

LUCAS[®] 3, v3.1 chest compression system

Training answer key and annotated test

All pages in the answers refer to the Instructions for Use: LUCAS 3, v3.1 IFU 101034-00 Rev G

Circle the correct responses and return to the instructor once you've completed the test.

1. Which one of the following is NOT a contraindication for LUCAS device use?

- a. A patient that is too small for the LUCAS device
- b. A patient with a closed head injury**
- c. If it's not possible to position the LUCAS device safely or correctly on the patient's chest
- d. A patient that is too large for the LUCAS device

Contraindications, do NOT use the LUCAS chest compression system in these cases (Ch. 2.3: Contraindications).

- If it is not possible to position the LUCAS device safely or correctly on the patient's chest.
- Too small patient: if the LUCAS device alerts with three fast signals when lowering the suction cup, and you cannot enter the PAUSE mode or ACTIVE mode.
- Too large patient: If you cannot lock the upper part of the LUCAS device to the back plate without compressing the patient's chest.

2. When the battery indicator shows an intermittent yellow LED, the approximate operating time left is:

- a. 15 minutes
- b. 10 minutes**
- c. 30 minutes
- d. 5 minutes

One intermittent yellow LED and alarm during operation: low battery, approximately 10 minutes of operating capacity remaining (Ch. 2.7: User control panel).

3. When applying the LUCAS device, what is your FIRST action upon opening the carrying case?

- a. Remove the back plate
- b. Check for a spare battery
- c. Push ON/OFF**
- d. Pull out the Instructions for Use

Push ON/OFF on the user control panel for one second to power up the LUCAS device in the bag and start the self-test. The green LED adjacent to the ADJUST key illuminates when the LUCAS device is ready for use (Ch. 5.3: Unpack the device).

4. All of the following are risks of incorrect pressure pad position EXCEPT:

- a. Damage to the rib cage
- b. Impairment of blood circulation
- c. Tibial fracture**
- d. Damage to internal organs

WARNING - INCORRECT POSITION OVER CHEST. If the pressure pad is not in the correct position in relation to the sternum, there is an increased risk of damage to the rib cage and the internal organs. Also, the patient's blood circulation is compromised (Ch. 3.8: Operation).

5. What should you do if the patient is too small for the LUCAS device?

- a. Put something, such as a blanket, between the patient and the back plate
- b. Remove the LUCAS device and provide manual chest compressions instead**
- c. Continue to use the LUCAS device despite the suction cup not being in contact with the chest
- d. Put something, such as a blanket, between the patient and the pressure pad of the suction cup

WARNING - TOO SMALL PATIENT. If the LUCAS device alerts with three fast signals when lowering the suction cup, and you cannot enter the PAUSE mode or ACTIVE mode, immediately start manual compressions again.

6. All of the following are examples of when to use the PAUSE button EXCEPT:

- a. During a short break in compressions; for example, during ECG analysis
- b. To change the battery during use
- c. To mute the alarm**
- d. When moving a patient down stairs if the LUCAS device doesn't stay in the correct position and angle on the patient's chest

WARNING - ECG INTERFERENCE. Chest compressions interfere with ECG analysis. Push PAUSE before you start the ECG analysis. Make the interruption as short as possible. Push ACTIVE (continuous) or ACTIVE (30:2) to start the compressions again (Ch. 3.8 Operation).

Changing the battery: Push PAUSE to temporarily stop the compressions. Pull the battery out and then upwards to remove it (Ch. 5.7.1 Change the battery).

The LUCAS device can be active while you move the patient if: a) the LUCAS device and the patient are safely positioned on the transportation device and b) the LUCAS device stays in the correct position and angle on the patient's chest. If necessary, adjust the position of the suction cup.

WARNING - CHANGED POSITION DURING OPERATION. If the position of the suction cup changes during operation or during defibrillation, immediately push ADJUST and adjust the position (Ch. 5.6.3 Lift and move the patient).

7. How should the LUCAS device be positioned on the chest?

- a. The lower edge of the pressure pad inside the suction cup should be positioned immediately above the end of the sternum
- b. The lower edge of the suction cup should be positioned immediately above the end of the sternum**
- c. The lower edge of the suction cup should be positioned at a distance of two fingers from the lower end of the sternum
- d. The lower edge of the suction cup should be positioned at the nipple line of the patient

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 (Ch. 5.4 Adjustment and operation).

8. How should the suction cup be lowered to the patient's chest during adjustment?

- a. Use both hands and push as hard as you can until the pressure pad compresses the chest
- b. Use one hand (two fingers) and push down until the pressure pad touches the chest without compressing the chest**
- c. Use both hands to lower as far as the pressure pad will go
- d. Use one hand (two fingers) and push down making sure to leave a 2-inch space above the chest

Adjust the height of the suction cup to set the start position: a) make sure the LUCAS device is in the ADJUST mode, b) push the suction cup down with two fingers until the pressure pad touches the patient's chest without compressing the chest (Ch. 5.4 Adjustment and operation).

9. All of the statements are true regarding the battery in the LUCAS device, EXCEPT:

- a. Press the PAUSE button before removing the battery while compressions are ongoing
- b. the LUCAS device will remember the current settings and start position for 60 seconds after the battery is removed
- c. You must power off the LUCAS device before removing the battery
- d. The battery will last for approximately 45 minutes with a full charge

Changing the battery: Push PAUSE to temporarily stop the compressions. Pull the battery out and then upwards to remove it (Ch. 5.7.1 Change the battery).

If you change the battery quickly in 60 seconds or less, with the LUCAS device in the ON mode, the LUCAS device smart restart feature remembers the settings and start position. If the battery change takes more than 60 seconds, the LUCAS device does a self-test and you must adjust the start position again (Ch. 8.2 Battery replacement).

Initial battery runtime (nominal patient) 45 minutes (typical) (Ch. 9.5 Battery physical specifications).

10. All of the following steps are done when moving a patient on the LUCAS device, EXCEPT:

- a. Reassess placement of the suction cup frequently
- b. Lift the patient using the wrist straps (patient straps)
- c. Attach the stabilization strap
- d. Secure the patient's wrists in the patient straps

Caution - Do not use the patient straps to lift the patient. The straps are only to fixate the patient to the LUCAS device (Ch. 3.8 Operation)

True or false

- 11.** Bruising and soreness of the chest are common during the use of the LUCAS chest compression system. True False

The International Liaison Committee on Resuscitation (ILCOR) states these side effects of CPR: "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."¹

Apart from the above, skin abrasions, bruising and soreness of the chest are common during the use of the LUCAS chest compression system (Ch. 2.4 Side effects).

- 12.** A battery does not have to be inserted into the LUCAS device when it's running on AC power. True False

Caution - keep battery installed. The battery must always be installed for the LUCAS device to be able to operate, also when powered by the external power supply (Ch. 3.8 Operation).

- 13.** Always check to make sure the position of the suction cup is correct after defibrillation. True False

After defibrillation, make sure that the position of the suction cup is correct. If necessary, adjust the position (Ch. 5.8.1 Defibrillation)

- 14.** If the battery change takes more than 60 seconds, the LUCAS device does a self-test and you must adjust the start position again. True False

Note: If the battery change takes more than 60 seconds, the LUCAS device does a self-test and you must adjust the start position again (Ch. 5.7.1 Change the battery).

- 15.** A fully charged spare LUCAS device battery should always be in the carrying case. True False

To minimize interruptions, we recommend to always have a charged spare LUCAS device battery in the carrying case (Ch. 5.7.1 Change the battery).

- 16.** It's ok for the defibrillator electrodes and wires to be under the suction cup. True False

Position the defibrillator electrodes and wires so they are not under the suction cup. If there are already electrodes on the patient, make sure they are not under the suction cup. If they are, you must apply new electrodes (Ch. 3.8 Operation).

- 17.** The LUCAS device is intended for performing external cardiac compressions on adult patients in cardiac arrest. True False

Intended use, LUCAS chest compression system is to be used for performing external cardiac compressions on adult patients who have acute circulatory arrest defined as absence of spontaneous breathing and pulse, and loss of consciousness (Ch. 2.2 Intended use).

- 18.** The use of the LUCAS device is restricted by patient weight. True False

The use of the LUCAS device is not restricted by patient weight (Ch. 9.1 Patient parameters).

- 19.** An intermittent LED and alert signal alerts the rescuer before each ventilation pause. True False

ACTIVE (30:2). When you push this key, the LUCAS device performs 30 chest compressions and then temporarily stops for three seconds. During the stop, the operator can perform 2 ventilations. After the stop the cycle starts again. An intermittent LED in combination with an audible signal sequence will alert the operator before each ventilation pause (Ch. 2.7 User control panel).

- 20.** The LUCAS device should be used on every patient in cardiac arrest regardless of whether manual chest compressions would be performed. True False

The LUCAS device must only be used in cases where chest compressions are likely to help the patient (Ch. 2.2 Intended use).

Reference

1. 2005 ILCOR, Resuscitation 2005;67:195