



Research and Evaluation Publications

2018



**The Fred Hollows
Foundation**

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PREFACE

THE FRED HOLLOWES FOUNDATION SEEKS TO UNDERTAKE AND SUPPORT HIGH IMPACT RESEARCH AND INNOVATION TO ACCELERATE CHANGE.

This report summarises The Foundation's 2018 research and evaluation publications.

Vision problems and blindness impact the ability of individuals and their families to participate in education, employment and maintain their role as active members of their community. Restoring vision is about more than being able to see well, it's about ensuring all people have the best possible chance to live healthy and happy lives.

The Fred Hollowes Foundation is an international development organisation, committed to a world in which no person is needlessly blind or vision impaired.

Thanks to advances in medical treatment, health care and technology, 4 out of 5 people who are blind don't need to be. The Foundation works with local partners and governments in more than 25 countries to deliver essential eye operations and treatments, train surgeons and health care workers, provide equipment and advocate for sustainable eye care services.

To ensure our programs deliver the best possible solutions, The Foundation maintains a portfolio of high quality, high impact research and innovation. These investments strengthen the evidence base, improve program performance, further global thinking on ending avoidable blindness and support our advocacy and policy efforts. Our research is complemented by rigorous program monitoring and evaluation, which build our organisational capacity and strengthen the performance of our programs ensuring we continue to deliver what works for individuals and communities in need.

Our commitment to innovation, and to improving and evaluating our work sets The Foundation apart. We believe in delivering the best possible solutions, backed by evidence. We remain willing to trial new approaches and are committed to continuous quality improvement and excellence. We believe that sharing our insights, facilitating knowledge exchange with our partners and scaling-up innovative solutions is key to driving large scale systemic change.

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STRATEGIC EVALUATIONS

VIETNAM: Evaluation of The Fred Hollows Foundation Vietnam Program Comprehensive Eye Care Model 2003-201

Dinh, K. Prasad, N. & Phan, T.

Background: The Fred Hollows Foundation Viet Nam implemented the Comprehensive Eye Care (CEC) Model in Vietnam in collaboration with the Provincial Department of Health in 19 provinces from 2003 to 2016. The CEC model is a comprehensive set of interventions designed to support all levels of the provincial eye health system. The five components of the model are:

1. **Partnership and coordination** – strengthening project management skills and coordination for eye health service providers and other stakeholders
2. **Human resource development** – clinical training for eye care workers and project management training
3. **Enabling infrastructure** – support for infrastructure such as buildings and equipment
4. **Disease control** – support for eye health screening and treatment, including cataract surgery
5. **Eye health promotion** – education and information dissemination activities, including distribution of information education campaign materials

Method: The Foundation collaborated with the Australian consulting firm ZEST Health Strategies in order to conduct an evaluation of the CEC Model from January to August 2018. The purpose of the evaluation was to identify key lessons from implementing the CEC Model as well as its medium-term outcomes. Data was collected from a sample of four provinces: Hoa Binh, Vinh Long, Phu Yen and Quang Ngai.

Results: The evaluation found that the following outcomes were achieved for activities supported by FHF in the four provinces between 2012 and 2017:

- A 58% increase in the number of patients screened for eye conditions per year
- A higher proportion of female (52-63%) than male patients (37-48%) screened each year
- A 26% increase in the number of cataract surgeries performed per year
- Evidence of good access to eye screening for ethnic minorities, those living in remote areas and the elderly.

Conclusion:

The Program resulted in improved outcomes in availability, accessibility, quality and uptake of eye health services. Key factors that influenced the effective implementation of the CEC Model included:

- The working relationships between the relevant Provincial Government authorities and FHF
- Long-term eye health planning and annual reviews by

Provincial Governments

- Provincial co-funding of CEC Model activities
- A strong and well-coordinated primary eye care network
- The quality of formal clinical training and availability of follow-up mentoring and supervision
- Good community awareness of eye health that results in patients presenting earlier to be screened and a gradual reduction in severe cases within villages

Acknowledgements: ZEST Health Strategies. The report was commissioned by The Fred Hollows Foundation, Knowledge and Innovation Division.

Citation: Dinh, K. Prasad, N. & Phan, T. (2018). *Evaluation of the Fred Hollows Foundation Vietnam Program*. ZEST Health Strategies prepared for The Fred Hollows Foundation.



School children in Vietnam have their eyes tested, through a program supported by The Fred Hollows Foundation

PREVALENCE OF BLINDNESS STUDIES

PAPUA NEW GUINEA: Rapid assessment of avoidable blindness in Papua New Guinea: a nationwide survey

Lee, L., D'Esposito, F., Garap, J., Wabulembo, G., Koim, S.P., Keys, D., Cama, A.T., Limburg, H. and Burnett, A.

Background: The objective of this study was to estimate the prevalence and main causes of blindness and vision impairment in people aged 50 years and older in Papua New Guinea.

Method: National cross-sectional population-based survey in National Capital District (NCD), Highlands, Coastal and Island regions. Adults aged 50 years and above were recruited from 100 randomly selected clusters. Each participant underwent monocular presenting and pinhole visual acuity (VA) assessment and lens examination. Those with pinhole VA <6/12 in either eye had a dilated fundus examination to determine the primary cause of reduced vision. Those with obvious lens opacity were interviewed on barriers to cataract surgery.

Results: A total of 4818 adults were examined. The age-adjusted and sex-adjusted prevalence of blindness (VA <3/60), severe vision impairment (SVI, VA <6/60 but ≥3/60), moderate vision impairment (MVI, VA <6/18 but ≥6/60) and early vision impairment (EVI, VA <6/12 but ≥6/18) was 5.6% (95% CI 4.9% to 6.3%), 2.9% (95% CI 2.5% to 3.4%), 10.9% (95% CI 9.9% to 11.9%) and 7.3% (95% CI 6.6% to 8.0%), respectively. The main cause of blindness, SVI and MVI was cataract, while uncorrected refractive error was the main cause of EVI. A significantly higher prevalence of blindness, SVI and MVI occurred in the Highlands compared with NCD. Across all regions, women had lower cataract surgical coverage and spectacle coverage than men.

Conclusion: PNG has one of the highest reported prevalence of blindness globally. Cataract and uncorrected refractive error are the main causes, suggesting a need for increased accessible services with improved resources and advocacy for enhancing eye health literacy.

Citation: Lee, L., D'Esposito, F., Garap, J., Wabulembo, G., Koim, S.P., Keys, D., Cama, A.T., Limburg, H. and Burnett, A. (2018). *Rapid assessment of avoidable blindness in Papua New Guinea: a nationwide survey*. British Journal of Ophthalmology, 103(3), 338-342. doi:10.1136/bjophthalmol-2017-311802

PAPUA NEW GUINEA: Rapid assessment of avoidable blindness and diabetic retinopathy in people aged 50 years and older in the National Capital District of Papua New Guinea

Burnett, A., Lee, L., D'Esposito, F., Wabulembo, A.C., Guldan, G., Nelisse, M., Koin, S.P., Keys, D., Poffley, A.J., Limburg, H. and Garap, G

Background: The aim of this study was to conduct an assessment of avoidable blindness, diabetes mellitus and diabetic retinopathy (DR) in adults aged 50 years and older in the National Capital District (NCD) region of Papua New Guinea (PNG).

Method: A cross-sectional population-based survey was performed for which 25 clusters of 50 people aged ≥50 years were randomly selected from the NCD region. The standardised rapid assessment of avoidable blindness (RAAB) with diabetic retinopathy (+DR) methodology was used. Blindness was defined as presenting visual acuity <3/60 in the better eye. Participants were classified as having diabetes if they were known to have diabetes or if their random blood glucose level was ≥200mg/dL. Dilated fundus examination and Scottish DR grading were performed.

Results: In total, 1192 out of 1250 eligible participants (95.4%) were examined. Of these, 7.8% had known or newly diagnosed diabetes. Seventy-one per cent of participants with known diabetes had a blood glucose level ≥200mg/dL, and 82.9% had never had an ophthalmological examination for DR. Prevalence of DR and/or maculopathy was 46.4%. The age-adjusted and sex-adjusted prevalence of diabetes was estimated at 8.1% (95% CI 5.7% to 10.4%) in the population aged 50 years or older in the NCD region of PNG.

Conclusion: Prevalence of diabetes in adults aged 50 years and older was lower than reported elsewhere in the region, and lower than other RAAB+DR surveys. Despite this, the prevalence of DR is high compared with other RAAB+DR surveys and demonstrates the need for increased awareness and accessibility to eye services for people with diabetes.

Citation: Burnett, A., Lee, L., D'Esposito, F., Wabulembo, A.C., Guldan, G., Nelisse, M., Koin, S.P., Keys, D., Poffley, A.J., Limburg, H. and Garap, G. (2018). *Rapid assessment of avoidable blindness and diabetic retinopathy in people aged 50 years and older in the National Capital District of Papua New Guinea*. British Journal of Ophthalmology Epub ahead of print: 8 April 2019. doi:10.1136/bjophthalmol-2017-311803

CATARACT STUDIES

ARTICLE: Prevalence and causes of blindness, visual impairment among different ethnic minority groups in Xinjiang Uygur autonomous region, China

Li, Y., Huang, W., Qiqige, A., Zhang, H., Jin, L., Ti, P., Yip, J. and Xiao, B.

Background: The aim of this cross-sectional study is to ascertain the prevalence and causes of blindness, visual impairment and uptake of cataract surgery among different ethnic groups in Xinjiang Uygur Autonomous Region, China.

Method: 4150 people at 50 years and above from different minority ethnic groups were randomly selected for an eye examination. The four trained eye teams collected data using tumbling E visual chart, torch, portable slit lamp and direct ophthalmoscope in 2015. The World Health Organization's definition of blindness and visual impairment (VI) was used to classify patients in each ethnic group. Data were analysed by different minority groups and were compared with Han Chinese.

Results: 3977 (95.8%) out of 4150 people were examined. The prevalence of blindness from the study population was 1.7% (95% confidence interval: 1.3–2.2%). There was no significant difference in prevalence of blindness between Han Chinese and people of Khazak and other minority ethnic groups, nor, between male and female.

Cataract was the leading cause (65.5%) of blindness and uncorrected refractive error was the most common cause of VI (36.3%) followed by myopic retinopathy. The most common barrier to cataract surgery was lack of awareness of service availability.

Conclusion: This study documented a low blindness prevalence among people aged 50 years and over comparing to prevalence identified through studies of other regions in China. It still indicates blindness and un-operated cataract as a significant public health issue, with no evidence of eye health inequalities, but some inequities in accessing cataract surgery amongst ethnic minority groups in Xinjiang.

Citation: Li, Y., Huang, W., Qiqige, A., Zhang, H., Jin, L., Ti, P., Yip, J. and Xiao, B. (2018). *Prevalence and causes of blindness, visual impairment among different ethnic minority groups in Xinjiang Uygur autonomous region, China*. *BMC Ophthalmology*, 18(1), 41. doi:10.1186/s12886-018-0705-6.

ARTICLE: Beyond monetary benefits of restoring sight in Vietnam: Evaluating well-being gains from cataract surgery

Feeny, S., Posso, A., McDonald, L., Chuyen, T.T.K. and Tung, S.T.

Background: A more holistic understanding of the benefits of sight-restoring cataract surgery requires a focus that goes beyond income and employment, to include a wider array of well-being measures. The objective of this study was to examine the monetary and non-monetary benefits of cataract surgery on both patients as well as their caregivers in Vietnam. Participants were randomly recruited from a Ho-Chi-Minh City Hospital.

Method: A total of 82 cataract patients and 83 caregivers participated in the survey conducted for this study. Paired t-tests, Wilcoxon Signed Rank tests, and regression analysis were used to detect any statistically significant differences in various measures of well-being for patients and caregivers before and after surgery.

Results: There were statistically significant improvements in monetary and non-monetary measures of well-being for both patients and caregivers approximately three months after undergoing cataract surgery, compared with baseline assessments collected prior to surgery. Non-monetary measures of well-being include self-assessments of overall health, mental health, hope, self-efficacy, happiness and life satisfaction. For patients, the benefits included statistically significant improvements in earnings, mobility, self-care, the ability to undertake daily activities, self-assessed health and mental health, life satisfaction, hope, and self-efficacy ($p < 0.01$). For caregivers, attendance at work improved alongside overall health, mental health, hope, self-efficacy, happiness and life satisfaction, three months post-surgery ($p < 0.01$).

Results: Restoring sight has positive impacts for those suffering from cataracts and their caregivers. Sometimes the benefits are almost equal in their magnitude. The study has also demonstrated that many of these impacts are non-monetary in nature. It is clear that estimates of the rate of return to restoring sight that focus only on financial gains will underestimate the true returns to society of restoring sight from cataract surgeries.

Citation: Feeny, S., Posso, A., McDonald, L., Chuyen, T.T.K. and Tung, S.T. (2018). *Beyond monetary benefits of restoring sight in Vietnam: Evaluating well-being gains from cataract surgery*. *PLoS ONE* 13(2). doi:10.1371/journal.pone.0192774

REPORT: Extending financial protection for cataract surgery in Vietnam

B. M. Essue, S. Jan and T. Laba

Background: This study aimed to estimate the health and financial protection benefits associated with two hypothetical programs that eliminated out-of-pocket costs associated with cataract surgery in Vietnam. The study also aimed to understand whether the programs had the potential to enhance financial protection among the sub-groups of the population who are most at risk of facing a financial burden when paying for cataract surgery and in so doing, achieve important equity outcomes.

The two interventions investigated included: 1) a hypothetical program that eliminated medical out-of-pocket costs and, 2) program one with the addition of a voucher program to cover non-medical out-of-pocket costs. The impacts associated with phacoemulsification surgery and small incision cataract surgery, two common cataract surgeries performed in Vietnam, were investigated.

Method: Extended cost effectiveness analysis (ECEA) was used. ECEA is a policy tool that examines how incremental health and financial protection benefits are distributed within a population. The health benefits were measured in terms of disability adjusted life years and the financial

protection benefits were measured as the number of cases of catastrophic health expenditure and impoverishing expenditure that would be avoided with the programs in place.

Results: Providing small incision cataract surgery free at the point of care, supplemented with a voucher to offset the non-medical costs of having surgery represents better value for money compared to the other options and achieves financial protection benefits that are concentrated among individuals in the lowest income quintiles for both males and females.

Eliminating medical out-of-pocket costs for cataract surgery without addressing nonmedical costs will not enhance financial protection in the population and may have the unintended effect of undermining financial protection. Addressing medical and non-medical out-of-pocket costs has the potential to strengthen financial protection for females and their households, and in so doing, mitigate gender inequities in access due to cost.

Acknowledgements: University of Sydney, Menzies Centre for Health Policy; Funded by The Fred Hollows Foundation.

Citation: Essue, B. M., Jan, S., Laba, T. (2018). Extending financial protection for cataract surgery in Vietnam – Full report. University of Sydney.



Cataract is the leading cause of blindness worldwide. Restoring vision through cataract surgery has life-long benefits.

REPORT: Partnership with the private clinic Clinique de l'Oeil for clinical and surgical outreach in four Eastern provinces of Burundi: Final Evaluation

R. Geneau & P. Courtright

Background: The Fred Hollows Foundation supported eye health programming in Burundi from 2015-2017 through a partnership with a private sector eye health provider – Clinique de l'Oeil (CdO). The partnership agreement included FHF financial support for the delivery of eye screenings and cataract services in four underserved provinces of the country. Key activities funded through this project included screening outreaches, the transport of cataract patients, cataract surgeries, cataract surgical outcome monitoring, patient follow-up systems, and supporting the work of the National Committee for Blindness Prevention.

Method: A mixed method approach using both quantitative and qualitative data collection and analysis tools was employed in this evaluation, including analysis of output data, data collection visit to Burundi and a total of 16 semi-structured interviews with key individuals or groups associated with the project. A realist evaluation approach and assessment of governance structures and mechanisms for eye health programming at the national level was applied throughout.

Results: Two of the three primary project objectives were achieved: **(1)** over 10,000 free eye services, including more than 500 cataract surgeries, were provided in four underserved provinces of Eastern Burundi across a 12 month period; and **(2)** an effective referral pathway was established between 10 private vision centres across the country with the CdO surgical services. However, the final objective **(3)** to engage with the National Committee for Blindness Prevention to take advantage of performance-based financing mechanisms did not progress due to political instabilities in Burundi at the time.

Conclusion: Burundi is a fragile state, where weak health infrastructure, coupled with poor health governance structures at the central level, make it challenging for government hospitals and clinics to meet the basic health care needs of the population. The FHF partnership with CdO since 2015 enabled hundreds of at need patients to access cataract surgery free-of-charge. These patients were screened close to home, while counselling and the provision of transport services to and from the hospital removed additional barriers to surgery. Quality of care is high at CdO, which helps to build trust in communities towards cataract surgery, and increase willingness to pay for surgery in the longer term.

Citation: Geneau, R., & Courtwright, P. (2018) Partnership with the private clinic Clinique de l'Oeil for clinical and surgical outreach in four Eastern provinces of Burundi. A Fred Hollows Foundation Report.

ARTICLE: Process redesign of a surgical pathway improves access to cataract surgery for Aboriginal and Torres Strait Islander people in South East Queensland

Penrose, L., Roe, Y., Johnson, N.A. and James, E.L.

Overview: The Institute for Urban Indigenous Health (IUIH) aimed to improve access to cataract surgery in urban South East Queensland (SEQ) for Indigenous Australians, without compromising clinical visual outcomes. The Penchansky and Levesque concept of access as the 'fit' between the patient's needs and the ability of the system to meet those needs was used to inform the redesign of the mainstream cataract surgical pathway.

The IUIH staff and community stakeholders mapped the traditional external cataract surgical pathway and then innovatively redesigned it to reduce the number of patients being removed by the system at key transition points. The integration of eye health within the primary health care (PHC) clinic has improved the continuity and coordination of care along the surgical pathway, and ensured the sustainability of collaborative partnerships with key external organisations. Audit data demonstrated a significant increase in utilisation of cataract surgical services after the process redesign.

Previous studies have found that PHC models involving integration, coordination and continuity of care enhance patient health outcomes; however, the IUIH surgical model extends this to tertiary care. There is scope to apply this model to other surgical pathways and communities who experience access inequity.

Citation: Penrose, L., Roe, Y., Johnson, N.A. and James, E.L. (2018). *Process redesign of a surgical pathway improves access to cataract surgery for Aboriginal and Torres Strait Islander people in South East Queensland*. Australian Journal of Primary Health 24(2), 135-40. doi:10.1071/PY17039.

DIABETIC RETINOPATHY STUDIES

ARTICLE: Diabetic retinopathy in a remote Indigenous primary healthcare population: a Central Australian diabetic retinopathy screening study in the Telehealth Eye and Associated Medical Services Network project

Brazionis, L., Jenkins, A., Keech, A., Ryan, C., Brown, A., Boffa, J. and Bursell, S

Background: The aim of this research was to determine diabetic retinopathy (DR) prevalence and severity among remote Indigenous Australians.

Method: A cross-sectional DR screening study of Indigenous adults with Type 2 diabetes was conducted by locally trained non-ophthalmic retinal imagers in a remote Aboriginal community-controlled primary healthcare clinic in Central Australia and certified non-ophthalmic graders in a retinal grading centre in Melbourne, Australia. The main outcome measure was prevalence of any DR and sight-threatening DR.

Results: Among 301 participants (33% male), gradable image rates were 78.7% (n = 237) for DR and 83.1% (n = 250) for diabetic macular oedema, and 77.7% (n = 234) were gradable for both DR and diabetic macular oedema. For the gradable subset, the median (range) age was 48 (19–86) years and known diabetes duration 9.0 (0–24) years. The prevalence of DR was 47% (n = 110) and for diabetic macular oedema it was 14.4% (n = 36). In the fully gradable imaging studies, sight-threatening DR prevalence was 16.2% (n = 38): 14.1% (n = 33) for clinically significant macular oedema, 1.3% (n = 3) for proliferative DR and 0.9% (n = 2) for both. Sight-threatening DR had been treated in 78% of detected cases.

Conclusion: A novel telemedicine DR screening service detected a higher prevalence of ‘any’ DR and sight-threatening DR in a remote primary care setting than reported in earlier surveys among Indigenous and non-Indigenous populations. Whether the observed high prevalence of DR was attributable to greater detection, increasing DR prevalence, local factors, or a combination of these requires further investigation and, potentially, specific primary care guidelines for DR management in remote Australia.

Citation: Brazionis, L., Jenkins, A., Keech, A., Ryan, C., Brown, A., Boffa, J. and Bursell, S. (2018). *Diabetic retinopathy in a remote Indigenous primary healthcare population: a Central Australian diabetic retinopathy screening study in the Telehealth Eye and Associated Medical Services Network project*. *Diabetic Medicine*, 35(5), 630-639. doi:10.1111/dme.13596

ARTICLE: Task sharing in the eye care workforce: Screening, detection, and management of diabetic retinopathy in Pakistan. A case study

Shah, M., Noor, A., Deverell, L., Ormsby, G.M., Harper, C.A. and Keeffe, J.E.

Background: Diabetic retinopathy (DR) is a preventable cause of vision loss. Reducing vision loss due to DR and providing access to eye care services for people with diabetes have been severely constrained by a shortage in the number of ophthalmologists. This study aimed to explore the potential for task sharing in the eye care workforce for screening, detection, and management of DR.

Method: Using purposive sampling, 24 participants were recruited from four selected hospitals in 2 provinces in Pakistan. Face-to-face interviews were conducted to explore the potential for task sharing in DR management.

Results: Amongst 24 participants recruited, 22 (91.7%) including administrators (n = 3), ophthalmologists (n = 10), optometrists (n = 3), mid-level eye care workers (n = 4), and endocrinologist (2) participated in the study. All participants indicated the need for an organised screening program for DR detection through task sharing. Participants suggested that people with diabetes can be sent directly to an optometrist for initial eye exams, rather than making them wait to be examined by an ophthalmologist. Factors favouring task sharing included the name task sharing rather than task shifting and a high demand for eye care services. Major barriers to implementation of task sharing included the lack of a trained eye care workforce in the healthcare system and the lack of coordination amongst health professionals and policy makers.

Conclusion: Participants accepted the task sharing approach and believed that task sharing could improve access to eye care services for people with diabetes and better utilise the services of eye and healthcare providers.

Citation: Shah, M., Noor, A., Deverell, L., Ormsby, G.M., Harper, C.A. and Keeffe, J.E. (2018). *Task sharing in the eye care workforce: Screening, detection, and management of diabetic retinopathy in Pakistan. A case study*. *The International Journal of Health and Planning Management*, 33(3), 627-636. <https://doi.org/10.1002/hpm.2508>

ARTICE: Adapting clinical practice guidelines for diabetic retinopathy in Kenya: process and outputs

Mwangi, N., Gachago, M., Gichangi, M., Gichuhi, S., Githeko, K., Jalango, A., Karimurio, J., Kibachio, J., Muthami, L., Ngugi, N., Nduri, C., Nyaga, P., Nyamori, J., Zindamoyen, A.N.M., Bascaran, C. and Foster, A

Background: The use of clinical practice guidelines envisages augmenting quality and best practice in clinical outcomes. Generic guidelines that are not adapted for local use often fail to produce these outcomes. Adaptation is a systematic and rigorous process that should maintain the quality and validity of the guideline, while making it more usable by the targeted users. Diverse skills are required for the task of adaptation. Although adapting a guideline is not a guarantee that it will be implemented, adaptation may improve acceptance and adherence to its recommendations.

Method: Analysis of the process used to adapt clinical guidelines for diabetic retinopathy in Kenya was undertaken using validated tools and manuals. A technical working group consisting of volunteers provided leadership.

Results: The process was intensive and required more time than anticipated. Flexibility in the process and concurrent health system activities contributed to the success of the adaptation. The outputs from the adaptation include the guidelines in different formats, point of care instruments, as well as tools for training, monitoring, quality assurance and patient education.

Conclusion: Guideline adaptation is applicable and feasible at the national level in Kenya. However, it is labor- and time-intensive. It presents a valuable opportunity to develop several additional outputs that are useful at the point of care.

Citation: Mwangi, N., Gachago, M., Gichangi, M., Gichuhi, S., Githeko, K., Jalango, A., Karimurio, J., Kibachio, J., Muthami, L., Ngugi, N., Nduri, C., Nyaga, P., Nyamori, J., Zindamoyen, A.N.M., Bascaran, C. and Foster, A. (2018). *Adapting clinical practice guidelines for diabetic retinopathy in Kenya: process and outputs*. *Implementation Science*, 13, 81. doi:) 13: 81. <https://doi.org/10.1186/s13012-018-0773-2>

ARTICLE: A Mobile Phone Informational Reminder to Improve Eyecare Adherence among Diabetic Patient in Rural China: A Randomised Controlled Trial

Chen, T., Zhu, W., Tang, B., Jin, L., Fu, H., Chen, Y., Wang, C., Zhang, G., Wang, J., Ye, T., Xiao, D., Vignarajan, J., Xiao, B., Kanagasingam, Y. and Congdon, N.

Background: The purpose of this study was to determine whether short message service (SMS) reminders improve adherence to scheduled ocular examinations among patients with diabetes in rural China.

Method: The design of this study was a randomised controlled trial. This study enrolled consecutive patients with diabetes scheduled for eye examinations at 5 hospitals in low-income areas of Guangdong, China from March 1, 2015 to May 31, 2016. Regression models following intention-to treat principles were used to estimate the association between the main outcome (attendance within ± 1 week of scheduled visit) and membership in the Intervention group, with and without adjustment for other potential predictors of follow-up. Secondary outcomes included change in DR knowledge score (1, worst; 5, best) and end line satisfaction with care (3, worst; 15, best).

Results: Among 233 patients, 119 (51.1%) were randomised to Intervention (age 59.7 ± 11.3 years, 52.1% men) and 114 (48.9%) to Control (58.7 ± 9.50 years, 49.1% men). All participants provided data for the main study outcome. Attendance at scheduled appointments for the Intervention group (51/119, [42.9%]) was significantly higher than for Controls (16/114, [14.0%]), between-group difference 28.8% [95% confidence interval (CI) 17.9%, 39.8%], $P < .001$. Factors associated with attendance in multiple regression models included Intervention group membership (Relative Risk [RR] 3.04, 95% CI, 1.73–5.33, $P < .001$) and baseline DR knowledge (RR 1.47, 95% CI 1.21–1.78, $P < .001$). Improvement in Satisfaction (mean difference 1.08, 95% CI 0.70–1.46, $P < .001$) and DR knowledge (mean difference 1.30, 95% CI 0.96–1.63, $P < .001$) were significantly higher for the Intervention group. Total cost of the intervention was US\$5.40/person.

Conclusion: Low-cost SMS informational reminders significantly improved adherence to, knowledge about, and satisfaction with care. Additional interventions are needed to further improve adherence.

Acknowledgements: This research was co-funded by The Fred Hollows Foundation.

Citation: Chen, T., Zhu, W., Tang, B., Jin, L., Fu, H., Chen, Y., Wang, C., Zhang, G., Wang, J., Ye, T., Xiao, D., Vignarajan, J., Xiao, B., Kanagasingam, Y. and Congdon, N. (2018). *A mobile phone informational reminder improve eye care adherence among diabetic patients in rural China: a randomised control trial*. *American Journal of Ophthalmology*, 194, 54-62. doi:<https://doi.org/10.1016/j>

ARTICLE: Saving sight in China and beyond: the Lifeline Express model

Wong, I.Y.H., Ni, M.Y., Wong, I.O.L., Fong, N. and Leung, G.M.

Overview: Cataract and diabetic retinopathy are leading causes of blindness globally. Lifeline Express (LEX) has pioneered the provision of cataract surgery in rural China from custom-built trains and eye centres nationwide. Over the past two decades, LEX has provided free cataract surgery for over 180 000 patients in China. In China, half of the adult population has prediabetes and 113 million adults have diabetes.

Recognising the rising threat of diabetic retinopathy, LEX has expanded to providing free diabetic retinopathy screening nationwide by establishing 29 Diabetic Retinopathy Screening Centres across China. Source of referrals included host hospitals, the community and out-reach mobile vans equipped with fundus cameras. Fundi photos taken in the mobile vans were electronically transferred to primary graders. LEX also leveraged the widespread smartphone use to provide electronic medical reports via WeChat, the most popular instant messenger app in China. From April 2014 to December 2016, 34 506 patients with diabetes underwent screening, of which 27.2% (9,396) were identified to have diabetic retinopathy.

China's latest national health strategy ('Healthy China 2030 Plan') has championed the 'prevention first' principle and early screening of chronic diseases. LEX has accordingly evolved to extend its services to save sight in China—from cataract surgery to diabetic retinopathy screening and most recently outreaching beyond its national borders in a pilot South–South collaboration. With health at the top of the China's developmental agenda and the country's growing role in global health—LEX's largescale telemedicine-enabled programme could represent a potentially scalable model for nationwide diabetic retinopathy screening elsewhere.

Acknowledgements: This research was co-funded by The Fred Hollows Foundation and Li Ka Shing Foundation, Hutchison Whampoa Limited, China Guodian Corporation, China State Construction Engineering Corporation and the China National Pharmaceutical Group Corporation.

Citation: Wong, I.Y.H., Ni, M.Y., Wong, I.O.L., Fong, N. and Leung, G.M. (2018). *Saving sight in China and beyond: the lifeline express model*. *BMJ Global Health*, 3,e000766. doi:10.1136/bmjgh-2018-000766

REPORT: Review of the Lions Outback Vision Diabetic Retinopathy Screening Coordinator Project 2014-2018

Beatty, D., and Bansemer, A.

Background: Lions Outback Vision (LOV) aims to address the unique challenges of delivering quality specialist eye health care to regional, remote and Indigenous communities across Western Australia. From 2012 to 2016, LOV employed a Diabetic Retinopathy Screening Coordinator (DRSC) in the Kimberley, WA. Recognising the Kimberley model's success, from 2014 to 2016 LOV partnered with the Indigenous Australia Program (IAP) of The Fred Hollows Foundation to employ a DRSC in the Pilbara. The Project's main outcomes were to improve the quality, quantity and delivery of eye health services to Indigenous and other people of WA through early detection of Diabetic Retinopathy; to raise the profile of avoidable blindness as a public health issue and to build support for eye health programs.

Method: The review was entirely desk based, involving no face to face contact with stakeholders. Client experiences, health outcomes and the effectiveness of the overall Lions Outback Vision Program were beyond the scope of the review.

Results: All or close to all of the performance indicators for both phases of the Project, for which qualitative or quantitative data was available and for which appropriate targets were set, were assessed by this review as having been achieved.

Conclusion: The LOV project has assisted Aboriginal Medical Services and other regional and remote Primary Health Care services to embed DR delivery into their everyday work, evidenced by the increased number of images sent to LOV for grading. However, the Kimberley and Pilbara evidence and stakeholder reports suggest that ongoing DRSC involvement seems to be necessary to stimulate and maintain embedded DR imaging. Without this input, other health priorities can take precedence, with imaging being left to DRSC or other LOV or eye worker visits.

Acknowledgements: This report was prepared with the co-operation and input of LOV and WA Primary Health Care stakeholders and representatives of The Fred Hollows Foundation. The report was funded by The Fred Hollows Foundation.

Citation: Beatty, D., and Bansemer, A. (2018). *Line of Sight - The Pilbara Case Study: Evaluation the impact of the Lions Outback Vision Program*. The Fred Hollows Foundation.

REFRACTIVE ERROR STUDIES

REPORT: Tackling childhood refractive error in China

Wang, X., Congdon, N., Ma, Y., et al.

Background: China has one of the highest rates of childhood myopia in the world, affecting as much as 80% of students in urban areas and 60% of students in rural areas. The PRICE study, co-funded by The Fred Hollows Foundation, explored sustainable solutions to myopia in rural areas of China, where students are less likely to own vision correcting glasses. PRICE tested various models for providing school children with glasses, explored their effects on student up-take, and provided some understanding of cost as a factor in the decision to fill prescriptions for glasses. The study found that providing free glasses along with a pay-for upgrade, where parents could choose to pay for an upgrade to the glasses frame or lens, may offer a way to stimulate local sales revenue and safeguard the long-term financial sustainability of local eye glasses providers.

Method: The study was an extensive cluster-randomised controlled trial involving children from 138 primary schools across nine counties of Guangdong and Yunnan provinces, China. Following vision screening tests, 882 children with refractive error were randomly assigned to four groups: a control group who were provided with a prescription for them to buy glasses privately; a second group were provided with a voucher for free glasses from the local county hospital; a third group were given the voucher for free glasses plus the option to pay US\$15 to upgrade to their choice of frames and lens; and finally, the fourth group were given the voucher for free glasses and the option to pay US\$30 to upgrade to their child of frames and lens. Note that all of the children in the control group were offered free glasses at the end of the trial.

Results: The study showed that supplying a referral for free glasses can negatively affect the purchasing behaviour of families. Only, 13% of families in the study group who were given a voucher for a pair of free glasses (with no option to upgrade the frames or lens) opted to instead pay for their child to choose their own glasses.

However, the study found that offering families the option to voluntarily pay for upgraded frames or lens, reduced the impact of the free glasses on purchasing behaviour. Families provided with an option to voluntarily pay for upgraded frames or lens had a similar rate of purchasing glasses (21%) compared to those who were required to pay for the full cost of the glasses (23%).

The PRICE results suggest that the provision of free glasses with a pay-for upgrade option can generate sales income to support the long term financial sustainability of the refraction service providers, while still removing cost as a barrier to owning glasses for poorer students.

Conclusion: The results of the PRICE study indicated that programs to provide free glasses to children are likely to impact on local sales of glasses. However, the PRICE study also showed that simple measures, such as the provision of pay-for upgrades to frames and lens, may help to minimise the negative effects, potentially safeguarding the financial sustainability of the services that provide vision screening. Children's continued wearing of the glasses remains a challenge for eye health care planners and may require additional strategies to address this issue.

Citation: Wang X, Congdon N, Ma Y, et al. (2017). *Cluster randomised controlled trial of the effects of free glasses on purchase of children's glasses in China: The PRICE (Potentiating Rural Investment in Children's Eyecare) study*. PLoS ONE, 12, e0187808.



ARTICLE: Teachers' influence on purchase and wear of children's glasses in rural China: the PRICE study

Wang, X., Ma, Y., Hu, M., Jin, L., Xiao, B., Ni, M., Yi, H., Ma, X., Wang, C., Varga, B., Huang, Y., Rozelle, S. and Congdon, N.

Background: Uncorrected refractive error causes 90% of poor vision among Chinese children. Glasses correction is a safe and effective means for treatment of URE, and has been demonstrated to improve children's educational outcomes, but only 15% to 20% of Chinese rural and urban migrant children who need glasses have them. The objective of this study was to assess the impact of various teacher factors on acceptance of free glasses, purchase of glasses and children's in-school wear of glasses during the trial.

Method: This study was a cluster-randomised, controlled trial in rural Guangdong and Yunnan Provinces, China. Children at 138 randomly selected primary schools in Guangdong and Yunnan provinces with uncorrected visual acuity (VA) $\leq 6/12$ in either eye correctable to $>6/12$ in both eyes, and their teachers were included in the study. Teachers and children underwent VA testing and completed questionnaires about spectacles use and attitudes towards children's vision. The main outcome measures were children's acceptance of free glasses and spectacle purchase and wear.

Results: A total of 882 children (mean age 10.6 years, 45.5% boys) and 276 teachers (mean age 37.9 years, 67.8% female) participated. Among teachers, 20.4% (56/275) believed glasses worsened children's vision, 68.4% (188/275) felt eye exercises prevented myopia, 55.0% (151/275) thought children with modest myopia should not wear glasses and 93.1% (256/275) encouraged children to obtain glasses. Teacher factors associated with children's glasses-related behaviour included believing glasses harm children's vision (decreased purchase, univariate model: relative risk [RR] 0.65, 95% CI 0.43, 0.98, $P < 0.05$); supporting children's classroom glasses wear (increased glasses wear, univariate model: RR 2.20, 95% CI 1.23, 3.95, $P < 0.01$); and advising children to obtain glasses (increased free glasses acceptance, multivariate model: RR 2.74, 95% CI 1.29, 5.84, $P < 0.01$; increased wear, univariate model: RR 2.93, 95% CI 1.45, 5.90, $P < 0.01$), but not teacher's ownership/wear of glasses.

Conclusion: Though teachers had limited knowledge about children's vision, they influenced children's glasses acceptance.

Acknowledgements: This work was funded by Fred Hollows Foundation; Orbis International; US Agency for International Development; Luxottica-China (Shanghai); Essilor-China (Shanghai); Prof Congdon is supported by the Chinese Government's Thousand Man Plan and by the Ulverschroft Foundation.

Citation: Wang, X., Ma, Y., Hu, M., Jin, L., Xiao, B., Ni, M., Yi, H., Ma, X., Wang, C., Varga, B., Huang, Y., Rozelle, S. and Congdon, N. (2018). *Teachers' influence on purchase and wear of children's glasses in rural China: The PRICE study. Clinical and Experimental Ophthalmology*, 47, 179–186. doi:10.1111/ceo.13376

REPORT: Final Evaluation of the National Refraction Training Project Phase II (2013-2017)

Charanay, C., Tapas, R., & Varin, S.

Background: Uncorrected refractive error (URE) accounted for blindness and vision impairment amongst 20% of adults over 50 years and 10% of children under 15 years in Cambodia. Insufficient human resource, lack of training institutions and affordable glasses are the main challenges for the eye health sector in addressing URE.

The National Refraction Training Project phase II (2013-2017) was a collaboration between the Ministry of Health, FHF and Brien Holden Vision Institute to contribute to the reduction of blindness and visual impairment caused by uncorrected refractive error by increasing the number of fully trained refraction nurses and refractionists in Cambodia

Method: Both qualitative and quantitative methods were used for project evaluation. Qualitative methods are included document reviews, KIIs, FGDs, field observation and consultation meetings to measure 'how many' or 'to what extent' the project has achieved its goal and targets.

Results: Barring few exceptions, all targets under the NRT Project Phase were met and in some instances exceeded. For example, a total of 84 refractionists were trained against a target of 50. The additional trainees came from private participants, contributing additional funding to the project. All refractionists were deployed to work at referral hospitals and private optical shops.

Conclusion: Overall, the project increased the number of trained refractionists working in Cambodia and contributed to the national strategy for the prevention of blindness, as well as the global initiative VISION 2020.

Citation: Charanay, C., Tapas, R., & Varin, S., (2018) Final Evaluation of the National Refraction Training Project Phase II (2013-2017), The Fred Hollows Foundation.

TRACHOMA STUDIES

ARTICLE: Conjunctival transcriptome profiling of Solomon Islanders with active trachoma in the absence of *Chlamydia trachomatis* infection

Vasileva, H., Butcher, R., Pickering H., Sokana, O., Jack, K., Solomon, A.W., Holland, M.J. and Roberts, C.H.

Background: Clinical signs of active (inflammatory) trachoma are found in many children in the Solomon Islands, but the majority of these individuals have no serological evidence of previous infection with *Chlamydia trachomatis*. In Temotu and Rennell and Bellona provinces, ocular infections with *C. trachomatis* were seldom detected among children with active trachoma; a similar lack of association was seen between active trachoma and other common bacterial and viral causes of follicular conjunctivitis. Here, we set out to characterise patterns of gene expression at the conjunctivae of children in these provinces with and without clinical signs of trachomatous inflammation-follicular (TF) and *C. trachomatis* infection.

Methods: Purified RNA from children with and without active trachoma was run on Affymetrix GeneChip Human Transcriptome Array 2.0 microarrays. Profiles were compared between individuals with ocular *C. trachomatis* infection and TF (group DI; n=6), individuals with TF but no *C. trachomatis* infection (group D; n=7), and individuals without TF or *C. trachomatis* infection (group N; n=7). Differential gene expression and gene set enrichment for pathway membership were assessed.

Results: Conjunctival gene expression profiles were more similar within-group than between-group. Principal components analysis indicated that the first and second principal components combined explained almost 50% of the variance in the dataset. When comparing the DI group to the N group, genes involved in T-cell proliferation, B-cell signalling and CD8+ T cell signalling pathways were differentially regulated. When comparing the DI group to the D group, CD8+ T-cell regulation, interferon-gamma and IL17 production pathways were enriched. Genes involved in RNA transcription and translation pathways were upregulated when comparing the D group to the N group.

Conclusions: Gene expression profiles in children in the Solomon Islands indicate immune responses consistent with bacterial infection when TF and *C. trachomatis* infection are concurrent. The transcriptomes of children with TF but without identified infection were not consistent with allergic or viral conjunctivitis.

Citation: Vasileva, H., Butcher, R., Pickering H., Sokana, O., Jack, K., Solomon, A.W., Holland, M.J. and Roberts, C.H. (2018). *Conjunctival transcriptome profiling of Solomon Islanders with active trachoma in the absence of Chlamydia trachomatis* infection. *Parasites & Vectors*, 11, 104. doi:<https://doi.org/10.1186/s13071-018-2682-2>

ARTICLE: Clinical signs of trachoma are prevalent among Solomon Islanders who have no persistent markers of prior infection with *Chlamydia trachomatis*

Butcher, R., Sokana O., Jack K., Sui, L., Russell, C., Last, A., Martin, D.L., Burton, M.J., Solomon, A.W., Mabey, D.C.W. and Roberts, C.H.

Background: The low population-prevalence of trachomatous trichiasis and high prevalence of trachomatous inflammation-follicular (TF) provide contradictory estimates of the magnitude of the public health threat from trachoma in the Solomon Islands. Improved characterisation of the biology of trachoma in the region may support policy makers as they decide what interventions are required. Here, age-specific profiles of anti-Pgp3 antibodies and conjunctival scarring were examined to determine whether there is evidence of ongoing transmission and pathology from ocular *Chlamydia trachomatis* (Ct) infection.

Methods: A total of 1511 individuals aged ≥ 1 year were enrolled from randomly selected households in 13 villages in which >10% of children aged 1-9 years had TF prior to a single round of azithromycin mass drug administration undertaken six months previously. Blood was collected to be screened for antibodies to the Ct antigen Pgp3. Tarsal conjunctival photographs were collected for analysis of scarring severity.

Results: Anti-Pgp3 seropositivity was 18% in 1-9 year olds, sharply increasing around the age of sexual debut to reach 69% in those over 25 years. Anti-Pgp3 seropositivity did not increase significantly between the ages of 1-9 years and was not associated with TF ($p=0.581$) or scarring in children ($p=0.472$). Conjunctival scars were visible in 13.1% of photographs. Mild ($p<0.0001$) but not severe ($p=0.149$) scars increased in prevalence with age.

Conclusion: Neither conjunctival scars nor lymphoid follicles were associated with antibodies to Ct, suggesting that they are unlikely to be a direct result of ocular Ct infection. Clinical signs of trachoma were prevalent in this population but were not indicative of the underlying rates of Ct infection. The current World Health Organization guidelines for trachoma elimination indicated that this population should receive intervention with mass distribution of antibiotics, but the data presented here suggest that this may not have been appropriate.

Citation: Butcher, R., Sokana O., Jack K., Sui, L., Russell, C., Last, A., Martin, D.L., Burton, M.J., Solomon, A.W., Mabey, D.C.W. and Roberts, C.H. (2018). *Clinical signs of trachoma are prevalent among Solomon Islanders who have no persistent markers of prior infection with Chlamydia trachomatis*. Wellcome Open Research, 3, 14.

ARTICLE: Celebrating 20 years of progress: accelerating towards elimination

Sarah, V., Adams, A.B. and Jesudason, T.

Overview: Trachoma is the world's leading infectious cause of blindness and one of twenty neglected tropical diseases (NTDs) that affect over one billion of the world's poorest people. In 1998, the World Health Assembly adopted Resolution 51:11,1 which targeted trachoma for global elimination. Since then, progress has accelerated.

The number of people at risk of trachoma has more than halved since 2011, thanks to the efforts of stakeholders in the WHO Alliance for the Global Elimination of Trachoma by 2020. Since 2012, eight countries have been validated by WHO as having eliminated trachoma as a public health problem. By the year 2020, it is estimated that at least 70% of endemic districts will have reached the WHO target for elimination as a public health problem.

The rapid progress shown in the global programme demonstrates that trachoma can be eliminated as a public health problem. However, to achieve global elimination, every endemic community must be reached with treatment interventions. Ethiopia has the greatest need, with 70 million people living in areas where trachoma is endemic (this is 44% of the global population currently at risk of trachoma).

To meet our goals, the most marginalised of people – indigenous and nomadic tribes, refugees, internally displaced people, and people living in conflict areas – must be reached. Sustained political will, operational research, new donors and partnerships, as well as financial and human resources will be essential to continue progress towards elimination.

Citation: Sarah, V., Adams, A.B. and Jesudason, T. (2018). *Celebrating 20 years of progress: accelerating towards elimination*. Community Eye Health Journal, 31(103), 73.



Children in Ethiopia are taught about the Facial Cleanliness and Environmental components of the SAFE Strategy for trachoma control

ARTICLE: One round of azithromycin MDA adequate to interrupt transmission in districts with prevalence of trachomatous inflammation-follicular of 5.0-9.9%: Evidence from Malawi

Kalua, K., Chisambi, A., Chinyanya, D., Masika, M., Bakhtiari, A., Willis, R., Emerson, P.M., Solomon, A.W. and Bailey, R.L.

Background: As highly trachoma-endemic countries approach elimination, some districts will have prevalences of trachomatous inflammation-follicular in 1-9-year-olds (TF1-9) of 5.0-9.9%. The World Health Organization (WHO) previously recommended that in such districts, TF prevalence be assessed in each sub-district (groupings of at least three villages), with three rounds of azithromycin treatment offered to any sub-district in which $TF \geq 10\%$.

Given the large number of endemic districts worldwide and the human and financial resources required to conduct surveys, this recommendation may not be practical. In a group of 8 Malawi districts with baseline TF prevalences of 5.0-9.9%, the Malawi Ministry of Health administered one round of azithromycin mass treatment, to the whole of each district, achieving mean coverage of $\sim 80\%$. Here, we report impact surveys conducted after that treatment.

Method: We undertook population-based trachoma surveys in 18 evaluation units of the 8 treated districts, at least 6 months after the MDA. The standardised training package and survey methodologies of Tropical Data, which conform to WHO recommendations, were used.

Results: Each of the 18 evaluation units had a TF1-9 prevalence $< 5.0\%$.

Conclusion: The study demonstrates that in Malawi districts with TF of 5.0-9.9%, one round of azithromycin MDA with $\sim 80\%$ coverage associates with a reduction in TF prevalence to $< 5\%$. Further evidence for this approach should be collected elsewhere.

Citation: Kalua, K., Chisambi, A., Chinyanya, D., Masika, M., Bakhtiari, A., Willis, R., Emerson, P.M., Solomon, A.W. and Bailey, R.L. (2018). *One round of azithromycin MDA adequate to interrupt transmission in districts with prevalence of trachomatous inflammation-follicular of 5.0-9.9%: Evidence from Malawi*. PLoS Neglected Tropical Diseases, 12(6), e0006543. doi:10.1371/journal.pntd.0006543

REPORT: Evaluation of the Trachoma Elimination Program 2015-2017

Aquino, D.

Background: The Fred Hollows Foundation's Trachoma Elimination Program (TEP) aimed to end avoidable blindness due to trachoma in Australia. TEP was a multi-strategy, multi-stakeholder program conceived

by Indigenous Australia Program (IAP) as part of The Foundation's commitment to the global efforts to eliminate trachoma worldwide by 2020. This report outlines the process and results of a summative evaluation of the TEP 2015-2017 and provides a summary of the key findings related to program processes, outcomes, and impacts, and lessons learned from the program.

Method: The report was compiled utilising mostly qualitative techniques, including desk-based review of project design documents and key informant interviews. All documents and interview summaries were coded against the evaluation questions and logframe output/outcomes, then further coded for emergent themes.

Results: In terms of delivering on the main outputs of the program, these were mostly achieved:

- Community health promotion was implemented in five communities. Different approaches to health promotion were used, as well as linking with the IEH 'Milpa' THP.
- The Health Community Assessment Tool was trialled in seven communities in the NT and adaptations to the tool have been made for ongoing usage by the Environmental Health branch of the NT Government.
- Advocacy related to increasing the emphasis on environmental health strategies in trachoma control was undertaken (and continues to be undertaken).

However, despite these outputs, the intensity to which these were implemented (the program 'dose') was limited by a range of factors. As such many of the expected outcomes of the TEP were only partly achieved.

Conclusions: The TEP was a multi-strategy program underpinned by health promotion theory. The TEP intended to improve screening and treatment rates; change hygiene and environmental health knowledge and practices; improve systems for collecting, sharing and using environmental health information; and improve living conditions in remote Aboriginal communities. The extent to which TEP achieved its intended objectives was variable.

The landscape of trachoma funding and programming has shifted since the inception of the TEP. There is increased attention on the F & E components of the SAFE strategy and government funding is now directed at key stakeholders (namely CDC and IEH) to deliver on activities in these areas. This offers new opportunities for The Foundation's next phase of TEP.

Acknowledgements: This report was funded by The Fred Hollows Foundation and prepared by Menzies School of Health Research, Charles Darwin University.

Citation: Aquino, A. (2018). *Evaluation of the Trachoma Elimination Program 2015-2017*. The Fred Hollows Foundation.

ARTICLE: Quality Assurance and Quality Control in the Global Trachoma Mapping Project

Background: This study sought to complete the multiple-country Global Trachoma Mapping Project (GTMP). To maximise the accuracy and reliability of its outputs, inbuilt, practical mechanisms for quality assurance and quality control were needed. This article describes how those mechanisms were created and deployed. Using expert opinion, computer simulation, working groups, field trials, progressively accumulated in-project experience, and external evaluations, the study developed 1) criteria for where and where not to undertake population based prevalence surveys for trachoma; 2) three iterations of a standardised training and certification system for field teams; 3) a customised Android phone-based data collection app; 4) comprehensive support systems; and 5) a secure end-to-end pipeline for data upload, storage, cleaning by objective data managers, analysis, health ministry review and approval, and online display

Method: Expert opinion, distilled through a series of teleconferences of the GTMP's Methodologies and Prioritisation Working Groups, was used to develop criteria for where to map and where not to map. Computer simulation was used to confirm that population-based prevalence surveys were needed for mapping, rather than a quicker and epidemiologically dirtier approach. We held meetings and teleconferences of each of the four Working Groups (Methodologies, Prioritisation, Tools, and Training), and convened the GTMP Advisory Committee to oversee development of pilot systems that were then trialled in the field in Oromia, Ethiopia, in October 2012. The training system, electronic data collection app and field methodologies were all subsequently refined and enhanced as a result of this experience

Results: The GTMP was formally launched on December 17, 2012, and supported trachoma prevalence survey fieldwork until January 19, 2016, operating in a total of 29 countries. It acquired and processed data on 625,541 households and 2,667,457 examined people. Improvements were progressively introduced during rollout, with identification of issues that warranted improvement facilitated by weekly teleconferences of the core GTMP team, 10 periodic meetings of the Advisory Committee, and formal midterm and end-of-project evaluations by (different) external consultants.

Conclusion: Our experience shows that it is possible to quality control and quality assure prevalence surveys in such a way as to maximise comparability of prevalence estimates between countries and permit high-speed, high-fidelity data processing and storage, while protecting the interests of health ministries.

Citation: Solomon, A.W., et al. (2018). *Quality assurance and quality control in the global trachoma mapping project*. The American Society of Tropical Medicine and Hygiene, 99(4), 858-863. doi:<https://doi.org/10.4269/ajtmh.18-0082>

ARTICLE: A diagnostic instrument to help field graders evaluate active trachoma

Solomon, A.W., Le Mesurier, R.T. and Williams, W.J.

Overview: The SAFE strategy (Surgery for trichiasis, mass treatment with Antibiotics to clear ocular Chlamydia trachomatis infection, and Facial cleanliness and Environmental improvement to reduce transmission) is being used to eliminate trachoma as a public health problem. Decisions on whether or not to implement the A, F, and E components of SAFE are made on the basis of the prevalence of trachomatous inflammation—follicular (TF) in 1–9-year-olds. TF has a precise definition: at least five follicles, each of which is at least 0.5-mm diameter, in the central part of the upper tarsal conjunctiva.

Determining whether a follicle has a diameter $\geq 0.5\text{mm}$ is difficult using magnifying loupes alone. We have developed an ultra-low-cost solution: a follicle size guide that takes the form of a durable printed adhesive sticker which can be fixed to graders' thumb nails for direct size comparison. This tool will be made available to health Ministries free of charge. It is anticipated to simplify grader training, increase grader trainee pass rates, and prevent in-service diagnostic drift after training is complete.

Citation: Solomon, A.W., Le Mesurier, R.T. and Williams, W.J. (2018). *A diagnostic instrument to help field graders evaluate active trachoma*. *Ophthalmic Epidemiology*, 25, 5-6, 399-402. doi:[10.1080/09286586.2018.1500616](https://doi.org/10.1080/09286586.2018.1500616).

ARTICLE: Behavioural change interventions for sustained trachoma elimination

Dodson, S., Heggen, A., Solomon, A.W., Sarah, V., Woods, G. and Wohlgemuth, L.

Overview: Trachoma is the leading infectious cause of blindness. Significant progress has been made towards the elimination of trachoma as a public health problem since the launch, in 1996, of the Alliance for the Global Elimination of Trachoma by 2020, and the endorsement of the alliance's goal by the Member States of the World Health Organization (WHO) in 1998. Elimination is within reach if the global health community maintains focus, continues to innovate and collaborate and secures the necessary resources.

Strong international collaboration, high-quality prevalence data, the evidence-based Surgery, Antibiotics, Facial Cleanliness, Environmental Improvement (SAFE) strategy endorsed by WHO, Pfizer's azithromycin donation scheme, significant donor support and strong political will have enabled a tremendous programmatic scale-up towards the elimination of trachoma. In 2017 alone, 84 million people received antibiotics for trachoma and more than 231,000 people received trichiasis treatment.

The effects of these efforts are now being observed. Between 2007 and 2018, the number of people at risk of trachoma-related blindness dropped from 1244 million to 158 million. In 2018, Nepal and Ghana became the sixth and seventh countries validated by WHO as having eliminated trachoma as a public health problem.

This article summarises some of the key remaining challenges.

Citation: Dodson, S., Heggen, A., Solomon, A.W., Sarah, V., Woods, G. and Wohlgemuth, L. (2018). *Behavioural change interventions for sustained trachoma elimination*. Bulletin of the World Health Organisation, 96, 723-725. doi:<http://dx.doi.org/10.2471/BLT.18.212514>



The Fred Hollows Foundation's trachoma research seeks to improve knowledge of the trachoma burden, improve implementation of the SAFE Strategy, develop global best practice and expertise, and mobilise resources to eliminate trachoma as a public health problem.

EQUITY STUDIES

ARTICLE: Factors associated with social participation amongst elders in rural Sri Lanka: a cross-sectional mixed methods analysis

Marsh, C., Agius, P.A., Jayakody, G., Shajehan, R., Abeywickrema, C., Durrant, K., Luchters, S and Holmes, W.

Background: Populations of low and middle-income countries are ageing rapidly; there is a need for policies that support an increase in the duration of old age lived in good health. There is growing evidence that social participation protects against morbidity and mortality, but few studies explore patterns of social participation. Analysis of baseline quantitative and qualitative data from a trial of the impact of Elders' Clubs on health and wellbeing in the hill country of Sri Lanka provided an opportunity to better understand the extent of, and influences on, social participation among elders.

Method: We analysed data from 1028 baseline survey respondents and from 12 focus group discussions. Participants were consenting elders, aged over 60 years, living in Tamil tea plantation communities or Sinhala villages in 40 randomly selected local government divisions. We assessed participation in organised social activities using self-reported attendance during the previous year. Multivariable regression analyses were used to explore associations with community and individual factors. The quantitative findings were complemented by thematic analysis of focus group discussion transcripts.

Results: Social participation in these poor, geographically isolated communities was low: 63% reported 'no' or 'very low' engagement with organised activities. Plantation community elders reported significantly less participation than village elders. Attendance at religious activities was common and valued. Individual factors with significant positive association with social participation in multivariable analyses were being younger, male, Sinhala, married, employed, and satisfied with one's health. Domestic work and cultural constraints often prevented older women from attending organised activities.

Conclusion: Elders likely to benefit most from greater social contact are those most likely to face barriers, including older women, the oldest old, those living alone and those in poor health. Understanding these barriers can inform strategies to overcome them. This might include opportunities for both informal and formal social contact close to elders' homes, consulting elders, providing childcare, improving physical access, advocating with elders' families and religious leaders, and encouraging mutual support and inter-generational activities. Influences on social participation are interrelated and vary with the history, culture and community environment. Further study is required in other low and middle-income country contexts.

Citation: Marsh, C., Agius, P.A., Jayakody, G., Shajehan, R., Abeywickrema, C., Durrant, K., Luchters, S and Holmes, W. (2018). *Factors associated with social participation amongst elders in rural Sri Lanka: a cross-sectional mixed methods analysis*. BMC Public Health, 18, 636. doi:<https://doi.org/10.1186/s12889-018-5482-x>

ARTICLE: A qualitative study on gender barriers to eye care access in Cambodia

Neyhouser, C., Quinn, I., Hillgrove, T., Chan, R., Chhea, C., Peou, S. and Sambath, P.

Background: The Fred Hollows Foundation Cambodia recently partnered with the Ministry of Women's Affairs (MoWA) and National Program for Eye Health (NPEH, part of the Ministry of Health) to establish the Gender Equality in Eye Health Project. As part of this project, a qualitative study was carried out to identify barriers affecting women's access to eye health in Cambodia.

Method: A cross-sectional qualitative study was conducted in four provinces in both urban and rural locations between May and June 2015. Purposive sampling was used to identify respondents from a range of age groups, geographical locations, and experiences to explore different perceptions regarding access barriers to eye health care. Thirteen women experiencing eye problems (age range 45–84 years; mean age 63 years) and 25 eye health professionals took part in in-depth interviews. Eleven focus groups discussions were held with 69 participants (50 women, 19 married men) to capture the views and experiences of both younger and older women, as well as household decision makers' perspectives.

Results: Gender-based differences in decision-making, access and control over resources and women's social status all contributed to impeding women's access to eye health services. Women relied predominantly on informal sources of information about health, and these channels might be utilised to address barriers to information and access. Disparities in perceived costs of eye health treatment were evident between eye healthcare providers and users: costs were not perceived as a barrier by service providers due to health financing support for poor patients, however, many users were not aware of the availability of the scheme.

Conclusion: Demand-side and supply-side elements interact to reduce women's ability to seek eye treatment.

Citation: Neyhouser, C., Quinn, I., Hillgrove, T., Chan, R., Chhea, C., Peou, S. and Sambath, P. (2018). A qualitative study on gender barriers to eye care access in Cambodia. BMC Ophthalmology, 18, 217. doi:<https://doi.org/10.1186/s12886-018-0890-3>.

REPORT: Mid Term Evaluation of “Building Gender Equitable Eye Health Systems in Barisal Division” Project

Hasan, K., and ResInt Canada

Background: The Fred Hollows Foundation, through Standard Chartered Bank’s flagship project ‘Seeing is Believing’ (SiB) has implemented ‘Building Gender Equitable Eye Health Systems in Barisal Division’ project with the objective to bring down gender disparity in eye care, especially cataract services through health systems improvement approach. A midterm study was carried out during May and June 2018, mainly to assess the project outcome since inception and to suggest corrective actions, if needed.

The evaluation covered five districts of Barisal Division - Barisal, Pirojpur, Bhola, Patuakhali and Jhalokathi. The study used a mixed method of survey and FGDs (Focused Group Discussions) among 471 project beneficiary men and women, KIIs (Key Informant’s Interviews) among service providers, ophthalmologists, local government representatives, community leaders, and FHF staff. In addition, there were case studies, observation and review of project documents.

Method: A mixed method (of both quantitative and qualitative) was used to conduct this study among the target group to understand the status of eye health systems services offered to the target beneficiaries. Qualitative research includes FGDs, KII, and observations.

Results: To date, the project has led to increased awareness of major eye diseases in the target districts, improved knowledge on common eye health problems, increased awareness of eye care facilities, increase demand and improved eye seeking behaviour. Gender parity was achieved across all project objectives, with female patients enjoying almost equal facilities compared to male counterparts in terms of washroom privacy, treatment facilities, and time spent with doctors.

Conclusion: Overall, the Fred Hollows Foundation eye health care services initiative appears to have attained tremendous success in reaching the indigenous people in Barisal districts. The Foundation has also improved the eye care status among the women and poorer communities. A significant number of beneficiaries utilised the services and felt that if the eye health care services were not available, it would have been a matter of great trouble for the patients to avail the proper suggestion and referral system to get adequate and timely treatment.

Acknowledgements: This evaluation was led by ResInt Canada, and commissioned by The Fred Hollows Foundation.

Citation: Hasan, K., and ResInt Canada, (2018), *Mid Term*

Evaluation of “Building Gender Equitable Eye Health Systems in Barisal Division” Project. The Fred Hollows Foundation.

ARTICLE: Reference values for body composition and associations with blood in Kenyan adults aged ≥50 years old

Bastawrous, M.C., Piernas, C., Bastawrous, A., Oke, J., Lasserson, D., Mathenge, W., Burton, M.J., Jebb, S.A. and Kuper, H.

Background: The objective of this study was to develop age- and sex-specific centile reference curves for fat-free mass (FFM) and fat mass (FM) adjusted for height in an adult Kenyan population and to investigate the association between FM, FFM and blood pressure (BP).

Method: Measures of body composition from bioimpedance analyses and BP were collected in 1995 participants aged ≥50 years in Nakuru County, Kenya. Reference curves were produced using the LMS method. Multivariable linear regression models were used to test the cross-sectional association between body composition indexes and BP.

Results: The age- and sex-specific reference curves for body composition (FMI and FFMI) confirmed that FFMI is lower in both men and women with increasing age. FMI declines with age in women while among men the decline starts after 70 years. FFM was higher in men (47.4 ± 7.2 kg) than in women (38.8 ± 5.5 kg), while FM was lower in men (17.3 ± 8.1 kg) than in women (24.4 ± 10.2 kg). FMI, FFMI and BMI were all positively associated with systolic and diastolic BP, and after adjusting for body weight, FFMI remained positively associated with systolic BP and the FMI remained positively associated with diastolic BP. There was no evidence to suggest that FMI and FFMI were superior to measurement of BMI alone.

Conclusion: These body composition reference curves provide normative data on body composition for older adults in Kenya. Further research should consider the prospective associations with health, including frailty-related outcomes.

Citation: Bastawrous, M.C., Piernas, C., Bastawrous, A., Oke, J., Lasserson, D., Mathenge, W., Burton, M.J., Jebb, S.A. and Kuper, H. (2018). Reference values for body composition and associations with blood pressure in Kenyan adults aged ≥50 years old. *European Journal of Clinical Nutrition*, 73, 558-565.



A patient has their eyes checked as part of the Surigao Del Norte Community Eye Health Program, Philippines

REPORT: End of Project Assessment Report: Universal Access to Eye Health in Surigao del Norte Province, Philippines

Labajo, M., Godio, J. D., and Robis, B. C.

Background: Of the estimated two million Filipinos who suffer from moderate to severe visual impairment, 75% may yet regain their full sight, but for those who live in rural areas and below the poverty line, the opportunity is not so easily affordable or accessible. The country's eye care specialists are involved in largely private and urban-based practices – for Surigao del Norte, which has reported the highest poverty incidence rate in the country, access to these services may seem impossible.

The project undertaken by The Fred Hollows Foundation, the Department of Health's Community Eye Health Program (CEHP) aimed to prevent avoidable blindness in the province of Surigao del Norte, and develop effective provincial eye health systems across the country. The project would achieve this goal by increasing fair access to quality eye care services in the province, followed by the establishment of a comprehensive and sustainable eye care program, and the eventual replication of the CEHP beyond the province.

Method: The methodologies utilised for this evaluation involved an initial desk review of pertinent project documents and reports, in-depth interviews with key informants as well as focus group discussions with relevant personnel and non-participant observations.

In undertaking the evaluation, there was a limitation met in the form of having generated data primarily from the implementers of the project and very limited from the target beneficiary communities and households themselves. And from the project implementers, data gathered from the Center for Health and Development-CARAGA Region was limited as well by the time made available and the means of generating them.

Results: Overall, the project has delivered most of its intended results and outcomes, due largely to the provincial government's passion and commitment to a shared vision with the Department of Health through the integration and convergence of eye health care with its existing programs and services, both the Provincial Local Government Unit's executive departments, its partner national government agency (Department of Education, National Commission on Indigenous Peoples) as well as the Office of the Local Chief Executive. However, there is still a strong need to campaign for the Municipal Local Government Unit's support and commitment to eye health care, which plays a key role in deeply rooting the services in their respective Rural Health Units especially in reaching and responding to the needs of those who are more in need in the communities.

Acknowledgements: This evaluation was led by Meraki Consulting Inc., and commissioned by The Fred Hollows Foundation.

Citation: Labajo, M., Godio, J. D., and Robis, B. C. (2018), End of Project Assessment Report: Universal Access to Eye Health in Surigao del Norte Province, Philippines. The Fred Hollows Foundation.

HEALTH SYSTEMS STRENGTHENING STUDIES

ARTICLE: Development and testing of a framework for analysing health literacy in public policy documents

Trezona, A., Dodson, S., Mech, P. and Osborne, R.H.

Background: Health literacy is a driver of community empowerment and a key determinant of health and equity. The World Health Organisation has established a strong global mandate for addressing health literacy through public policy action, by positioning it as one of three key pillars for achieving sustainable development and health equity in the Shanghai Declaration on Health Promotion. Policy document analysis is a useful way of determining the strengths and limitations of past and current policies, as well as the likely success of their implementation and impact on health outcomes.

In this study, we developed a framework for analysing policy documents to assess the extent to which they prioritise and operationalise an emergent public health issue, in this case health literacy. Specifically, the framework enables a systematic exploration of (i) the stated policy goals and strategic objectives; (ii) the stated policy actions; and (iii) whether there is an intention to resource and monitor the stated policy activities. We tested the utility of the framework by applying it to a set of public policies in the Australian context. The framework presented in this study may be a useful tool for systematically analysing policy documents to reveal their strengths and limitations, and the extent to which they prioritise and operationalise health literacy.

Method: This study was undertaken in two parts. Firstly, a framework was developed to enable the systematic analysis of public policy documents for their prioritisation, operationalisation and resourcing of health literacy. Secondly, a set of policies relevant to health and social services within Victoria was compiled and analysed using the framework.

Results: An audit of government websites yielded 94 relevant documents, of which 10 documents did not meet the inclusion criteria and were excluded from further review. The remaining 84 documents were analysed against the framework.

Conclusion: A framework was developed that is likely to be useful for identifying the strengths and weaknesses of disparate policy documents and drawing comparisons between them, as well as making judgments about their potential to improve health literacy outcomes. By applying the framework in the Victorian context, we revealed that policy responses do not reflect best practice in policy development and implementation. That is, a relatively small number of policies describe specific actions to address health literacy, only one specifies funding to support the

implementation of activities, and two seek to monitor policy outcomes. For future policies to be effective in addressing health literacy, they will need to be strengthened in these areas.

Citation: Trezona, A., Dodson, S., Mech, P. and Osborne, R.H. (2018). *Development and testing of a framework for analysing health literacy in public policy documents*. *Global Health Promotion*, 25(4), 24-33. doi:10.1177/1757975918769616

ARTICLE: Participatory evaluation is the sea eagle looking “long way wide eyed”

Rogers, A., Harrison, N., Puruntatmeri, T., Puruntatameri, A., Meredith, J. and Dunne, R.

Overview: Participatory evaluation can be embedded in programs to support good governance and facilitate informed decision making in Aboriginal communities in remote and urban contexts. An Aboriginal Elder from the Tiwi Islands in the Northern Territory of Australia described participatory evaluation as a sea eagle looking “long way wide eyed.”

The metaphor refers to the long-term and broad approach undertaken when a complex community development program used participatory processes to build evaluation capacity and solve problems. The evaluation approach ensured the program was inclusive, responsive, empowering, and resulted in direct benefits for the communities.

This article addresses the lack of literature on applying developmental and empowerment evaluation approaches in practice by describing the methods, tools, and use of evaluation findings. The value of participating for the community members and partner organisations is shared and the benefits and implications for participants and the evaluator are discussed. The authors hope this article inspires practitioners and evaluators to consider participatory ways of working with communities to support community directed action and social change.

Citation: Rogers, A., Harrison, N., Puruntatmeri, T., Puruntatameri, A., Meredith, J. and Dunne, R. (2018). *Participatory evaluation is the sea eagle looking “long way wide eyed”*. *Evaluation Journal of Australasia*, 18(2), 78-98. doi:10.1177/1035719X18778712

REPORT: End of project evaluation report for Xintang County Pilot Project

Wen, Z.

Background: The Xintang pilot aimed to develop a best practice model for integrating primary eye care services into primary health care in rural provinces of China, to inform evidence-based advocacy to the central Government. The pilot established an effective partnership model, to support township doctors and nurses, and community health workers to undertake eye health checks during annual health checks and refer patients on to further services where needed.

Method: A literature review using project materials, international research, national and local policy papers, and online media sources was conducted to supplement evaluation data from baseline surveys and end of project surveys to measure knowledge and attitudes towards eye health services in Xintang county. Targeted interviews and group discussions were also conducted.

Results: The Project demonstrated an effective partnership model involving multiple stakeholders at national, county and township/village levels. As a result, more than 100,000 people received eye health screening, the largest scale screening ever undertaken in Xintang county. Over 700 doctors at the county, township and village level were trained in primary eye care techniques and over 60,000 villagers received eye health information. The output targets for the project were exceeded by at least 110% across all indicators.

The project faced some limitations, based on the time needed to build trust given The Fred Hollows Foundation was the first international development organisation to work with the local health administration in Xintang county.

Conclusion: With such a short period for implementation and given that it took a long time for local partners to familiarise with their first international cooperation, the Project has achieved what it could achieve. An extension of the Project will maximise the possibility of achieving the more ambitious objectives and beyond, with the foundation established in the first phase. What has been done in Xintang could be seen as a door opener to further and in-depth changes at both practical and policy levels. More could be done to sustain the momentum created by the Project.

Acknowledgements: This evaluation is supported by funding from The Fred Hollows Foundation.

Citation: Wen, Z. (2018), *Final Evaluation of Xintang Country Project*, The Fred Hollows Foundation

REPORT: Nganampa Health Council: Eye Health Coordination Project Evaluation

Bansemmer, A., and Beatty, D.

Background: Nganampa Health Council (NHC) is an Aboriginal Community Controlled Health Organisation (ACCHO) which delivers primary health care to all Anangu resident on, or visiting, the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands, in the remote north west of South Australia.

The Eye Health Coordination Project aimed to increase access to eye health care for Anangu on the Lands via the employment of a full time Eye Health Nurse; use of improved e-health systems, supported by the purchase and use of a retinal camera; and enhanced co-ordination and integration, including with NHC's chronic disease and environmental health programs. The Project also aimed to identify financing, key policy and critical funding gaps for Aboriginal eye health in remote Australia and for NHC's eye health model.

Results: The overall Project model (the Lands based nurse working in collaboration with relevant NHC staff and visiting teams, the retinal imaging system and the increased focus on triaging and targeting clients most in need) has achieved increasing coverage rates in visual acuity, diabetic retinopathy examination and trachoma screening. These NHC results exceed national results on comparable national Aboriginal eye health measures (Australian Institute of Health and Welfare 2017).

The Eye Health Nurse's efforts to ensure maximum take-up of Intensive Eye Surgery Week places has had an impact on cataract surgery figures. And trachoma prevalence in children aged 5 to 9 is declining. Retinal images of 323 current clients were taken by the Eye Health Nurse(s) between late 2016 and early December 2017, including opportunistic imaging of clients most overdue for an ophthalmic check.

Stakeholders were overwhelmingly positive about the Project and the impact of the Eye Health Nurse on the quality and coordination of eye health care to Anangu on the Lands.

However, the Project faced several obstacles to improvements in:

- The number of optometrist and ophthalmologist consultations on the Lands, largely because of the cancellation of some scheduled ophthalmologist visits (for very legitimate personal reasons);
- Resulting durations between referral and diabetic retinopathy treatment; and
- The proportions of clients waiting extended periods between referral and cataract surgery, with NHC clients' waiting periods greatly exceeding national Indigenous figures.

Citation: Bansemmer, A., and Beatty, D., (2018). *Nganampa Health Council: Eye Health Coordination Project Evaluation*. The Fred Hollows Foundation.

ARTICLE: Development of the Organisational Health Literacy Responsiveness (Org-HLR) self-assessment tool and process

Trezona, A., Dodson, S. and Osborne, R.H.

Background: The World Health Organization describes health literacy as a critical determinant of health and driver of citizen empowerment and health equity. Several studies have shown that health literacy is associated with a range of socioeconomic factors including educational attainment, financial position and ethnicity. The complexity of the health system influences how well a person is able to engage with information and services. Health organisations can empower the populations they serve and address inequity by ensuring they are health literacy responsive. The aim of this study was to develop the Organisational Health Literacy Responsiveness self-assessment tool (Org-HLR Tool), and an assessment process to support organisations with application of the tool.

Method: A co-design workshop with health and social service professionals was undertaken to inform the structure of the tool and assessment process. Participants critiqued existing self-assessment tools and discussed the likely utility of the data they generate. A review of widely used organisational performance assessment tools informed the structure and self-assessment process. The Organisational Health Literacy Responsiveness (Org-HLR) Framework (with seven domains/24 sub-domains) provided the structure for the assessment dimensions of the tool. The performance indicators were drawn from raw data collected during development of the Org-HLR Framework.

Results: Twenty-two professionals participated in the workshop. Based on the feedback provided and a review of existing tools, a multi-stage, group-based assessment process for implementing the Org-HLR Tool was developed. The assessment process was divided into three parts; i) reflection; ii) self-rating; and iii) priority setting, each supported by a corresponding tool. The self-rating tool, consistent with the Org-HLR Framework, was divided into: External policy and funding environment; Leadership and culture; Systems, processes and policies; Access to services and programs; Community engagement and partnerships; Communication practices and standards; Workforce. Each of these had 1 to 5 sub-dimensions (24 in total), and 135 performance indicators.

Conclusion: The Org-HLR Tool and assessment process were developed to address a gap in available tools to support organisations to assess their health literacy responsiveness, and prioritise and plan their quality improvement activities. The tool is currently in the field for further utility and acceptability testing.

Citation: Trezona, A., Dodson, S. and Osborne, R.H. (2018). *Development of the organisational health literacy responsiveness (Org-HLR) self-assessment tool and process*. BMC Health Services Research, 18, 694.

ARTICLE: Knowledge translation for public health in low- and middle- income countries: a critical interpretive synthesis

Malla, C., Aylward, P. and Ward, P.

Background: Effective knowledge translation allows the optimisation of access to and utilisation of research knowledge in order to inform and enhance public health policy and practice. In low- and middle- income countries, there are substantial complexities that affect the way in which research can be utilised for public health action. This review attempts to draw out concepts in the literature that contribute to defining some of the complexities and contextual factors that influence knowledge translation for public health in low- and middle- income countries.

Method: A Critical Interpretive Synthesis was undertaken, a method of analysis which allows a critical review of a wide range of heterogeneous evidence, through incorporating systematic review methods with qualitative enquiry techniques. A search for peer-reviewed articles published between 2000 and 2016 on the topic of knowledge translation for public health in low- and middle – income countries was carried out, and 85 articles were reviewed and analysed using this method.

Results: Four main concepts were identified: 1) tension between ‘global’ and ‘local’ health research, 2) complexities in creating and accessing evidence, 3) contextualising knowledge translation strategies for low- and middle-income countries, and 4) the unique role of non-government organisations in the knowledge translation process.

Conclusion: This method of review has enabled the identification of key concepts that may inform practice or further research in the field of knowledge translation in low- and middle- income countries.

Citation: Malla, C., Aylward, P. and Ward, P. (2018). *Knowledge translation for public health in low-middle income countries: a critical interpretive synthesis*. Global Health Research and Policy, 3, 29. doi:<https://doi.org/10.1186/s41256-018-0084-9>.

REPORT: Final Evaluation of the Top End Ophthalmology Outreach Resources Project

Gorham, G., Devitt, J., and Freeman, N.

Background: The Fred Hollows Foundation entered a funding agreement with Top End Health Services (TEHS) in 2014 to establish the Top End Ophthalmology Outreach Resources Project (TEORP).

The TEORP sought to enhance and increase the delivery of outreach ophthalmology services, through an expanded specialist workforce, improved service coordination and increased access to culturally appropriate eye care. The agreement funded an Ophthalmology Fellow, Outreach Ophthalmology Coordinator (Coordinator) and Aboriginal Liaison Officer (ALO) positions. Together The Foundation and TEHS developed service delivery performance measures and reporting templates and engaged the Menzies School of Health Research (Menzies) to assist with an assessment of the implementation of the project.

Method: Quantitative data were obtained from a variety of Department of Health and TEHS databases, including the Elective Surgery Waitlist for cataract surgery; Primary Care Information System (ophthalmology and optometry visits); Specialist Outreach NT (SONT) for staff travel; Travel management System for patient travel data and activity reports provided by the Coordinator and ALO. Qualitative data included reviewing previous monitoring and evaluation documentation (observation notes, reports and interview transcripts) as well as interviewing members of the outreach ophthalmology team and other key stakeholders.

Results: The TEORP has increased access to eye health for remote residents in the Top End with approximately 1500 episodes of care delivered across 30 communities in 2016/17. The dedicated Coordinator position was integral to facilitating communication and coordination between multiple eye health service providers, a network of remote primary health clinics and regional hubs at Katherine and Gove hospitals. However, waitlists for ophthalmology appointments continue to grow with a large unmet need.

Conclusion: The coordinator position was valued, however additional responsibilities risk over-extending the role. Improvements in data management systems were achieved as a result of the project, however a number of poor practices continue to create inefficiencies. The lack of ongoing funding to meet demand generated the project was identified as a significant sustainability risk.

Acknowledgement: This evaluation was prepared by Menzies School of Health Research, and funded by The Fred Hollows Foundation.

Citation: Gorham, G., Devitt, J. & N. Freeman (2018), *Top End Outreach Ophthalmology Resources Project*, Menzies School of Health research

ARTICLE: Demonstrating the value of community development: An inclusive evaluation capacity building approach in a non-profit Aboriginal and Torres Strait Islander organisation

Rogers, A., Radcliffe, D., Babyack, S. and Layton, T.

Overview: Inclusive, culturally safe, appropriate and relevant ways of evaluating that contribute to better outcomes for Aboriginal and Torres Strait Islanders that can be communicated to a wide audience are urgently needed. An Aboriginal and Torres Strait Islander non-profit community development organisation, Indigenous Community Volunteers (ICV), has transformed towards this goal by intentionally building evaluation capacity over the past four years. ICV now incorporates participatory monitoring and evaluation approaches into the community development practices of the organisation to improve measurement and capture outcomes with communities. The principles of inclusion, flexibility, empowerment, ownership and effective communication were essential to the transformation. This article shares how ICV developed evaluation capacity in an inclusive and culturally appropriate way and the results of an independent assessment of the value of the process. ICV's journey of change and the methodology used to make the assessment may be useful for other organisations or individuals working with community development organisations.

Citation: Rogers, A., Radcliffe, D., Babyack, S. and Layton, T. (2018). *Demonstrating the value of community development: an inclusive evaluation capacity building approach in a non-profit Aboriginal and Torres Strait Islander organisation*.



ARTICLE: Process evaluation of a national primary eye care programme in Rwanda

Yip, J.L.Y., Bright, T., Ford, S., Mathenge, W., Faal, H. and the Rwanda Primary Eye Care Process Evaluation group.

Background: Visual impairment is a global public health problem, with an estimated 285 million affected globally, of which 43% are due to refractive error. A lack of specialist eye care in low and middle-income countries indicates a new model of care would support a task-shifting model and address this urgent need. We describe the features and results of the process evaluation of a national primary eye care (PEC) programme in Rwanda.

Method: We used the Medical Research Council process evaluation framework to examine the implementation of the PEC programme, and to determine enablers and challenges to implementation. The process evaluation uses a mixed methods approach, drawing on results from several sources including a survey of 574 attendees at 50 PEC clinics, structured clinical observations of 30 PEC nurses, in-depth interviews with 19 key stakeholders, documentary review and a participatory process evaluation workshop with key stakeholders to review collated evidence and contextualise the results.

Results: Structured clinical assessment indicated that the PEC provided is consistent with the PEC curriculum, with over 90% of the clinical examination processes conducted correctly. In 4 years, programme monitoring data showed that nearly a million PEC eye examinations had been conducted in every health centre in Rwanda, with 2707 nurses trained. The development of the eye health system was an important enabler in the implementation of PEC, where political support allowed key developments such as inclusion of eye-drops on the essential medicines list, the inclusion of PEC on insurance benefits, the integration of PEC indicators on the health management information systems and integration of the PEC curriculum into the general nursing school curriculum. Challenges included high turnover of primary care nurses, lack of clarity and communication on the future funding of the programme, competing priorities for the health sector and sustained supervision to assure quality of care.

Conclusion: A model of a national primary eye care programme is presented, with service delivery to all areas in Rwanda. Key learning from this evaluation is the importance of strengthening the eye health care system, together with a strong focus on training primary care nurses using a PEC curriculum.

Citation: Yip, J.L.Y., Bright, T., Ford, S., Mathenge, W., Faal, H. and the Rwanda Primary Eye Care Process Evaluation group. *Process evaluation of a national primary eye care programme in Rwanda*. BMC Health Services Research, 18, 950. doi:<https://doi.org/10.1186/s12913-018-3718-1>.

ARTICLE: Conceptualisation and development of the Conversational Health Literacy Assessment Tool (CHAT)

O'Hara, J., Hawkins, M., Batterhan, R., Dodson, S., Osborne, R.H. and Beauchamp, A.

Background: The aim of this study was to develop a tool to support health workers' ability to identify patients' multidimensional health literacy strengths and challenges. The tool was intended to be suitable for administration in healthcare settings where health workers must identify health literacy priorities as the basis for person-centred care

Method: Development was based on a qualitative co-design process that used the Health Literacy Questionnaire (HLQ) as a framework to generate questions. Health workers were recruited to participate in an online consultation, a workshop, and two rounds of pilot testing.

Results: Participating health workers identified and refined ten questions that target five areas of assessment: supportive professional relationships, supportive personal relationships, health information access and comprehension, current health behaviours, and health promotion barriers and support.

Conclusion: Preliminary evidence suggests that application of the Conversational Health Literacy Assessment Tool (CHAT) can support health workers to better understand the health literacy challenges and supportive resources of their patients. As an integrated clinical process, the CHAT can supplement existing intake and assessment procedures across healthcare settings to give insight into patients' circumstances so that decisions about care can be tailored to be more appropriate and effective.

Citation: O'Hara, J., Hawkins, M., Batterhan, R., Dodson, S., Osborne, R.H. and Beauchamp, A. (2018). *Conceptualisation and development of the Conversational Health Literacy Assessment Tool (CHAT)*. BMC Health Services Research, 18, 199. <https://doi.org/10.1186/s12913-018-3037-6>

REPORT: Line of Sight - The Pilbara Case Study: Evaluating the impact of the Lions Outback Vision Program

Stott, C.

Background: This report presents the findings of a project to evaluate the effectiveness and impact of the Lions Outback Vision (LOV) Program. It focuses on understanding whether, and how, health and social change has occurred, and seeks to identify a range of appropriate indicators to measure the extent of this change. LOV was established in 2010 with the support of the Lions Eye Institute and the University of Western Australia. As the outreach arm of the Institute, LOV is firmly committed to preventing blindness and vision loss among regional, remote and Indigenous Western Australians. Together with partners and supporters, LOV aims to address the unique challenges of delivering equitable and quality eye health care to regional, remote and Aboriginal communities across our state with the development and implementation of innovative and sustainable models of service delivery.

Method: The evaluation applied the Social Return on Investment (SROI) methodology: SROI is an internationally recognised methodology used to understand, measure and value the impact of a program or organisation. It is a form of cost-benefit analysis that examines the social, economic, cultural and environmental outcomes created and the costs of creating them.

Results: The LOV Program plays a vital role in meeting the needs of many people in a number of communities who would otherwise avoid or simply be unable to address their eye health issues. For some communities, the nearest permanent optometrist can be nearly 800km away, and take up to 22 driving hours on rough unsealed roads.

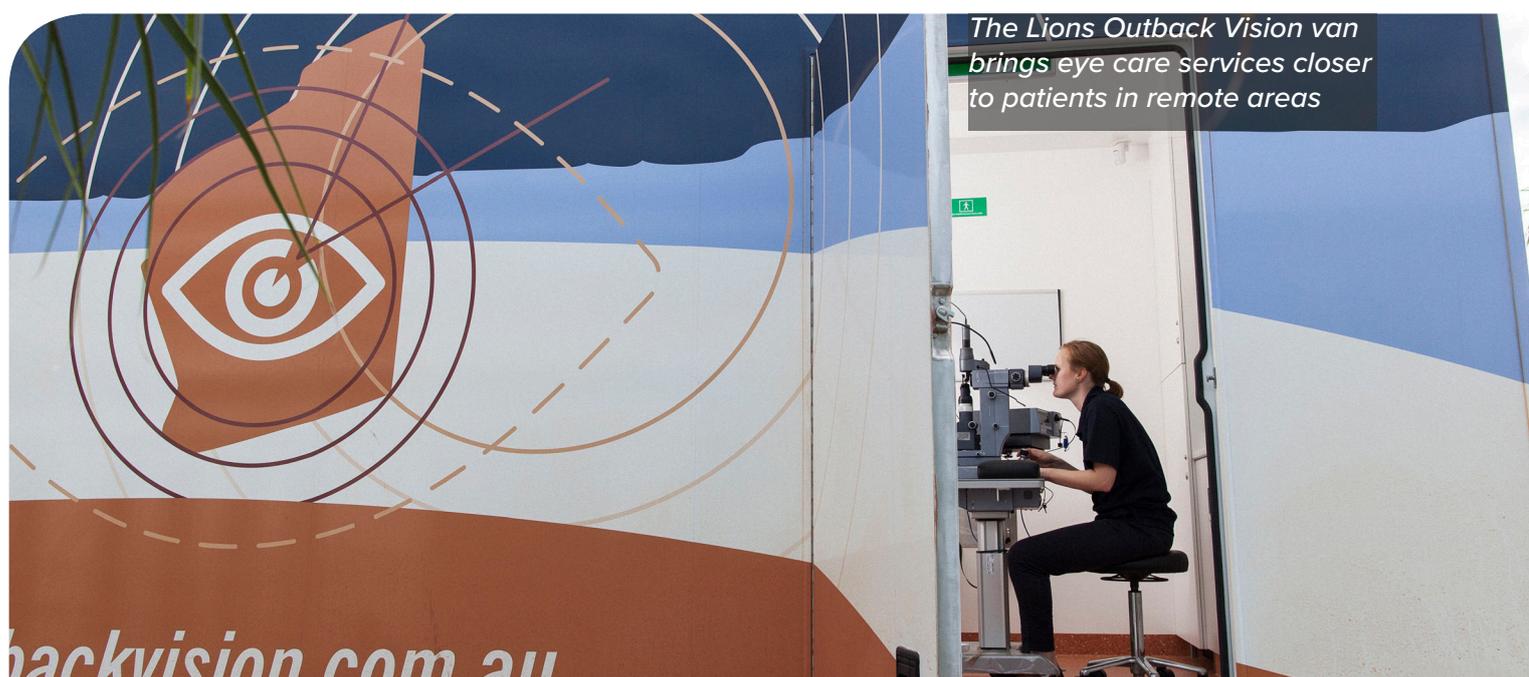
Such logistical and financial barriers contribute to the normalisation or tolerance of poor vision, along with increased risks associated with untreated eye disease and related complications.

The provision of outreach eye health services in the Pilbara is having a number of important health and social impacts including:

- Improving patients' quality of life, health and wellbeing,
- increasing eye health literacy of patients and local clinic staff,
- enhancing patients' engagement with eye health services,
- supporting enhanced diabetic management and diabetic patient health behaviours; and
- supporting innovation within local health facilities and better coordination and collaboration across local services.

Conclusion: The LOV Program has demonstrated its value in creating positive individual and community impact, however more work is to be done. The scalability of the LOV Program model of care is limited by the capacity of hospitals and host facilities to accommodate services. As such, the current model is unable to address national recommendations of increased access to care, particularly with regard to treatment for diabetic eye disease. Until such time, equality of access for people in regional, remote and Aboriginal communities will remain unattainable. Shifting the balance of care to preventative and early treatment is vital to stem the burden of eye disease. It is imperative the LOV Program continues to provide comprehensive and integrated holistic care to facilitate this.

Citation: Stott, C. (2017). *Line of Sight – The Pilbara Case Study. Evaluating the Impact of the Lions Outback Vision program*. The Fred Hollows Foundation.

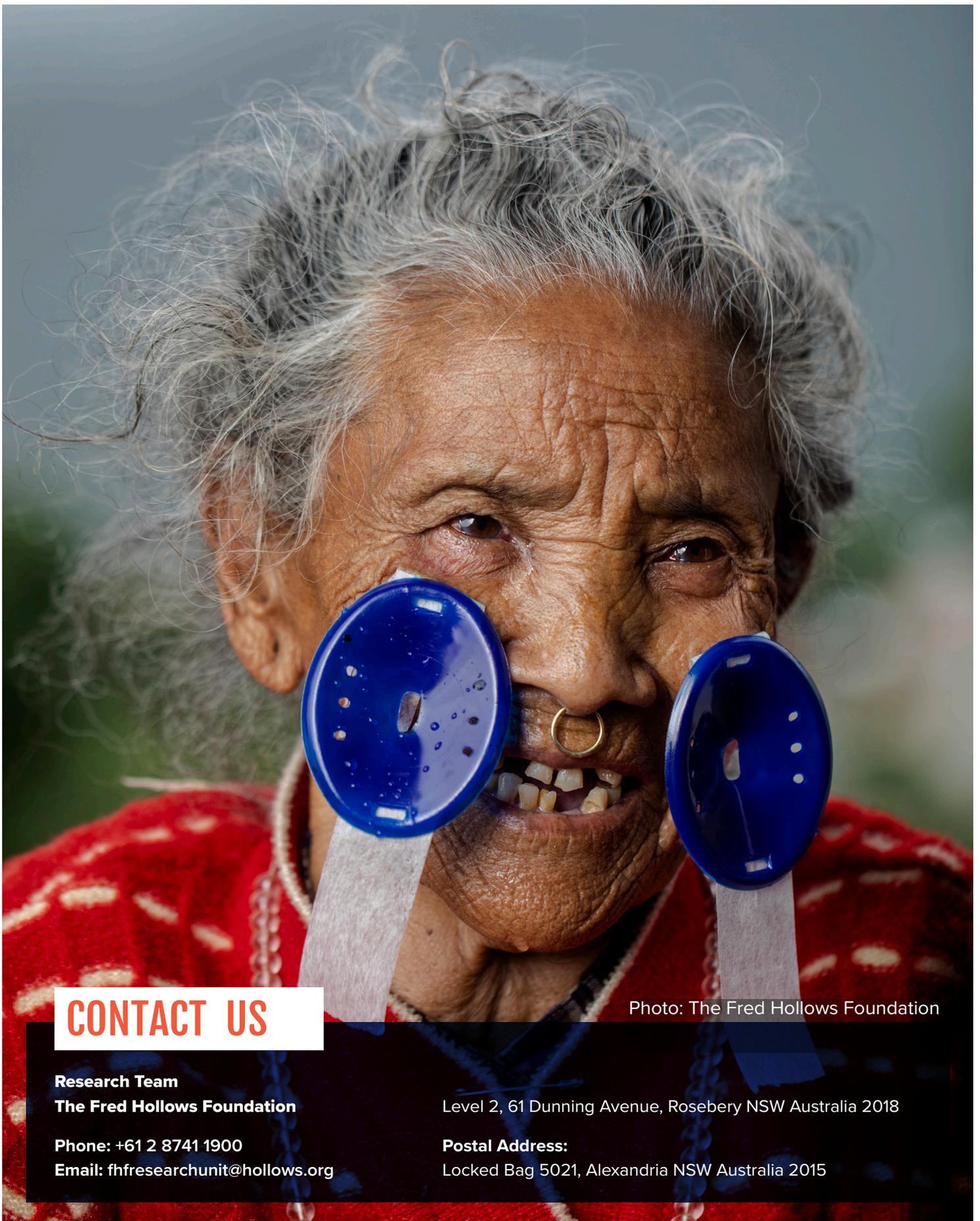




OUR RESEARCH AND INNOVATION PRIORITIES

The Foundation undertakes and supports high quality, high impact research and innovation focused around five priority areas:

1. **Cataract** – enhancing the quality of surgical outcomes, improving productivity and efficiency of services, and balancing equity of access
2. **Trachoma** – enhancing community engagement with surgery, and hygiene and sanitation practices, and understanding the nature of trachoma infection in areas where clinical presentations differ from the typical
3. **Diabetic Retinopathy (DR)** – enhancing understanding of the burden of DR, task shifting (and sharing), strategies for enhancing care coordination and integration, and innovative technology assisted DR care solutions
4. **Health systems strengthening** – enhancing understanding of the prevalence of eye disease across countries in which we work, innovative models of eye health financing, and technology, strategies and models of care that strengthen eye care coordination, integration and access
5. **Community engagement** – enhancing methods and tools to support needs assessments and engagement of communities in eye health program design, and to address the barriers experienced by women and other marginalised groups to uptake of eye health services.



CONTACT US

Photo: The Fred Hollows Foundation

Research Team
The Fred Hollows Foundation

Phone: +61 2 8741 1900
Email: fhfresearchunit@hollows.org

Level 2, 61 Dunning Avenue, Rosebery NSW Australia 2018

Postal Address:
Locked Bag 5021, Alexandria NSW Australia 2015



The Fred Hollows
Foundation