**Media release**

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**Research enables safer test for blindness in preterm babies**

* *Move to ‘microdrops’ for preterm infants reduces risk of serious side effects*
* *University of Otago research likely to inform best practice in New Zealand and internationally*

University of Otago researchers have successfully tested a safer way to administer the pupil-dilating eye drops used to test the eyes of preterm babies and help to prevent permanent blindness. The new approach could inform guidelines in New Zealand and around the world.

Every year in New Zealand and Australia, about 540 very preterm babies are born (before 31 weeks) and are at risk of permanent blindness. All of these preterm babies are offered an eye test, and if detected early, blindness and vision impairment can be prevented.

Until now, testing for babies has often used adult doses and formulations of eye drops, which can in some cases result in serious adverse events which affect the heart, lungs, and gastrointestinal system. These known risks can be managed in the Neonatal Intensive Care Units where preterm babies are tested, and are outweighed by the benefits of detecting retinopathy. However, clinicians and parents agree on the importance of minimising risks wherever possible.

In 2018, Cure Kids awarded a Project Grant to a team at the University of Otago, led by Associate Professor David Reith, to investigate whether infants could be given a smaller dose of eye drops. “We’re thrilled that the study will positively impact many families by reducing medicine-related harm,” says Lisa Kremer, a researcher at the School of Pharmacy who specialises in safe and effective use of medicines in neonates. This world-first medical research breakthrough, which has also been supported by the Health Research Council of New Zealand, enables extra safety for critical eye screening in vulnerable preterm babies.

Very preterm infants require several eye examinations to screen for retinopathy of prematurity, and with timely diagnosis and treatment, permanent blindness can be prevented. During these tests, preterm infants had previously received doses of mydriatic eye drops equivalent to, or higher than, doses administered to adults.

This 3-year study tested the safety and efficacy of microdrops, and proved that these smaller doses reduced side effects for babies.[[1]](#footnote-2)

**Māori babies a study focus, for the first time**

“We also wanted to investigate whether these eye drops work for Māori babies,” says Kremer. “This question has not previously been answered because there have never been any Māori participants in any published eye drop studies. The study had a high recruitment rate of Māori infants (20%), and results suggest that safety and efficacy for this group are not significantly different than for New Zealand European infants.”

Frances Benge, CEO of Cure Kids – New Zealand’s largest charitable funder of child health research – says the charity is getting behind research projects that ‘shine an equity spotlight’ to help achieve better health outcomes for disadvantaged ethnicities.

“Data[[2]](#footnote-3) show that Māori infants in New Zealand are less likely to experience the same health outcomes as other New Zealanders; therefore, to contribute to achieving health equity for Māori, targeted inclusion in clinical trials is critical, and something Cure Kids is fully supporting.”

**Kiwi research to guide international best practice**

Analysis and outcomes from *The Little Eye Drop Study* are likely to result in changes to best practice for the benefit of millions of preterm babies around the world.

“This study is yet another example of locally led innovative research from right here in New Zealand, joining other research funded by Cure Kids, such as studies on Sudden Unexpected Death in Infancy that have had a huge positive impact globally,” says Benge.

The research team has been communicating the results of the study with the major hospitals which care for preterm babies around Aotearoa New Zealand.

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**About the study**

The multicentre, prospective, randomised, controlled, non-inferiority clinical trial included 150 preterm babies born at four tertiary hospitals in New Zealand between 2019 and 2021. Pre-term babies with a birth weight less than 1250 g or gestational age less than 30+6 weeks who required an eye exam for retinopathy received up to three microdrops (~7 μL) in both eyes of either very low dose (0.5% phenylephrine and 0.1% cyclopentolate), or low dose (1% phenylephrine and 0.2% cyclopentolate) mydriatic solution.

**Available for interview:**

* Lisa Kremer – Lecturer in Clinical Pharmacy, University of Otago
* Frances Benge – Cure Kids CEO

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1. Kremer LJ, Medlicott N, Sime MJ, et al. Low dose or very low dose phenylephrine and cyclopentolate microdrops for retinopathy of prematurity eye examinations (The Little Eye Drop Study): a randomised controlled non-inferiority trial. *Arch Dis Child Fetal Neonatal Ed.* 2023; 0:F1–F7. doi:10.1136/archdischild-2022-324929. [↑](#footnote-ref-2)
2. Edmonds LK, Sibanda N, Geller S, et al. He Tamariki Kokoti tau: tackling preterm incidence and outcomes of preterm births by ethnicity in Aotearoa New Zealand 2010–2014. *Int J Gynecol Obst* 2021;155:239–46. [↑](#footnote-ref-3)