PHYSIO CONTROL

LIFEPAK® 15 MONITOR/DEFIBRILLATOR

The Only Monitor with Four Key Respiratory Parameters

The LIFEPAK 15 monitor/defibrillator brings to market the next generation of monitoring solutions

The LIFEPAK 15 monitor/defibrillator has built-in Microstream® and Rainbow® SET® technology that allows continuous monitoring of four key respiratory parameters: End-tidal carbon dioxide ($EtCO_2$), pulse oximetry ($Sp0_2$), carbon monoxide (SpCO) and methemoglobin (SpMet). The new color display and large screen allows for easy viewing. Durable and reliable, the *15* is built for the toughest environments, and offers the number one choice for respiratory monitoring.

We made it our job to make your job easier than ever before with innovative diagnostic and respiratory monitoring capabilities.

Physio-Control Introduces the First Monitor/Defibrillator with Rainbow SET Technology

Superior Technology

Masimo Rainbow SET Technology is built into the LIFEPAK 15 monitor/defibrillator, providing superior oximetry performance in a market that frequently encounters motion artifact and low perfusion states in critically ill or injured patients. The *15* is the only monitor/defibrillator on the market that offers noninvasive diagnostic capabilities of SpCO, SpMet and SpO_2 with the convenience of one finger sensor. With the *15* you don't have the inconvenience of having to carry an extra battery-operated handheld device and you don't have to worry about missed cases of carbon monoxide poisoning and methemoglobinemia as these parameters are constantly monitored in the background when measuring SpO_2.

Why Rainbow?

- Rainbow SET is an expandable platform for noninvasive monitoring of blood parameters
- Masimo SET pulse oximetry is proven accurate during motion and low perfusion in more than 100 independent clinical studies[1,2]

Why Use Rainbow in EMS and Fire?

- To quickly and inexpensively identify CO poisoning and methemoglobinemia
- To reduce risk of misdiagnosing unsuspected CO poisoning or life-threatening methemoglobinemia, which may masquerade as flu or fatigue
- To eliminate the need to carry an extra module, the technology is built in to the *15*

For Firefighters and Fire Scenes:

- To provide fast, accurate screening of firefighters during or after fire ground operations or during rehab, as recommended by NFPA 1584 (2008 standards)
- To quickly screen civilians at fire scenes to determine need for treatment and transport

Why Use Rainbow in the Hospital?

- Reduce costs: Other diagnostic techniques for monitoring CO and methemoglobin require expensive, timely and invasive blood draws
- Confirm and quantify efficacy of treatment with continuous monitoring
- Quickly and inexpensively aid in differential diagnosis for vague symptoms such as headache, nausea and fatigue
- Monitor met levels during administration of local anesthesia such as "caines" and during nitric oxide therapy used to treat newborns with hypoxic respiratory failure

Training and Educational Support:

- Study manuals for pulse oximetry, CO and methemoglobin monitoring
- Fire and EMS training DVDs
- Video training streaming on www.firerehab.com
- Clinical studies

Please contact your local sales representative for a full list of educational materials.

Clinically Innovative

Noninvasive measurement of carbon monoxide and methemoglobin in the blood

The noninvasive measurement of carboxyhemoglobin is referred to as SpCO and the noninvasive measurement of methemoglobin is referred to as SpMet.

SpCO

Carbon monoxide (CO) is a colorless, odorless and tasteless gas given off by the incomplete combustion of carbon containing fuels. CO is released from many sources including fires, heaters, car and boat exhaust, cigarettes and gas-powered generators. CO binds to hemoglobin, the oxygen carrying molecule in the blood, with an affinity of approximately 250 times that of oxygen. This affinity prevents oxygen from binding to hemoglobin and thus oxygen is not available to the tissues of the body. The heart and brain are especially vulnerable.[3]

In the past, detection of CO poisoning has been primarily limited to expensive and invasive blood draws. Blood draws are not ordered in the field and remain a painful and costly procedure in the hospial. CO poisoning is the number one cause of poisoning deaths in industrialized countries and often dubbed the "silent killer." The LIFEPAK 15 monitor/defibrillator alerts the rescuer if the SpCO levels reach greater than 10%, aiding in treatment and transport decisions, helping to improve patient outcomes.

SpMet

Methemoglobin is an abnormal form of hemoglobin produced by the oxidation of ferrous iron that does not have the capacity to carry oxygen. This can be caused by commonly prescribed drugs used in the hospital or outpatient setting, such as nitrates and the 'caines'. Cetacaine®, used in intubation, is a common cause of methemoglobinemia. Excessive amounts of methemoglobin leads to methemoglobenemia which causes lack of oxygen transport to the tissues of the body and can lead to death. High levels of methemoglobin result in hypoxemia to the body tissues and can manifest itself in cardiovascular and central nervous system problems. The LIFEPAK 15 monitor/defibrillator alerts rescuers if methemoglobin levels are above normal to further help with treatment and transport decisions.

Physio-Control Continues to Offer Patented Oridion Microstream Technology

The LIFEPAK 15 monitor/defibrillator offers you unparalleled advantages:

- Continuous $EtCO_2$ waveform
- Auto-scale to allow easy viewing for different patient situations
  - 0–20mmHg for hyperventilation, low cardiac output and cardiac arrest
  - 0–50mmHg for general patient monitoring
  - 0–100mmHg for high $EtCO_2$ values such as patients with COPD
- A large full color screen for clear viewing

Microstream Technology:

Patented Microstream technology from Oridion is built into the LIFEPAK 15 monitor/defibrillator and offers many advantages over other mainstream and sidestream capnography technologies:

Microstream advantages over other industry technologies:

- Easy set-up: simply insert the FilterLine® into the device and connect to the patient
- The FilterLine and Smart Capnoline® easily connect to the front of the device for full accessibility, regardless of carrying cases
- No lengthy warm up time: full accuracy at first reading
- No need to compensate for oxygen administration during monitoring
- Ability to monitor both intubated and non-intubated patients using the same module
- Accurate readings in neonates with low tidal volumes
- Automatic calibration
- No extra modules to carry around
- No costly sensors or cables to replace

Training and Educational Support:

Physio-Control and Oridion offer world-class educational programs to train medical professionals in the use of Microstream $EtCO_2$ monitoring technology. These programs can be tailored to meet your organization's specific needs.

Training options include:

- Live web cast training via the internet with expert capnography educators
- On-site instructor and provider training classes
- Computer based capnography training (CD)
- Trainers Resource Kit—*Microstream® Capnography for EMS: A Trainer's Guide*—everything you need to begin a successful implementation into your organization

Benefits of Capnography

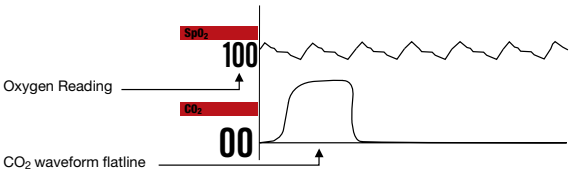
The numerous benefits and various applications of capnography are quickly being acknowledged across the world. Capnography is an objective monitoring tool essential for quickly determining ventilatory status.

- Capnography can be used to assess patients with respiratory diseases such as chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and asthma to help diagnose and assess treatment.
- The addition of a capnograph may anticipate a patient's oxygen desaturation by warning of a decrease in respiratory rate and subsequent rise in end-tidal carbon dioxide.
- In the OR setting, these monitors together were judged to potentially prevent 93% of respiratory mishaps, such as a misplaced or dislodged endo-tracheal tube.[4]
- Capnography can be used to verify the effectiveness resuscitation efforts, during bag ventilation and chest compressions, as well as assessing adequacy of ventilation during medication administration or procedural sedation.
- Visual patient inspection is not enough. Capnography monitoring is the only true way to tell if a person is adequately breathing breath to breath. When paired with SpO_2, which provides information providing adequate perfusion and general hypoxia, capnography can provide a more complete picture of ventilatory status.

Try this on yourself

Measure SpO_2 and $EtCO_2$ readings after holding your breath for at least 30 sec to simulate apnea

- Which parameter tells you first about the apnea?
- Now add oxygen. What happens?



- Worldwide, many EMS systems have mandated capnography as a standard of care for verifying proper endotracheal tube (ETT) placement.

REFERENCES AND WEBSITES

1 RAD-57 signal extraction pulse co-oximeter. 2007 Masimo Corp.

2 Masimo Literature 4054C-7419-0805

3 Bledsoe, Bryan 2007. Carbon Monoxide Poisoning. Masimo Corp.

4 Tinker J, Dull D, Caplan RA, et al. Role of monitoring devices in prevention of anesthetic mishaps: a closed claims analysis. *Anesthesiology* 1989; 71: 541-6.

All statements and information in this brochure are valid as of March 2009.

For further information, please contact your sales representative at 1.800.442.1142 or visit our website at www.physio-control.com.

Physio-Control, Inc.
11811 Willows Road NE
P. O. Box 97006
Redmond, WA 98073-9706 USA
Tel 425 867 4000
Fax 425 867 4121
www.physio-control.com

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