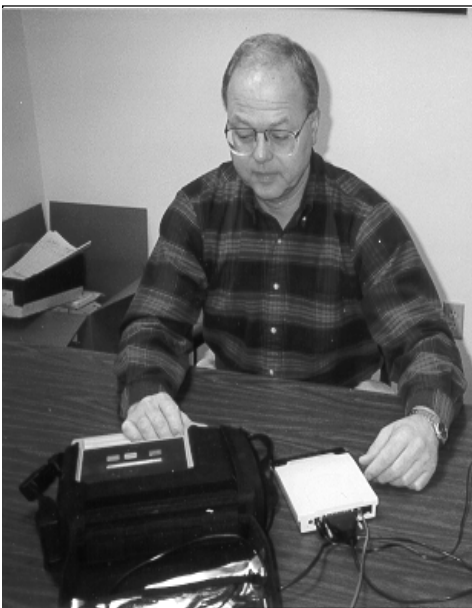


EMS Update

An Emergency Medical Services Learning
 Resources Center Publication

Winter/Spring 1998
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EMSLRC heart rhythms confirm long distance diagnosis

First responder, Ron Dacken, left, sent defibrillator heart rhythms to Lori Hartley's computer. Hartley then FAXed the rhythms to the ER physician.

Eighteen-year-old Danielle Geitzenauer was enjoying time with her friends in Lone Rock, Iowa, last July 27 when she collapsed. The Lone Rock first responders were paged in the early morning to a person having seizures at a lounge in the town of 175 people.

"We found the patient breathing and with a pulse, although she went into cardiac arrest soon after we arrived," says Dave Newbrough, Lone

Rock first responder.

"We attached the automated defibrillator which analyzed her heart rhythm and told us to shock. The defibrillation converted her heart out of ventricular fibrillation to an organized rhythm with a pulse."

Sentral Area Ambulance Service (SAAS), Fenton, Iowa, transported the patient toward Kossuth Regional Health Center, Algona, Iowa; Algona Ambulance Service tied with SAAS about halfway to the Health Center.

Helicopters could not fly because of heavy fog so after assessing the patient, the Kossuth Regional Health Center emergency room physicians arranged for her to be transferred by ground to St Mary's Hospital, Rochester, Minnesota. There she could

receive specialized care, and have her complete medical records available. (Geitzenauer was a patient in Rochester in 1993 after a serious auto accident.)

The Gold Cross Ambulance Service, Rochester, met the Algona Ambulance in Blue Earth, Minnesota, and completed the patient's 150-mile transport. Throughout transport she had a pulse, but still did not breathe.

David Klocke, MD, consultant, Division of Emergency Services, St Mary's Hospital, saw Geitzenauer with a normal heart rhythm and wanted to review the initial rhythms.

Ron Dacken, Lone Rock first responder, transferred the defibrillator's rhythms via modem to

continued on page 2

Heart rhythms

Danielle Geitzenauer, holding defibrillator at right, is surrounded by the Lone Rock first responders Ron Dacken, (left in photo) Dave Newbrough, Jerry Nerem, and Kim Fischer. They helped save her life when she collapsed in cardiac arrest.

Lori Hartley's computer in the Emergency Medical Services Learning Resources Center at the University of Iowa Hospitals and Clinics. He then called Hartley and asked that she FAX the heart rhythms immediately to the emergency physician in Rochester.

"The new machine worked very well," says Newbrough.

"Usually, we would have had to physically take the defibrillator's tape cassette to Iowa City, five hours away, to be reviewed as quickly as possible. The new defibrillator allows us to send the heart rhythm right away to the computer in Iowa City."

Hartley's computer receives heart rhythms 24 hours a day. "This was the first defibrillation we received via computer," says Hartley, RN, nurse evaluator, EMS Learning Resources Center. "A red computer screen alerts me that there is an incoming defibrillation tape. It allowed me to print out clear heart rhythm strips and FAX them to Minnesota."

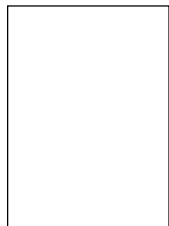
Klocke says that in a probable cardiac arrest situation, the rhythms are very helpful in confirming the diagnosis and instituting the appropriate care.

"Certainly the rhythms confirmed that she had ventricular fibrillation and they also confirmed her response to electrical countershock," he says.

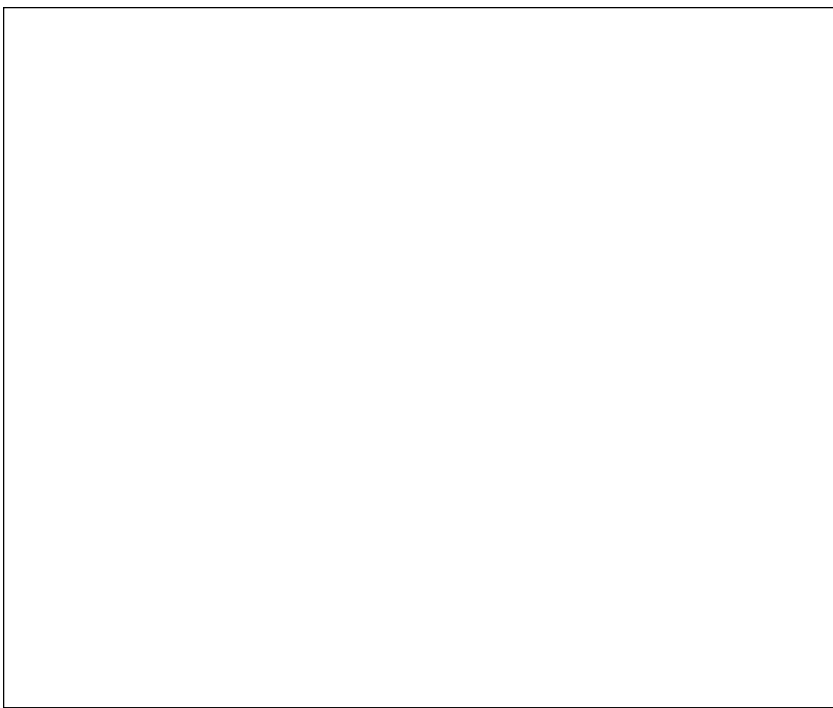
Klocke prescribed prophylactic antiarrhythmics for Geitzenauer based on the strips.

"The recorded strips are a great example of the use of an automated defibrillator," adds Klocke. "In this case, the defibrillator detected the dysrhythmias appropriately, delivered shocks appropriately and ultimately saved the life of a young person."

Geitzenauer was diagnosed with long QT syndrome where the heart has difficulty recharging the muscle cells and can fatally disrupt its natural rhythm. She was discharged August 2 with an implantable defibrillator and is currently a student at the University of Iowa, Iowa City.



Lori Hartley



Hartley named 1997 Iowa EMS Instructor

Mike Hartley, REMT-P, and EMS instructor with the EMS Learning Resources Center, was named Iowa's 1997 EMS full-time Instructor of the Year.

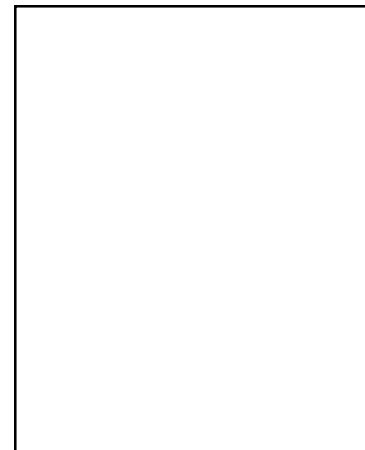
Hartley received the award November 13 in Des Moines at the annual Iowa EMS Association Convention and Trade Show.

The convention recognizes EMS leaders in Iowa. The EMS Instructor nominations identified individuals who instruct on a full-time basis; have dedication to EMS through instruction; the number of years in EMS; and the number of years instructing EMS.

Nominations outlined the achievements of the nominee based on continued, long-term performance.

Letters supporting Hartley's nomination included comments such as: "Mike is enriching the emergency medical education system and those he teaches by his example of commitment to his organization, his community, his students, and the State of Iowa." "Mike has been instrumental in developing new programs and ideas that have taken shape across Iowa and the nation."

Hartley joined the EMS Learning Resources Center in 1992 and



Mike Hartley

since then has developed the EMT-Basic, Emergency Medical Dispatch, the EMS Refresher Program and Automated External Defibrillator instruction to University of Iowa Hospitals and Clinics employees.

He is a certified EMS Instructor, ACLS Instructor, BCLS Instructor, PreHospital Trauma Life Support Instructor, Pediatric Advanced Life Support Provider, Neonatal Resuscitation Program Provider/Instructor and Emergency Medical Dispatch Instructor.

Hartley is a 1981 graduate of the EMS Learning Resources Center's paramedic training program and was a paramedic with Johnson County Ambulance Service for 10 years and assistant manager there the final four years. Hartley is also a former UIHC Air and Mobile Critical Care Services dispatcher and driver.

Latex allergy becomes new medical emergency for health care providers

Catherine Pesek, DO, cardiology fellow, the University of Iowa Hospitals and Clinics, is allergic to latex and takes many precautions to avoid contact with it. She carries an albuterol inhaler to open her airway and an epinephrine self injection pen with her at all times. Pesek (far right in photo) inspects items in the latex-free supply kit she uses when on staff in the emergency treatment center.

An estimated eight percent of the nation's seven million health care workers have latex allergies that can cause reactions ranging from itching and hives to difficulty breathing and shock.

"Latex is the new medical emergency for health care providers to contend with," says Jeff Messerole, EMT-P, manager, Mobile Intensive Care Services, Dickinson County Memorial Hospital, Spirit Lake, Iowa.

Latex gloves are worn mostly by health care workers to protect against the AIDS virus and other diseases but also by janitors, police, firefighters and restaurant workers.

"One patient had an allergic reaction in a restaurant to a salad that was prepared by someone wearing latex gloves," says Messerole. "She was conscious and was able to tell the rescuers she was allergic to latex.

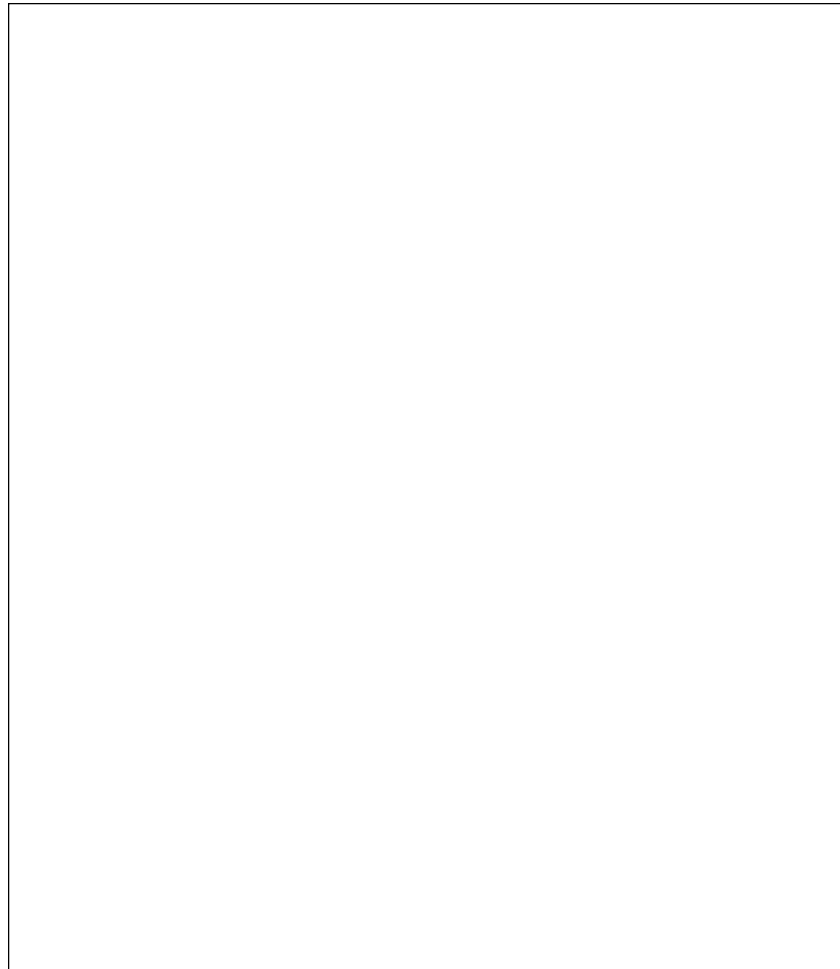
"Another patient planned ahead, and when she was involved in a motor accident the first responders noticed her license plates read 'no latex'."

Messerole says health care providers need to be aware of the symptoms and severity of a latex allergic reaction.

With immediate onset of an allergic reaction to latex, the patient may have swelling of the face, hives, and wheezing. Emergency management of a patient with latex allergy includes removing the causative latex agent, patient assessment, maintaining the airway, and being prepared to assist with ventilation and CPR.

A delayed onset, that occurs 48 to 72 hours after exposure to latex, is a local, crusting rash around the fingernails after wearing latex gloves.

The most common reaction occurs because of the response to the protein in latex gloves. In the last year, the FDA has received more than 300 reports of serious reactions to latex gloves—powdered and powder-free.



Powderless and hypoallergenic gloves still have the irritating protein. If a patient is truly allergic to latex they require the nonlatex vinyl.

Mucous membranes are one source of contact for latex allergies. The contact could be through a dentist or gynecologist wearing latex gloves.

Scientists say the latex risk is increased by gloves coated in powder. The powder absorbs the latex proteins and emits them in dust as people pull the gloves on and off. The powder dust can be inhaled as it is dispersed.

"The reaction to latex can also occur internally if a patient has surgery and comes in contact with the surgeon's latex gloves," says Messerole. "Most of these patients have undergone multiple surgeries."

Between 40 and 65 percent of spina bifida patients, for example, have latex allergies. They have been exposed to latex since birth through surgeries, enemas and rubber catheters placed in their bladders. They are also taught to blow into balloons to learn bladder control. This frequent exposure

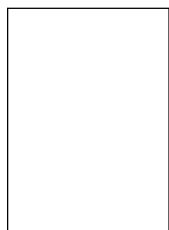
increases their likelihood of becoming allergic to latex.

"Those with latex allergies are also concerned about intravenous contacts," says Messerole. "Medicine is often stored in pre-filled syringes. It's believed the protein from the latex plunger leaks into the medicine, allowing the protein to enter the patient's system intravenously."

Emergency crews should establish a latex-free treatment box. Messerole suggests the box include a blood pressure cuff and stethoscope with suction tubing and latex-free single-use tourniquets. Any exposed latex should be wrapped with gauze or nonlatex tape. Rolls of nonelastic, latex-free tape should also be available. In addition, cloth can be tied to an oxygen mask in place of the elastic strap.

"It is the health care providers' responsibility to establish a latex-safe environment," adds Messerole.

Last September, the Food and Drug Administration ordered every latex-containing medical product to carry an allergy warning label.



Jeff Messerole

Ill or injured child: parents, child and EMS responders are anxious

North Liberty, Iowa, first responders, Brian Greer and Bob Brandt, assess a one-year-old with fever and difficulty breathing. There is a better chance for an accurate exam of a child if the patient can remain with the parent or caregiver.

Bill McConnell, DO

Less than 10 percent of all ambulance calls nationally are for children. Less than five percent of those involve true medical or surgical emergencies. The most critically ill children are less than six years of age and present with respiratory or central nervous system emergencies. These facts lead to high anxiety levels for all involved in the assessment and treatment of critically ill children.

"We are anxious. Kids are anxious. Parents are anxious. Prehospital providers should try to let the patient remain with the parent or caregiver because there is a better chance for an accurate exam," says Bill McConnell, DO, chairman, Department of Emergency Medicine, Silver Cross Hospital, Joliet, Illinois.

To provide optimal medical care to pediatric patients, an EMS system approach must be in place to ensure rapid access and the delivery of advanced emergency care when needed.

Children have unique anatomical, physiological, and psychological characteristics that increase their risk for a number of diseases and illnesses.

"Most prehospital care of the critically ill child is directed at recognition of the severity of the illness or injury," says McConnell.

"They should look at the child from a distance and assess him from across the room when they first enter."

Many variables must be considered when evaluating pediatric vital signs. For example, blood pressure and pulse rate vary greatly with age, body temperature, and degree of illness.

"In addition, EMS providers must explain what they are going to do. They can't say it's not going to hurt if it does," says McConnell. "If they do that, they will be number one on the child's public enemy list and he will not trust anyone."

When completing a head to toe assessment in infants and children, EMS professionals should start with the toes. If a stranger touches a child's head, he will get anxious. If rescuers begin with the toes, the child will become more comfortable by the time the exam reaches the head.

"Any child over two months old focuses on his parents and normally

wants to be with parents," says McConnell. "Early identification of a child's breathing problems is critical because of the child's potential to deteriorate rapidly."

McConnell says rescuers should listen to the airway for any breathing distress sounds such as hoarseness, snoring, or stridor.

"Children have anatomic differences which affect their airways. They have small airways, large tongues, and softer ribs and sternums. They also have short tracheas and thin chest walls," says McConnell. "Sometimes their stomachs can be distended and full of air. They are trying to breathe, but are swallowing air."

Four of the most important conditions for respiratory distress in pediatric patients are asthma, bronchiolitis, epiglottitis, and croup. Children with severe croup or epiglottitis are at risk of serious airway obstruction from the narrowed diameter of the trachea.

The majority of cardiac arrests in children are secondary to respiratory insufficiency. Therefore respiratory emergencies require rapid prehospital assessment and management.

"The least invasive method that assures adequate oxygenation and ventilation is best for the child," adds McConnell.

He suggests withholding feeding, suctioning and positioning before using more advanced procedures. "If invasive procedures are contemplated, EMS teams must consider if the

continued on page 5

Injured child

benefits outweigh the risk," he says.

It is important to have the appropriate-sized airway equipment selected and immediately available for pediatric patients. Size or age-appropriate blood pressure cuffs are also important to obtain a correct reading.

The emergency care providers must assess the child's hydration status for tearing and moist mucous membranes in the mouth.

"The most common error in pediatric resuscitation is the health care providers' reluctance to give adequate fluids rapidly enough," says McConnell. "Kids have higher metabolic rates, which means greater fluid needs.

"If emergency crews need to obtain rapid vascular access to give fluids, they should try to use the largest accessible vein and the child's least favorite arm," he says. "Ask the parents if the child sucks his thumb; if he does, then use the opposite arm for the IV."

McConnell suggests that emergency staff also be very aggressive in assessing slow heart beats. A child's anatomy is different than an adult's, which affects their circulation. Children have a small volume of circulating blood. Because of their high metabolic needs, infants and children have less cardiac reserve than adults for stressful situations such as stroke and trauma.

"After a trauma, when EMS providers are conducting a neurologic assessment on a child, they should remember that the reflexes aren't fully developed until three months of age," says McConnell.

"The head is the largest part of a child's body. It is like a lawn dart. If the child flies out of a car, he will land on his head.

"Prehospital teams need to make sure they are the best to provide the appropriate care and choose the best way to get it done for the child," adds McConnell. "They must always balance the need for intervention against the proximity to more experienced providers at a pediatric care facility."

He's flown 2,000 emergency flights!

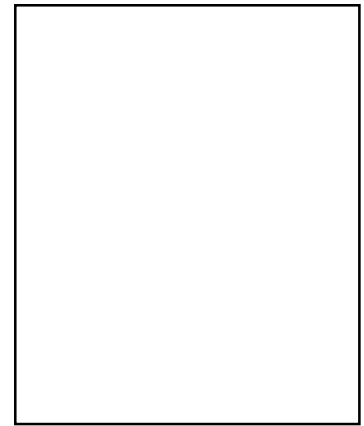
Flight nurse Mike Dillard says he was just doing his job when he made history and flew his 2,000th AirCare emergency helicopter flight.

Dillard, who joined the flight team in 1980, flew to Waterloo in the early morning hours on October 29 to be the first UIHC flight nurse to fly 2,000 flights.

"I just showed up for work, although the 2,000th flight was memorable for me. We flew the smallest baby I have ever transported," says Dillard. "It was a 530 gm, 25 week gestation surviving twin. It was a happy landmark day for me instead of a tragic situation like so many I've been involved in."

Dillard is a paramedic and a certified trauma flight nurse. He is a member of the National Flight Nurses Association, and is certified in Neonatal Resuscitation, Advanced Cardiac Life Support Provider/Instructor, Pediatric Advanced Life Support, PreHospital Trauma Life Support, and Trauma Nursing Core Course.

"We as flight nurses are just a spoke of the total wheel," adds Dillard. "We represent the paramedic who stabilized the patient at the scene and the nurses in the ER who give definitive care. They all



Mike Dillard

deserve a pat on the back."

"Most importantly to me is that we provide safe, effective air transport of patients from scenes and patients with complications from critical care units.

"I've stayed with it for 17 years because I enjoy the autonomy that we are able to practice and the style of patients we care for," says Dillard. "I have the added benefit of being able to fly everyday. I love flying and I enjoy being a part of aviation; assisting the pilot with map reading, looking for other aircraft and helping to keep the flight safe.

AirCare, was initiated in 1979, as the first hospital-based emergency aeromedical program in Iowa and one of the first programs in the nation serving a rural area.

Emergency Medical Services Week honors EMS providers, May 17-23, 1998



This year's EMS Week theme and logo, "EMS: the Vital Link," places a special emphasis on two important aspects of emergency medical care. The word "vital," from the Latin word *vitalis*, means "life."

"Every year, we recognize the life-saving endeavors of EMS providers and the ways in which they improve the quality of life for us all," says Nancy Auer, MD, president of the American College of Emergency Physicians.

Emergency Medical Services Week, a nationwide salute to more than

500,000 emergency medical technicians and paramedics, 70,000 emergency nurses and 23,000 physicians who provide lifesaving emergency care to our nation's residents, will be held May 17-23, 1998.

Anyone can receive a packet of EMS Week planning materials—provided at no cost, simply by calling ACEP in Washington DC, at (202) 728-0610. They are basic, easy-to-use materials to assist you in communicating important messages to the public.

House explodes, AirCare transports two children at once

A natural gas leak caused an explosion in East Moline, Illinois, which set off fire and injured six.

The University of Iowa Hospitals and Clinics AirCare helicopter airlifted two young children after a house explosion and fire in East Moline, Illinois, last October 5. Officials believe a leaking natural gasline caused the blast, which injured six people, three critically. Two small children and four adults were injured when the house exploded and burst into flames.

The impact of the blast sent glass flying hundreds of feet into neighbors' yards. The force of the explosion, along with the flames, demolished the south side of the house.

The two young children, ages six months and two years, were first taken to Illini Hospital, Silvis, Illinois, in critical condition before they were airlifted to the University of Iowa Hospitals and Clinics.

The emergency crews faced the challenge of multiple victims—including two pediatric patients—requiring rapid, intensive care transport to a tertiary level burn center. UIHC's AirCare II helicopter, based in Waterloo, was on another flight.

Katie Cavanaugh, RN, flight nurse, and Mariah Distelhorst, RN, EMT-P, neonatal/pediatric transport nurse at the University of Iowa Hospitals and Clinics, were on duty that day. It was unique that they transported two babies at once; normally they fly one patient at a time. Because the children were small, they could fly both patients safely at once.

"We knew we would be transporting two patients so we took enough equipment for both," says Distelhorst, "and determined who would care for each patient before we took off."

The youngest had 34 percent injury and the two-year-old had 19 percent flame injury. Both sustained burn injuries to their face/heads, hands, chests and portions of their legs.

The attending physician along with paramedics, nurses and the respiratory

therapist were at the children's bedsides when the flight team arrived in the emergency room.

"Upon arrival at Illini Hospital, we were impressed at what a wonderful job the attending physician and emergency room staff had done to provide initial stabilization of each child," says Cavanaugh. "What a wonderful team of professionals! They immediately made us part of their team in order to complete the

stabilization and expedite transport."

"The Illini Hospital staff knew the airway might be a problem," adds Distelhorst. "They had initiated intraosseous lines into the children and intubated each of them to protect the airways. They did a superb job."

Distelhorst and Cavanaugh assessed the patients again in the Illini Hospital emergency room. They

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EMS Update

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People with disabilities are welcome at the University of Iowa Hospitals and Clinics where reasonable accommodations will be made upon request. Please contact the UIHC Department of Social Service, (319) 356-2207.

UIHC receives Level I Trauma Center verification

"We commend the University of Iowa Hospitals and Clinics on its commitment to excellence, and on the quality of care rendered to its trauma patients," says Charles Lucas, MD, chairman, verification review committee, the American College of Surgeons (ACS).

The University of Iowa Hospitals and Clinics received notice January 21 of the Level I Trauma Center verification with pediatric commitment.

The ACS defines a Level I Trauma Center as 'a regional resource trauma center that has the capability of providing leadership and total care for every aspect of injury from prevention through rehabilitation.'

Michele Alpen, RN, MA, trauma nurse coordinator, UIHC, says, "The verification means the University of Iowa Hospitals and Clinics meets the national standards set by the American College of Surgeons to provide high quality care to trauma patients.

"We had to meet an extensive list of criteria, including specialty services available 24 hours a day; clinical capabilities; equipment; massive transfusion availability; education; and research, to name a few."

The pediatric commitment verification requires comprehensive pediatric specialty services and a demonstrated institutional commitment to pediatric trauma research, education and injury prevention.

"The American College of Surgeons recognizes that UIHC has the commitment and capacity to offer the highest level of care to any type of injured or traumatized patient that is available anywhere in the United States," says G. Patrick Kealey, MD, director of the UIHC Trauma Service. (Kealey is also professor, Department of Surgery, University of Iowa College of Medicine, and medical director of the Burn Treatment Center.)

For more information, please call Michele Alpen at (319) 356-1661.

G. Patrick Kealey, MD

Michele Alpen

Mark your calendars for the 1998 EMSLRC annual conference!

Nearly 200 physicians, nurses, emergency medical technicians and paramedics attended the EMS Learning Resources Center's 20th Annual Emergency Medicine Conference held in October in Iowa City.

The conference offered separate in-hospital and prehospital sessions each afternoon to meet the diverse needs of emergency care providers.

The 21st Annual Topics in

Emergency Medicine Conference has been scheduled for Thursday and Friday, October 8 and 9, 1998. It will be held at the Radisson Highlander Plaza, formerly known as the Highlander Inn and Conference Center, Iowa City.

The Hawkeyes will host Northwestern that Saturday for Homecoming. Football tickets may once again be available. Mark your calendars now and join us in 1998.

Explosion

continued from page 6

wrapped each child in plastic wrap to help prevent fluid loss and maintain body heat. Patients with burned skin cannot maintain heat so they become cold. These patients must be warm.

The flight nurses explained to the grandparents what they were doing and where they were going, switched the children to the AirCare equipment, and prepared for transport. They also gave the patients more pain control medications before the flight.

They had to coordinate loading and securing the children at the same time. The two-year-old was restrained to a cot and the youngest in a carseat. The nurses were able to deliver one on one intensive care giving oxygen and monitoring the airways during the half hour flight back.

Distelhorst and Cavanaugh called report to the Burn Treatment Center nurse assigned to care for children, 15 minutes before their arrival and gave an updated report upon arrival.

"The Illini emergency physician communicated very well with University Hospital burn physicians," says Distelhorst. "The Burn Treatment Center was fully prepared for each child when we presented to their unit."

"This flight was a wonderful example of the EMS system working efficiently to deliver the best possible care in a mass casualty situation," adds Cavanaugh. "It involved two states and a family of six dispersed to various hospitals, with the EMS family working as a team to deliver the best care for the patient."

EMSLRC course calendar

	MD	RN	EMS
1998			
Feb 26-27 Dubuque: Advanced Cardiac Life Support Instructor	15.75	1.7	17
Feb 27 Dubuque: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
Mar 5, 6 Iowa City: Advanced Cardiac Life Support Instructor	15.75	1.7	17
Mar 6 Iowa City: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
Mar 6-8 Iowa City: EMS Refresher Training Program	—	—	24
Mar 14-15 Iowa City: PreHospital Trauma Life Support Basic/Advanced Provider	—	1.6	16
Mar 19-20 Iowa City: Trauma Nursing Core Course	—	1.4	16
Mar 20-22 Iowa City: EMS Refresher Training Program	—	—	24
Mar 26-27 Iowa City: APLS—The Pediatric Emergency Medicine Course	17.25	1.95	19
Apr 1-3 Iowa City: Emergency Medical Dispatch	—	—	24
Apr 2-3 Iowa City: Pediatric Advanced Life Support Instructor	11.75	1.1	12
Apr 3 Iowa City: Pediatric Advanced Life Support Instructor Renewal	3.5	.25	3
Apr 4 Iowa City: PreHospital Trauma Life Support Refresher	—	.7	7
Apr 6 Iowa City: Critical Care Paramedic begins	—	—	54
Apr 17 Waterloo: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
Apr 17 Waterloo: Pediatric Advanced Life Support Instructor Renewal	3.5	.25	3
Apr 23-24 Ames: Pediatric Advanced Life Support Instructor	11.75	1.1	12
Apr 24 Ames: Pediatric Advanced Life Support Instructor Renewal	3.5	.25	3
Apr 30-May 1 Iowa City: Advanced Trauma Life Support Student	19	—	—
May 1 Iowa City: Advanced Trauma Life Support Refresher	6	—	—
May 12-13 Sioux City: Advanced Cardiac Life Support Instructor	15.75	1.7	17
May 13 Sioux City: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
May 14-15 Mason City: Advanced Cardiac Life Support Instructor	15.75	1.7	17
May 15 Mason City: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
May 18 Iowa City: EMT-Basic Begins	—	—	—
Jun 6 Iowa City: PreHospital Trauma Life Support Instructor/Coordinator	—	.7	7
Jun 11-12 Iowa City: Advanced Trauma Life Support Instructor	12	—	—
Jun 27 Iowa City: National Registry Testing	—	—	—
Jul 9-10 Des Moines: Advanced Cardiac Life Support Instructor	15.75	1.7	17
Jul 10 Des Moines: Advanced Cardiac Life Support Instructor Renewal	4.25	.35	4
Jul 13 Iowa City: Full-time Paramedic Program begins	—	—	—
Oct 8-9 Iowa City: 21st Annual Topics in Emergency Medicine Conference	TBA	TBA	TBA



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