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SafetyMatters

A quarterly, collaborative publication
from MedFlight and HealthNet
Aeromedical Services

THIS ISSUE INCLUDES:

National EMS Health and Safety Officer Update

By Justin Koper, MA, MTSP-C, FP-C
Safety Officer
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The National EMS Health and Safety Officer committee has been diligently working for the past year in conjunction with the National EMS Management Association (NEMSMA) to create a model for EMS agencies to use in selecting a dedicated safety representative. NEMSMA already has certified and tested positions for an EMS Director, EMS Manager, EMS Supervisor and has almost completed the EMS QA/QI position. Now they are moving onto safety. Our committee currently has the position description and position personal attributes completed. We are currently in the process of creating the test model and discussing what materials one might study or learn to achieve this position certification.

We have based our test model on the Board of Certified Safety Professional's (BCSP) Associate Safety Professional (ASP) model. We have begun the process of incorporating EMS specific modalities into this general safety model to make it relevant for an EMS individual. Many agencies will most likely choose someone with EMS experience, but others across the country have already begun to incorporate general industry safety professionals into their system for a broader look at safety processes. We hope the final model will increase the professionalism of the position along with the industry. ■

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Mission. Ready.

Shorelines, More than Just Extension Cords

By Mark A. Farley, CFRN
Flight Nurse
HealthNet Aeromedical Services Base 9

When unplugging your ambulance or aircraft, have you ever noticed the shoreline connection felt a little warm? If so, do you realize this can potentially be a serious problem? Even if the connection does not feel warm, an inspection of the cord and its connections still needs to be done. This cord is essential to the Mission.Ready. philosophy we live by each day.

Ambulance manufacturers began using products for shoreline connections in the early 1970s. This equipment was equivalent to standard RV hardware that would accommodate the load of a trickle-charging for system batteries, a suction device and a hand-held radio. This work load would pull less than 500 watts and a 15-amp residential cord could handle the demand easily. Shorelines are connected to many things today that are considered "parasitic loads." Some examples at minimum are a 10-amp charger for the chassis batteries, chargers for cot batteries, cardiac monitor, ventilator, suction, thermal angel/buddy lite, refrigerator and possibly a block heater. All of this adds up! The next time you remove the shoreline cord and it feels warm, it is a safe bet it is delivering current more than its recommended capacity.

Always examine shoreline cords at both ends and the shoreline receptacles on both ambulances and aircraft. A safe cord should be firmly attached to its plugs on both ends. If you find cutting of the outer and inner jackets exposing bare copper, remove the cords from service immediately and notify the base lead.

Crews must be familiar with the breaker panel in their ambulance and should know where it is located and how to reset the panel. It should contain at least a 110-volt circuit breaker, which looks like a toggle switch. There should be a number, either 15 or 20, on the visible part of the breaker which indicates the maximum amount of a 110-volt current the breaker will handle before it trips. The constant load rating for shoreline should amount to less than half of the breaker's trip limit.

Cords should also be permanently labeled every three to four feet with the kind of wire it contains. For example, a cord that handles a max of 15 amps should be labeled 14-3 AWG. This indicates three 14-gauge wires. A cord that handles a max of 20 amps should say 12-3 AWG. This means three 12-gauge wires. A 12-gauge cord protected by a 20-amp breaker in the station or hangar and a 20-amp breaker in your ambulance or aircraft would be optimal.

It is recommended that ambulance and aircraft shoreline cords be replaced once each year. Each time the cord is plugged and unplugged the ends arc slightly. This arc causes some wear on the metal and creates some minor damage. The amount of times the cords arc when plugged in wears the contacts, thus making the contacts less and less reliable when the cord is utilized over time. Cords do get wet and are run over from time to time by vehicles more than five tons. Make it a habit to pull cords out of the drive path of vehicles. Habits are reliable, even when we are tired. ■

MedComm: Columbus Air Medical "Air Traffic Control"

By Amanda Ball, Safety Officer
MedFlight

Numerous trauma centers, burn centers, and hospitals are in central Ohio. Naturally, air medical traffic is often congested. With nine helicopter teams positioned throughout Ohio, MedFlight is often in the air across the state and potentially crossing paths with other air medical programs in the area.

Since its inception, MedFlight's communication center, MedComm, has been proudly located in Columbus. These local and highly-trained experts are available 24/7 for your safety needs and have impressive experience in aviation, 911 dispatching, EMS, military service, nursing and air medicine.

For decades, MedComm has provided flight-following and flight monitoring services not only for our teams, but for other air medical programs visiting central Ohio hospitals. With safety as our top priority, MedComm acts as "air traffic control" for all inbound and outbound aircraft in the greater Columbus region. This initiative began as part of a partnership with the Central Ohio Trauma System to help prevent "traffic jams" over hospital helipads, flight paths crossing, and potential near-misses in an already congested urban airspace.

If you work at an agency that transports into the Columbus area, we ask that you contact MedFlight MedComm so we can not only alert other flight teams and hospital security teams of your intended flight path, but we can keep an eye on your safety as well. This needed communication process is broken down into a few simple steps:

1. Have your dispatch center call MedComm with your flight path and an ETA. MedComm can be reached 24/7 at **1-800-222-5433**.

2. Once you are 15 minutes away from your Columbus destination, contact MedComm on the radio. Most visiting flight programs contact MedComm on **155.400 PL 141.3**, but you are welcome to contact us on MedFlight's MARCS channel, labeled as MEDFLT. They will relay any air medical traffic you need to look out for in the area during your mission.

3. Columbus is also home to several touring, media, and law enforcement helicopters, three major airports, and visiting air traffic (banner planes, blimps, etc) during special events. Please announce your intended flight path and altitude to air traffic on **Unicom 123.025** when you are entering Columbus airspace.

Along with overseeing air medical traffic, MedComm is more than happy to assist your teams with their operational needs, like arranging for extra personnel to be waiting on your arrival for patient unloading, contacting your dispatch center if you are out of range, etc.

With your help, we can maintain a safe flying culture in the Greater Columbus area and around Ohio. ■

Dead Tired

By Amanda Ball, Safety Officer
MedFlight

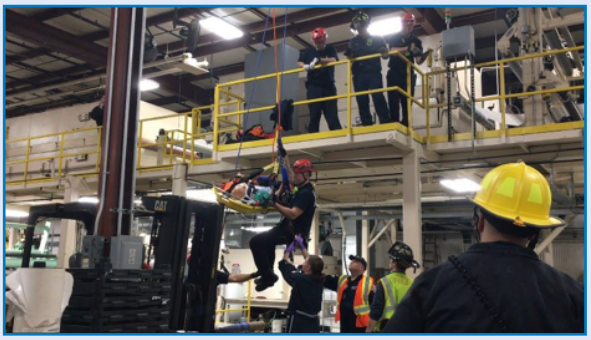
During my 16 years in EMS, I have never met a first responder who isn't unwaveringly dedicated to their job and to serving others. Taking that extra 911 call, picking up that extra shift, waking up in the middle of the night when the tones drop, pouring that extra cup of coffee as to prepare for a long transport – I've been there myself. I've come home to my family at the end of a long, strenuous shift, kissed my kids and went to bed… exhausted.

Odd schedules, odd hours and odd circumstances innately lead to odd sleeping patterns. But, what about fatigue? Fatigue is defined as "a subjective, unpleasant symptom, which incorporates total body feelings ranging from tiredness to exhaustion, creating an unrelenting overall condition which interferes with an individual's ability to function to their normal capacity." So, basically, you are so tired that you are not making great decisions.

I had never heard of fatigue management until I began my career in critical care transport over 12 years ago. There were so many proactive measures and systems in place at MedFlight to respect and prevent fatigue that it was hard to keep track of them all. One of the more notable policies is the "Crew Rest" feature where the team can take themselves out of service for a period of time to rest. The overall goal of all these systems is maintain healthy and alert clinicians to care for the sick and injured patients.

A friend of mine, who does not work in this industry, just had his normal work week increased to 72 hours a week, indefinitely. That equates to six, 12-hour shifts in a row with one day off in between (and he is asked weekly to work that day as well). He works in an industrial setting with very large machinery. As he talked about it, I found myself drawing a lot of parallels to our industry and how fatigue, burn out and the drive to place production over safety can quickly threaten the well-being of medical transport crew members.

What would the potential risks be if we required our crews to work a similar schedule?



MedFlight participating in industrial field amputation training with the Kettering Health Network Surgical Emergency Response Team.

What tools are in place at your organization to mitigate against fatigue and burn-out? Which of those practices could proactively be placed in my friend's work setting that would mitigate fatigue and potential errors?

Take time to review the safety measures at your organization that discuss fatigue and burn-out. In addition to having systems, practices and beliefs in place that promote a safe working cultures the Commission on Accreditation of Medical Transport Systems recommends ongoing training on the topics of sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue.

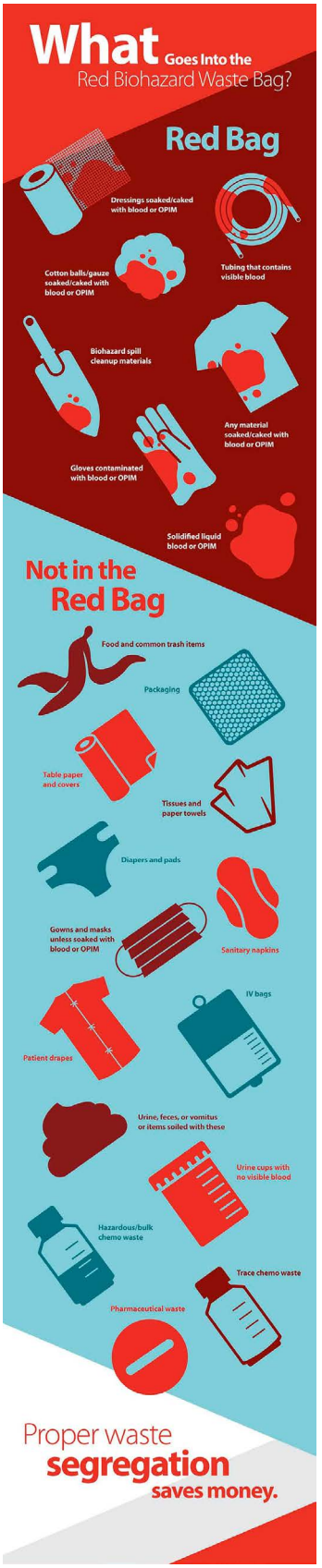
We work in an industry that needs us at our healthiest, so we can help those who need us most. In addition to that, we have families at home who depend on us. Respect your fatigue level and find a balance that maintains your health and well-being…it's a matter of safety.

References:

"Evidence-Based Guidelines for Combatting Fatigue in EMS," Daniel Patterson, PhD, MPH, MS, NRP.

"Fatigue: A concept analysis. Int J Nurs Stud," Ream E, Richardson

CAMTS Standards and Policies, 10th Edition. www.camts.org. ■



Vehicle Operations Training Evolving to Decrease Incidents

By Jeff White, M.S., MTSP-C, FP-C
Director of Safety
HealthNet Aeromedical Services

Begining October 2017, HealthTeam Critical Care Transport vastly expanded ground service across West Virginia. With the support of WVU Medicine and CAMC Health System, we grew from five assets to 32 in a matter of months. The expedited growth had its various challenges. The most vulnerable area we discovered was our driver-operator program. In West Virginia, one must take an Emergency Vehicle Operator (EVOC) training course to work in any facet of emergency services. Initially, we accepted any employees current EVOC certification and let them begin work. After almost a year of service, we have discovered that this may not have been the best strategy. With accident rates climbing, with employees who have less than two years of experience, we are taking a more aggressive approach in our driver management.

We implemented our own in-house EVOC course and require all team members to complete the 16-hour course based on the DOT National standard. Now we are taking a closer look at operations for transport industries that travel numerous miles in a year. We have settled on the model used by UPS for its drivers. Below is an outline of the 5-step process they use to minimize accidents inside of UPS along with multiple other items. This process is an effective defensive driving strategy that helps the driver maintain situational awareness. In the high-stress world of EMS, we are at a higher risk than most due to the use of Code 3 response. These strategies allow the driver to remain vigilant in all situations.

Aim High in Steering

Look as far down the road as possible to uncover important traffic information to make appropriate decisions.

Get the Big Picture

Maintain the proper following distance to comfortably determine the true hazards around your vehicle. Don't tailgate.

Keep Your Eyes Moving

Scan — don't stare. Constantly shift your eyes while driving. Active eyes keep up with changing traffic conditions.

Leave Yourself an Out

Be prepared. Surround your vehicle with space in front and at least on one side to escape conflict.

Make Sure They See You

Communicate in traffic with your horn, lights, and signals to establish eye contact with motorists and pedestrians. Be reasonably sure of people's intentions.

We feel that the implementation of these five steps, in conjunction with the increased driver training, will improve overall situational awareness and lead to the decline in incident rates. ■

Flushing IV Tubing with Unrecognized Residual Drug Leads to Adverse Effects

By Institute for Safe Medication Practices

Once again, we are reminded how residual drug in intravenous (IV) tubing can have severe effects if unrecognized when lines are flushed or other medications/infusions are administered through the same line, a subject we have covered in the past. We received a report about an elderly man hospitalized for prostate surgery. After the procedure, the patient complained of pain and was given HYDROmorphone IV in the post-anesthesia care unit (PACU). About a minute later, he developed slurred speech, body twitches, and a rapidly declining blood oxygen saturation level (SpO2) before losing consciousness. The anesthesia care team was called, and two doses of naloxone were administered without effect. The team then realized that, during surgery, the same line had been used to administer rocuronium. They administered 100 mg of sugammadex to reverse the effects of the suspected residual neuromuscular blocking agent in the IV port and tubing that the patient apparently received when the HYDROmorphone was administered. In less than a minute the patient regained consciousness and began to breathe spontaneously, with an SpO2 of 95%.

If IV lines are not flushed after administering an IV push medication, it is important to remember that the length of the IV tubing may contain 10 mL or more of uninfused medication. Additionally, needleless ports and stop-cocks also have dead space where the drug can accumulate.

In 2012, we published a nearly identical report in our acute care newsletter in which a patient also lost consciousness in the PACU after an IV push dose of HYDROmorphone (ISMP. Medication within IV tubing may be overlooked. ISMP Medication Safety Alert! 2012;17[16]:1-2). In that case, the patient's SpO2 dropped to 40%. The patient had been receiving rocuronium by continuous infusion during a procedure. While the neuromuscular blocking agent had been stopped afterwards, the line had not been flushed. Anesthesia immediately responded, administering neostigmine for reversal, as they suspected the problem was caused by flushing residual rocuronium in the IV tubing into the patient when administering HYDROmorphone.

We are aware of similar events that have happened when IV lines were not flushed after patients received other high-alert drugs, including fentaNYL and oxytocin. In one case, the residual oxytocin left in an obstetrical patient's IV line caused hypertonic, tetanic uterine contractions leading to deceleration of fetal heart rate and fetal hypoxia. In pediatric patients, even small amounts of residual medications in IV lines could prove fatal. Thus, depending on the drug concentration, pharmacologic action, IV set volume, and point of injection, harmful unintended doses and overdoses are certainly possible.

When administering medications such as neuromuscular blocking agents, all residual drug must be flushed, or the IV line must be changed, before the patient is extubated, and the source container should be removed. This should be verified at the point of patient

"handoff" or transfer of care (e.g., from the surgical suite to the PACU), as the receiving providers may not be aware of the medications that were administered in the previous patient care setting. In addition, all drugs administered IV should be flushed through the IV line to be sure they reach the patient for effect and do not linger in the IV line.

Check out the "Touching Base" Blog for exclusive online content

www.medflighttouchingbase.com

This quarter you'll find:
Safer Operations: The MedFlight Risk Assessment Experience

By Greg Schano, RN, MSN, MBA, CCRN, CMTE, CNML, EMT-P
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Intranet Website Resources:

ninthbrain

NinthBrain can be accessed via the worldwide web at suite.ninthbrain.com.

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Do you have any ideas for *SafetyMatters*?
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