Air Liquide HEALTHCARE | CPV

What if you could enhance your CPR performance?

CPV CO_2

www.device.airliquidehealthcare.com

Dealing with cardio-respiratory arrest:

Adequate ventilation is needed to preserve circulation

Adequate ventilation is crucial when cardiopulmonary resuscitation (CPR) is prolonged. To meet CPR requirements, in line with international guidelines, ventilation should include high-quality Chest Compression (CC) and optimal oxygenation[1,2].

Optimal oxygenation is critical when CPR is prolonged. The use of tracheal intubation, well-established as the «gold standard» of care in emergency, is currently being debated[3]. Ventilation with mask interfaces is recommended, as long as the risks associated with bag valve ventilation are avoided[4,5].

Air Liquide Medical Systems' commitment

For 40 years, Air Liquide Medical Systems has committed its expertise to healthcare professionals and patients to create and provide innovative medical devices, notably in respiratory care (ventilators and patient interfaces for intensive care, emergency, transport and patients' home).

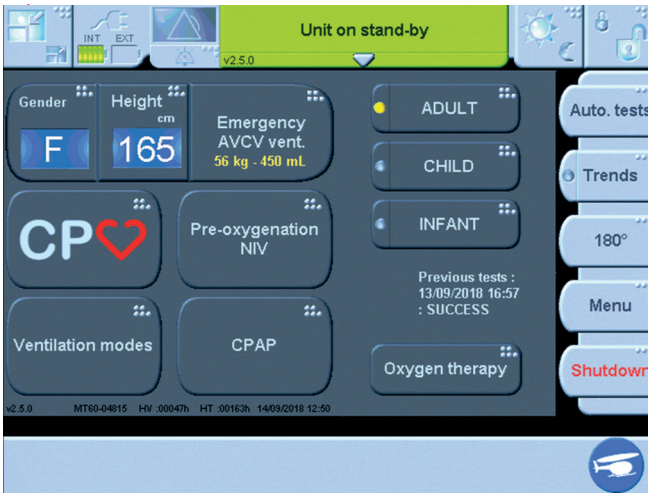
Air Liquide Medical Systems developed the CPV (Cardio Pulmonary Ventilation) solution. The solution is dedicated to managing cardiac arrest and can be used with the well-established emergency transport ventilator Monnal T60. **CPV offers technical innovations for each stage of cardiopulmonary resuscitation (CPR) that are specifically designed for rescuers.** The solution can be used by mobile intensive care units, during inter- and intra-hospital transports, and by specialized services.

1. European Resuscitation Council Guidelines for Resuscitation, 2015 ; 2. American Heart Association (AHA) Guidelines for CPR and ECC, 2015 ; 3. Jabre P et al. JAMA 2018 ; 4. Hasegawa K et al. JAMA 2013 ; 309 : 257–266 ; 5. Segal N et al. Resuscitation 2015 ; 86 : 62–66.

CPV
CARDIO PULMONARY VENTILATION

Developed with professional rescuers to meet their needs

- **ONE TOUCH start**
- **LIMITS the risks associated with bag valve ventilation**
- **FOSTERS continuous chest compressions**
- **LIMITS alarms**
- **GUIDES users to CPR**



CPV, the solution for a safe and protective ventilation

What is it?

CPV (Cardio Pulmonary Ventilation) is **an innovative solution in cardiac arrest management**. It is available as an option on the emergency transport ventilator Monnal T60.

Its goals are to easily perform ventilation and improve circulation at the same time.

It facilitates CPR management.

How to use it & how does it work?

The single button, displayed on the home screen, **immediately launches the CPV solution under preset settings in line with international guidelines**.

These settings can be modified according to clinical requirements, when necessary.

The CPV solution assists users from early stages with mask interfaces (to avoid the risks associated with the use of BAVU) to endotracheal intubation covering the different stages of cardiopulmonary resuscitation.

The CPV solution allows for an easy transition between the return of spontaneous circulation (ROSC) and CC, to facilitate ventilation management.

CPV: providing protective

Just a single touch to combine ventilation

Real-time performance feedback on chest compressions quality to guide you in the management of CPR

Chest compression quality is known to affect patient survival. The use of a real-time monitoring system to report on indicators of chest compression during CPR is an essential step forward.

The CPV solution, available as an option on the emergency transport ventilator Monnal T60, offers immediate support to deliver high quality CPR.

Essential parameters are detected in real time:
- fCC: chest compression frequency,
- % CC: CPR fraction or the percentage of time spent on continuous chest compressions,
- P-P: indicator of chest compression strength.

Ventilation fosters continuous chest compressions for optimal circulation

The CPV solution includes a specific algorithm for high and low pressures:
- magnifies intrathoracic positive pressure (ejection) during CCs
- magnifies negative intrathoracic pressure (venous return) generated by chest recoil.

The CPV solution guarantees sufficient oxygenation without interrupting chest compressions (CC) and maintains sufficient alveolar ventilation.

The innovative monitoring of $EtCO_2$ with CPV CO_2 is a method of assessing the quality and efficiency of CPR and limiting chest compression interruption, as recommended by the international guidelines.

ventilation for CPR

with high-quality chest compressions

Essential chest compression indicators to help you when performing CPR

Benefit to the rescuer

Frequency (fCC)

- Critical parameter reflecting CPR efficacy
- Helps **target and maintain optimal chest compression frequency**

- On screen: frequency of chest compressions per minute. Goal: 100/min

CPR fraction (% CC)

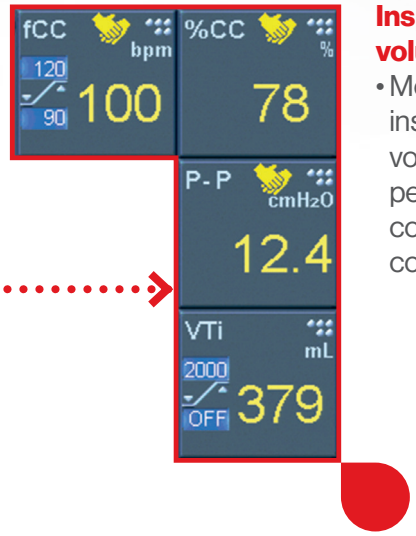
- Percentage of time spent on continuous chest compressions

- Encourages the rescuer to not interrupt CC Objective >60%, in case of prolonged CPR

Strength (P-P)

- Indicator of CC efficacy (indirectly shows the pressure transmitted to the thorax)
- Ensures consistent **compression amplitude**

- Encourages the rescuer to maintain the pressure intensity of compressions or ask a colleague to take over



Inspiratory tidal volume (VTi)

- Monitoring of inspiratory tidal volume while performing continuous chest compressions

Ventilation settings

- Two levels of Pressure delivered within a set Respiratory Rate and Time, combined with CCs

- Initial preset parameters in line with international guidelines:
  - FiO_2: 100% (50% for ROSC)
  - Frequency: 10 cycles/min
  - Duration of inspiration: 1 second

$EtCO_2$ like you've ne

The role of $EtCO_2$ (End-tidal CO_2) in the evaluation of the efficacy of CPR

Using the IRMA capnography probe with Monnal T60 activates CO_2 monitoring on CPV, named CPV CO_2.

Parameters linked to $EtCO_2$ that complete the CPV screen:

- **CO_2 (monitoring parameter),** the maximum $EtCO_2$ value measured between two ventilation cycles, which is also the closest value to alveolar CO_2
- **The CO_2 trend,** represented in the form of a green dotted line. This is the maximum CO_2 values averaged over the last two minutes of resuscitation. This trend is superimposed on the classic capnograph (yellow curve).

CPV CO_2, an advanced $EtCO_2$ monitoring solution that enables you to:

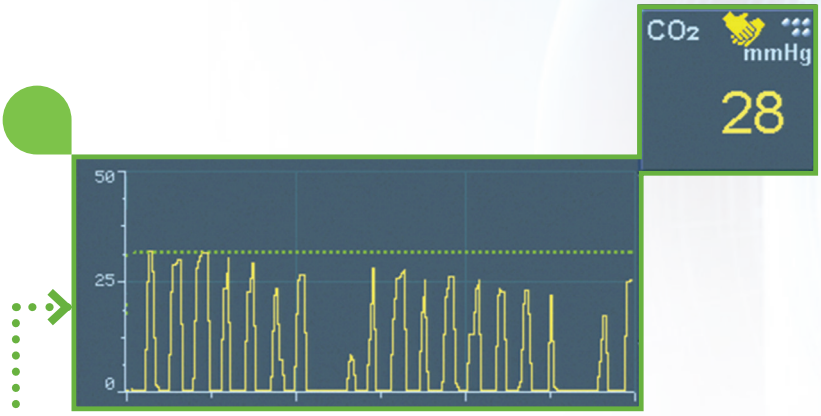
- Check the position of the endotracheal tube
- Assess the quality of chest compressions
- Monitor the respiratory rate during CPR in order to avoid hyperventilation
- Easily follow the trend of the measured CO_2 which is an effective prognostic factor[6]
- Detect a ROSC without interrupting CC[7]*

CPV CO_2

*if the capnograph (yellow curve) crosses the green CO_2 trend line, it is the sign of an increased production of CO_2. The rescuer can interrupt the CCs in order to take a pulse.

6. Touma et al. Resuscitation 2013
7. Savastano et al. Resuscitation 2017

ver seen before!



Monitoring of expired CO_2 (CO_2)
Representation of circulatory efficiency

- Indicator of proper intubation and effectiveness of CPR

CPV CO_2
Gradual and effective CO_2 feedback during CPR

- Provides the rescuer with a prognostic factor of ROSC. When the capnography curve (yellow) crosses the trend line (green), it is an indication that the rescuer can interrupt the CC and check for the occurrence of ROSC.

.... Benefit to the rescuer

CPV helps you focus your attention and efforts on patient outcomes.
CPV guides you in CPR according to international guidelines.

- You are continuously informed of the benefit of your actions and are guided to optimize CPR throughout its phases.
- The protective ventilation assured by CPV contributes to an improved oxygenation and optimization of the patient haemodynamics.
- Real-time and trend monitoring of $EtCO_2$ with CPV CO_2 is a method of assessing the effectiveness of CPR on the patient.

Contact

AIR LIQUIDE MEDICAL SYSTEMS
Parc de Haute Technologie
6, rue Georges Besse
92182 Antony Cedex

Phone: +33 (0)1 40 96 66 00
Customer service:
+33 179 51 7001

CE 0459

infoCPV@airliquide.com
www.device.airliquidehealthcare.com

Air Liquide HEALTHCARE

Air Liquide Healthcare is a world leader in medical gases, home healthcare, hygiene products and healthcare specialty ingredients. It aims to provide customers in the continuum of care from hospital to home with medical products, specialty ingredients and services that contribute to protecting vulnerable lives.

Please read the user manual carefully. Manufactured by Air Liquide Medical Systems SA. Class IIb medical device. CE 0459

The recycling of electrical equipment preserves natural resources and avoids any risk of pollution. To this end, Air Liquide Medical Systems fulfills its end-of-life obligations for the electro-medical devices that we place on the market by adhering to and financing the recycling network of Recylum. Recylum takes back from our customers our electro-medical devices at the end of their life.