



# Vision Screening and Retinopathy of Prematurity

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## Visual Deficits Seen in Preterm Infants

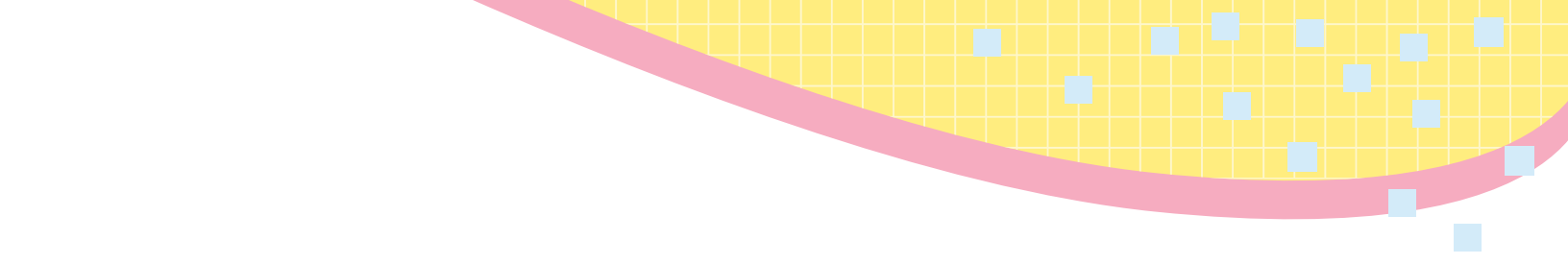
- High-risk infants are more likely to have permanent visual deficits and/or show a delay in visual development that persists until adolescence.
- Deficits in the ability to perform visual discrimination tasks is one of the most striking, persistent deficits.
- Reduced visual fields, amblyopia, myopia (associated with BPD, seizures and asphyxia), and strabismus (associated with intraventricular hemorrhage (IVH), bronchopulmonary dysplasia (BPD), necrotizing enterocolitis (NEC), periventricular leukomalacia (PVL)).

## Retinopathy of Prematurity

- Abnormal blood vessel growth in the incompletely vascularized retinas of premature infants.
- Incidence increases with lower gestational age and birthweight.
- Classification by:
  - Zones 1-3: locates the disease from most posterior (Zone 1) to most anterior (Zone 3).
  - Stages 1-5: degree of vasculopathy at the vascular-avascular transition (Stage 5 is most severe and involves complete retinal detachment).
  - Plus disease: occurs when arrested blood vessel growth resumes abnormally, with tortuous vessels piling up within the retina, forming a thick ridge of tissue.
- Neovascular tissue (i.e., plus disease) may contract and form a scar, which then pulls and distorts the retina, resulting in retinal detachment, especially if ROP is in zone 1.

## Screening/Monitoring

- All infants <1500 grams or <30 weeks estimated gestational age (EGA) should be screened prior to discharge.
- If retinal vasculature is completely mature, no further exams are needed.
- Followup is dictated by degree of maturation, severity of ROP, and ophthalmologist.

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- Patients with ROP requiring laser therapy, and grade III/IV IVH, PVL, HIE, or hydrocephalus requiring shunting should be seen again at 9-12 months postnatal age by ophthalmology.
  - A pediatric ophthalmologic assessment for glasses and possible strabismus or amblyopia therapy should be obtained in the first year of life.

## **Treatment/Outcomes**

- Mild ROP (stage I or II without plus disease) have a somewhat higher incidence of myopia, strabismus, and amblyopia.
- Threshold ROP (residual scar without retinal detachment):
  - Associated with severe myopia, glaucoma.
  - At risk for slowly progressive retinal degenerations that can lead to retinal detachments and acuity loss in later decades.
- Total retinal detachment equates to no useful vision in that eye, even when vitrectomy is performed to reattach the retina.
- Criteria for laser therapy or cryotherapy:
  - Zone 2: plus disease with stage 2 or 3 ROP.
  - Zone 1: plus disease with any stage ROP.
  - Zone 1: stage 3 ROP with no plus disease.