Implementation Strategies:
The control of vision loss due to ROP in real life settings

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Strategies

1. Initiation of screening
   a) Whom to screen? – Screening Guidelines??
   b) When to screen?
   c) How to screen?

2. Prevention
   - Especially in larger preterm babies
Whom to screen?

US Guidelines
- GA ≤ 30 weeks
- BW ≤ 1500 gm

UK Guidelines
- GA ≤ 31 weeks
- BW ≤ 1500 gm
Applicability of Western Guidelines to our population

• 28 - 30% of blinding ROP would be missed if US/UK guidelines are applied

Original Article

Severe Retinopathy of Prematurity in Big Babies in India: History Repeating Itself?

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[Indian J Pediatr 2009; 76 (8): 801-804]
Other countries

- Mexico
- Brazil
- Vietnam
Regional Broader Guidelines

- GA ≤ 34 weeks
- BW ≤ 1750 gm
- GA 34 – 36 wks or BW 1750 to 2000 gm with risk factors (mechanical ventilation, prolonged O2 therapy, hemodynamic instability, etc)
**When to screen?**

- 31 weeks post conceptional age OR
- 4 weeks after birth whichever later
- One session of retinal screening to be carried out by 1 month
How to screen?

- Binocular Indirect Ophthalmoscope (BIO)
- Digital imaging (DI) – Retcam Shuttle
BIO Vs Retcam

- Cheaper
- Trained ophthalmologist
- Learning curve
- No photo documentation
- No telescreening

- Costlier
- No ophthalmologist
- Relatively easier
- Photo documentation
- Telescreening
BIO Vs Retcam

- BIO is still gold standard
- DI does not supplant BIO for ROP
- Disadvantages include cost, the fact that DI collects considerably less information than required to fully stage the extent of ROP
Newer cameras

Forus camera 3nethra-neo

Phoenix and Icon camera
Bottle necks for ROP Screening in India

• Lack of access to care
• Lack of trained personnel
• Lack of awareness
• Referral reluctance amongst colleagues & hence late diagnosis & Rx
Lack of access to care

• Aravind ROP Telescreening
• ROPE – SOS (Retinopathy of Prematurity – Save our Sight)
• Funded by
  • USAID (United States Agency for International Development)
• 53 NICU’s
  – (including MOH)
Statistics

• Project started from 12th Aug 2015 till Oct 2016
• 3853 (new 2363+ rev 965) babies screened
• Any ROP – 623 babies (16%)
• Severe ROP – 58 babies (110 eyes) (9.3%)
Lack of trained personnel

- One month short term hands on training to teach ROP screening using BIO
- From 2011 – 41 ophthalmals
  - India 35
  - Egypt 2
  - Sudan 1, Azerbaijan 1, Italy 1, Bahrain 1
Lack of awareness

CME Programs
1. Tirupur AEH (24/8/15)
2. Thrissur GH (3/10/15)
3. Erode GH (3/12/15)
4. Salem GH (26/03/16)
5. Pollachi GH (22/6/16)
6. Maulana Hosp (23/7/16)
7. CBE AEH (17/9/16)

Till date we have sensitized 374 NICU staff on ROP screening

ARAVIND EYE CARE SYSTEM
Prevention of ROP

• Study involved 2 NICUs 2002-03
• 36 babies Fulminate ROP (34 from one NICU)
• Mean GA – 31.75 wk (R 28-34)
• Mean BW – 1554 g (R 850-2290)
Prevention of ROP

• During that time, the unit was administering 100% oxygen to babies using a non-re-breather funnel mask.

• When they changed oxygen delivery from funnel to hood type.

• Crude form of blending oxygen, not a single baby was seen with APROP from that NICU in 2004.
Harmful effects of unblended oxygen

Aggressive posterior retinopathy of prematurity in large preterm babies in South India
Parag K Shah, Venkatapathy Narendran, Narendran Kalpana


What is already known on this topic
‘Prophylactic’ oxygen in new born premature infants has been proved in 1950’s to cause severe retinopathy of prematurity (ROP).

What this study adds
Exposure to unblended oxygen causes massive retinovascular vessel loss and that causes aggressive posterior ROP in large preterm babies.
GA – 33 wks, BW – 1625 g
Unblended O2 – 12 days
FFA taken at PNA – 22 days
10 days after stopping oxygen
When do pediatricians in India use O2 blenders?

- Oxygen blenders are used only when babies are put on either CPAP machines or ventilators.
When do same pediatricians in India don’t use O2 blenders?

• But when “prophylactic” O2 is given to all babies born ≤ 36 wks without blenders

• Then 100% O2 from central line goes straight to babies
Stage 5 RLF. Case in our nursery that called attention to oxygen by having a **funnel over mouth** for added oxygen while in incubator.

History repeating itself !!!

Recent Oxygen Trials
- STOP-ROP *Pediatrics* 2000
- HOPE-ROP study *Pediatrics* 2002
- SUPPORT *NEJM* 2010
- BOOST trial *NEJM* 2013

O2 is an important, but not a sufficient, single cause of ROP
Summary

• Hay and Bell in their commentary in *Pediatrics* 2000 had cautioned that STOP-ROP study does not establish ophthalmic safety of unrestricted hyperoxemia, in early post natal period.

• It is entirely reasonable to assume that this use of liberal oxygen could lead to worse ROP.
Summary

• With a little education of our paediatric colleagues
• Cutting down unnecessary oxygen and using oxygen blenders could prevent ROP related blindness in large preterm babies
• And end history from repeating itself