AHA High Quality CPR: An Overview for Professional Rescuers

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AHA Learning Objectives

• Describe 3 reasons CPR quality should be continuously assessed and targeted for improvement.

• Name the 4 key metrics for delivering high-quality CPR.

• Describe 3 team behaviors that lead to improved delivery of high-quality CPR.

• Identify 3 reasons that full chest recoil is essential for proper delivery of CPR.

• Analyze and evaluate yourself according to the guideline measurements and evaluate key areas to improve.
AHA Learning Objectives, Continued

• List the evidence-based measurement parameters for the following CPR metrics:
  • Chest Compression Fraction
  • Rate of Chest Compressions
  • Depth of Chest Compressions for Adults
  • Depth of Compressions for Children
  • Ventilations
  • Components of Physiologic metrics to monitor on the CPR Recipient.
What is Our Goal?

• Increase Survival Rates through better, more efficient CPR including the following components (Four Key Quality Metrics):
  • Minimize Interruptions in Chest Compressions
  • Providing Adequate Compression Rate and Depth
  • Allowing Full Chest Recoil
  • Avoiding Excessive Ventilation
Quiz

- What is the proper rate for chest compressions of all patients?
- What is the proper depth of chest compressions for an adult patient?
- What is the proper ventilation to compression ratio for adult patients?
- What is the proper depth of chest compressions for a child patient?
Answers

- 100 compressions/minute
- 2 inches
- 30 Compressions to 2 Breaths
- Child: 1 ½-2 inches
  - Infant 1 ½ inches
Why the Push?

- AHA push for “Transformative Change” in CPR quality.
- Studies prove considerable variation and inconsistency in CPR performance.
- Need to change habits and routines.
- Better implementation of 2010 AHA Principles
How do we do: Rarely; Sometimes or Never

Minimizing Interruptions in Compressions:
- My team is careful to minimize interruptions in chest compressions during airway placement?
- I am aware of my chest compression fraction goals during a resuscitation event?
- During a resuscitation event, minimizing compressions is my top priority?
How do we do: Rarely; Sometimes or Never

- Providing Compressions at Adequate Rate and Depth:
  - I provide compressions at the right depth on a consistent basis?
  - Each time I provide compressions, I am aware of my goals to consistently deliver compressions at 100 to 120 per minute.
  - During a resuscitation event, I am consistently able to remain focused on our goals for an adequate compression rate and depth.
How do we do:
Rarely; Sometimes or Never

- Allowing Full Chest Recoil
  - I am aware of the need to allow full chest recoil?
  - I am careful to notice whether or not the victim's chest is able to fully recoil between compressions?

- Avoiding Excessive Ventilation
  - I am careful to avoid excessive ventilation during a resuscitation event?
Food for Thought

- What items can you and your team focus on improving in order to save more lives?

- What tasks will you personally improve?
KEY POINT

- High-Quality CPR should be recognized and considered to be the foundation for all other resuscitative efforts!!!
How Do We Do This?

Let’s Track our Progress:

- Capturing and Recording Metrics of CPR Performance
- Monitoring and Providing Feedback to Rescuers and Providers
- Improving Resuscitation Team Dynamics
- Implementing CPR CQI Programs
How do we do: Rarely; Sometimes or Never

- **Capturing and Recording Metrics:**
  - My team records metrics and tracks our CPR performance each time we engage in a resuscitation attempt?

- **Monitoring and Providing Feedback:**
  - My team constantly monitors and provides feedback for each other during resuscitation attempts?
  - Each person is comfortable receiving feedback to help reach our goals?
How do we do: Rarely; Sometimes or Never

- Improving Resuscitation Team Dynamics:
  - My team discusses how we can work together more effectively.
  - Each person is comfortable receiving feedback to help reach our goals.

- Implementing CPR CQI Programs:
  - My team has a structured plan in place to continually measure, evaluate, and improve our delivery of CPR.
Food for Thought

- What items can you and your team focus on improving in order to save more lives?

- What tasks will you personally improve?
What Makes Up High Quality CPR

CPR Quality Metrics Include:

- Minimizing Interruptions in Chest Compressions
  - (CCF >80%)
- Providing Compressions at Adequate Rate and Depth
  - Rate of 100-120/Minute
  - Depth of at least 2 inches/adults; at least 1/3 the AP dimension of the chest for children and infants
- Allowing Full Chest Recoil Between Compressions
  - No residual leaning on the chest between compressions
- Avoiding Excessive Ventilation
  - Only minimal chest rise and rate <12 breaths/minute
Let’s Take a Quiz

- Take Out A sheet of paper and follow along:
- There are 6 questions, in total.
- Answers will be at the end.
Of the public health problems listed below, which ranks the highest number of lives claimed each year?

- A. Breast Cancer
- B. Colon Cancer
- C. Car Accidents
- D. Cardiac Arrests
Question 2

Which of the following sentences accurately describes the recommendations for determining a patient’s chest compression fraction – or CCF?

- A. CCF is the proportion of time during which chest compressions are performed for a cardiac arrest victim. The measurable time span begins at the moment the cardiac arrest is identified and ends with ROSC.
- B. CCF is determined by the depth of the pressure applied to the chest. The compression is most effective if the variance between compression and recoil reaches 80% during compressions and returns to 100% during recoil.
- C. CCF is the percentage of time that each rescuer attended the patient by delivering the compressions. The most efficient compression deliverer should perform this role for at least 80% of the resuscitation.
- D. CCF is determined by comparing the rate of compressions actually delivered to the recommended rate of compressions for all CPR recipients. Teams should strive to reach 80% of the recommended 100 to 120 compressions per minute.
Question 3

What is the target chest compression fraction during CPR?

- A. Less than 20%
- B. Greater than or equal to 50%
- C. Greater than 80%
- D. Less than 95%
Question 4

- True or False: A common error documented by observing and tracking CPR quality is that many rescuers’ compressions are too deep.

  - A. True
  - B. False
Question 5

Which of the following represents an accurate goal for achieving the metrics of adequate rate and depth of compressions for an adult?

- A. A rate of 100 to 120/min; depth if at least 2 inches
- B. A rate of 80/min; depth of at least 3 inches
- C. A rate of less than 100/min; a depth of no more than 2 inches
- D. A rate of greater than 120/min; a depth of no more than 2 inches
Question 6

True or false: Multiple studies show that fewer than 100 compressions per minute or more than 120 compressions per minute appear to reduce the chances of survival to hospital discharge.

A. True

B. False
THE ANSWERS ARE:

1. D
2. A
3. C
4. False (They actually do not press hard enough)
5. A
6. True
Let’s follow the old adage: “If you don’t measure it, you can’t improve it.”

Monitoring CPR Quality is one of the most significant advances in resuscitation in the last 20 years and should be used in and incorporated in every resuscitation attempt.

Two Important Types of CPR Quality Monitoring

- How the TEAM is doing (CPR Performance Metrics)
- How the PATIENT is doing (Physiologic)
CPR Performance Metrics

- The correct technology.
  - Software to measure CPR metrics.
- The right supervisors in place.
  - Includes visual evaluation and instant feedback.
- Effective team Leadership
  - Practice CPR in a team
  - Dedicated team leader
Physiologic Monitoring

- Coronary Perfusion Pressure (>20mm Hg)
- End-Tidal Carbon Dioxide (>20mm Hg)
- Arterial Diastolic Pressure (>25mm Hg)
Four Goals of Team Leaders: Directing High-Quality CPR Priorities

1. Minimizing interruptions to reach chest compression fraction goals
2. Supervising for adequate compression rate and overseeing for adequate compression depth
3. Allowing full chest recoil
4. Avoiding excessive ventilation
Priority 1: Minimizing interruptions to reach chest compression fraction goals.

- Choreograph Team Activities
- Minimize Interruptions for Airway Placement
- Avoid Unnecessary Pulse Checks
- Minimize Pauses Before and After Shock Delivery
Priority 2:
Supervising for adequate compression rate and
overseeing for adequate compression depth.

How to Maximize Compression Rate and Depth

- Regulate compression rate by using devices like real-time feedback devices, metronomes, music, and continuous monitoring

- Maximize Compression Depth by:
  - Ensuring a firm, hard surface
  - Optimizing compression mechanics
Priority 3: Allowing full chest recoil.

- How to Improve the likelihood for full chest recoil:
  - Don’t Lean
    - Common Error: Leaning on patient chest to achieve optimal compression depth
    - Problem: Leaning diminishes chest recoil and compression effectiveness
  - Continually monitor for full chest recoil
Priority 4: Avoiding excessive ventilation

How to Avoid Excessive Ventilation:

- Methods to decrease ventilation rate using
  - Metronomes
  - Monitoring
  - Feedback
Team Performance Metrics and Continuous Quality Improvement (CQI)

- FACT: Few healthcare organizations consistently monitor CPR quality and outcomes, resulting in unacceptable variability in the quality of resuscitation care delivered.
  - A systematic process for reviewing quality and performance has been shown to improve outcomes.
Incorporating CQI in Your System

- Use a group “huddle” after each resuscitation attempt
- Hold weekly debriefing sessions to share constructive feedback on quality
- Use a checklist after each event and make simple notes to capture specific quality metrics
- Use monitoring data
- Integrate education and offer frequent refresher courses
- Incorporate “mock codes: or simulation training exercises into your routine.
Minimizing Interruptions in Chest Compressions:
- My team measures interruptions in compressions, even during critical steps like airway placement.
- After a resuscitation attempt, I track the chest compression fraction.
- After a resuscitation event, our team has data to track how well we were able to minimize pauses in compressions.

Avoiding Excessive Ventilation:
- I track the number of breaths per minute during every resuscitation attempt to avoid excessive ventilation.
Survey My Strengths: Rarely, Sometimes, Never

- **Providing Compressions of Adequate Rate and Depth:**
  - I consistently measure compression depth so that I know I am pushing hard enough to achieve the right depth.
  - I use a device or method that tracks my rate of compressions each time, so I know whether or not I am reaching my goal of 100 to 120/min.
  - I receive and respond to both data-based feedback and team-observation feedback during each resuscitation attempt to help me reach my goals for compression rate and depth.

- **Allowing Full Chest Recoil Between Compressions:**
  - My team measures whether or not we are achieving full chest recoil between compressions.
  - Someone on my team is assigned to provide feedback regarding chest recoil during every resuscitation attempt.
Survey Team Strengths: Rarely, Sometimes, Never

- Capturing and Recording Metrics of CPR Performance:
  - My team records metrics and tracks our CPR performance improvement over time.

- Monitoring and Providing Feedback to Rescuers and Providers:
  - My team monitors and provides feedback based on objective data during each resuscitation attempt.
  - We have a team leader who observes, monitors data, and provides feedback during every resuscitation attempt.
Survey Team Strengths: Rarely, Sometimes, Never

- Improving Resuscitation Team Dynamics:
  - We have predictable times set aside to discuss team dynamics, and I know when my next CPR team meeting will be.
  - My group has a team leader who tracks each resuscitation goal and provides feedback according to both data and observation.

- Implementing CPR CQI Programs:
  - Each person on my team is aware of improvements we have made in reaching our data-based goals and specific areas where we can continue to improve our delivery of care.
Personal Food for Thought:

- Which items do you believe your team should focus on improving so that more lives are saved?
- What tasks will you personally improve?
Summary/Review

- Describe 3 reasons CPR quality should be continuously assessed and targeted for improvement.
  - AHA push for “Transformative Change” in CPR quality; Studies prove considerable variation and inconsistency in CPR performance; Need to change habits and routines; 500,000 people annually experience a cardiac arrest and 15% survive; Cardiac Arrest kills more than breast cancer, prostate cancer, colon cancer, flu, pneumonia, MVAs, HIV, firearms and house fires combined.

- Name the 4 key metrics for delivering high-quality CPR.
  - Minimizing Interruptions in Chest Compressions; Providing Compressions at Adequate Depth and Rate; Allowing Full Chest Recoil Between Compressions; Avoid Excessive Ventilation

- Describe 3 team behaviors that lead to improved delivery of high-quality CPR.
  - Capture and Record CPR Performance Metrics; Implement CPR CQI Programs; Improve Resuscitation Team Dynamics; Monitor and Provide Feedback to Rescuers and Providers

- Identify 3 reasons that full chest recoil is essential for proper delivery of CPR.

- Analyze and evaluate yourself according to the guideline measurements and evaluate key areas to improve.
Summary/Review

- List the evidence-based measurement parameters for the following CPR metrics:
  - Chest Compression Fraction
    - (>80%)
  - Rate of Chest Compressions
    - (100-120/min)
  - Depth of Chest Compressions for Adults
    - (At least 2 inches)
  - Depth of Compressions for Children
    - (at least 1/3 the AP dimension of the chest for children and infants)
  - Ventilations
    - (Only minimal chest rise and rate <12 breaths/minute)
  - Components of Physiologic metrics to monitor on the CPR Recipient.
    - Coronary Perfusion Pressure (>20 mm Hg)
    - Arterial Diastolic Pressure (>25 mm Hg)
    - End-Tidal Carbon Dioxide (>20 mm Hg)
Thank You

- Information provided from this presentation was taken from the AHA: http://www.heart.org/HEARTORG/CPRAndECC/HealthcareProviders/CPR-Quality_UCM_450686_SubHomePage.jsp

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