

Global Challenges in Retinopathy of Prematurity Screening: Modern Solutions for Modern Times

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It has been over 70 years¹ since Terry first described a case of retrolental fibroplasia, later to be known by its modern day name: retinopathy of prematurity (ROP). Although major advances have been made in terms of understanding the pathophysiology and development of treatment plans for ROP, cost-effective screening has emerged as an important global challenge when dealing with ROP in the 21st century. The traditional model of ROP screening involves regular direct eye examinations by trained ophthalmologists on all at-risk neonates. However, the weaknesses of this model have become evident when one considers that: there is an ever increasing worldwide population of premature births; most premature births in the world are now in the developing nations where there is already a lack of adequate health care specialists; in most countries only a minority of the existent ophthalmologists are trained and able to screen for ROP; and in all countries there is a constant and increasing demand for the limited health care funds available.

The paucity of ophthalmologists able to screen for ROP and the geo-political challenges unique to each country (eg, sheer distance between communities in India, hostile climate in northern Canada, war-torn environment in many parts of the world) make it much more difficult and at times impossible for all at-risk neonates to receive timely, direct eye examination for ROP by an ophthalmologist.

Therefore, given the above challenges, there is increasing interest in researching the answers to address 2 key questions: (1) can one better predict more accurately which premature infants will develop severe ROP so as to reduce the overall number of infants who require screening and (2) can screening be done by nonophthalmologists?

The article by Kemper et al² in this edition of *Pediatrics* provides important new data regarding the feasibility, sensitivity, and cost-effectiveness of using telemedicine imaging performed by nonophthalmologists as a tool for ROP screening and detection of Type 1 ROP (ie, treatment-requiring ROP). The study explores various methods of screening a hypothetical cohort of 650 premature infants born at gestational ages ranging from 23 to 30 weeks. The results reveal that using digital imaging for serial ROP examinations done at sites lacking infant eye specialists does catch all cases of Type 1 ROP although it does lead to greater total number of interventions compared with direct ROP examination by an ophthalmologist.

As the study authors indicate, future developments in the field of retinal imaging technology (to enable complete imaging of the peripheral retina), as well as better predictive risk models allowing for identification of infants who could be at risk for developing referral-warranted more severe ROP,^{3,4} should help develop more targeted models of using telemedicine for ROP screening. The ultimate aim would be to have the

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least number of infants enrolled into ROP screening, with all screening done via telemedicine (nonphysician trained personnel) and an ophthalmologist only required for ROP treatment.

ABBREVIATION

ROP: retinopathy of prematurity

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