

## Retinopathy of prematurity

Of all the 14.8 million preterm births globally, approximately 23.4% babies are born annually, in India.<sup>[1]</sup> With expansion and improvement in neonatal services, more and more preterm infants are surviving. These infants are at higher risk of developing retinopathy of prematurity (ROP) a vaso-proliferative retinal disorder and potentially blinding condition. Preterm infants born with a gestational age (GA) of 32 weeks or less are at a higher risk of developing ROP. In India, every year, approximately 490,000 preterm infants are born with a GA <32 weeks and around 5000 need some form of treatment for ROP.<sup>[2]</sup>

With over 800 Special new born care units (SNCUs) established since 2008 in government facilities as an effort to reduce neonatal mortality, survival of preterm babies have improved, but has also increased the number of babies at risk for ROP blindness.<sup>[3,4]</sup> According to study by Dutta *et al.*, possible causes for increased ROP burden in India are high rate of prematurity with improved survival, unrestricted oxygen usage, higher incidence of infection, lack of awareness on the part of service providers, and lack of uniform ROP-screening protocols.<sup>[5]</sup> In India, “heavier” and “more mature” infants get sight threatening ROP, including stage 5 ROP<sup>[6]</sup> indicating a need for India centric screening and treatment guidelines for ROP along with improvement in the neonatal health care system by increasing the capacity and competence of care givers and setting up and implementation of standardised guidelines.

ROP can be an indicator of “Quality of care” provided to preterm neonates in a healthcare facility. Kumar *et al.* have<sup>[7]</sup> stressed the importance of developing a need-based intervention package to improve knowledge, skills, and practices of preterm care providers to improve survival of preterm neonates without sight-threatening ROP. In remote areas, e-learning approach can effectively be used to achieve desired goals.

There is a need to integrate ROP services and child health services to ensure the healthy survival of preterm infants. In India, Child health, Ministry of Health and Family Welfare, Rashtriya Bal Swasth Karyakram (RBSK), and National Programme for Control of Blindness and Visual Impairment (NPCB and VI) cover all the services needed for the healthy survival of the infants including prevention of blindness due to ROP.

Screening is the first step in ROP management. Nationally accepted uniform guidelines can form a strong backbone for successful screening programmes in any country.

In India, for the first time, the National Neonatology Forum (NNF) released guidelines (2010) for ROP screening. In 2015, the Ministry of Health, Government of India, released a universal vision screening program integrating ROP with neonatal care. The current “Operational Guidelines for ROP” are formulated by combined inputs from the National ROP Task Force (NTF), the RBSK, the Public Health Foundation of India (PHFI), and the NPCB. These guidelines recommend screening for infants with gestational age ≤34 weeks and birth weight ≤2000 grams.<sup>[8]</sup> The Task force also recommended that

the screening criteria could be revisited once in every 3–5 years when more contextual newer evidence is available.

At present, India has more than 20,000 ophthalmologists, but approximately only 200 are experienced to screen or treat ROP. Screening requires training, skill, and appropriate equipment. The successful implementation of these guidelines needs creating awareness about ROP and capacity building for screening and treatment. It is expected that by identifying key players and their roles and responsibility, these guidelines will improve coordination at national, state, and health facility level to strengthen ROP services in India and will also help to monitor the quality of neonatal care.

With an aim to improve the quality of neonatal care and integrate ROP services into the government health system using expertise in the Government and non-government sector in sustainable and scalable manner, the Queen Elizabeth Diamond Jubilee Trust (the Trust) included ROP in their 5 year (2012–2019) avoidable blindness programme for India. The program was implemented in parts of four states (Madhya Pradesh, Maharashtra, Odisha, and Telangana) under NTF guidance. A “hub and spoke” approach is recommended. In remote areas, tele-screening, using portable wide angle cameras, can be effectively used for ROP screening and to identify sight threatening ROP. If needed, these babies can then be transferred to higher centres for laser.

In Maharashtra, a unique model of public-private partnership (PPP) was created with collaboration between the Government, non-government, and private service providers to utilise available skilled resources to build network of early intervention centres at district levels.<sup>[9]</sup> The project also highlighted the importance of primary health care workers in sensitising the parents to improve the compliance. In a different manner, Odisha state was able to decentralise the entire project with improved co-ordination between government and mentor institute and achieve adequate capacity building and infrastructure development.<sup>[10]</sup>

Creating awareness among parents of preterm babies improves compliance and cooperation with improved overall neonatal care including reduced ROP incidence. A pilot project, “ROP parent support group” was developed by Malladi *et al.*<sup>[11]</sup> with an objective to support parents of ROP infants by counselling, information and resource sharing, and proving general guidance. The project is still in the phase of implementation, and it will be interesting to see the long-term impact of this exercise.

To summarise, India needs to gear up to face the challenge of the third ROP epidemic by improving the quality of neonatal care and expansion of screening and treatment programs. A multidisciplinary team approach by improving awareness among community-based health workers and parents, along with training of medical professionals, is the need of hour.

Initiatives by the Trus have begun a new era for ROP management in some parts of India and have shown that PPP and “universal screening” is necessary for the sustainability and success of the project. Sustaining this movement and its implementation across entire length and breadth of India will be a big challenge, but it is the key for long-term success.

Given the limited resources in the Government sector and limited number of specialists, tele-screening with cost-effective cameras,<sup>[12]</sup> advancements in image analysis technology, and the use of artificial intelligence could be a future of ROP screening.

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