National guidelines for screening and management of retinopathy of prematurity in Kenya: an overview of the recommendations

Sitati S[1], Mwangi N[2], Njambi L[3], Onyango O[1], Gachago M[3], Mundia D[4], Murila F[5]

[1]Department of Ophthalmology, Kenyatta National Hospital, Nairobi, Kenya
[2]Kenya Medical Training College, Nairobi, Kenya
[3]Department of Ophthalmology, University of Nairobi, Kenya
[4]Aga Khan University Hospital, Nairobi, Kenya
[5]Department of Paediatrics, Kenyatta National Hospital, Nairobi, Kenya.

Corresponding author: Dr Sarah Sitati, Department of Ophthalmology, Kenyatta National Hospital, Nairobi, Kenya. Email: smsixty@gmail.com

ABSTRACT

Retinopathy of Prematurity (ROP) is a challenge to neonatology and ophthalmology, as it causes blindness before the age of six months of age. In low and middle income countries, it is an upcoming epidemic and important cause of childhood blindness. Guidelines in many developing countries are lacking. The objective of the national guidelines for screening and management of ROP in Kenya is to improve the access, quality and coverage of prevention, screening, treatment and follow-up in ROP services. In this article, we provide an overview of the guidelines to facilitate their implementation by those providing care in new born units and eye care services.

Key words: Retinopathy of Prematurity, Prematures, Screaning Guidelines, Retina, Kenya

INTRODUCTION

Retinopathy of Prematurity (ROP) is a progressive, sight threatening, vaso-proliferative retinal disorder unique to premature infants[1]. It is the leading cause of childhood blindness in the developed world. Advances in neonatology in Low and Middle Income Countries (LMICs) have improved the survival rates for preemies, and consequently the rising prevalence of ROP[2]. In Kenya, prevalence of up to 40% has been reported in hospitals with well-established neonatal units[3-6]. Early detection through screening for all newborns at risk and prompt treatment can prevent blindness. However, clinical guidelines for screening and management of ROP (herein referred to as guidelines) are paradoxically lacking in LMICs. The Kenya ROP working group developed guidelines that were published in 2018[7]. These guidelines were adapted from existing guidelines with incorporation of local experience and local context[8]. In this article, we provide an overview of the guidelines for the benefit of those providing care in new born units and eye care services.

The objective of these guidelines is to improve the access, quality and coverage of prevention, screening, treatment and follow-up in ROP services. Close collaboration between neonatology/child health and ophthalmology, as well as obstetrics is encouraged. The guideline document is a comprehensive 30-page document with detailed recommendations for screening and management of ROP[7]. This article however, provides an overview that may be used as a quick reference by all clinical cadres and administrators involved in the care of premature infants.

PREVENTION OF RISK FACTORS OF ROP

This can be summarized by the POINTS of care for new-born infants, which addresses common risk factors for ROP[9]. These are summarized in Table 1, and they highlight the important roles of caregivers and a multidisciplinary team of health care providers.

Table 1: POINTS of care for new born infants[9]

Pain control	Reduce unnecessary painful procedures, prevent pain by swaddling, use of oral sucrose/glucose, pacifier, use of systemic analgesics during procedures
Oxygen management	Judicious use of ventilation and supplemental oxygen, oxygen saturation %SpO_2 monitoring (should be between 91-95%), equipment to safely deliver and monitor oxygen therapy
Infection control	Hand washing by all persons entering new born unit (NBU), before and after handling baby, avoid sharing equipment between babies to avoid cross contamination
Nutrition	Exclusive breastfeeding is recommended
Temperature control	Keep preterm babies warm by wrapping, putting in an incubator or under a warmer
Supportive care	Kangaroo care, good positioning in the incubator or cot, minimize blood transfusions

RECOMMENDATIONS FOR SCREENING

The key parameters that determine who should be screened are: Gestational age ≤ 32 weeks and/or birth weight ≤1500grams[7]. Neonates with co-morbidities or an unstable clinical course who fall outside these criteria should also be screened. A decision algorithm (also available as a poster) can assist those working in neonatal units to make quick decisions on the selection of babies to be screened, as illustrated in Figure 1.

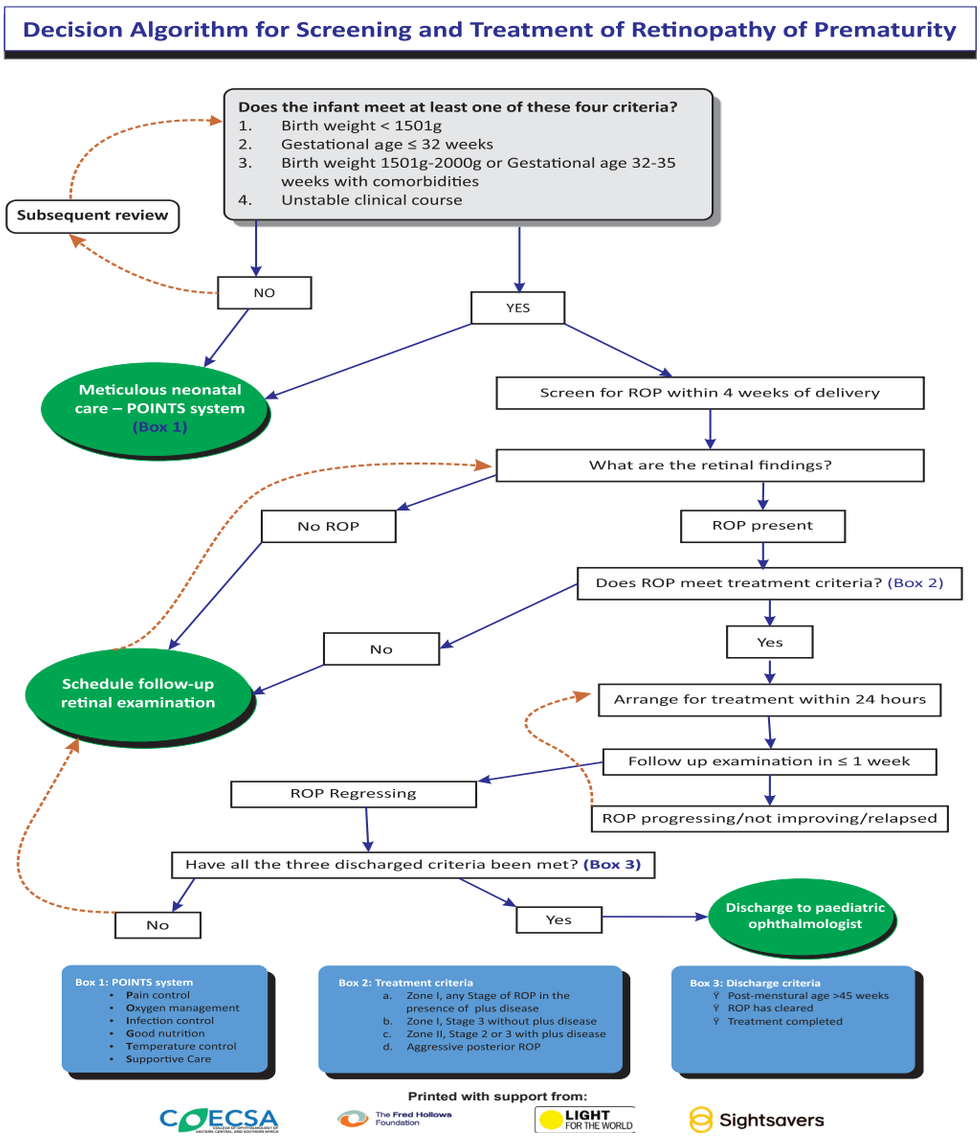


Figure 1: Decision algorithm

Eye examinations are carried out in the neonatal unit by an ophthalmologist, following dilatation of the infant's eyes (using a mydriatic cocktail drop of tropicamide 1% and phenylephrine), then by using an indirect ophthalmoscope and a 20D/28D/30D lens[7]. An eyelid speculum and indenter may be used to help visualize the periphery. Infection control practices must be put in place to prevent cross-infection between babies. Serial exams are done at least fortnightly, starting at one month post-birth. This means that identification of infants for screening begins on admission, and those not examined in the unit must be examined as out-patients in the clinic.

Infants may be discharged from ROP screening when they achieve vascularisation to zone III, achieve 45 weeks gestational age or when ROP completely regresses[7]. Thereafter, follow up is done by the paediatric ophthalmologist for refractive errors, strabismus and other conditions which may develop as a result of prematurity or ROP treatment.

RECOMMENDATIONS FOR TREATMENT OF ROP

Not all infants who develop ROP require treatment. Type 1 ROP necessitates treatment, that is any Zone I disease with plus disease, Zone I stage 3 disease or Zone 2/3 with plus disease. Aggressive Posterior ROP (APROP) also requires prompt treatment. Treatment for ROP is urgent and should be given within 24-48 hours of diagnosis[7]. Treatment modalities and recommendations are indicated in Table 2. Choice of treatment modality is made by the treating ophthalmologist, based on availability of equipment and monitoring facilities available for infants in the neonatal unit.

Table 2: Recommendations for choice of treatment for ROP

Modality	Recommendation
Anti-vascular endothelial growth factor (anti-VEGF), bevacizumab or ranibizumab	Zone I disease
Laser (indirect laser photocoagulation)	Zone II or III disease Stage 4 disease (in combination with surgery)
Pars plana vitrectomy(PPV)+ air fluid exchange (AFE)	Stage 4 and 5 disease

OUTCOMES OF ROP

Majority of ROP regresses spontaneously with close follow up and without treatment. Treatment of severe ROP is also associated with better long-term visual and structural outcomes. If untreated, severe ROP leads to blindness before the age of six months. A small proportion of preterm infants may also progress despite treatment. Close monitoring after treatment is required for early detection and re-treatment if necessary[7].

CONCLUSION

The elimination of childhood blindness is an important agenda for both ophthalmologists and paediatricians. Blindness due to ROP is emerging as an important cause of childhood blindness in Kenya. This is a condition that is both preventable and treatable. A multi-disciplinary approach involving parents/caregivers, obstetricians, ophthalmologists, paediatricians, nurses and administrators is important in stemming the second wave of ROP that is presenting in low and middle income countries.

Financial disclosure: Development of these guidelines was supported by the Ministry of Health through the Ophthalmic Services Unit, the College of Ophthalmology of Eastern Central and Southern Africa (COECSA) and partners.

REFERENCES

1. Jefferies AL, Fetus and Newborn Committee, and C.P. Society. Retinopathy of prematurity: An update on screening and management. *Paediatrics & Child Health.* 2016; **221**(2): 101-104.
2. Mora JS, Waite C, Gilbert CE, Breidenstein B, Slopper JJ. A worldwide survey of retinopathy of prematurity screening. *Br J Ophthalmol.* 2018; **102**(1): 9-13.
3. Onyango O, Sitati S, Amolo L, Murila F, Wariua S, *et al.* Retinopathy of prematurity in Kenya: prevalence and risk factors in a hospital with advanced neonatal care. *The Pan Afr Med J*. 2018; **29**(152): 1-7.
4. Sitati SM, Ojuma SM, de Alba CAG. Retinopathy of prematurity: Prevalence and risk factors among infants in rural Kenya. *J Ophthalmol Eastern Central Southern Afr.* 2018; **22**(2): 63-67.
5. Metho AA. Factors associated with development of retinopathy of prematurity in three private tertiary hospitals in Kenya [Master's Thesis]. 2018, Aga Khan University Nairobi.
6. Wanjala I, Ilako D, Kariuki M. Retinopathy of prematurity as seen in two major hospitals in Nairobi, Kenya. *East Afr J Ophthalmol*. 2007; **13**(1): 5-14.
7. Ministry of Health, Kenya national guidelines for the screening and management of Retinopathy of Prematurity. 2018, Ministry of Health: Nairobi.
8. Mwangi N, Sitati S, Onyango O, Mundia D, Njambi L. Developing a sustainable and scalable control programme for Retinopathy of Prematurity in Kenya: a health system perspective. *J Ophthalmol Eastern Central Southern Afr.* 2018; **22**(1): 31-34.
9. Deorari A, Darlow DA. Preventing sight-threatening ROP: a neonatologist's perspective. *Comm Eye Health.* 2017; **30**(99): 50-52.