



ROP in Asia

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Retinopathy of Prematurity (ROP) is a potentially blinding disorder, which affects premature babies. Improved neonatal management has increased the survival of premature babies worldwide, bringing with it an increase in the number of babies who will develop severe ROP. The article “Retinopathy of Prematurity Treatment: Asian perspectives” highlights the challenge that this third ROP epidemic presents to our colleagues in Asia where ROP is becoming a major cause of preventable childhood blindness [1].

Premature births are unevenly distributed around the world with 50% of the countries with the highest number of premature births being in Asia. Asia has high-income countries such as Japan and South Korea and low-income countries such as Nepal, with many others being lower or upper middle-income, of which China and India are the largest. This current report relates to the problems facing middle-income countries, especially India.

The scale of the Asian problem is enormous. Globally, 15 million babies are born prematurely each year with only 1.2 million in highly income countries. Although more than 60% of premature deliveries occur in sub Saharan Africa many of these babies will not survive. 13.4% of all live births in South-eastern and South Asia are premature compared with <8% in UK. 3.5 million premature babies are born each year in India, and it has been estimated that 10 to 20,000 of these babies may need treatment [2]. This compares with less than 350/year in the UK [3].

As the total prevention of premature birth is not possible, and with increasing survival after premature delivery, how can middle income countries manage this increasing ROP burden? A low incidence of ROP related blindness is associated with high-quality neonatal care, established ROP

screening protocols and availability of trained ROP specialists.

Ophthalmologists can educate neonatologists about steps that can be taken to reduce the risk of ROP. This includes the use of antenatal steroid and the management of supplemental oxygen. Levels of oxygen saturation of 91–95% in neonates younger than 28 weeks gestation can be recommended, rather than 100% [4]. Pulse oximetry is a cheap non-invasive means of estimating arterial oxygen saturation. Ophthalmologists must engage with neonatologists in explaining the importance of timely screening and intervention for ROP. Neonatologists must be made aware of the need for urgent treatment when sight threatening ROP is identified. Lack of awareness of the importance of screening can lead to delayed presentation of severe ROP and damage to vision [5, 6]. This has been identified as being more likely in rural areas as opposed to metropolitan areas in India; this is likely to be similar in many other countries with a developing ROP epidemic. Parents need to be educated on the importance of returning for follow up screening once their baby has been discharged from the neonatal unit.

Reduction in ROP related blindness starts with appropriate, universal, ROP screening. However not all countries in the world have ROP screening. A recent study by IPOSC (International Pediatric Ophthalmology and Strabismus Council) surveyed 141 countries worldwide on their ROP screening programmes with a 65% response rate [7]. Fourteen countries reported no screening (Republic of Moldova, Cambodia, Lao People’s Democratic Republic, Algeria, Benin, Democratic Republic of Congo, Ghana, Guinea, Malawi, Mali, Mozambique, Rwanda, Swaziland, and Uganda). It noted that nine of these countries were in Africa, where there is a high infant mortality rate. To be useful screening guidelines must be realistic and country specific; guidelines from highly developed countries may not capture all at risk babies in lower income countries. Ideally screening guidelines should be based on country specific data. The IPOSC survey found that 14 countries use the American

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guidelines, 12 use the UK guidelines, 23 had developed guidelines based on the early treatment of ROP study, and 35 countries used locally collected data.

The number of screeners per country varies significantly from 1916 live births per screener in Sweden to 184,400 in China. The Indian Retinopathy of Prematurity Society has reported that <1% of ophthalmologists in India are directly involved in ROP care [8]. It has 215 members, compared with over 20,000 members of the All India Ophthalmological Society.

Education of ophthalmologists, neonatologists, and neonatal nurses is important. Online educational resources can be very useful for training, and, in addition to the WISE-ROP programme, the American Academy of ophthalmology has an online interactive ROP tutorial <https://www.aao.org/interactive-tool/retinopathy-of-prematurity-case-based-training> and the Royal College of Ophthalmologists has developed an ROP e-learning module <https://portal.e-lfh.org.uk/MyElearning>.

Colleagues from the London School of Hygiene and Medicine with support from the Queen Elizabeth Diamond Jubilee Trust set up ROP-NET in 2017 to improve screening and management of ROP in Commonwealth countries. It paired mentorship centres of excellence in India, South African, and UK with six Commonwealth countries including Sri Lanka and Pakistan. Following this programme Ghana and Tanzania have started ROP screening, Kenya has established an ROP working group and Pakistan held a national meeting to develop a plan for ROP prevention and treatment. Nigeria has expanded its screening programme. The project helped support the development of the Indian ROP programme.

The authors rightly laud the technological innovations in ROP imaging and tele screening from India. However, the indigenous Indian ROP camera, 3nethra Neo, is still expensive (currently over £60,000 in the UK) and so this is not likely to be taken up by the majority of ROP units in middle income countries. Another much cheaper option, using almost ubiquitous technology, is smartphone screening [9]. This can be used either with or without a smartphone holder [10]. This produces a smaller field of view than a RetCam or a 3nethra Neo; however, the basis for deciding on the need for ROP treatment is essentially the presence of plus disease at the posterior pole so a smaller field is not a major drawback. This is a cheap, easy, and non-contact method of capturing ROP images for screening. The images can easily be transferred for expert assessment. In future it should be possible to train ophthalmic technicians to take smartphone photographs and then send them for analysis. This may be a cost-effective solution to the problem of very few ROP trained ophthalmologists and many babies requiring screening.

ROP cannot be prevented. With education, training, and collaboration between ophthalmologists and neonatologists and using the skills of other healthcare professionals it should be possible to bring ROP standards in middle-income countries up to those in high income countries. This would prevent significant visual morbidity and with it improve the quality and lives of premature children and their parents.

Compliance with ethical standards

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