

# High Performance CPR

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## Instructor Guide

Seattle Fire Department and King County EMS  
January 31, 2014

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# High Performance CPR

## Module 1 Intro to HP CPR

Segment Time: 15:00 Minutes

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### **Overview**

Successful resuscitation requires the coordinated efforts of the response team. In the best response to cardiac arrest, each responder understands their role and the importance of communication and coordination during the delivery of care. An important element of resuscitation care is CPR and evidence indicates that the quality of CPR compressions combined with minimal interruptions to CPR has a significant effect on patient outcomes. This course will focus on the important elements of High Performance CPR, as part of a total resuscitation response.

### **Objectives**

- Understand the “big picture” of High Performance CPR.
- Recognize the importance of a coordinated approach to resuscitation care.

### **Presentation Materials**

HP CPR Video Scenario BLS and ALS

### **Instructor Activities**

Introduce HP CPR

Show video

Emphasize Key Points

Answer questions

### **Practice**

No practice for this Segment

### **Key Points**

1. High quality CPR includes quality chest compressions and minimizing pauses, but there is no definitive training that provides guidance on integrating these elements into actual resuscitation response.
2. This training will focus on the integration of the elements of high quality CPR into the resuscitation response.
3. Important to recognize that HP CPR is more than CPR, it also includes the important elements of team communication and coordination.



# High Performance CPR

## Module 2 BLS CPR

Segment Time: 10:00 Minutes

### **Overview**

The CPR provided by BLS responders is an important part of resuscitation response. During resuscitation, the BLS provider owns CPR and should assure that interruptions are minimized. It is often necessary for the BLS provider to assume the lead role in the resuscitation to assure that the resuscitation team, including ALS responders, maintain focus on continuous CPR. We will break CPR into the individual components of initial assessment, compressions, ventilations and combining compressions and ventilations. Practice sessions will occur for each of the components.

### **Objectives**

- Understand the role of the BLS provider in providing resuscitation care.
- Identify the key aspects of high quality CPR.
- Understand the roles of each member of the resuscitation team.

### **Presentation Materials**

**Optional** – If response model includes two responders, show Two Rescuer CPR video segment.

### **Instructor Activities**

Introduce BLS CPR  
Show video if necessary  
Emphasize Key Points as needed  
Answer questions

### **Practice**

No practice for this Segment

### **Key Points**

1. BLS owns CPR
2. Initial assessment using CAB approach. Combine arouse, check for breathing and check for pulse into single action taking less than 10 seconds.
3. Avoid interruptions to chest compressions.
4. Proper compression depth (2" +) and rate (110 to 120 CPM).
5. Full recoil with equal compression/decompression cycle
6. Rotate compressors every 2 minutes.
7. Hover hands over chest and shock button.
8. ALS Skills performed around CPR



# High Performance CPR

## Module 3 Initial Assessment

Segment Time: 10:00 Minutes

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### **Overview**

Initial assessment; checking for responsiveness, breathing and pulse is traditionally performed as a three step process with each step taking several seconds. It would not be uncommon for a rescuer to take 30 seconds or more to complete an initial assessment. By performing all three steps simultaneously, an initial assessment can be completed in less than 10 seconds, reducing the time it takes to begin chest compressions.

### **Objectives**

- Recognize the importance of minimizing the time required to complete an initial assessment.
- Practice performing initial assessment in less 10 seconds or less.

### **Presentation Materials**

Show Initial Assessment video segment.

### **Instructor Activities**

Introduce Initial Assessment

Show video segment

Conduct practice session

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 2-4.

Have students perform initial assessment, checking responsiveness, breathing and pulse simultaneously with a goal of completing the assessment in less than 10 seconds.

### **Key Points**

1. One rescuer should be assigned the job of initial assessment prior to arrival at the patient.
2. Initial assessment should be completed in less than 10 seconds.
3. A second rescuer should get into position to begin compressions while initial assessment is being completed.



# High Performance CPR

## Module 4 Chest Compressions

Segment Time: 10:00 Minutes

### **Overview**

Chest compressions of adequate depth and rate are perhaps the most critical elements of high quality CPR. Recent science indicates that compressions must be at least two inches on an adult, the rate should be 100 to 120 compressions per minute and that the compression and decompression cycle should be equal.

### **Objectives**

- Recognize the importance of chest compressions as an element of high quality CPR.
- Understand why body positioning, depth of compression and duty cycle are critical to quality compressions.
- Practice performing chest compressions.

### **Presentation Materials**

Show Chest Compressions video

Metronome

### **Instructor Activities**

Introduce Chest Compressions

Show video segment

Conduct practice session

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 2-4.

Have students perform two minute cycles of chest compressions on a manikin.

Have peers provide coaching for depth, rate and duty cycle compliance. Use a metronome to assist with rate.

### **Key Points**

1. Hands need to be placed in the center of the chest.
2. Depth of compression at least two inches.
3. Body mechanics are very important for providing quality compressions: Correct distance from patient's side, arms locked at elbows, perpendicular to patient's sternum, torso and arms performs compression as a unit and fulcrum at waist.
4. Emphasis on smooth motion with equal compression and decompression cycle. Full recoil is important for refilling the coronary arteries.
5. Rate 100-120 compressions per minute.



# High Performance CPR

## Module 5 Ventilations

Segment Time: 10:00 Minutes

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### **Overview**

Ventilations have a reduced priority in high quality CPR. Over-ventilation is common when provided by professional responders and is detrimental to CPR quality. Rescuers should focus on when it is appropriate to add ventilations and limiting ventilation volume and rate.

### **Objectives**

- Understand the importance of limiting ventilation volume and rate.
- Recognize how over-ventilation can be detrimental to quality CPR.
- Practice performing ventilations.

### **Presentation Materials**

Show Ventilations video

### **Instructor Activities**

Introduce Ventilations

Show video segment

Demonstrate three finger squeeze of bag

Conduct practice session

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 2-4.

Have students perform ventilations on a manikin.

Have peers provide coaching for seal, volume and rate.

### **Key Points**

1. Use the "C" technique of creating seal with the BVM.
2. Breaths no more than one second duration.
3. Limit volume to 300 - 400 ml of air. A three finger squeeze helps limit volume.
4. Chest rise is a good indicator of volume and seal.
5. If using a two-person technique, pull face into the mask rather than pushing down on face.



# High Performance CPR

## Module 6 Ventilations and Compressions

Segment Time: 10:00 Minutes

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### **Overview**

Teamwork is an important aspect of providing resuscitative care. To be effective, the BLS CPR Team must assure the efficient coordination of ventilations and compressions. This includes rotating positions, especially the compressor, every two minutes.

### **Objectives**

- Recognize the importance of teamwork during CPR.
- Understand the importance of coordination of compressions and ventilations.
- Practice performing coordinated compressions and ventilations.

### **Presentation Materials**

None

### **Instructor Activities**

Introduce Compressions and Ventilations  
Conduct practice session  
Emphasize Key Points as needed  
Answer questions

### **Practice**

Organize students in groups of 3-4.  
Have students perform two minute cycles of chest compressions with ventilations on a manikin.  
Have peers provide coaching to compressor for depth, rate and duty cycle compliance.  
Have peers provide coaching to ventilator for seal, volume and rate.

### **Key Points**

1. Compressions should not be interrupted for ventilations more than needed to deliver breath(s).
2. Compressor counts out loud to signal ventilation.
3. A countdown to the end of the two minute CPR interval helps to prepare for switching compressors.
4. The switching of compressors should be accomplished in less than 5 seconds. This is accomplished by anticipating the end of the CPR cycle and counting down the last 15 seconds.
5. Re-emphasize key points from compressions and ventilations as needed.



# High Performance CPR

## Module 7 AED

Segment Time: 10:00 Minutes

### **Overview**

CPR and defibrillation are known to be the most effective treatment for a victim of cardiac arrest. However, an AED can also cause significant gaps in CPR during analysis and shock. Understanding the operation and limitations of your AED and how to minimize interruptions caused by the devices, will increase the percentage of time CPR is provided during resuscitation.

### **Objectives**

- Recognize the operational capabilities and limitations of the AED used by your organization.
- Identify techniques that can be used to minimize the time CPR is interrupted by the AED.
- Practice applying and operating the AED used by your organization.
- Other team members should practice countdown, hovering and rotation while the AED is being operated.

### **Presentation Materials**

None

### **Instructor Activities**

Introduce AED Integration

Demonstrate operation and limitations of AED in use

Conduct practice session

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 3-4.

Have students practice applying and delivering shocks with an AED Trainer on a manikin.

### **Key Points**

1. It is important to understand the operation and limitations of the device used by your organization.
2. Voice prompts and charging can cause significant delays in chest compressions.
3. Anticipating the AED's actions and providing solutions limitations will reduce interruptions to CPR.
  - a. Pre-clearing for shock, includes timer countdown, (10 seconds)
  - b. Hands hover above chest during shock, immediate return to compressions after shock, no delay.
  - c. Finger hovers over shock button
  - d. No pulse check after shock.
  - e. Crew rotation during analysis and charging of AED



# High Performance CPR

## Module 8 BLS CPR and AED

Segment Time: 15:00 Minutes

### **Overview**

Practicing scenarios helps to increase understanding of and competency with HP CPR techniques.

### **Objectives**

- Review the techniques of HP CPR that help minimize interruptions to CPR.
- Practice cardiac arrest scenarios using HP CPR techniques.

### **Presentation Materials**

Optional – show BLS CPR Video again

### **Instructor Activities**

Introduce BLS CPR and AED

Show BLS CPR Video (optional)

Conduct practice session

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 3-4.

Have students practice several different cardiac arrest scenarios, ensuring that each student rotates through all four roles – Leader, Compressor, Ventilator and “On Deck”.

Practice should include all of the HP CPR elements:

- Integrated Initial Assessment
- CAB Approach
- Compressions with adequate depth, recoil and rate. Good body mechanics.
- Ventilations no more than one second long and 300-400 mls of air delivered with three fingers
- Anticipate next actions with countdowns and hands hovering over chest and AED. No pulse check after shock.
- Quick transitions between roles. Rotate during AED analysis.

Ensure that peers continue to provide coaching as needed to improve technique.

### **Key Points**

1. It is important for each team member to understand their initial and next role.
2. Rotation through all roles is important to understand each team member’s responsibilities.
3. Emphasize the importance of anticipating next actions and not waiting for AED prompting after analysis, shock or no shock advised.



# High Performance CPR

## Module 9 Integration of ALS

Segment Time: 15:00 Minutes

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### **Overview**

The arrival of ALS personnel during BLS CPR can often complicate an already hectic scene. In addition, ALS skills such as the initiation of an IV, airway management and rhythm analysis often cause interruptions to chest compressions. It is important that the BLS crew continue to own CPR and that ALS providers be proficient in providing skills with continuous CPR and minimizing necessary interruptions to CPR.

### **Objectives**

- Recognize the impact of ALS arrival on HP CPR.
- Identify methods for providing ALS skills while CPR is in progress.
- Practice BLS/ALS Teamwork while performing CPR scenarios.

### **Presentation Materials**

Integrating ALS Video

### **Instructor Activities**

Introduce ALS Integration

Show video

Facilitate demonstration

Conduct group scenarios (Optional)

Emphasize Key Points as needed

Answer questions

### **Practice**

Organize students in groups of 3-4.

Have students practice scenarios that integrate ALS care on a manikin.

If time is limited, have one group of BLS and ALS participants perform scenario to demonstrate to remaining participants.

### **Key Points**

1. When ALS providers arrive, they should begin setup and switch over to their monitor during a two minute CPR interval.
2. Initiation of an IV and advanced airway management should begin as soon as possible without interrupting CPR.
3. Pre-charge the defibrillator during the last 15 seconds of the CPR interval.
4. BLS leader remains in charge of CPR and tracking of intervals.