't stop pushing."

Ventilators make the difference

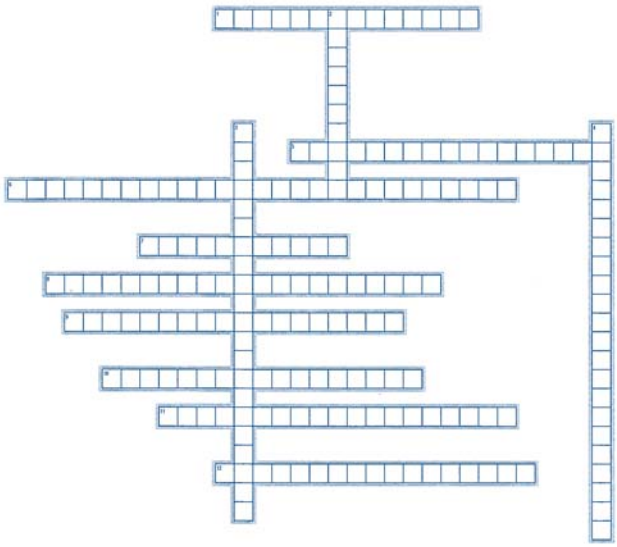
By Keith Stephens, RN, Waukesha/Milwaukee Base

Believe it or not, ventilators have been utilized since the 1930's. They allow providers to take control over the administration of the most important drug we deliver in health care: oxygen. Ventilators provide needed respiratory support and comfort, and offer many advantages during critical care transports. Transport ventilators provide more consistent ventilation volumes and pressure support than manual ventilation, as it is impossible to mimic complex ventilator settings using only a manual Ambu-bag. Bedside to bedside use of a ventilator provides seamless continuation of care without interrupting the ventilator circuit or settings. Flight For Life is one of the few air medical programs that uses a fully functional ventilator during the entire transport, from the referring to the receiving facility, bedside to bedside. Our goal is to deliver the best patient care possible; having this invaluable piece of equipment allows us to do exactly that.

Severe lung diseases such as Acute Respiratory Distress Syndrome (ARDS), Congestive Heart Failure (CHF), Chronic Obstructive Pulmonary Disease (COPD), and pneumonia can all pose tremendous challenges. Patients may require very specific settings that Flight For Life can deliver with the use of the LTV 1200 ventilator. Some examples include: Reverse I:E (inspiratory: expiratory) ratios, Non-invasive Positive Pressure Ventilation (BiPAP), CPAP, Assist Control (A/C), Pressure Control (P/C), SIMV (Synchronized Intermittant Mandatory Ventilation, both Volume and Pressure) and Pressure Support (P/S). Besides being used on adult patients it can be used for pediatric patients down to 5 Kg. By combining the use of capnograpy with our ventilator we can achieve the exact respiratory care patients would receive in any ICU setting. Literature supports the use of a ventilator with the ability to titrate ventilator settings according to the patient's response, resulting in better outcomes in patients with acute or chronic lung diseases. For this reason, Flight For Life medical crews have incorporated the use of a sophisticated transport ventilator for those patients who require advanced respiratory care.

Together with the Respiratory Therapy (RT) Department at Froedtert Hospital, Flight For Life staff received in-depth training on the LTV 1200 ventilator. The class was specifically designed around this transport ventilator and its utilization in the air medical environment. Froedtert's RT staff demonstrated techniques in the most effective use of our ventilator—along with troubleshooting tips—enabling us to consistently provide this expertise to our patients.

"Neuro Stuff" Crossword Puzzle



Across:

1. Presence of air within the cranal vault.
5. Type of bleed resulting from arterial bleeding. Usually underlying a linear skull fracture.
6. Pressure of the blood flowing through the brain.
7. Type of posturing seen with abnormal extension of arms and legs in response to painful stimuli.
8. The pressure of the brain and contents within the skull is called _____.
9. Used to measure the severity of coma in patients.
10. Type of hematoma associated with venous bleeding, commonly encountered in the elderly or alcoholic population.
11. Injuries to the brain from lack of oxygen.
12. Protective reflex to maintain a constant cerebral perfusion pressure (increased BP and bradycardia).

Down:

2. A transient loss of cerebral function following a blow to the head is called a _____.
3. Occurs when the delicate axons are stretched and damaged as a result of rapid movement of the brain.
4. This injury often produces Battle's sign or "racoon's eyes."

Answers on page 10

Carbon Monoxide Poisoning

(continued from page 2)

he was transferred to the same hospital where both patients were then simultaneously treated in the hyperbaric chamber. By the following day, both patients were extubated, conscious and talking. They both made full recoveries.

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We Want Your Photos!

If you have taken pictures of your Fire Department/ Rescue/EMS or Law Enforcement staff working with the ***FLIGHT FOR LIFE*** crew at a scene call or in training, or your ED/ICU staff working with our crew at your hospital, your photos could win a place in Flight For Life's calendar! (Yes, there are prizes for winning photos!)

What kind of photos are we looking for? We look for ACTION SHOTS of your crew and our *FLIGHT FOR LIFE* team working together at a scene – photos including your personnel, equipment and our helicopter; or at a hospital – photos of our crew and your staff working together. Any photos that show a patient during care or transport must be able to be de-identified.

Put your **HIGH RESOLUTION** digital photos **(300 [mininum] dpi & at least 11.25" x 8.75")** on a CD and clearly mark with the **date taken, photographer's name, the event** (scene call, training or hospital), and **location** and send in with the form below, (4" x 6" color prints are also acceptable). Feel free to make copies of the form to use throughout the year! Call Tammy Chatman at (414) 778-4573 if you have questions.

FLIGHT FOR LIFE Photo Submissions

(please print clearly)

Photographer's Name: _____

Address: _____

City, State, Zip: _____

Daytime Phone(s): _____

Department or Hospital Affiliation: _____

Date photo(s) taken: _____

Location where photo(s) taken: _____

Please list all agencies present [Fire, EMS, Law Enforcement, Hospital, Other]: _____

_____

_____

I give ***FLIGHT FOR LIFE*** permission to use my photo(s) for publication in their annual calendar, website or for training purposes.

Signature: _____ Date: _____

Mail your CD (or prints) & this form to:

FLIGHT FOR LIFE
Attn: Tammy Chatman
2661 Aviation Road
Waukesha, WI 53188

Secure that Zone!

by Bill Anderson, Pilot, Waukesha/Milwaukee Base

During the 30 plus years of EMS helicopters landing at trauma or medical scenes, there has been a need for landing zone (LZ) security for the running aircraft. The scene can be a very hazardous area. It can be a rural or urban location, day or night, with clear or changing weather conditions. Debris from the vehicle or environment can be near the LZ. There could also be pedestrian traffic, including law enforcement, EMS and fire personnel. After considering all of these factors, many times it is necessary to land one or more helicopters in an area no larger than a city block.

Helicopter EMS (HEMS) operators provide different ways to secure a LZ. The flight crew can provide security for the tail rotor and the perimeter while the aircraft is being shut down. The pilot can secure the flight controls and get out of the aircraft to provide security for the running helicopter (not an option we normally employ). Another option, and perhaps the most popular, is to have EMS/fire personnel on scene, providing tail rotor and aircraft perimeter security.

The personnel assigned to tail rotor security have a critical responsibility to keep the area clear and mitigate any danger that could arise in a potentially chaotic and hazardous area.

Some basic steps can keep you and your crew on top of LZ security issues:

1. The minimum requirement for LZ size is 100' x 100' during the day and 150' x 150' at night or in windy conditions.

2. The flight crew should contact LZ personnel on the ground after landing. They will ensure the tail rotor and aircraft area is secure prior to departing the LZ to initiate patient care. This is done to confirm with the pilot that any blind spots he/she has will be protected.

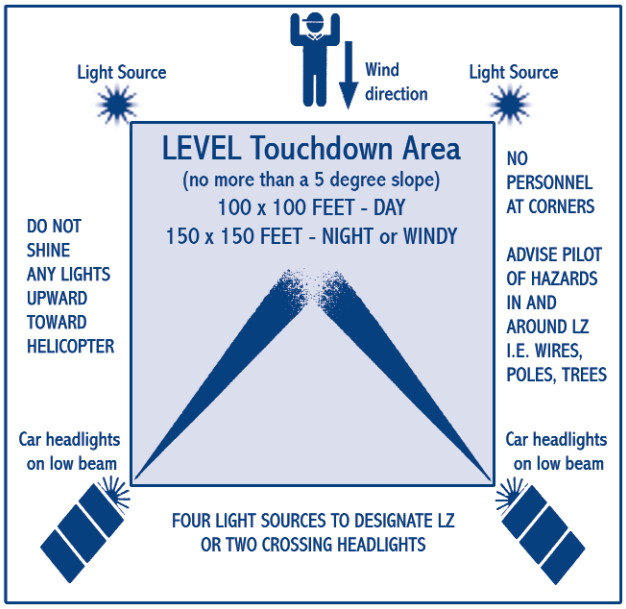
3. Keep an approximate 50 foot minimum working perimeter around the aircraft. All bystanders should be kept back 150 feet.

4. Do not allow anyone in the perimeter without permission from the pilot or the medical crew. The "anyone" includes other EMS, fire or law enforcement personnel and their vehicles. Maintain situational awareness! Do not put yourself in danger if it becomes necessary to intercept someone approaching the perimeter!

5. You and your crew should keep your attention focused on aircraft and tail rotor security only. If necessary, the flight crew will enlist the aid of other EMS personnel on scene for assistance with equipment and/or patient loading.

6. Once the responsibility is given and accepted for the security of the aircraft and tail rotor, it **CANNOT** be given to another individual.

The goal is for scene operations to progress in a safe and secure manner. Thanks to all in the past who have been part of keeping helicopter scene operations safe. A helicopter scene response can be a very challenging environment. Be prepared for anything, because anything can happen.



Congratulations to...

the following people who were randomly selected from those who completed ***FLIGHT FOR LIFE*** Online Customer Satisfaction Surveys.

Month	Name & Affiliation	Prize
June	**Jonathan Gonring** Watertown Police Dept	FFL Baseball Cap
July	**Blaine Werner** Random Lake Fire Dept	FFL T-Shirt
August	**Dr. Lubomyr Domashevsky** Aurora Med Ctr - Hartford (ED)	FFL T-Shirt
September	**Joseph Krueger** McHenry Township F.P.D.	FFL T-Shirt

Communicators Corner: A Partnership for the Future

by Chris Forncrook, Lead Communication Specialist

The Flight For Life Communications Center operates 24/7, 365 days a year to provide safe, efficient, high quality service to our customers. Therefore, it is imperative to maintain a system to continue operations even during times of disaster. Whether the event is as catastrophic as a fire, or a much less complex network outage, our Communications Specialist must be able serve our customers at all times.

One of the challenges of moving to our new Waukesha/Milwaukee Base at the Waukesha County Airport was to find a site for a safe, reliable back-up Communication Center. Many options were explored, including utilizing space in our hangar at Froedtert Hospital. However, when that space became unavailable, we reached out to the folks at Waukesha County. Flight For Life had just finished a project with Waukesha County's Radio Service division on expanding our use on the county's 800 MHz radio system, when the need arose for the back-up Communication Center. Richard Tuma, Waukesha County's Director of Emergency Preparedness and head of the county's consolidated dispatch center, was contacted and was able to quickly move the process forward. In early August an agreement was signed between Flight For Life and Waukesha County to house a computer and utilize a small amount of desk space in their state-of-the-art Communications Center. As of October 15, 2010 the Flight For Life back-up Communication Center became fully operational at Waukesha County Communications (WCC); should disaster ever strike, our Communications Specialists are prepared to make the switch.

This project exemplifies the dedication of Waukesha County to interagency cooperation and sharing of resources to benefit public safety. Flight For Life would like to thank Richard Tuma for facilitating this agreement and County Executive Dan Vrakas for the county's continued support of our organization. We must also send thanks to the entire WCC staff, specifically Sherri Stigler, Operations and Training Manager, for being so accommodating and allowing us access to the dispatch floor for set-up. Getting the new back-up Communications Center was a huge project, and the behind-the-scenes hard work and expertise of Nick Burns, MRMC/FFL Information Systems Coordinator, must be mentioned. Without Nick's knowledge and insight, a project this complex could not have even started. Final thanks to Jim Singer, FFL Transport System Director, for supporting a vision of preparedness and interagency cooperation that allowed the open dialogue with Waukesha County to begin.

Having a fully operational back-up Communication Center is something we at Flight For Life hope to never take advantage of, but the hard work of planning for a "worst case scenario" has led to a great new partnership for the future.

Mark Your Calendar!

- **Wisconsin EMS Association's "Working Together" Conference & Exposition**, January 26 - 29, 2011, Frontier Airlines Center, Milwaukee—come and see us there!
- **May is Critical Care Awareness Month**
- **EMS Week is May 14-21, 2011**

Blood Drives:

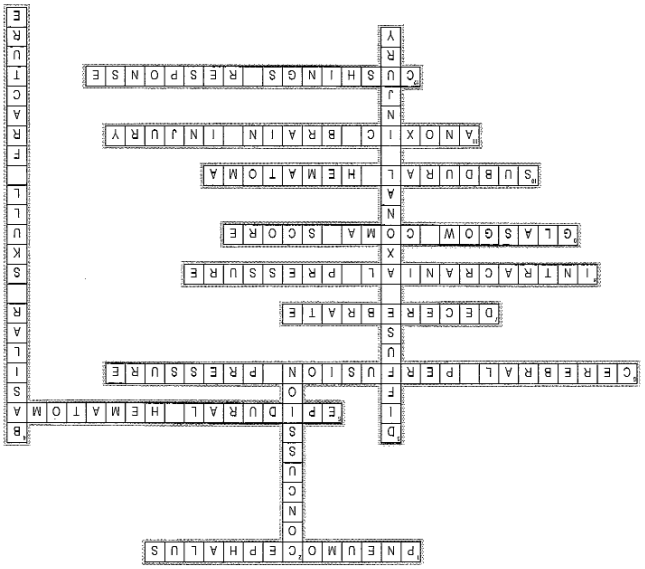
- ***FLIGHT FOR LIFE***–McHenry and McHenry Township F.P.D. will hold a joint **Blood Drive** on Saturday, June 25, 2011
- ***FLIGHT FOR LIFE***–Waukesha/Milwaukee & Fond du Lac Bases will also hold Blood Drives during 2011, but those dates have not been set yet.

For the latest news and information on events see our Website:
www.flightforlife.org

AND

Check us out on Facebook:
www.facebook.com/flightforlife transportsystem
for daily updates!

"Neuro Stuff" Crossword Puzzle Answers



First Annual Seven Angels Blood Drive Held

by Tammy L. Chatman, CMTE
Professional Relations/Marketing Manager
McHenry Base

On October 25, 1995 a terrible tragedy happened in Fox River Grove, Illinois. A school bus full of Cary-Grove High School students on their way to school was hit by a commuter train. Seven students died and twenty-one more were injured. Many fire, EMS and law enforcement agencies along with dispatch, multiple helicopters and various hospitals were involved that day. It was a very trying and difficult time for the students, their families, the community and those agencies involved.

To somehow commemorate that day fifteen years ago, the Fox River Grove Fire Protection District and Flight For Life-McHenry teamed up with LifeSource to host the First Annual Seven Angels Blood Drive. The blood drive was held on Saturday, October 23rd, at the Fox River Grove Station #1. A short memorial service was held at the conclusion of the blood drive at the site where the accident occurred. In all, 100 units of blood were collected! LifeSource provided hot dogs and hamburgers for donors and Flight For Life-McHenry provided the famous helicopter sugar cookies as well. It was a wonderful opportunity to turn a tragic event into a day of giving back in honor of those students who lost their lives that day.

Another special part of the Seven Angels Blood Drive was the raffling of a one-of-a-kind quilt that represented almost every fire, EMS, law enforcement, medical helicopter, dispatch and hospital that was involved in the accident that day. The quilt was lovingly created from patches and t-shirts from each of the involved agencies by the ladies from the Pieceful Gathering Quilt Shop in Fox River Grove.

Each blood donor was given a raffle ticket as a way to say thank you for donating and others could be purchased with all proceeds going to the Richard Stiller Memorial Scholarship Fund. The Fund provides scholarships to students from Cary-Grove High School who enters the fire service or medical field in memory of the seven students who died in the crash. The winning ticket was pulled at the Fox River Grove F.P.D. Annual Turkey Raffle Fundraiser on November 20th.

Photos from Flight For Life's 2010 Blood Drives

Conference Held Twice With Excellent Attendance

by Jayce Commo
Customer Service/Outreach Coordinator
Fond du Lac Base

To accommodate our growing number of customers, Flight For Life's annual "Trends and Issues" Conference was held in two locations this year. The Kenosha County Center in Bristol, Wisconsin was once again host to our first conference, but this year we added a second conference at St. Agnes Hospital in Fond du Lac, Wisconsin. Despite this being the first year offering a conference in the Fond du Lac area, and even though the two conferences were just weeks apart, both events were very well attended.

Flight For Life nurses **Jon Hagen** and **Nettie Jenkins** presented a case study of a spinal cord injured patient, along with a review of the central nervous system. The presentation was followed by **Dale Carr**, a spinal cord injury patient himself, who told his amazing story of survival and recovery. Children's Hospital of Wisconsin Assistant Professor of Pediatric Emergency Medicine, **Amy Drendel**, discussed the "ABCs" – Asthma, Bronchiolitis, and Croup. Flight For Life nurse **Keith Stephens**, who is also a member of the hyperbaric medicine team at Aurora St. Luke's Medical Center, joined his Aurora colleague **Nathan Brown** in discussing Carbon Monoxide Poisoning and the use of hyperbaric chambers. Street drugs were the topic of the fourth session of the day as **Todd Rishling**, Flight For Life Paramedic, discussed how to recognize the signs and symptoms of use of common street drugs. The final session of the day included a brief history of night vision goggles, as well as how they will be used and how they can improve safety. **Vince Freeborn**, Flight For Life Program Aviation Manager, then took groups into a dark room at allowed them to see, first hand, the benefits of using NVG technology.

Special thanks to our 2010 sponsors: **Froedtert & the Medical College, LifeQuest and Zoll**.