Innovative Medical Education LLC.

American Heart Association BLS Healthcare Provider Study Guide

American Heart Association
Learn and Live

AUTHORIZED
Provider
CPR and First Aid
Courses

Innovative Medical Education LLC. (616)745-3917 jeff@cprwestmi.com

NOTES:

Innovative Medical Education LLC.

2020 Guidelines for Healthcare Provider BLS

Adult Chain of Survival Elements:

- Prevention and preparedness
- Activating the emergency response system
- High-quality CPR, including early defibrillation
- Advanced resuscitation interventions
- Post-cardiac arrest care and recovery

CPR - Adult

BLS CPR consists of 3 main components:

1. Compressions-30 compressions
2. Airway-Head tilt chin lift
3. Breathing-visible chest rise with 2 breaths

Adult 1 rescuer CPR

- Verify scene is Safe.
- Check for responsiveness. Tap and shout, "Are you OK?"
- Shout for nearby help
- Activate EMS (call 911) and send someone to get the AED.
- Assess the victim for breathing and the presence of a pulse within 10 seconds.
    - If pulse found and no breathing, perform rescue breathing; one breath every 6 seconds
- If there is no pulse begin chest compressions.
    - Compress chest 2 inches, but no deeper than 2.4 inches, 100-120 per minute
    - Give 2 breaths (1 second each) watching for chest rise.
- Push Hard and Push Fast until help arrives or the victim is revived.
- Attach **AED as soon as it arrives** without interrupting chest compressions.

Adult 2 Rescuer CPR:

- Ventilator - determines responsiveness if no response, activate EMS (call 911) and call for an AED
- Ventilator - checks for pulse and no breathing or normal breathing
- If Victim has Pulse:
    - Ventilator will provide rescue breaths for them:
    - 1 breath every 6 seconds or 10 breaths per minute (breath delivered over 1 second)
- If Victim has No Pulse:
    - Compressor will start chest compressions, with the heel of two hands on chest at a ratio of 30 compressions by the **Compressor** to 2 ventilations by the **Ventilator** at a rate of at least 100 to 120 per minute and a depth of at least 2” and no deeper than 2.4 inches.
- After every 5 cycles or 2 minutes of CPR switch positions to maintain effective CPR.

ADVANCED AIRWAY

If an advanced airway is in place do NOT stop compressions for breaths, perform continuous compressions and give 10 breaths per minute (one breath every 6 seconds), switch positions, check for a pulse and analyze the rhythm every 2 minutes.

INFANT AND CHILD

Pediatrics Chain of Survival:

- Prevention is #1
- Begin early and effective CPR, for two minutes if alone
- Rapid activation of EMS or Call 911
- Begin early and effective Advanced Life Support (EMS) (includes rapid stabilization and transport to definitive care and rehabilitation)

Infant (0-1 year of age) **Child** (1 year of age to puberty)

Puberty for: **MALES** = chest-facial-under arm hair. **FEMALES** = Breast development

CPR - Infant 1 rescuer CPR

- Make sure the scene is safe.
- Determine responsiveness. Tap and shout.
- If the child is un-responsive shout for nearby help.
- Activate EMS via cell phone if available.
- Assess the victim for breathing and the presence of a pulse within 10 seconds.
- If pulse found and no breathing, perform rescue breathing; one breath every 3-4 seconds
- If the collapse was sudden and witnessed leave the infant if needed to call 911. If unwitnessed, no cell phone or bystander to call you should do 2 minutes of CPR before leaving to call 911.
- If there is no detectable pulse, or pulse is less than 60 beats/min., start chest compressions at the depth of 1/3 of the child's body or about 1.5" depth: Do 30 compressions. Rate of compressions 100 to 120/ per minute.
- ***If the infant does not have a normal pulse or if the pulse is less than 60 beats/min.***
    - Start chest compressions, 2 fingers, one finger width below the nipple line, at a ratio of 30 compressions to 2 ventilations (30:2) at a rate of at least 100 to 120 per minute
- Depth of chest compressions is 1/3 of the infant's body or a depth or 1 1⁄2"
- Go activate EMS or call 911 if no cell phone or no-one is around after the first 5 cycles of CPR
- Then return to the infant & continue CPR

Rescue Breaths = infant is not breathing but has a pulse greater than 60 beats/min.

- 1 breath every 3-4 seconds for about 12-20 per min. (each breath over 1 sec. making the chest rise)
- Recheck pulse every 2 minutes

Infant 2 rescuer CPR:

- Switch to 15 compressions and 2 breaths, Rate = 100 to 120/min. 5 cycles of 15-2

Child-1 rescuer CPR:

- Make sure the scene is safe.
- Determine responsiveness. Tap and shout.
- If the child is un-responsive shout for help. Activate EMS via cell phone if available.
- Assess for normal breathing and check the pulse.
- If the collapse was sudden and witnessed leave the victim if needed to call 911. If unwitnessed, no cell phone or bystander to call you should do 2 minutes of CPR before leaving to call 911.
- If there is no detectable pulse, or pulse is less than 60 beats/min., start chest compressions at the lower part of the breastbone, at the depth of 1/3 of the child's body or about 2" depth: Do 30 compressions.
- Give 2 breaths (1 second each) watching the chest rise
- Continue CPR at a ratio of 30 to 2 until help arrives. Push Hard, Push Fast, and compress at a minimum rate of 100 to 120 compressions per minute. Allow full chest recoil after each compression and minimize interruptions in chest compressions. Attach AED ASAP.

Child-2 rescuer CPR:

- 15 compressions: 2 breaths, Rate = 100 to 120/min
- (Ventilator) the rescuer at the head, (Compressor) the rescuer at the chest
- Ventilator determines responsiveness if no response compressor or bystander calls 911 or activates EMS.
- Check for pulse, check for breathing or no normal breathing (min 5 seconds; max 10 seconds)
- Ventilator will **rescue breath** for them: 1 breath every 3-4 seconds or about 12-20 per minute (each breath should be delivered over 1 second making the chest rise)
- Recheck pulse every 2 minutes

If the child does not have a normal pulse or if the pulse is less than 60 beats/min begin chest compressions.

- Compressor will start chest compressions, with the heal of 1 or 2 hands at a ratio of 15 compressions followed by 2 ventilations by the Ventilator at a rate of 100 to 120 per minute and a depth of 1/3 of the child's body depth or 2", switch places and reassess victim after 5 cycles or 2 minutes.

AED USE

An Automated External Defibrillator (AED) is used when the heart stops beating normally and needs to be reset by an electric shock. **The AED does not PREVENT cardiac arrest.** The sooner the shock is delivered the better, since the probability of successful defibrillation diminishes rapidly over time.

- Provide 5 cycles of CPR, 30 compressions to 2 breaths, for 2 minutes before using an AED on a child from 1 year to 8 or on an infant 1< of age.
- Special Considerations:
- Hairy chest-remove enough hair to get good contact with the skin.
- Dry chest if visibly wet.
- Implanted device-place pad at least 1 inch away from implant, never place pad on top of device.
- Medication patch-remove it and wipe area before pad placement. Note: Adult AED pads can be used on children and infants, but pediatric pads are preferred. Pediatric pads cannot be used on adults.

- For infants a manual defibrillator is preferred. If a manual defibrillator is not available, an AED with pediatric pads or a pediatric dose attenuator (plug-in shock reducing adapter) is desirable. If neither are available use Adult pads if that is all that is available.

Choking

Adult Conscious Choking

- ASK “Are you choking”?
- ASK “Can you speak”?
- ASK “Can I HELP you”?
- Inform the person that you will provide abdominal thrusts
- Provide inward and upward Abdominal Thrusts, just above the navel.

Adult Unconscious Choking: (NO BLIND FINGER SWEEPS)

- Call 911
- Open the airway remove the object if you see it, then begin Chest compressions
- Ratio of 30 compressions to 2 breaths
- Every time you open the airway to give breaths look for the object
- Then continue CPR (30 to 2)

Choking - Child Conscious Choking:

- ASK “Are you choking”?
- ASK “Can you speak”?
- ASK “Can I HELP you”? (ask the parent if you can help their child)
- Provide inward and upward Abdominal Thrusts, just above the navel.

Child Unconscious Choking: NO BLIND FINGER SWEEPS

- Call for help, send bystander to call 911 or activate EMS
- Open the airway, remove the object if you see it
- Begin CPR, with a ratio of 30 compressions to 2 breaths.
- Every time you open the airway to give breaths look for the object.
- Then continue CPR with a ratio of 30 compressions to 2 breaths.
- If no one came to call 911 or activate EMS, you call after 2 minutes of CPR

Infant Conscious Choking:

- Look for choking signs, like bluish skin, lips or nose, high-pitched noise
- Pick up the infant and give 5 back blows between the shoulder blades, with the head supported and with the head lower than the infant’s bottom
- Then flip the infant over and provide 5 chest thrusts just below the nipple line, keeping the head lower that the infant’s bottom
- Repeat until infants able to cry or becomes unconscious

Infant Unconscious Choking: NO BLIND FINGER SWEEPS

- Call for help, send bystander to call 911 or activate EMS
- Open the airway, remove the object if you see, begin CPR at a ratio of 30 to 2

- Every time you open the airway to give breaths look for the object, then continue CPR at a ratio of 30 to 2 compressions and breaths
- If no one came to call 911 or activate EMS, you call after 2 minutes or 5 cycles of CPR

Important Facts to Know about BLS CPR

1. If the victim has been in water or their chest is wet wipe the chest dry before attaching the AED.
2. For adults compress to a depth of at least 2 inches but not deeper than 2.4 inches.
3. For children (1 y/o-8 y/o) compress ⅓ the depth of the child's chest or about 2 inches.
4. For infants (0-1 y/o) compress ⅓ the depth of the infant's chest or about 1.5 inches
5. An AED can help the heart return to a normal heart rhythm, it does not prevent cardiac arrest.
6. When doing CPR on an unresponsive choking victim always look for an object in the mouth before doing a rescue breath.
7. Start CPR if a choking victim becomes unresponsive.
8. Start CPR for an unresponsive victim who is gasping and/or not breathing normally.
9. For an infant who is choking provide continuous sets of 5 back slaps followed by 5 chest thrusts.
10. If a choking infant becomes unresponsive start CPR and call 911.
11. If you see someone performing chest compressions too slowly tell them to compress at a rate of 100 to 120 times per minute.
12. Always remember to turn on the AED first and follow the voice prompts.
13. A hairy chest may need to be shaved before attaching AED pads.
14. When using a bag valve mask watch the chest carefully to monitor the chest rising.
15. For single rescuer infant CPR provide 30 compressions then two rescue breaths.
16. If multiple rescuers are doing CPR switch positions about every 2 minutes.
17. Start CPR if the victim is unresponsive, not breathing and has no pulse.
18. Always allow the chest to recoil completely between compressions so the heart can refill.
19. It is better to push too deep when providing compressions than to push too shallow.
20. Air goes in and out, blood goes round-and-round, any deviation is a problem. **FIX the problem!!!**

Summary of High-Quality CPR Components for BLS Providers

American Heart Association.

Component	Adults and adolescents	Children (age 1 year to puberty)	Infants (age less than 1 year, excluding newborns)
Verifying scene safety	Make sure the environment is safe for rescuers and victim		
Recognizing cardiac arrest	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
Activating emergency response system	***If a mobile device is available, phone emergency services (9-1-1)***		
	If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	***Witnessed collapse*** Follow steps for adults and adolescents on the left ***Unwitnessed collapse*** Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED Return to the child or infant and resume CPR; use the AED as soon as it is available	
Compression-ventilation ratio *without advanced airway*	***1 or 2 rescuers*** 30:2	***1 rescuer*** 30:2 ***2 or more rescuers*** 15:2	
Compression-ventilation ratio *with advanced airway*	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)	Continuous compressions at a rate of 100-120/min Give 1 breath every 2-3 seconds (20-30 breaths/min)	
Compression rate	100-120/min		
Compression depth	At least 2 inches (5 cm)*	At least one third AP diameter of chest Approximately 2 inches (5 cm)	At least one third AP diameter of chest Approximately 1½ inches (4 cm)
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	***1 rescuer*** 2 fingers or 2 thumbs in the center of the chest, just below the nipple line ***2 or more rescuers*** 2 thumb–encircling hands in the center of the chest, just below the nipple line If the rescuer is unable to achieve the recommended depth, it may be reasonable to use the heel of one hand
Chest recoil	Allow complete recoil of chest after each compression; do not lean on the chest after each compression		
Minimizing interruptions	Limit interruptions in chest compressions to less than 10 seconds with a CCF goal of 80%		

Figure 1. The American Heart Association 2020 Chains of Survival. Links in the Chain of Survival will differ based on whether the arrest occurs in or out of the hospital and the age of the victim. **A,** Pediatric In-Hospital Chain of Survival. **B,** Pediatric Out-of-Hospital Chain of Survival. **C,** Adult In-Hospital Chain of Survival. **D,** Adult Out-of-Hospital Chain of Survival.