sured peak end-expiratory CO₂ concentration remains basically unchanged.

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Reusing the Nellcor Pulse Oximeter Probe: Is it Worth the Savings?

To the Editor:—We wish to point out a potential source of error when using the pulse oximeter. A Nellcor pulse oximeter with oxisorb Model N-25 was used on a 2-week-old term neonate (weight = 3.0 kg) for an urgent pyloromyotomy. The probe, which looks like a bandage, contains two low-intensity light emitting diodes and a photocell detector. These optical components are located on the adhesive side of the probe, and are covered with transparent material. Even though this particular probe is recommended for single patient use, in a cost-conservation effort, we had reused the probe several times.

During preoxygenation, prior to a rapid sequence induction, with \( F_{102} = 1.0 \), saturation as indicated by the pulse oximeter \( (S_{po2}) \) was 99%, and the pulse rate sensed by the oximeter correlated with that shown on the electrocardiographic monitor. After intubation, \( S_{po2} \) continued to register 99% and auscultated breath sounds were equal. \( F_{102} \) was decreased using an air/oxygen mixture to maintain an \( S_{po2} \) of 95–96% and the surgery was started. After 10 min, the oximeter indicated an \( S_{po2} \) of 75%, with good signal detection. A quick check of the patient’s breath sounds, endotracheal tube placement, and \( F_{102} \) showed these to be unchanged; the \( F_{102} \) was increased to 1.0 with only a minimal increase in \( S_{po2} \). A new oximeter probe was attached to the patient’s other extremity. Oxygen saturation indicated by this probe with an \( F_{102} \) of 1.0 was 100%. The \( F_{102} \) was again decreased to maintain \( S_{po2} \) at 95%, and the case was completed uneventfully. Upon emergence, with the \( F_{102} = 1.0 \), the reused probe was again attached to the oximeter and gave readings of 80–85%; changing to the new probe, \( S_{po2} \) was 100%.

On examining the reused probe, it was noted that some of the adhesive from the bandage-like part of the probe had partially covered the transparent windows over the optical components (fig. 1). Since pulse oximetry functions by positioning a pulsating arterial vascular bed between a two-wavelength light source and a detector, an opacity over the light source will effectively decrease the amount of light delivered and, consequently, the amount detected. Such an instrument error caused us needless worry over more ominous causes of desaturation, and, in the case of the neonate, the resultant attempt to increase \( S_{po2} \) by increasing \( F_{102} \) could have unnecessarily predisposed the patient to the development of retrolental fibroplasia.

While cost containment is an important consideration, it would seem prudent, for more reliable patient monitoring, not to reuse this type of probe.

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