

*Committee On Trauma Reviews  
North Carolina  
Trauma System  
North Carolina Level II State Medical  
Assistance Team (SMAT II)  
Flight Physiology  
Victim Decontamination  
in the Healthcare Setting  
Calendar*

## *Committee On Trauma Reviews North Carolina Trauma System*

# *Duke LifeNet*

Late this past summer, Federal HRSA bioterrorism hospital preparedness funds allowed the North Carolina Office of Emergency Medical Services (OEMS) to invite the American College of Surgeons (ACS) Committee on Trauma (COT) into the state for a consultation visit. The ACS states that the purpose of this broad-based assessment process is to provide guidance to the development of a trauma system at a community, county, regional or, as in this case, state level. In actuality, very few of these trauma system reviews have been conducted on the state level in the USA and North Carolina is probably one of the most, if not the most, developed trauma systems the College has reviewed to date.

The consultation effort was quite broad, involving multiple facilities as well as many trauma system stakeholders over a 3 ½ day period. It involved a broad analysis of all the major components of a trauma system, their integration and function. Areas such as leadership, system development, legislation, injury prevention, workforce resources, edu-

cation, prehospital care, communications, definitive care, disaster preparedness, medical rehabilitation, information systems, evaluation and research were just some areas examined. Designed to highlight the strengths and provide guidance to overcome the challenges, the consultation is also structured to identify opportunities for performance improvement.

North Carolina's review team was composed of the following individuals: (1) **Robert Mackersie, MD, FACS** (Team Leader), Chair of the ACS COT Committee on System Consultation; Professor of Surgery, University of California San Francisco; (2) **Alasdair Conn, MD, FACS**, Chief of Emergency Services, Massachusetts General Hospital; (3) **Jon Krohmer, MD, FACEP**, Medical Director, Kent County EMS, Grand Rapids, MI; (4) **Margaret Trimble**, then Pennsylvania EMS Director, Harrisburg, PA; (5) **Mary Sue Jones, RN, MS**, Trauma System Coordinator, Delaware Office of EMS, Dover, DE; and (6) **Clay Mann, Ph.D., MS**, Associate Professor;

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Durham, North Carolina*

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*Duke Emergency Services*



We are currently keeping Dr. Vaslef so busy that I am acting as "From the Editor – Substitute". I have missed the opportunity to share my thoughts since Ginger has taken over (very well I might say) the Outreach Corner. Now, again I have space so here goes.

For those that attended the 15th Annual Trauma Conference on March 3rd. I hope you had a good time and gained much new knowledge. We are now planning for our fall workshop so if there are any specifics you would like hear about now is the time to let me know. Fresh ideas are always welcome, as well as speakers.

You may hear a few new voices on the phone when you call the Trauma Center. We have a couple of physicians intermittently helping by taking some trauma call. Thank you to Dr. Ricardo Bonner and Dr. Kumash Patel. Another new voice will be that of Dr. Jeff Hoehner, who has joined us in pediatric surgery. Dr. Hoehner comes to Duke from John Hopkins Hospital in Baltimore, Maryland. Welcome!

Over the next couple of months you will see some changes on the Duke Trauma website. We will be moving to a new location, reformatting the pages, and adding new information. Please hang on and there are better things coming.

In the meantime have a great spring and be safe.

*Claudia McCormick, RN, MSN  
Duke Trauma Program Director*

## COMMITTEE ON TRAUMA REVIEWS NORTH CAROLINA TRAUMA SYSTEM CONTINUED

Associate Director, Research, University of Utah School of Medicine, Intermountain Injury Control Research Center, Salt Lake City, UT. The team also brought two technical support staff (Ms. Gail Cooper and Mr. Nels Sanddal) and two surgeon observers (Dr. Christoph Kaufmann and Dr. Arthur Cooper) who also provided feedback during the review process.

Prior to the visit, OEMS completed a lengthy Pre-Review Questionnaire (PRQ) supplied by the ACS that served as the basis for the team's discussions with stakeholders. The consultation, held at the Radisson Governors Inn, involved open dialogue with an average of 65 individuals each day, with numerous trauma center (including Duke) and RAC (including the Duke RAC) representatives engaged in the discussion.

A draft of the ACS' final report was received in late September, with the State EMS Advisory Council appointing a Trauma Task Force of about twenty individuals in November to review the final document once it is available. The report, once received, will be posted for all to read on the OEMS web site ([www.ncems.org](http://www.ncems.org)). The first meeting of the Task Force will take place in January, with their initial charge involving separation of the recommendations into those that would require legislative action versus those that could be addressed through alternate means.

Perhaps one of the most interesting aspects of the report will be the surveyors' final responses to five focused questions presented by OEMS. These included the following: (1) What is the proper distribution of Level II trauma centers and what will constitute an adequate number of Level IIIs in North Carolina? (2) Is the level of state trauma funding adequate and, if not, what are some avenues for improvement? (3) What tools are we lacking to encourage participation in the trauma system where it currently does not exist? (4) Would realigning the regionalization of trauma care (from the current RAC structure) along the lines of the public health structure hurt or improve our efficient delivery of trauma care? (5) How can we strengthen our regional and statewide performance improvement activities? How can we utilize our trauma registry and other databases more effectively, with an emphasis on obtaining outcome data?

While the consultation team noted some gaps in the state trauma system, they acknowledged that the state provides a model for other states to follow and that it has the potential to guide the nation in trauma care and to successfully integrating trauma within the state response to bioterrorism concerns.



*Sharon Rhyne, MHA, MBA  
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[www.dukehealth.org/emergency\\_services/trauma](http://www.dukehealth.org/emergency_services/trauma)

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## North Carolina Level II State Medical Assistance Team (SMAT II)

OK, so what is SMAT II? It is the State Medical Assistance Team, Level II, an integral part of the North Carolina tiered disaster response system, it is comprised of teams at three levels. The SMAT I is a state level team, based at the Special Operations Team Response Center in Winston-Salem. The SMAT I can deploy anywhere in the state and set-up a 200-bed alternate care facility. The SMAT II teams are based at each Trauma Regional Advisory Committee (RAC), seven teams across the state. The SMAT II can deploy either in-region or in-state and will have the capability to conduct decontamination operations and set-up a 40-bed alternate care facility. The team is self-contained and operates from a 26 foot trailer equipped with both medical supplies and state-of-the art decontamination equipment. The minimum deployable team is ten members. The SMAT III teams, strategically located in 27 counties across the state, are designed to be the local first line of defense. With a primary mission of medical treatment and rapid victim decontamination, the SMAT III can be deployed locally within 30 minutes and regionally within 2 hours. The SMAT III teams operate from a trailer similar to the SMAT II.

The Duke RAC began the process of forming the SMAT II Team in early December with a call for volunteers from each hospital and county EMS agency within the RAC. Applications are still being accepted for the first round of training which will begin on 23 April 2005. The personnel are volunteers, but participation requirements for each hospital and EMS

agency are directed by the state as a condition of receiving HRSA grant monies under the North Carolina Hospital Bioterrorism Preparedness Grant. Under the provisions of the HRSA grant, each hospital with a greater than 150-bed capacity is required to furnish a minimum of 1 Physician, 2 Registered Nurses, and 1 Pharmacist. Hospitals with a bed capacity of less than 150 beds must furnish a minimum of 1 Registered Nurse to the Team. County-level EMS agencies are required to furnish 1 ALS ambulance and 2 Paramedics. The Duke RAC team will have a minimum of 42 personnel at full strength. We would like to split the team into four "Strike Teams", essentially allowing each group to cover one week a month. The exact composition of the team and the coverage rotation are details that will be worked-out by the team members, once the team is formed.

There are a number of requirements for team membership:

- Must submit an application to the RAC and be medically cleared.
- Must be physically fit and able to carry 50 pounds for 200 feet.
- Must be able to work in a confined environment (Level C Decontamination Suit with P APR).
- Must be able to deploy anywhere in-region or in-state and remain on-scene for three days plus two days of travel.
- Must maintain proficiency by completing initial training, continuing education and participation in team training and

drills.

- Must maintain a "Deployment Bag" of clothing and personal items.

Once accepted for membership all team members will need to complete 6 hours of on-line training, then will receive a minimum of 20 hours of intense classroom training covering all aspects of team operations. Additionally, team members will receive a minimum of 8 hours of hands-on decontamination training. All training must be successfully completed to the standards established by the North Carolina Office of Emergency Medical Services. Training will culminate with a full-scale decontamination exercise. Continuing education will be provided by both on-line offerings and team training sessions. Initial training must be completed within 90 days of team formation, so it will be an intense time for both the instructors and the students. Because of the geography of the Duke RAC, our team and the Central Carolina RAC team will initially train together and training will be offered at a central location.

There are still many details to be worked out at NCOEMS level with regards to SMAT II, principle issues are those of liability and reimbursement. The liability issues are dependent upon your status.....a different set of rules apply dependent upon your job. Nursing personnel are covered by the institution where they are employed and that coverage is carried over during deployment. Physicians

*(Continued On Page 6)*

# Flight Physiology

## Part II: Flight Physiology

In our previous newsletter we discussed the various physical laws pertinent to flight physiology.

Now that an explanation of the gas laws has been discussed, we can move on to the stresses of flight. The stresses of flight explain how the aviation environment affects the human body. There have been nine stressors identified that are inherent in this aviation industry. The first is hypoxia. As discussed before, there are four main kinds of hypoxia. Hypoxic hypoxia, hypemic hypoxia, stagnant hypoxia, and histotoxic hypoxia are the four main classes. We have already covered hypoxic hypoxia in relation to altitude. This can also be caused by a physical airway obstruction and ventilation / perfusion problems. Hypemic hypoxia is diagnosed when there is a mechanism that causes a reduction in the ability of the blood to carry oxygen to the tissues. Common causes of this type of hypoxia are anemia, carbon monoxide poisoning, sulfa drugs and sickle cell disease. Stagnant hypoxia is from the pooling of blood in an area, which does not allow proper delivery of oxygenated blood. This is caused by many different factors. Gravitational forces (G-forces) experienced with acceleration and deceleration in flight. Cardiac problems such as cardiogenic shock can also cause this type of hypoxia. The increase in thoracic pressure associated with positive pressure ventilation can cause stagnant hypoxia. Severe hypothermia is also associated with this form of hypoxia. The last type of hypoxia is histotoxic hypoxia. This results from the inability of the tissue cells to allow the transfer of oxygen to them. Causes are cyanide poisoning, carbon monoxide poisoning, alcohol poisoning, and most narcotics.

Hypoxia has several common effects on the body despite their different pathophysiology. The altitudes at which these symptoms occur will differ between crewmembers based on their physical fitness and patients based on their physical condition. The first sign seen may seem like the patient is intoxicated or extremely tired. The rate of breathing may increase, loss of hand / eye coordination, confusion, and in extreme cases, even unconsciousness. Symptoms felt by the patient or crewmember could easily be mistaken for some other cause other than hypoxia. Dizziness, fatigue, headache, hot / cold flashes, nausea, tingling, and belligerence. Night vision is very susceptible to the effects of hypoxia. Significant effects are seen at altitudes as low as 5,000 feet. At 8,000 feet, night vision can be reduced down to 75% of normal. No matter what form of hypoxia is affecting the patient, there are some key points to remember. Every hypoxia that affects the patient is cumulative in its influence on the patient. Every type of hypoxia causes some degree of mental impairment.

All hypoxias can be broken down into different stages where the altitude at which the signs and symptoms appear. At sea level to 10,000 feet, minimal effects will be noticed until the higher altitudes are reached. The two symptoms that routinely occur are night vision deficit and increased respiratory rate. This stage is called the indifferent stage.

The compensatory stage is from 10,000 feet to 15,000 feet. Pulse oximeter readings are usually ranged from 80% to 90% in this zone. Symptoms of hypoxia become more evident at this stage. Poor judgment with aggressive behaviors is noted. The heart rate and blood pressure increases while the night vision decreases by as much as 50 percent. Nausea and vomiting, headaches, and decreased level of consciousness have been reported. These symptoms are exaggerated more in our patients due to their compromised condition.

The altitude between 15,000 to 20,000 feet is called the disturbance stage. Severe central nervous impairment is noted at these altitudes. Symptoms such as delayed reactions to stimuli, short-term memory loss, drowsi-

ness, decreased hand-eye coordination are present. Euphoria manifests in this altitude as well as vision impairments. A sense of false confidence overcomes the crew and patient. Handwriting and speech are noticeably impaired also when you reach these altitudes.

The final altitudes to be discussed are between 20,000 to 30,000 feet, also known as the critical stage. If symptoms are not recognized quickly in this zone, death will most certainly occur. The concept of "Time of Useful Consciousness" is used here. The period of time from when the concentration of available oxygen is not sufficient to provide an adequate supply to the tissues to the time when the person becomes incapacitated is the "Time of Useful Consciousness". The person's ability continually declines during this time period; it is not the time the person can function normally until unconsciousness. If supplemental oxygen is not supplied before the "Time of Useful Consciousness" expires, the subject will become unconscious due to hypoxia. This time period is usually between 5 minutes to 1 minute. If the crew is subjected to a rapid decompression, this "Time of Useful Consciousness" can be reduced to between 2 minutes to 30 seconds. The phrase we always hear on commercial airlines about "placing the oxygen mask on ourselves first before assisting others" takes on a whole new light now.

Two simple measures can decrease the effects of hypoxia at increased altitudes. The first is to pressurize the cabin to an altitude that matches the indifferent stage. Not all aircraft are capable of pressurizing their cabins. For these situations, we must provide supplemental oxygen to counter the effects of hypoxia.

The second stressor of flight is barometric pressure. We discussed this stressor in depth with Boyle's Law. One tends to forget that this pressure not only affects the patient but also the crew. If a crewmember comes to work with even a simple cold, several devastating conditions could occur. The first deals with barotitis media. This happens when the crewmember is unable to "clear their ears". The pressure in the middle ear cannot match the rate of pressure change with the ascent or descent of the aircraft. If this pressure is not equalized,

eventually the eardrum will rupture. Common treatments include the Valsalva maneuver, yawning, swallowing, or medications. If no interventions are successful, then you must descend to a lower altitude until the symptoms subside.

The maxillo-facial sinus as well as the teeth are also susceptible to the barometric changes that occur in flight. For the maxillo-facial symptoms, the only treatments are medications or descent. For involvement of the teeth (Barodontalgia), treatments are pain medications and descent.

Pneumothorax presents a different problem. All recognized pneumothoraces should be treated prior to departure. If left untreated, a tension pneumothorax could develop. This is especially important with patients requiring mechanical ventilation. The settings may differ from the actual delivered to the patient. This will be seen more with pneumatic powered ventilators as opposed to electronic powered ventilators.

The third stressor of flight involves temperature changes. As altitude increases, the temperature decreases. For every 1000 ft increase in altitude, a drop of approximately 4 degrees Fahrenheit occurs. Measures must be taken to prevent heat loss, even during the summer. Simple interventions such as placing a space blanket over a patient or a cap on the patient's head would help significantly. The crew must also consider the affects of the temperature differences on themselves. It may be comfortable at ground level, but drastically different at altitude. A jacket and gloves should always be with the crewmember.

Gravitational forces are the fourth stressor of flight. One gravitational unit, referred to as a "G", is the force of gravity on a human body at rest. G forces affect the body in different ways, depending on if they are negative G's or positive G's. Negative G's cause stagnant hypoxia because of the blood pooling in the upper body and is accompanied by a headache. Positive G's cause stagnant hypoxia by pooling the blood in the lower extremities. Increased intravascular pressures are also an affect of positive G's.

Variations of this concept of G forces affecting the body include: Motion sick-

ness and spatial disorientation. Motion sickness occurs because of the G forces applied to the fine hairs located in the semicircular canals of the inner ear. The endolymph inside these canals is put into motion and stimulates the fine hairs connected to the canals. Too much G forces or sudden changes in G forces can have a very profound affect on this endolymph, thus causing motion sickness.

This basic concept also is behind spatial disorientation. The G forces can alter the messages being received by the brain to disorient the crewmember or patient. This causes the affected person to believe they are moving in one direction, when they are actually moving in another. The most severe form of spatial orientation is Coriolis Illusion, which is caused by the person moving their head quickly while the aircraft is also turning.

To prevent any form of motion sickness or spatial orientation, the crewmember or patient must minimize head movement, know where the horizon is for visual reference, and rely on instrument readings. Patient positioning in the opposite direction of the G forces helps to minimize the effects. The treatment is related to the symptoms. A supine position is recommended with helping the person focus on a fixed point. Cool air or washcloth on the face also helps occasionally.

The noise associated with air transport is another stressor of flight. Noise levels are measured in decibels (dB). The ignoring of hearing protection for the patient and the crew can lead to significant hearing loss or damage, even if exposed for a short period of time. The average range of noise measured in the cabin of both rotor and fixed wing is 100 to 125 dB. Any exposure to decibels above 115 for any amount of time unprotected will cause some amount of hearing damage. Do not wait until you have the sensation of ringing in your ears, which indicates overexposure to apply hearing protection. Simple earplugs or headphones can protect the patient. All crewmembers should wear hearing protection that also has a communication system for use during flight.

Vibration has a profound effect on the body, which is why it is the sixth

stressor of flight. The vibration associated with both rotor and fixed wing aircraft causes fatigue, dehydration, nausea, and an increased metabolic rate. The constant molecules in motion caused by the vibration are what cause these physiological effects. The only true prevention and treatment of this stressor is to be in good physical shape and recognize the signs early.

Decreased barometric pressure is the seventh stressor of flight. This decrease in the barometric pressure causes third spacing to occur by allowing fluid from the intravascular space to move into the extravascular tissues. This is not usually seen unless you are on long distance flights or at very high altitudes. This is more common in mountain climbers at very high altitudes and manifests itself as pulmonary edema. The crewmember must be alert for signs of third spacing to prevent severe compromise to the patient or crewmembers.

The lack of humidity is the eight stressor of flight, which leads to dehydration. The air recirculated in the aircraft is not humidified, thus promoting further dehydration. The most common effect this has on the body is to cause respiratory secretions to thicken and form mucous plugs. Dehydration also leads to fatigue. The treatment of this condition is to maintain hydration by drinking fluids and maintaining the patient's fluid intake.

The final stressor of flight is fatigue. This stressor cannot be truly separated from the other stressors of flight. It helps to promote the negative effects of the other stressors as they also promote further fatigue. Maintaining your health and fitness is the best treatment and prevention measure you can implement. The other is to recognize fatigue before it becomes debilitating.

The medical transport crewmember must know the stressors of flight to prevent predictable effects the altitude will have on the patient and crewmembers. Without this knowledge of flight physiology, the consequences to not only the patient, but also the crew could be grave.

*Ronald L. Bolen, Jr.  
Life Flight*

## NORTH CAROLINA LEVEL II STATE MEDICAL ASSISTANCE TEAM (SMAT II) CONTINUED

who are direct hospital employees have the same coverage status as nurses. Physicians who are non-hospital employees should be covered by the liability insurance held by their individual group. NCOEMS and Dr. Alson, the SMAT Medical Director are working diligently to get all the liability issues rectified. Some of the changes may require changes to NC State Law and will take time. The reimbursement issues are no less straight forward than the liability issues. There are several mechanisms in place to get team members paid for their deployment time. The first method is the Memorandum of Agreement between hospitals that was authored by the North Carolina Hospital Association. Essentially this agreement covers the utilization of personnel and equipment during times of disaster. Once a disaster is "declared" by the President reimbursement for personnel, services and equipment falls under FEMA, a long, but usually effective process. The salary for your training time is borne by the facility where you are employed.

Ready to sign-up? Obviously, SMAT II isn't for everyone, it requires a strong sense of dedication and a commitment of time and energy. Team members will not only be providing a great service to the citizens of North Carolina, but will also be able to provide valuable expertise and guidance to their base-hospitals and agencies on matters of disaster preparedness and bio-terrorism. Still interested and want to learn more? Informational flyers have been sent to all RAC-member hospitals and EMS agencies. See your hospital Disaster Committee Chairman or ER Nurse Manager for an information sheet and application. EMS personnel should see their Director or Training Officer for information. Applications will be accepted by mail or fax at any time. Applications will be reviewed and letters of acceptance mailed to successful candidates by April 1st. Initial training will start on 23 April 2005 and run through the middle of May, just in time for good weather and a nice decontamination

exercise. Initial training will involve one Saturday in April and two Saturdays in May. Training sessions will be a full 10-hour day. There will be an additional Initial Training session scheduled for the September time-frame for those that aren't able to attend the first session. On-going training will be conducted quarterly, likely an 8-hour day. On-Line continuing education training is being developed and will be the same for all teams across the state.

If you want additional information please call 919-684-4841 or email me at [larry.tucker@duke.edu](mailto:larry.tucker@duke.edu).

Mail your completed applications to:

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## Join Duke Life Flight!

Duke Life Flight is a comprehensive air/ground critical care transport program with bases in Lumberton, Smithfield, Burlington, and Durham North Carolina. The program is currently seeking RN's and EMT's to join our team! **RN Requirements include:** 3 years of current ICU/ED experience and the ability to work in a diverse autonomous environment, satisfactory completion of physical fitness standards, ACLS, PALS, and PHTLS/TNCC preferred, maximum weight 257lbs, and a 2-year minimum commitment to the program. Rotating 12-hour shifts available. **EMT Requirements include:** 2 years of EMT experience, current North Carolina EMT certification, 25 Years of age, satisfactory completion of physical fitness standards, and a 2-year minimum commitment to the program.

If you are interested and would like to learn more about Duke Life Flight, contact one of the Clinical Operations Director nearest you!



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# Victim Decontamination in the Healthcare Setting

**H**ow many of you do a 100% effective job of patient or victim decontamination? How many of you trained on how to decontaminate around a cervical collar or a traction splint? The answer to both of these questions is not surprisingly – very few of us. The reason for this poor showing is also not surprising - most of us learned how to decontaminate in a HAZWOPER technician course with readily compliant responders in water and contaminant repellent clothing.

I offer the following guidelines as suggestions to improve your facilities' decontamination practice. You should only use them after careful review with your staff (including your safety officer!) to ensure that they "fit" into your facilities' mode of operation. These suggestions presuppose that your facility has a basic decontamination protocol in place and are not intended to replace formal training.

## Personal Protective Equipment

Less is better and more is better. Translation: Wear the least amount of personal protective equipment (PPE) that is necessary to do the job safely, and make sure that you have plenty of it on hand. A typical personal protective ensemble for a hospital based decontamination worker is a PAPR (powered air purifying respirator), protective suit, inner and outer gloves, boots and an apron.

### Suggestions:

- If you use the 3M Breathe Easy 10 PAPR, consider use of Tychem QC hoods. They are lighter, come in two sizes (regular and large) and when you're done, you can throw them away. No more having to put on a sweat filled hood after the first guy.
- Consider use of an apron. All protective coverall type suits have a zipper in the front – exactly where you will have the most splash when decontaminating someone.

- Don't forget boots. Many people believe that they can wear their street shoes inside their suit's booties. Two things happen – the suit booties fall apart if you're walking on concrete or asphalt, or you slip and fall while walking on water-soaked floors. Neither is desirable. Pick a comfortable rubber boot with arch support, cut the feet off of your suit and tape the suits legs over the outside of your boot. This will help the water run off of you outside your suit, rather than being funneled into your boot.
- Buy (lots of) nitrile gloves (Ansell Solvex or equivalent). For incidental contact with contaminants, nitrile gloves should provide adequate protection (n.b., incidental is the key word here. Hazmat responders actually handling neat or concentrated contaminants need to use higher levels of protection.) Butyl gloves typically cost ~\$15/pair; nitrile gloves cost ~\$1/pair. This cost differential allows you to buy more nitrile gloves and change them whenever you believe that you've been contaminated (including by blood or body fluids).
- Make sure you buy enough PPE. Use the following formula to estimate how many ensembles to start with:

(Number of hours to operate for) x  
(number of decon team members)/  
(work period in hours) x 1.25 safety  
factor

For example, a 10 person team that wants to work for 8 hours that utilizes a 45-minute work period will need:  
 $(8 \times 10 / .75) \times 1.25 = 133.3$  (134) suits

## Operations

Decontamination is the action that you take to ensure the safety of your team members, colleagues and other patients in the hospital. For most contaminants,

# Outreach Calendar

## March

**23 Neuro-Trauma Workshop (Duke)**

## April

**13-14 PHTLS Provider Course (Duke)**

**15 PHTLS Renewal Course (Duke)**

**19 State Trauma Meetings (Raleigh)**

**22 Duke RAC Meeting (Durham Regional Hospital)**

**25 Medical Forensics Workshop (Duke)**

## May

**5 Stabilization Course (Duke)**

**10 State EMS Advisory Meeting**

**19 Outdoor Trauma Workshop (Duke)**

there is no magic "tricorder" or means to verify cleanliness so you must rely on the process to ensure the patient is clean and safe for those downstream to handle.

### Suggestions:

- Let the ambulatory victim do the work. Help them disrobe, if they need assistance, then hand them a washcloth and a bottle of soap and let them scrub.

## VICTIM DECONTAMINATION IN THE HEALTHCARE SETTING CONTINUED

- Respect patient modesty, but observe each ambulatory patient as they shower. Make sure they wash their hair, behind their ears, under their arms, etc. A decon aide in the shower can also help make sure the line keeps moving. When buying decon tents or trailers, make sure that there is enough room in there for a decon aide.
- Use good body mechanics when handling non-ambulatory persons. Three persons are the absolute minimum for non-ambulatory decon, four is better, five is optimal. What does the fifth person do – he or she is the team leader coordinating the effort!
- Non-ambulatory = critical. Don't forget the basic ABC's of basic life support – it doesn't do any good to decontaminate someone that 's not breathing.
- Remove and change out bandages and medical appliances (e.g., collars, traction splints) when decontaminating. Decon teams may be made up primarily of non-patient care people but you will need patient-care capable staff members for this function.
- Be careful decontaminating someone on a backboard and/or a gurney. Backboards are narrow and naked unconscious people are slippery. Saw horses or litter stands and purpose built litters or stretchers (e.g., SKEDs) are much more stable to work on. When buying roller sets, look for the widest, most stable roller set you can buy.
- Leave the bleach and water solutions alone. Soap and water should be your primary tools when decontaminating people. The military used to use bleach and water to remove and degrade contaminants. You can do

as good a job removing contaminants with soap and water; to degrade contaminants like nerve agent, you need to keep the bleach solution in contact for 15-30 minutes. Not very realistic in a mass decon setting.

These are some of the tidbits accumulated over 19 years of hazardous materials response experience. Consider them and use them if you feel they're appropriate. If you have helpful hints or constructive advice you would like to share, I would like to hear them. Please email me or call me.

*Jim Chang, CIH  
Emergency Management Coordinator  
Duke University Hospital*

Duke Emergency Services

# Duke LifeNet

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