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**Influence of ambient light on cerebral oximeters**

Editor—Cerebral oximetry has become a standard monitoring in cardiac surgery and some studies have shown its usefulness in non-cardiac surgery.\(^1\)\(^2\) In the future, it may become widely used for routine monitoring. There are two different technologies used, absolute and relative oximetry. Absolute oximetry uses fiberoptic laser light of four different wavelengths (690, 780, 805, and 850 nm; ForeSight, Casmed medical, CT, USA), and relative oximeters emit 2 (730, 810 nm; Invos cerebral oximeter, Somanetics Corporation, MI, USA) or three (730, 810, and 880 nm; Regional Oximetry system 7600, Nonin medical Inc., MN, USA) different wavelengths, using LED. The proponents of absolute oximeters advocate that no baseline calibration is needed, hence any change during surgery does not have to be related to the baseline values, and that their monitoring cannot be influenced by ambient light.

In order to test the hypothesis that absolute oximeters are less affected by ambient light, we tested three different cerebral oximeters (Foresight, Invos cerebral oximeter, and Nonin regional oximetry system) in the laboratory, simulating OR conditions with ambient light of different direction and intensity. We placed all three devices on a large table, with the only light source being natural light on an overcast day entering a rectangular room from only one side. We then placed all three monitors next to each other, making sure that all sensors would receive light of the same intensity and direction. All monitors were switched on and the sensors exposed to ambient light; by shifting the sensors around, we tried to create different ambient light angles and shades.

The Foresight monitoring did not appear to be influenced by ambient light, irrespective of the angles, shades, light intensity or direction, and showed no value and the message ‘ambient light, no reading’. The Nonin monitor appeared to be influenced by ambient light, especially with partial covering of the sensor when increasingly low saturation values were displayed without any warning signal to indicate ambient light or artifact. When the sensors were placed in direct light, very high saturation numbers could be achieved (Fig. 1a). The Invos showed a bit more independence from ambient light than the Nonin; however, even without attaching the sensors to anything, saturation numbers in the ‘normal’ range could be achieved (Fig. 1a).

The results of the laboratory testing could be reproduced in a simulated OR setup with dimmed light—similar to the ambient lighting used for endoscopic surgery. The clinical importance of the influence of ambient light on cerebral oximeter devices should not be underestimated: one can easily imagine a clinical scenario of a patient undergoing surgery in dimmed light conditions (e.g. endoscopic surgery), where the adhesive sensors partially lose contact with the patient’s skin and are thus exposed to ambient light. Relative cerebral oximeter values such as created in the laboratory setting could be easily occurring in this scenario. At present, absolute oximetry is not influenced by ambient light, relative oximetry is. Further refinement is required to make sure that relative oximeters reliably detect artifact values created by ambient light.

![Fig 1](image-url) (a) Direct artificial light on the sensor of the Regional oximetry system 7600 (Nonin Inc., USA) creates very high values. (b) Both relative oximeters, the Regional oximetry system 7600 (Nonin Inc.) and the Invos cerebral oximeter (Somanetics), show aberrant values when sensors are exposed to ambient light.
Conflict of interest
None declared.

C. Zaouter*
E. Arbeid
Pisa, Italy
*E-mail: cedrickzaouter@gmail.com

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‘Win with the chin’, ‘sniffing the morning air’, or ‘last orders at the bar’?

Editor—I read with interest both the paper by Brindley and colleagues1 and the subsequent correspondence with Dr Bone.2 My experience in teaching novices corresponds to Dr Brindley’s. I too feel that the description of sniffing the morning air is a difficult analogy and enjoyed the description of ‘win with the chin’.
In my practice, I suggest that novices imagine that they are sipping a full pint of beer, taking great care not to spill any. This analogy not only easily understood and remembered by most, but more importantly, puts the patient in the correct position.

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None declared.

M. C. Dickinson*
Guildford, UK
*E-mail: matthew.dickinson@gmail.com

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2 Bone EG. No need to ‘win with the chin’ keep ‘sniffing the morning air’. Br J Anaesth 2010; 105: 93–4
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