

Which Action Would The Nurse Take When Performing External Cardiac Compression

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Performing external cardiac compression, commonly known as CPR (Cardiopulmonary Resuscitation), is a critical intervention in emergency situations where a patient's heart has stopped beating or is experiencing cardiac arrest. The primary goal is to restore blood circulation to vital organs, especially the brain and heart, until advanced medical help arrives. Nurses, as frontline responders in many clinical and emergency settings, must be well-versed in the correct procedures and actions to take during external cardiac compression. This article provides a comprehensive overview of the steps, techniques, and considerations a nurse should follow when performing external cardiac compression, ensuring optimal patient outcomes and adherence to best practices.

Understanding the Importance of External Cardiac Compression

External cardiac compression is a lifesaving technique that involves manually compressing the chest to pump blood through the heart and circulate oxygenated blood to the brain and other vital organs. It is an essential component of CPR and is often performed in conjunction with rescue breaths, depending on the situation and current guidelines.

The importance of effective external cardiac compression cannot be overstated, as immediate action significantly increases the chances of survival and reduces the risk of permanent brain damage. Nurses, especially those in emergency, critical care, or pre-hospital settings, play a crucial role in initiating and maintaining high-quality chest compressions.

Initial Assessment and Preparation

Before initiating external cardiac compression, a nurse must perform a series of vital assessments and preparations to ensure the safety of the patient and the correctness of the intervention.

1. Verify Responsiveness and Breathing

- Shake the patient gently and ask loudly, "Are you okay?"
- Check for responsiveness by observing for movement or verbal response.
- Look for normal breathing or agonal respirations. If the patient is unresponsive and not breathing normally, immediate action is required.

2. Call for Help and Activate Emergency Response

- If alone, immediately call emergency services or activate the hospital's emergency response system.
- Obtain or direct someone to retrieve an Automated External Defibrillator (AED) if available.
- Ensure help is on the way to assist with advanced care.

3. Ensure Scene Safety

- Confirm the environment is safe for both the patient and the responder.
- Remove any hazards that could cause further injury.

4. Prepare Equipment and Position the Patient

- Carefully position the patient on a firm, flat surface to facilitate effective compressions.
- Clear the chest area by removing clothing, jewelry, or any obstructive objects.
- Use a backboard if available, especially for patients lying on a soft surface.

Performing External Cardiac Compression

Once initial assessments are complete and help is on the way, the nurse proceeds with the core action: external cardiac compression. Proper technique and rhythm are essential for effective CPR.

1. Hand Placement and Body Positioning

- Place the heel of one hand on the center of the patient's chest, specifically on the lower half of the sternum.
- Place the other hand on top of the first, interlocking fingers or keeping them raised to avoid pressure on the ribs.
- Keep arms straight, shoulders directly above the hands, and elbows locked.
- Use body weight to generate force rather than solely relying on arm strength.

2. Compression Technique and Depth

- Compress the chest at a depth of at least 2 inches (5 cm) for adults.
- Avoid excessive depth to prevent injury.
- Allow the chest to recoil completely between compressions to enable blood flow.
- Maintain a rate of 100 to 120 compressions per minute, roughly to the beat of the song "Stayin' Alive" by the Bee Gees.

3. Rhythm and Continuity

- Perform continuous chest compressions without significant interruptions.
- Use a metronome or music to maintain the correct rate.
- Minimize pauses, except for necessary checks or to deliver rescue breaths if indicated.

Additional Considerations During External Cardiac Compression

Effective CPR involves more than just the mechanics of compressions. Nurses must adhere to guidelines and adapt to specific patient needs.

1. Ventilation and Compression Ratio

- For adults, current guidelines recommend continuous compressions with rescue breaths if trained and comfortable.
- If performing traditional CPR, deliver 30 compressions followed by 2 rescue breaths.
- Be mindful of the patient's condition and whether airway management or advanced airway devices are in place.

2. Use of AED

- As early defibrillation is crucial, attach an AED as soon as it's available.
- Follow the device prompts precisely.
- Ensure no one is touching the patient during shock delivery.

3. Monitoring and Reassessment

- Continuously monitor the patient's responsiveness and breathing.
- Reassess every 2 minutes or after a cycle of compressions.
- Be prepared to adjust techniques based on the patient's response.

Safety and Ethical Considerations

The nurse must prioritize safety and ethical standards during external cardiac compression.

1. Avoiding Injury

- Proper hand placement and technique minimize rib fractures or internal injuries.
- Be gentle but firm, especially in vulnerable populations such as the elderly or children.

2. Respecting Patient Autonomy and Legal Guidelines

- Follow established protocols and guidelines (e.g., American Heart Association, European Resuscitation Council).
- Document actions taken and patient response.

Post-Resuscitation Actions

Once spontaneous circulation is restored or the emergency is under control, the nurse's role shifts to ongoing assessment and supportive care.

- Provide advanced airway management if trained.
- Monitor vital signs continuously.
- Prepare for transfer to a higher level of care.
- Communicate with the healthcare team and document all interventions.

Training and Skill Maintenance

Performing external cardiac compression effectively requires regular training and practice.

- Attend certified CPR courses periodically.
- Practice techniques on mannequins.
- Stay updated with the latest guidelines and recommendations.

Conclusion

In emergency scenarios requiring external cardiac compression, the nurse's actions are pivotal in determining patient survival. From initial assessment

and scene safety to precise hand placement, compression technique, and rhythm maintenance, each step must be performed with confidence and adherence to established protocols. Continuous education, practice, and awareness of the latest guidelines ensure that nurses are prepared to deliver high-quality CPR, ultimately saving lives and reducing the impact of cardiac arrest.

Frequently Asked Questions

What is the primary goal when performing external cardiac compression?

The primary goal is to restore blood circulation to vital organs by manually pumping the heart through chest compressions.

How deep should external cardiac compressions be performed in adults?

Compressions should be at least 2 inches (5 cm) deep, but not more than 2.4 inches (6 cm), to ensure effective blood flow.

What is the correct hand placement for performing external cardiac compressions?

Hands should be placed on the center of the chest, on the lower half of the sternum, with the heel of one hand on top of the other and fingers lifted.

How many compressions should be delivered per minute during CPR?

Compressions should be performed at a rate of 100 to 120 per minute to maximize effectiveness.

When should the nurse pause compressions during CPR?

The nurse should pause only for necessary reasons, such as to deliver rescue breaths, attach defibrillator pads, or assess the patient's condition, minimizing interruptions.

What is the importance of ensuring proper chest recoil during external cardiac compression?

Allowing complete chest recoil between compressions ensures the heart refills with blood, improving the effectiveness of each compression.

What precautions should the nurse take to ensure safety during external cardiac compression?

The nurse should position their hands correctly, avoid excessive force, and ensure the patient's head and neck are stabilized to prevent injury.

Why is it important to switch rescuers performing CPR regularly?

Switching rescuers every 2 minutes prevents fatigue, maintaining high-quality compressions and increasing the patient's chances of survival.

Additional Resources

External Cardiac Compression: A Comprehensive Guide for Nurses

In emergency cardiovascular care, external cardiac compression—more commonly known as chest compressions—is a critical intervention that can mean the difference between life and death. For nurses, understanding the precise steps and best practices during cardiac emergencies is essential to optimize patient outcomes. This article provides an in-depth analysis of the actions a nurse should take when performing external cardiac compression, highlighting the importance of technique, positioning, and safety protocols.

Understanding External Cardiac Compression

Before delving into the steps, it's vital to grasp what external cardiac compression entails. It is a manual technique used to circulate blood when the heart has stopped beating effectively, such as during cardiac arrest. The goal is to generate enough blood flow to vital organs—especially the brain and heart—until advanced interventions like defibrillation or medications can restore spontaneous circulation.

Preparation and Safety Considerations

Assessing the Scene and Patient Safety

The initial action a nurse must take is ensuring the environment is safe for

both the rescuer and the patient. This involves:

- Checking for hazards (e.g., electrical hazards, fire, traffic).
- Moving the patient only if the environment is unsafe or if repositioning improves the ability to perform compressions effectively.
- Ensuring the patient is unresponsive and not breathing normally—confirming cardiac arrest.

Key steps include:

- Shouting for help to alert others.
- Calling emergency medical services (EMS) promptly.
- Gathering needed equipment (e.g., AED, gloves).

Personal Protective Equipment (PPE)

While performing compressions, nurses should wear PPE such as gloves to prevent exposure to potentially infectious bodily fluids. Proper donning of PPE is essential before initiating chest compressions.

Positioning the Patient for Effective Chest Compressions

Patient Placement

The patient should be placed on a firm, flat surface to allow effective compression depth and force. If on a bed, ideally, a backboard or hard surface should be used underneath to provide adequate stability.

Steps:

- Ensure the patient is lying flat on their back.
- Remove any clothing or obstructions around the chest to access the sternum.
- Position the patient's arms to the side.

Positioning the Rescuer

The nurse should position themselves correctly to deliver effective compressions:

- Stand or kneel directly over the patient's chest.
- Place the heel of one hand on the center of the sternum (the lower third of the sternum).
- Place the other hand on top, interlocking fingers or keeping them off the chest.
- Keep arms straight and shoulders directly above hands to utilize body weight.

Performing External Cardiac Compression: Step-by-Step

The core of the process involves a series of coordinated actions, emphasizing proper technique to maximize blood flow while minimizing injury.

1. Hand Placement

Proper hand placement is crucial. The nurse should:

- Locate the lower half of the sternum (breastbone).
- Place the heel of one hand on this spot.
- Position the other hand on top, interlacing fingers or keeping them off the chest.
- Ensure hands are positioned vertically over the sternum, not over the ribs or xiphoid process.

2. Compression Technique

Effective chest compressions demand the right technique:

- Use the upper body weight rather than just arm strength.
- Keep elbows locked and arms straight.
- Apply pressure downward to depress the sternum at least 2 inches (5 cm) in adults.
- Allow full recoil of the chest between compressions to maximize venous return.
- Maintain a rate of 100-120 compressions per minute, approximately the tempo of the song "Stayin' Alive."

3. Rhythm and Depth

Consistency is key. The nurse must:

- Count compressions to maintain rhythm.
- Use a metronome or audio cues if available.
- Avoid leaning on the chest after each compression.
- Ensure each compression is deep and rapid enough but not too forceful to cause injury.

4. Compression-to-Relaxation Ratio

In adult CPR, continuous compressions are performed, with minimal interruptions. If rescue breathing is indicated, a ratio of 30 compressions to 2 breaths is advised, but in many adult cardiac arrests, compressions are performed alone until advanced help arrives.

Monitoring and Adjustments During Compression

Assessing Effectiveness

While performing compressions, the nurse should continuously monitor for:

- Patient responsiveness.
- Signs of return of spontaneous circulation (ROSC), such as movement or improved color.
- The presence of a pulse (if trained and equipped).

Adjustments Based on Patient Response

If signs of ROSC are observed, compressions can be paused briefly to check rhythm and pulse, but resumption should be immediate if no spontaneous circulation is present.

Use of Automated External Defibrillator (AED) Integration

While not part of manual compression, the nurse must be prepared to operate

an AED as soon as it arrives:

- Turn on the AED and attach pads.
- Follow voice prompts.
- Ensure no one is touching the patient before delivering a shock.
- Resume compressions immediately after shock delivery.

Common Mistakes and How to Avoid Them

Mistake	Consequence	Prevention Strategy
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Incorrect hand placement	Ineffective compressions, possible injuries	Practice proper hand positioning regularly
Inadequate compression depth	Reduced blood flow, poor outcomes	Use proper body mechanics, training, and feedback devices
Too slow or inconsistent rate	Insufficient perfusion	Use metronome or rhythmic cues
Excessive interruptions	Decreased survival chances	Minimize pauses, coordinate with team

Post-Compression Care and Documentation

After the emergency:

- Ensure the patient is stable and monitor vital signs.
- Reassess periodically for ROSC.
- Document all actions taken, including compression rate, depth, duration, and patient responses.
- Communicate with the resuscitation team for further interventions.

Training and Skill Maintenance

Regular training updates are essential for nurses to maintain proficiency in external cardiac compression techniques:

- Participate in simulation exercises.
- Review current guidelines (e.g., AHA, ERC).
- Practice on manikins to reinforce proper technique.

Conclusion

Performing external cardiac compression is a vital skill that requires precision, strength, and adherence to established protocols. For nurses, mastering the correct actions—from scene assessment to effective chest compressions and integration with AED use—can significantly influence patient survival rates during cardiac emergencies. Continuous education, practice, and teamwork are the cornerstones of delivering high-quality CPR, ensuring that when seconds count, the nurse's actions are swift, accurate, and impactful.

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