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The Development of Competency-based Education for Mid-level Eye Care Professionals: A Process to Foster an Appropriate, Widely Accepted and Socially Accountable Initiative

R du Toit, A Palagyi, G Brian

The Fred Hollows Foundation New Zealand, Newmarket, Auckland, New Zealand

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Du Toit R, Palagyi A, Brian G

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A B S T R A C T

Introduction: The Western Pacific region has a dearth of appropriately educated eye care providers, training programs and large and increasing eye health needs.

Method: To ensure regional eye health needs would be met, an iterative process sought triangulations between the literature and consultations with local stakeholders from various fields. This information was used to develop competencies to meet quality standards for educational outcomes. A framework for social accountability was used to evaluate the proposed educational initiative, and the subsequent eye care service the graduates could provide.

Results: Current human resource development and deployment is inadequate to protect and restore ocular and visual health in the region. Some of these service needs could be met by task-shifting from conventional health professionals to appropriately trained mid-level personnel. A competency-based curriculum was developed to meet eye care needs and define this new cadre of mid-level professionals in relation to other professionals. This initiative met the relevance, equity, cost effectiveness and quality criteria for social accountability.

Discussion: The consultative process resulted in broad acceptance of the need for an appropriately educated mid-level cadre that could be recruited, educated, deployed, supported and retained in the Western Pacific region to supplement and substitute for



established eye care professionals. This process also provided validation of the initiative prior to implementation, as being appropriate to the region, meeting educational standards and social accountability criteria for outcomes. It could be replicated in other regions that wish to develop such an education for new cadres of health care professionals.

Keywords: Education, curriculum, ophthalmology, competency-based, socially accountable

Introduction

More than nine million people live in Western Pacific Island Countries and Territories (WPICT), ranging from an estimated six million in Papua New Guinea, to as few as a thousand in each of Niue and Tokelau. Most (70 to 85%) are rural dwellers in remote communities separated by vast expanses of ocean or mountainous terrain. Provision of health care is challenging in these geographic circumstances. This is compounded by poorly resourced countries with low per capita government health spending, low ratios of doctors and nurses to population, and inadequate health infrastructure at every level. This is reflected in poor health indicators¹.

Eye care in WPICT is no exception^{2,3}. Most blindness and vision impairment in the region is due to cataract and uncorrected refractive error⁴⁻⁸. Conditions such as presbyopia and conjunctivitis also occur commonly, and although unlikely to have sight threatening outcomes^{9,10}, may significantly affect quality of life^{11,12}. Childhood blindness and diabetes eye disease may also significantly contribute to disability¹³⁻¹⁵. Yet, up to 80% of vision impairment is avoidable, i.e. can be treated or prevented¹⁶, by appropriately trained health personnel implementing cost-effective health interventions^{15,17}.

Globally, there is a shortage of about 4.3 million health workers, leaving over a billion people with little or no access to health services. The greatest shortage is in poorest countries¹⁸. However, this is not just a problem of insufficient absolute numbers. Maldistribution of available health professionals frequently limits access to care, particularly for the poor and those living away from main population centres¹⁹⁻²¹. To assuage this workforce deficiency there has been a call for task-shifting²² away from conventionally accepted roles of health care professions: “*Task-shifting involves the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health workers to health workers with shorter training and fewer qualifications in order to make more efficient use of the available human resources for health.*”²³

There is evidence that these lesser trained and qualified mid-level cadres are able to carry out tasks generally associated with more conventional professionals, such as physicians, and provide effective care when doing so^{20,23-25}. They may also be more likely to live and work in locations and circumstances unattractive to conventional health professionals, especially if students are selected from areas of need^{20,26}. An additional benefit of this strategy may be that such workers more readily relate to the communities they serve^{20,27}.

Task-shifting to a mid-level cadre of eye care providers has been advocated for many years^{28,29} and is practiced in varying degrees in both high^{30,31} and lower³²⁻³⁵ income countries. The education for such a cadre would ideally be based on recommendations for best practice^{36,37}, appropriately equip graduates to perform their jobs within their environment and be socially accountable³⁸⁻⁴⁰.

This paper describes a widely consultative process undertaken to reach consensus about how best to meet eye care needs in WPICT. It describes the iterative process followed in: gathering information from the literature and from local stakeholders from



various fields; developing a listing of appropriate competencies for a mid-level care of eye care personnel; and verifying the recommendations of this initiative against criteria for social accountability.

Method

The Fred Hollows Foundation New Zealand, (FHFNZ) an international non-government developmental organization (INGO) working across WPICT, instigated this initiative to address eye care needs in the region. The process that was employed mirrored the "little steps" approach that argues for incremental improvement to foster sustainability. It further advocates that quality improvement projects in low income countries be integrated into local context, rather than summarily implementing an existing model without consultation or context specific adaptations and expecting high impact and immediate outcomes⁴¹.

The process commenced with information gathering from a selective literature review of eye and health care needs in the region and local stakeholder consultations. The process was iterative and at various points returned to the literature, most often prompted by additional information obtained from stakeholders. Similarly, stakeholders were consulted at various points to discuss or verify proposed options. Early involvement of stakeholders may foster a sense of ownership, acceptance of outcomes and encourage ongoing participation⁴¹.

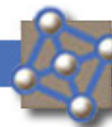
Stakeholders from various fields were involved to provide different perspectives and ensure an initiative best-suited to this region^{38,41,42}. FHFNZ staff met with representatives from Ministries of Health, the World Health Organization (WHO), academic institutions and professional bodies working in the most populous WPICT: Papua New Guinea, Fiji, Vanuatu, Solomon Islands, Samoa and Tonga. FHFNZ staff also attended the WHO 'Consultation on Strengthening Specialized Clinical Services in the Pacific' meeting. Groups of WPICT eye care personnel discussed how best to meet eye care needs during two workshops convened by FHFNZ: a Pacific regional workshop in Fiji and a subsequent workshop in Papua New Guinea, where Ministry of Health officials and other INGOs were also present. Throughout this process FHFNZ worked closely with a local ophthalmologist who had previously provided informal mid-level personnel eye care training.

The definition of competencies practitioners are to exhibit on graduation and in their future roles is held as the quality standard for educational outcome³⁷. Information gathered during this process was thus used to define both broad and specific competencies.

The definition of competencies in and of itself, however, does not guarantee quality of education³⁰, nor subsequent ethical and socially accountable practice^{38,43-46}. Neither can this be guaranteed by processes such as a certification examination, which typically provide only limited verification of clinical knowledge⁴⁷. Other measures of education quality may include student course evaluations, their success in attaining the qualification, and measures of the care they provide. The development, implementation and interpretation of such measures are, however, contentious⁴⁸. In addition, such information would only be available some time after implementation of the course.

Thus prior to the implementation of this initiative, FHFNZ applied a framework for assessing the social accountability of both the educational initiative and the health care it allows its graduates to provide^{38,39}. Criteria for social accountability: relevance, equity, cost effectiveness and quality^{38,39} were operationalized into questions addressing each area (Table 1).

Examples of questions for each area are listed below:



- relevance: how can training be structured to address priority eye care needs in the region and reduce avoidable causes of vision impairment?
- cost-effectiveness: how can training resources best be employed to enable the greatest impact on eye health?
- equity: how can training be focused to ensure that everyone has access to high quality comprehensive eye care?
- quality: how can training best be structured, and evidence-based data and appropriate technology be utilized, to ensure that populations can access comprehensive eye care, that meets their expectations and social and cultural needs?

Results

Stakeholder input

Discussions with representatives of Ministries of Health, WHO and professional bodies included: consideration of demographic and epidemiological trends; socio-economic development; financial capacity; technical aspects of and likely advances in the provision of eye care; global health workforce trends; the appropriate mix of eye care team personnel; the skills each member would require; and how geographical coverage and accessibility in remote areas could be achieved and productivity promoted.

At the two workshops, issues surrounding accessibility of eye care and the shortage of trained eye care personnel in WPICT were identified, as were the implications for human resource recruitment, training, deployment and retention. An indigenous workforce of fewer than 15 doctors, 65 nurses and a handful of ex pat doctors provide most of the eye care in the public health care sector. There is a lack of formal training opportunities: in 2005, a low-output eye doctor training scheme in Papua New Guinea provided the only eye care education in the region that culminated in a recognized tertiary-level qualification. Short courses of two weeks to four months duration and on-the-job training of up to a year were intermittently available for training nurses in eye care.

Stakeholders from various fields concurred with published recommendations¹⁵⁻¹⁷: with effective eye health promotion, prevention and curative services, a significant proportion of ocular morbidity and vision-related disability in the region could be avoided or treated. It was further agreed that, if appropriately trained and deployed, a cadre of specialist mid-level eye care personnel could address much of the current and anticipated eye care need^{4-10,13-15}. It was accepted that this would require formalized task-shifting from general nurses, optometrists, medical practitioners, and ophthalmologists²², with appropriate competency-based education, professional recognition, and workplace support following graduation²⁶. Task-shifting would free the time of eye doctors and ophthalmologists to perform higher level functions such as cataract surgery and laserizing of diabetic retinopathy.

Discussions with Ministry of Health representatives confirmed that remediations must not jeopardize other health and medical priorities. These should be in keeping with country health strategies and plans, encourage the retention of workers who would likely be lost to the system through migration and attrition, and avoid absorbing an inappropriately large proportion of nurses and doctors to the detriment of other health services. Thus this may, depending on the country's situation, require that from the outset there is an expectation of rural service and that these mid-level personnel are not recruited exclusively from nursing staff. The scope of practice for non-nurse trained personnel will depend on the health systems and professional bodies within each country, and on selecting appropriate competencies to make up their education.

Stakeholders proposed situating the mid-level cadre largely within a nursing structure because non-nurse clinicians have not proven viable in many WPICT⁴⁹. A newly created cadre of specialized non-nursing personnel would be unlikely to be incorporated



into health systems of many WPICT. Nurse graduates could more easily fit into public sector schemes and nurse practitioner models of care⁵⁰.

Representatives from regional tertiary academic institutions provided input into the academic requirements of a specialized eye care course. The nature of the educational qualifications required for specialized eye care personnel was discussed with human resources representatives from Ministries of Health and professional bodies. The nursing structure in most WPICT, whilst not recognizing eye care as a speciality area, makes some provision for rewarding the acquisition of a one-year post basic qualification with a salary increase.

Selective literature review

Appropriate education

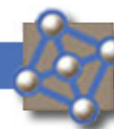
There is little evidence-based information directly related to eye care and/or to mid-level eye care personnel in low income countries. Thus expert opinion, consensus statements and position papers were sought about eye health, services and utilization in the Western Pacific^{1-15,51}; global trends in health human resources^{18-26,28-30,32-34,49,50,52-54}; strengthening health systems^{25,55}; commentary about eye health, providers and education^{22,29,56-61}; competencies and competency-based training^{23,36,58,59,62-76} curricula for mid-level or allied eye health personnel⁷⁷⁻⁸⁰ professionalism^{20,23,46,53,64-66,69,70,81-83}; and ethical/socially accountable medical education^{18,19,38,39,42,44-46,76,84-86}.

Education and health care cannot be isolated from the health system, socio-cultural or economic context within which it occurs. Thus a wide range of stakeholders³⁷ including health professionals, policy makers³⁸, academics and representatives of health services⁴² can assist in defining competencies to help ensure that individuals are appropriately trained to perform their prospective jobs within their environment. Conventional health education with a curative, disease-oriented approach frequently lacks firm social mandates and may not equip its graduates to meet population health needs, especially those of resource-poor communities^{18,19,38}.

Competency-based education

Many health care training programs in higher income countries, such as ophthalmology⁶⁸ and optometry⁶⁹, now base their curricula on competencies (“the ability to perform the activities within an occupation or function to the standard expected in employment”⁷⁰). Such competency-based education provides a measure of quality³⁷ in that it can assist in clarifying, for both teachers and students, the expected learning outcomes. Thus the acquisition of a broad competency such as a professionalism may be facilitated throughout the course instead of being relegated to a hidden curriculum and potentially overlooked^{71,87}. Specific competencies serve to align course content to the application of knowledge and skills⁸⁸, allow for criterion-based assessment⁷³ and focus on the expected outcomes after the course⁸⁸ to enable students to learn to proficiently accomplish their expected tasks^{23,59,74}. These advantages of competency-based education are equally applicable to low income countries^{36,37}.

Further, these competencies characterize conventional health professions in high income countries. Professions such as optometry^{64,70} and ophthalmology^{65,66} may be defined by their legal scope of practice⁶⁹ and by their professionalism in practice⁴⁶. In contrast, mid-level eye care personnel have generally been identified by their relationship to other professionals or the location in which they work and not by their competencies⁸¹. However, defining new task-shifting cadres of mid-level health care personnel



by what they do, and not who they are or where they work, may benefit the professionalism of a mid-level cadre^{23,83}. It will facilitate the demarcation of professional boundaries. This may be important for a sense of professional identity, help secure status⁸², assist regulatory authorities and encourage recognition and respect from administrators and other health professionals^{20,53,83}. Furthermore, competencies can be used to establish recruitment and evaluation criteria²³.

The existence of defined competencies, “*knowledge, skills, attitudes and personal qualities that an individual needs to be effective in a wide range of jobs and various types of organizations*”⁷², are considered a quality standard for outcomes of medical education³⁷. The curricula available for mid-level or allied eye health personnel⁷⁷⁻⁸⁰ are not competency-based. The role of mid-level eye care personnel may include competencies from ophthalmology⁶⁸, optometry⁶⁹ and ophthalmic nursing⁷⁵.

Accountable education

There is consensus that education for health professionals should also be both ethically and socially accountable^{38,40,44-46}. It needs to be responsive and have a focus on continually improving quality by embracing changing circumstances, expectations and health care needs of individual patients and of society, new information and technologies^{85,86}. It is thus important that education programs, their graduates, and the health care these graduates provide meet certain standards of social accountability^{38,39}.

Competency and curriculum development

Based on the published information and stakeholder consultations FHFNZ staff developed draft competencies for mid-level eye care personnel. These were based on regional eye care needs, the role that this cadre could be expected to fulfill^{1-15,51}, competency standards for nursing, medical, optometric and ophthalmic personnel developed in high income countries^{23,36,58,59,62-76} and curricula from mid-level eye care personnel⁷⁷⁻⁸⁰. A draft of these competencies was presented for group discussions during the workshops, and the feedback used to further modify the competencies. The competencies were submitted to the regional eye workers’ association (PACEYES) for approval.

Specific competencies were grouped into six areas to address curative and preventive/promotive aspects of the significant eye care needs in this region (Annex 1). In addition, core generic/broad competencies^{71,58,67,76} were developed to cut across the entire course. These include public health perspective, systems-based practice, collaboration, working in teams, patient-centred care, interpersonal and communication skills, information and communication technology, quality improvement, practice-based learning and professionalism, evidence-based eye care. The inclusion of behavioural and social sciences into the traditional curative curriculum provoked the most debate. Given the available evidence of best practice^{37,67,89} and eye care needs in the region¹³⁻¹⁶, these were retained.

Evaluation of social accountability

FHFNZ used the best evidence available – the information from a selective literature review and the stakeholders to evaluate this initiative against the criteria proposed for social accountability^{38,39} (Table 1). Both the educational outcome and eye health service delivery were assessed against the criteria of relevance, cost-effectiveness, quality and equity. While this occurred informally throughout the initiative, a final evaluation of the initiative verified that the purpose, function and education of this new cadre of mid-level eye care personnel would meet the criteria for social accountability⁴⁶. The information used as proof of verification of each criterion is summarized in table 1.



Table 1: Criteria for social accountability²⁸ applied to the purpose, function and education of a new mid-level cadre of eye care workers for the Western Pacific region

Criteria	ASSESSMENT OF THE PURPOSE, FUNCTION AND EDUCATION OF A MID-LEVEL EYE CADRE
Relevance	<p>This health care service is relevant because it is based on the:</p> <ul style="list-style-type: none"> • eye health care needs of the Pacific, existing workforce structure and gaps in service delivery. <p>This education initiative is relevant because it is based on the:</p> <ul style="list-style-type: none"> • role that mid-level eye care providers are required to fill: providing accessible and timely eye care, either as a carer when training and facilities allow, or as a referrer in a chain of escalating care. • tasks that mid-level eye care providers are required to perform, with the instrumentation they have available, and the circumstances and health systems of their workplace.
Cost-effectiveness	<p>This health care service is relatively cost-effective and contributes to the cost-effectiveness of eye care because:</p> <ul style="list-style-type: none"> • promoting eye health and preventing eye problems are cheaper and more effective than curative options.¹⁶ • eye care interventions are amongst the most straightforward and cost effective.⁹³ • direct and indirect costs of referrals are reduced when most people are treated in a timely manner, closer to their homes.^a <p>This education initiative is relatively cost-effective and contributes to the cost-effectiveness of eye care because:</p> <ul style="list-style-type: none"> • the one-year course^b means that the postgraduate qualification is attainable at reasonable cost and causes relatively little social and workforce disruption.
Quality	<p>This health care service meets quality criteria because:</p> <ul style="list-style-type: none"> • it aims to provide high quality, evidence-based, ethical patient-centred care, informed by the inclusion in the course of cross-cutting / generic competencies.⁴⁵ • it strives for continuous service and outcome improvement, enabled by specific quality improvement training during the course. • the mid-level cadre is equipped with appropriate competencies to competently perform expected tasks, often in isolated circumstances without immediate backup from higher-level providers. <p>This education initiative meets quality criteria because:</p> <ul style="list-style-type: none"> • teaching and assessment are competency-based, providing a consistent standard of knowledge, skill and experience. • it is student-centred, using active learning methods with application of knowledge in structured practical sessions to promote critical thinking skills.^{36, 94} • it is recognized by regional governments and international organizations as a significant specialist qualification, and is portable in the region. • it is offered at an accredited institution,^c with qualifications awarded by institutes of higher learning.^d
Equity	<p>This health care service meets equity criteria because:</p> <ul style="list-style-type: none"> • the mid-level cadre can be deployed to enable access to services by those usually disadvantaged by poverty, fear and distance to services. • access to services and referral for services should be more widely available and no longer subject to rationing dependent on non-medical criteria. • patient-centred care is provided, ensuring that all patients are treated with respect and care, regardless of personal characteristics. <p>This education initiative meets equity criteria because:</p> <ul style="list-style-type: none"> • course selection criteria and processes are merit-based. • “public health perspective / systems-based practice” and “patient-centred care” competencies are integral to the curriculum. • a specific “community eye care” module is available, focusing on population and primary health care approaches, including how to empower individuals and communities to obtain the care they require.^e

^a A mid-level cadre graduating from a competency-based course for designed Pacific eye health needs, can be deployed to rural and remote areas to manage most eye conditions at the district / community level, referring only those with more complicated conditions and those requiring surgery.

^b It is possible to maintain quality despite the short duration, by including health background in the selection criteria, focusing on the application of knowledge, providing structured practical experience in conditions similar to those of graduates’ workplaces, and using formative assessment strategies to encourage efficient acquisition of bioethics and competencies.

^c The Pacific Eye Institute (Suva, Fiji) is accredited by the International Joint Commission of Allied Health Ophthalmic Personnel.

^d The Fiji School of Medicine (Suva, Fiji), Divine Word University (Madang, Papua New Guinea) and The National Institute of Health Science (Dili, Timor-Leste).



^e The inclusion of primary, community and rural health issues, is not only essential to ensure competence to work in remote areas, but may also generate enthusiasm to work in these areas.

After consultations with academic institutions, the competencies were included in a curriculum for a full-time, tertiary-level, qualification-earning course to convert general nurses, and those with a suitable non-nursing tertiary education and work experience, into mid-level eye care professionals. The curriculum was applied to one-year courses delivered by The Pacific Eye Institute (Suva, Fiji) and Divine Word University (Madang, Papua New Guinea), with an adapted version at The National Institute of Health Science in Dili, Timor-Leste. The training at these institutions is delivered in partnership with FHFNZ, Ministries of Health and the academic institutions, which approved these curricula and continue to oversee their implementation and award the qualifications: Postgraduate Diploma in Eye Care (Fiji School of Medicine and Divine Word University) and Diploma in Eye Care National Institute of Health Science. All graduates receive, as part of their scholarship package, equipment to use while learning and to allow them to implement these competencies at their workplaces.

Discussion

Service and survey data^{2-5,7,8} and stakeholder consultations confirm there is a great need for comprehensive, capable and accessible eye care in the Western Pacific region. Current services are insufficient to protect and restore ocular and visual health. In part this is because of an inadequate workforce—too few, inappropriately trained and poorly deployed.

The strengths of this initiative designed to address the inadequate workforce within a broader health systems approach, include the comprehensive process that was used to ensure social accountability, quality, appropriateness and widespread accord. Current best practice regarding eye care and global workforce trends, and also education and competencies of health and eye care personnel was identified^{1-15,18-30,32-39,41,42,44-46,48-50,52-86} and triangulated with information from stakeholders from various fields.

A task-shifting approach to mid-level eye care personnel was proposed to assist in assuaging the need for eye care in WPICT. Given the identified benefits of the definition of competencies³⁷, both specific and generic competencies for this cadre were identified. These were incorporated into curricula that aim to produce mid-level health professionals with values, attitudes, knowledge and skills in eye care that will enable them to provide ethical and socially accountable service. Additionally, these competencies can be used to advocate for professional recognition as specialized eye care providers, define the role of these personnel both in eye care and in relation to others in the health care team, inform policies and planning, aid recruitment and calculation of reimbursement packages, evaluate workplace performance, and identify strengths and weaknesses when planning continuing professional development and career advancement^{73,37,35}.

Grouping of competencies according to local eye health need or worker interest and capability also offers an opportunity to design a modular education and workplace system that accommodates a cohort of complementary workers within the mid-level cadre. As the need for particular competencies and cadres fluctuates with time, education courses need to be able to respond in a flexible and integrated manner⁸⁵. If widely endorsed and adopted across the Western Pacific region, the mid-level eye care competencies could enhance retention of workers as they migrate across national borders. Harmonization of competencies may also help maintain the quality of courses and graduates^{38,85}.

This initiative further employed a widely consultative process involving educators, eye care personnel, and those from the wider health field. Wide consultation was intended to help design an initiative that would prepare mid-level eye care personnel able to provide quality eye care appropriate to the context of their health systems. The competencies within the proposed educational



initiative and the subsequent eye care that graduates would provide were further honed by evaluating them against a framework of social accountability, considering relevance, equity, cost effectiveness and quality^{38,39}. This process culminated in the approval by the profession, health systems and the academic institutions in the region. This process, incorporating the operationalisation and application of this social accountability framework^{38,39} as a component of the development of an educational program for mid-level health personnel, appears to be unique⁴⁰.

Limitations of this process include that communities, the end users of eye care services, were not directly consulted about their needs and priorities. Obtaining a representative view of all communities in WPICT would have been nearly impossible – in Papua New Guinea alone about 800 languages are spoken. Instead, information from eye care personnel and from surveys of quality of life⁵¹ and access to services^{2,3} was used to identify patient needs. Communities in WPICT are likely to accept the concept of specialized mid-level eye care personnel, since much of the general health care in remote areas in this region is provided by non-physicians^{50,90}. Further the course includes competencies to enable graduates to work in partnership with their communities to adapt eye care services to meet local needs and expectations.

In this region initiatives are often suggested by ‘experts’ and implemented from the top down, and extensive consultations are not the norm. A top-down approach can lead to the creation of less appropriate interventions, weaken any sense of local program ownership, and hamper subsequent implementation^{41,91}. The extensive consultative process we used was time and resource intensive. Yet, respectful consultations with a wide range of stakeholders and basing this initiative on best practice, resulted in a remarkably smooth process and a largely uncontroversial and widely accepted outcome. It also fostered a sense of ownership. Further, it is consistent with the incremental approach recommended for sustainability of quality improvement initiatives⁴¹. This widely endorsed process⁹² may also ensure that the skills level and contribution of mid-level personnel is recognized as sufficient and significant by the health system and other health care professionals^{35,60}, so that they do not try to limit the extent of task-shifting that occurs²⁰.

To bring about lasting change, the process still cannot be considered complete. As mid-level personnel are recruited, educated and deployed, ongoing evaluation and negotiation will be required with health systems in each WPICT. The goal will be to ensure nomination of suitable candidates, within a careful plan for human resources to meet eye care needs, while considering other health priorities: that competencies are adjusted to meet changing eye health needs and priorities; that infrastructure, equipment, professional recognition, policy and legislation are in place; that there are effective systems for workplace mentoring, supportive supervision and continuing professional development; and that any other required improvements or adjustments can be made^{28,60,61}.

Conclusion

Mid-level personnel can potentially make a valuable contribution to unmet global health needs²². The process described here, which culminated in the establishment of training courses for Western Pacific mid-level eye care personnel, was carefully structured and widely consultative. The iterative nature of gathering information from both stakeholders and the literature further strengthened this process. It also helped ensure the competencies appropriate to the eye care needs in the region and the integration into the wider health system. This initiative addresses the three components of Vision 2020–The Global Initiative to Eliminate Avoidable Blindness: human resource development; infrastructure development; and disease control^{15,93}. In addition, evaluation against a framework of social accountability allowed the assessment of both the educational outcome and the eye care the graduates could provide, prior to implementation of the initiative³⁸. As such, this process could be replicated in other regions that



may be interested in developing an appropriate and socially relevant competency-based education for new cadres of health care professionals.

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Appendix: Competencies for a cadre of mid-level eye care personnel

Competencies upon which to base a tertiary-level, qualification-earning course to convert general nurses and those with a suitable non-nursing tertiary education and work experience into mid-level eye care personnel providing socially-accountable services, both autonomously and as part of an eye care team^a

ESSENTIAL EYE CARE

- Provide high quality preventive and curative eye care, commensurate with scope of practice,^b to maintain the eye health and maximize visual outcomes for individuals throughout their life.
- Use analytic / critical thinking to establish a differential diagnosis of common ocular abnormalities, diseases and injuries,^c classify the level of seriousness, and determine an appropriate course of action:
 - Obtain a comprehensive history in a structured manner, asking questions to establish the reason for the consultation, details of symptoms and other information required to make a diagnosis and to understand the patient's needs.
 - Accurately perform, record and interpret visual acuity measurements (unaided, aided, distance and near, pinhole, functional measures), and
 - Based on the case history and visual acuity measurements, select, accurately perform and document appropriate examination procedures (identification of external and internal ocular abnormalities using torch, slitlamp and/or direct ophthalmoscope) and diagnostic tests (keratometry, biometry, pupil reflexes, tonometry, colour vision, visual fields), including use of diagnostic drugs (fluorescein, mydriatics), without causing unnecessary pain or discomfort.
- Develop and document informed and appropriate management plans, using a "first do no harm" approach and derived from evidence-based clinical guidelines, clinical expertise and patient needs, preferences and values:
 - Implement appropriate management (including first aid procedures, removal of superficial foreign bodies, prescription of medication) or referral where indicated.
 - Prescribe medication in an ethical manner, adhering to rules and regulations governing the availability, handling and rational use of drugs.
 - Provide information using effective communication techniques and demonstrations to help the patient adhere to the management plan, to return for follow up and/or to maintain eye health or prevent eye problems.
- Demonstrate an understanding of patient rights by listening to the main reasons for the consultation, carefully explaining the findings and management options to the patient (and relatives / carer), and jointly agreeing on the management plan.

REFRACTION

- Improve vision and visual comfort by determining the refractive error and, if appropriate, prescribing a correction to ensure the clearest, most comfortable vision to meet individuals' specific visual needs.
- Apply clinical reasoning to information from every procedure to guide the refraction and management options, and to solve any subsequent problems a person may experience with their spectacles:
 - Obtain a general eye and health history that includes detailed information about vision, symptoms, visual requirements and spectacle wearing history.
 - Accurately perform visual acuity measurements (unaided, aided, distance and near, pinhole) and use this information, together with the history, to reach an initial determination of size and type of refractive error.
 - Select the most appropriate techniques (retinoscopy, spherical and / or spherocylindrical refraction, near refraction) to identify and quantify any refractive error.



- Refine and balance the refraction result to ensure the clearest, most comfortable vision at the distances required by the individual.
- Discuss and jointly decide with the patient (family and / or carer) the appropriate management of the refractive error, taking into consideration the patient's current correction, symptoms and visual needs, their visual acuities and refractive status, and any economic, physical and social barriers to spectacle wear.
- Demonstrate accountability by obtaining a comprehensive history, a thorough ocular examination to determine if refraction and / or spectacle provision is the most appropriate action, or whether another eye health-related issue must first be addressed.
- Undertake basic spectacle dispensing, including determination of the power of lenses and adjustment to ensure the most appropriate frame and lenses for the individual.

COMMUNITY EYE CARE

- Explain the global impact of vision impairment, the impact of poor vision on quality of life, and the economic and social implications for an individual and a society.
- Apply population health approaches (e.g. the "Vision 2020: Right to Sight Initiative" to eliminate avoidable vision impairment) to plan care for populations, as opposed to providing care to one patient at a time. This includes interventions to prevent childhood blindness through health promotion, targeted school screening and the provision of specialized services where appropriate and possible.
- Work and advocate within broader health systems that affect eye care provision, and collaborate in interprofessional teams (in different places, at different levels and / or with different disciplines) to provide accessible and equitable care.
- Plan and implement an advocacy strategy in partnership with communities: identify appropriate messages and media to convince different audiences that the elimination of avoidable vision impairment is important and worthwhile. This may include explaining the concept of avoidable visual impairment, the leading causes of avoidable visual impairment in the area / country, and the comprehensive eye care services required.
- In partnership with the community, assess needs (using various qualitative and quantitative techniques) and analyze and plan to overcome the barriers people face in accessing eye care, especially in clinical or hospital settings, with a particular focus on gender and poverty.
- Recognizing the basis, the benefits and the outcomes of listening to and learning from the community, plan, implement and evaluate eye care services in partnership with the community to ensure these are appropriate and meet community needs.
- Plan and coordinate sustainable and comprehensive eye care services (prevention, promotion, clinical, rehabilitation) at the community level, in partnership with the community and other agencies, and integrated into primary health care. This may include well planned and coordinated targeted school and community screening services, and working with community health workers.

EYE HEALTH PROMOTION

- Recognize that health behaviour is not solely under an individual's control, but is affected by factors such as surroundings, individual and community health beliefs, and perceptions of health benefit.
- Acknowledge that people cannot be expected to change their behaviour based on the provision of information alone.
- Promote healthy behaviour, prevent eye problems and increase awareness of eye care at individual and community levels by providing high-quality culturally-sensitive information and supportive services, supporting people to develop personal skills, advocating for healthy policies, and encouraging community participation in creating healthy social and physical environments.
- Plan and implement eye health promotion interventions in partnership with communities, integrating eye health promotion with other primary health promotion activities to improve the effectiveness and scope of interventions:
 - Taking target groups, social and environmental factors into account, develop effective messages, pretest materials and choose appropriate communication channels (e.g. counselling, mass media, education entertainment, social marketing) to encourage healthy behaviour.
 - Develop a monitoring and evaluation plan based on the expected outcomes, including a baseline evaluation if appropriate, to assess the effectiveness of the health promotion intervention and to make improvements where required.
- Use effective verbal and non-verbal communication techniques and active listening skills to encourage communication and understand people's expectations, fears, anxieties and concerns.

QUALITY MANAGEMENT

- In consultation with stakeholders, plan (and write proposals if required) for eye care services by specifying the intended goals, objectives and activities, and how the quality of eye care provision will be monitored and continually evaluated.
- Collect essential information from eye clinic, health promotion, community and school screening services (e.g. numbers, gender, spectacles dispensed, treatment outcomes), analyze / interpret this information and write reports as required. Use this information and both qualitative and quantitative data from various sources (e.g. patient satisfaction data) to evaluate the quality of eye care services. Provide feedback to stakeholders and plan changes and / or advocate to improve the quality of the services.
- Support patient care and improve the safety and performance of eye care services by using the most suitable communication tools, technology and systems for:
 - health information (e.g. paper-based or electronic monitoring systems)



- communication (e.g. telephones, mobile devices, internet) to exchange patient information with other providers and / or request assistance when needed; and
- management (e.g. basing performance appraisals on job descriptions with performance indicators, use financial and stock management systems).
- Provide leadership by acting as a role model, being accountable and responsive to the needs of all patients and society; by coordinating effective and efficient care in a manner that is acceptable to the community; by being an agent of change: by making improvements where required; and by communicating effectively to share information and support and motivate others to work together to achieve objectives.
- Demonstrate a commitment to continuing personal development and improving professional competence by self-regulation:
 - Make time to collect, reflect on and self-assess feedback and information (e.g. audits of clinical records, patient satisfaction questionnaires, skills checklists).
 - Document evidence of good performance for advocacy purposes.
 - Identify and reflect on factors that negatively effect provision of care, and implement measures for learning and improvement.

OPERATING THEATRE ASSISTANCE

- Maintain patient dignity, and effectively communicate to show empathy and provide information and reassurance to the patient prior to and during the procedure, post-operatively and at follow up visits. This includes obtaining informed consent prior to the procedure and allowing time for patient questions and decision making.
- Demonstrate accountability through accurate preoperative assessment and documentation of eye and general health necessary for maintaining patient safety and achieving good visual outcomes; careful checking that the correct procedure is performed on the correct eye in the correct patient; maintaining sterility appropriately.
- Efficiently and effectively clean and prepare the theatre to have the necessary staff, instruments, equipment and sterile supplies to ensure safe care and optimum outcomes from surgery, including preparation and arrangement of equipment and instrument trays using appropriate disinfection and sterilization techniques.
- Perform and / or assist in a range of surgical procedures,^d using appropriate aseptic, non-touch handling and passing techniques to provide a safe working environment and promote good surgical outcomes.
- Provide support to the surgical team by opening sterile packs, anticipating the needs, ensuring safe and appropriate handling of patients before, during and after the procedure, monitoring the theatre for hazards, and removing waste as per protocol.
- Monitor patients after surgery by assessing the condition of the eye, and recording and reporting deviations from expected progress.
- Provide patient education for optimum recovery.
- Perform routine maintenance of ophthalmic instruments / equipment (covering, cleaning, disinfecting, sterilization, calibration) and take steps to ensure all equipment is operational.

^a The mix and emphasis of competencies taught will depend on the system and circumstances in which the worker will be employed. For example, for Timor-Leste, the competencies chosen were predominantly clinical (refraction and essential eye care).

^b Scope of practice will be defined by legislation and / or professional bodies and / or ministry of health for each country.

^c The specific conditions will be determined by local need. These should include trauma and surgery-related complications.

^d This will depend on scope of practice, infrastructure and the presence and skill of other eye care workers.