



ALERT:

Mouth-to-mouth resuscitation is essential in responding to opioid overdoses

In 2006, 26,400 unintentional drug overdose deaths occurred in the United States, the majority of which involved opioids. Mouth to mouth resuscitation (rescue breathing) is essential when responding to an opioid overdose because the victim is dying of lack of oxygen due to reduced or arrested breathing caused by the opioids. Rescue breathing, if initiated soon enough, provides oxygen which is essential to saving a life by keeping the heart pumping and preventing brain damage.

New American Heart Association (AHA) guidelines recommend *chest compressions only* or *hands-only resuscitation* as the appropriate emergency response to sudden cardiac arrest. The new AHA guidelines have received widespread publicity in the media, without mention of the accompanying exceptions for situations involving drug overdose, drowning, or collapse due to breathing problems. As explained on the AHA website (<http://handsonlycpr.org/faqs.html>), in cases of *sudden* cardiac arrest, “At the time of a sudden collapse, the adult's lungs and blood are likely to have a fresh supply of oxygen that can last for at least a few minutes even if breathing stops.” However, in the case of an opioid overdose, a victim’s breathing slows gradually, so they are less likely to have as much reserve of oxygen in their blood at the time they stop breathing.

Naloxone is a medication that can prevent an overdose from becoming fatal by blocking the opioid receptors thus reversing the respiratory depression. As of November 2010, over 10,000 reversals with naloxone by bystanders trained in overdose prevention had been reported in the United States (Wheeler). It is likely that in many, if not the majority of cases, rescue breathing was initiated before cardiac arrest occurred. Providing breaths with or without chest compression oxygenates the blood and may prevent the heart from stopping and the brain from dying. Drowning and strangulation should be treated similarly.

While chest compressions may be better than nothing – particularly in cases where a bystander is unwilling or unable to do mouth-to-mouth resuscitation – providing oxygen through mouth-to-mouth resuscitation remains key to proper overdose response.

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Why were the American Heart Association (AHA) recommendations changed?

It is estimated that every year between 166,000 to 310,000 Americans experience out-of-hospital sudden cardiac arrest. Only a minority receive CPR, for whom survival rates were generally low, in the range of 10-20% (Nichol). The high death rate due to sudden cardiac arrest motivated experts in resuscitation to explore the hypothesis that hands-only resuscitation (chest compressions only) might be easier than chest compressions with mouth-to-mouth ventilation, and therefore result in a higher percentage of saved lives in these cases.

The American Heart Association now recommends hands-only resuscitation for those untrained in standard CPR (AHA, Sayre). This is based on several premises:

- a) In sudden cardiac arrest the blood is fully oxygenated, so circulation will provide oxygen to the vital organs.
- b) Interruption of chest compressions for rescue breathing may decrease efficacy.
- c) Rescue breathing is distasteful to many bystanders and often done improperly. It may, in fact, be a deterrent to efforts at first aid.
- d) Hands-only CPR may be easier to teach, particularly for emergency dispatchers over the phone.

What does the research say?

A number of studies have shown that hands-only resuscitation is as effective or more effective in sudden cardiac arrest than standard methods (chest compressions with mouth-to-mouth ventilation). Two studies were recently published comparing the outcomes of standard vs. hands-only CPR instruction given by emergency dispatchers to bystanders at sudden cardiac arrests who were not otherwise trained in CPR (Rea, Svensson). Both found no significant differences in the survival rates or neurological outcomes between recipients of the two methods, though there were trends towards better survival in the hands-only group. Both studies concluded that hands-only CPR is the better choice for untrained bystanders since instruction is easier.

A third study evaluating a state-wide campaign promoting hands-only resuscitation in Arizona also found increased bystander participation in first aid and greater survival among those receiving hands-only resuscitation – particularly among those with witnessed sudden arrest (Bobrow).

There is little in the literature examining the use of hand-only in asphyxia (e.g. drowning, opioid overdose). Two large studies in Japan (Kitamura) found higher rates of survival among adult victims of noncardiac arrest who received standard CPR vs. hands-only resuscitation, as well as better long term outcomes among children receiving standard CPR. The authors suggest hands-only be taught to the general public and conventional CPR be taught to those most likely to witness a noncardiac arrest. Also relevant is a small study (Berg) which found that swine in

cardiac arrest induced by asphyxia were significantly more likely to survive if they received ventilation and chest compressions, but that chest compressions alone were better than nothing.

What is the problem?

Although the new AHA hands-only recommendations have received much publicity, many media, and those quoting from media, are omitting the important exceptions for victims of asphyxia, and particularly of overdose. For example, the headline from a CBS Associated Press article, “Hands-Only CPR Works Just As Well As Mouth-To-Mouth,” is misleading, and this is made worse in the final paragraph: “The only cases in which mouth-to-mouth seems to make a difference is when the victim is a child, or in cases of adults who have stopped breathing because of choking, drowning or other respiratory problems.” (July 30, 2010, CBS/AP)

An anecdotal report from Pittsburgh, coincidentally a few weeks after the CBS/AP article appeared, illustrates this point. A young man died of a heroin overdose, and a potentially contributing factor was that the person who was with him was instructed by the emergency dispatcher to give chest compressions instead of rescue breathing.

Recommendations:

- Overdose prevention education should emphasize the role of rescue breathing with or without chest compressions if an opioid overdose is suspected.
- Steps should be taken to ensure that the screening protocol for emergency dispatchers is as precise as possible in determining which patients need ventilation.
- Further research, or analysis of existing data, should be undertaken to determine the effectiveness of hands-only resuscitation in asphyxia.

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