

EMS Update

An Emergency Medical Services Learning Resources Center Publication

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Successful chain of survival saves bank employee

The bank cashier collapsed in a room on the upper floor of Hills Bank. Rescuers were concerned about a narrow, restrictive staircase and getting the patient down.

Larry Blake was fortunate to be at work at Hills Bank, Hills, Iowa, October 26 when he went into cardiac arrest and needed emergency care. The fire station and rescue vehicle are only a half block from the bank and defibrillation was begun within one minute.

A Hills Bank employee stopped by the break room for a cup of coffee that October morning and discovered Blake, the bank cashier, slumped over a table. The co-worker yelled for help. Another employee called 911 while a third, with nursing experience, laid the victim on the floor. He was breathless and pulseless so she began CPR.

The Hills Fire Department emergency call originally came across as a man down. Guy Sommers, first responder, Craig Schmidt, EMT-B, and Rochelle Blakley, CPR-trained firefighter, were first on the scene.

When Sommers, Schmidt and Blakley entered the bank they found 52-year-old Blake breathing and with a pulse. Shortly after their arrival, Blake went into cardiac arrest.

While Schmidt was retrieving equipment, Blakley ran out and said they needed the defibrillator quickly;



the patient was in cardiac arrest.

"Rapid response is certainly the biggest factor in a patient's survivability," says Schmidt. "Because this cardiac arrest was witnessed and care provided immediately, the time of arrest until the defibrillator was attached was under one minute."

With the electrodes attached, the defibrillator advised one shock. After the responders delivered one shock the defibrillator analyzed again, but

no shock was advised. Blakley performed compressions after the shock while Sommers attempted to insert an airway.

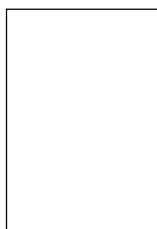
Andi Bryant, EMT-P, and Dawn Buser, EMT-P, staff paramedics, Johnson County Ambulance Service, Iowa City, transported the patient to the hospital.

"By the time we arrived, the

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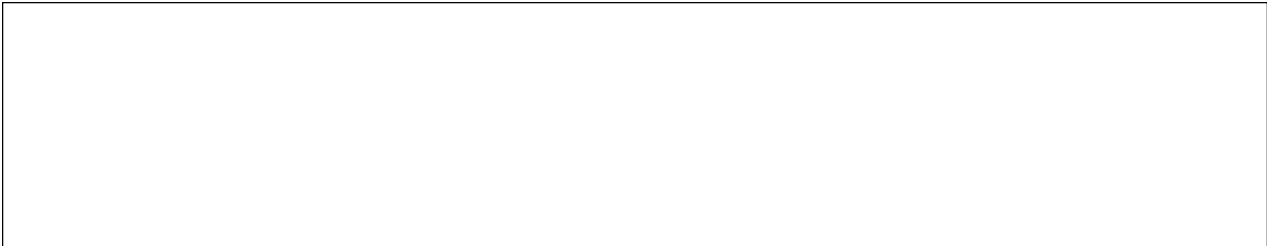
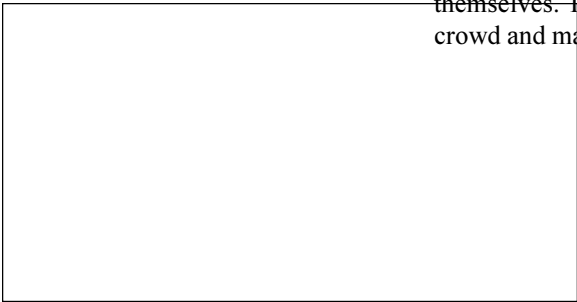
Guy Sommers



Craig Schmidt

Responders cont'd

Heart rhythm strips, at right, show the pre-shock rhythm (ventricular fibrillation) and the shock. After the defibrillation, the resulting rhythm as the patient is transported, below right, shows normal heart rhythm.



that we provide emergency support here. Whenever there's a need, we try to be there. We help with the Hills Bank Annual Appreciation Picnic every fall in case of heat stroke or if someone would cut themselves. There is always a large crowd and many elderly people

attend," says Sommers. Hills Bank is one of the local, generous supporters of supplies and equipment expenses for Hills Fire

great to work with," says Blakley. "The bank had a narrow, restrictive stairway with a 180-degree switchback and 90-degree turn at the bottom to get out; we were concerned about trying to get the gentleman down," says Buser. "With the first responders' assistance we got him down in a timely manner."

The paramedics started an IV of medications, monitored his airway and assisted with ventilation. The first responders assisted in the ambulance during transport.

It takes a high level of dedication from the first responders and the

patient already had a rhythm back. The Hills First Responders had things under control," says Bryant. "We put our heart monitor on; he had a rhythm and was breathing pretty well on his own with a bag valve mask.

"Everything went like it was supposed to—like you'd read in a book," adds Bryant. "It is pretty obvious that if it hadn't been for the quick response of bystanders and first responders, the patient's outcome would not have been as positive. They began CPR and defibrillation immediately.

"The first responders had the most important things—defibrillation and oxygenation underway. Everything that was in their scope of abilities they were doing and doing well," says Bryant. "They had all of the defibrillation equipment attached correctly and the defibrillation delivery was appropriate."

Sommers feels the community is grateful for the service Hills First Responders provide.

Hills Fire Department is an EMT-Basic service and includes 11 first responders, all certified in CPR, with five EMT-Basics.

"I think everybody feels good

Department and First Responders.

"Johnson County Ambulance Service also responds to our calls," says Sommers. "It's a great comfort knowing they're coming a few minutes behind us.

"It was an ideal situation. It is not often that the system works as well as this did. The patient was in a stage when he could be revived," adds Sommers.

"The quick response and competency of first responders is so important," says Buser. "They have the hardest job being the first ones there. The chain of survival was definitely at work in this situation: early access by the bystanders; early CPR and early defibrillation provided by the first responders; and early advanced care with the advanced paramedic service intervention.

"The Hills rescuers saved him; we maintained him and got him to the hospital so he could continue his medical care," says Buser.

Buser says Johnson County residents are very lucky to have such a good first responder system in Johnson County.

"We got him back, but the paramedics kept him going; they are

rewards are few. Most first responder teams have one to two meetings per month in addition to the time committed to the emergency calls. First responders are also required to receive 14 hours of continuing education over two years.

Johnson County Ambulance Service paramedics conduct quarterly reviews and defibrillation recertifications for first responders and EMT-Basics. They run cardiac arrest codes with shockable and non-shockable rhythms; review airway placement; and discuss issues and answer questions.

"I like being able to help people in need," says Blakley. "I think the reason our fire department is such a success is that our community supports us. We hear thank yous every time we turn around."

(Blakley received her EMT-Basic certification in January.)

"I feel very fortunate to have been at the bank and half a block away from the fire station," says Blake. "In my case that made the difference. I owe my life to the Hills First Responders and I'm so appreciative of the job they did."

Blake received an automated implantable cardiac defibrillator and returned to work full time eight weeks after his collapse.



Rochelle Blakley



Andi Bryant



Dawn Buser

New ETC scanner gives instant cross-sectional images

University of Iowa Health Care senior imaging technologist, Jenny Maiers, at right, prepares a patient for a computed tomography (CT) scan. CT scans are important diagnostic tools when working with trauma patients.

Trauma patients treated in the University of Iowa Health Care Emergency Treatment Center (ETC) can now undergo rapid, radiologic, multi-slice scans of the entire body to identify traumatic injuries.

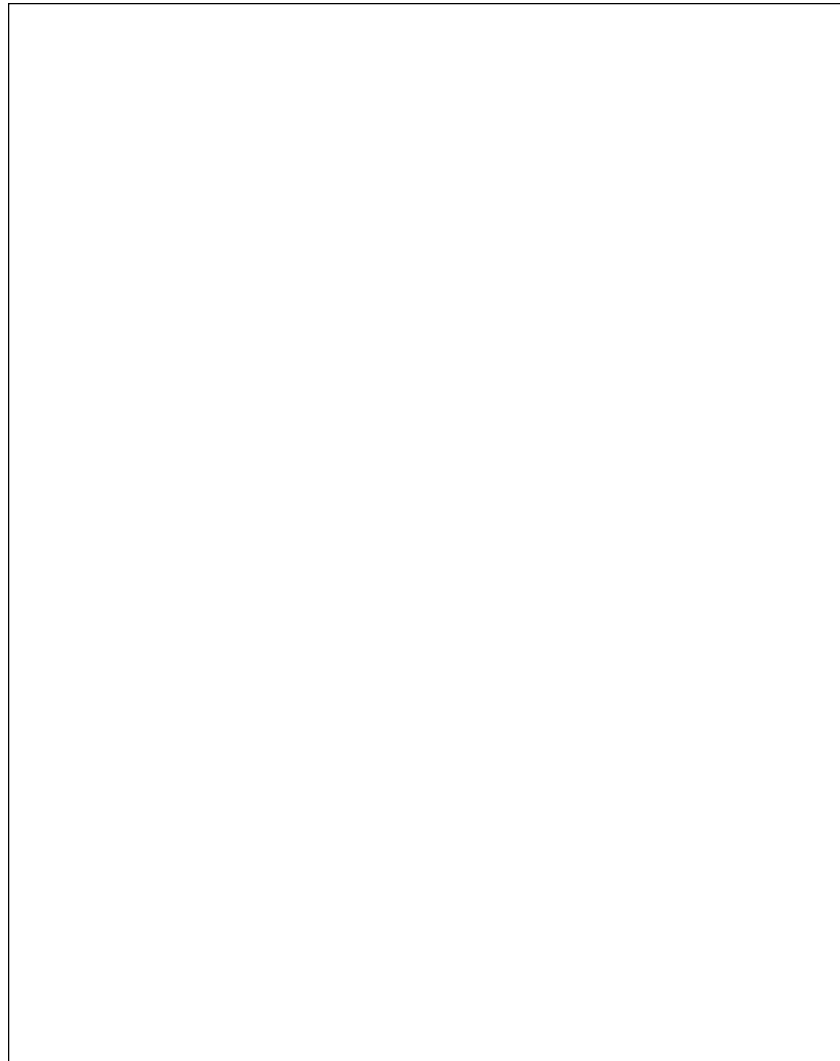
The University of Iowa Health Care Department of Radiology has joined with the Emergency Treatment Center in an effort to provide greater accessibility to imaging services for trauma and acute patients.

"Part of this initiative is the installation of the new generation multi-slice computed tomography (CT) scanner in the ETC," says Mary Burr, chief diagnostic technologist, Department of Radiology, University of Iowa Health Care. "This scanner provides thin-sectioned, cross-sectional images at quicker speeds with more efficient use of the X-ray beam. It is capable of scanning the body very quickly. In a trauma situation, it is important to diagnose the extent of the patient's injuries as quickly as possible. The physician can then plan the appropriate medical/surgical treatment."

CT is an important diagnostic tool when working with trauma patients. The ability to image the head, spine, chest, abdomen and pelvis in a relatively short amount of time has led to an increased use of CT imaging in major trauma centers.

"The CT scan allows for better images and better accommodations for unstable patients with head injuries who cannot remain still," says Michele Alpen, RN, MA, trauma program manager, University of Iowa Health Care. "The speed of these scanners not only shortens the time that the patient is on the table, but reduces image problems caused by patient motion.

"If the patient has experienced blunt trauma, we can get a CT of the abdomen and check for solid organ injuries to determine if the patient



will require an operation," adds Alpen. "The scanner can also characterize lung contusions and other chest injuries."

Orthopedic surgeons appreciate detailed images of some fractures as they plan appropriate treatment. If the patient is stable enough to undergo the scan, the digitalized images help the surgeons in the operating room.

G. Patrick Kealey, MD, director, Trauma Service, medical director, Burn Treatment Center, and professor, Department of Surgery, University of Iowa Health Care, says, "This cutting edge scanner has become an important and integral part of our Level One Trauma Center. The improvement in quality and speed is truly remarkable."

"It's wonderful for trauma patients and ETC staff having the CT directly next to the resuscitation room," says Alpen. "University of Iowa Health

Care currently has three multi-slice scanners, including the scanner adjacent to the ETC department. Locating this enhanced technology within the Emergency Treatment Center provides faster diagnosis and facilitates treatment of patients."

The new CT scanner, installed in the Level One Trauma Center last May, is part of the extensive renovation to the Emergency Treatment Center. The scanning table moves in and out of a donut-shaped, spiral CT scanner which produces cross-sectional images for immediate diagnosis. All imaging in the Emergency Treatment Center is digital, and replaces the X-ray film methods used for the past 50 years.

All CT scanners at University of Iowa Hospitals and Clinics are now linked to a central archive system. University of Iowa Health Care staff can review images from multiple locations within the hospital.



G. Patrick Kealey, MD

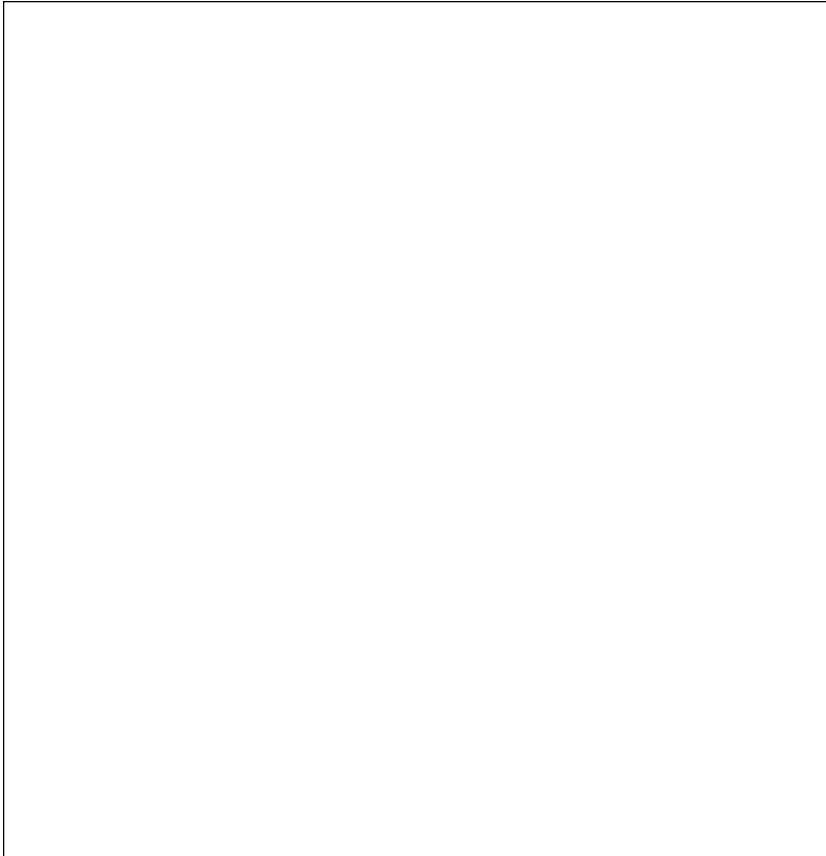


Mary Burr



Michele Alpen

Doug York, EMT-P, director of the EMS Learning Resources Center, at right, assists paramedic students with needle placement while they learn to start IVs.



tion status; the Standards therefore constitute the minimum requirements to which an accredited program is held accountable.

Doug York, REMT-P, director of the EMSLRC, applauds the efforts to earn the accreditation. "The accreditation process showed us that our graduates receive quality education. Utilizing the accreditation standards, we are able to demonstrate continued growth of our Paramedic Training Program. I want to recognize and congratulate Clark for his leadership role during our accreditation process."

Accreditation is meant to protect the public and ensure a supply of qualified health care professionals. Programs are accredited when it is established that they meet the educational Standards and Guidelines established by the profession.

"Congratulations to the EMSLRC not only for your efforts to attain the (well-deserved) formal accreditation, but for all the hard work leading to

Paramedic program receives accreditation

Clark Christensen, right, coordinated the three-year application process submitted to The Commission on Accreditation of Allied Health Education Programs.

"The commission recognizes you and your colleagues for your commitment to continuous quality improvement in education, as demonstrated by your participation in program accreditation."

After a three-year application process, the Emergency Medical Services Learning Resources Center's EMT-Paramedic training program received provisional accreditation October 20 from The Commission on Accreditation of Allied Health Education Programs (CAAHEP).

The UI Health Care program is only the second EMT-Paramedic program in Iowa to receive accreditation with only 147 programs in the U.S. who meet the nationally established standards.

"The accreditation allows the release of government financial aid

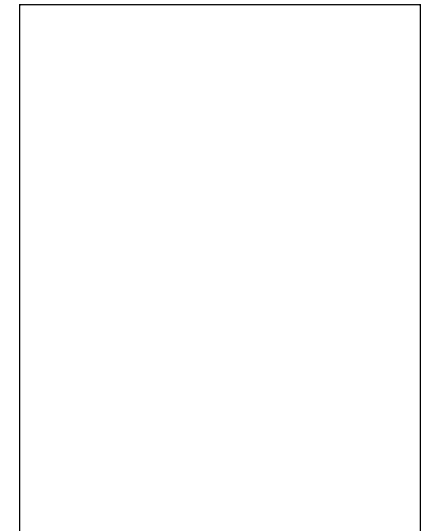
to qualifying students in the program. Accreditation also initiates a quality assurance assessment for all aspects of our paramedic program," says Clark Christensen, EMS instructor with the Emergency Medical Services Resources Center.

The Commission on Accreditation of Allied Health Education Programs, established in July 1994, accredits educational programs that prepare health professionals in 18 different disciplinary areas.

Each of the 18 committees on accreditation is responsible for reviewing self-studies, performing on-site reviews and making recommendations to the CAAHEP Board of Directors for final action.

"One important benefit is that it holds us to a high set of training standards," Christensen says. "Employers know our graduates have met these standards."

These Standards are the minimum standards of quality used to accredit programs that prepare individuals to enter the profession of EMT-Paramedic. The extent to which a program complies with these standards determines its accredita-



the outstanding products of your educational efforts—your great paramedics," says Fred Hansen, MD, clinical professor, Program in Emergency Medicine and co-medical director, EMSLRC, University of Iowa Health Care. "I truly believe the EMSLRC is a crown jewel of the institution and represents hard evidence of commitment to a comprehensive health care system, including, but not limited to, the trauma program."

Old drug proves beneficial with new applications for cardiac care

Amiodarone's soap-like consistency causes excessive foaming to occur when agitated, which can make medication removal difficult and reduce the overall amount of drug within the ampule's main body. Circular swirling of an ampule is not advised when using amiodarone.



Andrew Nugent, MD

Approximately 1,000 individuals suffer from sudden cardiac arrest each day. In the U.S. alone, approximately 250,000 deaths each year are due to out-of-hospital cardiac arrest.

Clearly, early CPR and early defibrillation are still the most important factors for a patient to survive an out-of-hospital cardiac arrest. Additional therapy of IV amiodarone as an early component of the antiarrhythmic medications has proven to have clinical benefits.

First approved for use in the U.S. in its oral form in 1985, an IV form of amiodarone was subsequently developed and released a decade later in 1995.

Data from a 1997 study of 504 out-of-hospital arrest patients demonstrated a 27 percent increase in the overall survival-to-hospital admission of patients who received amiodarone when compared with 1997 ACLS guidelines.

The American Heart Association (AHA) states that antiarrhythmic medications are "acceptable, probably helpful" for the treatment of ventricular fibrillation or pulseless ventricular tachycardia that persists after three or more shocks from an external defibrillator. The new American Heart Association ACLS guidelines include amiodarone as a key component in the management of prehospital cardiac arrest.

Andrew Nugent, interim director, Program in Emergency Medicine, University of Iowa Health Care, and co-medical director, for Johnson County Ambulance Service, supports amiodarone for prehospital irregular heart beats.

"The studies show there is a greater efficacy of amiodarone taking patients out of life threatening arrhythmias than lidocaine," says

Nugent. "Another positive aspect is that amiodarone comes in 150 mg vials so is pushed once and health care providers don't have to redose as with lidocaine."

Any patient in cardiac arrest who doesn't respond to cardioversion and first dose of epinephrine can receive amiodarone. Amiodarone is used more often prehospital because most patients experience cardiac arrest before they arrive at the hospital and paramedics would be the first to respond to the scenes.

"If a patient has not received previous prehospital medications for chest pain, then medical control may order lidocaine or amiodarone," adds Nugent. "Amiodarone may advance the quality of care we bring to our patients—at an increased cost. At about \$150 per (300 mg) dose, that is a high price for a prehospital drug."

The American College of Cardiol-

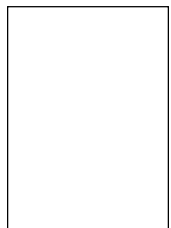
ogy/AHA committee on management of acute myocardial infarction identified amiodarone as a beneficial, useful and effective agent for the treatment of sustained ventricular tachycardia (VT) in patients with heart attack when VT is not accompanied by chest pain, pulmonary congestion or hypotension.

"Current literature says amiodarone is more successful than lidocaine on patients who suffer lethal arrhythmias," says Nugent. "There is no evidence that people live longer and those studies are still pending. Researchers saw no significant change in the overall survival rate of patients discharged alive from the hospital."

University of Iowa Health Care began supplying amiodarone January 1 in the updated code cart medication drawers to reflect the new ACLS guidelines.

Training offered for weapons of mass destruction incidents

The bombing of the Alfred P. Murrah Federal Building in Oklahoma City April 19, 1995, right, is one example of terrorist activity that suggests the potential for similar acts of terror across the country. The bombing claimed 168 lives and left many more critically injured.



Rick Sywassink

Rick Sywassink, chief deputy, Muscatine County Sheriff's Department, is introducing a course to Iowa that will help law enforcement and emergency rescuers respond to terrorist incidents. The *Law Enforcement Response to Weapons of Mass Destruction Incidents* course increases the awareness of terrorism and teaches responders to prepare for this type of situation.

"People cannot think that since they don't live in a big city, they don't have the risk of terrorism. Terrorism can happen anywhere," says Sywassink.

The major bombings in New York and Oklahoma City have suggested the potential for similar acts of terror at virtually every location in the country. The abundance of weapons technology has increased the possibility that such materials will be used by terrorists when striking U.S. targets in the future.

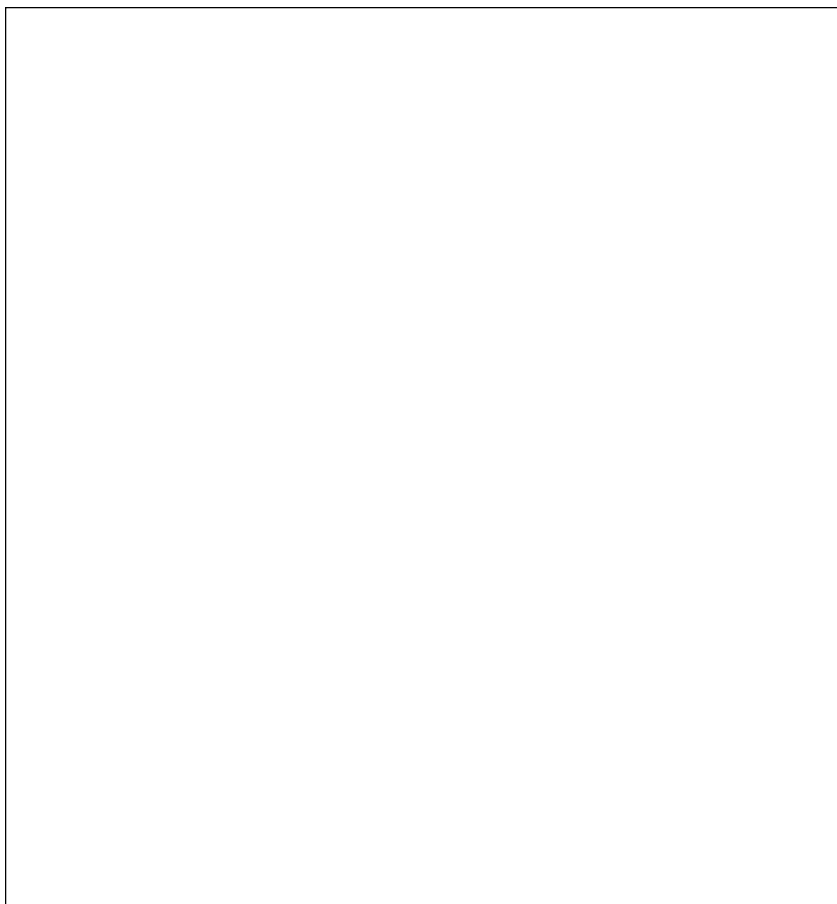
"This 'train the trainer' course, to be held March 1-2 in Iowa City, allows participants to go back to their jurisdictions and present schools," says Sywassink. "The Academy of Counter Terrorist Education, Louisiana State University, provides the instructors."

Rescuers, who arrive first on the scene, must be trained to respond appropriately to terrorist incidents.

"Our focus is on first responding law enforcement officers—the actions that they must take in order to respond to WMD incidents.

"We help participants identify potential terrorist targets in their communities. Participants also are introduced to weapons of mass destruction—biological agents, nuclear materials, chemical agents, and explosives," says Sywassink.

"Terrorism is criminal activity—regardless of the cause, the group promoting the cause, or the location of the activities," adds Sywassink.



White named Air and Mobile Critical Care Service director

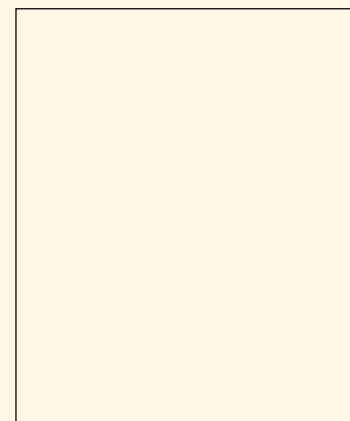
David White, DO, MS, assistant clinical professor, Program in Emergency Medicine, and Medical Director of Air and Mobile Critical Care Services with University of Iowa Health Care, came to Iowa City in October.

White was previously a staff physician with Emergency Care Specialists, Grand Rapids, Michigan, before joining University of Iowa Health Care.

"The University of Iowa offered me the opportunity to enter an academic facility. They were looking for someone interested in three positions and all of them appealed to me. It was a good fit," says White.

White also became the Johnson County Medical Examiner, January 2, 2001. His masters degree in biomechanics emphasized traffic accident investigation and reconstruction.

"My understanding of biomechanics



helps me identify the mechanism of injury and recognize pattern injuries in trauma cases. I can visually place the person in the car to look for injuries when I'm involved in forensic medicine."

White was a flight physician for seven years in Grand Rapids, Michigan; that experience assists him with patient care and patient transport issues.

"My years as a flight physician helps with my decision making as Medical Director of Air and Mobile Critical Care Services."

White is certified by the American Board of Emergency Medicine.

Cardiac Care Update meeting identifies guideline changes

The Emergency Cardiac Care Update 2000 meeting topics included: the importance of family members of at-risk persons learning CPR; using barcodes to record resuscitation data; development of new CPR written evaluations; AED use in rural areas with first responders; and children's effectiveness in the Chain of Survival.

More than 2000 people from across the U.S. and 25 other countries attended the Emergency Cardiac Care Update held in San Diego, September 21-24.

The conference revealed the new emergency cardiac care guidelines and the rationale for changes. Three days of learning and sharing new information proved beneficial for Ginny Henry and Rosemary Adam.

Henry, RN, EMT-P, training center coordinator and Adam, RN, EMT-P, nurse instructor with the EMS Learning Resources Center, attended the conference and several of the 32 concurrent sessions.

"The sessions opened with a simulated successful resuscitation utilizing an AED and incorporating a tiered response to the incident," says Henry. "That moved us into guideline changes and the evidence that supports changing them."

Changes in the basic cardiac life support include simplification of the lay rescuer course. The course will be video driven to allow more "hands-on" training in a watch and then practice format. Also, first responders will now check for signs of circulation rather than a pulse – so they will look for signs of breathing, coughing or movement.

"The research indicates that it takes rescuers far too much time to do a pulse check with half of the rescuers in one study taking more than 24 seconds to decide if a pulse was present," says Henry. "This is valuable time lost and decreases the chance of survival. Compression only CPR is now recommended when the rescuer is unwilling to perform mouth-to-mouth rescue breathing or for use with dispatch-assisted CPR, which allows untrained bystanders to intervene."

New American Heart Association programs will implement CPR into the curriculum in the school systems. A complete video package is being

developed for release with the revised course in late 2001.

"The conference confirmed that the greatest chance for survival from cardiac arrest is for individuals who are in ventricular fibrillation to be defibrillated quickly," says Adam. "A survival rate of 90 percent has been reported when defibrillation is performed within one minute."

Changes at the advanced cardiac life support level emphasize new standards and devices for airway and ventilation. Also, research with patients on high dose epinephrine for cardiac arrest has not shown improvement in survival. Although, amiodarone has been proven effective in treating out-of-hospital cardiac arrest.

"ECC guideline changes in the care of the pediatric patient include using the 2-thumb-encircling hand technique for chest compressions rather than the 2-finger technique in infants," says Henry. "The research indicates that a better blood flow will occur using this method. Use of a defibrillator is encouraged in victims of cardiac arrest who are over eight years old or 55 pounds."

EMS Update

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Photos:

Pg 3, Jim Olson, University of Iowa Health Care

EMS Week: Answering the Call

National EMS Week, May 20-26, designates Wednesday, May 23 as EMS for Children (EMSC) Day. The goal of EMSC is to heighten awareness of the specialized care needs for pediatric patients. Fact sheets in this year's EMS Week activity kit address scooter safety and proper care of children in ambulances. Additional information on National EMS Week programs can be obtained on the American College of Emergency Physicians web site at www.acep.org

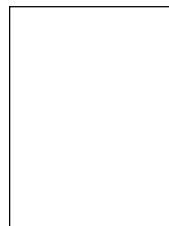
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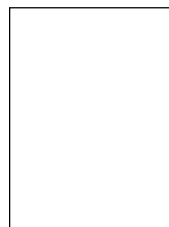
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People with disabilities are welcome at the University of Iowa Hospitals and Clinics where reasonable accommodations will be made upon request. Please contact the UIHC Department of Social Service, (319) 356-2207.



Ginny Henry



Rosemary Adam

EMSLRC course calendar

MD (CMEs) **RN (CEUs)** **EMS (CEHs)**

2001

Mar 1-2	Peosta: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor	Varied	Varied	Varied
Mar 2	Peosta: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor Update and Renewal	Varied	Varied	Varied
Mar 2-3-4 Mar 16-17-18	Iowa City: EMS Refresher	—	—	24
Mar 5	Iowa City: Advanced Cardiac Life Support Provider Renewal	—	0.4	4
Mar 10	Red Oak: Basic Life Support Instructor Trainer/Renewal	—	Varied	Varied
Mar 17	Iowa City: Basic Life Support-Instructor Trainer/Instructor Update	—	—	—
Mar 19-21-26	Iowa City: Pediatric Advanced Life Support Provider	—	1.4	14
Mar 26	Iowa City: Pediatric Advanced Life Support Provider Renewal	—	0.4	4
Mar 21-22	Cedar Rapids: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor	Varied	Varied	Varied
Mar 22	Cedar Rapids: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor Update and Renewal	Varied	Varied	Varied
Mar 22-23	Iowa City: Advanced Trauma Life Support Provider	19	—	—
Mar 23	Iowa City: Advanced Trauma Life Support Refresher	6	—	—
Mar 26-27	Iowa City: Advanced Medical Life Support	—	1.5	16
Mar 29-30	Iowa City: Trauma Nursing Core Course	—	1.4	16
Apr 6-7	Iowa City: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor	Varied	Varied	Varied
Apr 7	Iowa City: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor Update and Renewal	Varied	Varied	Varied
Apr 9-10	Iowa City: Pediatric Education for PreHospital Professionals	—	TBA	TBA
Apr 12-13	Fort Dodge: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor	Varied	Varied	Varied
Apr 13	Fort Dodge: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor Update and Renewal	Varied	Varied	Varied
Apr 16-17	Iowa City: PreHospital Trauma Life Support	—	1.6	16
Apr 20	Waterloo: Advanced Cardiac Life Support and Pediatric Advanced Life Support Instructor Update and Renewal	Varied	Varied	Varied
Apr 21	Iowa City: Basic Life Support Instructor/Instructor Update	—	—	—
Apr 26-27	Iowa City: APLS—The Pediatric Emergency Medicine Course	17.25	1.8	18



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