Duke Emergency Services

In This Issue

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Guidelines for the Management and Referral of Complex Hand Injuries

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Duke LifeNet

The Duke University Hand Service consists of Orthopaedic and Plastic surgeons, each of whom is trained in the management of complex injuries of the hand. This includes the ability to perform microsurgery on severed blood vessels and nerves as small as 0.4mm in diameter. While the majority of hand injuries that present to local emergency departments can be initially treated in the emergency room and referred to a hand surgeon the following days for definitive treatment, there are some injuries that require the immediate attention of a hand specialist. It is the purpose of this paper to outline those hand injuries that we consider appropriate for referral to a tertiary care center equipped to deal with complex hand trauma. Likewise, it is our hope to provide information that may facilitate the care for and transport of patients to our center in the immediate post-traumatic and pre-operative period.

Ideally, every patient from an outside hospital considered for transfer should be evaluated by an orthopaedic surgeon or plastic surgeon. We recognize that this is oftentimes not possible in communities where such a physician simply doesn't exist; however, in hospitals where there is such a surgeon available, it is extremely helpful to the patient and the surgeon at the tertiary care center to have the patient evaluated by a surgeon. Such communication will only serve to direct treatment in a more effective and appropriate manner. It is assumed in this outline that all patients have been fully resuscitated and are stable for transport.

The one obvious variable in trauma to the hand that requires expeditious referral to a referral hand center is any compromise of blood flow to the hand and/or fingers. This is represented clearly with amputations, but can also result from an isolated laceration at the forearm, wrist, hand, or digital level. More often than not, nerve and/or tendon injuries will accompany an injury to an artery. There is no emergency in repairing the tendons or nerves, so if a single digital artery is lacerated and the finger appears well-perfused (i.e., pink pulp, good turgor, brisk capillary refill, warmth, ability to transduce a

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Durham, North Carolina

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Happy Holidays Everyone!!!

While it remains a busy time for all of us we do need to take a little time for reflection. We at the Trauma Center have taken some time to do so. And what has been determined is that all of us (everywhere in North Carolina) are working very hard.

Take a look at Ginger's article and see what the Duke RAC has accomplished. The PI, Care Management, and Education Committees have made strides to improve trauma care across our region. Progress is slow but steady. Thanks for leading the charge, Ginger.

Larry led the RAC Disaster Preparedness group to a whole new world. The SMAT Team supplied 8 weeks of care to the victims of Hurricane Katrina. From conversations with this group, it was clearly a very positive experience for all. In between world traveling, ongoing training, and grant writing, disaster preparedness is a busy business.

Here at our home base, Duke Hospital is has not been any quieter. A new ED is under construction (YEA!). It has been busier than ever with the number of trauma patients being brought into DUH.

Overall I think everyone is ready for some fun and relaxation during the holidays. Thank you all for your ongoing hard work and dedication to the trauma population. May our New Year continue to be productive and positive.

Be safe!!

Claudia McCormick, RN, MSN
Duke Trauma Program Director

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Duke Emergency Services

Guidelines for the Management and Referral of Complex Hand Injuries

pulse oximeter reading-be sure to compare to other digits, b/c some patients with peripheral vascular disease or calloused hands will give a misleading exam), then there is little incentive to repair the vessel. In this scenario, regardless of injury to tendons or nerves, such patients can be treated at the presenting hospital with a formal washout, loose closure of skin, and follow-up with a hand surgeon for a thorough examination and surgical consultation. For both flexor tendons and nerve repair, it is preferable to have these injuries addressed by 7 days from the injury. Extensor tendon injuries are best treated by two weeks from injury. Some nerve repairs, depending on the specific nerve, can be delayed much longer, but as a general rule, one week is a safe standard to follow. With this said, good communication at the time of injury between the referring and accepting physicians is paramount in ensuring the most efficient, effective, and appropriate management of patients with such injuries.

Aside from lacerations with or without a spectrum of associated injuries, the amputation of fingers, hands, or arms represents the most dire and complex reason for referral to a tertiary hand center.

Replantation:

Duke played an integral role in the realization of replantation surgery in the 1960's. As such, Duke continues to serve as a major referral center for these injuries. Replantation is defined as reattachment of a part that has been completely amputated with no remaining connection between the severed part and the patient. Quite differently, revascularization refers to restoring blood flow to a part that has been incompletely severed with arterial injury that has rendered the distal tissue ischemic. Both replantation and revascularization are injuries that do require immediate surgical attention.

Timing of Replantation:

The timing of surgical replantation is critical to its success. Digits can be replanted for up to 6 hours of warm ischemia or up to 12 hours of cold ischemia. The more proximal the amputation is in the hand, the more intolerant the part becomes to an ischemic state, because muscle, absent

in the digit, is the least tolerant tissue in the body to oxygen depravation. Success rates from replantation of parts with muscle begin to decline if warm ischemia extends beyond 2-3 hours. If there is an expected delay in the immediate transfer of the patient (because of resuscitative efforts), the amputated part should be transported ahead of the patient to the treating center. The operative team can begin preparing the part for replantation prior to the patient reaching the operating room.

Preparation of Part:

The amputated part(s) should be quickly located and procured from the trauma site, wrapped in saline-moistened gauze and placed into a container, which is then placed onto ice. To prevent tissue maceration, the gauze should not be soaked, rather moistened. Similarly, to prevent secondary damaged with frostbite of the part, the part should not be placed directly onto ice. Placement in a container or cup will prevent this. Dry ice should not be used. The ideal temperature for cooling the amputated part is 4°C. Temperatures less than 4°C are dangerous, because the tissue's intracellular fluid freezes and damaging crystals develop (i.e., frostbite).

In the patient with a partially severed part (NOT an amputation), where by definition there is intact skin and presumably some retained blood flow (if only through micro-capillaries in the skin) the part should be **warmed** rather than **chilled**, to promote vasodilatation and increase local tissue blood perfusion. In addition, it is critical that if a part is still attached to the hand, even if the connection appears to be only a few cells-thick, under no circumstances should the amputation be completed.

Indications for Replantation:

As a general rule, we attempt to replant any amputated part in children; the thumb in adults, as the thumb is critical for hand opposition; multiple digits; and amputations to the hand and distal forearm.

Contraindications for Replantation:

Several crushed or mangled parts, amputations in patients with severe injuries or diseases, amputation at multiple levels, vessels with atherosclerosis, single digit amputations proximal to the insertion of the FDS (especially the index finger), and prolonged warm ischemia time, all are relative contraindications. Regardless, an earnest conversation with the patient should outline the realistic requirements for (prolonged hospitalization, recovery and return to work) and outcomes (80% success rate but with possibility for viable but stiff finger) following replantation surgery, and ultimately, the decision to revise the amputation or proceed with replantation should incorporate the wishes of the patient.

Other Injuries Requiring Transfer to Hand Center:

Other injuries that require immediate attention include loss of soft tissue, such as with industrial wringer accidents where significant skin degloving can occur. This needs urgent irrigation and debridement and grafting for coverage of the defect. The initial washout could be performed at an outside hospital if the patient needs to be stabilized, and then referred for definitive coverage in the following days.

High-pressure injection injuries result from the accidental injection of industrial paints or fuels into a digit. These are seemingly innocuous injuries, but can be devastating for the patient with a known high-rate of post-injury amputation from compromised blood flow and infection. These injuries are best treated with immediate referral to a hand center for urgent irrigation and debridement.

Compartment syndrome, a condition where the pressure within an anatomical compartment exceeds the body's blood pressure and thus blood flow is diminished or precluded, is a surgical emergency and is rarely appropriate for referral, if there is either a plastic or orthopaedic surgeon available at the outside facility. This is a sur-

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gical emergency and demands immediate attention, and any delay in arranging for transfer could severely compromise the patient's outcome. If, following decompression, there are issues regarding soft tissue coverage, a transfer to a tertiary center is prudent and appropriate. If compartment syndrome is diagnosed in a patient, and there is no surgeon available to emergently decompress the compartment, this patient needs to be transferred to a tertiary center with the same urgency that accompanies replantation patients.

In a similar vain, necrotizing fasciitis of the hand/forearm is a surgical emergency and once diagnosed, demands immediate surgical attention. Any transport would certainly delay surgery and possibly jeopardize the patient's limb or life. As with compartment syndrome, following initial washout of the arm, if there is concern for reconstruction of the arm/hand and/or concern for amputation, a referral to a hand center is very appropriate and should be considered.

Injuries Appropriate for Delayed Referral

Injuries that are appropriate for follow-up with a hand surgeon within a week of injury are any closed fractures of the hand or wrist, any flexor or extensor tendon injury, or any isolated nerve injury, assuming these laceration injuries have received appropriate washout in the emergency room or operating room, tetanus booster, and appropriate antibiotic coverage.

While it is virtually impossible to outline exactly what is best treated with immediate referral to a hand center, considering the variety of injuries and variety of treating surgeons' preferences to management, the key to elucidating this and therefore providing the most effective and appropriate patient treatment, is an open communication line between referring physicians and accepting physicians.

Hypothermia

On a bright, sunny but cold late January afternoon a call comes into a local EMS unit as an "Injured person due to a fall". Upon arrival to the scene the EMS unit finds a 43 year old male who was hiking and became separated from his small group. While enjoying the view from a small cliff, he lost his balance and slid down into a small creek. The air temperature is 33-35 degrees with a 5 mph northwesterly breeze. The patient was found with a broken right leg approximately 2 hours after his fall. The patient rolled into a small creek, but only got his pants wet. On initial exam the patient is slow to respond to questions, confused to date and time. Shivering was noted but not continuous. The patient is placed on a long backboard and clothes removed. The patient's right leg is stabilized with a long board splint. Before and after stabilization the EMS crew was unable to palpate peripheral pulses in the extremity, but the patient had full motor and neuro sensation before and after splinting. Warm dry blankets were placed on the patient and oxygen was applied. Two peripheral IV's of normal saline were started in the patients AC's. The crew was unable to palpate peripheral pulses or BP. The crew recognizes the need for immediate care in the ER so the patient is rapidly transported to a local Emergency Room. En route warm packs are applied to the patient's armpits, and high flow oxygen is applied via non-rebreather mask. The transport to the ER was uneventful; upon arrival to the ER the patient's rectal temp was 32 degrees Celsius.

Hypothermia is defined as a decrease in body temperature with a continuum of symptoms of progressive severity as core temperature falls. As hypothermia begins to set in the patient may begin to show signs and symptoms of the "umbles" which are stumbles, mumbles, and grumbles which show changes in motor coordination and levels of consciousness.

The human body produces its own heat at the cellular level, it is a measurement of the body's metabolism or general level of chemical activity within the body. The hypothalamus is the major center of the brain for regulating body temperature. It can be sensitive to blood temperature changes as little as 0.5 degrees Celsius and also receives information from nerves in the skin on ambient air temperature. 98.6 is the optimal temperature for chemical reactions to occur in the body, above 105 degrees enzymes can become denatured and below 98.6 chemical reactions slow down and cause various complications.

The human body regulates it core temperature in several different ways, first is vasodilatation and vasoconstriction. Vasodilatation increases surface blood flow and increases heat loss, vasoconstriction decreases blood flow to periphery and in turn decreases heat loss. Sweating cools the body through evaporation, and shivering generates heat by increasing chemical reactions required for muscle activity. Shivering can increase surface heat production by 500% but is limited to a few hours due to the depletion of muscle glucose and fatigue. Activity in general can increase or decrease heat production as well as adding or removing layers of clothing. Respiratory heat loss accounts for 10-30% of the body's heat loss where the ambient air is significantly colder then the core body temperature.

Hypothermia can be divided into three different stages or levels. First is mild hypothermia, the core temperature may range from 95.0-90.0 degrees F or 33-35 degrees C. At these temperatures a patient will begin to shiver involuntarily,

they will also lose the ability to perform complex motor functions like climbing or skiing but will be able to walk and talk. Vasoconstriction begins in the periphery, shivering becomes more violent as the core temperature decreases and disappears at temperatures less than 92 degrees F.

Next is moderate hypothermia and signs and symptoms of this level will start at temperatures from 90.0-87.0 degrees F or 33-31 degrees C. Signs and symptoms that begin to show at this stage is rigidity, bradycardia, slowed respiratory rate, irritable myocardium, slurred speech, irrational behavior like taking off clothes, and a flattened affect. The patient may begin to give up or take the "I don't care attitude" during this stage.

The final stage of hypothermia is known as profound or severe hypothermia, this is defined as core temperatures less than 87 degrees F or 31 degrees C. This is an immediate life threatening condition. The patient should be handled with care due to the risk of ventricular fibrillation from myocardial irritability. Under no circumstance should any patient who is displaying signs or symptoms of any stage of hypothermia be allowed to assist in there care. Muscular activity by the hypothermic victim pumps cold peripheral blood from the arms and legs into the central circulation causing the core temperature to drop even further. Gentle handling is critical! A cold heart is particular susceptible to ventricular fibrillation. Patient with a core temperature below 30 degrees may not respond to defibrillation.

Severe accidental hypothermia (body temperature below 30° C (86° F]) is associated with marked depression of cerebral blood flow and oxygen requirement, reduced cardiac output, and decreased arterial pressure. Victims can appear to be clinically dead because of marked depression of brain and cardiovascular function, but full resuscitation with intact neurological recovery is possible, although unusual. The victim's peripheral pulses and respiratory efforts may be difficult to detect, but lifesaving procedures should not be withheld based on clinical presentation.

37 degrees –	**Normal oral temperature**
36 degrees –	**Metabolic rate increased**
35 degrees –	**Maximum shivering seen/impaired judgment**
33 degrees –	**Severe clouding of consciousness**
32 degrees –	**Most shivering ceases and pupils dilate**
31 degrees –	**Blood pressure may no longer be obtainable**
28-30 degrees –	**Severe slowing of pulse/ respirations**
	Increased muscle rigidity
	Loss of consciousness
	Ventricular fibrillation
27 degrees –	**Loss of deep tendon, skin and capillary reflexes**
	Patients appear clinically dead
	Complete cardiac standstill

Primary treatment of hypothermia is aimed at maintaining the patient's airway, treating cardiac dysrhythmias, and rewarming the patient's core temperature. Once these have stabilized, then correcting dehydration, acidosis and any other problems may become a priority. There are 3 types of rewarming, first is passive rewarming which is the least invasive and labor intensive method to rewarm mildly hypothermic patients. The patient should be removed from the cold environment and placed in a warm, dry environment as soon as possible. Any damp clothing should be removed, warm blankets should be placed around the patient and the patient should be handled and stimulated as little as possible. The second type of rewarming is known as active rewarming, this type of warming is needed when the patient's internal reserves are not adequate. In this situation heat must be added to assist rewarming. Thermal blankets, hot water bottles, and hot water baths are very useful methods of rewarming a patient with mild to moderate hypothermia. Appling heat directly to the head and neck along with warm humidified air will warm the hypothalamus at the base of the brain. This rewarming of the central nervous system at the brainstem reverses the cold-induced depression of the respiratory centers and improves the level of consciousness. The final type of rewarming is active core rewarming which refers to heating the core directly. This type of warming includes heating humidified oxygen to 105-115 degrees F, heated intravenous fluids, heated bladder lavage, heated gastric lavage, heated peritoneal dialysis, hemodialysis, heart-lung bypass, and mediastinal lavage via thoracotomy. In hypothermic patients pulses and respirations should be checked for longer periods to detect minimal cardiopulmory efforts. If no pulses or respirations are detected CPR should be initiated immediately. With core temperatures of 86-93 degrees F or 30-34 degrees C external warming devices should be applied to the truncal areas only (neck, groin and armpits) in the prehospital setting. In the hypothermic patient the ventricular fibrillation threshold is lowered significantly and in all cases airway management, and transport should be undertaken gently.

If ventricular fibrillation occurs three shocks should be delivered, if VF persists after the 3 shocks further shocks should be avoided until after rewarming to above 30 degrees C or 86 degrees F. CPR, rewarming and rapid transport should continue after shocks. A hypothermic heart may not respond to cardioactive drugs, as well as pacemaker stimulation, defibrillation, and drug metabolism is reduced. When administering code drugs to the hypothermic patient, the medical professional must be aware that repeated use of these drugs can accumulate to toxic levels in the severely hypothermic victim. If these patients don't respond to initial boluses additional boluses of these medications should be avoided until the core temperature rises above 30 degrees C or 86 degrees F.

Every patient is susceptible to hypothermia even when the weather is

warm. The treatment of hypothermia starts as soon as rescuers arrive on scene and assumes care and continues until the patient's core temperature returns to a normal range. For hypothermic victims in the prehospital setting, the use of CPR, removing wet clothing and sheltering from wind chill, and stabilization with warmed air/oxygen and IV fluids constitute the initial treatment modalities. In-hospital rewarming and management can require intubation, central line placement, warmed peritoneal dialysate lavage, and extracorporeal treatment. Close post resuscitative management will require close in-hospital observation for a variety of potential pulmonary, hematological, and renal complications. Prior to discharge of a patient that has suffered from hypothermia, teaching should be done to inform the patient how to avoid hypothermia again. They should not venture out into cold temperatures unless they are prepared with extra clothing that is suitable for cold environments, as well as high carbohydrate food for extra calories. They will also need a plan for survival if an accident occurs. Homeless patients should have shelter arranged and instructed on how to avoid the same situation again.

Kristopher Harrison
Duke Life Flight

Disaster Medical Operations: Lessons Learned

At this point I am sure that we are all just about "Katrina'd" out, catastrophic events happen rarely and we tend to get as much mileage out of them as possible. The most important aspect of the Katrina operation is before us though, and that is to learn from the operation. There have been countless "Hot Washes", debriefings and reams of after-action reports written, but all will have been for not if we don't take the lessons learned and modify the way we plan, train and respond to major disasters. I have tried to pull-out a few key items from a compendium of AAR's that have particular applicability to operations that could be played-out right here in North Carolina. We will publish the SMAT After-Actions Report within the next few months, but these few items will get you started in the planning process.

- Working knowledge of the Incident Command System (ICS), whether it be the field component or the Hospital version (HEICS) is absolutely paramount to the success of the operation. Not just completion of IS 100 and IS 200, but practical working experience. A working knowledge of the National Incident Management System (NIMS) and the National Response Plan (NRP) are also extremely important. ICS training is available through NC Emergency Management and HEICS training is available through the Regional Advisory Committee. ICS is not just pretty colored vests, it is the key to a well orchestrated operation.
- You can never have too many supplies on-hand. We have traditionally planned for self-sufficiency for a period of 72 hours, Katrina proved that the more realistic time-frame is five days, yes FIVE. This stock level applies to both hospitals and response agencies, in a catastrophic event the supply system is taxed to the max and that all-important delivery truck may not arrive on schedule. Everyone seems to expect FEMA, DMAT and other federal agencies to arrive immediately; realistically it does not happen that way and self-sufficiency will be your lifesaver. Determine your projected needs and build-out to that level. Don't overlook the need for water and food for your personnel and patients. The famed, and dreaded, MRE will last for several years in controlled storage, the same with bottled water.
- Use Triage Tags for all patients. Buy a good tag that is waterproof, serial-numbered and bar-coded, it will save you countless hours of labor trying to match-up records after the operation is over. Partner with the other response agencies in your area and standardize the tag so that it becomes a single-source document from triage to discharge. It will be imperative that you know the number of red, yellow, green and black tags you have triaged or treated……and the agencies that come to support you will need the information also.
- Don't overlook force protection…that is making sure that your facility, equipment and personnel are protected. The climate of the crowd in New Orleans is living proof of the need for adequate force protection. There are very few, if any, hospitals that can adequately lock-down their facility with internal assets…..adequate force protection requires pre-planning and a partnership with your local and county law enforcement agencies who will be just as stressed and short-handed as your agency during the incident. During field operations the issue of force protection is even more important. The control of ingress and egress routes and the flow of patient traffic within the compound become major issues without pre-planning and adequate resources.
- Form strong working partnerships with all the disaster response stakeholders in your area, they are your lifeline when the bell goes off. Pay particular attention to

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Outreach Corner

by Ginger G. Wilkins, RN, BSN

It doesn't seem possible that another year has passed by so quickly, but here we are with the holiday season upon us. As I look back on 2005, I am excited to see the progress the RAC has made. We have formed a new Injury Prevention Subcommittee that is involved in surveying what the current Injury Prevention Programs are in the region and is also committed to recommending and providing new IP programs.

Our Performance Improvement Subcommittee has implemented two initiatives that will both improve our trauma care and our documentation of trauma patients within the region. We appreciate everyone's cooperation and willingness to help us collect EMS runsheets on all of our transferred patients and to track our prehospital endotracheal intubations. We realize that taking our calls for these requests for the information has been new for many of you in our Duke RAC Emergency Departments and EMS facilities and want you to know how valuable this information is to the Trauma Center.

Our Education Subcommittee continues to be active in keeping tabs on educational opportunities related to trauma in the region as well as in helping me to coordinate courses at outside hospitals and EMS facilities. Again,a big thanks from me to all of you that have assisted me in bringing TNCC and Trauma Stabilization courses to your facilities. We are making an impact in our RAC; educating our providers is essential in our continuing efforts to give the very best patient care for best patient outcomes.

Our Care Management Subcommittee has reviewed all of our current Care Management Guidelines and approved a new Trauma Transfer Data Guideline that will serve to aid our outside facilities in gathering useful information about the patient's condition when transfers are indicated.

We are nearing the completion of the update of our RAC website. The website will have all of our upcoming educational offerings and electronic copies of this newsletter and other information regarding trauma care and issues in our RAC.

I want to also thank all of our RAC members, no matter where you work, for helping to make the Hurricane Katrina mission to Waveland, MS such a great success. Our SMAT-II Team was made up of personnel from all our RAC hospitals and EMS systems and deployed on August 29 to Waveland. They joined 7 other SMAT-II teams from North Carolina who quickly meshed into a top-notch, state-of-the-art medical response team that provided all levels of triage and care for over 7000 patients over an 8-week period of time. I hope that all of you realize that it was not just the people who were deployed that made this a successful effort, but those of us that remained in North Carolina, covering their shifts, helping me make phone calls to coordinate the next team to go down, and providing all levels of support to the SMAT-II Team. We have received national recognition for our deployment and officials at the Federal level have been extremely impressed by our personnel, our expertise, and our extraordinary compassion for the hurricane victims. Special thanks and recognition go out to our Disaster Coordinator, Larry Tucker for his unfailing efforts to make this very first SMAT-II deployment the resounding success that it was. I am so proud to work with such a great group. Watch for postings for upcoming SMAT-II trainings - hurricane season 2006 will be upon us before you know it.

Have a safe and wonderful Holiday Season – I am looking forward to continued progress in 2006!

Ginger

16th Annual Duke Trauma Conference

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Contact John Duskey: 919-684-2197

the role of Emergency Management, these guys are your link to the state and national response system.

- Interoperable communications is a key to a successful operation. Avoid the temptation to buy low-end, Family Radio Service (FRS) portable radios for your internal communications needs, they will fail when needed the most. Also avoid the temptation to put all your communications eggs in one basket, have a back-up system……and a back-up for the back-up. We learned very quickly during Katrina that reliance on cell phones and the internet for communications was a serious mistake.

As I said earlier, these are just a few of the key lessons learned from the Katrina operation and a good starting point for updating and revising your disaster plans. These lessons are just as applicable for natural disasters as they are for Bioterrorism/WMD incidents…truly the "All-Hazards" approach to disaster planning.

Just a few words about the State Medical Assistance Team (SMAT). The Duke RAC team along with the other seven regional teams performed in an outstanding manner during our operations at the North Carolina Field Hospital in Waveland, MS. I am very proud and privileged to be associated with such a fine group of folks. As a result of Katrina we have received over 50 new applications for membership on the Duke RAC team. Additionally, we have recently partnered with the National Medical Reserve Corps and can now accept membership applications from unaffiliated healthcare and support personnel. Please contact me if you or anyone you know is interested in joining the team and I will be happy to send you an application. We have particular need for ER and Family Practice Physicians, Respiratory Therapists, Nursing Assistants, Medical Supply or Materials Management personnel, and Pharmacy Techs. Bi-lingual personnel are always needed.

Outreach Calendar

January

9,10, 11, 13 SMAT Initial Training

12 Duke Trauma Region Pandemic Flu Exercise

10-14 Eastern Association for the Surgery of Trauma (Orlando, FL)

26 Quarterly State Trauma Meetings (High Point, NC)

27 Duke RAC with Mid Carolina RAC at Durham Regional Hospital (Durham, NC)

February

8 State EMS Advisory Council Meeting (Raleigh, NC)

11 New Hanover Regional Medical Center's 17th Annual Trauma Symposium (Wilmington, NC)

16-18 National Foundation for Trauma's Finance, Business & Leadership Meeting/Trauma Medical Director Course (Dallas, TX)

22-24 HRSA Trauma-EMS Leadership Conference (Arlington, VA)

March

2 Duke's Annual Trauma Conference (Durham, NC)

18-19 Society of Trauma Nurses Annual Conference (Las Vegas, NV)

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