Eye care service assessment

Malawi

Sightsavers

Table of contents

List of Figures

List of Tables

List of Boxes

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All ECSA-related documents and guidelines can be found online on: http://www.who.int/blindness/publications/ECSAT_EN.pdf

Abbreviations and acronyms

Admin	Administrative
BICO	Blantyre Institute of Community Outreach
CHAM	Christian Health Association of Malawi
CMED	Central Monitoring and Evaluation Division
CO	Clinical Officer
CSR	Cataract Surgical Rate
DCS	Directorate of Clinical Services
DPHS	Directorate of Preventive Health Services
DPO	Disabled People's Organizations
ECSAT	Eye Care Service Assessment Tool
EHP	Essential Health Package
FEDOMA	Federation of Disability Organizations in Malawi
GNI	Gross National Income
GOM	Government of Malawi
GP	General Practitioner
HReH	Human Resource for Eye Health
HAS	Health System Assessment
HSSP	Health Sector Strategic Plan
IOLs	Intraoperative Lenses
MA	Medical Assistants
MCHS	Malawi College of Health Sciences
MNPBC	Malawi National Prevention of Blindness Committee
MOH	Ministry of Health

MUB	Malawi Union for the Blind
NEC	National Eye Coordinator
NHA	National Health Accounts
NHMIS	National Health Management Information System
OOP	Out of Pocket
PHC	Primary Health Care
PMPB	Pharmacy, Medicines and Poisons Board
SHN	School Health and Nutrition
WHO	World Health Organization
RAAB	Rapid Assessment of Avoidable Blindness
USD	United States Dollar
VIHEMA	Visual Hearing Membership Association

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Executive summary

This report presents results of the Malawi Eye Care Service Assessment. The Eye Care Service Assessment Tool (ECSAT) was used to assess the Malawi eye health services and their integration into the broader health system. ECSAT is a standardized tool that assesses an eye health system across six 'building blocks' of a health system, - (i) governance, (ii) financing, (iii) service delivery, (iv) human resources for health (HRH); (v) medicines and technologies; and (vi) health information and management system (HMIS).

Completion of the ECSAT required collaboration with the National Eye Coordinator of Malawi and the support of Sightsavers Malawi, but it is primarily a desk review. A significant challenge in its completion was the paucity of published and unpublished data sources on the various aspects of eye health. Despite this challenge, the report provides some useful insights into the Malawi eye health system, its strengths, weaknesses, opportunities and gaps. It also highlights the need for more comprehensive collection of primary data relevant to eye health.

Universal eye health coverage is a long-term goal of the Malawi public health sector and the Government of Malawi has put in place important governance mechanisms to ensure eye health system development and its integration in the broader health system. Eye health is included in the Malawi Health Sector Strategic Plan 2011-2016 and in the Essential Health Package. Eye care planning is led by the National Prevention of Blindness Committee (NPBC), which includes representatives from various public and private entities. There is a National Eye Health Action Plan and a national eye health coordination office under the Ministry of Health. It is however believed that the NPBC does not have required resources to effectively perform its function and the National Eye Care (NEC) coordinator has limited influence within the MOH and broader public sector.

There is some population-based data on magnitude and causes of visual impairment available for selected districts in the country, where epidemiological surveys were funded by international partner organisations. Overall, there is paucity of information on eye health at the national level and a large proportion of data collected through the routine HMIS is thought to be unreliable.

The health delivery system includes primarily government and not for profit facilities with eight hospitals delivering specialist eye care services across the country. A significant proportion of eye care is provided through community outreach camps and a network of primary and community health workers. The National Cataract Surgical Rate (CSR) is estimated at 530 per million population, a quarter of the recommended levels for Sub-Saharan Africa; and the system of monitoring quality of cataract surgery remains weak arguably due to high costs of patient follow up.

Eye health is included in the Essential Health Package (EHP) under eye, ear and skin priority area; and there is a policy of free health care in government facilities. However, the resources allocated to health and subsequently eye health, are inadequate. Although the total health expenditure (THE) in Malawi has increased in recent years and constitutes 9 percent of the country's gross domestic product (GDP), it amounts to only USD37.8 per capita per annum, which is well below the recommended spending of USD54 per capita per annum for low-income countries (1). The government share of expenditure is particularly low and insufficient to cover the costs of the EHP free of charge. As a result, international donors remain the major source of funding of the Malawi health system contributing about 65.4 percent of THE (1). The share of external funding in eye health is estimated to be even higher, at around 85 percent but the exact figures are not known.

Malawi has three accredited institutions that train various cadres of eye care workers and there has been an increase in the number of mid-level personnel trained in the past decade. However, limited financial resources and inadequate infrastructure undermine efforts in both the training and deployment of eye health personnel. There is a critical shortage of all types of eye health cadres with 4 times less surgeons, 2.5 times less ophthalmic clinical officers/nurses and nearly 10 times less optometrists than the minimum recommended levels for Sub-Saharan Africa.

Malawi has a Standard Treatment Guideline and an Essential List of Medicine; and there is the Central Medical Store that leads all negotiations and monitoring of procurement prices for eye medicines, medical products and technologies. However, as this assessment was based on the review of secondary data sources, no information was available on the availability of medicines or adherence to the Guideline at the facility level.

In conclusion, the evidence from this assessment suggests that although Malawi has made some progress towards elimination of avoidable blindness, Vision 2020 goals would be difficult to achieve without further significant investment in eye health. This investment however is likely to be dependent on the overall health expenditure, which is currently inadequate to provide basic services. Government allocations are particularly low and further work to assess government fiscal space and opportunities for increased budget allocations to health is necessary. However, given

that Malawi's GDP per capita is one of the lowest in the world, it would be unrealistic to expect a significant increase of resources from domestic sources in a short term. It is likely that in a short term the country will continue to be dependent on donor funding in both general health and eye health. It is therefore important that international donors that do support investments in eye health infrastructure consider funding mechanisms through which the delivery of eye health interventions can be sustained in the absence of significant increase of government allocations. It is also essential to ensure that the limited resources available for eye health are used in the most efficient way using the infrastructure and capacity available to its full potential, minimizing costs, where possible, and maximizing value for money.

Finally, it is also important to note that this assessment was limited to the review of the available data, which was scarce. More primary data is necessary for a more comprehensive assessment of the infrastructure, availability of medicines, productivity of eye health personnel and the scope and quality of services available throughout the country.

1. Introduction

This report presents results of the Malawi Eye Care Service Assessment (ECSA) conducted in October 2016 using the World Health Organisation (WHO) Eye Care Service Assessment Tool (ECSAT). The ECSAT is a standardized tool designed to utilise secondary data to perform a comprehensive assessment of eye care services at a country level. Specifically, the tool is used for the assessment of the strengths and weaknesses of an eye health system and the identification of priorities for investment and/or capacity building.

The tool is constructed around six health system 'building blocks' proposed by the WHO (2). As a rapid assessment, the ECSAT does not aim to collect primary data but rather reviews and analyses secondary data sources across various components of eye health. It is important to note that the ECSA was designed as an addendum to the Health System Assessment (HSA). No HSA has been conducted in Malawi.

This assessment was funded and technically guided by Sightsavers. To conduct the assessment, a brief meeting was held with the National Eye Coordinator (NEC) of Malawi to provide information on the purpose and scope of the review and utilization of data. As health system is a broad concept, several data sources and documents were selected for the review. These were identified based on the discussions with the Ministry of Health (MOH) and Sightsavers Malawi Country Office. Soft copies of the included documents were collected electronically. Where only hard copy documents were available, the sources were either scanned or analysed on site.

2. Country profile

Malawi is a landlocked country in Sub-Saharan Africa (see Figure 1). The Population and Housing Census conducted in 2008 estimated that the country had a population of 13 077 060 people with a median age of 17 years (3). The age and sex pyramid of Malawi is shown in Figure 2. More recent estimates from 2015 suggest that the population increased to 17 215 000 people (4). Approximately 85 percent of the population live in rural areas (4).

The WHO Health data indicate that in 2015 the country's life expectancy at birth was 57 years for males and 60 years for females (4). The under 5 mortality is estimated at 64 per 1000 live births (5).

In 2015 the Gross National Income (GNI) per capita was USD 350, up from USD 300 in 2010 (6).The GNI per capita adjusted for Purchasing Power Parity (PPP) is USD 1 140. About 51 percent of Malawians live below the poverty line.

Figure 1. Map of Malawi

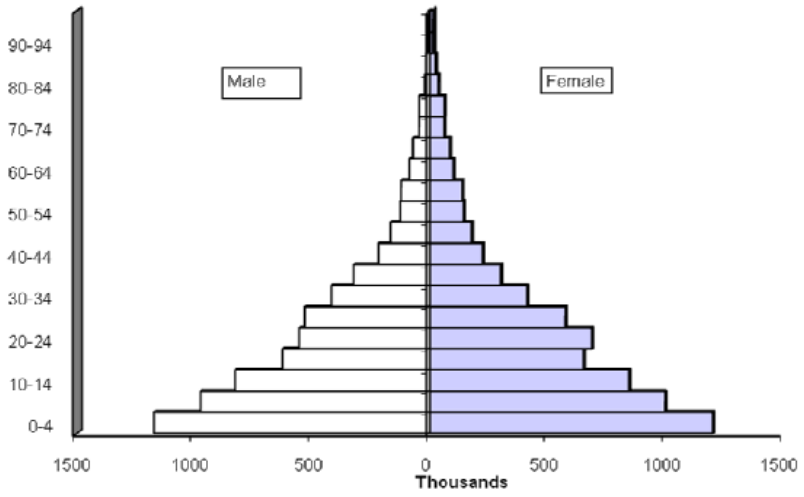

Figure 1: Age and Sex Pyramid of the Population of Malawi

Source: Malawi National Statistics Office, 2008

3. Malawi health system

The Minister of Health, appointed by the President, leads the Ministry of Health office. The office is responsible for the development and implementation of all government health policies and mobilizing resources required for the service delivery. The Minister also ensures that health policies are periodically reviewed to guarantee equitable and responsive health care provision. The Principal Secretary is the Chief Executive Officer of the Ministry appointed by the President. He/she is ultimately responsible for the management of all resources and programmes of the MOH. The MOH states that it is committed to the organization and management of the national health system in order to reduce inequalities and improve efficiency, effectiveness, quality and accountability at all levels.

Malawi is divided into five health administrative zones: Northern Zone, Central-west Zone, Central-east Zone, South-west Zone and South-east Zone. The MOH manages health service delivery through 13 administrative and technical directorates (see Box 1)

Box 1: Administrative and technical directorates of the Ministry of Health

(i) Directorate of Administration (ii) Directorate of Finance (iii) Directorate of Human Resources (iv) Directorate of Clinical Services (v) Directorate of Nursing & Midwifery Services (vi) Directorate of Preventive Health Services (vii) National Public Health Institute of Malawi (viii) Directorate of Health Technical Support Services (HTSS) (ix) Directorate of Planning & Policy Development (P&PD) (x) Directorate of Health Research (xi) Directorate of Reproductive Health (xii) Directorate of Safe Motherhood (xiii) Directorate of Nutrition

3.1. Public health care sector

The MOH is the major provider of health care responsible for 60 percent of services in the country. Similar to other countries in the region, Malawi uses a three-tier health care delivery and referral system, including primary, secondary and tertiary levels. Figure 3 shows the flow of patients in the referral system.

Primary Health Care (PHC) or community care is organized to meet the primary health needs of the population. This consists of community initiatives, heath posts, dispensaries, maternity units, health centres, community, and rural hospitals. Health Surveillance Assistants (HSAs) conduct community-based health education,

immunization, mosquito net distribution and basic treatments. Other health workers at health centres are medical assistants and nurses/midwives. At the primary health care level, patients receive treatment for minor illnesses and uncomplicated obstetric cases.

At the secondary level, service delivery includes specialized services such as surgical services, paediatrics, obstetrics and gynaecology. All complicated obstetric cases are managed at this level. District hospitals make up the secondary level. There is a district hospital in every district. Specialized supportive services, such as laboratories, diagnostics, blood banks, rehabilitation, and physiotherapy services are available at the secondary level.

Tertiary health care is delivered by central hospitals and other specialist hospitals providing care for specific diseases or groups of patients such as cancer patients. There are four central hospitals in Malawi located in Blantyre and Zomba (Southern region), Lilongwe (Central region) and Mzuzu (Northern region).

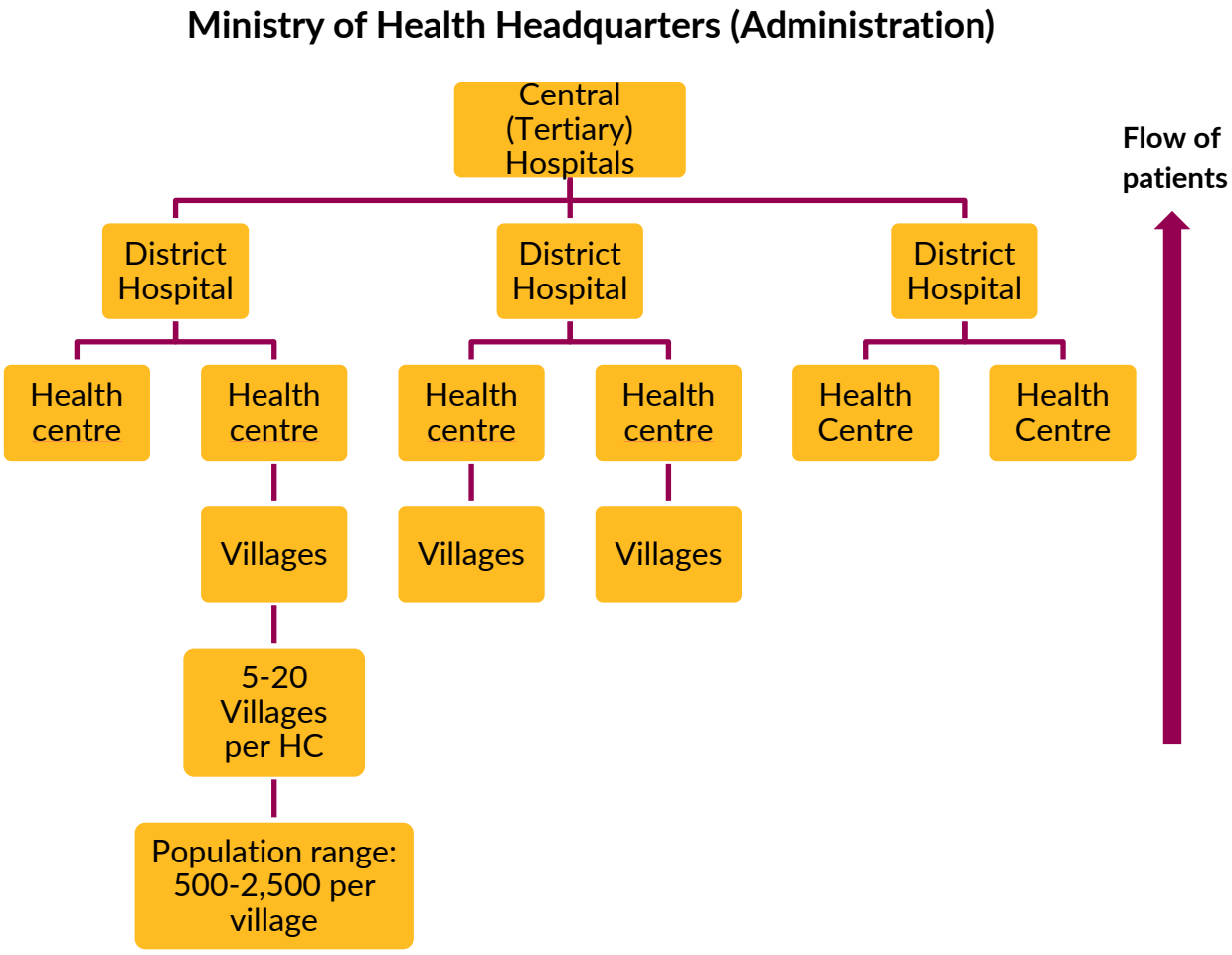

Figure 2: Diagrammatic representation of Malawi's three tiered service provision

3.2. Private health care sector

In addition to the public health system, Malawi has a private health system, which consists of the private not for-profit subsector, private for-profit subsector and professional associations. Health care in the private sector is mainly provided by not for profit providers such as the Christian Health Association of Malawi (CHAM). CHAM delivers services at the primary and secondary levels through its network of 172 health facilities, which are spread across the country, mostly in rural and hard to reach areas. CHAM facilities provide approximately 37 percent of health care in the country. There are also health facilities run by other non-governmental organisations (NGOs), such as Banja La Mtsogolo operated by Marie Stopes International, which runs 31 static clinics, 364 community outreach sites and hybrid facilities that provide mainly HIV services.

The private for-profit sector provides less than 3 percent of health care in Malawi. The sector consists of private hospitals, health centres and clinics, including company clinics as shown in Figure 4. Several private practitioner associations representing a range of health care professional cadres also exist in Malawi.

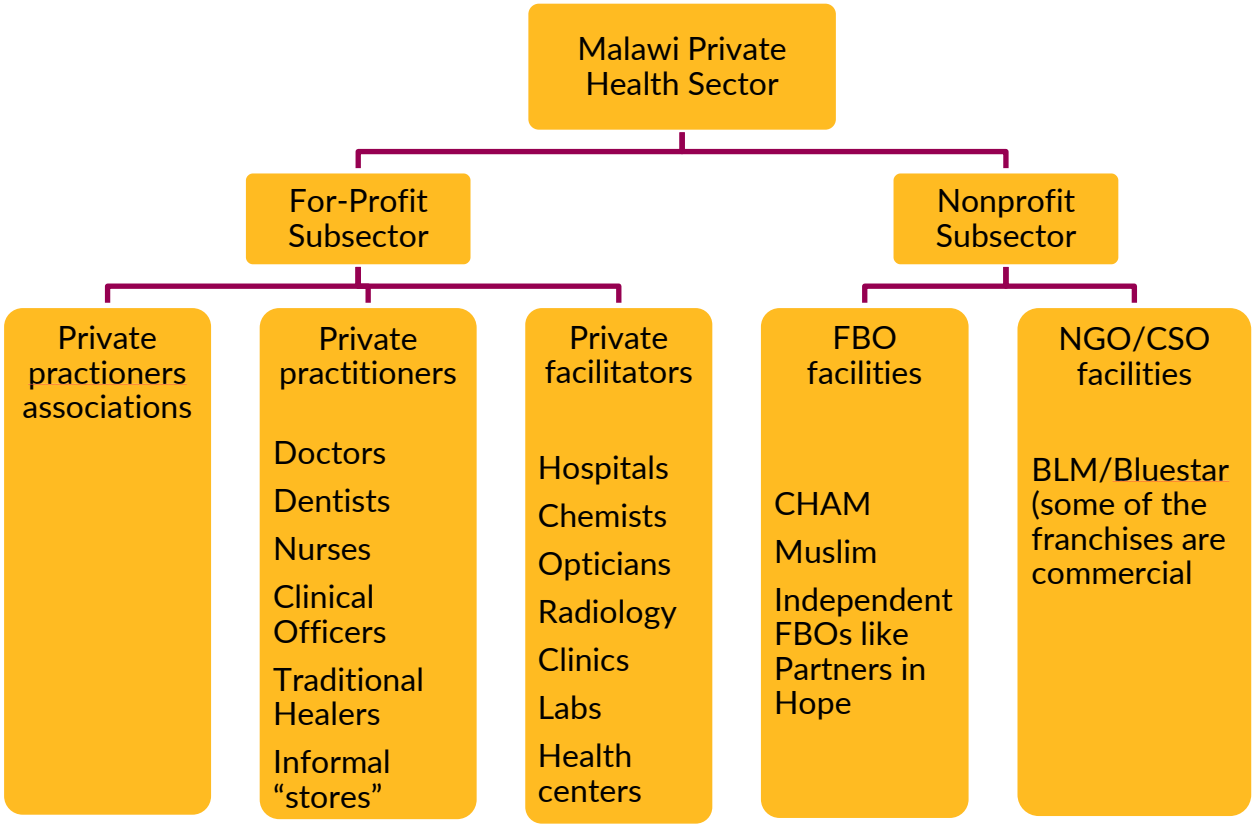

Figure 3: Malawi Private Health Sector

Source: SHOPS Project. 2012. Malawi Private Health Sector Assessment. Brief. Bethesda, MD: SHOPS Project, Abt Associates.

4. Eye health system in Malawi

4.1. Eye health status

Available data on visual impairment in Malawi is based primarily on the findings of the Rapid Assessment of Avoidable Blindness (RAAB) survey conducted in seven districts of Southern Malawi in 2010 (7). The study examined 3 430 participants aged 50 years and above and estimated the prevalence of blindness, severe visual impairment (VI) and moderate VI in this age group at 3.3 percent , 2.7 percent and 9.5 percent respectively. The main three causes of blindness were cataract (48.2 %), glaucoma (15.8%) and cornea scarring (12.3%). The estimated cataract surgical coverage was 44.6 percent (7).

There are also smaller studies focusing specifically on children with VI, including a survey of 95 students in three integrated schools (8) and another study of 151 children with VI in rural Malawi. In the later study the leading causes of childhood blindness were congenital cataract (35%) and corneal diseases (22%) (9).

Epidemiological data from Malawi is comparable to other studies in Sub-Saharan Africa (WHO, 2016b; (10), including the neighbouring countries, for example Zambia (11) and Tanzania (12). However, the available studies do not provide nationally representative estimates of magnitude and causes of visual impairment and according to the National Eye Coordinator, there are no known plans to collect more prevalence data in the country.

4.2. Eye health governance and leadership

The eye health system in Malawi is embedded within the broader health system and is under the oversight of the Directorate of Clinical Services (DCS) at MOH.

The Malawi National Prevention of Blindness Committee (MNPBC) leads eye care planning. The MNPBC advises the MOH on issues pertaining to the practice of ophthalmology and is under the leadership of the Director of Clinical Services. Specifically, the committee plays an advisory role to the Government and acts as a channel of communication by advocating best practices in the prevention of avoidable blindness. The members of the committee include representatives from various public and private entities involved in eye health (see Appendix 2). However, the MNPBC appears not to have resource allocation to carry out its mandate. For example, committee meetings are contingent upon external sponsorship. Critically, it is also important to highlight that there is no lay or non-health sector representation on this committee.

Evidently, the Government of Malawi (GOM) has put in place governance mechanisms to guide the eye health sector. The Malawi eye health system has appropriate policies and strategies for system governance. Eye health is included in the Malawi Health Sector Strategic Plan (HSSP), and in the Essential Health Package (EHP). The country has a National Vision 2020 Eye Care Action Plan (NECP), which outlines strategic priorities for eye health and guides eye care service provision in the country. The most recent plan for 2011-2016 outlines seven priority goals (see Box 2) and is in line with the recommendations of the 66th World Health Assembly and universal eye health strategies (13).

The National Eye Coordinator (NEC) is responsible for the implementation of eye health policies through eye health programmes. The NEC also has the mandate of coordinating all the partners involved in eye health with the aim of avoiding duplication and ensuring that operations conform to the priorities laid out in the NECP. The scope of stewardship function in eye health is greatest at the national level. However, this function is thought to be inadequate as the office of the NEC lacks the necessary political influence. In addition, as this assessment was based on secondary data it was unable to establish whether the eye health strategies and policies are being effectively implemented and reinforced throughout the country.

Box 2: National Eye Care Action Plan (2011-2016) goals

(i) to increase number of human resource for eye care at all levels of the health delivery system

(ii) to improve infrastructure, equipment and information technology for provision of eye care services,

(iii) to improve supply of eye care drugs, diagnostics and supplies to all hospitals,

(iv) to reduce the burden of preventable and curable causes of blindness

(v) to improve quality of eye care services

(vi) to promote implementation of evidence based eye care practice

(vii) to develop systems for effective management and supervision of interventions carried out by the stakeholders in a coordinated approach.

4.3. Eye health financing

The WHO defines health financing as the “function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system.” It states that the “purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care” (WHO 2000).

Eye health financing in Malawi relies on both internal and external sources. The two main internal sources are the GOM and households. The GOM health budget is allocated to the MOH, who then allocates funds to the Directorate of Clinical Services and other directorates as a lump sum. There are no specific allocations to eye health in the health budget. Instead, at the directorate level, funds are allocated to various programme, including eye health, malaria, HIV/AIDS and others. This assessment was unable to establish definitive criteria used for allocation of resources between the programmes.

In the absence of detailed eye health financing data, this assessment used information on general health expenditure in Malawi, which suggests that in 2011/12 Malawi’s total health expenditure (THE) was MWK127.3 billion (USD624.8 million) or 9 percent of the country’s gross domestic product (GDP). Between 2009 and 2012 THE increased by 67.9 percent and 20.1 percent in Malawi kwacha and dollar terms respectively. (1) However, whether this increased expenditure resulted in increased allocation of resources to eye health remains unknown.

In per capita terms, in 2009-2012 Malawi spent on health an average of USD37.8 per capita per annum, which is well below the WHO recommended spending of USD54 per capita per annum to support a basic package of cost-effective interventions in low-income countries (1) It is also well below the average per capita spending on health in other countries of the Southern Africa Development Community (SADC), which in 2012 was around USD147 per annum (1).

The average government spending on health in 2009-2012 was USD7.6 per capita per annum; this is less than the amount needed to deliver the Malawi Essential Health Care Package free of charge, which is estimated at USD44.4 per capita per annum in the SADC Region (1)

At the source level, international donors are the major source of funding of the Malawi health system contributing on average 65.4 percent of THE in 2009-2012 (1).The share of THE borne by the Government in the same period was on average 20.5 percent. Government health expenditure as a percentage of total government expenditure represents around 6.5 percent (excluding donor pool funding) (1), which is below the Abuja Declaration target of 15 (14).

Similar to most Sub-Saharan African countries, external sources play a significant role in financing the Malawi eye health system (15). International NGOs are the key players in eye health. These include Sightsavers, Brian Holden Vision Institute (BHVI), Lions Aid Norway, CBM, the International Centre for Eye Education and others. Whereas the total financial contribution of these partners is difficult to elucidate, the estimates from the NEC suggest that the Government finances about 15 percent of eye care, while the external sources finance 85 percent of eye care.

Although Malawi has a free public health system, households pay significant resources for health care and contribute around 10.4 percent of THE (1). Malawi does not have a national health insurance scheme (NHIS) which has implications for financial risk and health inequalities. Eye care services in MOH facilities are free at the point of use. Patients with refractive error, for example, receive eye examination and refraction free of charge but are expected to purchase spectacles at a cost ranging from USD 15 to USD100. The NEC noted that there are plans to introduce user fees in eye health in MOH facilities but there are concerns about catastrophic health expenditures, as a large proportion of Malawians live below the poverty line. Not for profit facilities provide eye care services at a subsidised cost, while for profit providers have a varying pricing structure usually determined according to the patient's ability to pay. No further information on the fees charged by for profit and faith based hospitals was available at the time of this assessment.

For geographical allocations, Malawi uses a resource allocation formula based on population, number of facilities and existing resources rather that disease burden or poverty data (16). The National Health Accounts (NHA) study conducted in Malawi in 2013 found that per capita expenditure by region was consistently higher in the north, the area with better socioeconomic indicators than the rest of the country (1).

There was no data on the distribution of funds allocated to eye health within the system. The estimates provided by the NEC suggest that the majority of funds allocated to eye health (60-70%) support staff costs, 10 percent go to training and 15 percent support service delivery.

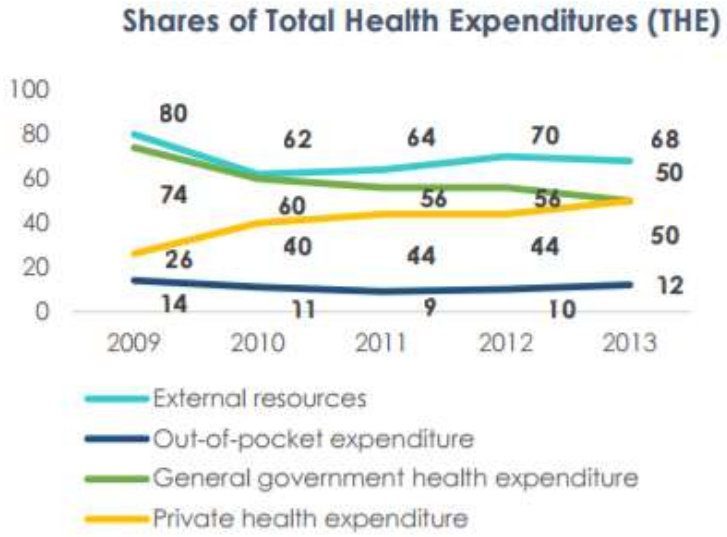

Figure 4: Share of total health expenditure in Malawi (2009-2012)

Source: WHO, 2015

4.4. Eye health service delivery

4.4.1. Eye health infrastructure

The health delivery system in Malawi includes primarily government facilities and not for profit providers such as CHAM – this also applies to eye care. The NEC supervises, monitors and evaluates eye services provided by the Government, CHAM and private facilities.

All four government central hospitals[1] have dedicated eye departments with eye wards and theatres. District hospitals have space for outpatient clinics. CHAM runs one hospital with a dedicated eye department, Nkhoma Hospital.

Specialist eye services are mainly provided through six hospitals: four tertiary (central hospitals) located in Blantyre and Zomba (Southern region), Lilongwe (Central region) & Mzuzu (Northern region) and two faith based mission hospitals in Lilongwe (Nkhoma) and Nsanje (Muona). This assessment was unable to analyse the status of the infrastructure in these facilities as no documented evidence was available at the MOH level .

A significant proportion of secondary eye care is provided through community outreach camps. These camps are reliant almost exclusively on external sources. For

[1] Central hospitals: Kamuzu Central Hospital, Queen Elizabeth Central Hospitals, Mzuzu, and Zomba

example, the National Trachoma Control Programme[2] (NTCP) within MOH performs trachoma surgeries in selected districts through outreach camps. The NTCP involves a consortium of partners, such as Sightsavers, Blantyre Institute of Community Outreach (BICO), AMREF Health Africa, Water Aid and CBM. In addition, various eye health partners run community outreach programmes, which focus on eye health. The NEC estimated that about 70 percent of secondary eye care is provided by the Government, 20 percent by CHAM and 10 percent by other private sector providers. However, the percentage of eye services provided through outreach camps was unknown.

The NEC also estimated that about 80 percent of Primary Eye Care (PEC) is provided by the Government, 15 percent by CHAM and 5 percent by other private providers but there were no details of the type of services provided at this level. There was a reference to preventive eye health, which is under the Directorate of Preventive Health Services (DPHS). It was noted that preventive eye health was yet to be integrated in the existing PHC programmes, such as the expanded programme for immunisation and the national school health screening. There is also an MOH policy on screening and care for babies at risk of retinopathy of prematurity but the public health sector lacks the capacity to implement it. Patients with diabetes are required to present for an eye check-up twice a year. However, there is little awareness of and low demand for this service.

Blindness prevention programmes also work with over a million people with visual impairments and their families (17). Low vision and rehabilitation services are coordinated by the Ministry of Disability. Children with VIs and those who are blind attend either integrated schools or schools for the blind. The extent to which the MOH and the Ministry of Disability collaborate to deliver services to people with VI was unclear. There was a reference to the referral system between different levels of care but no information on the effectiveness or uptake of referrals was found in this assessment.

According to the Federation of Disability Organizations in Malawi (FEDOMA), an umbrella organisation of Disabled People's Organisations (DPOs), there are two registered organizations that represent and advocate for the rights of individuals with VIs. These are the Visual Hearing Membership Association (VIHEMA) and the Malawi Union for the Blind (MUB). The MUB is a member of the MNPBC and ensures that individuals with VIs have an opportunity to participate in eye health planning.

[2] The National Trachoma Control Programme is a MOH led programme that is part of The Queen Elizabeth Diamond Jubilee Trust Trachoma Initiative, which aims to eliminate blinding trachoma. Key partners are Sightsavers, BICO, CBM, AMREF, Water aid and John Hopkins University (JHU).

4.4.2. Provision of services

Health service delivery in Malawi is implemented through the Essential Health Package, which integrates various health programmes into a single package. The EHP was developed in 2002 to account for local burden of disease and mortality and to guide both planning and funding of health care services. The EHP has 13 priority areas: eye, ear and skin conditions are included in one priority area. A recent facility based study conducted in three districts in Malawi found that the knowledge of the EHP among facility managers was limited. Only 33 percent of the managers knew about the EHP and only 44 percent could explain what EHP meant in simple terms (18). The shortage of vital drugs was a major constraint for the implementation of the EHP. For example, cotrimoxazole was sufficiently available in only 27 percent of the health centres surveyed. The study did not collect any data relevant to eye health; and there was no other information to assess comprehensiveness, accessibility, coverage, continuity or quality of eye care services provided across the country.

Cataract surgery data available to the NEC suggests that in the year preceding this assessment Government facilities conducted 1803 cataract surgeries (712 among males and 1091 among females) – the number of surgeries conducted by faith based and other private providers was not known. An earlier study funded by Sightsavers in 2013 estimated that the National Cataract Surgical Rate (CSR) in 2011 was 533 per million population, which is lower than the IAPB recommended level for SSA of 2000 per million per year.

Priority for cataract surgery is given to patients with cataracts and visual acuity (VA) < 3/60. The typical waiting time for cataract surgery was estimated to range from one to two weeks. However often surgeries are dependent on the availability of intraocular lenses (IOLs) in the facility. An unreliable supply chain of IOLs was reported to affect timely provision of services.

Due to the high cost of patient follow up, the system of monitoring cataract surgical quality remains weak. A pragmatic approach adopted by the facilities is to keep patients for up to three days in the hospital and use the postoperative VA as a proxy measure of quality. However, no systematically reported data on post-operative VA was available at the MOH level at the time of this assessment.

The waiting time for refractive error services reportedly varies but there were no other information available on the uptake or quality of refractive error services in this assessment.

Some available documents stressed a need to improve multi-sectoral cooperation in eye health. For example, a report by BICO (19) notes that there are several partners working in the Water, Sanitation and Hygiene (WASH) sector in all districts in Malawi. However, these partners do not necessarily address the relationship between WASH

and trachoma. There exists an opportunity to engage these partners to add messages on facial cleanliness and environmental hygiene in their programmes.

4.5. Eye care medicines and products

Malawi has a Standard Treatment Guideline and an Essential List of Medicine (20). The guideline has standards for ophthalmic conditions including essential medicines for managing conjunctivitis, keratitis, glaucoma, orbital cellulitis, chemical injury, immune-mediated uveitis, endophthalmitis and cytomegalovirus retinitis. The previous edition of the Guideline (2009) covered conjunctivitis, foreign body in the eye and Ophthalmia Neonatorum only.

According to the NEC, the list of essential medicines for eye health is known to eye care providers and pharmacies, and the medicines are available at all times. However, there was no facility level assessment in this study to explore the availability of medicines or adherence to the Guideline any further.

The Central Medical Store[3] leads all negotiations and monitoring of procurement prices for eye medicines, medical products and technologies. According to the NEC, the national clinical guideline is updated as needed, when new diseases emerge or new medical treatments become available. To update the guideline the NEC collaborates with a panel of ophthalmic experts from the Malawi College of Medicine and private practitioners. The review panel is expected to act in the best interests of patients and to ensure access to medicines that are safe and based on the latest scientific evidence (21). However, given the paucity of eye health data available at the MOH level, it was not clear what the review process involved or to what extent it was evidence-based.

Malawi does not have domestic manufacturers of eye medicines, medical products or technologies. All medicinal products for human or veterinary use available in the country in the public or private sectors, whether procured or donated, must be duly registered and licensed within the Pharmacy, Medicines and Poisons Board (PMPB) prior to any form of handling, which may include manufacturing, assembly, importation, exportation, sale and supply. Application for registration and licensing must be submitted, together with the application fee and product licence fee, to the registrar of the Board by a registered pharmacist. The cost of the licence fee was not known. It was suggested that the fees could be high for donors and charitable organisations but there are waivers made on a case-by-case basis. For example,

[3] Central Medical Stores Trust exists by Government's General Notice Number 125/1968 of the Finance and Audit Act to operate as a commercially oriented Treasury Fund with the purpose of purchasing, storage and distribution of medicines and medical supplies for the public health facilities. http://www.cmst.mw/

there was a waiver on import duty and custom clearance, handling and storage charges for drugs donated to the National Trachoma Programme. Generally, the registration process takes around two weeks to complete from the time the drugs arrive in the country.

4.6. Human resources for eye health

Human resource is one of the three key pillars of the Vision 2020. There appears to be no national human resource information system in Malawi and the data presented here was compiled from the national deployment records by the NEC.

4.6.1 Availability of eye health cadres

According to the data included in the newly drafted (unpublished) National Eye Care plan (2017-2022), as of July 2016, Malawi has nine ophthalmologists registered with the Medical Council of Malawi. One works full time in a private practice, two work in CHAM, two are with the College of Medicine and the remaining four are in the government facilities. Out of the nine ophthalmologists, there are two paediatric ophthalmologists, two oculoplastic surgeons, two vitreoretinal specialists (one surgical and one medical retina), and a public health specialist. The HRH study conducted in Malawi in 2013 showed that in 2011 there were also 9 cataract surgeons working in the country; the combined number of ophthalmologists and cataract surgeons results in the ratio of 1.1 surgeon per million population, which is well below the IAPB recommended level for Africa of 4 surgeons per million (22).

There are 54 OCOs, five ophthalmic technicians based in each of the five health zones of Malawi and twelve ophthalmic nurses (ON) (four in the public sector and eight in the CHAM supported Nkhoma Eye Hospital). This results in the ratio of 4.1 OCO/ON per million population, which is also below the recommended levels of 10 per million(22). There are also 24 optometrists in nine facilities and 15 optometry technicians in 8 facilities across the country, resulting in the raito of 2.3 optometrists/refractionists per million population against the recommended levels of 20 per million(22).

Although the low number of eye care workers is typical for many Sub-Saharan African countries, the HReH situation in Malawi appears to be worse than in other neighbouring countries, such as Tanzania, Zambia and Zimbabwe (22). With the projected population growth to about 21 million by the year 2022, Malawi will need 84 ophthalmologists/surgeons, 210 OCOs/ONs and 420 optometrists/refractionists to meet the minimum recommended ratios. Based on the trends in 2011-2016 the country is unlikey to reach this target without a significant investment in training and infrastructure.

With regards to primary care workers , there are 10 500 Disease Control Assistants (DCAs) in Malawi; 3000 of them have been trained in primary eye care. There are also 60 community based rehabilitation workers, and two cataract case finders. It was suggested that primary eye care includes eye health education, symptom recognition, visual acuity measurement, basic eye examination, diagnosis and timely referral. However, it was not clear whether health workers available at the primary care level had been sufficiently trained to adequately provide eye health services at this level. It was also unclear whether there is a system of supervision and coordination to support their work in eye care.

4.6.2. Distribution of eye health workers

The majority of eye health workers are in the public sector. Table 1 shows distribution of cadres by sector and location. Unequal geograpical distribution of eye health workers has implications for the equity of access of eye care services. For example, whereas approximately 85 percent of Malawians reside in rural areas, almost the entire eye health workforce is based in urban areas.

Table 1: Distribution of eye care workers by sector and geographical location

	Sector						Geographical location			
Cadre	Public		Private		NGOs		Urban		Rural	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Ophthalmologist	5	0	1	0	1	1	7	1	0	0
Ophthalmic Clinical Officer (OCOs)	31	16	1	0	4	2	59	16	1	0
Optometrist	18	2	4	0	3	0	22	1	0	0

Note: District hospitals classified as urban

Table 2 shows the number of eye health workers in Government facilities. Only five Government facilities deploy ophthalmologists and 14 facilities deploy cataract surgeons; 32 facilities have OCOs, 4 deploy nurses and 2 have ophthalmic medical assistants. A further deterrent to equitable access is the distribution of eye health workers across various levels of care, as all ophthalmologists and 80 percent of optometrists work in tertiary hospitals accessible to a small proportion of patients.

Table 2: Total Number of Eye Care Workers in Government Facilities

	Number of facilities with respective cadres								
CADRE	None	1	2	3	4	5	6	7	8
Ophthalmologist	31	3	1	1	0	0	0	0	0
Cataract surgeon	21	12	1	1	0	0	0	0	0
Ophthalmic clinical officer	3	17	10	3	2	0	0	0	0
Ophthalmic medical assistant	33	1	0	1	0	0	0	0	0
Optometrist	26	5	1	0	1	1	1	0	0
Optometry technician	27	5	1	0	2	0	0	0	0
Ophthalmic nurse	31	2	1	0	0	0	0	0	1
Maintenance technician	30	5	0	0	0	0	0	0	0
Retired ophthalmic staff	31	2	1	1	0	0	0	0	0

4.6.3 Training

Malawi has three accredited institutions that train various cadres of eye care workers: Malawi College of Medicine, Malawi College of Health Sciences and Mzuzu University. These institutions use government-endorsed curricula. Ophthalmologists are trained in a four-year postgraduate programme within the Faculty of Ophthalmology at the College of Medicine. With two lecturers, the institution has the capacity to train four ophthalmologists annually. However it requires funding to be able to meet this quota.

The Malawi College of Health Sciences (MCHS) is responsible for training mid-level eye care workers, that is cataract surgeons, ophthalmic clinical officers and optometry technicians. The training course of OCOs admits medical assistants and clinical officers to a Diploma or Advanced Diploma in Clinical Ophthalmology respectively. Optometry technicians train for 3 years and receive an Optometry Technician Diploma. In addition, MCHS has a 12-18 months Cataract Surgeon Training Course for OCOs.

Optometrists are trained at Mzuzu University. A number of international partners, including BHVI, Optometry Giving Sight and Sightsavers, worked with the MOH, Mzuzu University and Malawi College of Health Sciences (MCHS) to establish an optometry school. To date 18 optometric technicians and 14 optometrists have graduated under the programme.

All three training institutions are represented in the MNPBC, which ensures their participation in the national eye care planning. Although in the last ten years there was an increase in the number of OCOs, optometrists and optometry technicians trained (see Table 3), limited financial resources and infrastructure continue to undermine both the HReH training and deployment.

Table 3 : Change in eye care worker numbers in 2010 and 2016

Cadre	2010	2016
Ophthalmologist	7	7
OCOs	46	76
Ophthalmic Nurses	0	0
Cataract Surgeons	4	4
Optometrists	4	24
Optometry Technician	0	18
Maintenance Technician	2	2

Source: NECP 2011-2016 and Draft NECP 2017-2022

The National Eye Care Action Plan (2017-2022) outlines strategies for more effetcive deployment of eye health workers. In addition, there is a need to put in place capacity building schemes to attract more general nurses and doctors to ophthalmology.

4.7. Eye Health Information Management System

Malawi has a national health information management system (HMISI).According to the current HMIS Policy (2015) (23), the Central Monitoring and Evaluation Division (CMED) of the MOH is required to regularly publish a national comprehensive health statistics report on the MOH web site to ensure access to health information by individual researchers, research institutions and the public. However, at the time of this assessment, no recent health statistics report was available.

Overall, the lack of eye health data was a significant challenge in this assessment. For example, there is no published or unpublished annual report that gives an overview of different projects and activities implemented under the Vision 2020 Eye Care Action Plan and it is difficult to identify gaps and opportunities for system strengthening.

According to the CMED, data collection for the National HMIS (NHIMS) is department led. That is, each department within the Directorate of Clinical Services requests the CMED to include their indicators in the NHMIS. One eye health indicator routinely updated in the NHMIS is the number of eye care units but the NHMIS should include indicators and procedures for collecting data on trachoma, cataracts, glaucoma, refractive error, allergic conjunctivitis and other eye infections presented in primary care facilities.

Eye health data is collated at the regional and national levels, however this is often challenging. At the lower levels, data collection is manual and there are many data entry errors. When reported, eye health data is disaggregated by district and region and by eye care provider. For planning purposes, it is advised to further disaggregate data by age and sex and other patient characteristics, e.g. disability. However, according to the estimates made by an informant from the CMED, only 40 percent of the eye heath data available in the NHMIS can be considered reliable.

Population-based data are limited. The most recent Malawi Demographic Health Survey (MDHS) (2015-2016) collected data on maternal and child health, malaria and HIV/AIDS but not on eye health or disability. The 2008 National Census did not include any questions on visual impairment or other disabilities. Another periodic report, the Infectious Disease Surveillance Response report does not include any data on blinding conditions.

5. Conclusions

Malawi has made some progress towards achieving VISION 2020 goals. The Government has put in place important governance mechanisms to guide the eye health sector development and its integration within the broader health system. Eye health is included in the Malawi Health Sector Strategic Plan and in the Essential Health Package. The country has a National Vision 2020 Eye Care Action Plan (NECP), which is in line with the global strategies for universal eye health coverage. Eye care planning is led by the National Prevention of Blindness Committee, which includes representatives from various public and private entities, including Disability People's Organisations. There is also a national eye health coordination office. However, the Committee does not appear to have resource allocation to carry out its mandate and the eye health coordination office appears unable to mobilise political influence necessary for eye health advocacy.

Population-based data on magnitude and causes of visual impairment is available for selected districts only, which is broadly in line with the situation in most other Sub-Saharan African countries. There is a system for collecting data through the routine HMIS but the number of eye health indicators reported is limited and a large proportion of data is thought to be unreliable. There is no systematically collected data on activities implemented under the Vision 2020 Action plan or the quality of services provided.

The health delivery system includes primarily government facilities and non for profit providers with less than 3 percent of the general health care delivered by private for profit entities. Specialist eye services are provided by six government hospitals and two faith based hospitals. A significant proportion of secondary eye care is provided through community outreach camps, and there is a network of primary and community based providers, some of whom have been trained in eye care. Data on the number of cataract surgeries is available mainly from the government providers but the National CSR is thought to be no more than a quarter of the recommended levels for Africa. The system of monitoring quality of cataract surgery remains weak due to high costs of patient follow up.

Health service delivery in Malawi is implemented through the Essential Health Package, which includes 13 priority areas. Eye, ear and skin conditions are included in one priority area.

There is limited information on eye health financing. Information on general health financing shows that the total health expenditure in Malawi is very low and is well below the WHO recommended levels. The government spending on health is particularly low with less than a fifth of the minimum costs required to deliver the Essential Health Care Package free of charge. As a result international donors

remain the major source of funding of the Malawi health system contributing around two thirds of the total health expenditure. The share of external funding in eye health is estimated to be even higher, at approximately 85 percent.

Malawi has a Standard Treatment Guideline and an Essential List of Medicine. However, as this assessment was based on the review of secondary data sources, little is known about the availability of medicines or adherence to the Guideline at the facility level.

Malawi has three accredited institutions that train various cadres of eye care workers and there was an increase in the number of mid-level personnel trained in the past decade. However limited financial resources and inadequate infrastructure undermine efforts in both the training and deployment of eye health personnel. There is a critical shortage of all types of eye health cadres with 4 times less surgeons, 2.5 times less ophthalmic clinical officers/nurses and nearly 10 times less optometrists than the minimum recommended levels for Sub-Saharan Africa.

In conclusion, the evidence from this assessment suggests that although Malawi has made some progress towards elimination of avoidable blindness, Vision 2020 goals would be difficult to achieve without further significant investment in eye health. This investment however is likely to be dependent on the overall health expenditure, which is currently inadequate to provide basic services. Government allocations are particularly low and further work to assess government fiscal space and opportunities for increased budget allocations to health is necessary. However, given that Malawi's GDP per capita is one of the lowest in the world, it would be unrealistic to expect a significant increase of resources from domestic sources in a short term. It is likely that in a short term the country will continue to be dependent on donor funding in both general health and eye health. It is therefore important that international donors that do support investments in eye health infrastructure consider funding mechanisms through which the delivery of eye health interventions can be sustained in the absence of significant increase of government allocations. It is also essential to ensure that the limited resources available for eye health are used in the most efficient way using the infrastructure and capacity available to its full potential, minimizing costs, where possible, and maximizing value for money.

Finally, it is also important to note that this assessment was limited to the review of the available data, which was scarce. More primary data is necessary for a more comprehensive assessment of the infrastructure, availability of medicines, productivity of eye health personnel and the scope and quality of services available throughout the country.

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Appendix

Appendix 1: Members of the MNPBC

Director of Clinical Services - Chairperson
WHO Representative
Heads, Eye Departments of Blantyre, Lilongwe, Zomba, Mzuzu and Nkhoma Hospitals
Director, Malawi College of Health Sciences
Executive Director, CHAM
Executive Director, MACOHA
Country Coordinator, CBM
Representative, Malawi College of Medicine
Country Officer, International Centre for Eye Education
Country Director, Sightsavers
Country Director, Lions Aid Norway
Representative, Malawi Union of the Blind
Head of Ophthalmic Training, Malawi College of Health Sciences
Representative (2) of Mid-Level Personnel - Clinical and Nursing
Representative, Ministry of Education
The Programme Manager, NTD

Sightsavers