Clinical Usefulness of New-Generation Pulse Oximetry in the Paediatric Cardiac Surgery Setting

Objectives
Arterial oxygen saturation (SaO(2)) monitoring using pulse oximeter (SpO(2)) is mandatory in the intensive care unit. The aim was to assess bias and precision of new (SpO(2)ng) and old (SpO(2)og) pulse oximeter technologies in the postoperative period following pediatric cardiac surgery in cyanotic children.

Study Design
Prospective, monocentric.

Patients and Methods
Ten patients (7 days to 53 months old) were studied in the postoperative period following palliative cardiac surgery. SaO(2), SpO(2)og, and SpO(2)ng were obtained every 4 hours. SaO(2) of arterial blood sample was obtained from an intra-arterial catheter located in the radial artery, on the same side as the oximeters. Bias and precision were assessed using Bland-Altman analysis.

Results
We obtained 136 SaO(2) determinations. Mean SaO(2) was 76+/-15%. SpO(2)og was significantly different from SaO(2), while SpO(2)ng was not different from SaO(2). In 21 (15%) cases, SpO(2)og was not available whereas SpO(2)ng was available in 136 (100%) cases. In the remaining 115 cases, SpO(2)ng's precision was significantly better than SpO(2)og's precision.

Discussion
SpO(2)ng is more accurate and more reliable than SpO(2)og for SaO(2) monitoring in the postoperative period following pediatric cardiac surgery in cyanotic children.