



Topic Expert Group: Medical care and clinical practice

Prevention, detection, documentation, and treatment of retinopathy of prematurity (ROP)

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Target group

Preterm infants at risk of severe retinopathy of prematurity (ROP) defined by national guidelines and parents

User group

Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard

Screening programmes for detection, documentation, and treatment of sight threatening retinopathy of prematurity (ROP) in all units caring for very preterm infants, as well as preventive measures such as control of oxygen supplementation and promotion of optimal nutrition are established.

Rationale

The goal is to prevent visual impairment and blindness due to retinopathy of prematurity (ROP), which is a major cause of childhood blindness and mainly affects extremely preterm infants. (1,2) Uncontrolled oxygen supplementation and poor neonatal monitoring are important factors contributing to increased ROP risk, even in more mature infants. (3)

Hospitals caring for very preterm infants need programmes promoting adherence to oxygen saturation targets and avoidance of hyperoxia, through implementation of appropriate alarm levels, education of healthcare professionals, oxygen titration guidelines, and sufficient number of skilled attendants. Automated oxygen control can improve SpO₂ targeting and may be an alternative. (4) Prevention and management of ROP require close inter-disciplinary collaboration.

Hospitals caring for very preterm infants should adhere to screening and treatment programmes for ROP, based on existing evidence.

These programmes define:

- screening inclusion criteria,
- timing of eye examination:
 - first examination generally at 4-6 weeks of age but not before a postmenstrual age of 31 weeks
 - follow-up screening examinations biweekly to twice a week depending on findings
- choice of dilating drops and information on how to avoid systemic absorption
- any topical anaesthesia
- indication for treatment
- follow-up of treated infants following appropriate protocols based on the type of treatment

Currently, most hospitals adhere to the US recommendations for screening (5) and for treatment, the recommendations of the Early Treatment for Retinopathy of Prematurity Group (6) are followed in many countries.



Benefits

Short-term benefits

- Reduced occurrence of severe retinopathy of prematurity (ROP) needing treatment (7–9)
- Improved identification of infants needing treatment for ROP (5,10)
- Increased number of infants treated timely (5,10)
- Reduced stress for parents (11)

Long-term benefits

- Reduced occurrence of visual impairment and blindness caused by ROP (7–9)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about retinopathy of prematurity (ROP), screening, treatment, and outcomes including the importance of breastfeeding for the prevention of ROP. (see TEG Care procedures) (11,12)	A (Low quality) B (High quality)	Patient information sheet
For healthcare professionals		
2. A unit guideline on prevention and management of ROP is adhered to by all healthcare professionals.	B (High quality)	Guideline
3. Training on oxygen saturation targets is attended by all responsible healthcare professionals. (13)	A (High quality) B (High quality)	Training documentation
For neonatal unit		
4. A unit guideline on prevention and management of ROP is available and regularly updated. (5,6,14)	A (High quality) B (High quality)	Guideline
5. A unit guideline for control of oxygen supplementation is available and regularly updated. (15)	A (Moderate quality) B (High quality)	Audit report, guideline
For hospital		
6. Training on prevention and management of ROP is ensured.	B (High quality)	Training documentation



7. Availability of expert personnel for fail-safe system of ophthalmological screening and treatment is ensured. (5)	A (Moderate quality) B (High quality)	Audit report
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For health service

8. A national guideline on prevention and management of ROP is available and regularly updated.	B (High quality)	Guideline
9. Rate of blindness and impaired vision due to ROP is monitored nationally.	B (High quality)	Audit report

Where to go – further development of care

Further development	Grading of evidence
For parents and family N/A	
For healthcare professionals	
<ul style="list-style-type: none"> Initiate seamless information transfer systems between clinics and hospitals and measures to improve patient adherence to ophthalmological follow-up during screening and after treatment. (16–18) (see TEG Follow-up & continuing care) 	B (Moderate quality)
For neonatal unit N/A	
For hospital N/A	
For health service	
<ul style="list-style-type: none"> Consider telemedicine support for screening for retinopathy of prematurity (ROP). (10,19) Support research into causes and treatment of ROP. (20) 	A (Moderate quality) B (Moderate quality)

Getting started

Initial steps

- For parents and family**
 - Parents are verbally informed by healthcare professionals about retinopathy of prematurity (ROP), screening, treatment and outcomes including the importance of breastfeeding for the prevention of ROP.
- For healthcare professionals**
 - Attend training on prevention and management of ROP.
- For neonatal unit**
 - Develop and implement a unit guideline on prevention and management of ROP.
 - Develop information material on ROP for parents.
 - Develop fail-safe systems for the identification of infants at risk of ROP.
 - Ensure fail-safe systems for referral and continuous cover by ophthalmologist.



- Develop formalised programmes for education in oxygen saturation targets.
- Develop formalised programmes for promotion of mother's own milk feeding.

For hospital

- Support healthcare professionals to participate in training on prevention and management of ROP.
- Identify pathways for infants with progressive ROP to receive expert assessment and treatment.

For health service

- Develop and implement a national guideline on prevention and management of ROP.

Description

Despite the success of retinopathy of prematurity (ROP) screening and treatment much is unknown about the progression and response to treatment.

There is controversy over the precise oxygen saturation targets but current evidence suggests that, whereas ROP is less frequent when saturations are targeted at 85-89%, mortality is increased. Thus, most units maintain targets of 91-95%. (21) However, recent European consensus guidelines recommend a target range of 90-94% with alarm limits set at 89% and 95%. (22) It is important to avoid higher saturations and research is ongoing into whether these targets can be refined further. Most importantly better adherence to saturation targets is associated with lower rates of ROP. (15)

Furthermore, early breastfeeding is associated with a reduced risk of ROP. (23,24)

If treated at the appropriate stage, vision of infants with severe ROP can be preserved by laser therapy or anti-VEGF therapy where indicated. (20) The long-term safety of anti-VEGF treatment needs further research. (25) If left untreated, severe ROP may lead to irreversible blindness – often in both eyes. (26) Importantly, even less severe ROP affects vision (27) and infants treated for ROP have an increased risk of retinal detachment, myopia, and other complications throughout life. (28,29)

Source

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