Submission No 14

IMPROVING ACCESS TO EARLY CHILDHOOD HEALTH AND DEVELOPMENT CHECKS

Organisation: The Royal Australian and New Zealand College of Ophthalmologists (RANZCO)

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RANZCO Response to Legislative Assembly Committee on Community Services inquiry into Improving access to early childhood health and development checks:

Introduction

The Royal Australian and New Zealand College of Ophthalmologists is pleased to provide this submission to the Committee focussing on the important role of vision screening in supporting optimum health, educational[1], social and mental health outcomes for children in NSW. If children are not screened, eye disease can go undiagnosed, losing the opportunity to reverse the causes and leading to lifelong poor vision in that eye. Children experiencing loss of vision are more likely to have poor mental health when compared to those with full vision.[2]

Vision is a developed sense that requires healthy eyes with clear images in each eye during early childhood to achieve the best visual potential. Rapid visual development occurs, especially in the first few months of life, completing by around age eight, with the possibility of treatment extending into the teen years. The primary target of vision screening is to identify amblyopia, characterised by poor vision due to abnormal visual experiences in early life. If diagnosed in the young, the causes of amblyopia can be reversed. This condition can be bilateral but often affects only one eye and is often asymptomatic.

Most children with severe vision impairment in both eyes are typically detected in early life, either due to obvious difficulty with seeing or as part of the workup for another disorder. According to the World Health Organisation (WHO)[3], the purpose of screening programs is to identify the population at risk to facilitate early treatment or intervention, thereby reducing disease incidence and mortality. In the context of vision screening, the goal is to reduce the prevalence of amblyopia and prevent permanent vision loss.

Role of vision screening programs

Screening programs should only focus on important disorders for which there are acceptable, appropriate, and reliable tests, coupled with available effective treatments. The benefits of screening should outweigh potential harms, aligning with Wilson and Junger's principles of screening[4]. These principles include the importance of the health problem, the existence of an accepted treatment, availability of facilities for diagnosis and treatment, the presence of a recognisable latent or early symptomatic phase, a suitable test or examination, acceptability to the population, understanding the natural history of the condition, and having an agreed policy on whom to treat as patients. For evidence on efficacy of children's vision screening programs refer to RANZCO Position Statement: Pre-School / Early School-Based Children's Vision Screening Programs.

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Furthermore, the cost of case-finding, including the diagnosis and treatment of diagnosed patients, should be considered, and case-finding should be viewed as a continuous process rather than a one-time project. Ensuring the importance of the health problem remains a central focus in the screening process.

Prevalence of amblyopia

Amblyopia the most common cause of vision loss in children, has a similar prevalence across racial and ethnic pre-schoolers. The Sydney Myopia Study revealed that 1.9% of Australian pre-schoolers sampled had amblyopia.[5]

The common causes of amblyopia include refractive errors (needing optical correction, particularly hypermetropia (long-sightedness) and anisometropia (different focus between the eyes) and strabismus, or a combination of these. Rare causes include cataracts and other media opacities. Amblyopia is usually unilateral but can be bilateral, often asymptomatic due to compensation by the other eye.

Amblyopia is associated with various visual deficits, including abnormal contour interaction, reduced contrast sensitivity, positional uncertainty, poor accommodation, abnormal eye movements, and suppression. Amblyopic children exhibit reduced fine and gross motor skills and read more slowly than controls.

Reduced visual acuity at school entry is linked to reduced literacy, with literacy scores decreasing with each line of vision reduction[6] and low overall performance in school.[7] Because the risk factors for amblyopia occur in infancy or early childhood, screening at only one point in time should detect most of the affected population. Across most of NSW, there are dedicated catch up StEPs clinics for children who have missed the primary screening at age four.

In a study of adults aged 49 years or older, the Blue Mountains Eye Study found an amblyopia prevalence of 3.2%, with no impact on lifetime social class but a lower completion rate for higher degrees.[8] An increased risk of 5-year incident visual impairment in the better-seeing eye was observed, emphasising the potential consequences of amblyopia. It has been demonstrated that amblyopia in one eye results in a nearly doubled lifetime risk of bilateral vision loss.[9] Reduced vision in one eye can prevent employment in careers such as military, law enforcement, aviation, firefighting and driving heavy vehicles.

Treatment of amblyopia

Treatment for common causes of amblyopia, such as refractive errors and strabismus, can be initiated after referral by community optometrists or general/paediatric ophthalmologists. Children with organic conditions like optic nerve disorders, cataracts, and glaucoma are urgently referred to a tertiary paediatric ophthalmology service.

The current approach to amblyopia treatment typically involves a refractive correction (usually glasses), followed by part-time patching or atropine occlusion if glasses alone are insufficient. Approximately 75% of children under 7 years of age achieve resolution of amblyopia, with treatment potentially lasting 6-12 months, and tapering reducing the risk of recurrence.[10]

The StEPS program

RANZCO supports the State-wide Eyesight Preschooler Screening (StEPS) program which has offered free vision screening to all four-year-old children through the respective local health district preschools and childcare centres since 2008. This approach detects vision problems prior to children starting school, at an age when reliable vision testing can be achieved and treatment for childhood ocular conditions is most effective. Opt-in consent forms are needed to participate and alternative options for vision assessment are available at respective NSW Health Child and Family Health services and GP practices. Follow up clinics for children missed in the initial preschool screening is part of the StEPs program.

Built into the service model, the StEPS program in NSW has strategies for reaching high-risk groups including children:

- not currently accessing LHD preschools and childcare centres
- who are prevented from, or delayed in, accessing necessary health information and health services including those in rural and remote locations[11]
- from remote indigenous populations
- with multiple disabilities
- born prematurely

RANZCO supports the findings of the 2019 evaluation of the StEPS program by the University of Technology Sydney (UTS) which presented an overall positive assessment of the program.

We acknowledge the Aboriginal and Torres Strait Islander Peoples, the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and community. We pay our respects to them and their cultures; and to their Elders past, present and emerging.
In recognition that we are a bi-national College, we also acknowledge the Rangatiratanga of Māori as Tangata Whenua and Treaty of Waitangi partners in Aotearoa New Zealand.

In particular we highlight the following key findings from the evaluation[12]:

1. **Appropriateness:** The StEPS program was deemed appropriate, unique, and evidence-based, aligning with international guidelines. Local variations in implementation did not affect referral patterns, and the program enjoyed support from key stakeholders.

2. Effectiveness: The StEPS program achieved a high rate of vision screening (75.6% of four-year-olds from 2009 to 2016) and was effective in identifying children requiring active treatment. Catch-up clinics were established in all Local Health Districts (LHDs), contributing to higher screening rates. The availability of catch-up clinics enhanced access (19.3%).[13]

3. **Efficiency:** The program was considered cost-effective (approximately $4 million per year) and comparable to other prevention programs, representing good value for money.

Key implications and recommendations include:

1. **Encouraging and improving access:** Recommendations include making program information available in common languages, simplifying parental consent processes, and increasing public awareness.

2. **Maintaining quality and consistency:** Suggestions involve use of a research standardised vision chart for screening, ongoing training for screeners, and extending the availability of secondary screening.

3. **Strengthening referral pathways:** Recommendations include exploring strategies to improve uptake of post-referral services, better ways to manage referrals, and advocacy for timely management of eye conditions.

4. **Improving data quality and reporting:** Recommendations include exploring options to improve data entry, simplifying outcome classifications, and implementing electronic reporting of outcomes by eye health professionals.

Building on StEPS

RANZCO recommends that the NSW Government build on the success of the NSW Ministry of Health's Health and Social Policy Branch StEPS program to further strengthen its capacity to detect eye and vision problems early to maximise treatment outcomes and optimise restoration of normal vision development for optimal mental[2] and physical well-being. Targeting pre-school aged children during this period of critical brain development is vital for them to achieve their potential.

Aligned with the findings of the StEPS evaluation (see above), RANZCO recommend strengthening referral pathways and further refining existing strategies to improve uptake of post-referral services (especially among at-risk groups named above), better ways to manage referrals, and advocacy for timely management of eye conditions.

RANZCO recommends ongoing funding support for Paediatric Ophthalmic Outpatient clinics located at child health centres targeting children:

- with potentially significant vision loss as high priority follow up referrals
- who miss screening at preschool age

RANZCO recommend ongoing funding of StEPS coordinators to develop local processes for the following audiences:

- Aboriginal and Torres Strait Islander families
- Culturally and Linguistically Diverse children
- Children in Out of Home Care
- Refugee children
- Socioeconomically disadvantaged children
- Difficult to examine (children with disabilities)

RANZCO recommends NSW develop evidence-based educational resources on the importance of vision screening and follow-up, targeting parents and caregivers with a specific focus on currently under-screened groups.

References

1. Lynne L, Prem-Senthil, M, Constable, P. A Systematic Review of the Impact of Childhood Vision Impairment on Reading and Literacy in Education. *Journal of Optometry*. 2024;17(2)doi:https://doi.org/10.1016/j.optom.2023.100495
2. Augestad L. Mental Health among Children and Young Adults with Visual Impairments: A Systematic Review. *Journal of Visual Impairment and Blindness*. 2017;
3. World Health Organisation. *Screening Programmes: A Short Guide, Increase Effectiveness, maximise benefits and minimize harm*. 2020. https://iris.who.int/bitstream/handle/10665/330829/9789289054782-eng.pdf?sequence=1
4. Dobrow M, Hagens, V, Chafe, R, Sullivan, T, Rabaneck, L,. Consolidated priniples for screening based on a systematic review and consensus process. *CMAJ*. 2018;190(14)doi:10.1503/cmaj.171154. PMID: 29632037; PMCID: PMC5893317

5. Pai S, Rose, K, Leone, J, Sharbini, S, Burlutsky, G, Varma, R, Wong, T, Mitchell, P,. Amblyopia prevalence and risk factors in Australian preschool children. *Ophthalmology* 2012;119:138-144.
6. Bruce A, Fairley L, Chambers B, Wright J, Sheldon TA. Impact of visual acuity on developing literacy at age 4–5 years: a cohort-nested cross-sectional study. *BMJ Open*. 2016;6(2):e010434. doi:10.1136/bmjopen-2015-010434
7. Harrington S, Davison, P, O'Dwyer, V. School Performance and undetected and untreated visual problems in school children in Ireland: A population based cross-sectional study *Irish Educational Studies*. 2021;doi:10.1080/03323315.2021.1899024
8. Chua B, Mitchell, P. Consequences of amblyopia on education, occupation, and long term vision loss. *Br J Ophthalmol*. 2004;88:1119-21. doi:10.1136/bjo.2004.041863
9. van Leeuwen R, Eijkemans, M, Vingerling, J, Hofman, A, de Jong, P, Simonsz, H,. Risk of bilateral visual impairment in individuals with amblyopia: the Rotterdam study. *Br J Ophthalmol*. 2007;91:1450-1451. doi:10.1136/bjo.2006.113670
10. West S, Williams, C, . Amblyipia in Children (aged 7 years or less). *BMJ Clin Evid*. 2016;doi:PMID: 26731564
11. Xinzhi Z, Andersen, R, Saaddine, J, Beckles, G, Duenas, M, Lee, P. Measuring Access to Eye Care: A Public Health Perspective. *Ophthalmic Epidemiol*. 2008;15:418-425.
12. Strategy IC. *Evaluation of the Statewide Eyesight Preschooler Program (StEPS). Final Report*. 2018.
13. French A, Murphy, E, Martin, F, de Mellow, N, Rose, K. Vision Screening in Children: The New South Wales Statewide Eyesight Preschooler Screening Program. *Asia Pac J Ophthal*. 2022;11(5)doi:10.1097/APO.0000000000000558.