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TO: ALL LUCAS COUNTY PARAMEDICS

FROM: Brent Parquette, NREMT-P
Lucas County EMS Continuing Education Program

DATE: May 18, 2011

SUBJECT: **Continuing Education – June 2011**

Continuing Education classes during the month of June will be dedicated to the following topic matter:

- Protocol Test Review
- 12-Lead ECG Review
- Introduction / In-Service Training: **LUCAS™2 Chest Compression System**
- Skill Station Practice: **LUCAS™2 Chest Compression System**

I have attached a “Draft” protocol for the LUCAS™2 Chest Compression System for your review prior to class. Copies will be made available during each of the sessions. Additionally, I would like you to review the following LCEMS protocols to help better prepare you for the 12-Lead ECG interpretation portion of the presentation:

Tab 800: Cardiac Protocols

- Section F: Chest Pain / Acute Coronary Syndromes
- Section M: STEMI Alert
- Section R: 12-Lead ECG
- Section S: 12-Lead Transmission

I look forward to seeing you in the coming month. If you have any questions or comments please feel free to contact me thru e-mail or by phone.

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LUCAS™2 Chest Compression System



The LUCAS™2 Chest Compression System is a portable tool designed to overcome problems identified with manual chest compressions. LUCAS assists rescuers with 100 chest compressions per minute with a depth of 1.5 to 2 inches.

Intended Use

LUCAS™2 Chest Compression System is to be used for performing external cardiac compressions on adult patients (≥ 16) who have acute circulatory arrest defined as absence of spontaneous breathing and pulse, and loss of consciousness.

Contraindications

Do NOT use the LUCAS™2 Chest Compression System in the following cases:

- If it is not possible to position LUCAS safely or correctly on the patient's chest.
- Too small patient: If you cannot enter the **PAUSE** mode or **ACTIVE** mode when the pressure pad touches the patient's chest and LUCAS alarms with 3 fast signals.
- Too large patient: If you cannot lock the Upper Part of LUCAS to the Back Plate without compressing the patient's chest.

Side Effects

Rib fractures and other injuries are common but acceptable consequences of CPR given the alternative of death from cardiac arrest. After resuscitation, all patients should be reassessed and re-evaluated for resuscitation-related injuries.



LUCAS™2 Chest Compression System



LUCAS™2 Chest Compression System, continued

Instructions for Use:

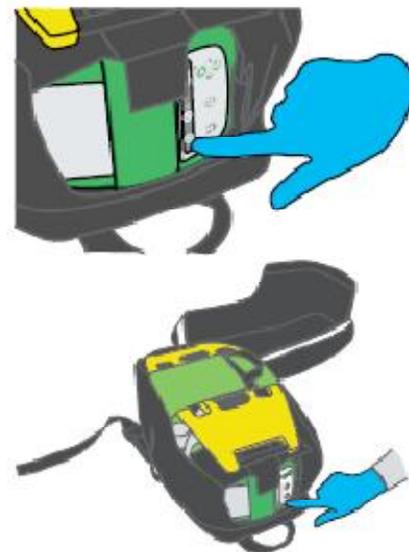
1. Arrival at the patient

- Confirm cardiac arrest.
- Immediately start manual compressions.
- Continue with a minimum of interruptions.



2. Unpack LUCAS

- Position the bag with its top to you.
- Put your left hand on the black strap on the left side and pull the red handle so that the bag unfolds.
- Push **ON/OFF** on the User Control Panel for 1 second to power up LUCAS in the bag and start the self test.
- The green LED adjacent to the **ADJUST** key illuminates when LUCAS is ready for use.



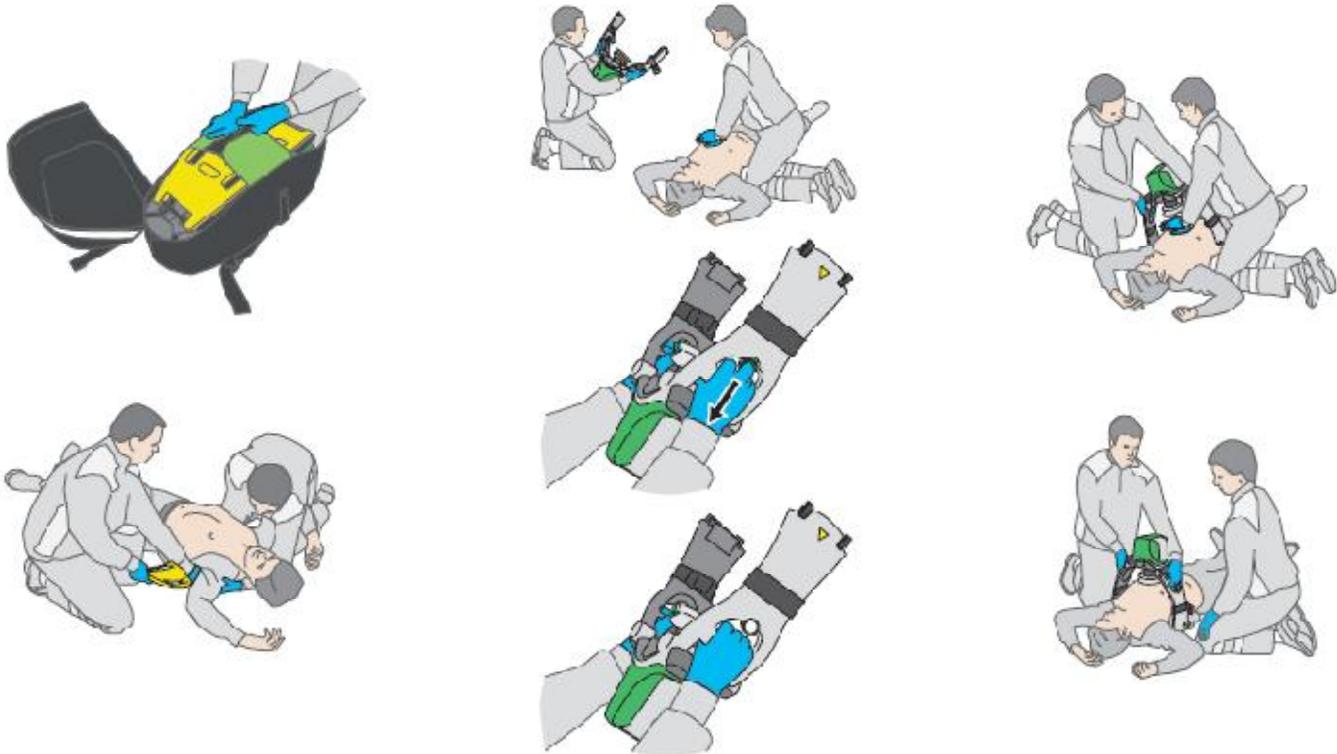
LUCAS™2 Chest Compression System



LUCAS™2 Chest Compression System, continued

3. Assembly

- Remove the LUCAS Back Plate from the Carrying Bag.
- Stop manual CPR.
- Make sure that you support the patient's head.
- Carefully put the LUCAS Back Plate under the patient, immediately below the arm pits.
- Start manual CPR again.
- Hold the handles on the support legs to remove the LUCAS Upper Part from the bag. Pull the release rings once to make sure that the claw locks are open.
- Let go of the release rings.
- Attach the support leg (that is nearest to you) to the Back Plate.
- Attach the other support leg to the Back Plate, so that the two support legs lock against the Back Plate. Listen for the click.
- Pull up once to make sure that the parts are correctly attached.



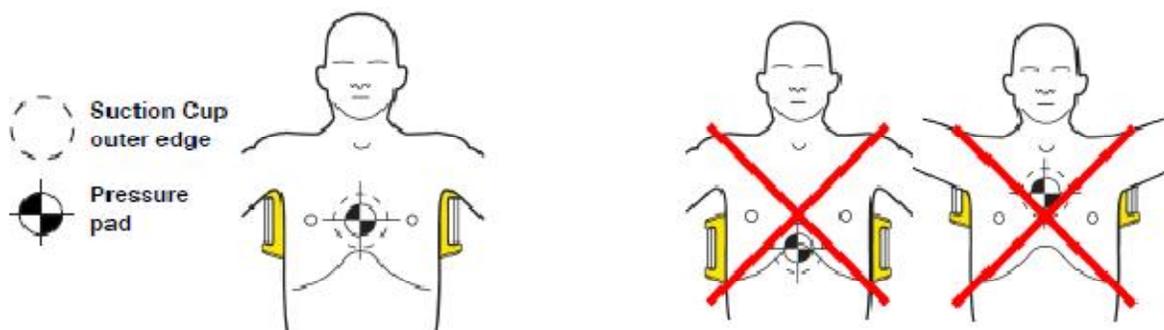
LUCAS™2 Chest Compression System



LUCAS™2 Chest Compression System, continued

4. Adjustment and Operation

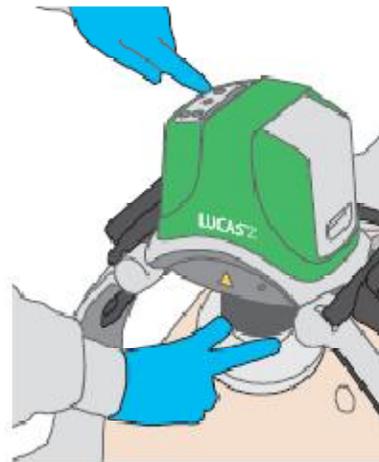
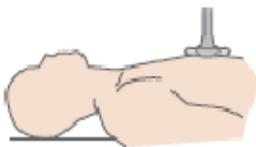
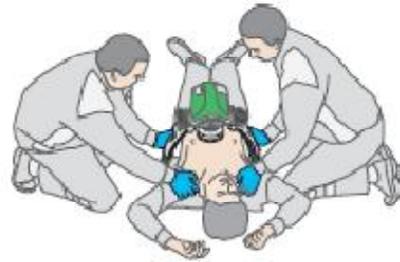
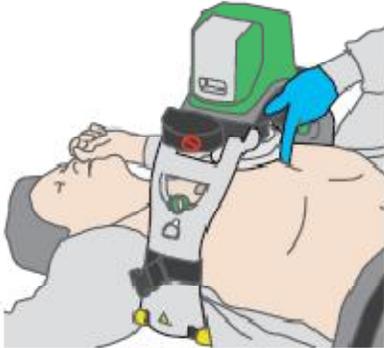
- The compression point should be the same spot as for manual CPR and according to guidelines.
- When the pressure pad in the Suction Cup is in the correct position, **the lower edge of the Suction Cup is immediately above the end of the sternum.**
- Use your finger to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum.
- If necessary, move the device by pulling the support legs to adjust the position.
- Adjust the height of the Suction Cup to set the Start Position.
- Make sure that LUCAS is in the **ADJUST** mode.
- Push the Suction Cup down with two fingers until the pressure pad touches the patient's chest without compressing the chest.
- Push **PAUSE** to lock the Start Position – then remove your fingers from the Suction Cup.
- Check for proper position. If not, push **ADJUST**, pull up the Suction Cup to readjust the central and/or height position for a new Start Position. Push **PAUSE**.
- Push **ACTIVE (continuous)** OR **ACTIVE (30:2)** to start compressions.



LUCAS™2 Chest Compression System



LUCAS™2 Chest Compression System, continued



LUCAS™2 Chest Compression System

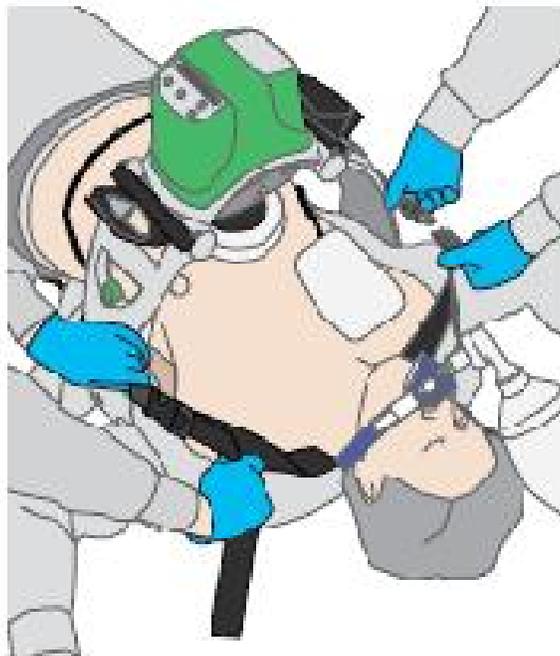


LUCAS™2 Chest Compression System, continued

5. Stabilization Strap Application

Delay the application of the LUCAS Stabilization Strap if this prevents or delays any medical treatment of the patient.

- Remove the cushion strap, which is a part of the Stabilization Strap, from the Carrying Bag (the support legs strap of the Stabilization Strap should already be attached to the support legs).
- Extend the cushion strap fully at the buckles.
- Carefully lift the patient's head and put the cushion behind the patient's neck. Position the cushion as near the patient's shoulders as possible.
- Connect the buckles on the support leg straps with the buckles on the cushion strap. Make sure that the straps are not twisted.
- Hold the LUCAS support legs stable and tighten the cushion strap tightly.
- Make sure that the position of the Suction Cup is correct on the patient's chest. If it is not, adjust the position.



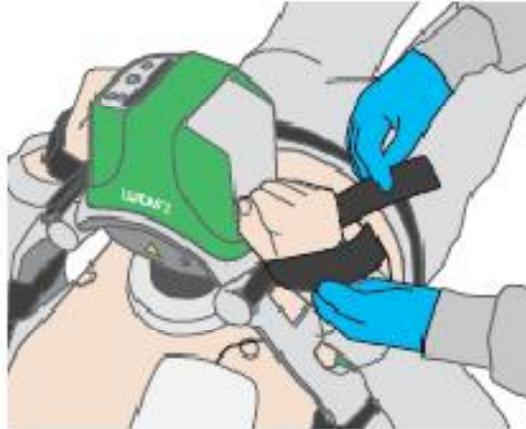
LUCAS™2 Chest Compression System



LUCAS™2 Chest Compression System, continued

6. Secure the Patient's Arms

- When moving the patient, secure the patient's arms with Patient Straps on the LUCAS. This makes it easier to move the patient.



7. Lifting the Patient

- Push **PAUSE** to temporarily stop the compressions.
- Lift and move the patient to a stretcher or other transportation device (backboard, cot, etc.).
- Make sure that the Suction Cup is in the correct position on the patient's chest.
- Push **ACTIVE (continuous)** or **ACTIVE (30:2)** to start the compressions again.



LUCAS™2 Chest Compression System

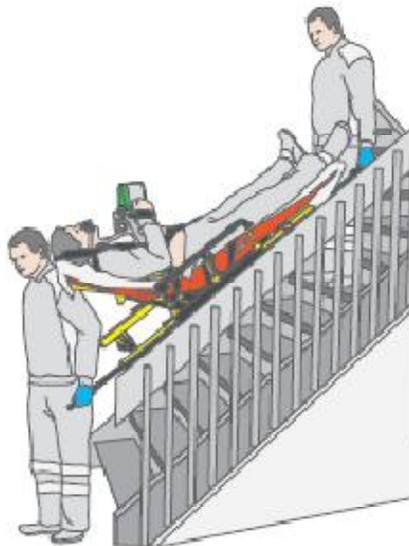


LUCAS™2 Chest Compression System, continued

8. Moving the Patient

Lucas can be active while you move the patient if:

- LUCAS and the patient are safely positioned on the transportation device.
- LUCAS stays in the correct position and angle on the patient's chest
- If the position of the Suction Cup changes during operation or during defibrillation, immediately push ADJUST and adjust the position. Always use the LUCAS Stabilization Strap to help secure the correct position.



To ensure maximum safety, always refer to the **LUCAS™2 Chest Compression System Operating Manual** for specific detailed information on “**CAUTIONS**” and “**WARNINGS**” during device operation.



LUCAS™₂ Chest Compression System



LUCAS™₂ Chest Compression System, continued

LUCAS™ Battery

The battery must always be installed for the LUCAS to be able to operate, also when powered by external Power Supply.

To minimize interruptions, it is recommended to always have a charged spare LUCAS Battery in the Carrying Bag.

LUCAS™ Suction Cup

After each use, clean and inspect the Suction Cup. If showing signs of wear and/or damage, replace using the following guidelines:

- Pull the Suction Cup off the black mounting tube.
- Discard the Suction Cup.
- Bend a new Suction Cup onto the black mounting tube.
- Make sure the Suction Cup is safely attached on the mounting tube.

Cleaning

Clean all surfaces and straps with a soft cloth and warm water with a mild cleaning agent or disinfectant agent. DO NOT immerse LUCAS in liquid. The device can be damaged if liquid enters the hood.

LUCAS™2 Chest Compression System



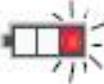
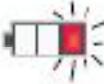
Troubleshooting

Situation	Visual LED indication	Audible signals	User action
LUCAS is in the ON mode and there is more than 90% Battery capacity remaining.	 Fully charged Battery: All 3 green Battery indication LEDs show a constant light.	None	None
LUCAS is in the ON mode and there is more than 60% and less than 90% Battery capacity remaining.	 2/3 charged Battery: The 2 green Battery indication LEDs to the right show a constant light.	None	None
LUCAS is in the ON mode and there is more than 30% and less than 60% Battery capacity remaining.	 1/3 charged Battery: The green Battery indication LED farthest to the right shows a constant light.	None	None
LUCAS is in the ON mode and there is less than 30% Battery capacity remaining (approximately 10 minutes of operating capacity).	 Low Battery: The orange Battery indication LED farthest to the right illuminates intermittently.	Intermittent alarm	Replace the Battery or connect to the external power supply.
An external LUCAS Power Supply is connected and charging the Battery.	 Charging Battery: The 3 green Battery indication LEDs show a "running" light.	None	None
An external LUCAS Power Supply is connected and the Battery is fully charged.	 Fully charged Battery: All 3 green Battery indication LEDs show a constant light.	None	None
The Battery has been used more than 200 times with compressions of more than 10 minutes each or is older than 3 years.	 End of Battery service life: The Battery indication LED farthest to the right shows orange light instead of green, in all the above situations.	None	Dispose of Battery.
In the ADJUST mode.	 The ADJUST LED shows a green light.	None	None
In the PAUSE mode.	 The PAUSE LED shows a green light.	None	None
In the ACTIVE (continuous) mode.	 The ACTIVE (continuous) key, LUCAS performs continuous chest compressions. The green LED signal will blink 8 times per minute.	None	This is to alert for ventilation during on-going compressions.
In the ACTIVE (30:2) mode.	 The ACTIVE (30:2) LED shows a green light with an intermittent LED during compressions number 26, 27, 28, 29 and 30.	Alarm signal alert during compressions number 20 ("ding"), 29 ("ding") and 30 ("ding").	This is to alert the operator to ventilate the patient when LUCAS temporarily stops the compressions at number 30.
Too small patient. Trying to enter the PAUSE mode or any of the ACTIVE modes when the Suction Cup is in a lower position than for the minimum patient (stature height approximately 17 cm).	None	3 fast signals	Continue with manual compressions.

LUCAS™2 Chest Compression System



Troubleshooting

Reason	Visual LED indication	Audible alarms	Result
Compression pattern outside limit (too deep, too shallow and timing failure)	 Red alarm LED	Alarm	Compressions stop
Rising temperature in LUCAS		Warning alarm	None
Too high temperature in LUCAS	 Red alarm LED	Alarm	Compressions stop
Hardware error	 Red alarm LED	Alarm	Compressions stop
Too high Battery temperature	 Intermittent red Battery warning: The red Battery indication LED farthest to the right illuminates intermittently.	Intermittent alarm	Compressions stop
Battery charge too low	 Intermittent red Battery warning: The red Battery indication LED farthest to the right illuminates intermittently.	Intermittent alarm	Compressions stop. The Battery must be recharged in the external Battery Charger.
Battery error	 Constant red Battery warning: The red Battery indication LED farthest to the right shows a constant light.	Alarm	Compressions stop. The Battery cannot be used anymore.