



Naloxone in CPR/AED Training and Public Access to Defibrillation

The opioid epidemic, one of the nation's dire public health crises, has had overwhelmingly grave consequences on public health as well as on social and economic well-being. Drug overdose has surpassed motor vehicle and firearms related deaths, suicides and homicides to become the leading cause of injury-related death.¹ Opioid overdoses have been reported to claim over 115 lives each day and their incidence has increased 30 percent during the period between July 2016 and September 2017 in 52 areas in 45 states.² Trend analysis of overdose deaths attributable to opioids, which include prescription opioids, illegal opioids (heroin), and illicitly manufactured fentanyl, indicate 5 times higher mortality numbers in 2016 (42,000) as compared to 1999, with more than 350,000 lives lost during the period.^{2,3} Deaths involving synthetic opioids such as fentanyl (50 -100 times more potent than morphine) are on the rise and have doubled between 2015 and 2016, with almost 19,400 fatalities in 2016 alone.^{2,4} Moreover, studies have confirmed opioid misuse to produce detrimental effects on major organ systems including the cardiovascular system, since opioids influence myocardial conduction, contractility and reperfusion post myocardial infarction. Moreover, addiction has been recognized to be an independent factor contributing towards coronary artery disease.^{5,6} The White House's Council of Economic Advisers' report estimated the economic costs of the crisis to amount to \$504 billion or 2.8 percent of the year's GDP in 2015.⁴

In order to control and mitigate the impact of the opioid crisis, the U.S. Department of Health and Human Services has outlined key priorities to guide life-saving efforts, which include promoting the use of overdose-reversing drugs.² Naloxone (or naloxone hydrochloride) is an overdose reversal agent that was approved by the U.S. Food and Drug Administration in 1971 as an injectable medication. An overdose of opioids induces respiratory depression, which in turn can lead to hypoxia (low oxygen levels in blood), hypercarbia (elevated carbon dioxide levels in blood), and death.⁷ Naloxone works as an opioid antagonist (reported efficacy: 75 -100%) and replaces opioids from their receptors in the brain to thus, rapidly counter the effect of opioid overdose for a short time period (30-60 minutes).^{7,8}

Naloxone is a prescription drug that normally requires a medical professional's prescription for procurement from a pharmacist. It is a safe medication and has not reported to have produced adverse effects when administered in normal doses.⁷ In emergencies, trained healthcare professionals (or first responders) are permitted to administer naloxone without a prescription.⁸ Naloxone access expansion efforts focus on relaxing some or all of these restrictions to ensure the life-saving agent is more readily available in times of need.⁸ These efforts aim at expediting treatment to improve outcomes and have led to an increased use of naloxone in a pre-hospital setting by emergency personnel.⁷ Naloxone is also being prescribed to laypersons for out-of-hospital administration and take-home naloxone programs are considered effective in reducing overdose mortality.⁷ Naloxone access expansion measures play a key role in saving lives and while the benefits have been reported to surpass risks by a considerable margin, it is important to note concerns about the precipitation of the opioid-withdrawal syndrome following administration in cases of prior opioid exposure.^{7,8} Administering naloxone is a time-sensitive procedure where improper or rapid administration can result in vomiting and/or status seizures, that can further complicate the situation and require tricky airway management techniques.⁹ Therefore, providers and members of the

community need to be educated and equipped with all relevant information regarding the risks to the overdosed patient and themselves before administering naloxone to ensure safe and responsible use.⁹

In light of these benefits and concerns tied to naloxone access expansion proposals, particularly those directed at storing naloxone together with CPR/AED equipment, the American Heart Association (AHA) takes the following position on naloxone availability with CPR/AED equipment:

- The AHA supports integrating guidance on using naloxone within CPR/AED training; the AHA has already done this within Basic Life Support courses and is creating two new opioid education modules for laypeople and for healthcare providers
- We are not in favor of making naloxone mandatory for those who place AEDs in public facilities (may be a barrier in AED availability if someone doesn't want to store Naloxone)
- But for those who choose to do so, we support integrating naloxone guidance into training and maintenance protocol, which must make a mention of naloxone expiration, and could be coupled with periodic AED checks if that is possible
- It is likely that those who use naloxone in emergency situations are already covered under Good Samaritan Laws
- We would not proactively open up Good Samaritan Laws to include naloxone, but are supportive of efforts to reaffirm Good Samaritan coverage

The opioid crisis calls for comprehensive measures to combat the rising pace of misuse, addiction, overdose, and overdose related deaths. Even though initial positive results of naloxone access expansion efforts are encouraging, policy makers need more on-going evaluations of such initiatives to guide crucial decisions.⁸

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