IEMSA
APRIL-JUNE 2003
Iowa Emergency Medical Services Association
NEWSLETTER
A VOICE FOR POSITIVE CHANGE IN IOWA EMS

E.M.S. Everyday Heroes

Jeff Dumermuth, EMT-PS, President of the Board

This year marks the 31st Anniversary of EMS Week, nationally sponsored by the American College of Emergency Physicians. The theme has been defined as EMS-Everyday Heroes. It is hard for us, as emergency care providers, to think about ourselves as heroes when we are in the midst of Iraqi Freedom. We need to remember the sacrifice that so many men and women are making to allow us to continue to live in the fashion we are accustomed. While the world as we know it changed dramatically on 9-11, we still take many things for granted daily. Say an extra prayer for our President and armed forces.

EMS Week is an important time to reflect on the services we provide to our communities. It is also important for us to recognize the sacrifice made by many men and women here at home. You truly are the hometown heroes, providing emergency medical services to your community. I challenge each service and each EMT to grasp the purpose of EMS week and celebrate our success. Let our communities know how vital EMS is and use the opportunity to recruit new members. Consider sponsoring a health fair, free blood pressure checks or maybe a bicycle safety check. Remind the kids in your community the importance of seatbelts and helmets. Most importantly, do something.

Recognize your co-workers, tell the dispatchers, fire fighters, law enforcement officers, physicians and nursing personnel how important they are in our success. Don't forget to tell your spouse and family how much you appreciate their support and how important they are to you.

Once EMS week is completed, send IEMSA a list of the activities that you sponsored. We'll publish a list of activities in our next newsletter recognizing you who did such great work promoting EMS in your communities.

Most importantly, as we continue to move through these troubled times of terrorist attacks and biochemical threats, remember your safety and the safety of your partner. Keep an extra eye out for things that don't look right, trust your gut, it's usually right.

Keep safe and have a great EMS Week.

NEW REGIONAL BOARD MEMBERS ELECTED

Six individuals, one from each of the EMS regions in the State, have been elected to serve for two-year terms on the IEMSA Board of Directors.

North Central Region – Judy Rurup, Director, S.W. Webster Ambulance Service

Northeast Region – Kirk Dighton, Operations Supervisor, Area Ambulance Service

Northwest Region – John Hill, EMS Services Coordinator, Spencer Hospital

South Central Region – Roger Heglund, Training Officer/EMS Director, Newton Fire Department

Southeast Region – Brian Jacobsen, EMS Coordinator, Davenport Fire Department

Southwest Region – Bill Fish, Director, Carroll County Ambulance Service

To contact your Regional Representative, look for their information on the Board List located on page 15.

Iowa Governor's Conference on Public Health Aug. 14 & 15

Mark your calendars for the *Governor's Conference on Public Health: Leading the Charge for Community Health*, also known as Barn Raising IV, on August 14 and 15, 2003, at Drake University in Des Moines, IA. The biennial conference brings together cutting-edge experts from several health care arenas. The purpose is to:

• expand participants' knowledge,

• introduce new tools and resources, and

• share successful program models through workshops and networking.

This conference is targeting those who work in the health fields or who recognize the vital importance of the health sector to the stability and economic security of their communities.

Although planning is still underway, at this initial stage, speakers who have agreed to keynote the conference include the following:

➢ Ed Thompson, M.D., deputy director of the Centers for Disease Control and Prevention

➢ Irwin Redlener, MD, President of the Children's Health Fund and CEO of the Children's Hospital at Montefiore, and

➢ Martin Collis, PhD., exercise physiologist and motivational speaker

Among the list of outstanding workshop presenters are Tom Klaus of the Legacy Resource Group, "Dealing Effectively with Controversy"; Tyler Norris of Community Initiatives, "Addressing the Forces of Change in a Community"; and Dr. Kevin Ault of the University of Iowa, "STDs: New Approaches to Treatment."

The conference is divided into two tracks: *Tools for Leaders,* and *Leading the Charge in Healthy People/Healthy Iowans 2010: The Overarching Goals*. Topics include access to health care; mental, physical, and sexual health issues; confined animal feeding operations; bioterrorism, as well as many other topics pertinent to today's health care advocates. Altogether, more than 30 different sessions are being planned.

Continuing education units will be available for conference attendees. Training sessions for Mandatory Reporting of Child Abuse and Adult Abuse will also be offered for an additional fee.

Conference conveners are the Office of the Governor Thomas J. Vilsack, the Office of the Lieutenant Governor, Sally J. Pederson, the Iowa Department of Public Health and Drake University. The major financial sponsor is The Wellmark Foundation.

Continuing education credits, registration, poster sessions, displays, lodging, speakers, and the conference brochure will be posted on www.idph.state.ia.us. Double click on conferences.

For other questions, contact Louise Lex, Ph.D., Iowa Department of Public Health, by phone: 515-281-4348 or e-mail: llex@idph.state.ia.us.

Two Wheel Trauma Workshop in SE Iowa

April 5th brought EMS continuing education to the Fairgrounds at Eldon, IA. ABATE of Iowa (A Brotherhood Aimed Toward Education), District #14 sponsored the Two Wheel Trauma program. This program's objective was to enhance the survival rate for the injured rider(s) of bicycles, motorcycles, ATV's, mopeds, snowmobiles and other vehicles of similar design and to reduce the potential for rescuer injury due to inappropriate actions at the accident scene. 76 EMS providers from 40 cities and 16 counties attended the workshop. It had been 12 years since Dick "Slider" Gilmore, Anita Bailey, and Frank Prowant brought their entertaining and educational presentations for this course to Wapello County. Thanks to ABATE, 6 hours of CEH's and lunch were provided at no charge. Please thank your local ABATE members for making this partnership a winning situation.

The IEMSA Board of Directors recognizes our

Everyday Heros

EMS Week May 18-24, 2003

AED'S TO RURAL EMS PROVIDERS *BUREAU OF EMS AND IEMSA PARTNER*

The Iowa Department of Public Health's Bureau of Emergency Medical Services and the Office of Rural Health were successful in their submission of a HRSA grant to provide AED's to rural EMS providers. The Bureau has partnered with the Iowa Emergency Medical Services Association for the distribution of, and training for, these devices.

The Grant will fund sixty "non-age" specific AED's across the State. The sites were selected based on federal criteria of demographics and geographical disbursement. The Heartlink ® Defibrillators will be distributed Wednesday, May 21st during EMS Week in Des Moines. The event will be held on the campus of Iowa Methodist Medical Center in the Virginia Thompson Auditorium.

The main emphasis of the grant project is to extend the early defibrillation standard of care to our children under the age of eight. Broadly deployed, new AED technology affords the opportunity to provide such care. Adult and pediatric FDA approved AED's will be provided to the rural EMS services who will in turn "recycle" their currently existing "Adult Only" AED into the community in an effort to strengthen overall EMS system development.

As breakthroughs in defibrillator technology and heightened public awareness of the prevalence of sudden cardiac arrest for all ages broaden the demand for defibrillators, communities need to become empowered with the ability to meet these ever-changing health care needs. Successful resuscitation of pediatric cardiac arrest remains devastatingly low despite intensive efforts to improve protocols. Iowa's EMS providers need to become poised with not only innovative protocols, but also with technologically advanced equipment that addresses the needs of all Iowans regardless of their age.

The New Heroes

Michelle Mefferd, Johnston High School Senior

"911 Emergency, how can I help you? …" "Yes, someone is on their way." Yeah, that's going to be us in a few months. No more waiting for someone else to save the day. We will be the new heroes.

A few months ago, seven other students and I signed up for an EMT Basic class. We had no idea then that we would know as much about life as we do now. Our class teaches us simple skills, such as transporting a patient from the highest level on a building to safety and to the more difficult skills like treating an unconscious, bullet wound victim. Just knowing the skills is not enough, though. Thankfully, this basic class also teaches us how and when to apply these techniques.

Michele Emery, East High said, "They're (skills) not necessarily hard things to learn, but it's a lot different applying the knowledge in the real world."

Not only do we get to spend three hours a day learning these life saving skills from a book, but once a week we get the opportunity to go to Mercy School of EMS. There we are taught by practicing paramedics. They give us real-life scenarios to act out. We practice carrying each other on stretchers, taking each other's vitals and all the other things we will need to know to become Emergency Medical Technicians.

"EMT-B is a great foundation class for anyone going into a health career or just going on through life," said Valley High School senior Leeann Charlet.

Even if our future plans do not include becoming an EMT, the information is helpful. You never know when the guy in line next to you is going to trip on his shoelaces, hit his head and/or need mouth-to-mouth resuscitation.

Footnote: Last semester's high school EMT class passed their class skills/written test at 100%. The current class is preparing for their clinical/field experience.

UPCOMING IEMSA MEETINGS

IEMSA's Board of Directors will meet on the following dates. Most meetings will be held from 10:00 a.m. - 1:00 p.m. at Fire Station #17, 1401 Railroad Avenue, West Des Moines, unless otherwise noted. All members are welcome to attend. Minutes of each meeting will be available at www.iemsa.net.

May 21 – 1:00-4:00 p.m.
June 19
NO JULY MEETING!
August 21
September 18
October 16
November 13 – ANNUAL MEETING
December 18

Iowa Donor Network Partners with Lakes Regional EMS to Offer Families Donation

An Iowa law that became effective July 1, 2002, adds new ways for Iowans to give consent for organ and tissue donation. "First Person Consent" is an amendment to the state's Uniform Anatomical Gift Act, and allows Iowans to personally give their consent for organ and tissue donation *before death*. A person can register his or her intentions to be a donor by accessing www.IowaDonorRegistry.org, or by calling toll-free, (877) 366-6742. An Iowa driver's license can also be used as a form of consent for organ donation. Prior to passage of this amendment, the legal next-of-kin was asked for consent *at, or after* the time of an individual's death.

The First Person Consent Amendment also includes "good faith" language allowing EMS providers the opportunity to refer non-hospital deaths to the Iowa Donor Network (IDN) for evaluation of tissue donation. The law paves the way for EMS personnel in Iowa to share a decedent's name and other personal information with IDN representatives.

Going above and beyond just making a phone call, the paramedic specialists at Lakes Regional Healthcare Mobile Intensive Care Service in Spirit Lake are partnering with IDN to support the tissue donation process. The organization has invited IDN to hold educational forums on-site, educating nursing staff, as well as EMS staff.

Additionally, all full-time paramedic specialists are receiving special training delivered by IDN specialists, equipping them with the skills to discuss the option of tissue donation with bereaved family members. Having completed this course, Lakes Regional Healthcare paramedic specialists can initiate the donation process and answer families' questions or concerns. Providing this extra training to EMS personnel helps save time and increases the number of tissue donors in Iowa.

"We are excited about the inclusion of EMS-specific language within the First Person Consent bill," said Michelle Kelsey, development specialist at Iowa Donor Network. "EMS providers can now help IDN implement the law and honor a person's donation wishes when death occurs outside a hospital setting."

Since Lakes Regional Healthcare paramedic specialists implemented this program, every family contacted by IDN tissue donation coordinators has consented to donation and received the comfort of knowing that their loved one's wishes were carried out.

Lakes Regional Healthcare Mobile Intensive Care Services deserves recognition for implementing such an innovative and successful program. EMS personnel have truly added a service to the Spirit Lake community.

For more information on how to get your local EMS service involved, please contact Michelle Kelsey at (800) 831-4131.

ADVENTURELAND DISCOUNTS AVAILABLE

Have some fun at Adventureland Amusement Park, Inn and Campground in Des Moines. Discount tickets, saving IEMSA members $3-$4 off the purchase price of admission, are available at the IEMSA office. Quantities are limited – first come, first served. Get yours today - call 515-225-8079.

IEMSA BOARD MEMBER NAMED MOTHER OF THE YEAR

Congratulations go out to Mildred "Kay" Lucas of Bedford for being chosen as the 2003 Iowa Mother of the Year by the Iowa Mother's Organization. She was nominated for this honor by Bedford's Young Mothers at Heart. The panel of judges who selected Kay for this award stated that they found her portfolio to be "so interesting; setting wonderful examples of motherhood and a big asset to her local community." *(The Bedford Times-Press, March 12, 2003)*

Kay and her husband, Dr. James Lucas, have five children and eight grandchildren. She has been very active in community affairs while keeping her family as first priority. One of her biggest community projects was when she served as Ambulance Director for the Bedford Emergency Medical Services from 1984 to 2002. She remains committed to EMS in Iowa as she serves in the local, county and state associations.

Legislative Committee Report

Ric Jones, IEMSA Legislative Chair

2003 will not go down in the books as a banner year for EMS legislative gains. It's difficult to stand in front of the statehouse with your hand out when the bank is broke. So what do we do? Here is a call to action for each of us:

1. We need a formal legislative agenda with a target of November of this year for Board approval at the latest.

2. We need to remind every State Representative and Senator that keeping Iowans safe in their communities is what they were elected to do. It is job #1 every day. Safe communities include well-funded, well-equipped and well-trained EMS resources. This will happen if each of us makes one contact to our representatives. It is a no-brainer, but they have to hear it at home!

3. We need to maintain a professional presence on Capital Hill. Cal Hultman has done a remarkable job for us. We need him to continue to be there for us.

4. We need to more closely align ourselves with other public safety advocates and share our agendas.

5. We need to continue to work in concert with the Bureau of EMS whenever and however we can. We are making real progress on real issues together.

6. We need your input on what is important to you and your services.

Issues that remain before us include, but are not limited to:

1. A dedicated and adequate funding stream for the State's EMS systems, including the operation of the bureau, funding of training and equipment.

2. Equity in pensions for our paid providers. Many full-time EMS providers in the State are treated relatively poorly by the Iowa Public Employees Retirement System (IPERS) when compared to other public safety employees. Police and Fire have a much better system, and other public safety employees covered by IPERS have a better retirement program than EMS providers.

3. Rewards for public safety volunteerism. An income tax break, a pension system, or something to reward those who volunteer to keep the citizens of this state safe.

4. Resistance of public policy initiatives that are not in the interests of our constituency. These happen with some frequency. With our good work they will fail.

We will continue to develop a legislative program for the second half of the session. Of course, we understand that most of what we seek will require public dollars, but let's not loose sight of what the legislature is there for: to keep Iowans safe and provide them with good government. People are willing to pay taxes for public safety. EMS has for too long been an un-noticed component of public safety. Let's make them notice us!

Wireless 911 Report, April 2003

Dennis Bachman, EMT-PS Wireless 911 Board

The Iowa House of Representatives chose to change the wording and the surcharge increase, which basically killed the meaning of the proposed changes in the code. We were hoping that we could find other ways of moving the bill through the House but we could not find the support needed. We will go back to the drawing board and work on plans for next year in hopes that we can find better support.

What this means is that local 911 centers attempting to locate emergencies placed via cell phones, (as we have in place now with Phase I), will know the tower the call is coming into and the cell phone number of the caller. This leaves us with only a 10-mile radius for seeking the location of the caller if it is unknown. Another important point is that people who have cell phones that do not have regular service can not be called back from the communications centers if they have an emergency and do not stay on the line.

The present system is costing about $.58 per phone, but the system is only collecting $.50. Therefore, we are losing ground at about $0.08 cents per month per phone. We now have a deficit of $2.5 million dollars that is owed to the phone companies for the network, and that figure will continue to increase.

We will be looking for future ways to implement the system and to cover the cost. In the meantime, we will continue to look for those lost souls in cell phone land that we can't find – delaying care and losing parts of the "golden hour" due to this legislative choice.

Thermal Burn Trauma

Objectives: Once the participant has read the article, each should be able to answer the 10-question post-test with at least an 80% overall success, demonstrating their understanding of the following:

1) Normal skin anatomy, physiology, and the pathophysiology of a thermal burn injury;
2) Identification of potential dangers within the thermal incident and factors to prevent injury to the healthcare worker;
3) Assessment and management of a thermal burn injury, including determination of the severity of the burn, wound care and fluid therapy protocols;
4) The continuous reassessment of the burn patient, watching for complications and determining whether therapy is adequate during transport to the Accredited Burn Center if needed.

Case Study

Time: 23:00 hours; A 45-year-old male dialed 911 and reported a house fire to the local Fire Department. Upon the engine company's arrival, they find that this patient has thermal injury to his skin and an ambulance has been dispatched.

Scene Size Up

Upon ambulance arrival, you find that several of the Fire Department personnel are donning air packs and full gear to enter the burning building as there is a report of at least one person trapped. The 45-year-old male is reluctant to let you manage his injuries. He is standing on the edge of his property talking anxiously to Fire Fighters.

It has been 20-30 minutes since the structure fire was recognized by the 1st victim.

Scene Size-Up Note: Fire Rescue and EMS personnel injured while rescuing burn victims compromise 1% of all burn patients. Do not become a victim. Rescuers entering smoke-filled buildings without proper training and/or protective equipment provide a prime example of how they can become a victim.

Back to the Scene…

Since this is a multi-casualty, multi-agency event, the senior member of the Fire Department establishes Incident Command and all subsequent responders report to the person in charge.

The Incident Commander finds out that two children were successfully pulled from the structure by the 45-year-old and taken to a neighbor's house. The neighbor reports that, "the kids are just fine."

Patient Number 1 Assessment:

A: Patient is talking and oriented.
B: Lung sounds are clear and without labor.
C: Skin is warm and dry in the non-burned areas; distal pulses strongly palpable.
D: Moves all extremities. He has been alert and oriented throughout.

Vitals: BP 140/90, pulse 110, resp. 28, pulse oximeter reads 98% on room air. Weight is 180 lbs.
The patient has blistered burns on both arms and hands, feet and chest. His hair is singed.

What percentage of this patient's body is burned?
What is the probable depth of the burn overall?
What are some techniques that may help you determine the size and depth of the burn?
Are his burns bad enough that he needs fluid resuscitation?
Of what benefit is the pulse oximeter reading in these situations?

Patient Number 2: …has just been rescued from a back bedroom of the structure that is now fully engulfed. Firefighters state that she was found on a smoldering mattress. She is responding to verbal stimuli with a hoarse cough. Her skin is covered in soot. Her hair is singed and she is drooling with clear secretions from her nose and eyes.

Patient Number 2 Assessment:

A: Hoarse cough with soot in mucous membranes of mouth.
B: Loud breath sounds, shallow.
C: Skin is warm and dry with distal pulses weakly palpable.
D: Eyes are open, she is disoriented to date and place. She is restless.

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Vitals: BP 90/60, pulse 130, resp. 36 and using accessory muscles to breathe. Pulse oximetry shows 90%. Her weight is 130 pounds. She has darkened, dry areas of her body that feel leathery on her posterior thorax, lower back, buttocks and posterior thighs.

What percentage of this patient's body is burned?
What is the probable depth of the burn overall?
Are her burns bad enough that she needs fluid resuscitation?

And – What is going on when the skin gets burned?

Skin Anatomy & Physiology

Skin is the elastic, self-generating, waterproof cover of the body. It protects against heat and cold and is involved in the body's temperature regulating systems. The largest organ of the body, the skin has 2 layers: epidermis and dermis. The outermost layer is the epidermis and serves as the body's first line of defense against injury and infection. The outer layer of the epidermis is made up of a hardened cell layer and is continuously shedding. The 2-layered dermis is formed by connective tissue and contains blood vessels, nerve endings, sweat glands, sebaceous glands, lymph vessels, and hair follicles. The dermis supplies nutrition to the epidermis. Under the dermis is a layer of subcutaneous tissue composed of fat and connective tissues. The dermal layer cannot regenerate if the cells are destroyed.

The four major functions of the skin are temperature regulation, protection, secretion, and sensory reception. The sensations of pain, touch, temperature, and pressure are transmitted through the sensory nerve fibers to areas in the cerebral cortex. The sweat glands secrete perspiration to maintain a normal body temperature. The sebaceous glands secrete sebum, an oily substance that helps lubricate the skin and maintains its texture. This sebum also contains antifungal and antibacterial properties. In terms of protection, the skin keeps the body from losing excessive amounts of fluids and electrolytes.

Burn Trauma Epidemiology

Burn victims experience devastating problems, from the initial event to and through lengthy rehabilitation periods. The burn victim must cope with changes in body image, altered self-esteem, and new financial burdens.

The good news is that the incidence of serious burn injury and subsequent hospitalization has declined by 50% in the past 20 years. Many steps to prevent these life-altering injuries have made the difference, including legislation, education, and industrial changes. The bad news is that burn injury remains the third leading cause of death in all children, and the second leading cause of death in the 1-4 age group.

Overall, burns rank as the fifth leading cause of death because of unintentional injury. The majority of burn deaths occur as a result of house fires; 78% of the deaths are related to inhalation of toxic substances. Careless use of smoking materials and alcohol consumption are common factors in fatal house fires, with more than 40% of the deaths in house fires alcohol- or drug-related.

Scald burns are more frequent for those under the age of 5 and over the age of 65. Hot water from taps, showers, and bathtubs is the leading source of scald burns for children less than 5 years of age. Water at 65.5 deg. C (156 deg. F), can cause a deep partial or full-thickness burn in 1 second.

The range of cost of care for a hospitalized burn victim is $36,000 to $117,000; a fire-related death including lost years of estimated productivity has been estimated to cost between $250,000 and $1.5 million.

Mechanism of Injury & Pulmonary Involvement

The most common mechanism of injury leading to thermal burns are those events generating heat and/or flames. These burns can be caused by flames, flash, scalds, and contact with burning substances, objects or chemicals. Pulmonary injury is related to the inhalation of heat, smoke, and toxic substances (both gases and particulate matter) released during the burning process. As natural and synthetic materials burn, the byproducts of the combustion, such as carbon monoxide, hydrogen cyanide, and other gases are released. Also, as oxygen is consumed in the fire, the atmospheric concentration of oxygen decreases, carbon dioxide levels rise, and the temperature in the area rises.

Many times the patient has more than just burns to the skin. Although the burn injury to the skin may be the first injury seen, the potential for injury to the pulmonary system requires immediate assessment and intervention. Inhalation injury significantly increases the mortality from burns. Additional injuries may be a direct result of explosions, falls, or motor vehicle crashes. Burn trauma patients are just that – trauma patients who may require bleeding control, spinal immobilization, etc..

Thermal Burn Pathophysiology

A thermal burn occurs when the body cannot dissipate thermal energy rapidly enough to prevent damage to layers of the skin and perhaps to the underlying structures.

Severe burns on the skin present zones of injury:

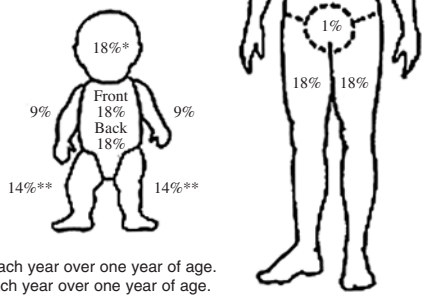
1) Zone of Coagulation: The affected cells for an area of coagulation at the center where the tissue is dead.
2) Zone of Stasis: Just outside the zone of coagulation, this area develops capillary occlusion, diminished blood flow and edema within 24 to 48 hours after the burn.
3) Zone of Hyperemia (increased blood flow): This area has increased blood flow as part of the inflammatory response.

Within the tissues, chemicals that dilate blood vessels are released along with white blood cells and blood clotting matrix. The capillaries may have direct injury and leak large substances out and into the free tissues – which eventually will pull water from the circulatory system. If greater than 20-30% of the body surface area is burned, systemic affects can be anticipated, including shock.

Estimating Burn Size

RULE OF 9's

(For calculating percentage of body burned)



* Subtract 1% from head for each year over one year of age.
** Add 1/2% to each leg for each year over one year of age.

Determining Severity of Thermal Injury

The severity of the burn injury is determined by assessing the extent of body surface area (BSA) and the depth of skin involved in the burn. The Rule of Nines is a convenient method of assessing the extent of BSA involved. In the adult, most anatomic areas represent 9% or two times 9% of total BSA. In the infant however, since the head is disproportionate to the total BSA, the calculations must vary. (See chart above.)

The depth of injury is caused by both temperature and length of exposure to the heat. This can be described as:

1) First Degree Burn (Superficial) Limited to the epidermis. Usually bright red and painful.
2) Second Degree Burn (Partial Thickness) This involves varying depth of the dermis and is manifested by blister formation, redness & pain.
3) Third Degree Burn (Full Thickness) This depth of burn destroys both the epidermis and dermis and may extend into underlying subcutaneous tissue, muscle, bone or other structures. The skin may appear charred and leathery, or dry and pale. Pain is typically absent here.

Scattered burns are common in thermal injuries and that makes the assessment for extent of BSA a challenge. One method advocated by many experts is to reference the patient's palm of their hand as 1% of their BSA.

Patients commonly have varying depths of burns that compound the assessment for the severity of the injury. Understanding skin physiology might help here. Take your gloved hand and gently run it across the surface of the patient's burned skin. If the patient's body hair comes off onto your glove, that is probably a full-thickness burn as the hair follicles have been destroyed. Don't forget to assess for burned tissue under the cap of hair on the patient's head – especially a child. If you gently pull on their hair and it easily comes out in clumps, the area under the hair has a full-thickness injury.

Remember- Stop The Burning Process!

Remove all clothing and jewelry from the patient. Clothing that adheres to the burned skin may be left alone. Don't merely cut the clothes anteriorly and push to the sides. Turn the patient to the side and push all clothing through and out from behind their backs, as well. Clothing and jewelry may trap heat underneath and enhance the burning process. Jewelry must be removed early as removal will become progressively more difficult as edema develops.

ABC's… There are two major pathophysiologic issues that the EMS provider must prepare for in the thermal burn. Remember that the thermal burn trauma victim may have had to inhale many products of combustion and warm air which compromises breathing. We know that the patient's tissues are going to start to swell – this includes their upper and lower airways. These 2 anticipated problems in this patient means early advanced airway management.

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Advanced airway management is indicated in many cases. The patient must be evaluated early in the local Emergency Department for the need for early intubation, including the use of medications to enhance the procedure by those credentialed at that level. If the patient has early airway and breathing compromise in the field, the EMS provider should use the bag-valve-mask device with high-flow oxygen and prepare the patient for early intubation.

The use of the CombiTube® is controversial in this setting. As tissues swell, a tube placed into the esophagus would keep the esophagus open but not the trachea. A better treatment is an endotracheal tube, which would help splint the trachea open as tissue edema accumulates around it.

Fluid Resuscitation in the Burn Patient

The criteria for initiating fluid therapy in the pre-hospital phase include:

1) Burns that are greater than 20% BSA and transport time is greater than 60 minutes from the time of the injury.
2) Hypovolemia from associated injuries. (NOTE: I.V.s should be initiated enroute.)
3) Management of life-threatening dysrhythmias.
4) Patients who require endotracheal intubation.

The shock associated with thermal trauma develops post-burn because of movement of larger molecule-filled plasma out of vessels and pulls water with it into the tissues. The greatest fluid shift occurs in the first 8 hours post burn.

Do not delay transport to initiate an IV. Initiate I.V.s enroute if transport time permits. You should start the IV's in non-burned tissue but if necessary, an IV may be placed in burned tissue if a viable vein can be palpated. The flow rate for Lactated Ringer's solution is:

a. For those > 15 years of age, infuse at 500 ml/hour
b. For those 5-15 years of age, infuse at 250 ml/hour
c. For those < 5 years of age, infuse at 150 ml/hour

Another standard IV infusion rate formula is based on the patient's weight and BSA calculation: 2-4 ml/kg/BSA over 24 hours with 1/2 of the calculated total to be infused over the first 8 hours. This 8-hour calculation *begins at the time of the incident.*

Case Study

Using 4 ml/kg/BSA formula… At what rate should patient number one have his IV fluids at?

At what rate should patient number two have her IV fluids at?

Wound Care and Use of Plastic Wrap

Due to the risk for hypothermia (remember skin physiology?), do NOT apply cooling or moist dressings to any burns that constitute > 10 % BSA. In general, do not apply any ointment or salve to the wounds. The patient is at risk for hypothermia, so keep the ambient temperature warm and cover the skin with dry, clean sheets and then apply blankets to maintain the patient's body temperature. It is not necessary to apply dressings to wounds. Direct wound care will be done at the receiving Burn Center.

For many years, The University of Iowa Health Care's Level I Burn Center has advocated the use of ordinary household plastic wrap (such as Saran Wrap®) directly over burn wounds. Plastic wrap keeps the wound moist and soft, conserves moisture, protects against contamination, and usually relieves pain. Once the fire is out in a thermal burn injury – all clothing and jewelry off – then plastic wrap may be applied right off the roll (the first "turn" off the roll should be discarded) onto the patient's skin. (See survey attached to quiz.)

Transferring Burn Patients

The American Burn Association has established criteria, endorsed by the American College of Surgeons, for those patients who should be transferred onto a specialty Burn Center. EMS programs many times transport the patient to the local hospital for initial resuscitation and then will be called upon to transfer the patient onto a Specialty Burn Center (ABA/ACS). Pain management will be initiated, as well as continued assessment and resuscitation of the initial thermal and associated injuries. Burn experts recommend that the patient have a naso or orogastric tube and a urinary catheter inserted prior to transfer. EMS personnel should monitor the patient's urinary output during the transfer and report to Medical Control if the output falls below 30-50 ml/hour in adults or less than 1-2 ml/kg/hour in children.

Continuous monitoring of the patient during transfer should also include cardiac, pulse oximetry and capnography if available. Remember that a pulse oximeter cannot recognize what type of gas is attached to the hemoglobin – only how saturated it is. Carbon Monoxide has an affinity for hemoglobin 250 times greater than that of oxygen and that gas is readily available within the process of combustion. It may be useful to monitor the patient's oximetry reading but understand that clinical signs and symptoms should guide oxygen therapy, airway and breathing management. Carboxyhemoglobin levels will be drawn at the local or resource hospital and those patients who meet criteria will undergo hyperbaric oxygen (HBO) therapy.

All persons exposed to the products of combustion within a fire should be evaluated for carbon monoxide levels. *Remember the two kids in our case study who were whisked away to the neighbor's house? They should be taken in for evaluation, including carbon monoxide levels.*

In Summary

Burn patients are trauma patients. Scene size-up should be particularly thorough and only those trained and equipped to enter hazardous scenes should do so. The Consciousness, ABC approach for the initial assessment is standard for all trauma patients. All patients in an enclosed space within the structure of a fire should be evaluated at the local hospital, if only to have carbon monoxide (CO) levels determined.

Pulmonary injury is a common complication in any burn patient and meticulous assessment and care are essential. Be careful of using pulse oximetry to determine oxygen levels in the patient who may have CO attached to their hemoglobin instead of oxygen. Hemoglobin likes CO more!

Determination of burn size, depth and other complicating factors are key components in evaluating the seriousness of burns. The rule of 9's, palms=1% and other helpful tools can assist in determining burn size. Burn depth may be misleading at first but 1st, 2nd, and 3rd degree burns should be estimated.

In the prehospital setting, initial assessment, triage and rapid transport to the closest facility, with final disposition of those patients who qualify, at an Accredited Burn Center. If the patient has more than 20% of their body surface involved and an initial hospital ETA more than 60 minutes post injury - I.V.s may be started enroute and protocols followed for fluid administration. Wound care for any injury of more than 10% should have all clothing and jewelry removed and never include "goo" or water. Clean, dry sheets or plastic wrap once the fire is out is important.

The continuous assessment of the burn patient throughout the out-of-Burn-Center period is essential to a good outcome.

Please complete the 10-question post-article quiz to receive CEH credit, along with our small survey. Mail it to: Rosemary Adam, RN, EMT-P(Spec.), The University of Iowa Health Care, 200 Hawkins Drive, EMSLRC South 608 GH, Iowa City, IA 52242-1009; 319-356-2599; fax 319-353-7508; e-mail: *adamr@uihc.uiowa.edu*

Thermal Burn Trauma

10-Question Post-Article Quiz

Iowa EMS Association members who achieve an 80% overall score on the following quiz will receive 1.0 informal CEH through The University of Iowa Health Care's EMS Learning Resource Center of Iowa City, an EMS Training Program, Provider 08.

Name: _____

Address: _____

City/State/Zip: _____

Email Address: _____

EMS Certification Level: _____ **Contact Phone Number:** _____

First Responder and EMT-Basic answer questions 1-8. Advanced levels answer all 10 questions.

Please choose the one, best answer to the following questions and indicate your answer by circling.

1. In our case study, using the "Rule of 9's", what percentage of body surface area was burned in victim #1?

   A. Approximately 10%.
   B. Approximately 30%.
   C. Approximately 50%.
   D. Approximately 75%.

2. Choose the correct statement regarding the pulse oximeter reading in the evaluation of burn patients after an enclosed fire:

   A. Pulse oximeter readings are the best way to determine how well the patient is ventilating.
   B. Pulse oximeter readings are the best way to determine perfusion to the distal finger.
   C. The pulse oximeter readings show how well the hemoglobin is saturated with a gas.
   D. The pulse oximeter must read 100% if the patient is ventilating well enough.

2. The most immediate, life-threatening injury to victim #2 is:

   A. The large third-degree burn to about 30% of her body.
   B. The large third-degree burn to about 50% of her body.
   C. The pulmonary system involvement with potential respiratory failure.
   D. Airway edema from immediate fluid shifts.

4. Choose the best statement that describes why the body swells with major burns:

   A. Within a few hours, the patient's body swells due solely to the inflammatory process.
   B. Within a few hours/days, the patient's body swells due to capillary leaking and the pull of water into tissues from the circulatory system.
   C. The patient's body swells from both the inflammatory process and the IV fluid we have to give for shock.
   D. Within seconds, the total body shifts fluids from the circulatory system to the free tissues to try and put out the fire.

5. In our case study, victim #1 should have the following treatment:

   A. Remove all clothing and jewelry, provide wound care/warmth, IV fluid resuscitation and high-flow oxygen.
   B. Remove all clothing and jewelry, provide wound care/warmth, (he does not qualify for fluid resuscitation), and high flow oxygen.
   C. Remove all clothing and jewelry, provide wound care/warmth, IV fluid resuscitation.
   D. Remove all clothing and jewelry, provide cool, wet cloths to the burns, (he does not qualify for either oxygen therapy or fluid resuscitation).

6. In our case study, victim #2 should have the following treatment:

   A. Remove all clothing and jewelry, provide cool, wet cloths to the burns, start 2 I.V.s on the scene, then transport to the hospital that is 15 minutes away with oxygen on her.
   B. Remove all clothing and jewelry (even if it is stuck into the skin), apply burn wound care, provide positive pressure ventilations with 100% oxygen, intubate early and start I.V.s enroute.
   C. Remove all clothing and jewelry, apply burn wound care, provide positive pressure ventilations with 100% oxygen, intubate early. This patient does not qualify for I.V.s.
   D. Remove all clothing and jewelry, apply burn wound care, provide positive pressure ventilation with 100% oxygen, facilitate early intubation and IV fluid resuscitation, and transport to the closest appropriate hospital prior to transfer onto a Burn Center.

7. Choose the best description of the reason for pulmonary system involvement in a structure fire:

   A. Direct inhalation of the burning process is the reason for pulmonary system involvement.
   B. Carbon monoxide poisoning is the most common reason for pulmonary system injury.
   C. Immediate swelling of the airways is the reason that the patient becomes dyspneic.
   D. Patient's have pulmonary involvement due to gas and particulate matter release in a burning process with oxygen consumed by the fire.

8. Choose the **incorrect** statement regarding normal skin function (physiology):

   A. The skin is involved in the body's temperature regulating system.
   B. The epidermis serves as the body's first line of defense against injury and infection.
   C. The dermis contains blood vessels, nerve endings, hair follicles, lymph vessels.
   D. The epidermis and dermis can regenerate if the cells are destroyed.

First Responders and EMT Basic level participants may stop here. Intermediate '85, Intermediate '99, National Standard Paramedic 1985, and National Standard Paramedic (Paramedic Specialist) 1999 are to continue in order to receive full credit.

9. You are 30 minutes from a receiving hospital (1 hour post incident) with our victim #1 and you were able to establish an IV of normal saline enroute. Medical Control has asked that you infuse 4cc/Kg/body surface area burned to our victim as prescribed in the article. Please calculate this patient's fluid needs for the next hour:

   A. Approximately 700 cc per hour
   B. Approximately 225 cc per hour
   C. Approximately 600 cc/hour
   D. Approximately 1100 cc/hour

10. The local hospital has evaluated victim #1 and decided to transfer him onto a Level I Burn Center due to his high risk burns. A second IV was established, an NG and a Foley catheter were inserted. You are asked to transfer this Pt onto the 2nd hospital. What clinical signs and symptoms would show a ***deterioration*** in our patient?

    A. Lowered heart rate and increased BP with urine output at 15 cc/hour.
    B. Increasing heart rate, decreasing BP with urine output at 15cc/hour.
    C. Lowered heart rate, static BP with pulse oximetry stable and urine output at 30 cc/hour.
    D. Increasing heart rate, static BP with pulse oximetry higher and urine output at 1-2 cc/kg/hour.

This article written by Rosemary Adam, RN, EMT-P (Spec), Nurse Instructor at The University of Iowa Health Care's EMS Learning Resources Center in Iowa City. Questions or comments may be forwarded with the post test or by email to: *adamr@uihc.uiowa.edu*. Phone: (319)356-2599.

We welcome you to participate in our brief survey on the back of this post test. The purpose of this survey is to gain the clinical perspective from our EMS providers on the use of plastic wrap for burn wound care. It will only take a few minutes to complete and the information will be used in a research project.

Thanks to the University of Iowa Health Care's Level I Burn Center, Jacqueline Heinle, RN, Nurse Manager, and her staff for their assistance in providing continuing education to the health care providers of the Midwest.

References:

Upright, Ed.D, "Pre-Hospital Burn Life Support Course" ABLS Manual, 1994, American Burn Association

Bennett-Jacobs, Sr. Ed., "Trauma Nursing Core Course" Provider Manual, 5th Edition, 2000, Emergency Nurses Association

(continued on page 14)

(continued from page 11)

Burn Survey

1. Prior to reading this article, had you heard of using plastic wrap for pre-hospital burn wound care?
   Yes No

2. Do your service protocols include the use of plastic wrap for pre-hospital burn wound care?
   Yes No

3. If you provide education in first aid or EMS, do you include information on the use of plastic wrap in burn wound care?
   Yes No

4. If you have personally applied or witnessed application of plastic wrap in pre-hospital burn wound care, please comment on how the procedure went, whether the patient expressed any change in discomfort following application, and any general comments regarding this process:

_____

_____

_____

_____

_____

_____

_____

5. If you have personally applied plastic wrap in the wound care of a burn patient, may we contact you for more information about your experience with the procedure? Again, any information you provide will be used for research purposes only and will be kept strictly confidential.
   Yes No

If yes, please provide your name and email address or phone number:

Name: _____

City/State: _____

Email Address: _____

Phone Number: _____

Funding Volunteers: EMS and Fire

By Cindy Hewitt, SE region
(Data is from Jan. 21, 2003 IDPH, Bureau of EMS)

In this day and age in rural Iowa with the struggle for funding, survival of essential services, and trying to be good neighbors, where do you belong? Are you an EMS provider in a small community? Are you a volunteer? Or do you work for a paid service and volunteer in the community where you live? Then you belong to that group in Iowa that is 12,833 members strong.

Are you affiliated with a fire service? Then you belong to one of 422 services in Iowa that are Fire-based EMS services. That breaks down into 133 ambulance services and 253 non-transport services as mainly volunteer/or volunteer services. (27 are career services). Is your Fire/EMS service supported from township taxes? Does EMS get any of that funding? Does your county or city provide any funding for you to provide EMS services? Does your unit do fundraisers to support the EMS services the community has come to expect?

When all of the grants speak of system development and working partnerships, what does that mean to your service? Is it a reality or is there still a territorial problem between Fire and EMS?

Is EMS a “special interest” group or are you expected to be prepared and available when the consumer calls? Does the public have confidence in the EMS system? With all the uncertainty in this world, will EMS always be here? Or will we be fighting to promote what EMS stands for with our legislators? If you don’t paint the picture of your EMS service, how will anyone know? Did your grant money get cut this year?

Know the funding problems EMS in Iowa is struggling with. Know your Representative or Senator, and call them. Ask them what they do know about EMS in your area. Ask them how they think we support our services. I think you may be surprised with the answer. It may be your opportunity to educate your legislator about EMS. Talk with your IEMSA legislative committee or board member to get more information about our funding interests in EMS.

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NEWS TO SHARE

Are you working on an exciting program that needs to be shared with the membership of IEMSA? Do you know of an EMS-related educational program that needs to be showcased? Has your service won an award or done something outstanding? Do you want to honor a special member of your staff or of the community? If so, you can submit an article to be published in the IEMSA newsletter! In order to do this, just prepare a press release (and pictures, if appropriate) and e-mail it to iemsa911@netins.net by the following dates:
August 1 (to be mailed by August 20),
November 17 (to be mailed by December 10).

The Newsletter Committee will review all articles submitted and reserves the right to edit the articles, if necessary.