Lead Pilot

By: Marty Fisher

Marty Fisher

I would like to introduce myself to all of MedCenter Air's customers in North and South Carolina. My name is Martin Fisher and I am the pilot aviation manager for Omniflight Helicopters, operating on behalf of MedCenter Air.

I have been with the program for two years, operating as a line pilot and flying out of our Rock Hill, SC and Charlotte, NC bases. Before MedCenter Air I had the fortunate experience of being a U.S. Marine, flying and working around the globe.

As I settle in to this new position, I am excited and encouraged at the opportunity to manage and lead the pilots while working alongside our incredible maintenance and medical crews. I am privileged to work for one of the most experienced flight nurse and respiratory therapist teams in the helicopter emergency medical service industry. Not only is this team a professional organization in our industry, but it operates sophisticated and technologically advanced aircraft. Our EC-135 P2+ aircrafts are designed and equipped with up-to-date flight safety features and ALS equipment. We are lucky to be living in and around communities that are serviced with the industry's highest standard in rotary wing aviation.

An incredible part of our job is flying out to local communities, landing on a farm, baseball field or four lane highway and providing lifesaving care to people in need. Our industry grew from the MEDEVAC flights on the Korean peninsula and the CASEVAC missions of Southeast Asia into what it is today. Instead of soldiers and marines setting up landing zones halfway around the world - firefighters and EMS personnel set up landing zones on ball fields and church parking lots in America, all in the hope of giving someone the best opportunity for proper medical attention. It is my job to ensure our pilots and aircrafts are performing at an optimum level of service so when you call, we can respond in a safe and timely manner.

It is a honor to work in a service dedicated to helping others during times of need as I am sure you feel these sentiments. I look forward to meeting many of you while I travel around our region. Please feel free to contact me if you have questions about our aircraft and our capabilities. If I don't have the answer I will put you in touch with someone who does. My contact information is martin.fisher@carolinas.org or martin.fisher@omniflight.com. 704-607-6911.

MEDCENTER AIR
1000 Blythe Blvd., Charlotte, NC 28203

Upcoming Events

EMS Night Out
Chester County
March 29 at 7 pm

SC EMS Symposium
Myrtle Beach, SC
April 13-16

MTLI
Wheeling West Virginia
May 1-6

MedCenter Air and the fire department team up to save lives.

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Hypothermia

By: Shari Wingate

On a cold, winter day the crew assembled on pad one to off load a trauma patient. The temperature was 19 F. Everyone was bundled in their coats, gloves and hats. We off loaded the patient under the turning blades, which theoretically lowered the wind chill factor to about -20 F. The patient's clothes had been cut off and he was halfway covered with a sheet. The patient had been intubated. He had been trapped in his car for nearly 20 minutes prior to extrication while the paramedics worked on him. When the patient was taken through the resuscitation room the crew placed a warm blanket over the top of his body. On arrival to the Emergency Department the patient was hypothermic with a rectal temperature of 95.6 F.

Under normal circumstances the hypothalamus regulates the core temperature by monitoring heat sensors within the body. A drop in temperature initiates shivering and vasoconstriction to promote heat generation and prevent further heat loss to maintain a core temperature between 97 F and 100 F. Once the body has been injured in a traumatic episode a cascade of events occurs that can interfere with the hypothalamus action.

At the time of an accident a patient is exposed to conduction, convection and evaporation. Conduction is heat loss when a warm object lays on a cold surface. Convection is heat loss from a current of air blowing across a warm object. Evaporation is heat loss when moisture turns to vapor.

In the case of this accident the victim experienced heat loss from a prolonged extrication time. The victim lay in a cold car with blood-dampened clothing while exposed to the wind. Children and the elderly are at a greater risk for this type of heat loss due to the lack of fatty tissue. Comorbid factors may further exacerbate hypothermia. For example, beta blockers will inhibit the tachycardia needed to circulate the blood volume related to hypovolemia. Injuries such as closed head and spinal cord have the propensity to prevent shivering and vasoconstriction. Drug and alcohol use can decrease the work of the hypothalamus; if the patient had been participating in either they may already have below normal temperatures.

Once the resuscitation effort begins the patient is bombarded with treatments that lend to the increasing detriment of his temperature. The emergency response team removes his clothing, further exposing him to the elements and heat loss due to convection and evaporation. The patient may receive massive volume replacement, which was stored at ambient temperature. He may require blood products that are kept in a cold environment, usually less than 10 F. If the patient is intubated and receives sedation and paralytics he loses his ability to shiver to maintain a normal temperature.

Hypothermia is divided into three classes:
Class I: 95 F - 97 F (mild)
Class II: 90 F - 95 F (moderate)
Class III: <90 F (severe)

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MedCenter Air rushing a patient to CMC.

Neonatal Sepsis

By: Shellie O'Day

Neonatal sepsis is the single most common cause of neonatal deaths in the community. If diagnosed and treated early it is possible to save most cases of neonatal sepsis.

Sepsis is defined as a severe complication of viral, bacterial, parasitic or fungal infection, which causes a systemic inflammatory response. During pregnancy babies contract the infection from the mother's genital tract during labor and delivery, or after birth from contact with others.

Sepsis in a newborn is likely to develop when the mother has had complications that increase the likelihood of infection. Complications include: premature rupture of the membranes, bleeding problems, difficult delivery, infection in the uterus or placental tissue, or fever in the mother.

Babies also can develop sepsis by contracting infections after birth from infected persons or objects. Babies who are preterm or have a low birth weight are more susceptible to infection. Sepsis in newborns is not always easy to identify since newborn babies do not have the same signs and symptoms as older children. Although each baby may experience symptoms differently, the following are signs of infection in newborn babies:

- Apnea or difficulty breathing
- Bradycardia
- Decrease in temperature
- Lethargic
- Poor feeding
- Cyanosis
- Diarrhea/vomiting

Early treatment is crucial for ensuring optimum outcomes of neonates with sepsis. Antibiotics and supportive care are equally important components of treatments. Antibiotics take between 12 to 24 hours to show any effect and it's the supportive care that makes the difference between life and death. The purpose of supportive care is to normalize the temperature, stabilize the cardiopulmonary status, correct hypoglycemia and prevent bleeding.

Antibiotics and supportive care of a septic neonate

- Antibiotics - Ampillicin- 100mg/kg Q12 hrs
- Gentamycin - 3mg/kg Q24 hrs if less than 34 weeks
- Gestation - 4mg/kg Q24 hrs if greater than 34 weeks

1. Provide warmth - ensure normal temperature.
2. Start an IV or IO (for infants >3kg).
3. Infuse normal saline 10ml/kg over 30 minutes if capillary refill is > 2 seconds, Repeat normal saline bolus if capillary refill continues to be > 3 seconds.
4. Infuse D10W at 80ml/kg/day for infants less than one week old and 100ml/kg/day for infants one to four weeks old.
5. Infuse D10W bolus 2 ml/kg for blood glucose less than 50.
6. Start oxygen by nasal cannula or hood, if cyanotic or grunting.
7. Provide stimulation for apnea. If apnea persists, nasal cannual at 2lpm may provide enough stimulation to prevent any further apenic episodes.
8. Provide bag mask ventilation if the infant breathing is inadequate.
9. Avoid enteral feed.
10. Consider dopamine if perfusion is persistently low after 2 NS boluses.

MedCenter Air taking off.

Hypothermia

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Any temperature less than 97 F is considered hypothermia and severe hypothermia begins at 90 F. Research by Goldberg and Roe found that a temperature less than 97 F causes a 92 percent increase in oxygen consumption. Bat et al found that shivering, when hypothermic can increase oxygen consumption by as much as 400 percent. Mild hypothermia interferes with the monitoring of pulse oximetry, drug metabolism and elimination due to vasoconstriction so the medications administered during pre-hospital resuscitation may remain in the periphery for a longer period of time. The medications may not be dispersed at the expected rate, resulting in an unexpected dumping of medication at an undesired time.

Hypothermic patients may experience cold diuresis. This phenomenon is when the patient has peripheral vasoconstriction. The body is tricked into believing there is adequate or hypervolemia due to the pressure on the baroreceptors causing kidneys to eliminate the presumed excessive fluid. When the patient once again returns to a normotensive state and the vasoconstriction reverses the patient suddenly becomes hypovolemic. (Sicoutris, 2001).

MedCenter Air waits at sunset.

The body's response to hypothermia and trauma has been described as polar opposites. (Sicoutris, 2001). The hypothermic state slows the body's response where traumatic injuries can trigger the fight or flight response. The cascade of events stemming from this polar warfare can result in what is known as the "trauma triad of death," "lethal triad," or "bloody vicious circle." As the body's temperature decreases the metabolic rate slows. The slowed metabolism and decreased oxygenation results in anaerobic metabolism triggering the release of lactic acid. Lactic acidosis can impair the most essential parts of the coagulation process. Platelets are temperature sensitive and decrease activation at moderate hypothermia (around 93 F) and ceases activation at severe hypothermia (< 90 F); (Lier et al, 2008). Acidosis is further exacerbated by a hypovolemic state and massive fluid transfusions. Although the acidosis can be reversed the coagulopathy will not quickly correct. In order to prevent the patient from entering the "trauma triad of death" the caregiver must intervene early and stop the cascade of events that result in hypothermia, acidosis and coagulopathy.

Given that transportation via air medical or ground results in patient exposure to environmental temperatures, the transport team must be cognizant of heat loss and prevention. Even if the region of operation of the transport is not experiencing frigid weather, extenuating factors such as wet clothing and wind can promote extreme cooling in the hottest of temperatures. About 90 percent of heat loss is done by conduction and convection of the skin. One single layer of insulation (sheet, paper or blanket) can decrease this heat loss by 30 percent. This is not due to the actual layer of insulation, but due to the air between the body and the insulator (Frakes & Duquette, 2008). Other treatment options are to remove wet clothing, administer warmed crystalloids, cover with blankets (or commercial thermal blanket), place warmed fluids in groin or axillary and increase the cabin temperature. Once contact has been made with the receiving facility advise the physician the patient may need further warming so the trauma team can be prepared upon the patient's arrival.

Hypothermia is a principal factor in morbidity and mortality of trauma patients. Although most studies are done in cold regions hypothermia also can occur in sub-tropic and tropical regions. Patients in the warmer climates may have a more severe sequela due to the missed hypothermia, so hypothermia should be addressed in every trauma resuscitation. According to one study of 2,184 patients about 13 percent of the patients in a warm weather environment developed hypothermia during the prehospital resuscitation and nearly 7 percent developed hypothermia during the hospital resuscitation (Aitken, 2008). Regardless of where the hypothermia occurs, the episode of hypothermia results in an increase of Intensive Care Unit (ICU) admissions, increased lengths of stay and increased mortality rates.

Dedicated Charge

By: April Strassburger

MedCenter Air is continually striving to meet the needs of our service area's referring hospitals and emergency facilities. Our most recent accomplishment is the formation of a dedicated charge position during the week.

A clinician is accessible in our communication center so communicators may complete their jobs quickly and efficiently. The dedicated charge receives patient reports from referring facilities, decreasing our times from receiving a request to dispatching the appropriate team. Often when you provide patient reports by phone the dedicated charge will receive your report; decreasing bedside time used for patient reports. The transporting team may have further questions when they arrive to bedside. With charge receiving the report, the team will be informed of the patient report and prepared with the proper equipment when they arrive at bedside.

Additional charge duties may include looking into different modes of transportation. For example, a requested ground transport over a long distance may meet the criteria for fixed wing transport. In these situations fixed wing can be more comfortable for the patient and can decrease the out of hospital time.

The dedicated charge position is a new and evolving role that we are proud to provide. With this new position we hope to increase our efficiency in the transferring process. As this position grows we encourage you to fill out customer satisfaction surveys and provide feedback on your experience with the dedicated charge.

MedCenter Air landing.

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