



# Medical Directive

<b>Directive Number</b>	<b><u>17-01</u></b>
<b>Publish Date</b>	<b><u>07 February 2017</u></b>
<b>Effective Date</b>	<b><u>08 February 2017</u></b>
<b>Subject</b>	<b><u>New Deployment and Implementation Guidelines for the LUCAS Device</u></b>
<b>Update to Clinical Operating Guidelines v 02.17.16</b>	

<b>Credentialed System Responder</b>	<b>Information</b>
<b>Credentialed EMT</b>	<b>Information</b>
<b>Credentialed EMT-Intermediate</b>	<b>Information</b>
<b>Credentialed EMT-Paramedic</b>	<b>Information</b>
<b>Credentialed EMD</b>	<b>Information</b>

As our EMS System continues to incorporate evidence based medicine to guide our clinical practices, we will make changes designed to improve the outcome, quality of care and safety of our patients. Recent evaluation of clinical outcomes for cardiac arrest patients within our EMS System indicates a negative association between cardiac arrest patient outcomes and the application of a LUCAS device. More specifically, our System's data shows cardiac arrest patients are significantly more likely to survive to hospital discharge if they receive manual CPR as compared to receiving LUCAS CPR. This significant difference in outcome for our cardiac arrest patients requires us to take immediate action.

Effective 7:00 am on Wednesday, February 8, 2017, the LUCAS device will be applied only when one of a very small list of special circumstances exists. Updates to COG Clinical Procedures 19 and 41 outline these special circumstances and will be released today for immediate implementation (see attached). Essentially, attempts to place the LUCAS device on a patient will only occur when the patient is being moved for transport, being transported to the hospital, or when the available staffing to effectively implement resuscitation efforts is limited. LUCAS devices will remain on EMS District Command and DMO response vehicles as well as ESDs with limited available staffing.

Initial studies of the LUCAS device demonstrated similar but not improved outcomes compared to manual CPR, however, subsequent studies have raised concerns. A recently published analysis of more than 80,000 patients in the U.S. Cardiac Arrest Registry to Enhance Survival (CARES) found survival to hospital discharge was lower when mechanical CPR was utilized in the resuscitation efforts compared to the use of manual CPR. The CARES analysis found those patients treated with mechanical CPR had an overall survival rate of 7.0% compared to 11.3% for those treated with manual CPR. When neurologically favorable outcomes were considered, the survival rate for mechanical CPR patients decreased to 5.6% compared while the manual CPR group decreased to 9.5%. Because the available mechanical CPR data does not yield improvement in outcomes but in some communities (including ours) is associated with a lower probability of survival, I am compelled to act in the best interest of our patients.

It is important to recognize that our analysis also illustrates the high quality manual CPR being performed in our EMS System. I cannot emphasize enough the importance of continuing to focus on delivering high quality manual CPR to cardiac arrest patients. Our data, as well as that of other communities demonstrate the value of high quality manual CPR in providing the greatest likelihood of survival to hospital discharge with a favorable neurological outcome.



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# CPR – Pit Crew

## Clinical Indications:

- Patient in cardiac arrest > 5 days old.
- Patients new born to 5 days old use Guideline OB - 3

## Contraindications: None

## Notes/Precautions:

- Focus is on:
  - Minimally interrupted compressions
  - Appropriate depth and quality of compressions
  - Consideration of compressor fatigue and change compressors as needed
  - Use of a consistent and uniform Team approach
- Infants and small children may require modification of the procedure due to size.
- This procedure is based on a 4-person crew of providers.
- If there is a 3-person crew (or Position 4 is not immediately available): Position 2 does the narration into the AED.
- If LUCAS device is available, see Steps 7 - 11 for integration and operation.
- **LUCAS device is only to be used for Compressions during required patient movement, Patient Transport to Hospital and staffing shortages.**
- If there is only a 2-person crew, see modified procedure.
- Exception for Witnessed Arrest where a manual defibrillator is immediately available.

Legend		
S	System Responders	S
B	EMT - B	B
I	EMT - I	I
P	EMT - P	P

## Procedure:

### 1. Initial Actions

1. Upon arrival at patient's side, assess for cardiac arrest
2. Ensure adequate personnel, move patient to appropriate space before compressions
3. Position 2 or 4 immediately powers AED On and on FR3 press "CPR Button" when displayed) and places AED near position 2 (patient's left shoulder); Position 4 begins narrating all actions.
4. Position 4 assumes team leader role and performs each of the following throughout resuscitation:
  - a. narrates steps as they are being done (speaks into the AED recorder),
  - b. monitors compressor use of CPR quality feedback and monitors pause times
  - c. directs action in response to CPR quality feedback from AED as needed (rate, depth, release, pauses)
  - d. apply PUCK or CPR Feedback device once available
  - e. directs actions based on Pit-Crew Checklist

### 2. CPR/BVM (1<sup>st</sup> set of 200 compressions with metronome)

1. Position 1 performs 100 manual compressions with metronome
2. Position 2 places CPR feedback puck between Position 1's compressions as soon as ready for use
3. Position 2 retrieves metronome, powers on and places on the patient's left side
4. Position 2 both AED pads to patient's anterior chest and connects cable to AED
5. Position 3 assembles BVM and ITD. Places OPA and mask and makes a two-handed mask seal (with bag directed toward compressors). Position 3 turns on timing light
6. Position 2 squeezes bag using timing light
7. After 100 compressions (approx. 1 minute), Position 2 immediately begins compressions.
8. Position 1 squeezes bag using timing light
9. Position 1 resumes after 100 compressions until time for rhythm analysis (after 200 total compressions total). Position 2 squeezes bag using timing light.

# LUCAS

## Clinical Indications:

- Adult patient in cardiac arrest

## Contraindications:

- Device does not fit patients
- Patient <18 years of age
- Traumatic Cardiac Arrest
- Obviously Pregnant

Legend		
S	System Responders	S
B	EMT - B	B
I	EMT- I	I
P	EMT- P	P

## Notes/Precautions:

- Minimize interruptions in chest compressions to place device.
- Must be appropriately trained
- Use an Anterior-Posterior pad placement.
- LUCAS device is only to be used for Compressions during required patient movement, Patient Transport to Hospital and staffing shortages.

## Procedure:

1. Remove from bag.
2. Ensure that operation knob is in the ADJUST position.
3. Assemble/Prepare device, in accordance with the type being used (electric or pneumatic)
4. Pause chest compressions at 2 minute pause (Pit-crew model).
5. Apply Posterior AED pad and Place patient on backboard.
6. Place back plate under patient on backboard below armpits.
7. Resume chest compressions.
8. Attach LUCAS device to back plate.
9. Position suction cup.
  - Lower edge immediately above end of sternum
  - Pressure pad centered over middle of sternum
  - Lower suction cup & pressure pad to the point where it just comes into contact with the patient's chest
10. If pad does not fit, return to manual chest compressions.
11. Turn operation knob to ACTIVE.
12. Check device for proper position.
13. Attach stabilization straps.
14. LUCAS device should never be left unattended or with an untrained provider.
15. To stop LUCAS, turn operation knob to LOCK.
  - Should only be done:
    - if device improperly placed
    - damage to the patient is occurring
    - to assess the patient
    - while AED is analyzing and charging
16. Once patient has a sustained ROSC, release and retract the "pressure pad" to allow for greater chest excursion and tidal volume during BVM usage.