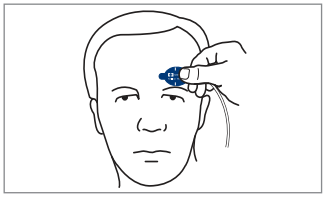
APPLICATION **GUIDE**

For Nellcor™ Forehead SpO_2 Sensor with OxiMax™ Technology

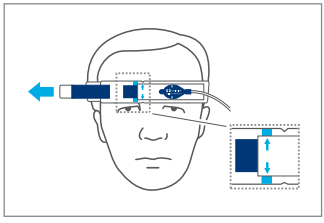
To ensure reliable, accurate pulse oximetry readings from Nellcor™ forehead SpO_2 sensors, always remember to:

1 **Think PIRATE**
(Place It Right Above The Eye)

- Prepare the site with alcohol
- Remove the adhesive backing strip



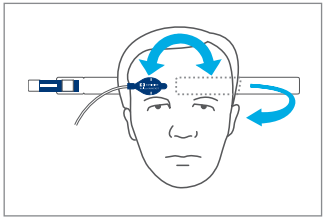
2 **Always use the Nellcor™ forehead SpO_2 headband positioned over the sensor and adjust the tension to align green arrows with indicator**



3 **Alternate the sensor site from above one eye to the other every 12 hours**

- Prepare the site with alcohol
- Change the adhesive layer when necessary
- Reapply the headband

Because individual skin condition affects the ability of the skin to tolerate sensor placement, with some patients it may be necessary to change the sensor site more frequently.



The Nellcor™ OxiMax™ forehead SpO_2 sensor is more closely aligned to arterial blood gas (ABG) draws than digit sensors.*[1-3]

Medtronic
Further, Together

Forehead sensors detect hypoxemic events faster than other sensors[4-6]

- The forehead of a healthy adult exposed to cold temperatures stays warm while the fingers, ears and nose lose heat (Figure 1)
- Cold causes vasoconstriction and low peripheral perfusion
- Forehead SpO_2 measurements are more accurate than finger SpO_2 measurements in critically ill patients[7]

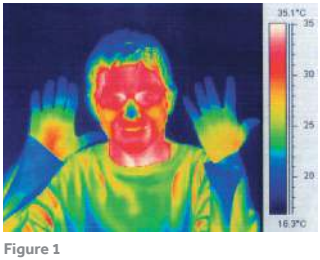
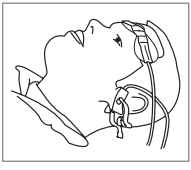
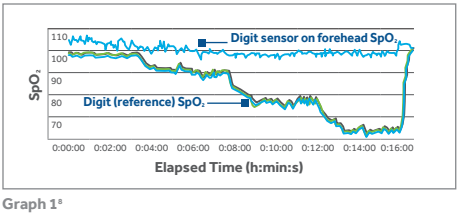


Figure 1

Do not use digit sensors on a patient's head or ears

When used on foreheads, digit sensors give inaccurate, often overestimated SpO_2 levels (Graph 1)





Graph 1[8]

Nellcor™ pulse oximetry with OxiMax™ technology provides accurate measurement of SpO_2, even in some of the most challenging patients.[9]

*Comparison between the Nellcor™ N595 monitor with the Nellcor™ OxiMax™forehead SpO2 sensor, Nellcor™ MAXN sensor, Nellcor™ MAXA

1. Fernandez M, Burns K, Calhoun B, George S, Martin B, Weaver C. Evaluation of a new pulse oximeter sensor. Am J Crit Care. 2007;16(2):146-152.
2. Bebout DE, Mannheimer PD, Asbagh NA. Detection of hypoxemia during peripheral vasoconstriction at the radial artery and various pulse oximeter sensor sites. Critical Care Med. 2003;31(2):A72 [Abstract].
3. Berkenbosch JW, Tobias JD. Comparison of a new forehead reflectance pulse oximeter sensor with a conventional digit sensor in pediatric patients. Respir Care. 2006;51(7):726-731.
4. Bebout DE, Mannheimer PD, Wun C-C. Site-dependent differences in the time to detect changes in saturation during low perfusion. [Abstract] *Crit Care Med*. 2001;29(12):A115.
5. MacLeod DB, Cortinez LI, Keifer JC, et al. The desaturation response time of finger pulse oximeters during mild hypothermia. *Anaesthesia*. 2005;60(1):65-71.
6. Fernandez M. Evaluation of a new pulse oximeter sensor in patients with low cardiac outputs. *Am J Crit Care*. 2005;14(3):264.
7. Nesseler N, Fre´nel JV, Launey Y, Morcet J, Malle´dant Y, Seguin P. Pulse oximetry and high-dose vasopressors: a comparison between forehead reflectance and finger transmission sensors. *Intensive Care Med*. 2012;38(10):1718-1722.
8. Internal data on file.
9. Sponsored study, Pulse oximetry—performance during severe signal interference. ClinicalTrials.gov identifier: NCT01720355. First received October 3, 2012. Last updated February 12, 2013. Available at https://clinicaltrials.gov.

04/2016–13-PM-0265(1)–[WF#853580]

6135 Gunbarrel Avenue
Boulder, CO 80301
800.635.5267
medtronic.com/covidien

Medtronic