

## Cover

### Why Optometry?

The case for delivering quality, advanced and equitable eye health and vision care for patients.  
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## 1. Executive Summary

*Why Optometry?* was originally developed by the World Council of Optometry (WCO) in response to the World Health Organisation's *Global Action Plan for the Prevention of Avoidable Blindness and Visual Impairment 2014-2019*. It provides the case for delivering high quality, advanced and equitable eye health and vision care for patients worldwide. It was recently updated to represent the current state of vision and eye health. The World Health Organisation (WHO) estimates that 253 million people suffer from moderate to severe vision loss with 36 million considered blind. Of these, 124 million have uncorrected distance refractive errors, and 65 million have cataract ("The Global Burden of Vision Impairment • IAPB Vision Atlas"). In addition to these figures, there are 1 billion people with near vision impairment due to uncorrected presbyopia. Uncorrected refractive error is the leading cause of visual impairment globally. This places a financial burden on the economy, is a significant contributing factor to poverty and is avoidable.

The prevalence of refractive errors, especially myopia, is rapidly increasing, particularly in the Asia Pacific region. For example, in China around 50% of the population are myopic, which translates into more than 600 million people.

There are significant challenges for eye health providers with the increase in avoidable visual impairment and blindness. These include insufficient numbers of competent healthcare professionals, uneven distribution of resources and the inability to access or afford treatment. In order to address these challenges, there must be a focus on the development of human resources, including optometrists, and models of sustainable service delivery. Optometry answers these challenges by providing a range of preventative, diagnostic, management, technical and direct patient care and support services required by patients and other health care professions. It has increasingly focused on universal health coverage; providing accessible, equitable and affordable eye health services to all and shifting from a predominantly private sector orientation to a public sector one as well. Optometry functions in a primary care capacity in many developed countries and in developing countries at both a primary and secondary level as part of a multidisciplinary team including doctors and ophthalmologists.

To support the development of optometric education, the WCO has developed a *Global Competency-Based Model of Scope of Practice in Optometry* that provides a vertical career ladder for individuals seeking to expand their scope of clinical responsibility. This will also help regulatory bodies guarantee practitioners' competence to protect the public and act as a stimulus for creating greater uniformity of optometric practice worldwide by being applied to teaching curricula.

Optometric education and the practice of optometry have developed at different rates around the world. Optometric education is provided in major research universities, as well as in independent

schools and colleges of optometry. WCO encourages and helps to further develop optometric education and facilitates the reviews of education providers by external agencies.

To meet present and future challenges, a paradigm shift is needed in the way optometry approaches the delivery of eye care services. WCO believes that an optometrist should possess the skills and competencies to perform eye examinations, prescribe spectacles, diagnose and treat common eye problems, and know when and how to refer for more serious conditions. WCO believes that optometrists should be integrated within the eye care, and wider, health care team.

## **2. Introduction**

Our vision is of a world where optometry makes high quality eye health and vision care accessible to all people.

In order to achieve this vision, the mission is to facilitate the development of optometry around the world and support optometrists in promoting eye health and vision care as a human right through advocacy, education, policy development and humanitarian outreach.

Our objective is the worldwide improvement and conservation of human vision through:

- The enhancement and development of primary eye health and vision care by optometrists.
- The promotion of high standards of education and practice by optometrists including by the advancement of international co-ordination of optometrists.
- The process of support to aid programmes directed at the provision of eye health and vision care to societies in need.
- The supporting of the advancement of the science of optometry.

The World Council of Optometry (WCO) has produced this document with the aim of providing health professionals, government agencies and the general public with an overview of the practice activities of the optometrist and how they relate to the global needs of the public.

WCO represents optometry through its six regions: Africa, Asia Pacific, Eastern Mediterranean, Europe, Latin America and North America, and on a global scale. National, state, provincial and local professional organisations also exist and promote eye health and vision care. Through strategic alliances with other health care practitioners, professional and non-government organisations, optometry can maximise its role in responding to significant unmet eye health and vision care needs worldwide.

This document describes the global public health challenges of eye care and the role of optometry as a primary health care profession, its educational requirements and standards as well as legislative and regulatory frameworks.

Optometry is a healthcare profession that is autonomous, educated, and regulated (licensed/registered), and optometrists are the primary healthcare practitioners of the eye and visual system who provide comprehensive eye health and vision care, which includes refraction and dispensing, detection/ diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system ( [Who is an Optometrist](#) ).

The profession of optometry has evolved since the late 19th Century as the primary eye care health profession responding to the universal need for quality, accessible, cost-effective eye health and vision care.

Optometrists are widely distributed in communities around the world; they detect sight and life threatening conditions such as glaucoma, diabetes and hypertension at a saving to the health care system; they provide entry into the health care system for many patients who would otherwise not seek care; they prepare our children for the competitive marketplace by assuring their visual health and preparedness for learning and achievement; they maximise employment productivity and benefit economic stability; and they promote quality of life and individual independence and reduce costly institutionalised and supported care; they provide economic value for the services they offer.

Over 200,000 optometrists and their professional associations worldwide have dedicated themselves to preserving eye health and enhancing vision as the essence of this mission. Notwithstanding the variations in the scope of optometric services that are defined legally by government entities, the profession of optometry shares a common concept that unifies and harmonises its purpose worldwide.

The profession of optometry is therefore well placed to deliver Universal Eye Health as part of supporting the Universal Health Coverage and the SDGs ([WHO Sustainable Development Goals](#)) Optometry is an integral part of the eye care team and critical to the successful systems approach to the delivery of eye care services.

### **3. The Changing Needs and Demands of Effective Eye Health and its Integration into Public Health Systems Frameworks**

Health - the external context

In recent times, health has become a priority factor in ensuring sustainable development as it has a significant impact on economic growth and broader human development. Several of the Sustainable Development Goals<sup>1</sup> are pertinent, specifically those related to health, education and disability.

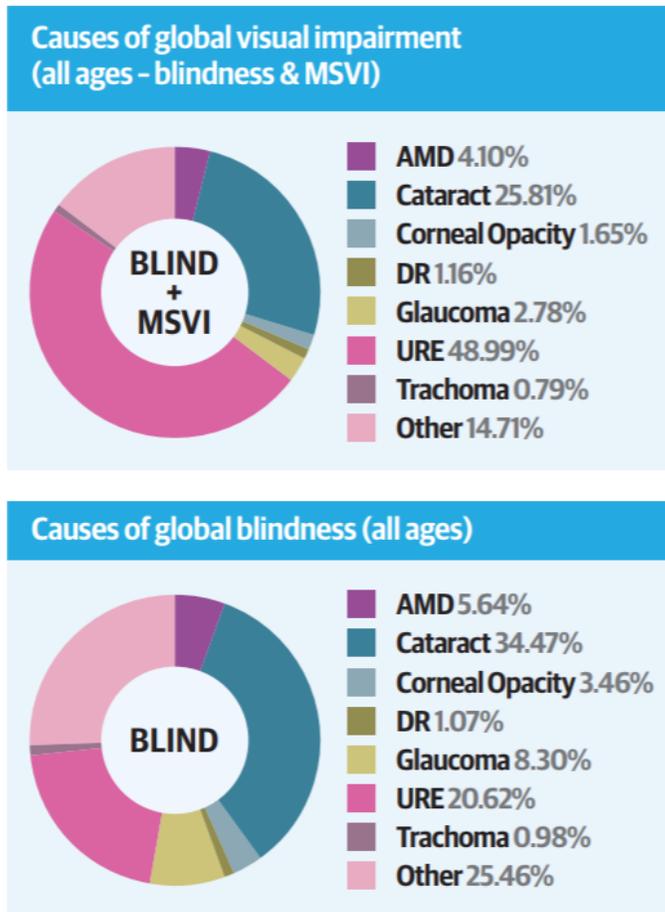
Average life expectancy has been an indicator for influencing health trends. Infant mortality has reduced considerably over the last 50 years, while life expectancy figures have increased. According to recent report titled “Ageing in the 21<sup>st</sup> Century: A Celebration and A Challenge”, by 2050 there will be more people over 60 than children under 15 years of age. There are already more adults over 60 than children under 5 years of age<sup>1</sup>. This is due in part to improved outcomes resulting from medical advances, continuing innovations and developments in technology.

Over the last century, there has been a shift in the major causes of the burden of disease both in developed and developing countries from the infectious diseases of the 19th and early 20th centuries to chronic diseases in the 20th century and today. Much progress has been made in forging closer links between health and other related sectors, particularly through national and international inter-sectoral health and development plans and through increased use of planning tools such as health impact assessment procedures, integrated monitoring and improved health information systems.

#### The current eye health context

The World Health Organisation (WHO) estimates that 253 million people suffer from moderate to severe vision loss with 36 million considered blind. Of these, 124 million have uncorrected distance refractive errors, and 65 million with cataract. In addition to these figures, there are 1 billion people with near vision impairment due to uncorrected presbyopia<sup>2</sup>.

Globally, the leading causes of blindness are cataract, uncorrected refractive error (URE), age related macular degeneration (AMD), and glaucoma, while the leading causes of vision impairment are URE, cataract, and AMD (Figure 1).



**Figure 1: Global causes of visual impairment (Bourne, et al.) (IAPB Vision Atlas., 2017)<sup>3</sup>**

### **Health - the External Context**

The prevalence of refractive errors, such as myopia, is rapidly increasing, particularly in the Asia Pacific region. For example, a meta-analysis of the trends of myopia in children and adolescents in China show that the prevalence of myopia is expected to reach 84% by the year 2050.<sup>4</sup>

The financial burden on the economy due to uncorrected distance and near refractive error is at least US\$227.36 billion<sup>5,6</sup>. Yet alleviation and elimination of visual impairment and blindness is one of the most cost-effective of all health interventions with the estimated cost of correction of distance vision between US\$20 billion and US\$28 billion.<sup>7</sup>

The WHO has recently released the Global Burden of Disease data<sup>8</sup> and for the first time has recognised vision impairment due to uncorrected refractive errors as a cause of disability. Research has shown that vision impairment contributes to 2.7% of the global years lived with disability. This indicates the need for a significant eye health response. Despite current efforts in blindness prevention, the problem of avoidable blindness continues to rise. While the prevalence according to recent estimates seems to have decreased from 1.9% in 1990 to 1.3% in 2010 for blindness and 5.3% in 1990 to 4.0% in 2010 for

moderate to severe visual impairment, the absolute number of people with blindness and visual impairment has increased<sup>9</sup>.

### Poor eye health and poverty

Some of the most significant contributing factors to poverty are visual impairment and blindness. Equally, poor eye health can lead to or deepen poverty. It is estimated that 75% of visual impairment is preventable or treatable, and 89% of those with visual impairment reside in low- or middle-income countries.<sup>10</sup>

Disparities exist in the prevention of visual impairment and blindness. People in the lower and extreme lower socio-economic status of society face a greater risk of becoming blind. Poor eye health leading to vision disability affects people's income and livelihoods, access to basic services, nutrition and generates social exclusion<sup>11</sup>. Estimates suggest that almost 3.1 billion people (55% of the total world population) are in rural areas<sup>12</sup> and at least 70 per cent of the world's very poor people are rural. Additionally, it is estimated that almost two thirds of blind people are women<sup>12</sup>. Considering the existing gender barriers that prevent women accessing health services, it is possible to infer that if visual impairment and blindness are not addressed then poverty and inequality will be perpetuated.

These disparities in the prevalence of visual threatening conditions affect some regions more than others. Africa for instance, has approximately 10 per cent of the world's population, 19 per cent of the world's blindness and 51 per cent of the world's poor. The state of eye care in Africa stands in alarming contrast to that in the rest of the world. Low practitioner-to- patient ratios or a total absence of eye-care personnel, inadequate facilities, poor state funding and limited professional educational programmes are the hallmarks of eye care in Africa, with preventable and treatable conditions being the leading cause of blindness<sup>13</sup>.

The challenges in the developing world can be linked to problems with the availability of trained human resources, equipment, consumables, access to care, and affordability of these services which affect their supply. In addition, there is a lack of awareness and/or a negative attitude towards examination and treatments, which affects their demand. Each of these factor in as to why uncorrected refractive error and cataract remain the leading causes of visual impairment and blindness in these countries. These conditions can be treated by cost-effective proven treatments: surgery for cataract and spectacles for refractive error.

### The world context

In the developed world, cataract and uncorrected refractive error have been largely addressed by the presence of adequate health infrastructure and public awareness of these conditions and their treatment. Neglected tropical diseases are virtually non-existent, with a few exceptions.

However, AMD is a significant cause of blindness in developed countries. AMD is a leading cause of blindness globally and is the leading cause in developed countries accounting for over 50% of blindness. Despite the effectiveness of new treatments for AMD, including the anti-VEGF therapies for the wet form of the disease, the dry form continues to affect millions of people. It is projected that by 2020, 196 million people will have AMD, rising to 288 million in 2040<sup>14</sup>. Other common causes of blindness, including glaucoma and diabetic retinopathy, are expected to increase with aging populations and lifestyle changes.

The number of people (aged 40 to 80 years) with glaucoma is estimated to increase by 18.3% to 76 million in 2020 and by 74% to 111.8 million in 2040 compared with 2013 (64 million people). Much of this increase in the number people with glaucoma is projected to be due significant increases in Asia and Africa. Asia will continue to have the greatest number of people with primary open angle glaucoma and primary angle closure glaucoma in 2040, increasing by 18.8 million (79.8%) and 9.0 million people (58.4%), respectively, from 2013. In Africa the number of people with glaucoma increases by 130.8% (10.9 million) from 2013 to 2040<sup>15</sup>.

Projections of future prevalence of diabetes vary dependent on surveillance methodology. In 2013, the International Diabetes Federation (IDF) estimated that 382 million people had diabetes worldwide and that by 2035 this was predicted to rise to 592 million people. Of these, 80% live in low- and middle-income countries, and of the overall total more than 60% live in Asia<sup>16</sup>. A number of epidemiological studies indicate that approximately 1 in 3 people with diabetes (34.6%) demonstrate signs of diabetic retinopathy in the United States, Australia, Europe, and Asia and 1 in 10 (10.2%) had vision-threatening retinopathy<sup>17</sup>.

As in developing countries, low income and other marginalized groups are more likely to be affected by these conditions as they face difficulties accessing eye care services. Optometrists are trained and ideally positioned to detect these and other sight and health related problems at an early stage in their development.

### The challenges faced by eye health

The alarming situation of increasing avoidable blindness is believed to be caused by multiple factors. In many cases, the number of competent health care professionals is insufficient, productivity is low, there is an uneven distribution of resources or in some cases, people lack medical insurance or the ability to afford treatment. In general, the poorest and most remote areas have the least access to eye care. The most common causes of visual impairment and blindness are cataract, refractive error, diabetic retinopathy and glaucoma, each with a gradual onset. Due to a lack of access to primary eye care, people try to self-medicate or use coping strategies. These lead to complications or even complete vision loss. Key issues to address this include human resource development and distribution.

Early detection and treatment of common causes of blindness through primary health care initiatives within the health system can have a tremendous impact on eye health care and prevention of blindness. Although eye health should be an integral part of the health care system, it has not always been sufficiently integrated at all levels of health care delivery, especially in primary health care and health

financing. Current population trends, with increases in aging populations and the prevalence of non-communicative disease, such as diabetes in both developed and developing countries, will demand different responses from the eye health community. The elderly (over 65 years old) are already the fastest growing segment of the population and will continue to grow in developed countries.

Diabetic retinopathy is a leading cause of visual impairment. This trend is significant in developed countries, but also emerging in developing countries with an increased prevalence of diabetes and related complications attributed to changes in diet. The disease will have a more debilitating impact on individuals and communities in these resource poor settings due to the lack of health service infrastructure and community awareness around the prevention, detection, and treatment of diabetes and the related complications.

These disease entities have increased the prevalence of visual impairment and blindness due to cataract, macular degeneration, glaucoma, and diabetic retinopathy. People over the age of 50 account for two thirds of visual impairment and 85% of blindness. With the increased prevalence of these conditions, the demand for eye care will continue to increase, creating an additional burden on existing services. The effect in developing countries will still be significant, but to a lesser degree given the low average age of the populations.

#### Eye care within universal health coverage and access

There has been a significant shift in the way in which eye care is delivered in the 21st century. Eye care has traditionally been positioned within the private sector, with the need for spectacles and contact lenses the primary reason to visit an optometrist. However, the limitations and barriers of marginalized communities being unable to reach eye care services have shifted the provision of eye care to a public health position. The fundamentals of public health (epidemiology, biostatistics, human resources, legislative issues, etc.) have highlighted the disparities that exist in eye care between the developed and developing world.

The provision of eye care should be aligned with universal health coverage, and the role of health care professionals, including optometrists, in eye care is rapidly changing. By applying the fundamentals of public health, eye health programmes must be equitable, efficient and effective. Epidemiological research has enabled the implementation of eye health programmes to be more focused. Developing an adequate eye health workforce has been a challenge in many situations, however, a systems approach has allowed the development of various types of eye health professionals, each serving discrete, yet integrated services. While providing services to marginalized communities, it is evident that innovative solutions also need to be developed to ensure sustainable service delivery together with the role that optometry is currently playing and future challenges.

## **4. The Scope of Optometric Practice**

Optometry as defined by WCO is a healthcare profession that is autonomous, educated, and regulated (licensed/ registered). Optometrists are the primary healthcare practitioners of the eye and visual system, providing comprehensive eye health and vision care, which includes refraction and dispensing, detection/diagnosis and management of disease, and the rehabilitation of conditions of the visual system. However, it is acknowledged that optometry functions both independently and in collaboration with the broader eye care and health team.

Optometry answers the challenges of eye health and vision care by providing a range of diagnostic, management, technical and direct patient care and support services required by patients and other health care professions. It has increasingly focussed on universal health coverage; providing accessible, equitable and affordable eye health services to all and shifting from a predominantly private sector orientation to a public sector one as well.

Optometric scope of practice includes:

- Refraction
- Dispensing
- Detection/diagnosis and management of visual problems
  - Examination of the eye and visual system
  - Assessment of binocular vision
  - Ocular and systemic pathology with ocular manifestations such as
    - Glaucoma
    - Diabetic Retinopathy
    - Hypertension
    - Cataract
- Utilizing medications to improve diagnostic and therapeutic skills in eye care
- Contact lens fitting
- Low vision rehabilitation
- Vision therapy
- Behavioural optometry
- Referral to ophthalmology and other professionals

Optometrists have responsibilities in the following areas of public health primary care:

- Prevention
- Health education
- Health promotion
- Health maintenance
- Diagnosis
- Treatment and rehabilitation
- Counselling
- Consultation

There are regional variations in the scope of optometric practice which restrict how optometry can respond to the challenges of vision loss in many countries<sup>18</sup>. Optometry functions in a primary eye care capacity in many developed countries and manages disease either autonomously or in co-management within a multidisciplinary team, dependent upon the scope of practice. In many developing countries, optometry is at a secondary level supporting primary eye care nurses.

As an integral part of the health care team, optometrists have a wide range of responsibilities, including ensuring provision of high quality and affordable eye health services. Those in an academic environment need to orientate their teaching towards making students more aware of the public health challenges to eye health. Those in research need to provide the evidence for clinicians and their health profession colleagues and legislators to ensure that service provision is focused on the needs of the public. Health promotion advocacy, although historically neglected, is very important and needs to be made widely available.

The disability agenda has gained much traction in recent years. Visual impairment is a disability that has a significant impact on an individual's educational and economic development, limiting opportunities and impacting on the quality of life. However, in this debate, the role of optometry is often conspicuous by its absence. A multi-sectoral approach and collaboration with eye care, rehabilitation and social services requires development. It is very important to find a better balance between public, private and non-governmental organisation (NGO) sectors so that those in need are well supported.

### The initial steps

Optometry has been an established profession in many parts of the world for over 100 years<sup>19, 20</sup>. As a profession, optometry grew from education in technical optics and refraction to include visual optics, anatomy and physiology of the eye and the recognition and treatment of ocular disease and abnormalities. As a consequence of this evolution, optometry gained more recognition, became regulated - not only by governments, but also by professional councils - and integrated into formal health structures in the public and private sectors in many parts of the world.

A key event in advancing the role of optometry globally has been the recognition of WCO by the World Health Organisation (WHO) and the development of working relations between the two bodies. Optometry has also been recognised as an independent eye care profession in the joint World Health Organisation and International Agency for the Prevention of Blindness (IAPB) VISION 2020: Right to Sight campaign. The identification of refractive error as one of the priorities of the campaign alongside cataract and other ocular pathologies cemented optometry's contribution to this effort.

### The current status of optometry

Depending on the health system in individual countries, optometrists are regarded as either primary or secondary health care providers. This influences the group of healthcare professionals and related

health personnel who make up the eye care team. Eye care professionals include ophthalmologists, optometrists, orthoptists, dispensing opticians, ophthalmic technicians and nurses. The impact of optometry's contribution varies from country to country due to the limited recognition of optometry in some countries and the uneven distribution of optometrists in others.

There are huge disparities in the scope of practice of optometrists in both developed and developing countries. Whilst refraction and the dispensing of spectacles was historically optometry's primary service, the scope of optometric practice has expanded to the autonomous and direct provision of primary eye care, including the use of diagnostic and therapeutic drugs, in many countries in the developed and developing world. As the first point of contact for the public in many countries, optometrists are ideally situated to provide comprehensive eye examinations including early recognition, diagnosis and, where appropriate, treatment of eye conditions. This has been enhanced by the introduction of diagnostic and therapeutic services and the development of new diagnostic technologies.

In addition, technological advances in spectacle lens materials and designs have given optometrists and dispensing opticians the opportunity to provide spectacles to meet the demands of 21st century living and working. On the other hand, sub-speciality areas in optometry such as paediatrics, therapeutic contact lenses, low vision and binocular vision allow optometrists to provide focussed services to those with particular needs.

In the developing world, where there is limited access to even basic optometric services, optometric practitioners often fill a secondary care role. Ophthalmic nurses, ophthalmic technicians and trained lay people provide primary care, referring patients to optometrists. A sub-speciality area like low vision/vision rehabilitation should be well structured and delivered within a multi-disciplinary health service framework in developed countries. However, in developing countries, the low number of appropriately trained personnel and affordable assistive technology devices make such a service inaccessible and inadequate to meet the needs of the population.

#### Optometry as a public health profession

The substantial changes taking place in the optical industry have provided optometry with advanced screening and diagnostic instrumentation which facilitates both refraction and the recognition and diagnosis of ocular diseases<sup>21</sup>. This has enabled optometry to undertake both autonomous management and co-management of ocular disease alongside ophthalmologists and medical practitioners. Current and ongoing advances to simplify the screening and diagnosis of patients with potentially blinding conditions such as diabetic retinopathy, macular degeneration and glaucoma have the potential to revolutionise access to and early detection of these problems in the primary care setting.

Despite the significant improvements in technology, the access to this technology is inequitable. Currently clinical diagnostic and screening equipment, especially for ocular disease identification, is unaffordable for use in the public sector or in rural communities particularly in developing countries. Similarly, assistive technology available in the developed world is often unaffordable for the poor within developing countries, highlighting the need for the optical industry to design affordable instrumentation in order to serve the needs of the poor. The development of mobile applications is beginning to revolutionise screening for ocular pathology, especially in underserved populations and innovative use of smart phone technology in the medical field has opened up possibilities for the use of this technology in vision screening and diagnosis<sup>22</sup>.

Critically, the paucity of optometry schools in the developing world needs to be addressed. Unless this is done the objective of eliminating vision impairment and blindness due to avoidable causes such as uncorrected refractive error will remain elusive.

The academic community in optometry should be called upon to advance the profession through research and development. Today, with the majority of the world seeking health care in the public sector, it is important that verified clinical and screening protocols are implemented to ensure comprehensiveness and quality of services provided. These can only be identified through rigorous clinical trials. Research into development of technology to provide cost effective or affordable screening instruments is critical to the provision of successful and comprehensive eye health. In a world where costs to society are scrutinised intensely, more focus has to be put on generating the evidence of the economic impact of vision impairment and blindness.

It is essential that eye care delivery is patient-centred and delivered as a team with interdisciplinary co-operation to optimise the contribution of each team member to reach more people in need. This means taking a proportionate view of the skills and competencies required at the primary, secondary and tertiary levels of eye health care delivery<sup>23</sup> ([Core Competencies for the Eye Health Workforce in the WHO African Region](#)).

## 5. Optometric Competency Standards

### The right competencies to provide the best services

Competency is the ability to perform the activities within an occupation to the standard expected in employment. Competencies are the skills, attitudes and knowledge needed to be able to practise.

Kiely and Slater, in their 2015 article on the Australian Universal (Entry-Level) and Therapeutic Competency Standards for Optometry<sup>24</sup> define competency standards as:

“Competency standards list the skills, knowledge, abilities and attributes needed to perform the activities associated with an occupation to a standard appropriate for the current workplace”

The term 'attributes' is used to indicate the personal qualities that underpin performance and, hence, competence. Attributes include capacities, skills, abilities and traits. Inevitably, to some extent such listings are open ended as identifying and describing human attributes is not an exact science.

A 'competent' professional can perform the range of professional roles and activities at the required standard. The term 'competence' describes overall professional ability and integrates 'capability' and 'performance levels', while the term 'standards' represents the overall structure that describes professional practice.

#### The WCO Global Competency- Based Model of the Scope of Practice in Optometry

To support the development of optometric education, the WCO has developed a Global Competency-Based Model of Scope of Practice in Optometry that provides a vertical career ladder for individuals seeking to expand their scope of clinical responsibility.

The WCO Global Competency Based Model (Global Competency-Based Model of Scope of Practice in Optometry)<sup>25</sup>, first published in 2005 and revised in 2015, recognises the historical development of optometry and the cultural and legislative differences in the optometric scope of practice around the world. Moreover, it reflects optometrists' commitment to achieve appropriate patient care outcomes aimed at maintaining and improving their patients' quality of life.

The model was built largely based on the competency statements and model developed and subsequently regularly revised by Optometry Australia (OA)<sup>26</sup>. These competency statements have the added strength of having been initially developed through support received from the Australian government. The categorical structure of the model parallels the structure developed for the European Diploma in Optometry by the European Council of Optometry and Optics (ECOO) in the mid-1990s.

The model will also help regulatory bodies guarantee practitioners' competence as part of their responsibility to protect the public when faced with future migration of optometrists across jurisdictional borders. It will also act as a stimulus for creating greater uniformity in optometric practice worldwide by being applied to teaching curriculums and statutory definitions of scope of practice.

In October 2011, the WCO Governing Board adopted the broad competencies of dispensing, refracting, prescribing and the detection of disease/abnormality as being the minimum required for individuals to call themselves optometrists. This is in addition to and does not conflict with the Concept of Optometry which remains unaltered and in many countries is still an aspiration. The competency model reflects this decision and clearly identifies the competencies required of an optometrist, highlighted in the following statement:

“WCO believes that an optometrist should possess the skills and competencies to perform eye examinations, prescribe spectacles, diagnose and treat common eye problems, and refer more serious conditions. WCO believes that optometrists should be integrated within the eye care, and wider healthcare team.”

## 6. Optometric Education

Over the past century, optometry has developed from a profession mainly providing refractive services and spectacles to a primary health care profession providing diagnosis and treatment for a wide range of vision and related general health conditions.

Development in optometric education has influenced and reflected these changes in scope of practice. Optometric education has progressed from one and two-year post-secondary education to a minimum of four years of college tertiary/university education in many countries. The WCO has provided advice to the WHO that the minimum level of education required to be an optometrist is at bachelor's degree level from a tertiary institution.

Optometric education, and as a result, the practice of optometry, has developed differently and at different rates around the world. Optometric education is now provided at Bachelor's degree level or higher in major public and private research universities internationally, as well as in independent schools and colleges of optometry. There are differences in the education requirements for optometrists due to country specific regulatory requirements. These relate to optometry course accreditation requirements and/or regulatory requirements for initial registration (licensure) as a practicing optometrist. In most countries, entry to optometric education follows higher level secondary school qualifications, typically after a minimum of 12 or 13 years of schooling. In others, entry to optometry professional programs occurs subsequent to a 3- or 4-year undergraduate degree. Entry to optometry education programs, their duration and structure are in most countries similar to those required for other health professions such as medicine, dentistry and pharmacy.

The scope of practice and services provided by optometrists vary considerably from country to country. In countries such as the United States, Canada, Australia, South Africa and the United Kingdom, optometrists not only provide management in refractive correction, low vision, contact lenses, visual rehabilitation and binocular vision care in addition to optical services, but also diagnose and treat many ocular conditions such as conjunctivitis, glaucoma, ocular allergy and dry eye among other ocular diseases with topical or oral therapeutic drugs. Optometrists monitor diabetic retinopathy and other ocular pathologies such as glaucoma or cataract, provide pre- and post-operative care and often work in hospitals, eye referral centres and in practices with ophthalmologists and other members of the health care team. In other countries, optometrists have limitations legislatively on their scope of practice,

irrespective of the scope of their optometric education. In some cases, legislation may restrict optometrists to mainly refractive services. In these countries, increase of the scope of practice will require legislative change to recognize the scope of optometric education; in others there may need to be consequent expansion of the optometric education provided to equip future optometrists with increased skills to permit a wider role in health care delivery as exists in other countries. In countries where there is a lack of practitioners, more optometric educational institutions need to be established to educate a sufficient number of optometrists.

Independent of their structure, optometry educational departments share faculty with other health-related departments, including medicine. They also collaborate in research and translational activities such as patient care and communication. This multidisciplinary approach ensures both the competency of optometrists and confidence between optometry and the medical and related professions.

### Curriculum

An optometry education curriculum commensurate with tertiary education is constructed of the following elements:

- a strong foundation in the basic and biomedical sciences. This may be either through the program or through pre-requisite tertiary studies that provide students with a thorough understanding of the basic and biomedical sciences underpinning the optical and vision sciences, and the clinical practice of optometry.
- foundation in optics and vision sciences (e.g. physiology of vision, ocular anatomy and physiology)
- a strong foundation in dysfunctions and diseases of the eye, systemic disease, pharmacology
- a strong foundation in the fundamental skills required for the practice of optometry.
- a significant period spent primarily in direct contact with patients to experience
- a diversity of presentations and patient needs. the complex interplay of causative factors, pathogenic processes, and psychological and physical factors in patients that influence delivery of clinical care.
- clinical instruction that incorporates a range of learning opportunities to develop and consolidate students' clinical skills, including student observation, practitioner demonstration and patient care that ultimately results in patients being independently examined by students under supervision, including independent management decisions by students that are reviewed by a supervisor
- optometry's role in public health

A core structure to support this could be considered within 5 themes:

- Science and biosciences – providing foundation knowledge in cellular processes, anatomy, physiology, optics and chemistry to support later study of the vision sciences and clinical subjects, including pharmacology and disease processes.

- Vision sciences – studies that pertain to the eye and understanding of visual function, leading to pre-clinical studies.
- Pre-clinical studies – clinical methods in optometry, binocular vision, eye disease, low vision, contact lenses, supporting the development of skills relevant to clinical practice.
- Research in vision and optometry; evidence-based practice – research studies, research projects and evidence-based practice to support clinical investigation and management, and future practice.
- Clinical studies and clinical practice, public health.

WCO's Education Committee has produced a guide to help schools, colleges and universities intending to start or upgrade an optometry programme with a basis for designing their curriculum (Curricular Support Elements for an Optometry Programme)<sup>27</sup>.

### Accreditation

As with any health care profession, optometry relies upon a process of accreditation of education, audit and assessment of competencies to provide reassurance to the public and related professions.

The level of oversight and evaluation of optometric education institutions varies around the world. There are typically institution specific requirements for ongoing course review, development and approval. Additionally, in some countries there are accreditation agencies such as the Accreditation Council on Optometric Education (ACOE) for the U.S. and Canada<sup>28</sup>, Optometry Council of Australia and New Zealand (OCANZ)<sup>29</sup>, the UK General Optical Council (GOC)<sup>30</sup> and The European Council of Optometry and Optics (ECOO)<sup>31</sup> which undertake independent external program reviews. These organisations have very similar procedures and processes for the evaluation of optometric educational programmes. Optometric education programs are required under these external evaluation processes to demonstrate how course (program) structure, content, delivery, and assessment equip graduates with the required professional competencies to enter the profession. In other instances, individual institutions have procedures for external program reviews to assure quality education. The WCO encourages and helps countries to develop optometric education and in-depth programme reviews of institutions by external agencies.

## **7. Legislation and Regulation**

### Professional regulation<sup>32</sup>

A profession is an occupation in which an individual uses an intellectual skill, based on an established body of knowledge and practice, to provide a specialised service in a defined area, exercising independent judgement in accordance with a code of ethics and in the public interest. Some areas of

work are reserved by statute to members of a profession for the protection of the public on the basis that the profession's governing body will ensure that those licensed to practice are properly qualified and conduct themselves in a professional manner.

For example, in the UK, a governing body may be established by statute, by Royal Charter or incorporated as a company limited by guarantee. In other countries, they are established by law. Governing bodies are accountable to the public they serve and should be independent of all other interests. Governing bodies are required to support a fair and competitive market in which the public can make informed choices between the providers of professional services in each area, as well as between the qualified and unqualified.

### Principles of regulation

The purpose of professional regulation is to assure the quality of professional services in the public interest. The regulation of a profession involves the setting of standards of professional qualifications and practice; the keeping of a register of qualified persons and the award of titles; determining the conduct of registrants, the investigation of complaints and disciplinary sanctions for professional misconduct. All procedures for regulation should be open, transparent and auditable. Lay persons should be involved, where appropriate.

Governing bodies should keep the standards of education, training and practice required to enter the profession under regular review and relevant to the needs of those who require professional services. The competence of those seeking professional qualifications should be determined by peer review. Areas of work involving health, safety and professional competence should be subject to periodic assessment and re-certification or re-validation.

Governing bodies should require registrants to undertake personal responsibility for monitoring their own performance, to undertake such further learning and training necessary to maintain their competence, and to maintain their commitment to a high standard of professional conduct.

Governing bodies should provide a clear and accessible complaints procedure which distinguishes between the investigation and the disciplinary process. Disciplinary procedures should follow the requirements of natural justice and include an appeal procedure to an independent forum. The outcome of any disciplinary hearing should be published.

The form which regulation can take a variety of forms depending on national law and culture and, in the case of optometry, will depend on the level of recognition of the profession and its scope of practice by governments.

### Voluntary professional self-regulation

Where there is no statutory regulation of the profession, an association may decide to establish its own standards of education and ethical guidelines as a requirement for membership. This gives assurance to the public that association members practise to an appropriate standard.

#### Case study Bulgaria

The number of optometrists in Bulgaria has increased over the past few years. Two universities now offer optometry programmes - the Sofia University since 2010 and the Medical University in Varna since 2016. Both universities have obtained state accreditation for their optometry programmes. However, there is no adequate legal framework to regulate the profession, and there are no provisions on the scope of practice of optometrists. The Bulgarian Association of Optometrists (BAO) was established four years ago to work toward the full recognition of the optometry profession. The first thing the BAO set out to do was to prepare a proposal, in partnership with Sofia University, for the recognition of optometry. As a result, the optometrist was added to the National Classification of Professions as an independent profession with the minimum requirement of having obtained a bachelor's degree. The next step on the agenda is to establish a working group to prepare a proposal for a new regulatory framework for optometrists. The work done by the BAO over the past four years has laid the necessary groundwork.

### Statutory self-regulation

Governments may legislate for the regulation of a profession such as optometry but then delegate the implementation of the legislation in respect of educational standards, scope of practice and registration to a professional association. This model is becoming less common in the current political climate of deregulation as it is seen as a risk to the creation and maintenance of monopolies.

#### Case study Spain

In September 2018, the Spanish Supreme Court has now formally acknowledged the legitimacy of the Colegios in demanding compulsory registration of professionals. In Spain, professionals practicing optics and optometry ought to have a recognised degree in the field. Furthermore, in order to comply with the ethics code of the Spanish System of Professional Associations, professionals are required to be registered at one of the "Colegios". This practice is a legal requirement and non-compliance could be met with sanctions. The enforcement of the compulsory registration has been legally conferred to the professional associations, and their members are bound by the obligations outlined in the professional code of conduct. Even though membership of the professional association was already mandatory, in line with the in accordance with the Act which regulates Health Professions (Ley de Ordenación de Profesiones Sanitarias, LOPS 44/2003), the new endorsement by the Supreme Court aims to reduce existing cases of irregular practice through which practicing professionals are not registered. Irregular practise had already been addressed by case law and by the Spanish Supreme Court. In some of its decisions (STS of 11 November 1992 -RJ 1992/8667- and STC of 8 March 1996 -RJ 1996/2267-), the

Spanish Supreme Court stated that “such disciplinary functions entrusted to professional associations should be broadly understood, so that they may represent a reinforcement of the authority publicly entrusted to the professional association.” This implies that the individuals who practise the profession without being members of the association still fall within the remit of the association’s authority. The Professional Association of Opticians-Optometrists of Valencia (Spain) has played an important role in the case of irregular practice. After the association submitted its Internal Regulations for approval to the Spanish Internal Affairs and Justice Department, the Department issued a resolution (November 2013), in which it deletes article four of the Internal Regulations (which implies that, when an Optician-Optometrist practices “without being a member of the association, he/she shall become ex-officio member, so that, for the sake of the safety of patients, the interested party may legally exercise the profession, without engaging in illegal conduct”). After the Association appealed against the resolution, the Supreme Court ruled in July 2018 that the association’s internal rules comply with the legislation, because they lay down rules to address ex-officio registration. In parallel, a bill was introduced in June 2018, to amend the Law of Professional Associations of Valencia. This bill is currently going through regional parliament.

#### Statutory regulation

Legislation is enacted to establish a council or board with powers to regulate standards of education, entry standards and continuing professional development and to maintain a register of suitably qualified practitioners often together with disciplinary procedures to protect the public against unethical behaviour and to remove unsuitable practitioners from the register. In some countries the council or board will include lay and medical members.

#### Case Study Switzerland

In order to promote quality in healthcare, Switzerland is enacting a new law that by 2020 will regulate the training and competencies of seven selected non-medical so-called «health professionals»: nursing, physiotherapy, occupational therapy, nutritional advice, obstetrics, osteopathy and optometry. Swiss optometrists holding a Bachelor (BSc) Degree (3 years full-time study in the ECOO Gold Standard at the Institute of Optometry FHNW, since 2007) are now nationwide defined as specialists for prescription determination, contact lens fitting and optometric examinations including preventive health screening. The diploma-qualified opticians who were previously qualified for prescription regulations and contact lens fitting (Higher Professional Examination, abolished in 2011) retain their demonstrably acquired competencies and professional rights as «old-law» professionals. The new «health professionals»-law and the associated implementing provisions are not yet in force. A public consultation on these issues was completed at the end of January 2019. From 2020 onwards, the new federal law must be integrated in 26 independent and different cantonal health laws, in which the practice of optometry has been regulated to date at the level of the graduated ophthalmic optician.

#### Case study UK

The legislation was originally formed in the Opticians Act 1958. This legislation was consolidated to form the 1989 Act, which includes all subsequent amending legislation. In 2005, a number of changes were made to the legislation. These included the introduction of mandatory Continuing Education and Training (CET) for full registrants, and the introduction of registration for student optometrists and dispensing opticians.

Optometrists with additional speciality qualifications are able to prescribe medicines, within their scope of practice, for ocular conditions. The sale, use and production of medicines are covered in legislation, including the Medicines Act 1968 and Human Medicines Regulations 2012.

In the UK, healthcare professions are regulated by 12 healthcare regulators and the profession of optometry is regulated by the General Optical Council (GOC), which can be considered a National Board. The Opticians Act gives the General Optical Council powers to make orders, rules and regulations in relevant areas, subject to approval by the Privy Council. Optometrists and opticians must register with the GOC to practise and are subject the GOC Standards for Optometrists and Dispensing Opticians. The title optometrist is protected in legislation, and it is an offence to use the title if not registered with the GOC.

### Licensure

Licensure is a method of regulation where a license to practice is issued by a regulating authority which may be a government ministry or state board. The licence is issued based on educational qualifications and may be lifelong or time limited and subject to periodic review.

### Case study US

Doctors of optometry in the United States are regulated by independent state boards. Each state independently determines the requirements for licensure, the scope of practice and the process for maintenance/renewal of licensure. Changes in scope of practice are advocated for within the individual state. While the American Optometric Association as the national organization is supportive of advocacy efforts conducted by the states, the individual state is responsible for the efforts to maintain or update their own laws and statutes. All states require some form of continuing education as a requirement for periodic license renewal. Some states use the Association of Regulatory Boards of Optometry (ARBO) to assist with review and approval of courses.

Optometrists must complete all course work and graduate from an accredited College of Optometry. This includes passage of all parts of the national board examinations as well as local jurisprudence examinations, which vary by state.

### Case study Canada

In Canada, Doctor of Optometry must write national written and practical board exams. Additionally, optometrists are required to become licensed in the province in which they wish to practice. Regulatory of

professions is within provincial jurisdiction. Therefore, regulation of optometry is unique to individual provinces and territories. In Ontario, optometrists are licensed by the College of Optometrists of Ontario.

### Protection of title

In some countries, there is limited regulation of professional activities, but the law protects the title of optometrist. This means that whilst non-qualified persons can refract and fit contact lenses, they cannot call themselves optometrists. The reassurance to the public is that if they choose to go to an optometrist, they know that person is properly qualified.

Whilst the nature and scope of regulation varies from country to country, WCO recommends that optometry should be regulated in a similar way to other independent health care professions in each country.

## **9. Workforce Planning**

Optometrists currently work in many contexts and sectors e.g. private, public, industry and academic. Workforce planning should be based on the various roles that optometrists can play as well as evidence of the numbers needed, mix and distribution worldwide. Optometrists should be appropriately trained and optimally placed to provide the eye care required by society.

The global health workforce crisis is estimated to have the most significant impact in 56 countries, 36 of which are in Africa (WHO)<sup>33</sup>. The shortage of optometrists and other eye health professionals in Africa is of particular concern. Very often, the limited and misdistribution of the human resources for eye health can be attributed to limited advocacy and mobilisation of resources to ensure an equitable distribution of optometrists to serve the interests of the public, especially in the public sector.

WCO believes that governments need to acknowledge the existence of optometrists in the eye health work force. The WCO advocates with governments for the recognition of optometry as a profession and the significant positive impact the profession can have on health expenditure. WCO can also advocate for the creation of posts for optometrists in the public sector and emphasise the importance of a fair distribution of optometrists in rural and urban settings.

The success of the profession in the private sector needs to be galvanised to support expansion of services in the public sector. The heavily resourced private sector can stimulate the development of programmes in the public sector.

WCO is at the forefront of ensuring that the quality of optometric services is benchmarked against the existing competency framework. It is imperative that by reaching adequate numbers, the quality of service is not compromised. A clear policy to develop the optometric workforce is needed by which WCO acknowledges that in some developing countries, and particularly in rural areas, there are insufficient clinicians to carry out refractions as part of a complete (or comprehensive) eye examination which includes detecting the early signs of disease and abnormality. However, in view of this reality, WCO believes strongly that 'stand- alone' refraction ([The Sight Test: Refraction and Examinations of the Eye for the Purpose of Detecting Injury, Disease or Abnormality: The Public Health Case](#)) without an eye health examination is a serious public health issue and that a team approach with other eye health professionals needs to be developed to address this deficit for the benefit of the population.

### Optometry in an integrated eye health care team

To meet present and future challenges, a paradigm shift is needed in the way optometry approaches the delivery of eye care services. An approach that strengthens the health system needs to be supported with each of the building blocks supported in integration with the others.

The WHO defines the purpose of a health system as improved health for the beneficiaries, which is equitable and responsive to their needs. The health system is composed of service delivery, health workforce, health information, medical products and technology, financing, and governance

An integral component of a health system is human resources and, as discussed, it is very important to ensure that there is the right number, the right quality, and the right distribution of trained health providers to meet the needs of the community.

WCO believes that an optometrist should possess the skills and competencies to perform eye examinations, prescribe spectacles, diagnose and treat common eye problems, and refer more serious conditions. WCO believes that optometrists should be integrated within the eye care, and wider health care team.

### The WHO Health System Framework

Academic institutions need to incorporate public health into their curriculum<sup>34,35,36</sup> and ensure that graduating optometrists have adequate skills and knowledge to address the public health challenges that exist in eye care. In the United States, for the optometry doctoral program a set of core competencies in public health and environmental vision were approved by the American Schools and Colleges of Optometry Academic Officers. Importantly, young graduates need to be encouraged to work

in the public sector and in rural and underserved areas. For this to be successful, health ministries need to offer appropriate incentives.

It has been fifteen years since the VISION 2020 Right to Sight campaign was launched. While significant efforts have been made across the world to eliminate avoidable blindness, there is still a lot more to do to reach its goals. The adoption of refractive error as one of the priorities created an opportunity for the recognition of optometry as a key player in the eye health equation. In addition, the recent focus on non-communicable diseases such as diabetic retinopathy and age-related macular degeneration has also created another opportunity for optometry to embrace its co-management role and support millions of patients with diabetes around the world. The achievement of the 25% target established by the WHO Action plan for 2014-2019 presents some challenges to the profession but it should also catalyse its efforts and motivate the profession to make a tangible impact.

## 10. Resources

[www.worldoptometry.org](http://www.worldoptometry.org)

- Vision Mission and Objects
- About WCO
- An introduction to WCO
- Definition of Optometry and Optometrists
- Regional Structure
- Position papers
- Scope of Practice Questionnaire
- Membership
- Regional News
- Education and Resources
- Optometry Schools
- World Optometry Foundation
- e learning platform
- Education curriculum toolkit

- Global Competency Model

[www.givingsight.org](http://www.givingsight.org)

- Optometry Giving Sight [www.ecoo.info](http://www.ecoo.info)
- European Diploma in Optometry and Accreditation Scheme

[www.iapb.org](http://www.iapb.org)

- International Agency for the Prevention of Blindness World Sight Day

[www.who.int](http://www.who.int)

- Universal Eye Health: a global action plan 2014-2019 [www.who.int/blindness/actionplan/en/](http://www.who.int/blindness/actionplan/en/)

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