

# Can Changes in Clinical Practice Decrease the Incidence of Severe Retinopathy of Prematurity in Very Low Birth Weight Infants?

Chow LC, Wright KW, Sola A, and the CSMC Oxygen Administration Study Group. *Pediatrics* 2003;111(2):339-345

## Introduction

These researchers noted there was a wide variability in the incidence of severe Retinopathy of Prematurity (ROP) in very low birth weight infants reported globally by Neonatal Intensive Care Units (NICUs). They believed, however, that strict management of O<sub>2</sub> delivery and monitoring to minimize episodes of hyperoxia and hypoxia might be associated with decreased rates of ROP. Their objective was to compare the incidence of, and need for surgery for, severe ROP (stages > 3) in infants of 500 to 1500g birth weight before and after implementation of a new clinical practice of O<sub>2</sub> management in their level 3 NICU.

## Methods

In April, 1998, the researchers implemented an O<sub>2</sub> management policy. The policy included strict guidelines in the monitoring practices of SpO<sub>2</sub> parameters and of increasing or weaning of oxygen levels in the delivery room, during in-house transport of infants to the NICU and throughout hospitalization. The main objectives were to monitor O<sub>2</sub> levels more precisely and to avoid hyperoxia and repeated episodes of hypoxia-hyperoxia in very low birth weight infants. The policy included selection of equipment for monitoring (Masimo SET), avoidance of repeated increases and decreases of the inspired O<sub>2</sub> (F<sub>i</sub>O<sub>2</sub>), and modification of previously used alarm limits. Following education on the new protocol, each staff member signed an agreement acknowledging they understood and would adhere to its guidelines. Experienced ophthalmologists, following standard ROP classifications, performed eye examinations on the 447 infants in the study. ROP data from January 1997 to December 2002, for infants of 500 to 1500g, was analyzed.

## Results

The incidence of ROP 3 to 4 decreased consistently in the 5-year period from 12.5% in 1997 to 2.5% in 2001. The need for ROP laser treatment decreased from 4.5% in 1997 to 0% in the last 3 years of the study.

Birth Weight	Severe ROP Pre Policy	Severe ROP Post Policy (last 3 years)
500 to 749 g	38%	10 - 12%
750 to 999 g	12 - 15%	0%
1,000 to 1,249 g	12 - 15%	0%

## Authors' Discussion and Conclusions

"As part of an organized process of improvement in quality of care, the implementation of a clinical practice change of curtailed O<sub>2</sub> was associated with an important and clinically significant decrease in the incidence of both severe ROP and the need for ROP therapy." During this same period, the global incidence of severe ROP, reported by the Vermont-Oxford Network with data supplied from 400 NICUs, demonstrated no change from the 10 to 12% range. The authors commented further, "We can speculate that the decrease in incidence of ROP was 'gradual' because the change in practice was gradual, as a result of the time that it took for 'buy in' of all bedside nurses and RTs to deliver their practice at all times for all infants. In addition, many of the care providers reported greater ease in following the policy with use of new SpO<sub>2</sub> monitors (Masimo Signal Extraction Technology) with less artifact and false alarms."