



By A.J. Heightman, MPA, EMT-P

The Fragile Resuscitation Bridge

The messages were as subtle as a sledgehammer striking a carton of eggs: We must slow down the ventilation of cardiac arrest victims, perform quality CPR, allow complete chest wall recoil after each compression and focus more on post-resuscitative care. These were recurrent themes heard at the 2006 Emergency Cardiac Care Update Conference in Orlando (Fla.) in late June.

Joe Ornato, MD, Tom Aufderheide, MD, Lars Wick, MD, PhD, and other experts were consistent with their messages and convincing with their data. In a study cited by Aufderheide, CPR was successful in six out of seven subjects (67%) when ventilated just 12 times a minute, as compared with just one in seven (14%) resuscitated when 30 or more breaths were given.

Aufderheide also pointed out that almost no oxygenated blood will reach the brain if you keep pressure on the chest during CPR and don't allow it to completely recoil. If your technique involves a brief "hands-off" pause when no pressure is applied to the chest after each compression, it allows for the complete refilling of the heart and increases coronary and cerebral perfusion pressure. One group cited was able to double their number of resuscitations using this technique.

Fatigue was also shown to significantly reduce the effectiveness of CPR. In one study, CPR was shown as being nearly 80% effective after one minute, but just 17% effective when continued by the same rescuer for more than four minutes. There's a real message here: Rotate your "compression staff" every two minutes, when possible.

The therapeutic cooling of cardiac arrest patients older than 18 who have return of spontaneous circulation (ROSC) after ventricular fibrillation is proving to be key in long-term survival of resuscitated patients in hospitals, which means it will occur in the field soon.

The underlying message at ECCU was that *the bridge to resuscitation is fragile* and can fail if you're not resuscitating your patients in a continuous and consistent manner. To help us stay within the critical parameters, manufacturers are focusing their products on the achievement of maximum success.

The Philips MRX2 with Q-CPR technology by Laerdal impressed attendees with its ability to keep them on the right track to resuscitation. Tore Laerdal, chairman of the board of Laerdal Medical AS, personally demonstrated the effectiveness of Laerdal's Q-CPR technology, which visibly and audibly teaches, coaches and reminds EMS personnel to do quality CPR.

The ZOLL Real CPR Help technology in its AED Plus and AED Pro devices also provides voice prompts to keep providers within acceptable parameters. ZOLL's new compact CPR Training Puck offers real-time audible and visual feedback. When placed on a manikin that's compressed at the correct rate and depth, lights on the device will blink simultaneously.

Mercury Medical's new Intubating Laryngeal Airway (ILA) is a *reusable*, latex-free device that allows you to place an ET tube through it without interrupting CPR.

To assist you in ventilating non-breathing or intubated patients, Tri-anim Health Services was showing the LYFETYMER LED Metronome, a small, simple and effective device that flashes a red LED every six seconds to coach rescuers to deliver

breaths at just the right moment (see Hands On, p. 110).

The Lifesaving Systems Oxlator EMX pressure-limited/flow-triggered ventilation device, a positive pressure resuscitation and inhalation system, uses patient responsive technology. It requires no power source other than a 50 PSI supply of compressed oxygen or air, making it safe in any environment. It works with either its mask or an ET tube and can be easily decontaminated. The best feature of the Oxlator is that it offers hands-free patient ventilation and operates "in sync" with chest compressions during CPR, so you don't have to interrupt those critical chest compressions at all.

The ResQPOD circulatory enhancer, an impedance threshold device (ITD), is currently the only Class IIa device of its kind recommended in the 2005 AHA guidelines. It improves the hemodynamics of CPR and increases the chance of ROSC during cardiac arrest. It provides perfusion on demand (POD) by regulating pressures in the patient's thorax during states of hypoperfusion.

Essentially, when you attach it between the ET tube and your bag-valve mask, it prevents unnecessary air from entering the chest during CPR and maintains the vacuum (negative pressure) in the patient's thorax during recoil for more effective compressions. Studies show that during CPR, the ResQPOD *doubles* the blood flow to the heart, increases blood flow to the brain by 50%, helps circulate drugs more effectively and increases the likelihood of successful defibrillation. It also flashes LEDs every six seconds to alert you to ventilate your patient.

Stay on top of your cardio-pulmonary training, and consider the host of new products being designed and introduced to help you traverse the fragile bridge of resuscitation. Quality CPR and slower ventilations are the ticket to increasing the ROSC rates of your patients. **JEMS**