

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Eyes Wide Open: The emerging threat of vision loss in the Pacific

At a glance

- The purpose of this paper is to draw attention to Pacific Heads of Health and policy makers on issues and challenges related to eye health in the region, in particular the need for ongoing investment into the eye health workforce and wider eye health system strengthening.
- There remain unacceptably high rates of blindness and vision impairment in the Pacific, with approximately 90% being preventable or treatable. Alarming, over the coming decades, it is projected that the prevalence of vision loss will markedly increase, and the epidemiology of eye diseases will significantly change due to factors such as rapidly growing and ageing populations, along with behavioral and lifestyle changes, ongoing increase in non-communicable diseases (NCDs), urbanization, and the climate crisis.
- The leading causes of blindness in the Pacific are cataract, uncorrected refractive error, and diabetic retinopathy, a complication of diabetes. Vision loss caused by diabetic retinopathy is irreversible, meaning early detection, routine screening, and timely treatment is paramount.
- While there have been limited studies on diabetic retinopathy prevalence, it has been estimated that in some countries in the Pacific up to 69% of people with diabetes have a form of retinopathy, which is more than double the global rate. Anecdotal evidence from countries indicates that the age of people presenting with diabetic retinopathy is getting younger; a cause for concern.
- Eye health data in Pacific Island Countries (PICs) is limited, and the true burden of vision loss, including on health, economies, and development, is largely invisible due to limited investment in research and data collection. However, recent studies show the significance of the problem. A national survey in Papua New Guinea found that 5.6% of the population aged 50 years and older are living with blindness; 61% of which is experienced by women. These are among the highest rates globally. The Fiji Eye Health Survey 2009 (in Viti Levu) found the estimated prevalence of blindness in people over 40 to be 2.6%. Given the high NCD rates, particularly the rising rates of diabetes in Fiji, this is likely to be much higher.
- At the pace of the current growth of the eye health workforce against the increasing rates of blindness and vision impairment, the current workforce is simply not sufficient to meet current population needs, let alone keep pace with the growing rates of diabetes within the context of the NCD crisis.
- Few countries in the Pacific have national eye health plans and policies and there is limited targeted investments to strengthen eye health systems and progress towards universal health coverage (UHC) for eye care.

Pacific Heads of Health are invited to:

1. Recognize the growing burden of vision loss in the region, particularly diabetic retinopathy due to rising rates of diabetes.
2. Include eye care in human resource planning to further develop a highly skilled eye care workforce that can increasingly meet complex population eye needs.
3. Support the integration of eye health as part of their national health planning to drive national eye health priorities to progress towards integrated people-centred eye care as part of universal health coverage (UHC).
4. Invest in collecting eye health data and information to better understand the true burden of vision loss and enable policy development, prioritization, and reporting.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Current situation

Over 2.2 billion people around the world are living with a vision impairment and 1.1 billion people do not have access to eye care services. Without change, this will increase by approximately 64%, rising to 1.8 billion people by 2050.¹

Even though the true burden of vision loss across the Pacific is unknown, recent studies have indicated that there are unacceptably high rates of blindness and vision impairment, with approximately 90% being preventable or treatable.² The leading causes of vision loss in the Pacific are cataract, uncorrected refractive error, and diabetic retinopathy.

Across PICs the estimated prevalence of cataract amongst the population 50 years and older is 10.66%, while the estimated prevalence of uncorrected refractive error causing vision loss is 6.97%.³ A national prevalence survey in Papua New Guinea in 2017 found that 5.6% of the population aged 50 years and older are living with blindness; 61% of which is experienced by women.⁴ These are among the highest rates globally.

Over the coming decades, it is projected that the prevalence of vision loss will markedly increase, and the epidemiology of eye diseases will significantly change due to factors such as rapidly growing and ageing populations, along with behavioral and lifestyle changes, an increase in non-communicable diseases (NCDs), and urbanisation.⁵⁻⁶ The climate crisis is also likely to contribute to this by increasing the incidence of cataracts, vitamin A deficiency, and eye injuries.^{7,8}

The rapid rise in non-communicable chronic eye conditions, such as diabetic retinopathy, glaucoma, age-related macular degeneration, and complications of high myopia pose significant challenges for PICs.⁹⁻¹⁰ Countries across the Pacific will face an increasing burden of non-communicable chronic eye conditions that require comprehensive and extensive long-term care posing a critical risk to already strained health systems.

¹ World Health Organization. 2019. World Report on Vision. <https://www.who.int/publications/i/item/9789241516570>

² Burton, M. J., Ramke, J., Marques, A. P., Bourne, R. R., Congdon, N., Jones, I., ... & Faal, H. B. (2021). The Lancet Global Health Commission on Global Eye Health: Vision Beyond 2020. *The Lancet Global Health*, 9(4), e489-e551.

³ Data from VLEG/GBD 2020 model. IAPB Vision Atlas. <https://www.iapb.org/learn/vision-atlas/>

⁴ Lee L, D'Esposito F, Garap J, Wabulembo G, Koim SP, Keys D, et al. Rapid assessment of avoidable blindness in Papua New Guinea: a nationwide survey. *British Journal of Ophthalmology*. 2019 Mar 1;103(3):338-42.

⁵ Burton MJ, Ramke J, Marques AP, Bourne RRA, Congdon N, Jones I, et al. The Lancet Global Health Commission on Global Eye Health: vision beyond 2020. *The Lancet Global Health* [Internet]. 2021 Feb 16 [cited 2021 Sept22];0(0). [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(20\)30488-5/abstract](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30488-5/abstract)

⁶ World Health Organization. 2019. World Report on Vision. <https://www.who.int/publications/i/item/9789241516570>

⁷ IAPB. 2021. *Why immediate action on climate matters to eye health for all, but especially women and girls*. <https://www.iapb.org/blog/why-immediate-action-on-climate-matters-to-eye-health-for-all-but-especially-women-and-girls/>

⁸ WorldEconomicForum. Global Health and Healthcare Strategic Outlook- *Shaping the Future of Health and Healthcare*. <https://www.weforum.org/centres-and-platforms/shaping-the-future-of-health-and-healthcare>.

⁹ Burton MJ, Ramke J, Marques AP, Bourne RRA, Congdon N, Jones I, et al. The Lancet Global Health Commission on Global Eye Health: vision beyond 2020. *The Lancet Global Health* [Internet]. 2021 Feb 16 [cited 2021 Sept22];0(0). [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(20\)30488-5/abstract](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30488-5/abstract)

¹⁰ International Diabetes Federation. IDF Diabetes Atlas [Internet]. Brussels, Belgium: International Diabetes Federation; 2021 [cited 2022 Feb 10]. 10th edition. <https://www.diabetesatlas.org>

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Of particular concern is vision loss caused by diabetes (diabetic retinopathy), particularly given six of the ten countries with the highest rates of diabetes globally are in the Pacific.¹¹ While there have been limited studies on diabetic retinopathy prevalence in the Pacific, it has been estimated that in some PICs, up to 69% of people with diabetes have a form of retinopathy¹², which is more than double the global rate. A study in Fiji found 26% of patients reporting for photo-screening had sight-threatening diabetic retinopathy, 13% of which were already clinically blind.¹³ Crucially, vision loss caused by diabetic retinopathy is irreversible, meaning early detection, routine screening, and timely treatment is paramount. Consideration is needed for new treatment and management strategies, strengthening referral pathways and expanding service delivery by integrating diabetic retinopathy screening within routine diabetes management and control services.

Based on current eye health workforce training (Annex 1), and the projected vision loss trajectory, it is likely that the Pacific will not have a sufficient workforce to respond to the growing demand in eye care services.

Another key issue facing the sustainability of the eye health workforce is the limited recognition of eye nurses, eye care-trained Health Extension Officers, and technicians within national health workforces across the region contributing to reduced incentives for these clinicians who wish to specialize in eye care and leading to increased attrition of eye care workers. Annex 2 tabulates the current Pacific eye health workforce and shows a growing trend in eye care workforce attrition.

Strengthening eye health systems to enable sustainable eye health services is paramount. Key to this is ensuring that eye health is prioritized and captured in national health planning processes¹⁴ and that there is sufficient eye health information and data to support robust policy development, planning and investment. Eye health data is important for health decision makers to improve service delivery as well as to support Pacific governments meet their international reporting requirements. At the 74th World Health Assembly (WHA) in May 2021 Pacific Health Ministers adopted new 2030 targets for the two global leading causes of blindness and vision impairment, which countries are required to track and report against:

- 30 percentage point increase in effective cataract surgery coverage (eCSC)
- 40 percentage point increase in effective refractive error coverage (eREC).

National prevalence surveys are the recognized method to establish baselines and enable target setting and reporting on these indicators.¹⁵ Papua New Guinea and Solomon Islands have completed a national

¹¹ International Diabetes Federation. IDF Diabetes Atlas, 10th edn. Brussels, Belgium: 2021. <https://www.diabetesatlas.org>

¹² Tin, S. T. W., Kenilorea, G., Gadabu, E., Tasserei, J., & Colagiuri, R. (2014). The prevalence of diabetes complications and associated risk factors in Pacific Islands countries. *Diabetes research and clinical practice*, 103(1), 114-118.

¹³ Bhikoo R, Murray N, Sikivou B, Emma S, McGhee C. Demographic features and visual outcomes of patients presenting to diabetic photo-screening and treated for sight threatening retinopathy in Fiji. *Int J Ophthalmol* [Internet]. 2017 [cited 2022 Mar 20];10(5):790-795. Available from: http://www.ijocn.giyken/ch/reader/create_pdf.aspx?file_no=20170522&year_id=2017&quarter_id=5&falq=1 doi: 10.18240/ijocn.2017.05.22

¹⁴ Noting that eye health should be integrated across key health services such as maternal and child health, neonatal care, nursing, noncommunicable diseases (particularly diabetes), healthy ageing, rehabilitation, and occupational health and safety.

¹⁵ World Health Organization. 2022. *Report of the 2030 targets on effective coverage of eye care 2030 targets on effective coverage of eye care* (ISBN 978-92-4-005800-2). <https://www.who.int/publications/i/item/9789240058002>

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

prevalence survey in the last ten years, however Solomon Islands' 2018 survey data is yet to be analyzed or reported.

As a high-level summary, based on the WHO's guidelines for a strong eye health system¹⁶, we note the following current capacity within public eye health systems in the Pacific in PICs:

- 6 countries can screen for diabetic retinopathy and offer laser treatment
- 1 country can offer vitreoretinal surgery (for example for advanced DR)
- 8 countries have at least one active ophthalmologist
- 13 countries have active eye nurses
- 8 countries can deliver cataract surgery
- 5 countries can deliver refractive error services including custom-made spectacles¹⁷
- 10 doctors and 18 nurses from 7 countries are currently in eye care tertiary training (see Annex 1 for details). In addition, 1 ophthalmologist is receiving sub-specialist training at PEI and 3 ophthalmologists are enrolled in the Asia Pacific Academy of Ophthalmology (APAO) Leadership Development Programme
- 3 countries have done national prevalence surveys, with only 1 country being able to report against both global WHA eye health indicators (Papua New Guinea)
- 3 countries have national eye health plans, with 2 of these endorsed by their respective governments
- 2 countries have a dedicated National Eye Care Coordinator
- 3 countries have a National Eye Health Steering Committee to oversee and monitor the implementation of eye health policies, plans and programmes at a national-level.

Whilst this might seem a positive picture currently, given rising rates of diabetes and diabetic retinopathy, the current workforce will not be sufficient to likely meet population needs in the immediate future. PICs should continue to consider investing in eye health system strengthening in particular the eye health workforce and prevalence surveys.

Future vision

Our Pacific leaders have long desired to achieve UHC for their communities as indicated in numerous national and regional health plans. A core part of UHC is integrated people-centred eye care, which is essential for the achievement of SDG 3, in particular target 3.8. The WHO World Report on Vision states the need for integrated people-centred eye care to achieve UHC – which is defined as: 'services that are managed and delivered so that people receive a continuum of health interventions covering promotion, prevention, treatment and rehabilitation; should address the full spectrum of eye conditions according to their needs, coordinated across the different levels and sites of care within and beyond the health sector, and recognizes people as participants and beneficiaries of these services, throughout their life course'.¹⁸

¹⁶ The WHO recommends the use of an independent assessment using the [Eye Care Situation Analysis Tool](#) to understand a countries' eye health system, which includes 31 components across the six health system pillars and a maturity scale to highlight strengths and weaknesses in the system.

¹⁷ In a few countries, private practices provide refraction services complementing government services.

¹⁸ World Health Organization. 2019. World Report on Vision. <https://www.who.int/publications/i/item/9789241516570>

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

UHC for eye health contributes to the Healthy Island Vision¹⁹ and Pacific Leaders 2050 Vision²⁰ of ‘a resilient Pacific Region of peace, harmony, security, social inclusion, and prosperity, that ensures all Pacific peoples can lead free, healthy and productive lives.’

In addition, addressing eye health is key to progressing action towards the Pacific NCD Roadmap. At the 2022 Directors of Clinical Services Meeting, the need for integrated people-centred eye care (IPEC)²¹ was noted in a paper presented by The Fred Hollows Foundation NZ, titled ‘Sustaining Integrated People-Centred Eye Care in the Pacific’ (DCS13/7.6) – attached in Annex 3. There are multiple areas where action and resources can be leveraged within the Pacific Monitoring Alliance for NCD Action (MANA), for example, by including eye health leaders in multisectoral NCD Taskforces (L2.), ensuring national guidelines for diabetes care include diabetic retinopathy (H1.), or by ensuring intravitreal drugs for the treatment of diabetic retinopathy are included in essential drug lists (H2.). See Annex 4 for further information about intravitreal drugs.

Examples of recent progress

PICs’ Ministries and Departments of Health have been investing in their eye health systems for at least the last two decades with significant funding and support. Partners continue to contribute and work collectively in Pacific eye health, such as universities, the Pacific Eye Care Society (PacEYES), the International Agency of Prevention of Blindness (IAPB), WHO, Christian Blind Mission, the Royal Australian College of Ophthalmologists (RANZCO), and The Fred Hollows Foundation NZ and Australia.

A significant focus has been on eye health workforce development to support eye health service delivery. Twenty years ago, there were hardly any ophthalmologists nor eye care nurses in PICs and so there was a reliance on visiting international teams to deliver eye care which is unsustainable to meet the growing needs. The Fred Hollows Foundation NZ, together with Fiji National University (FNU) and Divine Word University (DWU), developed Pacific contextualized, globally accredited eye health qualifications for doctors, nurses, and other health personnel²², which has enabled the training of a substantial workforce and helped establish eye health systems across the Pacific.²³

Ministries of Health have invested substantially in workforce training; 327 eye care clinicians have been trained since 2001 in partnership with The Fred Hollows Foundation NZ (24 ophthalmologists, 14 PGDO registrars²⁴, 283 ophthalmic nurses & health extension officers, and 6 ophthalmic technicians).

¹⁹ Healthy Island Vision. 2015. https://www.who.int/publications/i/item/PHMM_declaration_2015

²⁰ Pacific Islands Forum. Blue Pacific 2050, 2050 strategy for the Blue Pacific Continent. [PIFS-2050-Strategy-Blue-Pacific-Continent-WEB-5Aug2022.pdf](https://www.pif.org/~/media/2022/08/5Aug2022.pdf) (forumsec.org)

²¹ The WHO states the need for integrated people-centred eye care to achieve UHC – which is defined as: ‘services that are managed and delivered so that people receive a continuum of health interventions covering promotion, prevention, treatment and rehabilitation; should address the full spectrum of eye conditions according to their needs, coordinated across the different levels and sites of care within and beyond the health sector, and recognises people as participants and beneficiaries of these services, throughout their life course’. (World Health Organization. 2019. World Report on Vision. <https://www.who.int/publications/i/item/9789241516570>).

²² FNU offers the Master of Medicine (Ophthalmology), Postgraduate Diploma in Ophthalmology, and the Postgraduate Diploma in Eye Care. DWU offers the Advanced Diploma in Eye Care.

The University of Papua New Guinea (UPNG) offers the Master of Ophthalmology and Postgraduate Diploma in Ophthalmology.

²³ Poppelwell, E., & Burnett, K. (2022). *Evaluation of the Pacific Eye Institute Training Programme 2016-2021*. Future Partners International Development & The Fred Hollows Foundation NZ. https://www.hollows.org.nz/images/assets/4549/1/Final%20Evaluation%20Report%20FHFNZ%20PEI%20Training%20Programme_16%20Jan%2023.pdf

²⁴ Postgraduate Diploma in Ophthalmology (PGDO) registrars refers to doctors who have completed a Postgraduate Diploma in Ophthalmology.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Approximately 80% are actively delivering eye care within public health systems across 12 Pacific countries: the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Samoa, Tokelau, Tonga, Tuvalu, Solomon Islands, and Vanuatu.²⁵

This trained eye care workforce has contributed to the delivery of more than 1.1 million eye consultations and 88,000 eye surgeries across 11 countries with The Fred Hollows Foundation NZ's support.²⁶ In some PICs where eye care is limited or unavailable, a regional ophthalmic outreach model was developed to enable increased access to quality eye care services in remote communities and Small Island States (SIS). This team, made up of an entirely Pacific workforce performs outreach across the region, in response to government requests. To date, the Pacific outreach team has conducted 75 regional outreaches.

Training facilities such as the Pacific Eye Institute (PEI) in Fiji, the Regional Eye Centre in Solomon Islands, and the Madang Provincial Hospital Eye Clinic in Papua New Guinea, have been established to provide training for clinicians, including students at FNU, DWU and UPNG. Whilst these facilities are part of the government's health systems, they are significantly funded and supported by external sources.

To support countries to build evidence and information on eye health for robust planning and investment, The Fred Hollows Foundation NZ and the University of Auckland recently launched a collaborative 5+ year State of Eye Health (SoEH) in the Pacific research programme. This will involve Pacific countries undertaking national prevalence studies and economic analyses on the cost of vision loss.

Why urgent action is needed now

The social and economic cost of inaction is daunting: With growing rates of vision loss, including unknown and potentially escalating rates of diabetic retinopathy, due to rising rates of diabetes, the cost to people's lives, health systems, and economies will be severe if governments delay increasing their investments in eye health. Vision loss has a significant impact on economic development, and vision loss caused by diabetes disproportionately affects the working age population, thus contributing to the vicious cycle of unemployment and poverty.²⁷ A diabetic retinopathy programme across five PICs was found to have a return on investment of nearly 6:1 to the local economy,²⁸ although benefits extend far wider and deeper, for example there are also health system savings due to reduced co-morbidities.

Wider sustainable development is threatened when there are high rates of avoidable vision loss: Good eye health is essential for the achievement of the 2030 Sustainable Development Agenda and was formally recognized by the United Nations General Assembly in 2021 with the unanimous adoption of resolution 75/310, 'Vision for everyone: Accelerating action towards achieving the Sustainable

²⁵ The training of this workforce was enabled through our partnerships with Fiji National University (FNU) and Divine Word University (DWU) in Madang, Papua New Guinea, as well the ophthalmic qualifications delivered by the University of Papua New Guinea (UPNG).

²⁶ The Federated States of Micronesia, Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Timor-Leste, Tokelau, Tonga, Tuvalu, Solomon Islands, and Vanuatu.

²⁷ Diabetes, T. L. (2020). Under the lens: diabetic retinopathy. *The Lancet Diabetes & Endocrinology*, 8(11), 869.

²⁸ PricewaterhouseCoopers LLP. 2018. Investing in Vision – making a difference across the commonwealth.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Development Goals'.²⁹ The resolution firmly enshrines eye health as essential for achieving the SDGs, specifically linking eye care to half of the goals.³⁰ Drawing upon the evidence in the 2021 Lancet Global Health Commission on Global Eye Health, some direct links between eye health and the SDGs include:

1 NO POVERTY



People living with blindness and vision impairment are less likely to be engaged in paid work. 90% of vision loss is in low- and middle-income countries and the highest rates of vision loss are in the poorest areas and countries.

3 GOOD HEALTH AND WELL-BEING



Poor vision has a significant impact on wellbeing and mental health with links to higher levels of depression, anxiety and a loss of independence. Poor vision results in an increased risk of co-morbidity and mortality (up to 2.6 times).³¹

4 QUALITY EDUCATION



Good vision enables children to participate in education, learn, and reach their full potential across their lives. Spectacles can reduce the likelihood of a student failing a class by 44%.

5 GENDER EQUALITY



Women and girls experience 55% of blindness and vision impairment globally yet are less likely to receive treatment. They are more likely to carry the burden of caring for those with blindness and vision impairment.

8 DECENT WORK AND ECONOMIC GROWTH



Adults with vision impairment have lower rates of workforce participation and productivity. Vision loss costs the global economy \$410 billion every year in lost productivity.³²

10 REDUCED INEQUALITIES



The majority of people who suffer from untreated poor vision are from rural and remote areas and low- and middle-income countries. Women, people with disabilities, and people from vulnerable groups are less likely to receive eye care services.

Recommendations to be considered by the Heads of Health

Recommendations for governments

Pacific Heads of Health are invited to:

1. Recognize the growing burden of vision loss in the region, particularly diabetic retinopathy due to rising rates of diabetes.
2. Include eye care in human resource planning to further develop a highly skilled eye care workforce that can increasingly meet complex population eye needs.
3. Support the integration of eye health as part of their national health planning to drive national eye health priorities to progress towards integrated people-centred eye care as part of universal health coverage (UHC).

²⁹ United Nations General Assembly resolution 75/310, Vision for Everyone: accelerating action to achieve the Sustainable Development Goals, A/RES/75/310 (23 July 2021). <https://undocs.org/en/A/RES/75/310>

³⁰ United Nations General Assembly resolution 75/310, Vision for Everyone: accelerating action to achieve the Sustainable Development Goals, A/RES/75/310 (23 July 2021). <https://undocs.org/en/A/RES/75/310>

³¹ IAPB Vision Atlas - Wellbeing. <https://www.iapb.org/learn/vision-atlas/impact-and-economics/well-being/>

³² Burton, M. J., Ramke, J., Marques, A. P., Bourne, R. R., Congdon, N., Jones, I., ... & Faal, H. B. (2021). The Lancet Global Health Commission on Global Eye Health: Vision Beyond 2020. *The Lancet Global Health*, 9(4), e489-e551.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

4. Invest in collecting eye health data and information to better understand the true burden of vision loss and enable policy development, prioritization, and reporting.

Recommendations for development partners

Development partners are invited to:

1. Provide technical support to countries in implementing the proposed recommendations.
2. Increase funding for eye health to enable countries to fully implement the proposed recommendations.
3. Advocate for the integration of eye care services as part of countries' overall health systems and work to raise awareness of the socio-economic burden of vision loss.
4. Support activities that will improve the collection of better information and evidence related to eye health.
5. Fund eye health prevalence surveys.

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3. SPC
4. The Fred Hollows Foundation NZ
5. The Fred Hollows Foundation Australia
6. The Pacific Eye Care Society (PacEYES)

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Annex 1: Current PIC Student Eye Health Workforce

The table below summarises the current cohort of health personnel in eye care training at Fiji National University (FNU), the University of Papua New Guinea (UPNG), and Divine Word University (DWU), as well as in-house sub-specialist training offered by the Pacific Eye Institute (PEI) in Suva, Fiji.

FNU offers the Master of Medicine (Ophthalmology) (MMed), Postgraduate Diploma in Ophthalmology (PGDO), and the Postgraduate Diploma in Eye Care (PGDEC).

The University of Papua New Guinea (UPNG) offers the Master of Ophthalmology (MMed) and Postgraduate Diploma in Ophthalmology (PGDO).

DWU offers the Advanced Diploma in Eye Care (ADEC).

PIC ³³	Number of Personnel	Qualification/Training	University/Training Institute	Completing Year
Fiji	2	PGDEC	FNU	2023
	2	MMed		
	1			2025
Samoa	3	PGDEC		2023
Solomon Islands	2	PGDEC		
	1	MMed		
Tuvalu	1	MMed		2026
Vanuatu	1	PGDEC	2023	
Tonga	1	Vitreoretinal surgery	PEI	
Papua New Guinea	2	MMed	UPNG	2024
	3	PGDO		2023
	10	ADEC	DWU	2023
Total	29			

³³ There are also 2 MMed students studying at FNU from Timor-Leste due to graduate in 2026.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Annex 2: Total trained eye health workforce and eye health workforce attrition rates in the Pacific

Table 2 below shows the total workforce from each country that has been trained, along with the total workforce attrition³⁴ by eye care workforce cadre, based on the data available to the Pacific Eye Care Society (PacEYES) and The Fred Hollows Foundation NZ. We acknowledge that there may be additional eye care workers, particularly in Papua New Guinea and Fiji.

	Ophthalmologists	Attritioned ophthalmologists	Ophthalmologist attrition rate	PGDO registrars*	Attritioned PGDO registrars	PGDO registrar attrition rate	Ophthalmic nurses & HEOs**	Attritioned ophthalmic nurses & HEOs	Ophthalmic nurse & HEO attrition rate	Overall eye care workforce attrition rate
Cook Islands	0	0		1	1	100%	1	1	100%	100%
Federated States of Micronesia	1	0	0%	0	0		2	1	50%	25%
Fiji	10	2	20%	8	5	63%	51	25	49%	44%
French Polynesia										
Kiribati	1	0	0%	1	0	0%	14	3	21%	7%
Nauru	0	0		0	0		2	1	50%	50%
New Caledonia										
Niue	0	0		0	0		1	1	100%	100%
Palau										
Papua New Guinea	15	2	13%				108	17	16%	15%
Republic of Marshall Islands	0	0		0	0		2	0	0%	0%
Samoa	1	0	0%	0	0		17	3	18%	9%
Solomon Islands	5***	2	40%	2	0	0%	42	8	19%	20%
Tokelau	0	0		0	0		2	1	50%	50%
Tonga	2	0	0%	0	0		14	1	7%	4%
Tuvalu	0	0		0	0		1	1	100%	100%
Vanuatu	1	0	0%	0	0		14	5	36%	18%

* Postgraduate Diploma in Ophthalmology (PGDO) registrars are doctors who have completed a PGDO.

** Health extension officers (HEOs) are a workforce cadre in Papua New Guinea, some of which study the Advanced Diploma in Eye Care (ADEC) programme at Divine Word University.

*** 1 of these ophthalmologists is active in Fiji and 1 of these ophthalmologists works as a part-time locum ophthalmologist in SL.

Pacific Heads of Health

Réunion des directeurs de la santé du Pacifique

Annex 3: 2022 Directors of Clinical Services Meeting Paper: Sustaining Integrated People-Centred Eye Care in the Pacific (DCS13/7.6)



DCS7.6 Sustaining Integrated
People C

Annex 4: Supplementary information on intravitreal drugs for diabetic retinopathy and diabetic macular oedema

Efficacious, cost-effective, and safe anti-vascular endothelial growth factor (anti-VEGF) drugs are used widely in both developed and developing countries for patients with DR and Diabetic Macular Oedema (DMO). Unlike other treatments for advanced (proliferative) DR and DMO, such as laser photocoagulation, anti-VEGF treatment not only prevents further vision loss, but improves visual outcomes.³⁵ Bevacizumab in particular is recognised as the anti-VEGF drug of choice by the global ophthalmic community^{36,37} and as such is the only anti-VEGF drug included in the WHO's 22nd Model List of Essential Medicines for ophthalmological preparations.³⁸ According to WHO, it should be permanently available in health systems based on the evidence of efficacy and safety as well as comparative cost-effectiveness.²⁹

Avastin treatment is available in some clinics in Fiji, Kiribati, Tonga and Solomon Islands. Fiji's National Medicines and Therapeutics Committee have just endorsed an application for an Avastin proposal so is one step closer to expanding access.

³⁴ Attrition is defined as the eye care clinician no longer publicly delivering eye care

³⁵ Virgili G, Parravano M, Evans JR, Gordon I, Lucenteforte E. Anti-vascular endothelial growth factor for diabetic macular oedema: a network meta-analysis. *Cochrane Database Syst Rev* [Internet]. 2018 [cited 2022 Mar 19]. Issue 10. Art. No.: CD007419. Available from: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD007419.pub6/epdf/full> doi: 10.1002/14651858.CD007419.pub6

³⁶ International Council of Ophthalmology. Section 21: Ophthalmological Preparations. Application for addition of bevacizumab for the treatment of proliferative (neovascular) eye diseases [Internet]. [place of publication unknown]:[publisher unknown];[publication date unknown] [cited 2022 Mar 18]. 11 p. Available from: https://www.who.int/selection_medicines/committees/expert/19/applications/Bevacizumab_21_A_Ad.pdf?ua=1

³⁷ Zarei M, Roohipoor R, Mahmoudzadeh R, Yaseri M, Riazi-Esfahani H. Epidemiology of Intravitreal Injections in Iran: Indications and Referral Patterns in a Tertiary Hospital. *Clin Ophthalmol*. 2020;14:1201-1206
<https://doi.org/10.2147/OPHT.S256317>

³⁸ World Health Organization. WHO Model List of Essential Medicines – 22nd list [Internet]. Geneva: World Health Organization; 2021 [cited 2022 Mar 8]. 66 p. Available from: <https://www.who.int/publications/i/item/WHO-MHP-HPS-EML-2021.02>

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