



Retinopathy of Prematurity (ROP)

Guyana's Approach



MINISTRY OF HEALTH
GUYANA



VISION and EYE HEALTH SERVICES

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Every year,
an estimated
15 million babies are
born preterm.

Approximately 20,000
of these babies will
become blind
from retinopathy of
prematurity (ROP).

Every year,
an additional 12,300
will have
visual impairment.

*March of Dimes, PMNCH, Save the Children, WHO. Born Too Soon: The Global Action Report on Preterm Birth. Eds CP Howson, et al. WHO. Geneva, 2012.

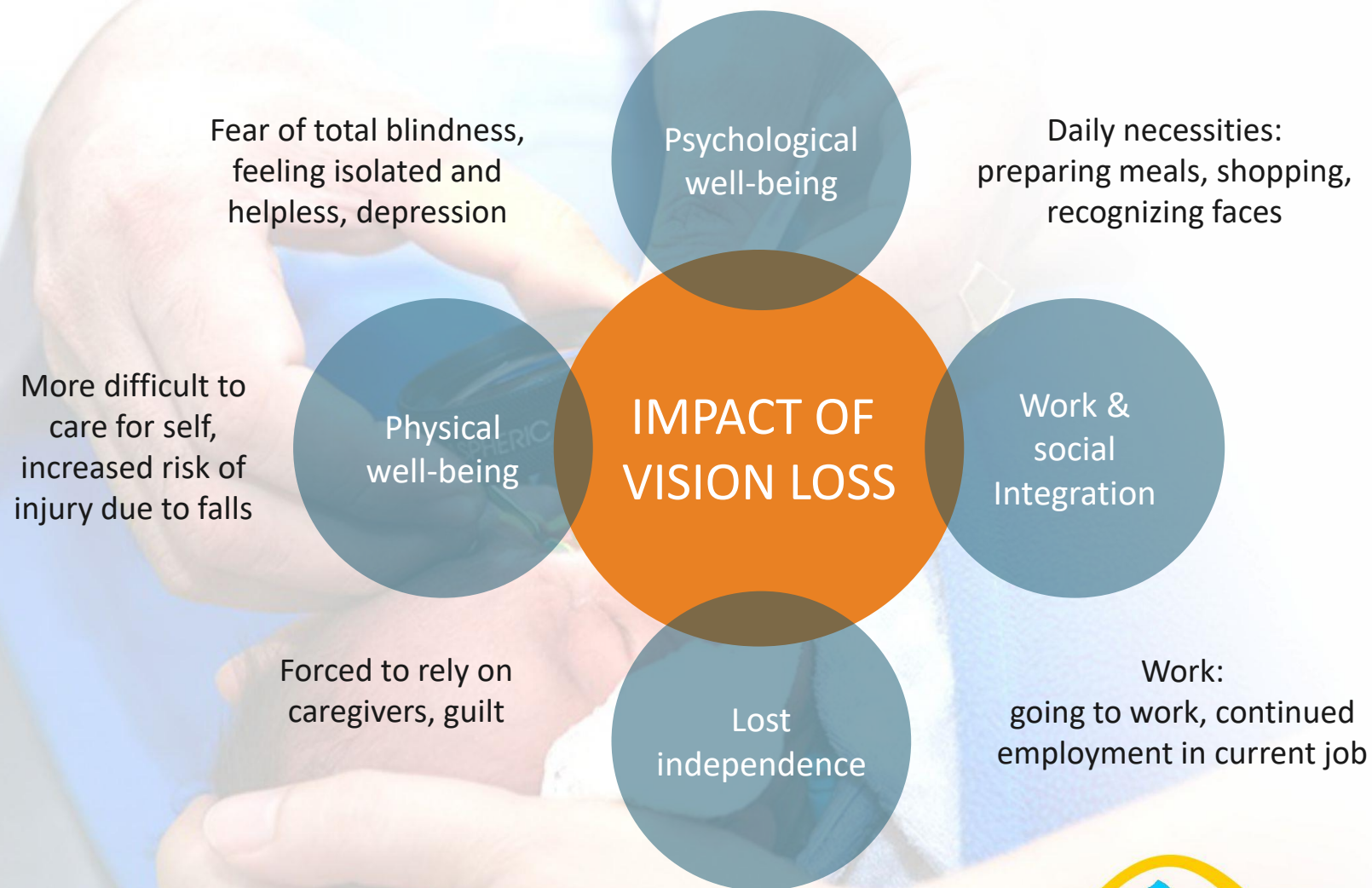
*Blencowe J, et al. Beyond newborn survival: Paper 3. Preterm associated visual impairment and estimates of retinopathy of prematurity at regional and global level for 2010. *Pediatr Res* 2013;54:36–49.

PREVENTION is better than CURE

In Guyana, how can policy makers encourage prevention of blindness in the community?



Effects of Vision Loss on a Person



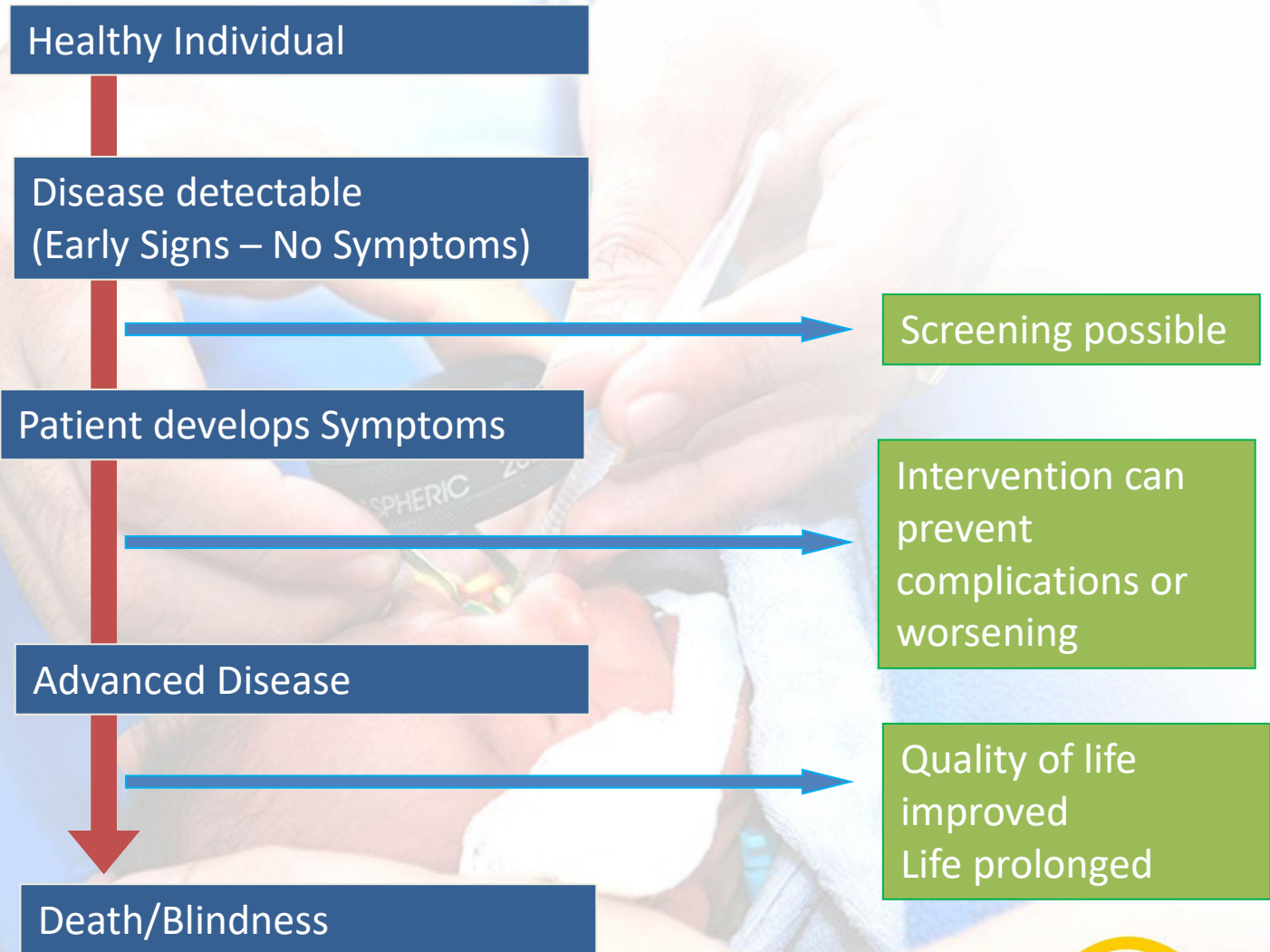
Why Screen ROP?

- Well established classification system
- Natural history is known: signs develop 3-4 weeks after birth; progression is rapid, but in around 70% of infants the condition resolves without treatment (i.e. 5-10% of all babies screened). It is those who progress who need treatment
- Clinical trials show that treatment of the disease once it reaches a critical stage is highly effective at preventing progression to blinding retinal detachment

WHO Principles of Screening

- Important health issue with a pre-symptomatic stage
- Screening process should be acceptable by the public and also recommended by medical community
- Safe, effective and universally agreed treatment
- Cost of screening and treatment should not be more than the cost for diagnosis and treatment

Screening Pathway



Why Screen ROP?

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What is ROP?

- Retinopathy of prematurity (ROP) is a disease that occurs in premature babies that causes abnormal blood vessels to grow in the retina.
- This abnormal growth of blood vessels (neovascularization) can cause the retina to detach from the back of the eye, leading to permanent blindness.
- In 5–10% of premature babies, ROP progresses and can lead to retinal detachment

Population at Risk

- WHO estimate that there are 15 million preterm births a year (born at <37 weeks)
- Ministries of Health are highly likely to expand neonatal intensive care as a consequence: this will lead to increased survival of preterm babies, so putting them at risk of ROP
- Those most at risk of ROP are those born at <32 weeks gestational age; babies 32-37 weeks are at less risk.
- Only preterm babies cared for in neonatal intensive care units develop ROP with principal risk factor being unmonitored oxygen levels.
- Factors which increase the risk of ROP include preterm birth; too much oxygen; sepsis; chronic lung disease; poor nutrition i.e. less than perfect neonatal care

ROP – Public Health Approach

| Primary prevention | Secondary prevention | Tertiary prevention |
|---|--|---|
| <ul style="list-style-type: none"> •<u>Good neonatal care:</u> -systemic steroids to mothers for premature births and -O2 monitoring of neonates •<u>Reduce preterm births:</u> -Reduce number of implanted embryos in fertility clinics and health education about risks of in vitro and fertility drugs -Prevention of teenage pregnancies -Avoid unnecessary Caesarean sections | <ul style="list-style-type: none"> -Screening and Examination of babies at risk -Laser treatment of type 1 ROP -Follow up | <ul style="list-style-type: none"> -Surgery for stage 4 ROP -Low vision services and rehabilitation |

Strategies for Control

- ***Prevent preterm birth:*** a challenge that is multifactorial
- ***Improve neonatal care:*** again, a challenge, but specific interventions such as reducing infection and using less oxygen, and using it more carefully, can reduce the risk. Better oxygen monitoring requires
 - systems for delivering oxygen in varying amounts (blenders)
 - systems for measuring oxygen levels in the blood (probes and monitors)
 - trained staff who understand the importance of controlling oxygen levels

Strategies for Control

- ***Detect infants with disease needing treatment.***

This can be done in the following ways:

- Neonatologist identifies infants to be examined according to gestation age, birth weight etc criteria
- Ophthalmologist visits the neonatal unit on a fixed day and time each week to examine the infants using an indirect ophthalmoscope. For each infant they have to decide a) safe to discharge, or b) see again next week, or c) treatment needed

Strategies for Control

- ***Detect infants with disease needing treatment.***

This can be done in the following ways:

- As above, but instead of using an indirect ophthalmoscope, a RetCam (wide field digital camera) is used.



Blindness from ROP can be controlled through 2 broad approaches:

- reducing the incidence through excellent neonatal care
- detecting and treating infants who develop the severe stages of disease

ROP Screening and Control in Guyana

- Guyana has an Eye Care Strategic Framework on prevention of Blindness of which Childhood Blindness is one of the primary areas of focus.
- PAHO-MoPH Workshop was held on 15 July 2019 in Georgetown to develop Guidelines for ROP in Guyana.
- National Stakeholders and the Ministry of Health were present at this meeting including nurses and doctors involved in Neonatal Care.

ROP Screening and Control in Guyana

- Dr. Juan Carlos Silva, PAHO Regional Advisor, Prevention of Blindness and Ocular Health.
- Dr. Pablo Duran, PAHO Regional Advisor, Neonatal Health.
- Guyana ROP Working Group was established to finalise the guidelines and to promote the adoption of these Guidelines by the Ministry of Health.

ROP Screening and Control in Guyana

- The Maternal and Child Health Unit of the MoPH to collaborate with the ROP Working Group to implement the plan in tandem with the Guyana Neonatal Health Strategy and the Neonatal Resuscitation Programme.
- With lack of data in Guyana, this collaborative approach encourages collection of data at all levels to monitor progress on Childhood Blindness Prevention.

ROP Screening and Control in Guyana

- The Guyana ROP Guidelines addresses issues in two broad categories:
 - Neonatal Care and
 - Ophthalmological Care

Guyana ROP Guidelines - Summary

Neonatal Care

- Use of Breast Milk for premature infants due to protective impact on incidence of ROP
- Creation of Alarm System to identify premature infants at risk for ROP (using GA, BW and WG)
- Supplementation of premature infants with Vitamins due to effects on reducing ROP
- Resuscitation of preterm newborns with PPV and Oxygen levels of 21-30%

Guyana ROP Guidelines - Summary

Neonatal Care

- In NICU/Delivery Rooms, maintenance of saturation with standard ranges in patients with ROP risk:

3 min: 70-75% 5 mins: 80-85% 10 mins: 85-95%

- Permanent monitoring of saturation with a pulse oximeter to maintain saturation between 89-94%.
- Compressed air-oxygen blenders and environmental oximeters for the periodic control of FiO₂ are suggested for all neonatal care units

Guyana ROP Guidelines - Summary

Ophthalmological Care

- Screening for ROP is recommended for every newborn with a birthweight of $< 2,000$ g and/or a GA of 36 weeks or less of any birthweight, who presents at least one of the situations identified as risk factors for ROP.
- The first examination for ROP screening is recommended according to the scheme:
 - Babies less than 28 weeks should be conducted at 30 weeks.
 - Babies 28 weeks and more to be conducted 4 weeks after birth.

Guyana ROP Guidelines - Summary

Ophthalmological Care

- Follow up Screening for ROP and suspension of screening to follow the national scheme based on Stages of ROP.
- Screening and treatment will follow international recommendations of equipment and eye drops required and recommended protocols.
- Visually Impaired Children will be incorporated in the available education programmes early.

Moving Forward

- Office of Vision and Eye Health Services officially implemented in Jan 2021 at the Ministry of Health.
- Finalization and Adoption of National ROP Guidelines that were drafted in July 2019 during National PAHO Workshop.
- Distribute Guidelines at the national level with all pediatricians, neonatologists and nurses working at the NICU.

Moving Forward

- Screening and treatment will follow international recommendations of equipment and eye drops required and recommended protocols.
- National Referral and Screening Form will be developed.

[Currently screening continues at the Referral hospital.]

ROP SCREENING

PEDIATRIC OPHTHALMOLOGY CLINIC

GPHC

Name: _____

Age: ____ weeks

PRE NATAL HISTORY

Maternal Infection History _____

Maternal Drug History _____

Others Maternal Condition _____

Fetal Condition _____

PAST OCULAR FAMILY HISTORY _____

OCULAR EXAM

| | OD | OS |
|------------------|----|----|
| ADNEXAS ORBITS | | |
| ANTERIOR SEGMENT | | |

BINOCULAR INDIRECT OPHTHALMOSCOPY

NO ROP ____

| OD STAGE | Zone I | Zone II | Zone III |
|-----------|--------|---------|----------|
| Inmature | | | |
| Stage I | | | |
| Stage II | | | |
| Stage III | | | |

POST NATAL HISTORY

IG ____ weeks BW ____ g Apgar ____

Oxygen ____ PCPA ____ Antibiotic IV ____

Phototherapy ____ Transfusions ____

General Medical Condition _____

| OS STAGE | Zone I | Zone II | Zone III |
|-----------|--------|---------|----------|
| Inmature | | | |
| Stage I | | | |
| Stage II | | | |
| Stage III | | | |

Moving Forward

- Review the training and equipment needs and gaps at the NICU at the Georgetown Public Hospital and at the intermediate care units in the different regions (6 units).
- Training workshop for all levels of health care professionals (nurses, physicians) working with newborns and premature infants.
- Request equipment at the various health care levels for implementation of guidelines.



Moving Forward

WORKSHOP - VISION SCREENING OF PREMATURE INFANTS

- PURPOSE:** To familiarize all health care personnel working with premature infants to identify infants for vision screening and to implement guidelines for Retinopathy of Prematurity (ROP) prevention.
- LOCATION:** Georgetown Public Hospital Corporation (GPHC)
- TIME:** 4 (Four) Hours
- TRAINERS:** Neonatologists and Ophthalmologists from GPHC
- TARGET PARTICIPANSTS:** Nurses, Government Medical Officers (GMOs)/GPs, Residents, Neonatologists, Paediatricians, NICU Staff
- NUMBER:** 20-30 (From all hospitals that have nursaries or NICU – GPHC, Linden Health Complex, New Amsterdam Hospital, West Demerara Regional Hospital, Suddie Hospital, Bartica Hospital)

Moving Forward

- PAHO and WHO template for Data Collection will be initiated that provide overall country status and auger research.



| Template for data collection at the Neonatal Intensive Care Unit NICU on RETINOPATHY OF PREMATURITY - ROP | | | |
|--|------|--------------|-------|
| I. Objectives | | | |
| (1) Perform the diagnosis of human and physical resources and technologies available in neonatal units to perform prevention of blindness by Retinopathy of Prematurity -ROP (2) Assess outputs and outcomes at the NICU | | | |
| II. General data on the Hospital | | | |
| Name of the Hospital: | | | |
| Public () ; Private () | | | |
| Secondary Care () ; Tertiary care () | | | |
| Number of beds: | | | |
| Human resources identification | | | |
| | Name | Phone number | Email |
| Hospital Director | | | |
| NICU Director | | | |
| Neonatologist - Pediatrician coordinator | | | |
| Chief nurse | | | |
| Ophthalmologist | | | |

Conclusion

- ROP will become a problem for Guyana in the near future with the improvement in Neonatal Care and development of NICUs.
- As Health Care Providers we can start planning and implementing strategies for the prevention of an epidemic.
- Collaborative approach of the Ministry of Health, Regional Health Authorities and Health Care Professionals needs to be encouraged in preterm care to combat Childhood Blindness.



THANK YOU

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