

Michael Whitson retires!



Congratulations and best wishes to REACT’s Lead Mechanic, Michael Whitson! He retired in March after 33+ years with REACT. He was the first employee of the flight program in 1987 and started before the arrival of our first aircraft. Michael will be missed, but we are glad that he will have more time to spend with his family.

We hope you enjoy your well-earned retirement, Michael, and congratulations on your distinguished career. Thank you for all you have done to keep us safe!

Happy National EMS Week

May 16-22

*Thank you
for all you do!*

This is EMS:
Caring for Our Communities



Flying with antibiotics



By Danielle Swenson

As a CAMTS-accredited program, we have always strived to stay ahead of the game by meeting and/or exceeding industry standards in all aspects of care. That is certainly no different when it comes to infection prophylaxis and prevention in our trauma patients with open fractures. REACT introduced two different antibiotics to our med bags two years ago. Our goal is to get these antibiotics infusing prior to arrival at the receiving emergency department. The standard at trauma centers is to initiate antibiotics within an hour of arrival at the emergency department. Starting antibiotics in the field prior to hospital arrival helps to reduce the potential of infection that could lead to sepsis. This, in turn, also reduces morbidity and mortality of a trauma patient.

Why is this important? Trauma causes many stressors on a body from the point of initial injury until well after the patient has healed. This added stress makes the body more susceptible to infection. By initiating antibiotics early, we’re able to lessen the burden on an already stressed body.

React currently carries two different broad-spectrum antibiotics. Ancef (cefazolin) will be used on most open fractures, and the antibiotic used more frequently. For grossly contaminated open fractures, such as farm injuries, we would turn to Invanz (Ertapenem). Both of these antibiotics carried by REACT are administered by IV drip.

While it’s important to administer IV antibiotics early, it’s more important to initiate lifesaving measures first. Our crew continues to provide excellent care to include advanced airway management, blood and plasma administration, pain management, as well as chest tube placement in the field when patient condition warrants. IV antibiotics are just another great tool in our bag to help us deliver the best care possible.

Blood products in trauma resuscitation



By Mike Stefko, AAS, FP-C, CCP, NRP

Exsanguination remains the leading cause of death in trauma patients. Uncontrolled hemorrhage within 6 hours of injury is one of the prime causes of avoidable death.¹ Recognizing massive hemorrhage early and getting our patients to definitive care remains paramount. So how are we managing these critical patients until we can deliver them to an appropriate facility?

When treating trauma patients, we are now taught to allow adult patient population to remain permissively hypotensive with a systolic blood pressure at 90mmHg. The current most easily available treatment is administering crystalloid fluids like normal saline or lactated ringers to maintain a systolic blood pressure of 90mmHg. Titration of these fluids to achieve that target blood pressure is key by giving smaller boluses instead of the old school of thought of giving 2-4 liters of crystalloids as fast as possible. It's important to remember when administering crystalloids we are losing the oxygen carrying capacity and clotting function of blood. While we are providing volume we are not effectively oxygenating vital organs and tissues. This may contribute to poor outcomes in hemorrhage through disrupting existing clots, dilutional coagulopathy, acidosis, hypothermia, endothelial dysfunction and reperfusion injury. Furthermore, only about 30% of infused crystalloid remains intravascular and therefore the volume required to be infused is about three times that of the lost blood.² Today, studies have shown emergency department crystalloid resuscitation of 1.5L or more is associated with increased mortality in elderly and non-elderly trauma patients.³

After initiating crystalloid fluids and recognizing that it's taking numerous boluses or a continuous infusion to maintain a systolic blood pressure of at least 90mmHg, what's next?

The transfusion of PRBCs and blood products prior to trauma center arrival were associated with a nearly 5-fold increase in odds of survival at 24 hours and a 72% reduction in the odds of shock.⁵ Replenishing what the patient is losing early is key to maintaining adequate perfusion to vital organs and tissues.

As you may know, Mercyhealth's REACT helicopter carries fresh never frozen plasma and PRBCs on every flight. Our critical care flight crews are able to administer these products to not only our trauma patients but our medical patients as well. This allows us to treat shock early in the field further reducing the time it takes to reach definitive care.

Along with Tranexamic Acid, (TXA), REACT will be administering plasma for its clotting factor content in resuscitation. For uncontrolled internal hemorrhage this is key in helping to slow or stop the bleeding that may otherwise not be controlled by other methods. Observational studies demonstrate that early use of plasma improves acidosis, mitigates coagulopathy and decreases the need for fluid resuscitation.⁴ Carrying fresh never frozen plasma or "liquid plasma" allows REACT to administer this product immediately without the need to thaw the product like with frozen plasma.

Next line treatment is administering PRBCs. PRBCs will help with clotting factors along with replenishing our patients their lost oxygen carrying factors such as hemoglobin. Our hemorrhagic shock patients are oxygen deprived. Without replacement of these products can lead to tissue and organ death rapidly increasing the morbidity and mortality of our patients.

Adapting our care to early administration of blood products has time and time again proven to benefit patients in numerous studies as well as through the observations of the patients we care for. REACT is proud to have this be our standard of care for all patients. Bringing these practices out into the field and surrounding areas proves to be the right resource for these critical patients.

References:

1. Holcomb JB, McMullin NR, Pearse L, Caruso J, Wade CE, Oetjen-Gerdes L, et al. Causes of death in U.S. special operations forces in the global war on terrorism: 2001-2004.
2. Wagner BK, D'Amelio LF. Pharmacologic and clinical consideration in selecting crystalloid, colloidal and oxygen carrying resuscitation fluids. Clin Pharm.
3. Crystalloids in Trauma Patients- J Trauma 2011 Eric J Iley, MD, Morgan A. Clond PhD, Marissa K. Srour, BS, Moshe Barnajian, MD, James Mirocha, MS, Dan R. Margulies, MD, Ali Salim MD
4. Gonzalez EA, Moore FA, Holcomb JB, et al. Fresh frozen plasma should be given earlier to patients requiring massive transfusion
5. Brown JB, Sperry JL, Fombona A, Billiar TR, Peitzman AB, Guyette FX. Pre-trauma center red blood cell transfusion is associated with improved early outcomes in air medical trauma patients. J Am College of Surgeons

Educational opportunities offered by REACT

The REACT team is pleased to offer educational opportunities to your staff, hospital or prehospital. Our highly trained staff is diverse and wants to share our knowledge with you. The lecture topics below can be tailored to your specific needs with class duration ranging from 1-2 hours. Continuing education hours can be approved ahead of time through the Ohio Nursing Association (for nursing), and by IDPH for EMS and CCEMTP hours.

If you would like the REACT team to teach, please complete the request form at mercyhealthsystem.org/react-helicopter-contact-us-form, or email Lois Hinton, BSN, RN, CFRN, Outreach Coordinator, at lhinton@mhemail.org.



TRAUMA

Adult:

- General trauma care
- Neuro trauma
- Thoracic trauma
- Abdominal trauma
- Orthopedic trauma
- Hepatic trauma
- Renal trauma

Pediatric:

- General trauma management
- Neuro trauma
- Thoracic trauma
- Abdominal trauma
- Orthopedic trauma
- Hepatic trauma
- Renal trauma

General trauma topics:

- Stop the bleed: tourniquet application
- Blood products and administration

MEDICAL

Pediatric:

- Respiratory issues
- Cardiac issues
- Sepsis
- Child abuse
- Airway management
- Ventilation management (hi-flow oxygen, CPAP, mechanical ventilator)
- DKA pediatric focus

Adult:

- DKA
- Cardiac care
- Cardiac pathophysiology
- Intravascular emergencies (dissecting aortic aneurysm, pulmonary embolism, DVT)
- Stroke, hemorrhagic and non-hemorrhagic care and interventions
- Sepsis
- Adult abuse
- Ventilator management, CPAP, BiPap
- Airway management

OB/GYN:

- Emergency delivery
- Trauma in pregnancies
- Pregnancy complications
- Neonatal care immediately post delivery
- Post-partum, post-delivery complications

General topics:

- Preparing the patient for transport
- Helicopter safety class

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