

# CPR: THE BEAT GOES ON...AND ON

by Sandra McCleaster RRT



As you're all probably aware, new guidelines for cardiopulmonary resuscitation (CPR) were recently introduced by the American Heart Association (AHA). By mid-year, the changes were launched in the field and by 2008, all cardholders will have completed their biennial renewals under the new rules.

If you're like most health care providers, you view your BLS health care provider renewal course as an annoyance. And if you're like me, you probably wondered "What's up with the changes?" After all, physiology hasn't changed. Nor have the dynamics of blood flow. "They need to justify their own existence", you may be saying. As a BLS instructor, I've heard these comments and more.

The facts of the matter are this: the new AHA guidelines were developed subsequent to what is said to be the most extensive review and research into CPR ever conducted. As it turns out, there's some real science behind the changes. The revisions are clearly evidence-based, having been drawn from an evaluation of over 20,000 journal articles conducted by the international resuscitation community and then presented to the 2005 International Consensus Conference on CPR and Emergency Cardiac Care.

The primary goal of the revisions was, of course, to improve survival from sudden cardiac arrest. To that end, the new AHA rules place a greater importance on the "cardio" part of cardiopulmonary resuscitation. In an editorial supplement to *Circulation* (the Journal of the AHA), it's stated that several small case studies in humans showed that "during CPR, healthcare providers delivered

an inadequate number and depth of compressions, interrupted compressions frequently, and provided excessive ventilation, particularly when victims were intubated. Delivery of rescue breaths by rescuers was also likely to create long interruptions in chest compressions. The combination of inadequate and interrupted chest compressions coupled with excessive ventilation rates reduces cardiac output and coronary and cerebral blood flow and diminishes the likelihood of a successful resuscitation attempt" (Hazinski, et al, Dec. 2005). Sources too numerous to cite were referenced.

Another research effort concluded that when lay rescuers were providing breaths, interruptions in compressions were averaging 15 seconds. This meant that circulation stopped and the rescue effort had to be started again from scratch. Add to that the fact that anecdotal evidence showed using the 15:2 ratio, compressions were being administered only half of the time. To summarize the massive research, the less time wasted between chest compressions the better the outcome would be. The evidence seemed overwhelming: rescuers need to place a greater emphasis on circulation. With that recognition, the prescribed ratio of compressions to ventilations was changed from 15:2 to 30:2. As a result "push hard and push fast" is now the rule of the day.

But what about those lost breaths, you're thinking. Well, the conclusion is that once blood is pumped to the vital organs, the need for oxygen delivered by those ventilations is actually less.

The 2005 protocols also revisited the role of the automatic external defibrillator (AED). The new evidence solidly supports the value of defibrillation as soon as possible after victim collapse. The old guidelines called for delivering three shocks before resuming CPR; now the AHA recommends AEDs can actually defibrillate with only one shock followed with an immediate resumption of CPR. Again, the intent is less time lost between cycles of compressions.

There's one more interesting change. It's been demonstrated that incomplete chest recoil during CPR impedes forward flow of blood. So now we'll use a "hands off" technique (lifting the heels of the hands completely off the chest wall between compressions) because this technique best achieves total chest recoil. One study in particular (Aufderheide, et al, 2004) went on to say there is no loss in accuracy of hand position with this method. Heaven knows this is in direct contrast to what was originally believed, when lifting hand position earned a stern rebuke from the instructor.

Since the overwhelming majority of sudden death events occur outside of the hospital setting, the second goal of the revisions was to simplify CPR by lay people. There are several changes that apply specifically to lay rescuers, but suffice it to say in summary that they're all designed to make CPR for lay rescuers easier to learn, perform and remember. As a matter of fact, CPR should now be easier for all rescuers, lay and healthcare providers alike, since the 30:2 ratio and decreased emphasis on pulse checks applies to all victims, except newborn infants.

The changes I've mentioned in this article are by no means exhaustive, but best illustrate the latest thinking in resuscitation

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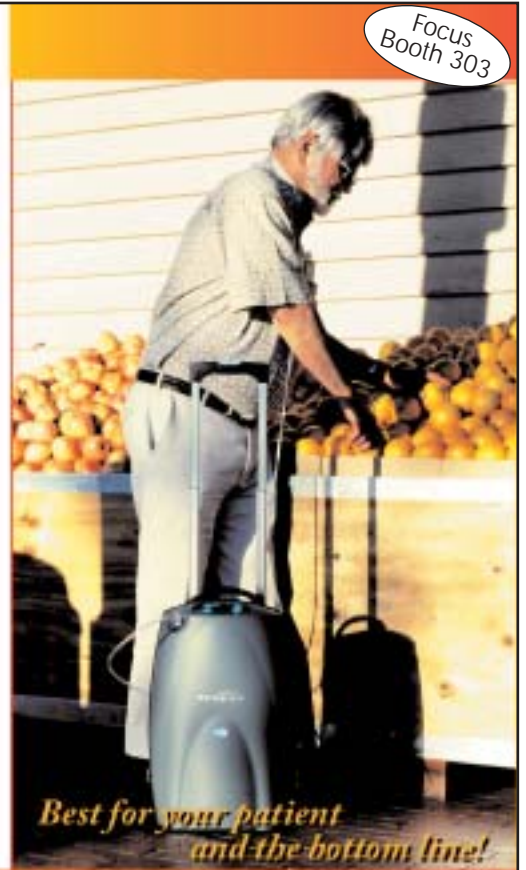
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must be in place in case of a mechanical failure. While these devices are generally very reliable failure can occur. If an oxygen conservation device is dropped or broken the patient must have plan of how to obtain oxygen while out of the service area. The provider should educate and assist in providing the patient information when to get oxygen in case of equipment failure. A traveling patient should always have a copy of their current oxygen prescription with them and a telephone of a local provider in case services are needed.

All clinicians regardless of where they practice need to be aware of the advances in home oxygen therapy. The acute care clinician may come in contact with patients utilizing oxygen conservation devices in outpatient and emergency department settings requiring the clinician to understand how this patient's oxygen therapy is being delivered. Home care clinicians need to understand how the different oxygen conservation devices operate in order to optimize the care provided to their patients. With each conservation device operating differently there are pro's and con's to each device in regards to each specific patient's needs.

Oxygen conservation devices are a useful tool to improve the patient's quality of life while allowing the home respiratory care provider the means to provide services within the current reimbursement system.

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science and education which overall, speaks to maximizing circulation, minimizing ventilation, and making sequences easier to perform and remember.

Does any or all of this mean you shouldn't be doing CPR if you're not up on the new rules? Of course not. Old CPR is better than no CPR and old CPR certainly has saved many lives in the past. The determining factor for survival from sudden cardiac arrest is, first and foremost, the willingness and ability for a trained rescuer to step up and initiate resuscitation attempts ASAP.

Since the renewal cycle is two years, many EMTs and hospital employees will still be practicing CPR under the old guidelines until their mid 2008 renewal. How "codes" are being conducted in the hospital setting probably depends on the renewal status of the person in charge. Sure, there's probably some discussion and a little confusion, and yes, old habits die hard. But it won't be long before the "old way" plays itself out and everyone will be on the same wavelength going forward.

The new guidelines supersede the last set of revisions which occurred in the year 2000. Even in light of the new developments, the resuscitation community feels that further research is still needed in nearly all aspects of CPR. So undoubtedly, these newest changes won't be the last. In the words of Alvin Toffler, American author and futurist, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and re-learn." Surely this applies to the study of cardiopulmonary resuscitation and emergency cardiovascular care.