



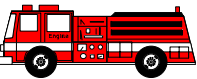


**TIMELINE OF A TYPICAL EMERGENCY RESPONSE  
TO AN INCIDENT OF SUDDEN CARDIAC ARREST**

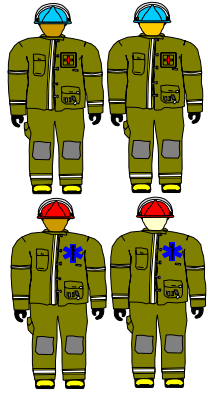
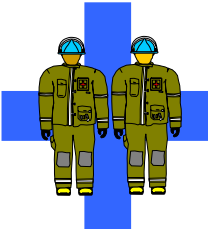
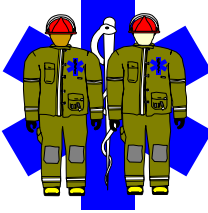


ICON	ACTION	NFPA 1710 STANDARD APPLIED	TIMELINE: EMERGENCY RESPONSE SYSTEM	TIMELINE: EFFECTS OF OXYGEN DEPRIVATION ON CARDIAC PATIENT <sup>1</sup>
	Onset of Sudden Cardiac Arrest (SCA).	N/A	N/A	Heart's ability to pump blood compromised as a result of a medical emergency including, but not limited to, respiratory arrest, drowning, traumatic injury, electrocution, irregular heart rhythm, or choking.
	Notification of 9-1-1 system.	N/A	Unknown variable	Contingent upon patient or bystander recognition of event and time to action taken.
	Call processing and dispatch of fire department units to the medical emergency.	NFPA 1710, §6.4.2, states that "All ...operating procedures shall comply with NFPA 1221," which allows no more than <b>one minute</b> for call processing and dispatch.	<b>Time elapsed: One minute</b>	<b>60 seconds:</b> Cardiac irritability if onset of SCA recognized within this timeframe.
	Fire fighters notified of medical emergency, prepare for response and board apparatus.	NFPA 1710, §4.1.2.1.1, states that the fire department shall establish a turnout time of <b>one minute</b> (60 seconds).	<b>Time elapsed: Two minutes</b> $\left. \begin{array}{l} 1 \text{ minute "dispatch time"} \\ + \\ 1 \text{ minute "turnout time"} \end{array} \right\}$	Heart's condition continues to worsen if no action taken. If defibrillation is initiated within <b>1-2 minutes</b> , however, survival rates can be as high as 90 percent.
	Fire fighters respond to emergency scene.	NFPA 1710, §4.1.2.1.1(3) states that a fire department shall establish the response time objective of " <b>Four minutes</b> (240 seconds) <b>or less</b> for the arrival of a unit with first responder or higher level capability at an emergency medical incident."	<b>Time elapsed: Six minutes (approx.)</b> $\left\{ \begin{array}{l} 1 \text{ minute "dispatch time"} \\ + \\ 1 \text{ minute "turnout time"} \\ + \\ 4 \text{ minutes "travel time"} \\ \text{(or less)} \end{array} \right\}$	Research shows that in many cases, <b>full recovery is possible if CPR is initiated within 4 minutes</b> of onset of symptoms, followed by the administration of both basic and advanced life support measures, resulting in the restoration of circulation.

<sup>1</sup> Timeline assumes the emergency medical system is activated at the onset of cardiac arrest.

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	<p>Four fire fighters arrive on the incident scene <b>within 4 minutes</b>: two BLS providers and two ALS providers.</p>	<p>NFPA 1710, §5.3.3.4.4 states that Advanced Life Support (ALS) emergency response deployments “shall include a minimum of two members trained at the emergency medical technician- paramedic (EMT-P) level and two members trained at the emergency medical technician- basic (EMT-B) level arriving on scene within the established response time.”</p>	<p>Fire fighters access patient, perform initial assessment, and initiate CPR.</p> <p style="text-align: center;">{ Time can vary due to patient location and accessibility. Time from assessment to initiation of CPR is typically calculated at less than 30 seconds. }</p>	<p><b>4-6 minutes: brain damage likely in the absence of basic and advanced emergency medical intervention.</b></p>
<p><b>BLS:</b></p> 	<p>Two BLS providers access and stabilize the patient, initiate CPR, and prepare patient for ALS interventions.</p> <p>One ALS provider prepares the AED and analyzes the results of electrocardiogram (ECG) report.</p>	<p>NFPA Standard 1710 states that “the fire department... shall ensure [that] emergency medical response capability includes personnel, equipment, and resources to deploy at the first responder level with automatic external defibrillator (AED) or higher treatment level.”</p>	<p><b>Time elapsed: Seven minutes (approx.)</b></p> <p style="text-align: center;">{ 1 minute “dispatch time” + 1 minute “turnout time” + 4 minutes “travel time” (or less) + 1 minute to access patient and initiate CPR }</p>	<p>If circulation is not restored, the patient’s condition will continue to deteriorate with increased time. <b>According to the Eisenberg study, survival rates decrease by 5.5 percent with every minute that passes without treatment.</b></p>
<p><b>ALS:</b></p> 	<p>One ALS provider prepares for and initiates the range of advanced cardiac life support measures, including advanced cardiac monitoring and manual defibrillation, drug therapy, advanced airway management (inclusive of intubation), and the establishment and maintenance of intravenous (I.V.) access.</p>	<p>NFPA Standard 1710 states that a “fire department shall establish the response time objective of <b>8 minutes or less</b> for the arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department.”</p>	<p><b>Time elapsed: Eight minutes (approx.)</b></p> <p style="text-align: center;">{ 1 minute “dispatch time” + 1 minute “turnout time” + 4 minutes “travel time” (or less) + 1 minute to access patient and initiate CPR + 1 minute to initiate ALS (if not in 1<sup>st</sup> group, e.g., ALS engine) }</p>	<p><b>6-10 minutes: brain damage very likely in the absence of ALS intervention.</b> Cardiac arrest can be reversed in many victims if it is treated with immediate CPR, and if followed by, an electric shock to the heart within 7 to 10 minutes. Few resuscitation attempts succeed if begun after 10 minutes have elapsed since the cessation of patient’s heartbeat and breathing.</p>