PHYSIO CONTROL

Why choose LUCAS?

Clinical Overview

LUCAS® 2 CHEST COMPRESSION SYSTEM

1

LUCAS delivers effective and consistent chest compressions with a minimum of interruptions.

At the scene

On the move

In the hospital

Better than manual CPR...

LUCAS delivers compressions according to guidelines:

- > 5cm/2" depth
- > 100 compressions per minute
- equal time for compression / decompression
- full chest recoil

LUCAS has shown to **significantly improve quality and increase consistency of compressions** compared to manual CPR, both at the scene, during ambulance or helicopter transportation, as well as in the cath lab setting.[1-3]

...with less interruptions

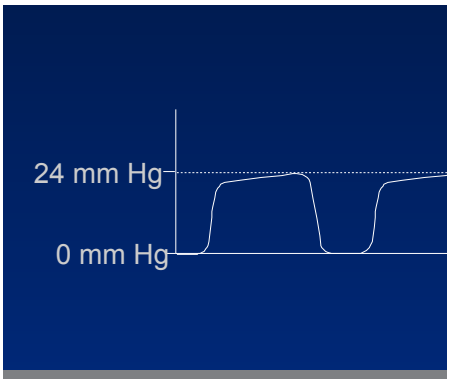
In prehospital use, at the scene and during transportation,[4, 5] LUCAS has shown to **significantly increase chest compression fractions** to around 90% compared to manual CPR.

2

LUCAS helps sustain blood circulation to the brain, the heart and vital organs.

Increased flow to the brain

>15mmHg threshold for ROSC



+20% $EtCO_2$

Increased flow to the brain

LUCAS has shown to **improve blood flow to the brain** compared to manual CPR in prehospital patients (60% increase as measured by Doppler).[6] These findings are consistent with results from experimental studies.[7] In addition, brain circulation as measured by cerebral oximetry during prolonged LUCAS compressions has shown values exceeding previously published values during manual CPR.[8]

>15mmHg threshold for ROSC

Both human[9, 10] and experimental[11, 12] studies have shown that LUCAS can **produce coronary perfusion pressures of over 15mmHg** during prolonged CPR, better than manual CPR.

+20% $EtCO_2$

LUCAS has shown to **significantly increase $EtCO_2$ levels**, compared to manual CPR in a prehospital, controlled clinical study[13] as well as in experimental studies.[7, 14]

3

LUCAS allows for lifesaving interventions.

The H's and T's

H
- HYPOXIA
- HYPOVOLEMIA
- HYDROGEN ION (ACIDOSIS)
- HYPO-/HYPERKALEMIA
- HYPOTHERMIA

T
- TOXINS
- TAMPONADE (CARDIAC)
- TENSION PNEUMOTHORAX
- THROMBOSIS, PULMONARY
- THROMBOSIS, CORONARY

Treatable causes of SCA[15]

Mechanical chest compressions during PCI

LUCAS during PCI

Treat the cause during prolonged CPR

The importance of diagnosing and treating the underlying cause (known as the H's and the T's) is fundamental to the management of all cardiac arrest rhythms.[15]

LUCAS has **helped save patients** whose cardiac arrest required treatment of the underlying cause, such as:

- coronary artery infarction treated with PCI during CPR [16-19]
- pulmonary emboli treated with prolonged CPR and thrombolysis [20-22]
- accidental hypothermia and/or submersion [23-28]
- electrolytical imbalances [29, 30]
- cardiac arrest due to anaphylactic shock[31]

Several more therapy-resistant cardiac arrests requiring long resuscitation efforts, many over an hour, have been reported with LUCAS and with **good neurological outcomes.**[32-36]

PCI during LUCAS chest compressions

Mechanical chest compressions have an **AHA class IIa** recommendation for use during emergency coronary intervention in the cath lab, based mainly on LUCAS references.[37]

4

LUCAS delivers safe chest compressions for patients and responders.

Safe for the patient

Improved safety during transit

Reduced fatigue and back pain

Safe for the patient

Autopsy studies have shown that LUCAS compressions are **safe for the patient**, with the same type of side-effects as for manual CPR. [38-41]

EMS and hospital organizations around the world have reported good, improved or neutral short term outcomes [42-48] as well as **improved neurological outcomes** [49] after implementing LUCAS.

Improved responder safety

Effective CPR is hard work, tiring and could cause injury to a rescuer's back. One study showed that ~60% of rescuers always experienced back discomfort when providing manual CPR. [50] LUCAS facilitates effective CPR and removes the issue of the "mattress effect". CPR related back injuries can be reduced among the staff.

In the case of transporting patients during ongoing CPR, rescuers can sit **safely belted** in ambulances **or harnessed** during take-off and landing in helicopters.

In the cath lab, CPR providers can stay out of the immediate X-ray field.

Referenced publications

The references in this document are a selection from over 100 publications available on the LUCAS Chest Compression System (as of March 2013).

If you want to see the comprehensive list, please ask your LUCAS sales representative for a copy of the LUCAS Reference List or the LUCAS Summarized Bibliography.

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