Purpose

This procedure describes the appropriate methods to apply, operate, and discontinue the LUCAS device in patients > 12 years of age requiring mechanical chest compression related to cardiac arrest.

Indications

The Lucas may be used in patients 12 years of age and older who have suffered cardiac arrest, where manual CPR would otherwise be used.

Contraindications

a. Patients who are too large and with whom you cannot attach upper part to back plate without compressing chest.

b. Patients who are too small and with whom you cannot pull the pressure pad down to touch the sternum 3 quick beeps will be heard if patient is too small

Placement

1. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined.

2. Initiate resuscitative measures following Protocol 9.

3. Early defibrillation should be considered and provided as indicated based on clinical presentation.

4. Manual chest compressions should be initiated immediately while the LUCAS device is being placed on the patient.

5. Limit interruptions in chest compressions to 10 seconds or less.

6. Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.

7. While resuscitative measures are initiated, the LUCAS device should be removed from its carrying device and placed on the patient in the following manner.

Backplate Placement

1. The backplate should be centered on the nipple line and the top of the backplate should be located just below the patient's armpits.

2. In cases for which the patient is already on the stretcher, place the backplate underneath the thorax.
3. This can be accomplished by log-rolling the patient or raising the torso (Placement should occur during scheduled discontinuation of compressions [e.g., after five cycles of 30:2 or two minutes of uninterrupted compressions).

Position the Compressor

1. Initiate CPR, Maintain high-quality compressions.
2. Hold handle on bag with left hand and Pull red handle on bag to open.
3. To activate, push ON/OFF button for one second to start self-test and power up.
4. The green LED adjacent to ADJUST illuminates.
5. Take the back plate out of the bag. Pause manual CPR. With one rescuer on each side of patient, grab the patient's arm to lift the upper body. One person should lift the patient and support the head, and the other person should lift the patient and slide the back plate below the armpits.
6. Continue manual compressions.
7. Take the upper part of the LUCAS 2 unit out of the bag. Hold the LUCAS 2 device by the handles on the support legs and make sure the support legs have reached their outer position.
8. Pull once on green release rings to check that the claw locks are open and then remove fingers from rings.
9. Interrupt manual chest compressions and connect the upper part to back plate, starting on side closest to user. Listen for the CLICK when attached.
10. Check by pulling upward that both support legs are locked onto the back plate.
11. Center the suction cup over the chest with the lower edge of the suction cup placed immediately above the end of the sternum.
12. Push the suction cup down using two fingers (V pattern), making sure you are in the ADJUST MODE and the green led is lit.
13. The pressure pad should touch the patient's chest. If pad does not touch or LUCAS 2 does not fit properly, remove and continue manual compressions.
14. Press PAUSE to lock the start position then remove your fingers from the suction cup.
15. Check for proper position and press ACTIVE (continuous) or ACTIVE (30:2).
16. Attach stabilization strap by fully extending the buckles and placing cushion under patient's neck.
17. Connect buckles on support cushion straps to straps on device support legs and tighten firmly.
18. Check for proper position of suction cup and adjust if needed.
19. Delay the application of the stabilization strap when it might prevent or delay treatment.

20. Attach the wrist straps to each of the patient's wrists to assist with securing the arms during movement/transportation. Use caution to determine that the intravenous site is not compromised due to a slight bend that will occur in the patient's arm. If this does occur release the arm.

21. Press PAUSE to stop compressions during ECG analysis.

22. Keep interruptions to a minimum.

23. After successful resuscitation or termination of activities, Press and hold the ON/OFF button for one second.

Patient Adjuncts

Place the neck roll behind the patient's head and attach the straps to the LUCAS device. This will prevent the LUCAS from migrating toward the patient's feet. Place the patients arms in the straps provided.

Defibrillation

1. Defibrillation can and should be performed with the LUCAS device in place and in operation. One may apply the defibrillation electrodes either before or after the LUCAS device has been put in position.

2. The defibrillation pads and wires should not be underneath the suction cup If the electrodes are already in an incorrect position when the LUCAS is placed, you must apply new electrodes.

3. Defibrillation should be performed according to ems protocols and following the instructions of the defibrillator manufacturer. If the rhythm strip cannot be assessed during compressions, one may stop the compressions for analysis by pushing the PAUSE BUTTON (The duration of interruption of compressions should be kept as short as possible and should not be > 10 seconds. There is no need to interrupt chest compressions other than to analyze the rhythm).

4. Once the rhythm is determined to require defibrillation, the appropriate ACTIVE BUTTON should be pushed to resume compressions while the defibrillator is charging and then the defibrillator should be discharged.

Pulse Checks/Return of Spontaneous Circulation (ROSC)

1. Pulse checks should occur intermittently while compressions are occurring.

2. If the patient moves or is obviously responsive, the LUCAS Device should be paused and the patient evaluated.

3. If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, one may consider pausing the LUCAS Device. If the pulse remains, reassess the patient. If the pulse disappears, one should immediately restart the LUCAS Device.

Device Management

1. If disruption or malfunction of the LUCAS device occurs, immediately revert to Manual CPR.

2. When fully charged, the Lithium Polymer battery should allow 45 minutes of uninterrupted operation. There is an extra battery in the Lucas Device bag.

3. When last green bar/LED on battery turns orange, you have 10 minutes left and should replace battery or connect to wall outlet.

Care of the LUCAS Device after use

1. Remove the Suction cup and the Stabilization Strap inspect for wear and contamination (if used, remove the Patient Straps).
2. Clean all surfaces and straps with a cloth and warm water with an appropriate cleaning agent.
3. Let the device and parts dry.
4. Replace the used Battery with a fully-charged Battery.
5. Remount (or replace) the Suction Cup and straps if they are not damaged. Note: *If the suction cup can be cleaned, inspected, & it's without holes, AND can hold suction on a flat surface….then it's "reusable*".
6. Repack the device into the carrying bag.
7. An EMS service request is needed for replacement parts, or some spare parts are available in the EMS equipment depots.