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## IAPB Policy Paper

**ADDRESSING THE EYE HEALTH WORKFORCE  
CRISIS IN SUB-SAHARAN AFRICA: BUSINESS AS  
USUAL IS NOT AN OPTION\***



International Agency for the  
Prevention of Blindness



### Summary

With some country exceptions, Sub-Saharan Africa is characterised by a lack of eye health and vision personnel and this is a significant contributing factor to the high prevalence of avoidable vision impairment and blindness. With aging populations more disposed to sight loss and with risks such as diabetes increasing, levels of avoidable blindness in the region are likely to rise. Strategic approaches to addressing the eye health workforce crisis are now urgent and essential.

This policy paper reflects the findings of the recent 'Mapping Human Resources for Eye Health' study that was conducted by International Centre for Eye Health (ICEH) and African Vision Research Institute (AVRI) in 21 countries in Sub-Saharan Africa from 2011-2013. The study assessed the number, distribution and retention of eye health personnel with the objective of helping to reduce the significant data gap on human resources to better inform policy solutions (1). According to the study, overall in the region, there is a catastrophic shortage of professionals qualified to deliver optometry services, insufficient eye health personnel in rural areas and extremely low cataract surgical rates. Projected rates of personnel and Cataract Surgical Rates (CSR) are not expected to keep up with increasing eye health needs. The study suggests that without significant investment and appropriate action, a large number of people will continue to unnecessarily experience avoidable and disabling vision impairment and blindness in Sub-Saharan Africa.

The present policy paper concludes that greater investment in eye health is essential with eye health workforce provision integrated into human resources for health strategies and stronger and more equitable health systems. It calls for the establishment and implementation of appropriate training and retention strategies, including task-shifting. One key finding is that cataract surgeons are providing a useful means to reduce personnel deficits and increase overall outputs. It also concludes that there needs to be greater attention to the collection of national and sub-national data to provide evidence-based policy-making to respond to need in specific contexts.

**\* African Vision Research Institute, International Agency for the Prevention of Blindness  
International Centre for Eye Health with financial support from Sightsavers.**

## Background

In Sub-Saharan Africa, the most recent estimate of the burden of visual impairment in 48 countries, calculated in 2010, indicates that 21.4 million people are visually impaired, including 4.8 million people who are blind **(2)**. Despite the existence of cost-effective solutions, such as cataract removal and the provision of eye glasses, an extremely high proportion, estimated at 2/3 of these cases of vision impairment, could have been prevented or treated.

Demands to address policy issues for eye health have gained increased traction since the adoption in May 2013 of WHA66.4, Universal Eye Health: A Global Action Plan 2014-2019 (GAP) **(3)**. The vision of the Global Action Plan (GAP) is of a world in which nobody is needlessly visually impaired, where those with unavoidable visual loss can achieve their full potential and where there is universal access to comprehensive eye care services. Eye health human resources are central to the GAP, given that adequate numbers of personnel are crucial to positive eye health outcomes. Significant progress has been made globally and in Africa since the establishment of the WHO/IAPB VISION 2020 Global Initiative in 1999 **(4)** aimed towards eliminating avoidable blindness, which this Action Plan builds on, so that the age-standardised prevalence rate of blindness has reduced. This is the case globally and in Africa. But there is a long way to go to eliminate avoidable vision impairment and blindness. New eye health challenges such as diabetes and an ageing population mean the needs are expected to be greater.

The potential benefits to the people whose sight is saved are considerable, including to their well-being, educational and employment opportunities, while the economic gains for governments in tackling eye health conditions sooner rather than later are significant. According to research by PriceWaterhouseCoopers for The Fred Hollows Foundation in 2013 **(5)** the cost benefits of eliminating avoidable blindness and visual impairment in developing countries average at a saving of 4:1.

In Africa there are major data gaps in eye health on prevalence of conditions, personnel, access to services, and availability of rehabilitation and assistive devices. This policy paper is based on research conducted by the London School of Hygiene and Tropical Medicine's International Centre for Eye Health (ICEH) and the African Vision Research Institute, funded by Sightsavers, on the eye health workforce and cataract surgical rates, to help respond to this data gap. For the study, data was collected from national eye care coordinators and combined with population data to calculate practitioner-to-population ratios and Cataract Surgical Rates (CSR) against Vision 2020 sector targets. It included multi-country analysis and was intended to be read alongside analyses of performance in individual countries **(6)**.

The VISION 2020 strategy established standardised global targets for eye health personnel practioner to population ratios and cataract surgical rates, developed by a group of eye health experts within the context of this important initiative. Given varying epidemiological and demographic contexts and productivity rates, ideally targets should be set at a national level to ensure they are based on need. However until national targets are developed VISION 2020 targets should be considered the default position.

## **1. Findings of the study**

### **1.1 Cataract surgical rates are far below targets**

Cataract is a major cause of avoidable visual impairment that can relatively easily be treated, even in resource poor settings thanks to advances in technologies and reduced costs. Further, cataract surgical rates are often used as a proxy indicator of the capacity of an eye health system. Yet, the regional CSR amongst countries sampled and based on pooled populations was only 515 overall - a quarter of the VISION 2020 target for Africa of 2,000 surgeries per million population. The DRC had the lowest CSR in 2011, recorded at 163 surgeries while only two countries have met or nearly met CSR targets: The Gambia (1,993 surgeries) and Sudan (2,210 surgeries).

The regional ratio of surgeries performed per surgeon in 2011 was 180 surgeries ranging from a minimum of 85 in Togo to a maximum of 483 in Malawi. The differences per surgeon may be explained by output inefficiencies, lack of equipment, poor referall systems, maldistribution of personel, lack of awareness of need for treatment amongst those affected, or lack of access due to the cost of care for the patient. Based on current trends, ***it is expected that very few countries will reach the CSR target of 2000 by 2020 or even after***, without extensive strategy change and investment in personnel.

### **1.2 Not enough eye health personnel**

Included in the overall grave shortage of health workers across the region are the human resources needed for eye health, in both the public and private sectors and including ophthalmologists, optometrists, ophthalmic clinical officers, ophthalmic nurses, optometric technicians, orthoptists and primary health care workers. According to the ICEH/AVRI study, there is insufficient personel regionally and the projected number of practitioners to population expected in 2020 (based on data from 16 of the 21 countries included in the study) will be insufficient to tackle the prevalence of avoidable vision impairment and blindness.

The research found that, regionally, there are 2.3 ophthalmolgists per million population, although when considered together with cataract surgeons, this figure increases to 2.9 per million, compared to the VISION 2020 target of 4 surgeons per million people. Another recent study, from 2012 **(7)**

estimated that there were 2.7 ophthalmologists per million people in sub-saharan Africa, compared to Latin America and the former socialist and established market economies where numbers were respectively estimated to be 20 and 30 times higher than in sub-Sahara Africa **(8)**.

According to the ICEH/AVRI study, a small number of countries are doing well in terms of reaching VISION 2020 eye health workforce targets but they remain the exception to the rule (5 countries for ophthalmologists/cataract surgeons, and 4 countries for ophthalmic nurses/clinical officers). All countries were below target for optometrists, even when other cadres who perform refractions as a primary duty were considered. Generally, the Francophone countries in Africa face greater challenges with the availability of human resources for eye health. Based on projections from a 16-country sample, there is expected to be a slight increase in ratios for surgeons from 3.1 to 3.4 per million population and ophthalmic nurses/ clinical officers from 5.8 to 6.8 in 2020. However, worryingly, beyond those countries that have already achieved the targets, no further countries are expected to reach the VISION 2020 targets of 4 per million and 20 per million respectively for surgeons and mid-level refractionists.

### **1.3 A dearth of refractionists and/or optometrists**

Uncorrected refractive error is a leading cause of avoidable vision impairment even though it requires only an eye exam and the provision of a pair of glasses to counteract the problem. The simple provision of glasses has a significant impact on social life, education and economic inclusion. According to the study, regionally there are only 3.7 optometrists per million population which is far below the VISION 2020 target of 10 per million by 2010 and 20 per million by 2020. While data retrieval for Nigeria for these cadres was incomplete, Nigeria is probably the largest employer of optometrists in SSA, followed by Sudan and South Africa. Uganda employed one-third of mid-level refractionists in the sample (32.9%). Tanzania was the only country that employed high numbers of both cadres.

When considering projected performances, currently it is expected that Sudan and Benin will be worse off in terms of the numbers of these cadres over the coming years as the numbers are expected to decrease in these countries. Madagascar, South Sudan, Mali, Senegal and Sierra Leone's projected practitioner to person ratio for these cadres are projected to improve but still not enough to meet VISION 2020 targets. On a positive note, countries such as Malawi, Mozambique, Ethiopia and Cameroon have new schools of optometry which will assist in alleviating the shortfall of optometrists. The situation of optometrists in Francophone countries is in stark contrast to the Anglophone countries with a median ratio of 0.5 (compared to 3.8 in the Anglophone countries and the 20.0 target) with other ophthalmic cadres likely to be diverted into doing refraction work.

#### **1.4 Underserved rural populations**

The majority of people in the region live in rural areas yet the eye health workforce is largely concentrated in urban areas. All rural populations are larger than urban populations within the countries researched. Secondly, for the most part, it is the higher skilled eye health workers who are based in major towns and cities: ophthalmologists (67.2%) and optometrists (66.3%) are more likely to be employed in capital cities. All other cadres are more frequently employed outside the capital. However it is important to note, when considering location, that practitioner per population ratios were uniformly worse in areas outside of capital cities. Eye care practitioners are likely to either migrate to major cities or leave their countries for opportunities overseas, creating a distribution imbalance with significant impact on rural communities. This reality is exacerbated in countries that have a low number of eye care practitioners.

According to the literature, underlying differences in eye health workforce geographical maldistribution may be attributed to several factors and these can vary across countries and contexts. These may include poor working conditions in the public sector, particularly in rural areas, low salaries, lack of dedicated positions, poor maintenance of facilities, inadequate provision of appropriate equipment and supervision by managers. Furthermore, health systems factors such as the structure and dynamics of the labour market and the role of the private sector as an employer<sup>1</sup> may attract eye health personnel to cities rather than countryside. In some cases, it may be caused by a lack of innovation in national human resources policies regarding retention and task-shifting, for example, through the development of attractive career maps, purposive recruitment of students from rural areas or shifting certain responsibilities to trained lower cadres.(9)

#### **1.5 Cataract surgeons are a successful addition to workforce**

On a positive note, and according to the study, cataract surgeons, (defined as both physician and non-physicians and including clinical officers and ophthalmic nurses trained to undertake cataract surgeries), have been proven to carry out surgery at the same rates as ophthalmologists. However, the training required is shorter and the study showed that this cadre is more inclined to be based in rural areas, which has the added benefit of reducing inequities in terms of access to eye care services. Although task shifting in eye health is often debated, the role of cataract surgeons in preventing blindness from cataracts in resource poor settings when the number of ophthalmologists is inadequate makes a compelling case. The Gambia, the earliest adopter of this cadre provides a successful example with one of the highest cataract surgical rates in the region.

## **2. The Way Forward: Business as usual is not an option**

### **2.1 Investing in eye health and strengthened health systems**

In order to reduce the impact of avoidable vision impairment and blindness, it remains absolutely essential to increase investment in the eye health workforce and integrate the eye health workforce into overall human resources for health strategies. By integrating approaches to diagnosis and treatment, it will be possible to identify problems earlier and be able to respond in a more efficient and cost effective way. It is imperative that collaborative efforts between national governments and international agencies devise efficient and equitable solutions to meet the growing and changing needs on the African continent taking into account economic and social realities, pressures on the system such as the 'brain drain', the burden of HIV/AIDS and evolving health threats. This also means responding to the workforce deficit, strengthening equitable health systems and developing sustainable approaches to financing health.

### **2.2 Development of strategic training policies**

Appropriate national policies are needed on the composition of the eye care team, their training, roles and responsibilities to ensure that adequate personnel are trained across cadres, taking into account the benefits of task-shifting. Coordination, in terms of the quantity, quality, scope and allocation of eye care workers, needs to be defined collectively by the health and education ministries with buy-in from education institutions and with adequate forward planning to accommodate population growth and future needs of the countries.

The training of eye health personnel in Africa is currently presented with a technological revolution boom that can facilitate the training and transfer of skills between countries. The use of innovative approaches in telecommunications, web resources, telemedicine and e-learning presents immense opportunities to the eye health community to engage in skill and knowledge upgrade and knowledge. However appropriate policies are needed to recognise and credit such non contact learning.

The introduction in training schools of a multiple entry-exit strategy can also be beneficial so that mid-way through an academic programme a student may be able to exit, for example, as an optometric technician able to provide refraction services within the health sector and then return later to complete an optometry degree. In Malawi, Mali and Eritrea successful diploma courses are being run to create the mid-level Optometric Technicians who are able to qualify later as optometrists through further study.

Given that Francophone countries are generally facing greater eye health challenges and workforce deficits, a significant focus needs to be placed on training in these countries. However,

caution should be exercised in simply duplicating lessons from the Anglophone countries as the educational policies differ significantly between the Anglophone and Francophone education system. This has implications for the recognition and integration of eye health workers by governments should shorter courses be developed by eye health partners. The necessary policy changes will be necessary prior to task shifting or substitution being adopted as a strategy.

### **2.3 Attracting and incentivising personnel to be based where needed**

With the massive anticipated increase in the urban population over the next 35 years, from a current estimate of 414 million to 1.2 billion by 2050, the concentration of eye health personnel, especially amongst certain cadres, in cities is and will become a major challenge. While eye care workers should have freedom of movement, policies that support appropriate remuneration, job satisfaction as well as individual progression need to be developed to encourage individuals to remain in rural areas or in the country. African governments invest significant resources to train and develop health professionals so policies that demand a return on investments for society needs to be implemented. This could involve a scholarship agreement for the subsidised portion of education and a compulsion for a minimum number of years of service in return for this scholarship. The Malawian government for example expects new graduates in optometry to serve a year in the public service before taking on other jobs.

Appropriate policies in staff training are needed to ensure that continuing education and other opportunities to improve service delivery are provided. Incentives regarding additional qualifications and skills will ensure not only financial security for eye care workers but also bring job satisfaction. Clear promotion/progression policies are critical to retain staff and boost morale.

### **2.4 Need for more and better data for strategic policymaking**

Finally, serious gaps remain in the availability of data on personnel overall, with very limited information on refractionists numbers and performance sufficient for policy development. For example, there is a lack of adequate data on entry and exit from the profession. The evidence generated by the study and the country specific data sheets provided by the study can contribute to more informed decision-making. But more information on personnel and on prevalence, the use of services and health outcomes to strengthen the policy response are needed. Attempts to assess health worker needs to respond to the human resources for health crisis, such as the Workload Indicator and Staffing Needs (WISN) tool, should incorporate eye health personnel, so that it becomes possible to calculate eye health personnel targets locally. It is essential that this occurs in a manner involving eye health stakeholders from the beginning to ensure this tool is undertaken rigorously and provides the information needed.

### **3. RECOMMENDATIONS**

Substantially more investment in HReH will be needed for most countries currently below target to ever achieve Vision 2020 indicators in Africa given projected practitioner and general population growth. The current shortage of eye health professionals has contributed to cataract surgical rates far below population needs and a lack of services in underserved rural populations. We need increased investments in the eye health workforce, a new set of strategic training policies, a new approach to attracting and retaining eye health workers in rural areas and better data for policy making.

#### **IAPB therefore urges member states:**

- (1) To sustain their commitment to meeting the Abuja targets of devoting 15% of GNP to health by 2015
- (2) To integrate eye health workforce planning into wider health workforce plans
- (3) To develop and implement policies on task shifting, training and retention and to include the eye health workforce in design, delivery and monitoring of these plans
- (4) To support the development of comprehensive health information systems and include eye health data in these systems
- (5) To renew their commitment to WHA66.4, Towards Universal Eye Health, with a specific focus on the eye health workforce.

#### **IAPB urges its member agencies:**

- (1) To ensure that their support to training programmes is aligned with national health policy and is conducive to promoting the Global Action Plan
- (2) To coordinate this support at national level to avoid duplication
- (3) To increasingly focus resources on underserved countries and regions
- (4) To support national advocacy, HMIS and HRH coordination mechanisms
- (5) Support national governments to implement the 2012 WHO Road Map for Scaling up the Health Workforce

#### **IAPB requests international partners:**

- (1) To continue providing funding to strengthening the eye health workforce
- (2) To include the eye health workforce in all health plans and strategies
- (3)** To continue to promote research into the global health workforce crisis and to include the eye health workforce in these efforts.



## Footnotes:

1. Palmer, Chinanayi et al, **Mapping Human Resources for Eye Health in 21 Countries of Sub-Saharan Africa: Current Progress Towards Vision 2020**, Human Resources for Health, 12:44, August 2014 and Palmer, Chinanayi et al, **Trends and Implications for Achieving Vision 2020 Human Resources for Health Targets in 16 Countries in Sub-Saharan Africa by the Year 2020**, Human Resources for Health, 12:45, August 2014.
2. Naidoo, Gichui et al, **Prevalence and Causes of Vision Loss in sub-Saharan Africa: 1990-2010**, British Journal of Ophthalmology, 2013-304081, February 2014
3. Resolution A/66/11, **Universal Eye Health: A Global Action Plan 2014-2019**, WHO, Geneva, May 2013
4. **Vision 2020: The Right to Sight**, WHO and IAPB, 1999
5. **Investing in Vision – Comparing the Costs and Benefits of Eliminating Avoidable Blindness and Visual Impairment**, The Fred Hollows Foundation and PriceWaterhouseCoopers, February, 2013
6. The study was undertaken in 21 countries: Benin, Botswana, DRC, Ethiopia, The Gambia, Ghana, Kenya, Madagascar, Malawi, Mali, Nigeria, Rwanda, Senegal, Sierra Leone, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe.
7. Felch, Resnikoff et al, **The Number of Ophthalmologists in Practice and Training Worldwide: A Growing Gap Despite more than 200,000 Practitioners**, BJO 96 (6), June 202,
8. **Ibid**
9. See, for example, Fulton, Scheffler et al, **Health Workforce Skill Mix and Task Shifting in Low Income Countries: A Review of Recent Evidence**, HRH 9:1, 2011, Meesen, Hercot et al, **Removing User Fees in the Health Sector: A Review of Policy Processes in 6 sub-Saharan African Countries**, Health Policy and Planning, Vol. 26, 2011. Lehmann, Dieleman and Martineau, **Staffing Remote Rural Areas in Middle- and Low-Income Countries: A Literature Review of Attraction and Retention**, BMC Health Services Research, 8:19, 2008, GHWA, **Mid-Level Health Workers for Delivery of Essential Health services: A Global Systematic Review and Country Experiences**, WHO, 2012. Soucat, Scheffler et al, **The Labour Market for Health Workers in Africa: A New Look at the Crisis**, World Bank, 2013. **Documenting Best Practices for Retention of Health Workers**, ECSA Health Community, Arusha 2011

## **APPENDICES**

**Table 1: Practitioners per million population in 2011 by cadre, in SSA countries included in the study**

Eye care cadre	n countries included	Regional ratio	Country mean	Min	Max
Ophthalmologists	21	2.3	2.2	0.3	8.8
Cataract surgeons	21	0.6	0.9	0.0	7.3
<b>Surgeons</b>	<b>21</b>	<b>2.9</b>	<b>3.1</b>	<b>0.8</b>	<b>8.8</b>
Ophthalmic clinical officers	21	0.7	1.0	0.0	6.2
Ophthalmic nurses	21	4.7	7.4	0.0	45.9
<b>OCOs/Nurses</b>	<b>21</b>	<b>5.5</b>	<b>8.4</b>	<b>0.0</b>	<b>45.9</b>

**Table 2: Proportional Distribution of Eye Health Practitioners by Sector**

Eye care cadre	n countries	Mean % workforce by sector		
		Government	NGO/ Mission	Private for profit
Ophthalmologists	20	63.9	17.4	18.7
Cataract surgeons	16	68.1	22.5	9.4
<b>Surgeons</b>	<b>19</b>	<b>63.4</b>	<b>18.5</b>	<b>18.1</b>
Ophthalmic clinical officers	7	83.8	13.0	3.3
Ophthalmic nurses	17	82.2	10.2	7.6
<b>OCOs/Nurses</b>	<b>18</b>	<b>81.7</b>	<b>11.1</b>	<b>7.3</b>
Optometrists	14	33.5	9.2	57.2
Mid-level refractionists	13	39.6	22.8	37.6
<b>Refractionists</b>	<b>15</b>	<b>41.4</b>	<b>16.7</b>	<b>44.9</b>

**Table 3: Practitioners per million population in 2011, by cadre, inside and outside capital cities**

	n countries	Country mean	Inside capital mean	Inside capital (range)	Outside capital mean	Outside capital (range)
Ophthalmologists	20	1.8	10.8	(2.0-29.7)	0.7	(0.0-3.2)
Cataract Surgeons	18	1.1	2.3	(0.0-12.1)	1.0	(0.0-9.5)
<b>Surgeons</b>	<b>20</b>	<b>2.8</b>	<b>12.9</b>	<b>(4.0-29.7)</b>	<b>1.7</b>	<b>(0.2-9.5)</b>
Ophthalmic Clinical Officers	7	3.0	8.5	(0.0-19.9)	2.4	(0.3-6.5)
Ophthalmic Nurses	17	9.0	19.3	(1.2-69.3)	7.6	(0.0-39.5)
<b>OCOs/Nurses</b>	<b>19</b>	<b>9.2</b>	<b>20.5</b>	<b>(1.2-69.3)</b>	<b>7.7</b>	<b>(0.7-39.5)</b>
Optometrists	15	2.0	10.6	(0.0-51.8)	0.9	(0.0-3.8)
Mid-level Refractionists	16	2.6	8.4	(0.0-39.6)	1.8	(0.0-8.6)
<b>Refractionists</b>	<b>16</b>	<b>4.2</b>	<b>16.7</b>	<b>(0.0-64.4)</b>	<b>2.5</b>	<b>(0.0-9.3)</b>



**International Agency for the Prevention of Blindness – Africa**

172 Umbilo Road, Umbilo, 4001 Durban, South Africa.

Tel: +27 (0)31 202 3811

[www.iapbafrica.co.za](http://www.iapbafrica.co.za)

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