

 $SpO_2$  Measurements

# Measure with confidence

Pulse oximetry in Philips IntelliVue patient monitors

PHILIPS

# Pulse oximetry for **demanding situations**

Philips pulse oximetry comes into its own when it becomes difficult to obtain a reliable measurement. A patient in anesthesia recovery, for example, could be poorly perfused. Or you might be faced with a measurement site with plenty of movement, if your patient is a neonate or in transport. It's why we offer our patented FAST SpO<sub>2</sub> algorithm on IntelliVue patient monitors. It's designed to reliably distinguish the physiological signal from artifact. You can use FAST SpO<sub>2</sub>, to improve measurement accuracy and reduce the number of SpO<sub>2</sub> false alarms<sup>1</sup>.

# **FAST SpO<sub>2</sub>:** Pulse oximetry with steady signal



Measuring SpO, on IntelliVue patient monitors: A variety of numerics for clinical assessment

Our patented FAST SpO<sub>2</sub> (Fourier Artifact Suppression Technology) algorithm increases measurement accuracy<sup>1</sup> and significantly reduces the number of false alarms<sup>2</sup>, an achievement proven in laboratory and clinical studies. It derives SpO<sub>2</sub> using the absorptions of red and infrared light. But instead of examining how signal strength changes over time, the algorithm examines the strength of clinically relevant frequency components of the signals.

You can gain clinical insight through

- over-saturation/desaturation alarms that highlight acute changes in patient status
- configurable alarm delay times that suppress non-actionable alarm conditions
- real-time plethysmography (waveform) that reflects signal quality.

These features are accompanied by helpful tools such as alarm delay, smart alarm delay, averaging and trending (graphical, tabular, horizon and histogram), and can be combined with other key parameters using Event Surveillance.



Philips SpO<sub>2</sub> measurement modules work with a variety of IntelliVue patient monitors.



FAST SpO<sub>2</sub> is built into many other Philips monitors.





FAST SpO<sub>2</sub> is available on our multi measurement modules.

## Meeting needs in the NICU



## SpO<sub>2</sub>: A key parameter in neonatal surveillance

Too little and too much oxygen are both dangerous for neonates – particularly those born prematurely. IntelliVue patient monitors come with clinical decision support tools that can contribute to the information you need to make confident decisions during neonatal surveillance.

## High resolution trends (OxyCRG)

A special OxyCRG screen for neonatal surveillance shows you compressed, continuous trends of the neonate's beatto-beat heart rate, respiratory waveform, and oxygenation status. Taken at a resolution of four samples per second, this screen gives you a comprehensive picture of the neonate's condition over the last six minutes, making it easy to identify and view the beginning of events such as bradycardia and apnea.

### Histogram trends

A histogram – displayed in an embedded screen element, or viewed in a separate pop-up window – gives you an immediate, graphical impression of the frequency of distribution of the measured SpO<sub>2</sub> values over a period. This may be useful in evaluating pre-term infants in acute care phases, as well as assisting in discharge readiness and planning. Histograms may also support you in optimizing oxygen and ventilator settings, and assessing your patient's response to administered medication.

## Dual SpO<sub>2</sub> in the NICU

Dual SpO, can be especially useful in the NICU. You can, for example, simultaneously compare SpO<sub>2</sub> pre- and post-ductal, which may differ by as much as 25%. Dual SpO, can be configured on IntelliVue patient monitor models MP40 and higher, and MX500 and higher, using the SpO<sub>2</sub> measurement from two modules, or from a Multi-Measurement Server and a module. Dual SpO<sub>3</sub> can work with combinations of Philips FAST SpO, and other SpO, technologies, however, we recommend using the same technology, cables, and sensors for both measurements. Differences in manufacturers' algorithms may lead to additional variations in SpO, values.

## Neonatal Event Review (NER)

The Neonatal Event Review on our IntelliVue patient monitors correlates apnea, bradycardia, and drops in oxygenation. The number, severity, and distribution of such events can help you identify underlying problems and prescribe an appropriate course of treatment.

## Car safety seat Assessment Record (CAR)

It can also be an easy way to implement a CAR Test – recommended in some countries, prior to hospital discharge for all pre-term babies under 37 weeks gestation or 2500 grams birth weight. The CAR on IntelliVue monitors uses the NER to capture bradycardia, apnea and desaturation events for a selected period of time, using a specially designed screen. It provides a three page report with the neonatal event review and event details, including the SpO<sub>2</sub> histogram.

## Compatibility

The right SpO<sub>2</sub> solution is one outstanding fit for your needs, such as your protocols as well as patient population and acuity. There are also other needs to consider, such as streamlining workflows, managing costs, and, ultimately your desire to improve patient care. When it comes to streamlining workflows and keeping costs in check, we've made the FAST SpO<sub>2</sub> algorithm compatible with Philips and non-Philips sensors. This provides you with flexibility that lets you change monitors without changing sensors, for example, thus protecting your investment. We work closely with you, dedicated to supporting your need for clinical excellence in physiological measurements with the right SpO<sub>2</sub> solution for your situation – now and in the future.

Philips FAST SpO<sub>2</sub> technology is available within following Philips monitors and devices:

- All Philips IntelliVue Patient Monitors MP2 and higher, MX400 and higher
- All Philips Multi Measurement Servers X1 and X2
- Philips Pulse Oximetry Module
- All Philips Avalon Fetal and Maternal Monitors FM20 and higher
- All Philips HeartStart Monitor/Defibrillators

In addition to Philips SpO<sub>2</sub> sensors, Philips FAST SpO<sub>2</sub> devices are compatible with sensors from other manufacturers. Please check with your sales representative for options.

## A choice of sensors, the same assura



Every patient and clinical challenge is unique. To help you choose the sensor best suited to your needs, we designed FAST-SpO<sub>2</sub> to support a wide array of sensors from various manufacturers. This includes Philips reusable and single-patient SpO<sub>2</sub> sensors as well as many sensors from Nellcor<sup>TM3</sup> and Masimo<sup>®3</sup>.

To support your care for patients of different sizes – and measure at different sites such as a finger, ear, foot, and toe, we offer a wide range of extra-durable pulse oximetry sensors as well as extension and adapter cables. And what about patient comfort? Except for the hard-shell of the M1196T for spot-check environments, all our sensors are soft, flexible, and manufactured without latex for sensitive patients. They also fit securely without applying pressure.

#### Pulse oximetry sensors and cables

Philips offers a portfolio of pulse oximetry sensors for a variety of applications, appropriate for use across care settings from pre-hospital to emergency room; from labor and delivery to the operating room and on to post-anesthesia care; from adult and cardiac to pediatric and neonatal intensive care units. Philips sensors come in a range of styles, all characterized by their durability and cost-effectiveness.

You can buy any of these sensors as one-off purchases, or you can combine the purchase of your equipment and sensors for added savings and flexibility.

The supplies you choose have a valuable role to play in some of your biggest challenges. Go to **www.philips.com/ mysupplies** to find the information you need and get in touch with your sales representative. If you're in the US, order with ease from **www.philips.com/healthcarestore**.

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### **Reusable sensors**

Made of durable materials, Philips reusable sensors are built to withstand repeated cleaning and disinfection for a warranted life of up to 18 months.

- Silicone-glove sensors are available in sizes appropriate for adult, pediatric and even infant patients, and are preferred for continuous use over conventional clip sensors.
- Neonatal silicone sensors are available in a durable wrap style.
- Poorly-perfused or centralizing patients benefit from a sensor that measures oxygenation on the ear lobe, a site that remains perfused when extremities are shutting down.

#### Single-patient sensors

Philips single-patient sensors outlast conventional disposable adhesive sensors, and are preferred by nurses by over 3 to 1, according to a recent study<sup>4</sup> Philips single-patient wrap sensors come in adhesive-free and "adhesive-light" styles, secured with Velcro<sup>™</sup>. They are gentle on sensitive skin, and provide customary Philips accuracy, comfort and value. An alternate clip-style plastic sensor for adult and pediatric patients increases expected durability, making them appropriate even for long-stay patients. This clip sensor has also been shown to last twice as long as competitive, single-patient sensors, thus halving the total cost of use<sup>3</sup>.

All of these single-patient sensors are designed to support hospitals' infection-control efforts. They are designed to last an entire patient stay, helping to reduce utilization. Then you simply dispose of them when your patient leaves the hospital.



**M1191T** Reusable glove sensor for adult finger (also available: M1191B, M1191BL)





**M1192A** Reusable glove sensor for pediatric or small adult finger



**M1194A** Reusable sensor for adult or pediatric ear



M1193A Reusable wrap sensor for

neonatal hand/foot (also available:



M1195A Reusable glove sensor for infant finger



**M1131A** Single-patient wrap sensor for adult or pediatric finger



**M1133A** Single-patient wrap sensor for adult finger, infant big toe/thumb, or neonate foot/hand

Philips SpO<sub>2</sub> sensors can be also used in Philips products like our IntelliVue cableless measurement devices, telemetry products, Goldway monitors, Dixtal monitors, SEM monitors, and Home Healthcare solutions.



**M1196T** Reusable clip sensor for adult finger (also available: M1196A, M1196S)



**M1132A** Single-patient wrap sensor for infant finger



**M1134A** Single-patient, adhesive-free wrap sensor for adult finger, infant big toe/thumb, or neonate foot/hand

### Measurement technologies for today and tomorrow

When you work with us, you'll experience our commitment to providing best-in-class standard clinical measurements as well as innovative measurements to support clinicians' decisions.

We create and deliver innovation that matters to you by:

- maintaining and advancing the performance of existing, widely used standard-of-care measurements
- providing interfaces to more than 100 third-party specialty measurement devices through our IntelliBridge module
- investing heavily in research, development, and clinical validation of new parameters, algorithms, and sensors
- working with strategic partners to integrate next-generation
  measurements and technologies

- <sup>1</sup> Laboratory and clinical study results available on request, including Giuliano, K, Higgins, T, New-Generation Pulse Oximetry in the Care of Critically Ill Patients; American Journal of Critical Care, January 2005, Volume 14 No. 1
- <sup>2</sup> Lutter, N, False alarm rates of three third-generation pulse oximeters in PACU, ICU and IABP patients.; Anesthesia and analgesia, (2002 Jan) Vol. 94, No. 1 Suppl, pp. S69-75.
- <sup>3</sup> Please ask your Philips representative for the latest list of validated sensors.
- <sup>4</sup> Johnson, M., Olson, A. Durability of Two Disposable Pulse Oximeter Sensor Designs. Study commissioned by Philips Healthcare.
- University of Colorado Hospital, Anschutz Medical Campus, Aurora, USA.

Nellcor is a trademark of a Covidien company. Masimo is a registered trademark of Masimo Corporation.

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