TeleROP-NI: a regional multidisciplinary approach to ROP screening & decision making

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Introduction

The sustained provision of a robust Retinopathy of Prematurity (ROP) screening service in Northern Ireland has become more challenging in recent times due to the increasing survival rate of very premature infants, resulting in an increased workload. Simultaneously the service faces a dwindling workforce of ophthalmologists experienced in ROP management. A TeleROP-NI regional model for ROP screening was developed to meet this challenge, enabling imaging of infants across neonatal units in Northern Ireland by non-ophthalmologist ROP imagers with subsequent Multidisciplinary Team (MDT) collective decision-making for infants developing ROP. The telemedicine approach uses a team of ROP imagers to image infants with the Forus-Neo Camera and upload images for review at the weekly MDT virtual meeting.

Methods

Between 2nd May – 24th October 2023, 431 screens (n=127 infants) were undertaken: 250 by Imagers, 40 by Imagers and Ophthalmologists using Binocular Indirect Ophthalmoscopy (BIO), and 141 by Ophthalmologists. In line with the 2022 RCOphth ROP screening recommendations, BIO was performed on all infants by an ophthalmologist, to confirm vascularisation into Zone 3, before final discharge from the ROP screening programme.

Figure 1: Uploaded ROP image to Electronic Care Record with attached report

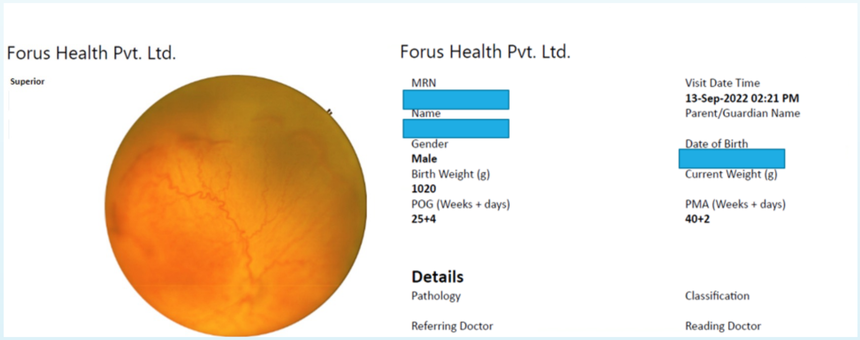


Figure 2: Imaging practitioner undertaking ROP imaging

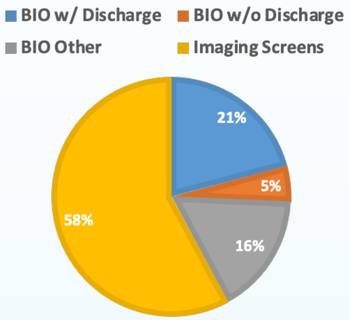


Results

Figure 3: Comparison between TeleROP-NI and Flagship ROP Telemedicine studies

Study	Infants n=	Outcome Measures	Results
TeleROP-NI	**129**	**(1) Treatment-warranted ROP (TW-ROP)** **(2) Any stage ROP**	**(1) Sensitivity 100%, Specificity 100%** **(2) Sensitivity 98.2%, Specificity 100%**
Fijalkowski et al SUNDROP (1)	511	(1) Treatment-warranted ROP (TW-ROP)	(1) Sensitivity 100%, Specificity 99.8%
Vinekar et al KIDROP (2)	1601	(1) Treatment-warranted ROP (TW-ROP) (2) Any stage ROP	(1) Sensitivity 95.7%, Specificity 93.2% (2) Sensitivity 94.3%

Figure 4: A chart to show distribution of screens undertaken - 58% reduction in Consultant screening workload



Conclusion

This study confirms that the tele-medicine model significantly reduced ophthalmologist workload and streamlined organisational barriers.

Imaging infants by non-clinicians is a safe and valuable practice

- 0 blind infants
- Meets standard of flagship Telemedicine trials in ROP detection
- MDT allows collective decision making in complex cases
- Medico–legal benefits to photo documentation of ROP examination findings
- Significant burden offloaded from Ophthalmologists

References

1. Fijalkowski N, Zheng LL, Henderson MT, Wang SK, Wallenstein MB, Leng T, et al. Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDROP): five years of screening with telemedicine. Ophthalmic Surg Lasers Imaging Retina. 2014;45(2):106–13.
2. Vinekar A, Gilbert C, Dogra M, Kurian M, Shainesh G, Shetty B, et al. The KIDROP model of combining strategies for providing retinopathy of prematurity screening in underserved areas in India using wide-field imaging, tele-medicine, non-physician graders and smart phone reporting. Indian J Ophthalmol. 2014 Jan;62(1):41.