

**TITLE:** OXYGEN ADMINISTRATION PREVENTS HYPOXEMIA DURING POSTOPERATIVE TRANSPORT IN CHILDREN

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**Introduction:** Arterial oxygen desaturation frequently occurs in healthy adults and children during transport from the operating room (OR) to the post-anesthetic recovery room (PARR).<sup>1,2</sup> Monitoring of oxygen saturation (SaO<sub>2</sub>) and/or administration of supplemental oxygen have been recommended for all pediatric patients in the recovery room.<sup>3</sup> This study prospectively examines the effectiveness of oxygen supplementation in the prevention of oxygen desaturation during and immediately after post-operative transport following routine surgery in pediatric patients.

**Method:** The study was approved by the Institutional Review Board and an information sheet was available for parents. A total of 200 ASA PS I or II patients (2 mos-9 yrs) scheduled for elective surgery were studied. Patients undergoing bronchoscopy or thoracotomy or those with a history of cardiovascular or pulmonary disease, URI within two weeks of surgery and/or incidental hypothermia were excluded. Premedication was not used; and anesthetic management was not stipulated. At the end of surgery, 100% oxygen was administered by mask, and a Nellcor<sup>(R)</sup> pulse oximeter set in Mode 3 was applied for continuous recording of SaO<sub>2</sub> during transport. Patients were randomly divided into two groups. Group A patients (n = 100) were transported to the recovery room while breathing room air. Group B patients (n = 100) received supplemental oxygen during transport from the OR to the PARR. Oxygen was administered at a rate of 6 L/m by a loosely held mask. The following data were recorded for each patient: number of minutes of 100% oxygen administered prior to transport, SaO<sub>2</sub> and Steward's recovery score<sup>5</sup> in the OR, duration of transport, time before onset of hypoxemia (defined as SaO<sub>2</sub> ≤ 90%, lasting > 30 seconds). Recovery scores and SaO<sub>2</sub> were noted upon admission to the PARR. Chi-square analysis was used for categorical variables and t-tests for continuous variables; the results expressed as mean ± SEM. The Wilcoxon test was used for comparison of Steward's PARR scores. P < 0.05 was considered statistically significant.

**Results:** The two groups were comparable in age, anesthetic technique, surgical procedures, SaO<sub>2</sub> in OR, anesthesia time, transport time, and recovery score in the operating room. The transport time ranged from 90 to 227 seconds. Twenty-one patients in Group A became hypoxemic during transport; vs. only 3 patients in Group B (p < .0001). The range of SaO<sub>2</sub> recorded is shown in table 1. Mean oxygen saturation in Group A was 91.7 ± 1.0, whereas it was 95.0 ± 0.6 in Group B (p < .01). On arrival in the PARR, mean Steward's recovery scores were not statistically different: 4.42 in Group A and 4.77 in Group B. Corresponding oxygen saturations were 94.0 ± 1.0 and 97.8 ± 0.4 in Group A and B patients respectively (p < 0.001).

Table 1. Number of patients in different SaO<sub>2</sub> ranges during post anesthetic transport.

SaO <sub>2</sub>	86-90	81-85	80
Group A (air) n = 21	12	6	3
Group B (oxygen) n = 3	1	0	2

**Discussion:** It has been previously reported that 23% of patients desaturate for longer than 30 seconds during transport to the recovery room.<sup>2</sup> PARR score or the degree of awakeness has been proven not to correlate with oxygen desaturation.<sup>4</sup> Routine use of supplemental oxygen was suggested to prevent hypoxemia during transport, however, its efficacy was not proven. We have shown that supplemental oxygen will reduce the incidence of hypoxemia during transport, and SaO<sub>2</sub> will be higher upon admission to the recovery room. Two out of three patients who became hypoxemic despite oxygen administration were otherwise healthy 2 months old infants. The third patient was a 32 week premature infant who underwent circumcision at the age of 8 months. Mode 3 of Nellcor<sup>(R)</sup> pulse oximeter was selected because it uses an averaging time of 10-15 seconds instead of 5-7 seconds in Mode 1. The increased averaging time is useful when the patient is active, because the instrument is less affected by patient motion.

Based on these and previous findings, we recommend routine monitoring of oxygen administration to infants and children during transport from the OR to the PARR.

**References:**

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