



# Eye Health Systems Assessment (EHSA) in Senegal

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## Acronyms

CBHI	Community Based Health Insurance
CSC	Cataract Surgical Coverage
CSR	Cataract Surgical Rate
DCMO	District Chief Medical Officer
MDD	Mass Drug Distribution
DHC	District Health Centre
DHIS2	Demographic Health Information System tool
DHMT	District Health Management Team
DPM	Directorate of Pharmacies and Drugs
DPOs	Disabled Peoples Organizations
EHSA	Eye Health Systems Assessment
ENDSS	National School of Health and Social Development
EPI	Expanded programmes on immunization
ERC	Ethical Review Committee
FARA	Fixed Amount Reimbursement Account (Direct funding, USAID projects)
FFS	Foundation Fereruela Sanfeliu
GAP	Global Action Plan
GDP	Gross Domestic Product
HAS	Health System Assessment
HFPI	Health for Peace Initiative
HKI	Hellen Keller
ICEH	International Centre for Eye Health
IGF	Internal Generated Fund
iHRIS	Integrated Human Resource Information System
iNGO	International Non-Governmental Organizations
IPRES	Old-age Pension Fund
LMIC	Low and middle income countries

LSHTM	London School of Hygiene and Tropical Medicine
MDA	Mass Drug Administration
MoH	Ministry of Public Health and Prevention
MoU	Memorandum of Understanding
NEML	National Essential Medicine List
NPS	National Pharmacy Supply
NTD	Neglected Tropical Disease
ODSR	Organization for the Development of the Senegal River
OOP	Out-Of-Pocket payment
RTI	Research Triangle Institutes
SNDES	National Economic and Social Development Strategy
UCAD	Cheik Anta Diop University
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Emergency Fund
UNITAID	International Drug Purchasing Facility
USAID	United States Agency for International Development
WHO	World Health Organization

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## Executive summary

### Background

It is estimated that 253 million people globally live with visual impairment, including 36 million, who are blind. Around 89% of visual impairment affects low and middle-income countries (LMIC) and about 75% of visual impairment can be prevented or treated if effective eye care services are in place. However, many LMICs face challenges in meeting population eye health needs. Within Africa specifically, health system challenges include a paucity of specialist eye care providers, poor infrastructure and referral systems and inadequate funding allocated to eye health.

The health system strengthening approach has been promoted in recent years as a way to address health care limitations experienced by LMICs. This approach seeks to strengthen national and local health systems as a whole rather than through vertical interventions in disease-specific areas. Evidence suggests that integration of eye health into the wider health system is essential to achieve universal health coverage and improve population eye health. It is therefore important to understand how the eye health system operates at the national and local levels and how it relates to the general health system.

The government of Senegal through the Ministry of Public Health and Social Action is committed to improving eye health and quality of life for all citizens. This report presents the findings of an Eye Health Systems Assessment (EHSA) conducted in Senegal in 2015-2018 by a collaborative effort of two organizations, the Ministry of Health and Sightsavers with the financial support from Sightsavers.

The overall aim of this study was to assess the eye health system in Senegal, to identify its key weaknesses and strengths and to inform future planning of eye care services integrated into the broader health system. The specific objectives of the study were:

1. To understand how the health system operates at different administrative levels;
2. To document the key structures involved in the delivery of eye health services;
3. To analyse the links between the eye health system and the general health system;
4. To identify potential health system strengthening interventions.

### Methods

The assessment used the Eye Health System Assessment tool developed in 2012 by a consortium of eye care and health experts, coordinated by the International Centre for Eye Health (ICEH) at the London School of Hygiene and Tropical Medicine (LSHTM) and funded by Sightsavers.

The study used a descriptive mixed-methods design and applied both quantitative and qualitative data collection. The study was conducted in the capital Dakar, where the key stakeholders involved in eye health are located and in two other regions, Kaolack (districts: Kaolack, Nioro and Guinguino); and Louga (districts: Louga, Sakal, Kebemer and Koki). The selected districts represented both central and peripheral locations. This helped to understand how eye health functions within both relatively well resourced urban locations



and underserved rural locations. The study settings did not aim to represent the whole country but to provide insights into diverse spectrum of quality of eye health services.

The study reviewed available documents covering various aspects of the general health system and eye health. Purposive sampling was used to recruit 45 key informants for qualitative in-depth interviews.

Quantitative data were analysed using descriptive statistics. Qualitative data were transcribed verbatim and analysed thematically.

Ethical approval<sup>3</sup> was obtained from the Ethical Review Committee (ERC) of the Ministry of Health and Social Action of Senegal.

## Results

### General health system

#### Strengths

- Health expenditure in Senegal has increased considerably in recent years, rising from 245 billion FCFA in 2005 to 431 billion FCFA in 2013 (or around 5% of GDP), an increase of almost 76%;
- Senegal has a National Health Policy, the “Plan National de Development Sanitaire du Senegal,” 2009-2018, which stipulates the right to healthcare by all citizens, including persons with disabilities and the elderly;
- There are different types of health providers, including public facilities, private facilities, and facilities of the Armed Forces; the health system has a pyramid structure, which includes central, intermediary (14 medical regions) and peripheral (76 health districts) levels with health facilities operating at all levels;
- There are several sources of health financing including the national government, local authorities, international donors, health insurance and private out-of-pocket co-payments;
- There are two health insurance schemes: a Mandatory insurance scheme offered by the employer that benefit government and private sector employees and the Community-Based Health Insurance scheme (mutual) established to reduce financial risk for informal sector workers and rural residents. The Government has set up a universal health coverage agency that offers a standard package of care in line with the National Strategy for Universal Health Coverage ;
- Mandatory health insurance schemes covered 35% of the population in 2014 (civil servants). The uptake of the Community health insurance has increased considerably with 32% of the target population reached in 2014;

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<sup>3</sup> Protocol number: SEN15/56, Ethics approval letter: No. 0986 MSAS/DPRS/DR

- The government has implemented programmes that provide subsidies and fee exemptions for specific services and indigent groups, including the national “Plan Sesame for seniors” and a free health care initiative for children under five;
- The National Health Development Plan, 2009–2018 recognizes the shortage and unequal distribution of health workers and calls for increasing training capacity at the national level and promoting incentives for workforce retention;
- There is a National Committee for the development and revision of lists of essential drugs and medical products under the Ministry of Health. The committee is responsible for regulating all pharmaceutical products procured by public and private wholesalers in the country;
- The National Pharmacy Supply is a government department responsible for purchasing pharmaceutical products included in the National Essential Medicine List and coordinates all activities related to medicines and reagents in health facilities.

## Weaknesses

- The government expenditure on health is low: 8% of the general government expenditure in 2013, which is well below the 15% target agreed in the Abuja Declaration in 2001;
- The out of pocket expenditure continues to be high at 77.4% in 2014, which is a significant burden for households, given that 46.7% of the population in Senegal lives below the poverty line;
- Senegal has a critical shortage of health professionals with an estimated health worker density at less than 4 per 10,000 population for nurses and midwives and less than 1 per 10,000 for physicians. This is well below the WHO recommended level of 23 health professionals per 10,000 population;
- The hospital beds ratio is low, around 0.3 per 1,000 population, which is lower than in many regional and sub-regional comparators;
- There is a significant problem of unequal geographic distribution of health infrastructure and health personnel with 70% specialist doctors and 39% of general practitioners being based in the capital serving only 24% of the population;
- The National Pharmacy Supply is only able to supply around 15% of the drug market in Senegal, which has implications for the delivery of drugs in public facilities.

## Eye Health Governance

### Strengths

- There is a National Eye Health Programme within the Ministry of Health and Social Action responsible for planning, supervising and monitoring eye health activities within the country. The eye health department follows standards and regulations set out by the MoH;
- Many activities identified in the Strategic plan for the Prevention of Avoidable Blindness for the period 2006-2010 were successfully implemented with the support of international donors/partners;
- There is an NTD plan for the period 2016 – 2020, which covers ten endemic NTDs including trachoma and onchocerciasis. Two previous strategic plans for the periods 2007-2011 and 2011-2015 have been successfully implemented.

### Weaknesses

- There is no up to date Plan for the Prevention of Avoidable Blindness; the previous plan has not been renewed since 2010, although local eye health plans are being implemented;
- DPOs are not involved in strategic planning and decision-making about eye health, as there is no institutional framework for their participation in policy-making. In addition DPOs have limited expertise to provide feedback on government policies and technical documents;
- The number of donors and NGO partners supporting eye health decreased in recent years; at the time of the study there were only two major iNGOs supporting eye health, Sightsavers and RTI;
- Many local Vision 2020 committees are not functional and there are no clear objectives for the Vision 2020 Committee at the national level.

## Eye health financing

### Strengths

- There are different sources of funding for eye health, including government allocations, international donor support, health insurance and user fee co-payments;
- There are some provisions for eye health within the general health budget at the national level, although such provisions at the regional level are less evident;
- There is a newly proposed decentralisation policy, which can create opportunities for separate budget lines for eye health at the district and facility levels;
- Community-based health insurance (mutual) covers a third of costs of cataract surgery in public facilities outside the capital;

- There is a system of user fee exceptions for indigent population groups including elderly and people with disabilities.

### **Weaknesses**

- Government allocations for eye health are very limited and had stayed unchanged for many years until recently, when the allocations were reduced
- Eye health resources are allocated under the general health management budget and are difficult to distinguish from other healthcare expenditures;
- There are reported delays in the release of funds from the regional level to districts and health facilities;
- In certain regions, there is no transparency of the financial allocations by international donors and iNGOs supporting eye health;
- User fees constitute a significant part of eye health expenditure resulting in significant burden for households and increased risk of health inequalities.

### **Eye health service delivery**

#### **Strengths**

- There are 60 eye units with eye health services; eye health units are available in all regions of Senegal;
- Eye health units provide a variety of services including eye care consultations, cataract surgeries; outreach programmes; trachoma treatments and surgeries and health promotion campaigns;
- Most eye health activities are delivered as part of the National Eye Health Programme and through eye health units with no parallel or stand-alone programmes;
- There is a large number of eye care consultations performed annually (155,033 in 2015);
- Cataract surgical rate increased in the past five years, from 843 surgeries per million populations in 2010 to 967 per million in 2015;
- Hospitals with eye units outside the capital have 2-3 hospital beds reserved for eye care patients who come from remote villages for cataract surgeries;
- The number of trichiasis surgeries increased in the past five years and was 3,463 surgeries in 2014; the number of azithromycin treatments more than doubled from 766,087 in 2012 to 1,831,387 in 2015.



## Weaknesses

- The Cataract Surgical Rate has stagnated in recent years and represents only half of the recommended level for Africa (2,000 per million per year);
- Cataract Surgical Coverage (CSC) is estimated by the WHO experts at 10%-25% of the population in need; population-level data to make accurate CSC estimates are limited;
- The need for cataract surgery outstrips the availability; the existing eye units are under significant pressure with long waiting times for cataract surgery;
- Productivity of the existing ophthalmologists/cataract surgeons is low at 150 surgeries per surgeon per year compared to the recommended levels of 500 per surgeon but the data are likely to be incomplete as private providers often under-report the number of surgeries they perform.

## Eye health workforce

### Strengths

- There is a National Human resources development plan for eye health. The plan will shortly be integrated into the National Human Resources for Health Plan;
- The open source software for managing health workforce information (iHRIS) is used to track and manage health workforce, including eye health staff;
- The National MoH is responsible for recruitment and paying salaries of eye health personnel, similarly to all other health workers in the country;
- Senegal meets the standards for the ratio of surgeons to the population (1/250 000 for WHO), although there are significant regional disparities in the distribution of surgeons;
- There are two institutions for training eye health workers in Senegal: Cheikh Anta Diop University (UCAD) responsible for training ophthalmologists and the National School of Health and Social Development (ENDSS), which trains senior technicians (ophthalmic nurses);
- The National Eye Health Programme with the funding from international partners supports in-service training of eye health workers including cataract surgeons)and primary care staff;
- Clinical supervision for eye health is integrated in the general supervision system with an ophthalmologist being part of the supervision team

## Weaknesses

- Although there is a relatively high number of ophthalmologists in Senegal, 45% of them work in the private sector. There are also inequalities in the geographic distribution of ophthalmologists; only 6 out of 14 regions have an ophthalmologist and 85% of all ophthalmologists in Senegal are based in Dakar;
- Optometrists are not recognized as an eye cadre in Senegal; cataract surgeons have limited recognition with no documents acknowledging cataract surgeons at the policy level;
- The surgical performance ratio by the available surgeons (ophthalmologists and cataract surgeons) is well below the GAP target (150 surgeries per surgeon versus recommended 500 per surgeon);
- The institutions available for training eye care workers are thought to operate autonomously and are not always responsive to the needs of the eye health system.

## Eye health medical products and technologies

### Strengths

- The National Essential Medicine List (NEML) is available and is regularly updated; there are regular meetings between the Directorate of Pharmacies and Medicine, National Pharmacy Supply (NPS), health care providers and users to prioritize medicines for the NEML;
- Eye health medicines are included in the NEML; at the time of the study 27 eye health medicines were registered on the list;
- Clinical guidelines including information on eye health medicines are available to health care providers.

### Weaknesses

- The NPS does not provide updates on the availability of eye health products;
- A large proportion of health related medicines, particularly those for NTD programs are purchased using external donor funds;
- There is no information about the proportion of medicines purchased through different sources of funding, including out-of-pocket expenditure, health insurance and government budgets;
- In public facilities, there is no agreed timeframe for procuring eye health medicines. The purchase of eye health products happens on ad hoc basis, as needed.

## Eye Health Information System

### Strengths

- The National Eye Health unit has implemented a number of eye health information initiatives supported by INGOs and integrated eye health information into the general health information system at various levels;
- There is significant donor support for the General Health Information System and the implementation of the new health information system tool (DHIS2); the tool will support integration and coordination of eye health information collated from different sources;
- Information on eye health, including eye health consultations, cataract surgeries and NTD treatments is collected and reported from lower to the upper levels of the system.

### Weaknesses

- There is a limited number of eye health indicators integrated into the General Health Information System;
- There are delays in collating and reporting eye health information from the facilities to the regional and national levels;
- There is limited human resource capacity to collect and aggregate data at various levels;

The private sector does not share its information regularly and its performance and contribution to eye health activities is often unknown. In addition, some public structures delay the transfer of information on eye health

## CHAPTER 1: Background and objectives

### 1.1. Background

The right to health is a fundamental part of human rights articulated in a number of international treaties. The World Health Organisation's (WHO) constitution recognizes the right to health, and states that "the enjoyment of highest attainable standard of health is the fundamental right of every individual" (1, 2). The recent Sustainable Development Goals Framework emphasizes universal access to health, including health services.

Within the eye health sector, the WHO endorsed the Global Eye Health Action Plan (GAP) 2014 – 2019 (WHA66), which aims to reduce avoidable visual impairment globally by 25% by the end of 2019 (3). The plan is built on the principles of the global initiative Vision 2020: the right to sight, and expresses commitment of Member States to reducing avoidable visual impairment and achieving quality of life for all citizens.

The latest global estimates suggest that there are 253 million people worldwide live with visual impairment, including 36 million, who are blind and 217 million who have low vision (4). Around 55% of people with visual impairment are women (4). Refractive error is the leading cause of visual impairment responsible for 49% of the total burden (4). Studies of ocular morbidity, which includes both visually impairing and non-impairing conditions show that eye conditions are very common. For example in Kenya, the prevalence of ocular morbidity was estimated at 15.5% (5). In Nigeria it was 23.1% (6). The Senegal 2020 Vision Plan estimates the national average prevalence of blindness at 1.4 (7).

Nearly 75% of visual impairment can be prevented or treated, if effective eye care services are available and affordable (4). Yet many low and middle-income countries (LMICs) face multiple challenges in meeting population eye health needs. Some reasons for this include financial and human resource constraints (8), weaknesses of the general health system (9) and patient barriers to access to services (10).

The health system strengthening approach has been promoted as a way to address health care challenges experienced by LMICs (10). This approach seeks to strengthen national and local health systems as a whole (11) rather than through vertical interventions in disease specific areas.

Evidence suggests that integration of eye health into the wider health system is essential to achieve universal health coverage and improve population eye health (12). This means assuring specialist ophthalmic services are available throughout the country, and have strong links with the general health system.

The integration of eye health into the general health system is also considered to be key for meeting the GAP targets in a sustainable and universal way (12). However, eye health in many LMICs is not fully integrated into the national health systems and strategies. Although many countries have national eye health policies and plans, there is limited political and financial leverage to deliver effective, safe and quality eye care services to meet the needs of all citizens (13).

It is therefore important to understand how the eye health system operates at the national and local levels and how it relates to the general health system. Such evidence is essential



to strengthen the scientific base of eye health programmes to ensure evidence-based decision-making and best practices.

The government of Senegal through the Ministry of Health and Social Action is committed to improving eye health and achieving the GAP targets. This report presents the findings of the Eye Health System Assessment (EHSA) conducted in Senegal in 2015-2017 through a collaborative effort of the Ministry of Health and Social Action (MoHSA) and Sightsavers with the financial and technical support from Sightsavers.

The assessment provides detailed information on the eye health system in Senegal and answers the following research questions:

1. How does the general health system and the eye health system operate at different administrative levels?
2. What are the key structures involved in eye care and how are they related to the general health system?
3. What is the level of integration of the eye health system into the general health system?
4. What are the bottlenecks and constraints for eye care service delivery?
5. What are the potential interventions that can strengthen the health system?

## 1.2. Aim and Objectives

This assessment aims to provide evidence to the Government of Senegal for reviewing and planning eye care services and informing partners developing various eye health initiatives.

The overall objective of this study was to evaluate the eye health system in Senegal, to identify its main weaknesses and strengths and to inform the future planning of eye care services integrated into the general health system. The specific objectives were:

1. To understand how the general health system and the eye health system operate at different administrative levels;
2. To document the key structures involved in the delivery of eye care services and highlight the links between the eye health system and the general health system;
3. To evaluate the level of integration of the eye health system into the general health system;
4. To determine the bottlenecks and constraints which undermine the process of integration;
5. To identify potential health system strengthening interventions.

## CHAPTER 2: Methods

### 2.1. Study Design

The assessment used the Eye Health System Assessment (EHSA) tool (14) developed in 2012 by a consortium of eye care and health experts, coordinated by the International Centre for Eye Health (ICEH) at the London School of Hygiene and Tropical Medicine (LSHTM) funded by Sightsavers. The tool is based on the Health System Assessment (HSA) approach developed by the United States Agency for International Development (USAID) in 2005-2007 and updated in 2011. The Eye health system adaptation was piloted in Ghana (15) and Sierra Leone (16) in 2012 and 2013 respectively.

The EHSA tool uses the WHO health system framework to provide a rapid and comprehensive assessment of the key eye health system functions and their interactions with the general health system (14, 15). The tool examines the key components of the health system (Governance, Finance, Human resources, Medical products/Technology, Service delivery and Health Management and Information System) and their interrelationships; and makes recommendations for strengthening the system as a whole (15).

The EHSA tool prioritises local participation and capacity building and reflects country priorities. It highlights the key strengths and weaknesses as perceived by the national and local stakeholders. This approach helps to design effective strategies for strengthening each element of the eye health system and to integrate eye health into the broader health system.

The assessment employed a descriptive study design using both quantitative and qualitative data collection methods.

### 2.2. Study settings

The study adapted the standard EHSA methodology, which proposes a purposive sampling of health facilities in the capital city and two other diverse locations as the study sites. This approach helps to achieve a fair representation of the health system by selecting different geographical locations and services with varying levels of provision, based on current knowledge of stakeholders and availability of data.

The study was conducted in Dakar (the capital) where the country's largest health facilities and the Ministry of Health and Social Action are located, and in two other regions: Kaolack (districts: Kaolack, Nioro and Guinguino); and Louga (districts: Louga, Sakal, Kebemer and Koki).

Dakar was selected to have easy access to key strategic information and organisations relevant to eye health. In Kaolack and Louga regions, the selected districts represented both central and peripheral locations.

This approach helped to understand how eye health functions performed within a relatively poor setting compared to relatively stronger systems in the regional centres. The study sites did not aim to represent the whole country but to provide insights into diverse locations across the spectrum of quality of eye care services.

### 2.3. Data collection

The study focused on a list of indicators described in the EHSA methodology (14, 16), which collects information in the following thematic areas:

- An overview of the general health system;
- Leadership and governance in eye health;
- Eye health financing ;
- Delivery of eye health services;
- Human resources for eye health;
- Medical products and technologies; and
- Eye health management and information systems.

The EHSA checklist was supported by a series of standardised probing questions (14). As a rapid assessment, the EHSA tool does not collect extensive primary data. This EHSA was therefore carried out through:

- A desk-based review of policy documents, grey literature and secondary data; and
- In-depth interviews with purposively selected health and eye health system stakeholders in the selected regions (appendix 2).

### 2.4. In-depth interviews

The qualitative data collected in the study included interview accounts, observations, photographs and documents. All participants were informed about the study and their consent to participate was sought before the interviews. All interviews were conducted in French using the interview guide translated from English into French. Information was recorded using digital recorders and hand notes.

Each in-depth interview lasted approximately 60 minutes. The fieldwork was conducted in two phases: a first phase from November-December 2015 and the second phase from November- 2017 to March 2018 in order to fill gaps in data collection (appendix 1). The report was finalized in March-July 2018.

### 2.5. Document review

The EHSA tool relies on existing information and statistics, so the assessment also reviewed relevant documents pertaining to the general health system and eye health services. The documents included national policies and plans, epidemiological surveys, international donor reports; regional, district and facility level records; and various statistics collated by the United Nations (UN) agencies. Data on past and current eye health activities were obtained through the National Eye Health Coordinator and international non-governmental organisations (iNGOs), Sightsavers and Hellen Keller International (HKI).

### 2.6. Data management and analysis

Data analysis took place after all data collection had been completed. Audio recordings were transcribed verbatim and supplemented by hand notes. The accounts were translated into English and analysed thematically. The first set of codes was based on the six blocks of

health system. Other codes were assigned alongside reading the transcripts as the themes emerged.

The themes were then grouped and categorised into weaknesses and strengths. Quantitative data obtained from national and local documents and donor reports was analysed using frequency distributions and percentages. Quantitative and qualitative data were triangulated where appropriate.

## **2.7. Ethical clearance**

Ethical approval<sup>4</sup> was obtained from the Ethical Review Committee (ERC) of the Ministry of Health and Social Action, Senegal. Information about the study and the use of data was given to all participants in their preferred dialect, outlining confidentiality, right to participate and risks and benefits of participation. Informed consent was sought from all participants.

## **2.8. Limitations**

The study has a number of limitations, which need to be taken into account when interpreting the findings of the report. First, as recommended by the EHSA methodology the study was limited in scope; the data were collected in three out of 14 administrative regions in Senegal. Although all efforts have been made to obtain a variety of documents and to select districts with different levels of eye care services, we cannot conclude that this assessment fully reflects the status of the eye health system in the country.

The EHSA methodology uses primarily routine data sources and interviews with purposefully selected stakeholders. Therefore findings of the review may be dependent on the information available and views of the selected informants.

The study did not include informal healthcare providers or patients attending eye care services and does not reflect their perspective on eye health service delivery.

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<sup>4</sup> Protocol number: SEN15/56, Ethics approval letter: No. 0986 MSAS/DPRS/DR



## CHAPTER 3: Overview of the Health System

### 3.1. Country information

#### 3.1.1. Socio-economic status

The Republic of Senegal is located in the western part of the African continent in the Sudano Sahelian zone and has an area of 196,722 km<sup>2</sup> (17). Senegal is divided into 14 administrative regions, 46 departments, 117 districts and 557 communes. The decentralisation Act (Act III) devolves decision-making power to local authorities.

Senegal has adopted a new development model as articulated in the "Senegal Emerging Plan (SEP)", which aims to build a society of solidarity in a state of law by the year 2035. The Plan is built around three pillars, where, Pillar 2 "Human Capital, Social Protection and Sustainable Development", aims to develop, essential social services expanding access to health and social protection coverage. In this context, the health sector is expected to develop interventions that increase access to quality preventative, curative, and rehabilitative services as part of a continuum of care in order to reduce the burden of diseases and build capacity for sustainable socio-economic growth.

The regions of Sedhiou, Kolda, Kedougou, Kaffrine, Tambacounda and Fatick are in the lowest economic and welfare quintile in Senegal.

#### 3.1.2. Sociodemographic status

Senegal is a lower middle income country with an estimated total population of 15.41 million people in 2015 (17). The population aged 15 years and below constitutes 42.1%, while the population aged 60 years and above constitutes 3.5%. Women represent 50.2% of the population. Women of reproductive age constitute 23.4% and children under the age of 5 years are 18.84%.

The population growth rate remains high (2.9%) (17) although the Total Fertility Rate (TFR) dropped slightly from 6.0 children per woman of fertile age in 1992 to 4.8 in 2016 (17) and the country has begun its demographic transition. Life expectancy at birth is estimated at 67 years (17). The population is expected to increase to 16.7 million in 2020 and 22.3 million in 2030.

Around 45.2% of the population reside in urban areas (17, 18). The largest concentration of the population is in Dakar followed by the Thies region. Table 1 shows the key country indicators and figure 3 shows distribution of the population by region.

**Table 1: Key Population and Health indicators, Senegal, 2016**

Health indicator	2016	Source
Population (millions)	15.41	World Bank 2016
Population aged less than 15 (%);	42,1	RGPHAE 2014
Proportion of over 60 years (%)	3,5	RGPHAE 2014
Median age (age)	18,0	RGPHAE 2014
Population in Urban Area (%);	45,2	RGPHAE 2014
Urban population in rural areas (%)	54,8	RGPHAE 2014
Total fertility rate (per woman)	4,8	World Bank 2016
crude mortality rate (per 1,000)	7,7‰	World Bank 2016
Birth registration rate (%)	53%	World Bank 2016

Life expectancy (years)	67 years	World Bank 2016
Child mortality rate <5 (per 1,000 live births)	47‰	World Bank 2016
Maternal mortality rate (per 100,000 live births)	434	ANSD-2014
HIV prevalence	0,4	World Bank 2016
Death due to malaria (per 100,000)	3,96%	ANSD-2014

*Source: (17-21)*

The average density is 80 inhabitants per km<sup>2</sup> (17) but there are significant variations between the regions. The Dakar region has 23.2% of the total population with a density of 5735 inhabitants per km<sup>2</sup> covering only 0.3% of the national area. The Tambacounda region, which occupies 21.5% of the territory, has 5% of the population with a density of 16 inhabitants per km<sup>2</sup>.

Senegal has one of the highest rates of urbanization (3.6%) in sub-Saharan Africa (17) due to the high numbers of young people migrating to the cities. At present, 33% of the urban population are young people aged 20 to 35 years compared with 25% in rural areas.

## 3.2. Health System governance

### 3.2.1. Policy and strategy

Senegal has a National Health Policy, the “Plan National de Development Sanitaire du Senegal” (PNDSS) for the period 2009-2018. This policy was formulated based on the article 17 of the Constitution of Senegal, which stipulates the right to healthcare for all citizens, including persons with disabilities and the elderly. The National Health Policy is implemented through the National Health Development Plan (NHDP), which aims to accelerate the fight against maternal, neonatal and infant mortality and morbidity as a key priority. The political commitment at the highest level is articulated in a range of global strategies (mother and child health, family planning) and international commitments.

### 3.2.2. Organisation of the health system

Health care in Senegal is provided by three types of health providers: public facilities under the Ministry of Health (MoH), private facilities, and facilities of the Armed Forces under the MoH.

The health system in Senegal has a pyramid structure which has three levels, including central, intermediary and peripheral levels (22, 23):

- I. The central level comprises the Minister's office, the Secretary General and 8 directorates and affiliated services. The central level also includes 22 national hospitals across the country (22).
- II. The intermediary level comprises 14 medical regions which are led by the Regional Chief Medical Officers who are responsible for coordinating, inspecting, supervising and overall control of public and private health structures in the region (22). The management of hospitals in the regions is autonomous. The hospitals report directly to the central level at the MoH.
- III. The peripheral level represents the most operational unit of the health pyramid and is comprised of 76 health districts. Each health district is headed by the District Chief

Medical Officer (DCMO) who works with the District Health Management Team (DHMT) to oversee both the District Health Centre (DHC) and the staff at peripheral facilities throughout the district (22).

### 3.3. Health Financing

#### 3.3.1. Sources of Health Financing

The major sources of health financing at the time of the study were the national government, local authorities, multi-lateral and bilateral donors including INGOs, health insurance funds and Out-Of-Pocket (OOP) expenditures (23). The key donor agencies providing funds for health activities at the time of the study were the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), the World Bank, International Drug Purchasing Facility (UNITAID), United Nations Population Fund (UNFPA) and United States Agency for International Development (USAID).

The World Bank data shows that the total health expenditure in Senegal decreased from 5.4% of the Gross Domestic Product (GDP) in 2006 to 4.6% in 2014, which amounts to around US\$ 46 per capita (17). This is below the average of 5.8% of GDP in LMICs and 5.7% in Sub-Saharan Africa (SSA).

The general government expenditure on health was 8.0% of the general government expenditure in 2014. This remains low compared to the recommended target of 15% agreed in the Abuja Declaration (23).

#### 3.3.2. Government allocations

In recent decades, the level of resources allocated by the government to fund the access to health services increased gradually. There is a significant increase in health expenditure, which went from 245 billion CFA in 2005 to 431 billion FCFA in 2013 (around 5% of GDP), an increase by nearly 76% (24).

In the health sector, the Ministry of Finance is responsible for allocating budget to the Ministry of Health and Social Action to run public health services. The proportion of annual budgets allocated to health from the central level in 2011–2015 is presented in table 2. The budget allocated to health increased from CFA 81,935,002,020 (US\$ 173,708,874.70 using 2011 average exchange rate of 0.002122) in 2011 to 134,702,980,000 (US\$ 230,253,632.35 using 2015 average exchange rate of CFA 0.00171) (25) in 2015. The implementation rate of the government budget allocation increased slightly from 83% in 2011 to 92% in 2014.

**Table 2: Annual budgets allocated to health through the Ministry of finance for 2011-2015**

	Budget allocation [CFA]	Budget allocated (USD)	Implementation rate (%)
<b>2011</b>	81,935,002,020	173,708,874.70	83
<b>2012</b>	86,731,288,086	169,352,393.58	88
<b>2013</b>	103,730,173,500	210,534,145.52	87
<b>2014</b>	127,095,464,760	217,249,777.37	92
<b>2015</b>	134,702,980,000	230,253,632.35	

Source : DAGE/MSAS (26)

### 3.3.3. Out of pocket expenditure

The government expenditure on health decreased from 42% in 2014 to 36.1% in 2015 (18). The domestic private expenditure on health as a percentage of total expenditure on health continues to be high, 56.5% in 2015. The out of pocket expenditure was 44.2% (18) in 2015, which is high, given that 46.7% of the population is estimated to live below the poverty line (24). As a result, health care expenditures place significant burden on household incomes and increase risk of persistent poverty.

**Table 3: Health expenditure in Senegal**

<i>Indicator</i>	<i>2014</i>	<i>2015</i>
<b>The total expenditure on health as % of total GDP</b>	1.3	1.3
<b>The health expenditure Per capita US \$</b>	42.0	36.1
<b>General government health expenditure as % of general government expenditure</b>	4.4	4.2
<b>General government expenditure on health as % of current health expenditure</b>	33.1	31.7
<b>Domestic Private expenditure on health as a % of total expenditure on health</b>	57.0	56.5
<b>Total out of pocket as % of total expenditure on health</b>	44.5	44.2
<b>External resource for health as % of total expenditure on health (%)</b>	9.9	11.7

Source: World Health Organization (18)

### 3.3.2. Health insurance

The Government of Senegal has shown commitment to the need to improve access to health through national health insurance. The Government currently runs the following insurance schemes (27):

- Mandatory employer-based insurance;
- Private insurance with voluntary contributions;
- Voluntary community based health insurance (CBHI);
- Public subsidies for specific services and population groups considered vulnerable, such as older people, indigent populations and people with disabilities.

During 2014, mandatory health insurance schemes covered 35% of the total population of civil servants (24). The majority of the population in Senegal (80%) are employed in the informal sector and are less likely to be covered by mandatory health insurance schemes. Those living in rural areas are also less likely to benefit from employer-based health insurance. Although, voluntary community-based health insurance has been set up to address needs of these specific populations, uptake of this scheme remains low, which is due to lower average incomes among these population groups.

#### ❖ Health insurance for current and retired government workers

There has been a mandatory health insurance scheme for working and retired public sector employees since 1972. This scheme is financed by the central budget through the Ministry of Finance. The source of financing for retired workers is the Old Age Pension Fund (IPRES). This scheme provides access to health care through public health providers and covers 80% of fees incurred for medical care expenses. Data from the National Strategy on the Universal



Health Coverage for 2013 – 2017 indicates that approximately 300,000 beneficiaries were enrolled in this scheme in 2012. Some public institutions have further implemented a complementary health insurance scheme as a co-payment of the 20% gap to ensure reduction in OOP expenses for their beneficiaries. Around 65% of these complementary funds are used for specialized care such as surgery and dentistry.

#### ❖ Social health insurance for private sector workers

Social health insurance for private sector workers and their families has been in place since 1975. Data from the National Strategic Development Plan estimates that around 700,000 people were enrolled in this scheme in 2012. There is a presidential decree that mandates all companies with more than 300 employees to create a Social health insurance scheme also known as “Foresight Disease Institution” (IPM). Companies with fewer employees are expected to join inter-enterprise IPMs or come together to set up new ones. The IPMs are managed as autonomous health funds once they have been duly registered with the Ministry of Labour and the “Old Age Pension Fund” (IPRES). The IPM covers 40% to 80% of medical costs incurred at the facility depending on the type and number of insurances the patient has. Available data indicates that IPMs account for 58% of spending at private pharmacies and opticians, 48% of spending at biomedical labs and 51% of spending at private outpatient clinics (27). However, it should be noted that the IPM have solvency problems and very few of them actually cover their subscribers.

**Table 4: Characteristics of Health Financing Schemes in Senegal**

Type of insurance	Population covered	% of pop. covered	Source of funding	Institution with oversight
<b>Mandatory Schemes (state and private sector)</b>	Public sector employees	7.4	General budget	Ministry of Finance
	Retired persons	4.9	Old age Pension Fund (IPRES)	Ministry of Finance and IPRES
	Private sector employees	3.6	Social Health Insurance (IPM)	Ministry of Labour
	Students	0.3	General budget	Ministry of Education
<b>Voluntary Community Based Health Insurance CBHI</b>	Informal Sector and rural	3.8	CBHI Schemes	MOH (UHC)
	Individual voluntary subscription	0.2	Private insurance	
<b>Medical assistance and subsidized</b>	Vulnerable population	3 - 8	General budget	MOH, President's office

Source: USAID's Health Finance and Governance (HFG) project (27)

#### ❖ Voluntary Community Based Health Insurance for informal sector and rural workers

The Community Based Health Insurance (CBHI) scheme otherwise known as “Mutual” was established in 1990 and intended to provide financial risk protection for informal sector workers and residents in the rural areas. This scheme provides insurance for the largest Senegalese population who are not eligible for the mandatory health insurance schemes and aims to cover 66% of the eligible population by 2017. This scheme has gone through periodic reforms since its inception in the early 1990s (22, 27). In 2012, the MoH established

a Technical support Unit (UHC) to support CBHI schemes. Stakeholders responsible for the CBHI have recently agreed on a standard CBHI package for all clients, which is captured in the National Strategy for UHC. The adoption of community health insurance has increased significantly with 32% of the target population reached in 2014 (24) against 14% in 2012.

### ❖ **Public subsidies for specific population groups and services**

The government has implemented programmes that provide subsidies and fee exemptions for specific health services including antiretroviral drugs, caesarean sections and anti-tuberculosis (TB) drugs. The government medical assistance programme also provides certain free services to indigents and populations with greater needs, such as children under five and elderly. Examples of such services are shown below:

- In 2006 the government established a national free health care programme called “Plan Sesame for seniors”. This programme provides free health care to the population aged 60 years and over and is funded by the central government budget. The programme covers about 450,000 elderly people, who are not covered by government or private retirement insurance schemes.
- In 2005 the government started a pilot programme called “Caesarean sections” to provide free institutional delivery care at health posts, health centres and hospitals for all women. This was first piloted in five poorest regions in Senegal and in 2006 expanded to all hospitals with the exception of Dakar. The programme attained full nationwide coverage in 2011.
- Since 1990, there have been free health care initiatives for children under five years starting with expanded programmes on immunization (EPI) providing free vaccinations. The programmes for children have been further expanded to include parasite removal, food supplements to treat malnutrition and “Vitamin A” supplements.

## **3.4. Health services delivery**

### **3.4.1. Public health services**

In addition to regional hospitals, each health district has at least one health centre, which is usually managed by a Medical Officer. These health centres provide preventive and curative medical and social care. There are a total of 76 health centres in the country; this includes 23 reference health centres (18). There is also a network of 971 health posts, which are based in municipalities, rural communities and villages (18). Health facilities are sometimes run by the army. The Ministry of National Education also has a role in running health facilities, especially medical education centres which form part of the peripheral level.

### **3.2.2. Private health facilities**

There are private health facilities, which are largely concentrated in the capital and employ nearly 80% of all doctors in the capital. The private sector include the following facilities (22):

- 4 private hospitals;

- 43 private clinics;
- 70 maternity centres;
- 131 medical practices;
- 76 private dispensaries;
- 843 pharmacy dispensaries;
- 12 private medical laboratories;
- 10 private imagery services;
- NGOs and associations providing care.

Private facilities are guided by the same policies and regulations as the general health system.

### 3.4.3. Armed Forces health facilities

The armed forces in Senegal have health facilities, which are located in all the regions where there is a military base. There are a total of 44 healthcare structures for the Armed Forces across various levels of the health system (27). These include:

- 1 hospital at the national level;
- 1 regional level hospital;
- 16 military base medical centres;
- 14 laboratories; and
- 12 health posts.

## 3.5. Human Resources for Health (HRH)

Senegal has a shortage of health professionals, which results in a heavy work load for health staff. The world development indicators estimate the health worker density in Senegal at 3.1 per 10,000 populations for nurses and midwives and 0.68 per 10,000 for physicians (17, 28). This is below the WHO recommended level of 23 health professionals per 10,000 population needed to deliver essential health care services.

The hospital beds ratio is around 0.3 per 1,000 population (28). The shortage of health workers and hospital capacity in Senegal is worse than in many regional and sub-regional comparators. For example, the density of health staff is 2 times lower than in Ghana, 3 times lower than in Uganda and 4 times lower than in Nigeria (17).

Senegal also faces a problem of unequal geographic distribution of health workers where a large proportion of the health workforce is concentrated in a few regions of the country. The capital for example has 70% of all specialist doctors and 39% of all general practitioners serving only 24% of the population (29). Similarly, while the capital has 2 physicians per 10,000 population, Kolda, Fatick, Kaolack, and Matam regions have less than 0.4 per 10,000 (29). Though to a lesser extent but the density of mid-level personnel also varies considerably among different regions (29).

The disparities in human resources for health deployment weaken the country's health system and compromise population health. The problem of health worker shortages have also given rise to task shifting downwards where midwives' role now includes emergency obstetric, new-born care and family planning services, while nurses are transitioning from nursing to midwifery roles in areas with limited health staff. This appears to create a situation

where unauthorized medical personnel in some rural areas are forced to provide medical care and treatment they may not be trained to provide (30).

There is a National Health Development Plan for the period 2009–2018 which recognizes that measures are needed to tackle the scarcity of health personnel and disparities in distribution across the regions, by increasing training capacity at the national level and adopting measures to promote workforce retention. The plan further estimates that the country requires 13,693 professionals to meet the health needs by 2018 (table 5) (27). In order to reduce the gap, the Government has increased the number of training centres and has set up a voluntary policy in this area.

Table 5: Projection of health workforce in the National Health Development Plan for 2009 –2018

CSP	General Medicine list	Special medicine list	TSS	IDE	SFE	Pharmacy	Surgeon & Dentist	Others needed	Total
Effective 2010	255	501	590	1911	825	92	79	7525	11778
Gaps compared to standards	-8	72	147	1673	759	-35	-37	-3252	-681
DICI	Replacement following retirees	35	114	365	95	12	6	881	1656
BESIONS 2013-	HR endowments following new implantations	85	454	4020	1928	64	33	4718	11500
	TOTAL 2009-2013	112	715	6058	2782	41	2	2347	12475
2013-	Replacement following retirees	50	110	384	138	12	11	1395	2193
BESIONS 2018	HR endowments following new implantations	85	454	4020	1928	64	33	4718	11500
	TOTAL 2013-2018	135	564	4404	2066	76	44	6113	13693
TOTAL NEEDS TO BE COVERED BY 2018	247	709	1279	10462	4848	117	46	8460	26168
Effective 2018	502	1210	1869	12373	5673	209	125	15985	37946
Expected rate of increased	1.97	2.42	3.17	6.47	6.88	2.27	1.58	2.12	3.22

Source: Direction of Human Resource, MoH

### 3.6. Medical Products and Technologies

The MoH in Senegal has set up a National Committee for the development and revision of lists of essential drugs and medical products. This committee has been in place since 1990 and is responsible for revising the national list of drugs and other health products every two years (22). The committee is responsible for regulating all pharmaceutical products procured by public and private wholesalers in the country. There is also a directorate for pharmacy and laboratories responsible for pharmacy and medical tests (22). This department oversees the practice of pharmaceutical professions, promoting and controlling public and private medical laboratories and regulating and promoting traditional pharmacopeia, thus regulating the manufacturing of traditional medicines and products.

The National Pharmacy Supply (NPS) is a government department responsible for purchasing pharmaceutical products for the public sector as well as regulating wholesale distribution. The National Pharmacy Supply has its headquarters in Dakar and 11 regional pharmacies, which fulfil the same role in each district by supplying to health facilities. This department coordinates all activities related to drugs and reagents in health facilities. In total, 99% of drugs purchased and supplied by the National Pharmacy Supply are essential drugs included in the National Essential Medicine List. The National Pharmacy Supply is only able to supply around 15% of the drug market in Senegal (22, 27), which has implications for the delivery of drugs in public facilities.

The Directorate of Pharmacy and Medicine plays an important role in the definition of drug policy. The National Laboratory for Drug Control also plays an important role by ensuring the quality of medicinal products.

### 3.7. Health Information

A number of stakeholders said that the health information system in Senegal had become more functional since 2004. The system was strengthened through internal efforts and support from international partners. A number of donors supported the General Health Information System and the implementation of the Demographic Health Information System tool (DHIS2). These included UNICEF, Intra Health, USAID, Belgium programme and the WHO.

The MoH revises health indicators every two years with the aim to identify new indicators for reporting. The lists of the agreed indicators are usually submitted to the MoH by programme managers. The HMIS department of the MoH provides technical support but is not responsible for choosing or prioritizing the indicator lists.



## CHAPTER 4: Eye Health System Assessment

### 4.1. Eye Health status

There had been no epidemiological surveys of visual impairment in Senegal prior to 2010. The information used by the MoH at the early stages of the development of the National Eye Health Programme was based on triangulation of hospital surveillance data from 1987.

According to the estimated made in the Senegal Vision 2020 Plan, there are 420,000 visually impaired people in Senegal, 140,000 of them are blind; and the national blindness prevalence is estimated at 1.4% (7). The estimated prevalence of various eye diseases is shown in Table 6. Cataract is the leading cause of blindness in Senegal affecting an estimated 30,000 people.

**Table 6: Prevalence distribution of various ocular pathologies in Senegal**

Oculars Pathologies	Prevalence
Cataract	0,31%
Trachoma	0,26%
Glaucoma	0,14%
Cornea Opacity	0,40%
Onchocerciases	0,02%
Undetermined	0,28%

The only two population based surveys of visual impairment available in Senegal were carried out in the Kaolack and Fatick regions in 2010 with the financial support from Sightsavers. The surveys used the Rapid Assessment of Avoidable Blindness (RAAB) methodology and estimated the prevalence of blindness among people over 50 years of age at 5.6% and 5.4% respectively (31). Women were more likely to be bilaterally blind than men in both regions. If we assume similar levels of blindness throughout the country and that 6.5% of the Senegal population are age 50+, this equates to approximately 53,270 people aged 50+, who are blind.

The RAAB data also shows that “unoperated” cataract was the leading cause of blindness in both regions. In Fatick unoperated cataract was responsible for 54.7% of blindness followed by trachoma (9.4%) and glaucoma (7.3%). In Kaolack cataract (56.8%) and glaucoma (11.3%) were the leading causes (table 7).

**Table 7: Prevalence of visual impairment and cataract surgery data in Fatick and Kaolack regions, RAAB 2010**

	Fatick	Kaolack
	Sample size = 2600	Sample size = 2900
Prevalence of bilateral blindness VA $\leq$ 3/60 (% in 50+, adjusted)	7,65.4%	7,5%
Prevalence of Low vision VA <6/18 (% in 50+, adjusted)	3,1%	3%
Cataract surgery:	0,9	0,9
Cataract Surgical Coverage (%)		
Good cataract surgical Outcome (VA $\geq$ 6/18)	60,4%	62%
IOL (%)	35,5%	28,7%

Source: Ministry of Public Health and Hygiene/Sightsavers (31)

Table 8: Principal causes of blindness in Fatick and Kaolack Regions, RAAB, 2010

Causes (%)	Fatick Sample size = 2600	Kaolack Sample size = 2900
<b>Refractive error</b>	1.0	4.7
<b>Cataract, untreated</b>	54.7	56.8
<b>Aphakia, uncorrected</b>	3.6	2.8
Total curable	<b>59.4</b>	<b>64.3</b>
<b>Surgical complications</b>	4.2	3.8
<b>Trachoma</b>	9.4	2.8
<b>Phthysis</b>	5.7	7.5
<b>Other corneal scar</b>	6.8	3.8
<b>Onchocerciasis</b>	0.0	0.0
Total preventable	<b>26.6</b>	<b>17.8</b>
Total avoidable	<b>85.4</b>	<b>82.2</b>
<b>Glaucoma</b>	7.3	11.3
<b>Diabetic retinopathy</b>	0.0	0.0
Potentially preventable*	7.3	11.3
<b>Globe abnormality</b>	0.0	0.0
<b>ARMD</b>	0.0	0.9
<b>Other post. segment / CNS</b>	7.3	5.6
Total posterior segment	<b>14.6</b>	<b>17.8</b>

Source: RAAB Report (31)

## 4.2. Link between Health System and Eye Health

### 4.2.1. Governance of the eye health system

In 2007, the MoH in Senegal established a department for coordinating eye health activities within the health pyramid. The department is headed by the National Eye Health Coordinator, a senior ophthalmologist. This represents the central level of the eye health pyramid where the National Eye Health Coordinator directly reports to the Director General of Health. The department has the overall responsibility for eye health at the ministerial level especially for policy, strategic planning and coordination. The department is responsible for all eye health promotion and disease prevention, including programmes targeting two blinding Neglected Tropical Diseases (NTDs,) trachoma and onchocerciasis. The activities of the department follow national regulations set out by the MoH.

The implementation and management of eye health activities at the regional level is coordinated by regional ophthalmologists (32), only six out of 14 regions have regional ophthalmologists. The regional ophthalmologists collaborate with the focal persons designated to eye health at the Regional Directorates. The level of coordination varies depending on the availability of the regional ophthalmologists.

The Regional Directorate works in collaboration with the District Health Team to coordinate eye health activities at the district level. The Medical Director in the district is responsible for supervising all health activities, including eye health. In districts where there is an eye unit, senior technician ophthalmologist or ophthalmic nurse works in close collaboration with the Medical Director of the district and the local council.

Senegal has a Global Action Plan [GAP] Committee at both national and local levels [for example in Kaolack and Louga Districts] with clear targets, which aim to reduce avoidable visual impairment. Concerning the full functioning of the GAP committees at the national level, more effort needs to be made because these committees are not active.

Stakeholders also had various opinions on the levels of commitment to eye health in Senegal. For example, many participants thought that the establishment of the National Eye Health unit evidenced the government's commitment to eye health. Others however felt that the MoH had yet to take full control of eye health through providing adequate funding to support eye health activities.

#### 4.2.2. International donors and partners

Donors and iNGO partners provide significant support to eye health activities in Senegal. All administrative regions except Dakar and Tambacounda have at least one partner supporting eye health activities. The two major partners working in eye health at the time of the study were Sightsavers, who supported both eye health and NTD activities and RTI, who focused on trachoma. Another iNGO partner identified in Kolda region was Foundation Fereruella Sanfeliu (FFS) (table 9).

Key informants interviewed in the study commented that in the past more donors/iNGOs had supported eye health in Senegal, including the Organization for the Prevention of Blindness [OPC], Fererra Foundation and Hellen Keller International [HKI].

**Table 9: Donor Mapping and Coordination**

Region	Donor	Main activities
<b>Dakar</b>		
<b>Thies</b>	RTI	Trachoma (MDD, prevalence survey)
<b>St Louis</b>	OMVS/PGIRE	Trachoma (Prevalence Survey)
<b>Matam</b>	OMVS/PGIRE	Trachoma (MDD, prevalence survey)
<b>Kaolack</b>	Sightsavers	Eye health, trachoma (TT surgery)
	RTI	Trachoma (MDD, prevalence survey)
<b>Kaffrine</b>	Sightsavers	Eye health, trachoma (TT surgery)
	RTI	Trachoma (prevalence survey)
<b>Tambacounda</b>	-	-
<b>Kedougou</b>	Sightsavers	Eye health
<b>Louga</b>	Sightsavers	Eye health, trachoma (TT surgery)
<b>Ziguinchor</b>	Sightsavers	Eye health
	RTI	Trachoma (prevalence survey)
<b>Diourbel</b>	Sightsavers	Eye health, trachoma (TT surgery)
	RTI	Trachoma (MDD, prevalence survey)
<b>Kolda</b>	FFS	Eye health
	RTI Foundation Fereruella Sanfeliu (FFS)	Trachoma (prevalence survey)
<b>Sedhiou</b>	Sightsavers	Eye health
	RTI	Trachoma (prevalence survey)
<b>Fatick</b>	Sightsavers	Eye health, trachoma (TT surgery)
	RTI	Eye health, trachoma (TT surgery)
	MERCK,SA	Praziquantel 600mg Tablet
	MERCK Sharp-Dohme	Ivermectine 3mg Tablet]
	GSK	Albendazole 400mg Tablet

Source: National Eye Health Coordinator (33)

### 4.2.3. Policy and Strategic plans

Stakeholders referred to the National Plan for Prevention of Blindness for the period 2006 – 2010; the plan had been approved and implemented by the Ministry of Health. However, since 2010, the plan had not been renewed.

The previous plan aimed to integrate eye health into the general health system, improve standards of eye care, and improve human resource capacity and infrastructure. There was a common opinion among stakeholders that many activities included in the Plan had been implemented with the support of eye health partners. However, there were few objectively verifiable indicators to demonstrate progress against the stated targets. The stakeholders further noted that the implementation of the Plan had been limited by financial constraints and weak capacities of the MoH to mobilise resources. A senior member at the MoH shared his opinion as follows:

*“[...] most indicators... contained in the plan... have not been ... achieved [because] as I have told you, we had a lot of problems with mobilization of resources; but in general we were able to achieve some key elements”* (key informants, national level)

The MoH developed and implemented three Strategic Plans for NTDs for the periods 2007-2011, 2011-2015 and 2016-2020 (23). The current strategic plan focuses on 10 endemic NTDs, which include leprosy, Guinea worm, rabies, leishmaniosis, dengue, schistosomiasis, helminthiasis, lymphatic filariasis, onchocerciasis and trachoma. Lymphatic filariasis (LF) and trachoma are targeted for elimination by 2020 (23). However, evidence suggested that the progress in fight of LF had been slow due to limited human and financial resources and weak mobilization of communities and healthcare workers (23).

### 4.2.4. Participation of people with disabilities in eye health decision-making

One area discussed by study participants was the level of involvement of Disabled People Organizations (DPOs) in eye health activities. The stakeholders pointed out that at the time of the study DPOs were not actively involved in eye health. Some stakeholders felt that DPOs and the National Eye Health department had different objectives with DPOs prioritising rehabilitation rather than prevention and treatment. DPOs argued that they had limited engagement and poor communication with the eye health programmes. An exception was frequent participation of DPOs in eye health activities during the World Sight Day celebrated at the national level and a few senior DPO members representing civil society at the National GAP committee. DPOs also said that they did not have authority or expertise to comment on technical aspects of government policies on eye health; they were more effective at a grass-root level and found it difficult to provide feedback at the policy level. Some DPOs members commented as follows:

*“[...] our contribution is needed but we only hear about eye health during World Sight Days... we need to advocate so that those with eye problems could know ... there is a lack of communication”* (FGD Participant 2)

*“[...] ... we are informed about the programme... we know, but we do not have information about the development of the programmes ... we are not involved”* (FGD, Participant 4)

Some informants pointed out that the situation was different in other disease areas. For example, there were strong patient groups working on diabetes and no government policy could be passed without their engagement. The informants suggested that DPOs could learn from such patient groups:

*“I take the example of a very strong organization, very strong... called the ASAD... it is the support group for diabetics... which virtually own all diabetes policy, nothing can be done in diabetes without them... they are very powerful ...” (key informants, national level)*

The lack of a coordinating framework was explained by uncertainties with the responsibilities for disability related policies. In the past, disability issues were within the remit of the Ministry of Social Affairs. Stakeholders expressed hopes that the situation would improve as disabilities moved to the responsibility of the Ministry of Health and Social Action.

### 4.3. Eye health financing

#### 4.3.1. Sources of funding for eye health

Informants explained that prior to 2006 (the year when the National Eye Health Programme was established) user fees paid to the facility and community-based insurance (“mutual”) had been the only sources of funding for eye health. In the subsequent years, these were supplemented by government allocations and funds from international donors and INGOs.

#### 4.3.2. Government allocations for eye health

Stakeholders explained that the MoH budget for health was divided into sections, chapters and budget lines. The breakdown of the budget into chapters was described as a preferred structure to ensure transparency. However at the time of the study there was no specific budget line for eye health in the general health budget in Senegal. The government allocations were captured under the budget of the General Health Management Department and were not separated from other MoH expenditures.

*“So I can say that it's health management or even general health management in particular, but there's no budget chapter specifically dedicated to eye health” key informant, national level*

The majority of participants felt that the government allocations for eye health within the overall MoH budget were limited and had remained constant for a number of years. One stakeholder for example, said:

*“the budget allocations for eye health stayed unchanged between 2005 and 2011 at 8 million CFA (approximately US\$17,680 using 2011 exchange rates 0.00221); the budget increased to 15 million CFA in 2011 (approximately US\$ 33,150 using 2011 exchange rates) but dropped again to 8 million CFA in 2015 (approximately US\$13,680 using 2015 exchange rate 0.00171)” (key informants, national level).*

The total government budget allocation for eye health as a percentage of the total budget of the General Health Management Department was estimated at 6.7% in 2015 ( 8 million CFA out of 120 million CFA (\$US13,680 / US\$265,200 using 2015 exchange rates 0.00171



At the time of the study, there were no specific budget allocations for eye health activities at the district level. At this level, the government allocated funds for general health services, which included eye health. For example, one participant commented on the situation in Nioro district

*“The government allocated 20 million CFA (approximately \$US 34,200, using 2015 exchange rates)” (key informants, district level)*

The resources were to support vehicle maintenance, computer consumables, cleaning products, office supplies and fuel.

Several participants also mentioned a new decentralization policy, which would create a new budget line for eye health in the districts:

*“There is a plan to create a different budget for eye health at the hospital, based on the new decentralization policy in the country; [this] will facilitate creating a new budget for eye health” (key informant, regional level).*

Stakeholders explained that the funds allocated by the government and generated by health facilities at the district level were managed by the local health committees, who were responsible for providing drugs and consumables to health facilities, including eye health units. Local committees also supported sensitisation activities for eye health. District eye care units or public health facilities generated enough resources for their own operations. However, the principle of unicity of the funds prohibits the exclusive or priority allocation of these resources to the eye health unit. It is an arbitration that decides the destination of the resources available and this takes more into account health emergencies (general surgery, emergency service, maternity, etc.).

#### **4.3.3. International partner support**

All stakeholders agreed that international partners were the key source of funding of eye health activities. The key donors mentioned were USAID and WHO, while Sightsavers, HKI, PAODES, RTI and FERRERA were named as the leading iNGO partners in eye health.

It was pointed out that the partners' support to eye health activities was provided in different ways. Some organisations supported specific health activities directly making their contribution more measurable and transparent; others supported indirectly, through contributions towards salaries, consumables and transportation costs, which were often more difficult to estimate. Sightsavers was named as a partner whose contributions were made directly in several regions and medical districts.

Stakeholder explained that the National Eye Care programme, whose function was to bring resources closer to the operational level, provided the overall coordination of partners at the regional level. Therefore it always advocated the management of financial resources by the medical regions.

The funds from major external partners were released to the regional and district levels on a quarterly basis. However financial allocations for eye health made by international partners to the Ministry of Health were not shown in the reports of the National Eye Care programme:



*"International partners support us a lot but they never tell us how much they have invested" (key informant, national level)*

#### 4.3.4. Health Insurance

Health insurance was also thought to be an important source of funding of eye health services, as one stakeholder from the MoH described:

*"[...] well ...for funding...care, there are two [sources]... either it is paid by the patients or the insurance package known as mutual fund" (National Level, MoH)*

Study participants explained that the national community-based health insurance, 'mutual', covered approximately one third of the costs of cataract surgery for those insured. These funds were usually used to support costs of surgery in the public facilities.

#### 4.3.5. Out-of-Pocket Payments

Study stakeholders described the system of internally generated funds based on out of pocket expenditures by patients. It was pointed out that usually hospitals had a single account for all internally generated funds (32). Therefore, this study could not identify any records of funds generated specifically for eye care. Some stakeholders estimated that in some hospitals out of pocket expenditures constituted 16% – 17% of the total hospital revenue while the global statistics suggests that user fees constitute around 36.9% of the total health expenditure in Senegal.

Study informants said that the price of cataract consultations and surgery charged to patients varied by location and type of health facility. The costs of surgery were reported to be highest in the capital and in private facilities. For instance, eye units in Kaolack, Louga and Kebeme reported the costs of surgery between 35,000 CFA and 50,000 CFA (around 60 -86 USD using 2015 exchange rate of 0.00171), while those in Dakar reported the costs of 100,000 – 150,000 CFA (172 - 258 USD using 2015 exchange rate of 0.00171) per surgery (table 10). Some stakeholders added that the costs of cataract surgery did not include post-operative services, for example refraction. Figure 18 shows a price list displayed in the eye health unit in Nioro district.

The cost associated with consultations also varied by facility type and location of service delivery. For example, costs per consultation in regional hospitals was around 3,000 CFA (5 USD using 2016 exchange rate 0.001681) while eye units in district health centres charged around 1,000 CFA (1.7 USD).

**Table 10: Cost of cataract Surgery by level, type of facility and location**

Category	Cost of surgery		Consultation	
	CFA	USD using 2016 exchange rate	CFA	USD using 2016 exchange rate
<b>Public facility</b>	100,000 – 150,000	168.05 – 252.08	3000 – 5000	5.04 – 8.40
	300,000 – 500,000	504.18 – 840.28		
<b>Private facility</b>	250,000 - 300,000	420.14 - 504.18	30,000	50.42
	250,000 – 600,000	420.14 – 1008.34		
<b>Regional</b>	50,000	84.02	3000	5.04
<b>District</b>	40,000	67.22	1000 - 2,000	1.68 – 3.36
<b>Health Centre</b>	35000 - 40,000	58.82 – 67.22	2000	3.36
<b>Capital</b>	100,000 – 150,000	168.05 - 252.08	5000 – 20000	8.40 – 33.61
<b>Outside capital</b>	50,000	84.02	1000 – 3000	1.68 - 5.04

A number of participants mentioned user-fee exemptions for patients who could not pay for cataract surgery. They explained that the government had a mechanism to support patients who could not afford fees. The system was managed by the social service department at each hospital, who set criteria for providing subsidies and assessed patients for their eligibility. The exemptions were usually granted to the patients classified as indigents, mainly the elderly and people with disabilities. Some stakeholders mentioned that occasionally individual community members volunteered to cover the costs for patients who could not afford to pay.

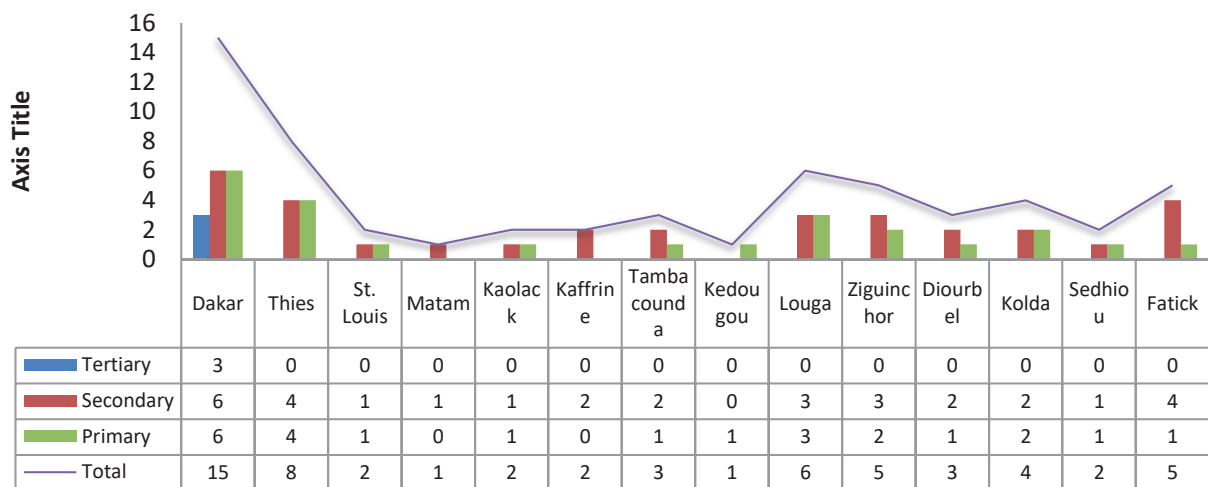
#### 4.4. Eye health service delivery

##### 4.4.1. Organization of Service Delivery

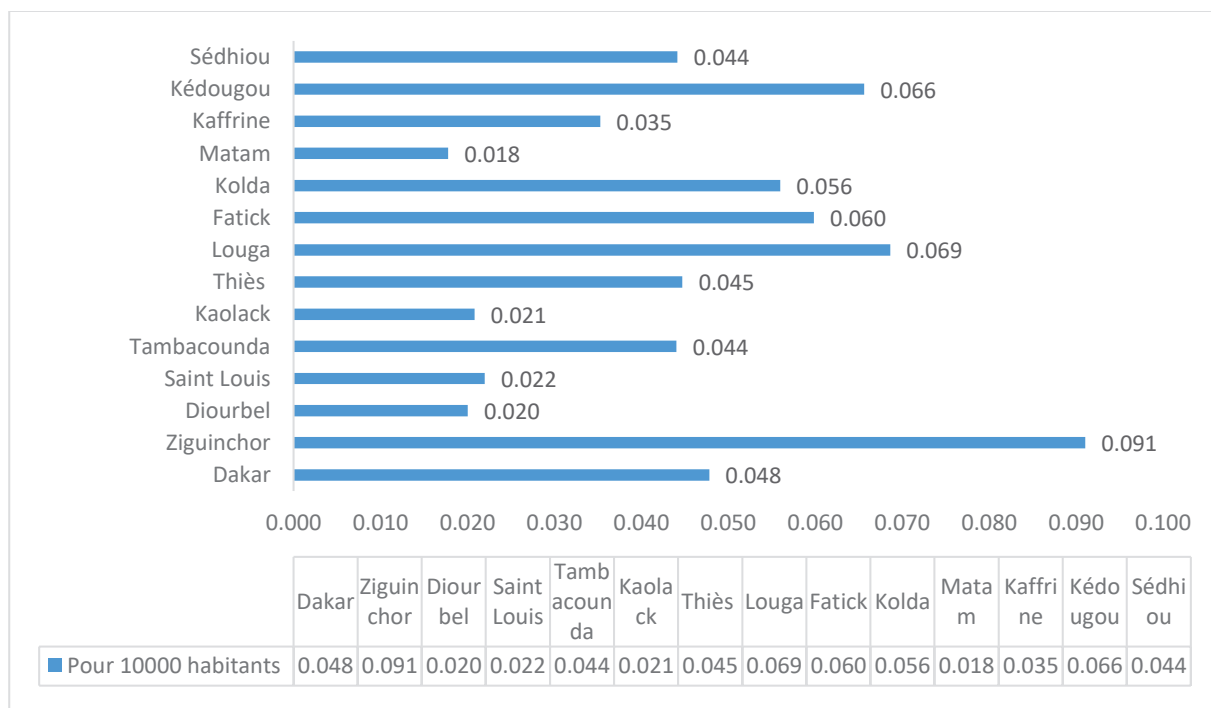
At the time of the study there were 59 health facilities with eye health units; these included 32 (54.2%) secondary, 24 (40.7%) primary and three (5.1%) tertiary facilities (figure 1). Tertiary facilities were located in Dakar only. 18 eye units were established in regions (Kaolack, Kaffrine, Fatick, Ziguinchor, Sedhiou) between 2007 and 2013 with the help of the Health for Peace Initiative (Health Initiative Program for Peace) project supported by Sightsavers.

The distribution of health facilities with eye units varies by region, with 15 (25.4%) of them located in Dakar, followed by eight (13.6%) in Thies and six (10.2%) in Louga. The ratio of eye units to the population at the time of the study varied between the regions; the average national ratio was estimated at 0.04 per 10,000 (or 250,000 people per 1 unit) (figure 2).

**Figure 1: Distribution of available eye care facilities or units in 2014 by Region and Level**



**Figure 2: Distribution of available eye units by population**



Source: National Eye Care Programme, 2015

Study stakeholders described how eye care services were delivered in their facilities. Eye care consultations were usually available throughout the week, while cataract surgeries were limited to particular days depending on the level of the facility; arrangements at the unit and the needs of other surgical teams. For example, an informant from Nioro district said that:

*“cataract surgery in the eye unit was performed four days a week, Monday to Thursday” (key informant, district level).*

Other eye health activities, such as outreach programmes for trichiasis surgeries, and eye health prevention and promotion campaigns were also scheduled for particular dates. The majority of stakeholders emphasised that all eye health activities were delivered as part of

the national eye health programme and through eye health units with no parallel or stand-alone programmes.

#### 4.4.2. Eye consultations

The study identified a large number of people visiting eye health units for eye care appointment and follow up treatments and referrals. For example, 155,033 eye care patients visited the eye units for eye health services in 2015. However, the number of people referred for treatment was reported to be two times higher (271,590 in 2015) (34).

It was also pointed out that the completeness of the data continued to be problematic as the private sector tended to under report its data:

*“[...] you find between 150,000 and 175,000 consultations ...But that is far from reflecting reality... It does not reflect reality since people do not always speak the same language, when referring to consultants and consultations... This information does not take into account the actual private sector data... [and] ophthalmological consultations performed by the general doctors” [key informants, national level]*

#### 4.4.3. Access to cataract services

The MoH estimated that in 2014 there were 41,800 cataract cases in need of surgery. In the same year 12,889 surgeries were performed, which indicates a significant gap in the current provision of services (34) (table 11).

**Table 11: National cataract surgeries**

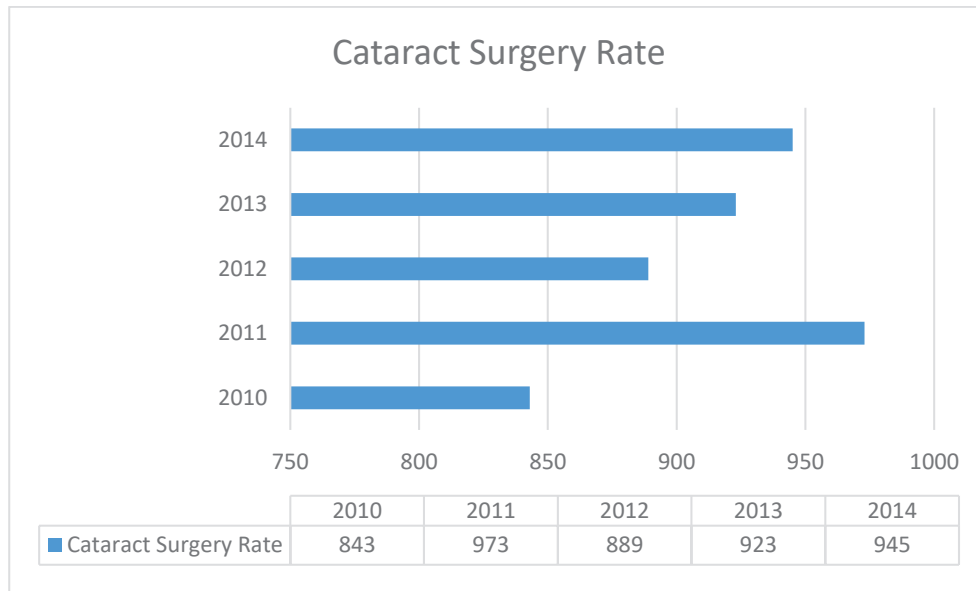
Years	2010	2011	2012	2013	2014
Population (Million)	12,15	12,5	12,81	13,13	
Number of cataracts to operate	37646	38739	39708	40700	41800
Number of Cataracts operated	10 241	12106	11349	12068	12889
Cataract Surgery Rate	843	973	889	923	945
Implantation rate	96%	97%	97%	97%	97%
Absolute GAP	27 406	26633	28359	28732	28900

**Source: National Eye Care Programme, Ministère de la Santé (34)**

The number of cataract surgeries performed in Senegal is calculated based on two sources, cataract cases presented at the facilities (routine surgery); and cases identified through outreach campaigns. Outreach campaigns play an important role in recruiting cataract patients, although their contribution to the overall number of patients varied throughout the years from 5% in 2001 to 23% in 2011. Between 2012 and 2014, the percentage of cataract cases operated during campaigns decreased from 13.3% in 2012 to 10.4% in 2014 due to improved services available at hospitals limiting the need for the organization of outreach campaigns.

The reported Cataract Surgical Rate (CSR) in the country increased from 843 surgeries per million populations in 2010 to 945 per million in 2014 (figure 3). The trend shows a general increase over the past 5 years with some stagnation in recent years. The current CSR is about half of the recommended target for Africa (2000 per million per year) (12) and there are significant variations in the number of surgeries between the regions.

**Figure 3: Cataract Surgery Rate (CSR) / million population / year**



Source: PNPSO, 2015

Data on cataract coverage is not easily obtainable and the available estimates are difficult to interpret. The MoH estimates suggest that access to cataract services in the country increased from 17.3% in 2000 to 30.8% in 2014. The estimates however need to be treated with caution, as they are not based on the population-based data.

The RAAB studies which are the only population-based estimates were conducted in two regions, Kaolack and Fatick, and showed a higher surgical coverage of 62% and 60.4% (table 7) respectively (31). However, it is likely that access to cataract services varies considerably between the regions and CSC in Fatick and Kaolack cannot be treated as representative of the country.

In addition, the data on the total number of surgeries used in the calculations of both CSR and national coverage estimates is likely to be underestimated, as private facilities feel reluctant to report the number of cataract surgeries performed.

Among people who have been operated for cataract, only 29% in Kaolack and 36% in Fatick had good visual outcomes ( $VA > 6/18$ ), which improved to 39% and 41% respectively with correction. This is lower than the recommended levels of 80%. Around 51% of RAAB participants in both regions had poor visual outcomes ( $VA < 6/60$ ), which reduced to around 37% with correction. This is much higher than the recommended level of no more than 5%.

In total, 29.1% of surgeries in Kaolack and 47.8% of surgeries in Fatick were non-IOL surgeries. In Fatick women were more likely to have a non-IOL surgery than men. However, this situation can be explained by the fact that there were no cataract services in Fatick at the time of the RAAB; patients in this area had surgery in The Gambia (31).

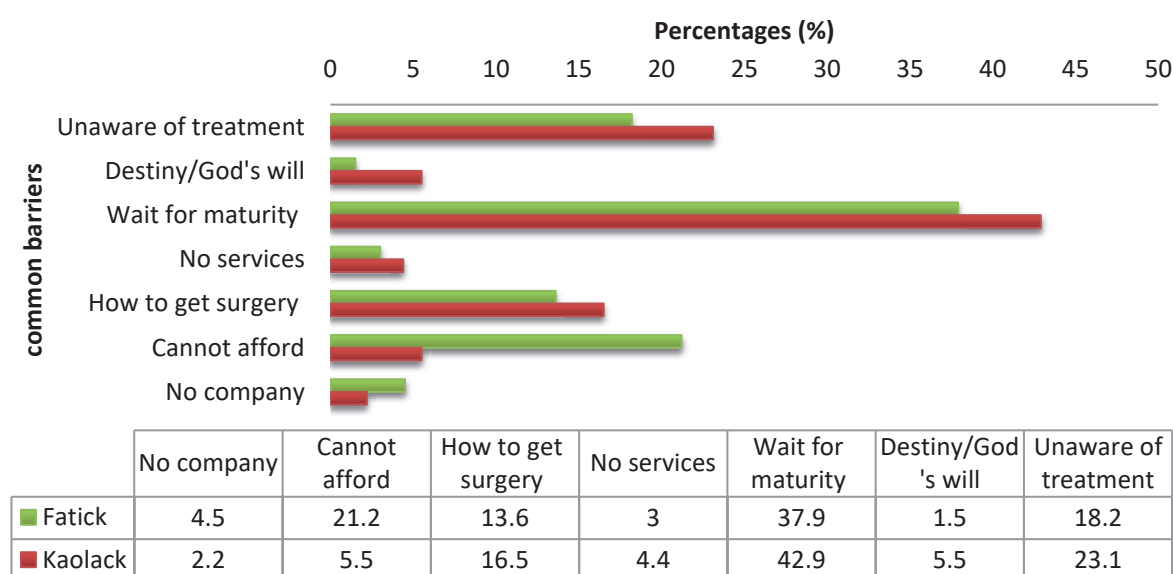
The study calculated cataract surgical productivity by dividing the total number of cataract surgeries reported in 2014 by the number of practicing ophthalmologists and cataract surgeons (12). Using these data, the cataract surgical productivity in 2014 was 150 surgeries

per ophthalmologist/surgeon, which is well below the recommended levels of 500 surgeries per surgeon per year (12). However, again this number may be an underestimate, as many private surgeries are not reported to the national HMIS. Also in the Senegalese system not all ophthalmologists are practicing surgeons.

Key informants commented on the improvements in service delivery offered by cataract surgeons following their in-service training in recent years. They however suggested that the current need for cataract surgery outstrips the availability and there are considerable waiting lists in many facilities.

The top reasons for not having a cataract surgery in the two regions where the RAAB survey was conducted were waiting for maturity of cataract and unawareness of treatment or how to get it in Fatick financial constraints were the second most common barrier (figure 4) (31).

**Figure 4: Barriers to uptake of cataract surgeries in Fatick and Kaolack regions in 2010**



Informants from DPOs suggested that an important barrier for many patients was the design of hospital buildings making it difficult for old visually impaired people enter and move within the facilities:

*"[...] you enter inside the building, if you are visually impaired, it is hard ... the infrastructure ... is not very suitable"* (FGD, Participant 1)

DPOs also commented that many people did not have information about a range of services and prices, although this study found the evidence that this information was available on display in many eye units.

Focus group discussions with people with disabilities revealed attitudinal barriers, for example poor reception by eye health professionals and long waiting times at the clinics.



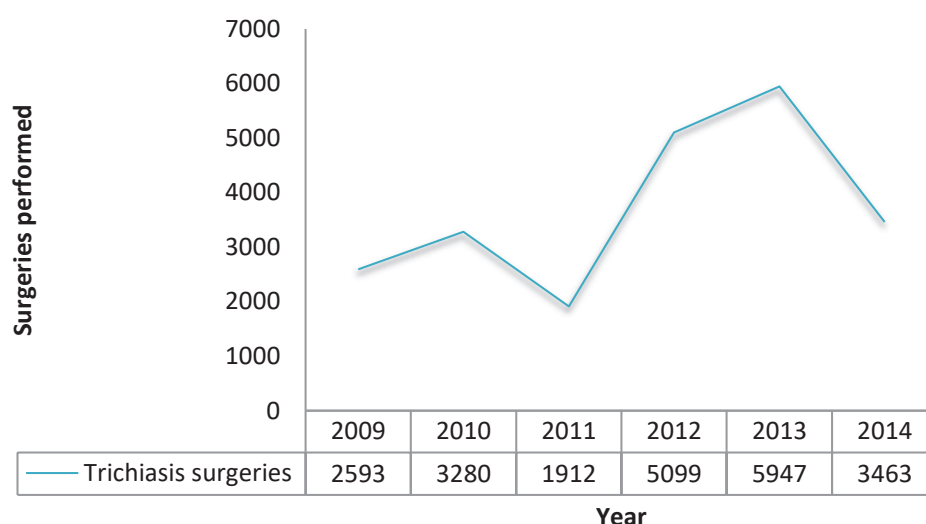
A large number of stakeholders said that hospitals had reserved beds for eye care patients from distant rural communities, who were unable to travel home after the surgery. On average there were 2 – 3 reserved beds per eye unit outside Dakar. In places where there were no reserved hospital beds (e.g. Kebeme, Nioro), there was an opportunity to book a bed upon request. However, it was also suggested that in many facilities, eye care was delivered as an outpatient activity, which often led to underutilisation of the reserved beds.

#### 4.4.3.1. Response to trachoma

Trachoma is the second leading cause of blindness in Senegal with an estimated 25,000 people blind from trachoma. A recent survey of trachoma prevalence estimated that 320,000 children under the age of 10 had signs of active trachoma (7).

Available documents on trachoma show that the number of trichiasis surgeries increased from 3,280 surgeries in 2010, to its peak of around 5,947 surgeries in 2013 (figure 5). In 2015 the number of trichiasis surgeries was 4,686 (34).

**Figure 5: Trends in trichiasis surgeries for the period 2009 – 2014**



Source: National Eye Health Coordinator, MoH, 2015

The number of treatments with azithromycin in Senegal more than doubled in recent years and was 1.83 million in 2014.

#### 4.5. Eye health workforce

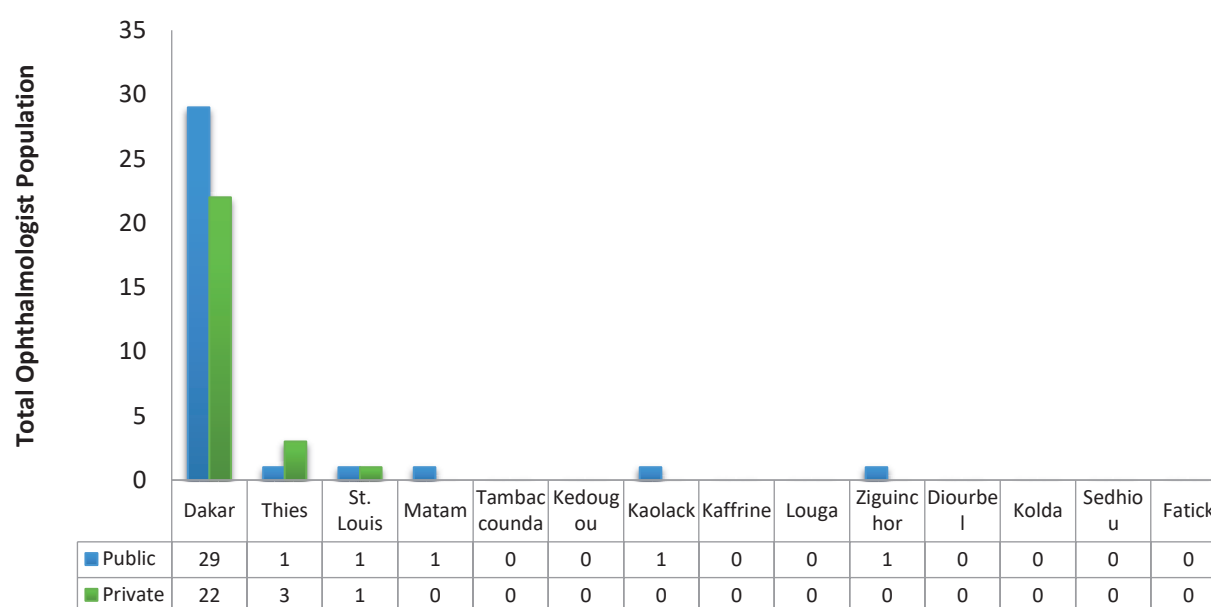
##### 4.5.1. Eye health workers

At the time of the study, there were a total of 60 active ophthalmologists and 26 cataract surgeons in Senegal. This represented 5.8 surgeons (ophthalmologist and cataract surgeons) per million population, which is higher than the recommended target of 4 per million (figure 8). As shown in figure 6, 55% (33/60) of ophthalmologists in Senegal are deployed in the public sector, while 45% (27/60) are in private facilities.

The study found significant geographic inequalities in the distribution of eye health workers especially ophthalmologists; only 6 out of 14 regions in Senegal had ophthalmologists and 85% of all ophthalmologists (n=51) were based in Dakar (figure 7), as one informant described:

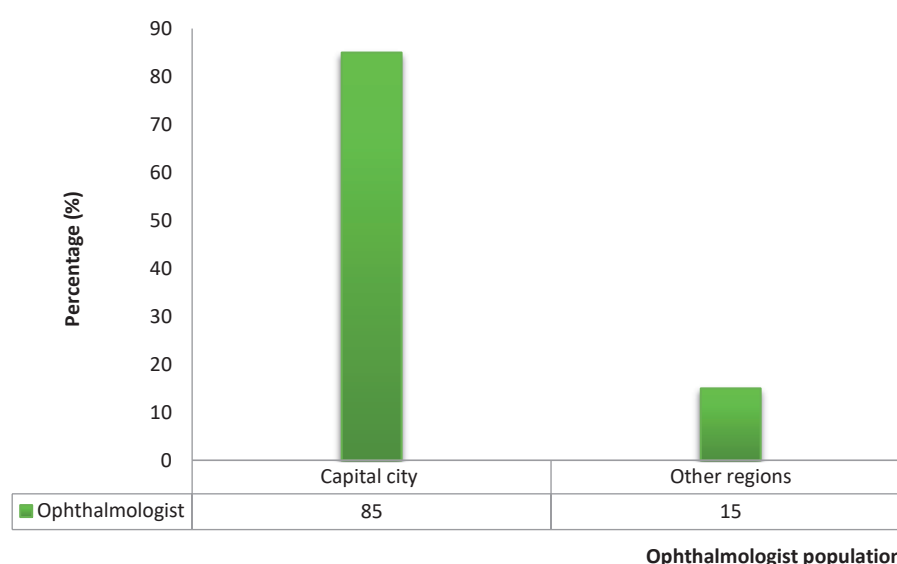
*“[...] well we must emphasize that we have problems in Senegal concerning eye health workers... there is a gap... we are not able to get ophthalmologists ... [in] each region...”* (key informant, national level)

**Figure 6: distribution of Ophthalmologists by public versus private, regions**



Source: National Eye Health Coordinator, MoH, 2015

**Figure 7: Distribution of Ophthalmologists by public and private sector and by region**



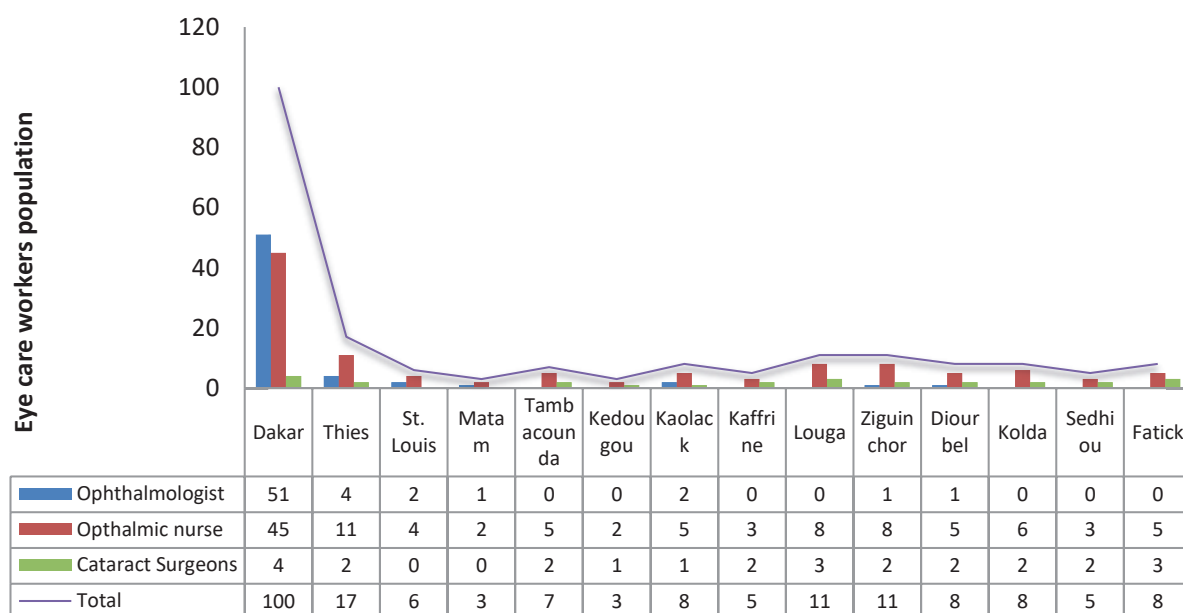
Source: National Eye health coordinator, MoH

The regions without an ophthalmologist at the time of the study were Tambacounda, Kedougou, Kaffrine, Louga, Diourbel, Kolda, Sedhiou and Fatick (figure 8). Study participants pointed out that the delivery of eye care services is affected by a shortage and an unequal distribution of general eye care workers. They further explained that the strategies used to attract eye care workers to rural areas were either financial incentives or “personal pleas”.

A number of stakeholders also mentioned a problem of aging ophthalmologists and the absence of clear plans to replace them:

*“[...] because ophthalmologists who are there, if you look ... at their age... there are many who will retire soon... there is one in Thies [region] who retired... who was forced to stay in the hospital to continue the services... because there is no one [to replace him]” (key informants, national level).*

**Figure 8: distribution of eye care workers by Region**



**Distribution of eye care workers by region**

Source: National Eye Health Coordinator, MoH, 2015

It was further noted that senior technicians had been trained as cataract surgeons to fill in the gaps in the number of ophthalmologists in some regions (figure 10). However, despite having been trained in relatively large numbers, they were not a recognised cadre at the policy level and there were mixed feelings about their role, support and effectiveness among the stakeholders interviewed.

Similarly, technician ophthalmologists otherwise known as ophthalmic nurses were trained by eye care institutions outside Senegal to improve the delivery of eye care services across the country. The study identified 112 ophthalmic nurses, which represents a ratio of 7.5 per million population (figure 9), which is below the GAP target (10 per million) (12). All 112 ophthalmic nurses and 26 cataract surgeons were deployed and distributed across 14 administrative regions (table 12).

There was a total of 3 optometrists, representing a ratio of 0.2 per million population, which is significantly lower than the recommended target of 20 per million (figure 9). In addition optometrists are not recognised by the MoH as a health worker cadre in terms of new recruitment. The three optometrists identified in the study were senior technicians who were already working and had been promoted to optometrist roles (initially 4 but one has retired since 2013)

Some interviewees argued that the limited number of ophthalmic staff available in the health facilities put pressure on the eye health units particularly at the time of outreach activities:

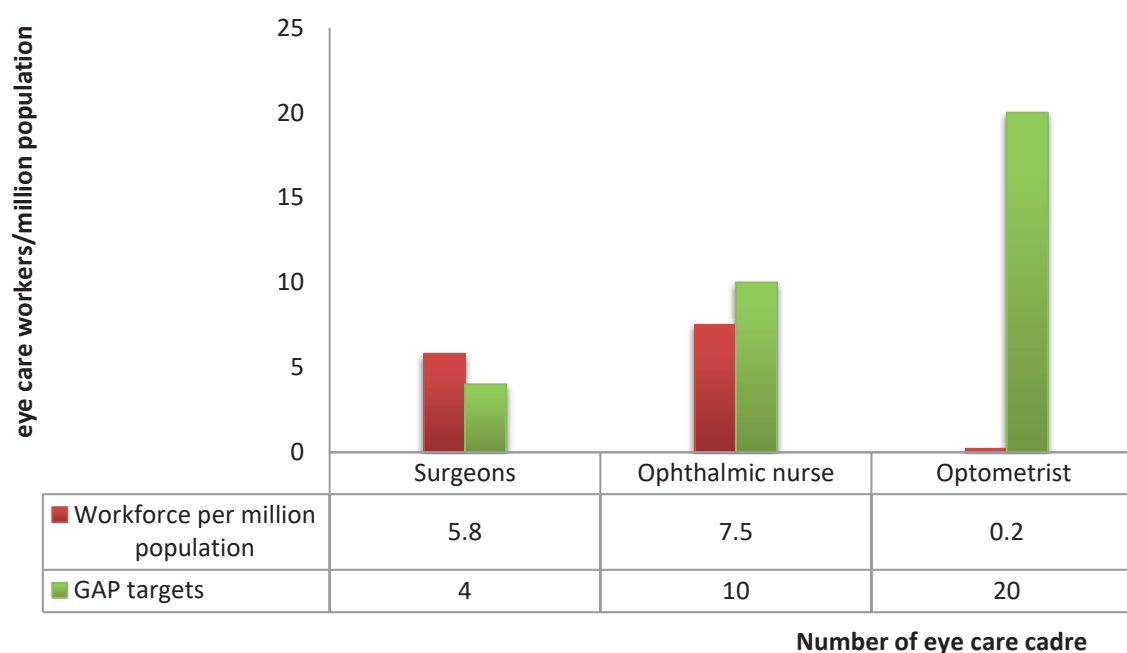
*“[...] there are three ophthalmic nurses in the facility making it difficult to have a full range of eye health services when some move for outreach programmes”* (key informant, district level).

**Table 12: Distribution of eye care workforce by location and type of facility in 2015**

Setting	Total Active workforce	Public	Private		Location		Training programme	Total Unemployed	Final year of training
			For-profit	NGO	Capital	Outside Capital			
<b>Ophthalmologists</b>	60	34	26		51	9	1	2	3
<b>Cataract Surgeon</b>	26	26	0	0	0	0	0	0	4
<b>Total Surgeons</b>	<b>86</b>	<b>62</b>	<b>26</b>				<b>1</b>	<b>2</b>	<b>7</b>
<b>TSO/Ophth. nurse</b>	112	112	0	0	0	0	1	2	5
<b>Total</b>	<b>112</b>						<b>1</b>	<b>2</b>	<b>5</b>
<b>Optometrists</b>	3	3	0	0	0	0	0	0	0

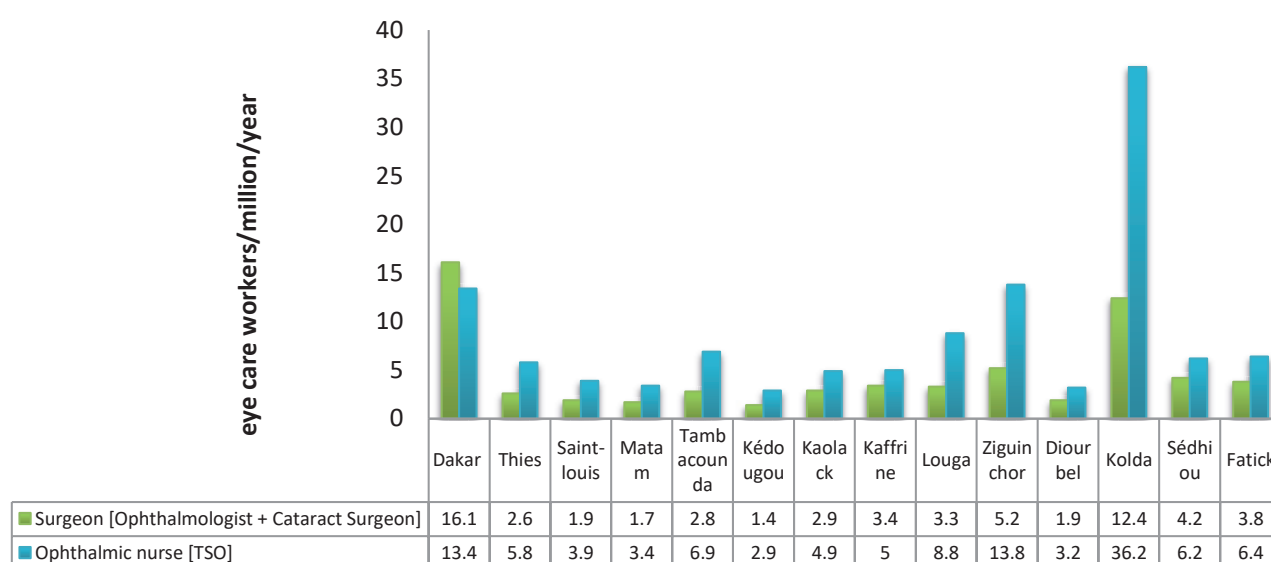
Source: National Eye Health Coordinator, MoH, 2015

**Figure 9: Number of eye care practitioners per million populations in 2014**





**Figure 10: Distribution of eye care workers/million population by region**



**Distribution by administrative regions**

#### 4.5.2. Human resources training

There are two institutions for training eye health workers in Senegal: Cheik Anta Diop University (UCAD) and National School of Health and Social Development (ENFSS). Informants explained that UCAD was responsible for training ophthalmologists over 4 years, while ENFSS trained senior technicians (ophthalmic nurses) for a period of 3 years.

The average number of students enrolled at UCAD at the ophthalmologist programme was 12, while ENFSS enrolled 10 students per year. Study participants said that all graduates were deployed in the eye health system but there was no formal Memorandum of Understanding (MoU) between the MoH and the two training institutions. A need for such MoU was identified by a number of stakeholders, particularly those from DPOs.

Stakeholders further noted that the MoH supported a three month in-service training for eye care workers; and in some cases there were scholarships for in-service training for cataract surgeons. A number of interviewees said that the in-service training was a good incentive for eye care workers:

*“[...] the in-service training enhances the skills and knowledge of the eye health workers ...there is no barrier at the ministry level for such training”* (key informant, national level)

Some stakeholders noted that the training institutions were autonomous and unresponsive to the needs of the eye health system. For example, the number of ophthalmic nurses (technician ophthalmologists) trained at ENFSS was limited to a certain number, which did not meet the needs of the eye health system and the population. It was also explained that some ophthalmic nurses were trained in the Gambia to fill in the gap:

*“[...] there is nothing in the Senegalese legal framework which opposes the practice where TSOs are trained in the Gambia”* (key informants, national Level)



INGO partners provided scholarship to fund the training of ophthalmic nurses at the eye care training institutions. For example, Sightsavers supported the training of 20 ophthalmic nurses, while Ferreruella foundation supported 3.

#### 4.5.3. Training of Primary care workers

In most regions there are primary care nurses trained in eye care, both through initial and in-service training. For example, many stakeholders referred to a training initiative in 2014 where around 400 nurses received in-service training. Another training of around 400-500 nurses in primary eye care was supported by “Care Supply and Demand Support Project” (PAODESS). The training of nurses in eye care is mostly supported and funded by external donors, Sightsavers and Ferrera Foundation. RTI also provided training for primary care staff involved in trachoma programmes.

#### 4.5.4. Human resource management system

Senegal has the Human resources for Health policy, which includes eye health workers. Stakeholders also mentioned that the National Development Plan has specific targets for eye health personnel.

Stakeholders commented that the National MoH is responsible for recruitment and deployment of public sector eye health workers in the same way as other health cadres in the country. The recruitment is handled by the Human resource (HR) department, who collaborates with the National Eye Health department. Although one interviewee expressed concerns about limited information sharing between the two departments, other stakeholders said that the departments did collaborate to ensure equal distribution of eye health workers across the country.

Some participants mentioned ‘iHRIS’ an open source health information software that supplies health-sector leaders with information to track, manage, and plan the health workforce. The system was developed by a USAID funded project and adopted in Senegal in 2013. Initially the software focused on health workers for mother and child health as a major priority area of the Senegal MoH. However, according to one informant the HR department in collaboration with the National Eye Health Co-ordinator is using this tool to plan national workforce for eye health.

Another issue related to health worker recruitment was a noted increase of the number of female eye health workers. This was a deliberate effort by senior eye health managers to empower female eye health workforce. For example, one informant from the MoH commented that:

*“out of 30 or 40 TSOs (ophthalmic nurses) trained over the last five years, only 5 were male” (key informant, national level).*

One issue discussed by study stakeholders was supervision of eye health personnel. Participants mentioned that the health system practiced an integrated supervision approach, where District Management Teams took responsibility for supervision. The integrated supervision approach brought ophthalmologists into the core team. This strategy supported integration of eye health into the general supervision system.

## 4.6. Eye health medical products and technologies

### 4.6.1. Policy, Laws, and Regulations

Stakeholders explained the system of procurement of medical products in Senegal. The Directorate of Pharmacies and Medicine (DPM) is responsible for registering medicines while the National Pharmacy Supply (NPS) is responsible for procurement. A number of stakeholders said that DPM, NPS, health care users and providers held regular workshops to discuss and agree the medicines to be included in the National Essential Medicine List (NEML). The list is updated every two years.

The stakeholders also said that within the public sector, the DPM compiled and the National Supply Pharmacy ordered all pharmaceutical products centrally. However, in the private sector, there were various wholesale distributors importing medical products or purchasing them from the local pharmaceutical manufacturers.

Study participants pointed out that not all eye health pharmaceutical products were included in the NEML. Available records from the MOH identified 27 eye related medicines included in the NEML at the time of the study (table 19 in the Appendix).

Key informants said that there were clinical guidelines for health care professionals, which contained information on various eye related medicines.

### 4.6.2. Financing of eye health products

The review of available documents showed that international donors and partners funded a large part of eye health medicines, particularly those for NTD programmes. Table 13 provides information on the key donors supporting procurement of pharmaceutical products for NTD programmes in Senegal.

**Table 13: Donors/partners supporting pharmaceutical products for NTDs**

Donors [partners]	NTD Pharmaceutical products
GSK	Albendazole 400mg Tablet
MERCK Sharp-Dohme	Ivermectine 3mg Tablet
MERCK,SA	Praziquantel 600mg Tablet
ITI	Azithromycin 250mg Tablet
ITI	Azithromycin 1200mg Syrup
RTI International	Tetracycline 1% pomade

**Source: National Eye Health Coordinator, MoH (34)**

Study participants said that there was no information on government allocations for purchasing pharmaceutical products through the MoH. Key informants at the regional and hospital levels felt that eye care products were purchased mainly using hospital budgets.

However, few could estimate the proportion of hospital pharmaceutical expenditure spent on eye health products. Only one informant from the regional hospital of Louga suggested that eye care medicines constituted around 28.4% of the total hospital budget for pharmaceutical products, which was 902,000 CFA out of 3,176,350 CFA (1,542 USD out of 5,342 USD using 2015 exchange rate of 0.00171):

*“[...] eye health medical products constitute 28.39% of the total budget for medical products at the facility” (key informants, regional level).*

Study participants further noted that there was no information on the proportion of funds spent on eye health medical products using private funds, including out of pocket expenditure and health insurance.

In the public facilities, there was no agreed timeframe for procuring eye health medicines. The purchase of eye health products happened when needed.

#### **4.7. Eye health information system**

##### **4.7.1. Strengthening health information system in Senegal**

Sightsavers was named as the only partner providing financial support to strengthen the eye health information system; Sightsavers expressed commitment to support the implementation of the DHIS2 tool to ensure integration of eye health data.

##### **4.7.2. Availability of eye health data**

A number of stakeholders said that eye health information was standardized and integrated into the health information pyramid at various levels; Information on the number of cataract surgeries was reported to the MoH. This information was used during annual reviews and reports and was thought to be the most reliable source of information available, used by national and local stakeholders and partners.

However, several participants said that the number of eye health indicators included into the health information reporting system was limited.

National level stakeholders pointed out to the lack of data for national planning or measuring the effectiveness of the eye health programmes. They explained that the data were available either in the facility registers or in the iNGO reports. Although iNGOs often shared their data with the National Eye Health Department, their data collection systems and tools varied, and it was difficult for the MoH to coordinate and align this information.

DPO representatives also said that they experienced difficulties in getting reliable information on eye health from the MoH. The only sources they referred to were global statistics repositories of the World Bank and WHO and informal communications with the National Eye Health Coordinator. It was argued that the lack of data undermined DPO planning processes and activities.

The stakeholders interviewed hoped that the new DHIS2 tool would help to collate and store information in a more coordinated way:

*“[...] because we [will] have a tool that can afford to take everything, we will create a central portal for storing data... where all data will be channelled to, and when we need data, we can rely on this tool for information...” (key informant, national level).*

##### **4.7.3. Reporting eye health data at various levels**

It was explained that the information collated in the facility registers included the number of eye consultations and the number of cataract surgeries performed. Eye units used their own

reporting templates and sent information via email to the medical director or to the health information unit in the district, who then passed it to the regional level.

The data is then reported to the region through the hospital information system. The ophthalmic nurse [TSO] is responsible for compiling eye health data within the zone of the district before submitting it to the region. The regional data is validated by the regional ophthalmologist.

*“The unit has its own reporting template for collecting eye health information... This information is sent to the hospital HIS department before finally reaching the regional level”* (key informant, regional level).

Some stakeholders said that although facility health information was usually collated on a monthly basis there were delays in aggregating and reporting data to the upper levels. In some districts this information could only be obtained from the facilities during monitoring and supervision visits. There were also limited human resource capacities to collate and aggregate data at various levels.

Informants further noted that eye health information was not integrated into the minimum set of indicators in the districts where there was no eye unit.

Stakeholders at the national level also noted problems with timely data collection and updates. For example, a senior official from the National Eye Health Department felt that some eye units were less committed to producing annual reports and their data were received by the national MoH only in September of the subsequent year.

In addition, private sector facilities did not share their data regularly. Study participants felt that in order to receive regular updates from the private sector the district medical supervisor had to be actively engaged.

An informant from an organization involved in the NTD treatment programmes noted that often reports were limited to financial data with little information on the technical aspects of the programmes.

## Conclusion

The study examined the eye health system in Senegal and explored its level of integration into the general health system. The study revealed a significant degree of synergy and interrelation between the two systems.

Eye health is governed by policies, regulations and standards that are applied in the general health system. There is a National Eye Health Program within the Ministry of Health and Social Action.

Eye health benefits from different sources of funding. Compulsory health insurance covers some aspects of eye health. Eye care services are present at different levels of the health pyramid.

The Human resources policy and Human resource development plan include eye health and the health workforce management software takes into account eye health workers. There are eye health training institutions in the country and the government supports in-service training of eye health personnel.

A total of 27 drugs and eye care products are integrated in the National list of essential medicines and clinical guidelines are available to guide health providers. Eye health information is collected at different levels and integrated into the general information system.

However, the study also identified a number of weaknesses and opportunities for strengthening the eye health system. Both eye health system strengths and weaknesses are summarised below following the WHO health system building blocks framework.

## General health system

### Strengths

- Health expenditure in Senegal has increased considerably in recent years, rising from 245 billion FCFA in 2005 to 431 billion FCFA in 2013 (or around 5% of GDP), an increase of almost 76%;
- Senegal has a National Health Policy, the “Plan National de Développement Sanitaire du Sénégal,” 2009-2018, which stipulates the right to healthcare by all citizens, including persons with disabilities and the elderly;
- There are different types of health providers, including public facilities, private facilities, and facilities of the Armed Forces; the health system has a pyramid structure, which includes central, intermediary (14 medical regions) and peripheral (76 health districts) levels with health facilities operating at all levels;
- There are several sources of health financing including the national government, local authorities, international donors, health insurance and private out-of-pocket co-payments;
- There are two health insurance schemes: a Mandatory insurance scheme offered by the employer that benefit government and private sector employees and the

Community-Based Health Insurance scheme (mutual) established to reduce financial risk for informal sector workers and rural residents. The Government has set up a universal health coverage agency that offers a standard package of care in line with the National Strategy for Universal Health Coverage;

- Mandatory health insurance schemes covered 35% of the population in 2014 (civil servants). The uptake of the Community health insurance has increased considerably with 32% of the target population reached in 2014;
- The government has implemented programmes that provide subsidies and fee exemptions for specific services and indigent groups, including the national “Plan Sesame for seniors” and a free health care initiative for children under five;
- The National Health Development Plan, 2009–2018 recognizes the shortage and unequal distribution of health workers and calls for increasing training capacity at the national level and promoting incentives for workforce retention;
- There is a National Committee for the development and revision of lists of essential drugs and medical products under the Ministry of Health. The committee is responsible for regulating all pharmaceutical products procured by public and private wholesalers in the country;
- The National Pharmacy Supply is a government department responsible for purchasing pharmaceutical products included in the National Essential Medicine List and coordinates all activities related to medicines and reagents in health facilities.

### Weaknesses

- The government expenditure on health is low: 8% of the general government expenditure in 2013, which is well below the 15% target agreed in the Abuja Declaration in 2001;
- The out of pocket expenditure continues to be high at 77.4% in 2014, which is a significant burden for households, given that 46.7% of the population in Senegal lives below the poverty line;
- Senegal has a critical shortage of health professionals with an estimated health worker density at less than 4 per 10,000 population for nurses and midwives and less than 1 per 10,000 for physicians. This is well below the WHO recommended level of 23 health professionals per 10,000 population;
- The hospital beds ratio is low, around 0.3 per 1,000 population, which is lower than in many regional and sub-regional comparators;
- There is a significant problem of unequal geographic distribution of health infrastructure and health personnel with 70% specialist doctors and 39% of general practitioners being based in the capital serving only 24% of the population;



- The National Pharmacy Supply is only able to supply around 15% of the drug market in Senegal, which has implications for the delivery of drugs in public facilities.

## Eye Health Governance

### Strengths

- There is a National Eye Health Programme within the Ministry of Health and Social Action responsible for planning, supervising and monitoring eye health activities within the country. The eye health department follows standards and regulations set out by the MoH;
- Many activities identified in the Strategic plan for the Prevention of Avoidable Blindness for the period 2006-2010 were successfully implemented with the support of international donors/partners;
- There is an NTD plan for the period 2016 – 2020, which covers ten endemic NTDs including trachoma and onchocerciasis. Two previous strategic plans for the periods 2007-2011 and 2011-2015 have been successfully implemented.

### Weaknesses

- There is no up to date Plan for the Prevention of Avoidable Blindness; the previous plan has not been renewed since 2010, although local eye health plans are being implemented;
- DPOs are not involved in strategic planning and decision-making about eye health, as there is no institutional framework for their participation in policy-making. In addition DPOs have limited expertise to provide feedback on government policies and technical documents;
- The number of donors and NGO partners supporting eye health decreased in recent years; at the time of the study there were only two major INGOs supporting eye health, Sightsavers and RTI;
- Many local Vision 2020 committees are not functional and there are no clear objectives for the Vision 2020 Committee at the national level.

## Eye health financing

### Strengths

- There are different sources of funding for eye health, including government allocations, international donor support, health insurance and user fee co-payments;
- There are some provisions for eye health within the general health budget at the national level, although such provisions at the regional level are less evident;

- There is a newly proposed decentralisation policy, which can create opportunities for separate budget lines for eye health at the district and facility levels;
- Community-based health insurance (mutual) covers a third of costs of cataract surgery in public facilities outside the capital;
- There is a system of user fee exceptions for indigent population groups including elderly and people with disabilities.

### **Weaknesses**

- Government allocations for eye health are very limited and had stayed unchanged for many years until recently, when the allocations were reduced
- Eye health resources are allocated under the general health management budget and are difficult to distinguish from other healthcare expenditures;
- There are reported delays in the release of funds from the regional level to districts and health facilities;
- In certain regions, there is no transparency of the financial allocations by international donors and INGOs supporting eye health;
- User fees constitute a significant part of eye health expenditure resulting in significant burden for households and increased risk of health inequalities.

### **Eye health service delivery**

#### **Strengths**

- There are 60 eye units with eye health services; eye health units are available in all regions of Senegal;
- Eye health units provide a variety of services including eye care consultations, cataract surgeries; outreach programmes; trachoma treatments and surgeries and health promotion campaigns;
- Most eye health activities are delivered as part of the National Eye Health Programme and through eye health units with no parallel or stand-alone programmes;
- There is a large number of eye care consultations performed annually (155,033 in 2015);
- Cataract surgical rate increased in the past five years, from 843 surgeries per million populations in 2010 to 967 per million in 2015;
- Hospitals with eye units outside the capital have 2-3 hospital beds reserved for eye care patients who come from remote villages for cataract surgeries;

- The number of trichiasis surgeries increased in the past five years and was 3,463 surgeries in 2014; the number of azithromycin treatments more than doubled from 766,087 in 2012 to 1,831,387 in 2015.

## Weaknesses

- The Cataract Surgical Rate has stagnated in recent years and represents only half of the recommended level for Africa (2,000 per million per year);
- Cataract Surgical Coverage (CSC) is estimated by the WHO experts at 10%-25% of the population in need; population-level data to make accurate CSC estimates are limited;
- The need for cataract surgery outstrips the availability; the existing eye units are under significant pressure with long waiting times for cataract surgery;
- Productivity of the existing ophthalmologists/cataract surgeons is low at 150 surgeries per surgeon per year compared to the recommended levels of 500 per surgeon but the data are likely to be incomplete as private providers often under-report the number of surgeries they perform.

## Eye health workforce

### Strengths

- There is a National Human resources development plan for eye health. The plan will shortly be integrated into the National Human Resources for Health Plan;
- The open source software for managing health workforce information (iHRIS) is used to track and manage health workforce, including eye health staff;
- The National MoH is responsible for recruitment and paying salaries of eye health personnel, similarly to all other health workers in the country;
- Senegal meets the standards for the ratio of surgeons to the population (1/250 000 for WHO), although there are significant regional disparities in the distribution of surgeons;
- There are two institutions for training eye health workers in Senegal: Cheikh Anta Diop University (UCAD) responsible for training ophthalmologists and the National School of Health and Social Development (ENDSS), which trains senior technicians (ophthalmic nurses);
- The National Eye Health Programme with the funding from international partners supports in-service training of eye health workers including cataract surgeons)and primary care staff;

- Clinical supervision for eye health is integrated in the general supervision system with an ophthalmologist being part of the supervision team

### **Weaknesses**

- Although there is a relatively high number of ophthalmologists in Senegal, 45% of them work in the private sector. There are also inequalities in the geographic distribution of ophthalmologists; only 6 out of 14 regions have an ophthalmologist and 85% of all ophthalmologists in Senegal are based in Dakar;
- Optometrists are not recognized as an eye cadre in Senegal; cataract surgeons have limited recognition with no documents acknowledging cataract surgeons at the policy level;
- The surgical performance ratio by the available surgeons (ophthalmologists and cataract surgeons) is well below the GAP target (150 surgeries per surgeon versus recommended 500 per surgeon);
- The institutions available for training eye care workers are thought to operate autonomously and are not always responsive to the needs of the eye health system.

### **Eye health medical products and technologies**

#### **Strengths**

- The National Essential Medicine List (NEML) is available and is regularly updated; there are regular meetings between the Directorate of Pharmacies and Medicine, National Pharmacy Supply (NPS), health care providers and users to prioritize medicines for the NEML;
- Eye health medicines are included in the NEML; at the time of the study 27 eye health medicines were registered on the list;
- Clinical guidelines including information on eye health medicines are available to health care providers.

#### **Weaknesses**

- The NPS does not provide updates on the availability of eye health products;
- A large proportion of health related medicines, particularly those for NTD programs are purchased using external donor funds;
- There is no information about the proportion of medicines purchased through different sources of funding, including out-of-pocket expenditure, health insurance and government budgets;
- In public facilities, there is no agreed timeframe for procuring eye health medicines. The purchase of eye health products happens on ad hoc basis, as needed.

## Eye Health Information System

### Strengths

- The National Eye Health unit has implemented a number of eye health information initiatives supported by INGOs and integrated eye health information into the general health information system at various levels;
- There is significant donor support for the General Health Information System and the implementation of the new health information system tool (DHIS2); the tool will support integration and coordination of eye health information collated from different sources;
- Information on eye health, including eye health consultations, cataract surgeries and NTD treatments is collected and reported from lower to the upper levels of the system.

### Weaknesses

- There is a limited number of eye health indicators integrated into the General Health Information System;
- There are delays in collating and reporting eye health information from the facilities to the regional and national levels;
- There is limited human resource capacity to collect and aggregate data at various levels;

The private sector does not share its information regularly and its performance and contribution to eye health activities is often unknown. In addition, some public structures delay the transfer of information on eye health

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## APPENDICES

**Table 14: Appendix 1: Phases and timeline of the EHSA**

	Date and key activity	Specific activities
June – July, 2015	1st meeting, July 13 – 17, 2015	<ul style="list-style-type: none"> <li>develop the EHSA protocol</li> <li>Identify a team leader and assemble an assessment team.</li> <li>agree the scope, time frame and dates of the assessment.</li> <li>ethics submission process</li> <li>Schedule and conduct team planning meeting.</li> <li>understanding the EHSA process</li> </ul>
	Shape the Eye Health Systems Assessment	
August – October, 2015	2 <sup>nd</sup> meeting October 26 – 30, 2016	<ul style="list-style-type: none"> <li>team roles and expectations during data collection, analysis and report-writing</li> <li>schedule and logistics for the EHSA field work</li> <li>follow-up on ethics approval</li> <li>engage stakeholders in the EHSA process</li> <li>document review of health system and eye health system</li> <li>prepare the logistics checklist, field visit calendar and assessment budget.</li> <li>develop specific indicators for each eye health system function to drive data collection</li> <li>understanding the EHSA process</li> </ul>
	gathering contact list	
November – December	3 <sup>rd</sup> team meeting, November 16 – 17	<ul style="list-style-type: none"> <li>understanding the EHSA process</li> <li>training team members for data collection</li> </ul>
	Monday, November 16, 2016	
	Tuesday, November 17, 2016	<ul style="list-style-type: none"> <li>adapting the questions and “mock exercise” of adapted questions in French language</li> <li>printing of questionnaires’</li> </ul>
	Wednesday, November 18, 2016	<ul style="list-style-type: none"> <li>data collection in the Kaolack region</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Thursday, November 19, 2016	<ul style="list-style-type: none"> <li>data collection in the Nioro District</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Friday, November 20, 2016	<ul style="list-style-type: none"> <li>data collection in Guinguindo District</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Saturday, November 21, 2016	<ul style="list-style-type: none"> <li>debriefing meeting with team members to identify finalize data collection in Kaolack region</li> </ul>
	Sunday, November 22, 2016	<ul style="list-style-type: none"> <li>team travelled to Louga region</li> </ul>
	Monday, November 23, 2016	<ul style="list-style-type: none"> <li>data collection in the Louga region</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Tuesday, November 24, 2016	<ul style="list-style-type: none"> <li>data collection in the Louga region</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Wednesday, November 25, 2015	<ul style="list-style-type: none"> <li>data collection in the Sakal district and Louga region</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Thursday, November 26, 2015	<ul style="list-style-type: none"> <li>data collection in the Coki district and Kebeme district</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Friday, November 27, 2015	<ul style="list-style-type: none"> <li>Debriefing and travelling to Dakar</li> <li>Gaps in data collection identified and follow-up</li> </ul>
	Monday, November 30,	<ul style="list-style-type: none"> <li>Continue data collection in Dakar</li> </ul>
	Tuesday, December 1, 2015	<ul style="list-style-type: none"> <li>Data collection in Dakar</li> </ul>
	Wednesday December 2, 2015	<ul style="list-style-type: none"> <li>Data collection in Dakar</li> <li>debriefing to agree on preliminary summary</li> </ul>
	Thursday December 3, 2015	<ul style="list-style-type: none"> <li>data collection in Dakar</li> </ul>
	December 4 – 31, 2015	<ul style="list-style-type: none"> <li>All gaps in in-depth interviews and document review were followed - up</li> </ul>

January, 2016 – March, 2018		
	January – February, 2016	<ul style="list-style-type: none"> <li>transcription and translation of in-depth interviews</li> </ul>
	January – March, 2016	<ul style="list-style-type: none"> <li>analysis framework were developed to identify themes and codes</li> </ul>
	April 2016 – May	<ul style="list-style-type: none"> <li>drafting of report</li> </ul>
	November, 2017 – March 2018	<ul style="list-style-type: none"> <li>gaps in data collection followed-up</li> </ul>
		<ul style="list-style-type: none"> <li>filling gaps of data and strengthening report</li> </ul>
		<ul style="list-style-type: none"> <li>results validation workshop</li> </ul>
	March –July 2018	<ul style="list-style-type: none"> <li>finalization of the report</li> </ul>
	March - December 2018	<ul style="list-style-type: none"> <li>stakeholders feedback and strategic plan workshop</li> </ul>

**Table 15: Appendix 2: List of interviews conducted and sites visited**

Contact name	Title (role)	Organisation	
<b>NATIONAL</b>			
Dr. Boubacar Sarr	National Eye Health Coordinator	Ministry of Health	<a href="mailto:bouk8sarr@yahoo.fr">bouk8sarr@yahoo.fr</a> +221775507773
Dr. Siaka	Monitoring, and Evaluation	Ministry of Public Health and Prevention	
Dr. Adoulaye Diaw	Health Information Systems	Ministry of Public Health and Prevention	<a href="mailto:lajejaw@yahoo.fr">lajejaw@yahoo.fr</a>
	Health Finance	Ministry of Health	
	Human Resource Manager	Ministry of Public Health and Prevention	
	Chief Pharmacist & Co	Ministry of Health	
Aboubakrine Thiam	Country Director	Hellen Keller	+221778341504
Salimata Boucoum	Senior Programme Manager	Sightsavers	<a href="mailto:sboucoum@sightsavers.org">sboucoum@sightsavers.org</a> +221338694538
Bassirou Fall	Director	Association of the Blind	
Yatma Fall	President	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
	Member	Association of the Blind	
<b>REGION A: KAOLACK – REGIONAL MINISTRY OF PUBLIC HEALTH AND PREVENTION</b>			
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	Human Resources	Regional Hospital	

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**Table 16: Appendix 3: Field Team members**

Organization	Team role
National Eye Health Coordinator, MoH, Senegal	Lead team planning meetings in country
Department of Sociology, Health System Governance Research, University Cheikh Anta Diop	Team member [team planning and Ethics process]
Ophthalmologist Kaolack region– Nioro du RIP	Team member [Team planning and data collection]
Ophthalmologist, Louga Region	Team member [team planning and data collection]
Country Director, Sightsavers I, Senegal	Team member [Schedule and follow up in-country interviews and translation, transcription, ethics]
Regional Research Advisor, Sightsavers	Team member [technical Support, protocol development, data collection, analysis and report writing]
Research Assistant	Team member [ data collection]

Appendix 4: Participant Consent Form

Informed Consent Form

**Project name:** Eye Health System Assessment (EHSA), Senegal

**Principal Investigator:** Dr. Boubacar SARR, Director for National Eye Health Programme, Senegal

**Please tick box**

1. I confirm that I have read and understand the participant information sheet. I have had the opportunity to consider the information, ask questions and have had these answered fully.	<input type="checkbox"/>
2. I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason, without penalty of any kind, and without my employment or legal rights being affected.	<input type="checkbox"/>
3. I agree to take part in the above study.	<input type="checkbox"/>
4. I agree that the interview can be recorded.	<input type="checkbox"/>
5. I agree that the research team can use anonymised quotes from my interviews in the final report and in any other output of this research (should individual quotes be identifiable, specific consent for this will be sought)	<input type="checkbox"/>

**Signature:** .....

**Name (capitals):** .....

**Job title and organisation:** .....

**Date:** .....



**Table 17: Appendix 5: Distribution of eye care infrastructure by region and level**

Region	Name of facility	Levels <sup>5</sup>	Type of facility <sup>6</sup>	Ophthalmologist Pu	Pr	TSO	Cataract Surgeons	Optometrist
DAKAR								
	Coordination PNSO	C	Pu	1		1	1	
	Hôpital le DANTEC	T	Pr.	6		5		
	Hôpital PRINCIPAL	T		5		2		
	Hôpital de Grand YOFF	S		3		3		
	Hôpital Albert ROYER	P		2		2		
	Hôpital Abbas NDAO	T		6		10		
	Hôpital de PIKINE	S		2		3		
	Centre de BOPP	S		0		5		
	Centre BAOBAB	P		0		1		
	Centre Médico-social IPRES	S		0		2		
	Centre de santé Roi Baudouin	S		0		2	1	
	Dispensaire U N Combattants	P		0		1		
	Unité de Soins de l'I..H..O..	P		1		2		
	Centre de Rufisque Youssou Mb	S		0		2	1	
	Centre de santé de Rufisque	S		0		2	1	
	Centre de Ouakam	S		0		2		
	<b>Sub-total</b>	<b>15</b>		<b>29</b>	<b>22</b>	<b>45</b>	<b>4</b>	
THIES								
	Hôpital R. de THIES	S		0		3		
	Centre des aveugles M'bour	S		1		1		
	Hôpital St jean de Dieu (NC)	P		0		1		
	Centre de Santé de Thiès	S		0		2	1	
	Centre de Thiadiaye	S		0		1	1	
	Centre de Tivaouane	P		0		1		
	Centre de Popenguine	P		0		1		
SAINT LOUIS	Centre de Joal-Fadiouth	P		0		1		
	<b>Sub-total</b>	<b>8</b>		<b>1</b>	<b>3</b>	<b>11</b>	<b>2</b>	
MATAM								
	CHR. de Saint-LOUIS	S		1		3		
	Centre de santé de PODOR	P		0		1		
TAMBACOUNDA	<b>Sub-Total</b>	<b>2</b>		<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	
	Hôpital d'OUROSSOGUI	S		1		2		
KEDOUGOU	<b>Sub-total</b>	<b>1</b>		<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	
	Hôpital R. de Tambacounda	S		0		3	1	
	C. de santé BAKEL	S		0		1	1	
KAOLACK	C. de santé GOUDIRY	P		0		1		
	<b>Sub-total</b>	<b>3</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>2</b>	
	C. de santé de KEDOUGOU	S		0		2	1	
KAFFRINE	<b>Sub-total</b>	<b>1</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	
	Hôpital R. de KAOLAK	S		1		3		
LOUGA	CS de Nioro	S		0		2	1	
	<b>Sub-Total</b>	<b>2</b>		<b>1</b>		<b>5</b>	<b>1</b>	<b>1</b>
LOUGA	CS de Kaffrine	S		0		2	1	
	CS de Koungheul	S		0		1	1	
	<b>Sub-Total</b>	<b>2</b>		<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	
LOUGA								
	CHR. de Louga	S		0		3	1	
LOUGA	CS de Louga	P		0		1		

<sup>5</sup> P= Primary level, S= secondary level and T= tertiary level

<sup>6</sup> Pu = Public facility, Pr. =Private facility

ZIGUINCHOR	CS de Kébémér	P		0		1		
	CS de DarouMousty	S		0		1	1	
	CS de Linguère	S		0		1	1	
	CS de Dahra	P		0		1		
	<b>Sub-Total</b>	<b>6</b>		<b>0</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>1</b>
DIOURBEL	Hôpital R. de Ziguinchor	S		1		3		
	Centre de santé de Bignona	S		0		2	1	
	Centre de santé de Oussouye	S		0		1	1	
	CS de Diouloulou	P		0		1		
	CS de ThionckEssyl	P		0		1		
Kolda	<b>Sub-total</b>	<b>5</b>		<b>1</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>1</b>
	CHR de DIOURBEL	S		0		3	1	
	Hôpital de TOUBA	S		0		1		
	CS de Bambèye	S		0		1	1	
	<b>Sub-total</b>	<b>3</b>		<b>0</b>		<b>5</b>	<b>2</b>	
SEDHIOU	CHR. de Kolda	S		0		2	1	
	Centre de santé de Kolda	P		0		1		
	Centre de santé de Vélingara	P		0		2	1	
	CS Medina Gounaa	P		0		1		
	<b>Sub-total</b>	<b>4</b>		<b>0</b>		<b>6</b>	<b>2</b>	
FATICK	Centre de santé de Sédhiou	P		0		2	1	
	CS de Goudomp	S		0		1	1	
	<b>Sub-total</b>	<b>2</b>		<b>0</b>		<b>3</b>	<b>2</b>	
	CS de Diofior	P		0		1		
	CS de Fatick	S		0		1	1	
	CS de Gossas	S		0		1	1	
	CS de Sokone	S		0		1	1	
	CS de Foudiougne	P		0		1		
	<b>Sub-total</b>	<b>5</b>		<b>0</b>		<b>5</b>	<b>3</b>	
	Unemployed			2		3		
			<b>59</b>	<b>34 (+2)</b>	<b>26</b>	<b>112 (+2)</b>	<b>26</b>	<b>3</b>

Source: National Eye Health Coordinator, Ministry of Public Health and Prevention

**Table 18: Proposition Committee for Prevention of Blindness Plan, 2006 – 2010**

Level	Committee members
<b>National</b>	Director General for Health, President
	Supervisor and coordinator at the General secretary department
	Head, department of communicable diseases
	Head, department of food and nutrition
	Head, department of immunization and epidemiological surveillance
	Head, Health Education
	Head, Department of Public Hygiene
	Epidemiologist at the Ministry of Public Health and Hygiene
	Representative of Human Resource Directorate
	Representative of General administrative department
	Representative of National Pharmacy Supply
	Two ( 2 ) representatives regional committee for prevention of the blindness
	Two heads from eye health department at regional hospitals
	Three medical doctors from regional level
	Representative from eye health department at private hospitals
	Representative of ophthalmologists within private sector
	Representative from Disabled Peoples Organization [Blind and Visual Impaired people]
	Representative from the following ministries: Social action, hydraulics, Communication and Education
	Representative from Multilateral and Bilateral donors like UNCEF, WHO, European Union, USAID and various iNGOs
<b>Technical committee</b>	Technical advisor to the Ministry of Public Health and Prevention
	Head, department of communicable diseases
	National Eye Health Coordinator
	Representative of teaching hospitals and general hospitals
	Epidemiologist at the Ministry of Public Health and Hygiene
	Representative of ophthalmologists within private sector
<b>Regional</b>	Representative of regional ophthalmologist
	The Governor of the region, president for the committee
	The President of Health Committee at regional council, vice president
	The Regional health director, coordinator
	The Mayor of the regional capital
	The Regional Ophthalmologist, focal person for eye health and executive secretary to the committee
	Director of the Regional Hospital
	The supervisor of primary health care
	Head of regional department of hygiene
	Head of Head Education
	Representatives of NGOs
	Responsible person for community development
	Regional inspector for schools

Source (7)

## Appendix 6: the creation of the national eye health programme

REPUBLICQUE DU SENEGAL  
Un Peuple – Un But – Une Foi

05.01.2011-000226  
N° \_\_\_\_\_ / MSP / DS / DLM / PRLC

MINISTRE DE LA SANTE  
ET DE LA PREVENTION

Dakar, le \_\_\_\_\_

**ANALYSE : Arrêté portant création du Programme National de Promotion de la Santé Oculaire.**

**LE MINISTRE DE LA SANTE ET DE LA PREVENTION**

**Vu** la constitution ;

**Vu** le décret n° 2009 – 451 du 30 avril 2009 portant nomination du Premier Ministre ;

**Vu** le décret n°2004 – 1404 du 04 novembre 2004 portant organisation du Ministère de la Santé et de la Prévention ;

**Vu** le décret n° 2010 – 1522 du 16 novembre 2010 portant réaménagement du Gouvernement ;

**Vu** le décret n°2010 – 925 du 08 juillet 2010 portant répartition des services de l'Etat et du contrôle des établissements publics, des sociétés nationales et des sociétés à participation publique entre la présidence de la République, la Primature et les Ministères.

**ARRÊTE**

**Article premier** : il est créé, au sein du Ministère de la Santé et de la Prévention, un Programme National de Promotion de la Santé oculaire rattaché à la Direction de la Santé.

**Article 2** : Le but du Programme est de développer toutes les stratégies de prévention et de lutte, pour assurer la promotion de la santé oculaire.  
Plus spécifiquement, le programme a pour objectifs de :

- Faire prendre conscience à la population l'importance de l'intégrité de leur vue et de la nécessité de la protéger (information, sensibilisation)
- Eviter les déficients visuels qui s'ignorent à prendre conscience de leur état et à réagir à bon escient (dépistage, prévention)
- Prendre en charge correctement les malades (diagnostic, traitement)

**Article 3** : Le Programme est dirigé par un Coordonnateur National qui sera un médecin ophtalmologiste nommé par arrêté du Ministre de la Santé et de la prévention.

**Article 4** : le Coordonnateur est assisté d'une part par une équipe de professionnels de la santé composée d'un médecin ophtalmologiste et d'un médecin de sante publique, et d'autre part par une équipe administrative composée ainsi qu'il suit :

- Un assistant
- Un gestionnaire
- Un statisticien
- Une secrétaire
- Un chauffeur

Les membres de cette équipe sont nommés par le Directeur de la Santé sur proposition du Coordonnateur.  
Ces équipes peuvent être renforcées en fonction de l'évolution des activités du Programme.

**Article 5** : Il est créé un comité national de lutte contre la cécité sous la dénomination de « Comité National Vision 2020 ».  
Au niveau de chaque région, il sera créé un « un Comité Régional Vision 2020 ».


**Article 6** : La composition et les missions du Comité National et des Comités Régionaux Vision 2020 seront fixées par arrêté du Ministre de la Santé et de la Prévention.

**Article 7** : Le présent arrêté sera enregistré, publié et communiqué partout où besoin sera.

**Le Ministre de la santé et de la Prévention**  
**Modou DIAGNE Fada**

**AMPLIATION**

- PR/SG
- PM/SG
- INSPECTION
- TOUTES DIRECTIONS
- TOUS MCR
- ARCHIVES/CHRONO



## Appendix 7: Invitation letter to GAP committee meeting in Kaolack Region

REPUBLIQUE DU SENEGAL  
Un Peuple – Un But – Une Foi

REGION DE KAOLACK

GOVERNANCE

N° 00011 /GR.KL/AA

Kaolack, le 25 JAN 2016

### CONVOCATION

Les destinataires de la présente sont priés de prendre part à la réunion du comité régional « Vision 2020 » de lutte contre la cécité, prévue le vendredi 29 janvier 2016 à 10 heures, à la Gouvernance.

**Ordre du jour :** Mise en œuvre des stratégies de prévention et de lutte contre la cécité dans la Région de Kaolack.

Le Gouverneur



**Sont concernés :**

- Les Présidents de conseil départemental ;
- Le Maire de la Commune de Kaolack ;
- Le Médecin chef de région ;
- L'ophtalmologiste de la région ;
- Le Directeur de l'Hôpital régional ;
- Le Directeur du Centre médico-social de la Fonction publique ;
- Le Chef du Service régional de l'Action sociale.
- Le Chef du Service régional du Développement communautaire ;
- L'Inspecteur d'Académie ;
- Le Chef de la Brigade régionale de l'Hygiène ;
- Le Chef de la Division régionale de l'Hydraulique ;
- La Présidente de la Cellule régionale du CONGAD ;
- Le Chef du Bureau de l'Education pour la Santé
- Le Superviseur des Soins de Santé primaires
- L'Administrateur diocésain ;
- L'Imam Ratib ;
- La Présidente de l'Union régionale des Mutuelles de Santé ;
- Le Président du Conseil régional de la Jeunesse ;
- La présidente régionale de la fédération des groupements de promotion des femmes ;
- La présidente régionale de la fédération des associations féminines du Sénégal ;
- Le président de l'association régionale des personnes handicapées ;
- Un représentant des comités de santé des districts sanitaires de la région ;
- Un représentant des pharmaciens ;
- Un représentant des tradipraticiens ;
- La Presse.

**Ampliation:**

- MSAS/CAB .

Gouvernance de Kaolack, Darou Ridwane, en face Grande Mosquée Ndiouga KEBE  
Téléphone : 33 941 17 94 – Fax : 33 941 35 90 - BP : 305- Email : gouvkaolack@yahoo.fr



**Table 19: List of eye health drugs included in the National List of Essential Medicines**

Generic drugs	Specialties	Nature
<b>Health post</b>		
Picloxidine	Vitabact	- collyre
Tétracycline	Auréomycine 1%	Pommade
Néomycine + poly myxine	Cébémixine	Collyre et pommade
<b>Health district</b>		
Lidocaïne 2% adrénaline	Xylocaïne 2% adrénaline	Unité injectable
Lidocaïne 2% non adrénaline	Xylocaïne 2 non adrénaline	Unité injectable
Oxybuprocaine	Novésine, Cébésine	- collyre
Fluorescéine	Fluorescéine	- collyre, bandelettes
Atropine 1%-0.5%	Atropine	- collyre
Néosynéphrine 10%	Néosynéphrine	- collyre
Tropicamide	Mydriaticum	- collyre
Gentamycine 0,3	Gentalline	- collyre et- pommade
Maléate de timolol, Cartéolol	Timoptolcarteol	- collyre
Dexamethasone	Maxidex	- collyre
Dexamethasone+ Antibiotiqu	Cébédexacol, Maxidrol	- collyre et pomade
Cromoglycate, Lévocabastine	Cromoptic , Lévophta	- collyre
Nandrolone	Kératyl,	- collyre
Aciclovir	Zovirax	- pommadeophtal.
Carbopol 940Chondroïtine	Lacrigel, gel larme, etc.	- gel oculaire, collyre
<b>Regional hospitals</b>		
Bupivacaine	Marcaïne 0,5	Unité injectable
« Gel d'examen »	Goniosol, réfractosol	- collyre
Quinolone	Okacin, chibroxine	- collyre
Indométacine, Diclofenac	Indocollyrevoltarene 0,1%	- collyre
Pilocarpine 1-2-4	Pilo 1%-2%-4%	- collyre
Acétazolamide	Diamox 250	Boîte de 1000 cp et inject
OfloxacinPéfloxacin	Oflocet, Péflacine	Boîte de 10 cp
Gentamycine	Gentalline 10mg	Unité injectable
Glycérone	Glycérone	Flacon susp. Buv.
Dexamethasone ink	Soludécadron	Boîte de 100 amp
Prednisolone 5mg	Cortancyl	Boîte de 1000 cp
<b>Matériels chirurgicaux</b>		
Implant de chambre postérieure		Boîte d'une unité
Substance viscoélastique (methylcellulose)		Boîte d'un flacon
S.N.R.M. polyamide noir- serti 30cm 6,2mm -3/8 cr- code 87770 - USP=10/0		Boîte de 10 unités
S.N.R.M. soie de traction noire - serti 75cm - 16mm - 3/8 cr - code f2250 – USP=3/0		Boîte de 36 unités
S.N.R.M. soie tressée noire - serti 30cm-6,6mm - 3/8cr- code F7752- USP=8/0		Boîte de 10 unités
S.R.T. polyglactine 910 - (Vicryl mono fil) serti 30 cm – 6,6mm- 3/8 cr- code jv7440- USP=10/0		Boîte de 10 unités
S.R.T. polyglactine 910 (Vicryl) serti 45cm- 7,6mm - 3/8cr- code jv551- USP=6/0		Boîte de 10 unités
Micro-éponges chirurgicales		Sachet de 3 unités
Couteaux 30° et 45°		Boîte de 10 unités
Pinces à mono filament		Unité
Canule à double courant		Unité



Figure 11: Field pictures

Sample of consultations that take place at an eye unit at region Louga

ACTIVITES OPHTALMOLOGIE CHIRASML TRIM 3 2013					SEPTEMBRE		T3	
ACTIVITES	JUILLET	AOUT						
CONSULTATIONS	1151	1086	1051	1051	301	1058		
CONSULTANTS	378	379	301	301				
ACTES								
CATARACTE SANS IMPLANT	0	0	0	0	0	0		
ICP	11	35	37	83				
CHALAZION	2	0	3	3				
PTERYGION	11	2	3	16				
E/T	6	4	6	16				
PLAIE DE CORNEE	0	1	1	2				
EVISCERATION	0	0	0	1				
KYSTE	0	0	0	0				
CV	0	0	0	0				
ECHOGRAPHIE	0	0	0	0				
TOTAL	30	42	51	123				

Sample eye care equipment at Nioro eye unit



Price list for eye care services in Nioro district

MEDICINE		DENTISTE		OPTICISME	
consultation Medecin : 1000		consultation Dentiste : 1000		consultation Opticien : 1000	
consultation Adulte : 1000		consultation Dentiste : 1000		consultation Opticien : 1000	
consultation Enfant : 1000		consultation Dentiste : 1000		consultation Opticien : 1000	
Injection : 1000		Injection : 1000		Injection : 1000	
Prescription : 1000		Prescription : 1000		Prescription : 1000	
Garde : 1000		Garde : 1000		Garde : 1000	
MATERNITE		MATERNITE		MATERNITE	
accouchement : 1000		accouchement : 1000		accouchement : 1000	
Naissance : 1000		Naissance : 1000		Naissance : 1000	
examen gynecologique : 1000		examen gynecologique : 1000		examen gynecologique : 1000	
HOSPITALISATIONS		HOSPITALISATIONS		HOSPITALISATIONS	
1 a 3 jours : 3000		1 a 3 jours : 3000		1 a 3 jours : 3000	
de 3 jours : 5000		de 3 jours : 5000		de 3 jours : 5000	

Sample of reserved beds for eye health patients at an eye unit in the Louga Region



## Appendix 7: Semi-Structured Questions/guide adapted from EHSA tool

CORE MODULE [Secondary data - Document review section]		Data collection method	Who to provide information
A. Diseases	1. Prevalence of blindness (and other blinding diseases) 2. Proportion of blindness due to cataract? 3. Top causes of eye morbidity and blindness –Number of cataract surgeries performed per 1,000,000 populations annually	Document review	National Eye Health Coordinator, INGOs and Responsible person for health information
B.8 Health system profile and background characteristics	1. Health system profile and background characteristics 2. Eye care service delivery organisation 3. Eye care donor mapping 4. Eye care donor coordination	Document review	National Eye Health Coordinator, INGOs and Responsible person for health information
BLOCK 1: GOVERNANCE [Semi structured interview guide]			
A. Government Responsiveness	1. Does the Ministry of Public Health and Prevention have a national eye health/prevention of blindness plan? <u>Probe:</u> Please can you provide evidence on the period for such plan? How does that work in practice? What impact does that plan have on eye health?	In-depth interviews	• Persons responsible for eye care at MOH • Director and president/executives of Disabled people's organisations (DPOs) • Country director or programme manager at sight savers • President/ executives of Disease association's e.g. diabetes association's Other organisations relevant to eye care
	2. Do stakeholder groups on health system include representatives from disabled people's organisations (DPOs) or specific disease associations (e.g. diabetes associations)? <u>Probe:</u> Please name some of the associations that were included in the past? At what stage of eye health policies do they include representatives of such association? What specific role do they play? What impact does that have?		
B. Voice: Preference Aggregation	3. Do DPOs, specific disease associations and other groups relevant to eye care have the capacity and opportunity to advocate for eye health issues? <u>Probe:</u> Are they recognized in the country? What kind of actions was initiated in the past as part of the advocacy? Has that changed over time?	In-depth interviews	
	4. Do the above organizations have the capacity and opportunity to use, analyse and feedback to government on health sector goals, planning, budgeting, expenditure and data related to eye health? <u>Probe:</u> Give example of such actions taken by the organizations and how it worked?	In-depth interviews	
	5. Do Civil society organizations (including professional organizations, specialized health related NGOs, and the media) that	In-depth interviews	

C. Client Power: Technical Input and Oversight	oversee health providers and provider organizations include National Ophthalmic Societies and Disabled People's Organisations? <u>Probe:</u> If yes, please is there a policy or legislation that supports their inclusion? Is that the same elsewhere?		
D. Service Delivery	6. Does information about the quality and cost of health care include information related to eye care? <u>Probe:</u> Typical Example is information for clients to select their health providers or health facilities? Which format is such information provided? Braille? Who makes those decisions?	In-depth interviews	<i>Provider organisations</i> Hospital Administrator, Medical Superintendent, Ophthalmologist, Ophthalmic Nurse and Other eye care staff at regional and district facilities. • Persons responsible for eye care at MOH • Director and president/executives of Disabled people's organisations (DPOs) • Country director or programme manager at Sightsavers
E. Information, reporting, and lobbying	7. Do health authorities' reports include information related to eye care? What impact does that have on eye health services delivery? What kind of information is reported to the Ministry of Health?	In-depth interviews	
	8. To what extent do general health and eye care service providers use evidence on results from eye care programmes to lobby government? <u>Probe:</u> Is this information used by the Ministry of Public Health and Prevention for planning and policy? Please can you provide example of such evidence? How does that work in practice?	In-depth interviews	
F. Compact: Directives, oversight and resources	9. Please are health sector regulations applied to eye care in Senegal? <i>Health sector regulations (protocols, standards, codes of conduct, and certification procedures) are known and enforced in training institutions and health facilities.</i> <u>Probe:</u> If yes, can you give examples of the regulations? Which of these regulations are not used in eye care? Who makes those decisions?	In-depth interviews	
BLOCK 2: HEALTH FINANCING [QUESTIONS FOR STAKEHOLDERS]			
A. Revenue Collection: amount and sources of financial resources	1. Public (government) spending on eye health as % of total health expenditure? 2. Donor spending as % of total eye health spending <u>Question:</u> What is the main source of financing eye health in the country? What is the timeline for the release of eye health fund from the sources of funding? What percentage of eye health spending constitutes funds from donors? What percentage of public expenditure on health is allocated to spending on eye health?	Documents review/In-depth interviews	• Persons responsible for eye care at MOH • Person responsible for finance at MOH • Country director or programme manager at Sightsavers
B. Pooling and allocation of financial resources:	3. What is the structure of decentralizing local budget allocation for eye health? Do you have Central and local council budget allocations	-In-depth interviews	• Regional Director at the regional Ministry of Public Health and Prevention

Government budget formulation and allocation	for eye health in decentralised systems? What impact does that have?	Documents review/In-depth interviews	Person responsible for finance at MOH
C. Pooling and allocation of financial resources: Health Insurance	4. What is the percentage of government health budget on outpatient/inpatient eye care?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for eye care at MOH</li> <li>Persons responsible for eye care at MOH</li> <li>District Medical Officer at the District Ministry of Public Health and Prevention</li> </ul>
	5. Which eye health services are covered by health insurance? Probe: What is the source of financing eye health services for the majority of the patients? Confirm from document? Does the country currently have national health insurance policy? If yes, which eye health services are being covered by health insurance?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for finance at MOH</li> <li>Persons responsible for eye care at MOH</li> </ul>
D. User Fees	6. What is percentage of eye health revenue is generated from user fee? What is the percentage in terms of eye health at facility and district level?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for finance at MOH</li> <li>Persons responsible for eye care at MOH</li> </ul>
	7. How much is generated from informal user fees for eye care-related activities (i.e. spectacles) in the public sector? If there is regular family screenings what are the sources of funding for such screening?	Documents review/In-depth interviews	
8. Do eye health facilities have the same tariff? Are there differences between the private and the public sector in terms of price?			
BLOCK 3: EYE CARE SERVICE DELIVERY [QUESTIONS FOR STAKEHOLDERS]			
A. Availability of Service Delivery	1. What is the proportion of hospital beds allocated to eye care? Confirm from document	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for eye care at MOH</li> <li>Country director or programme manager at Sightsavers</li> </ul>
	2. Number of ophthalmologist or trained nurses to perform eye health related activities for the last 12 months? Probe: Please which organization provided the training and the funding? Are there plans to have further training in the coming years? Any funding?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for eye care at MOH</li> <li>Director and president/executives of Disabled people's organisations (DPOs)</li> </ul>
B. Service delivery Access, Coverage, and Utilization	3. What is the rate of cataract surgical (country and different provinces or regions) monthly, quarterly or yearly? Confirm from document	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for eye care at MOH</li> <li>Country director or programme manager at Sightsavers</li> </ul>
C. Service Delivery Outcomes	4. What is the prevalence of Blindness? Confirm with years?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Person responsible for eye care at MOH</li> <li>Director and president/executives of Disabled people's organisations (DPOs)</li> </ul>
	5. Uncorrected refractive errors Confirm with years?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Country director or programme manager at Sightsavers</li> </ul>
D. Availability of Service Delivery (Coverage)	6. Number of primary care facilities with dedicated eye care services per 10,000 populations.	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>Country director or programme manager at Sightsavers</li> </ul>

	7. What is percentage of PHC facilities with trained nurse in eye care?	Documents review/In-depth interviews	• Person responsible for eye care at MOH
E. Availability of Service Delivery (Coverage)	8. What is the number and type of primary care facilities with eye health expertise (nurses or health workers trained in eye care stationed at facility) in health system per 10,000 populations? Confirm with years	Documents review/In-depth interviews	• Country director or programme manager at Sightsavers
	9. What is the percentage of people living within standard distance of eye health facility at primary level?	Documents review/In-depth interviews	• Person responsible for eye care at the MOH
F. Service Delivery Access and Utilization	10. Financial access? What is the price of a consultation and a cataract surgery operation compared to living standard? Has that changed over time?	Documents review/In-depth interviews	
	11. Do the health systems have a user fee exemptions and waivers for eye care services? Which groups benefit from the exemption strategy? Why?	Documents review/In-depth interviews	
	12. What is the proportion of cataract surgery operations that take place in the private vs public sector? Has that changed over time?	Documents review/In-depth interviews	
	13. What is the rate of utilization of private providers for eye care services in rural vs. urban areas per type of provider? Has that changed over time?	Documents review/In-depth interviews	
	14. What is the proportion of hospitalizations (or number of hospital days) that takes place in the private vs. the public sector?	Documents review/In-depth interviews	
	15. Do you have a full range of primary eye care services on a daily basis? What impact does that have? How does that work in practice?	In-depth interview	
G. Organization of Service Delivery	16. What is the number of vertical eye care programmes?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>• Regional Director at the regional Ministry of Public Health and Prevention</li> <li>• District Medical Officer at the District Ministry of Health</li> <li>• Hospital Administrator</li> <li>• Medical Superintendent •Ophthalmologist</li> <li>• Ophthalmic Nurse and</li> <li>• Other eye care staff at regional and district facilities.</li> <li>• President/ executives of Disease association's e.g. diabetes association's</li> <li>• Other organisations relevant to eye care</li> </ul>
	17. Do eye care providers follow national policies for promoting quality of care? How does that work in practice?	In-depth interview	
H. Quality Assurance of Care	18. Please is there a national eye care quality standards adapted to local level?		



	Please does the clinical supervision by district level supervisor include eye care services? How is the supervision done and how does it include eye care services?	In-depth interview	
BLOCK 4: HUMAN RESOURCES FOR EYE HEALTH [QUESTIONS FOR STAKEHOLDERS] A. The current HRH situation	1. What is the number of healthcare providers, by cadre, that work in eye care?	Document review/In-depth interview	• Person responsible for eye care at MOH • Country director or programme manager at Sightsavers
	2. Please what have been the trends in eye care workers over the past 5 years?	Documents review/In-depth interviews	Person responsible for eye care at MOH
	3. What is the ratio of eye care cadres to the population as well as distribution by: ✓ Compared to WHO/IAPB standards and regional comparators ✓ Disaggregated by cadre ✓ Disaggregated by service delivery level (primary, secondary, tertiary) ✓ Disaggregated by geographic area (province, region, etc) ✓ Comparison of urban/rural ✓ Comparison private/public sector	Documents review/In-depth interviews	• Regional Director at the Regional Ministry of Health • District Medical Officer at District Ministry of Public Health and Prevention • Country director or programme manager at Sightsavers
	4. Does the health system have implemented costed HRH strategic plans that include eye care?		
B. Human resource management system	Do collection systems include information on eye care staff? Note: the collection systems consist of availability of systems and capacity for the collection, integration and analysis of HRH data and information including both state and non-state players; evidence of utilization of information to plan, train, appraise, and support the health workforce		• Country director or programme manager at Sightsavers
C. Policy	5. Are HRH policies relevant to eye care staff and followed by eye care providers?	Documents review/In-depth interviews	• Hospital Administrator • Medical Superintendent • Ophthalmologist • Ophthalmic Nurse and • Other eye care staff at regional and district facilities
	6. Are cataract surgeons recognised by the authorities?		
	7. Who is responsible for the employment of optometrists and how are they by authorities and governmental structures?		• Dean, Head of Course Training organisations e.g. College of Nursing • Country director or programme manager at Sightsavers
D. Education	8. Which institution is responsible for training new eye health workers and how it is responsive to the needs of the health care system? How?	Documents review/In-depth interviews	
	9. Is any pre-service education curriculum for eye care also updated regularly? What period is such curriculum updated?		



	10. Does the decision making system support in-service training for eye care staff? Who provide such training?		
	11. What is the rural: urban ratio for eye care admissions/graduates? By gender? By ethnicity or region?		
<i>E. Partnership</i>	12. What is the process for forming or revising HR policies and how is it relevant to eye care staff?	Documents review/In-depth interviews	<ul style="list-style-type: none"> <li>• Director and president/executives of Disabled people's organisations (DPOs)</li> <li>• President/ executives of Disease association's e.g. diabetes association's</li> </ul>
<i>F. Leadership</i>	13. What formal agreement or MOU between government and eye care service provision governing organisations and for how long has there been such agreement	Documents review/In-depth interviews	
	14. a. How does the government or the public create awareness or advocacy for eye care HRH issues per the Vision 2020 b. Please how does this concern the ministerial, member of Parliament, or Cabinet level awareness for eye care HRH issues?		
<b>BLOCK 5: MEDICAL PRODUCTS, VACCINES AND TECHNOLOGIES PHARMACEUTICAL [Semi-structured interview guide]</b>			
<i>A. Standard Indicators</i>	1. What is the total expenditure on pharmaceuticals (medicine and consumables) specifically for eye care (e.g. eye drops, lenses)		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> <li>• Country director or programme manager at Sightsavers</li> </ul>
	2. What is the government expenditure on pharmaceuticals specifically for eye care?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
	3. What is the private expenditure on pharmaceuticals specifically for eye care? Table to make comparison by year		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> <li>• Country director or programme manager at Sightsavers</li> </ul>
<i>B. Pharmaceutical Policy, Laws, and Regulations</i>	4. Does the National Essential Medicines Policy (if exists) include eye care products?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
	5. Does the data collected include information on pharmaceutical products specifically for eye care?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
<i>C. Selection of Pharmaceuticals</i>	6. Does the NEML include medicines specifically for eye care?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
	7. Total number of pharmaceuticals specifically for eye care on the NEML		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
<i>D. Appropriate Use</i>	8. Do national therapeutic guides with standardized treatments include common eye health problems?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
	9. What training guidelines is used for training eye care staff? Do treatment guidelines for training include eye care staff?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> <li>• Hospital Administrator</li> </ul>

			<ul style="list-style-type: none"> <li>• Medical Superintendent</li> <li>• Ophthalmologist</li> <li>• Ophthalmic Nurse</li> <li>• Other eye care staff</li> </ul>
<i>E. Financing</i>	10. What is the proportion of financing the annual national expenditure on eye care medicines by government budget, donors, charities and private patients?		<ul style="list-style-type: none"> <li>• Person responsible for finance at the MOH</li> <li>• Country director or programme manager at Sightsavers</li> <li>• Person responsible for eye care at the MOH</li> <li>• Chief Pharmacist at the MOH</li> </ul>
<b>BLOCK 6: EYE HEALTH INFORMATION SYSTEM [Semi-structured interview guide]</b>			
A. Information Products	11. What eye health information is included in the disease surveillance reports received at the various levels of the health system?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• District Medical Officer at the District Ministry of Public Health and Prevention</li> <li>• Regional Director at the District Ministry of Health</li> <li>• Hospital Administrator</li> <li>• Medical Superintendent</li> <li>• Ophthalmologist</li> <li>• Ophthalmic Nurse</li> <li>• Other eye care staff</li> </ul>
B. Indicators	12. Is eye care included in the minimum core indicators? <u>Note:</u> categories of health indicators: determinants, inputs, outputs and health status?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• District Medical Officer at the District Ministry of Public Health and Prevention</li> <li>• Regional Director at the District Ministry of Health</li> </ul>
C. HIS Resources	13. Which international donors are involved in eye care supporting HIS? Please give example of international donors involved in eye care supporting HIS? How is such donor organizations involved?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> </ul>
D. Data Sources	14. Availability and accessibility of data sources specifically for eye care? <u>Probe:</u> Do you have available data sources specifically for eye care? Please can you give example of the data sources? How regularly is the data sources updated with eye care information?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> </ul>
E. Data Management	15. What is the percentage of districts reporting eye care information?		<ul style="list-style-type: none"> <li>• Person responsible for eye care at the MOH</li> <li>• District Medical Officer at the District Ministry of Public Health and Prevention</li> </ul>

			<ul style="list-style-type: none"> <li>Regional Director at the District Ministry of Health</li> </ul>
	16. What is the percentage of private facilities reporting eye care information		<ul style="list-style-type: none"> <li>Person responsible for monitoring and evaluation / health information systems at MOH</li> </ul>
	17. Does the national summary report contain information on eye care?		<ul style="list-style-type: none"> <li>Person responsible for monitoring and evaluation / health information systems at MOH</li> </ul>
	18. Reports of health authorities at various levels of the health system include information on eye care?		<ul style="list-style-type: none"> <li>Person responsible for monitoring and evaluation / health information systems at MOH</li> </ul>
F. Dissemination and Use	Data on eye care is used for planning, budgeting, or fundraising activities in the past year?		<ul style="list-style-type: none"> <li>Person responsible for monitoring and evaluation / health information systems</li> <li>Person responsible for eye care at the MOH</li> <li>District Medical Officer at the District Ministry of Public Health and Prevention</li> <li>Regional Director at the District Ministry of Health</li> </ul>

**Appendix 8: Detailed budget by sub-components of the Ministry of Health and social action**

Functional Programs	Components	Subcomponents	Budget acquired during the fiscal year	
			In Millions of FCFA	(%)
1- Maternal New born Child and Adolescent health	1-1 Maternal and New born health	1-1-1 Safe motherhood	286,300,801	4.20%
		1-1-2 Community management of pregnant women	52,440,960	0.77%
		1-1-3 Family planning	84,663,161	1.24%
		1-1-4 Neonatal Health	24,580,700	0.36%
	1-2 child monitoring	1-2-1 Integral Care of the Mother and Child ICMC	49,536,650	0.73%
		1-2-2 Nutrition	173,132,336	2.54%
	1-3 1-3 Reproductive health of adolescents and young people	1-3-1 service delivery	67,183,440	0.99%
		1-3-2 IEC / BCC Community	5,888,300	0.09%
		1 1 1 EPI	20 111 100	1 010/

	3-2 services performance	3-2-2 Current transfers	6,950,000	0.10%
	3-3 Financing the request	3-3-1 Health insurance cover	51,687,860	0.76%
		3-3-2 Free initiatives	159,888,329	2.35%
4. Health governance	4-1 Results-Based Management	4-1-1 Planning	26,558,613	0.39%
		4-1-2 Coordination / Monitoring / Evaluation	167,718,840	2.46%
		4-1-3 Financing Based on Results	0	0.00%
		4-1-4 N Normalization	1,048,200	0.02%
		4-1-5 Audit / control	5,503,894	0.08%
		4-1-6 Resource allocation system	593,166	0.01%
	4-2 Participation	4-3-1 Community participation	16,332,381	0.24%
		4-3-2 Decentralization and Multisectorality	19,108,288	0.28%
		4-3-3 Partnership	13,948,000	0.20%
5. Support to vulnerable groups	5-1 5-1 Support for deprived children	5-1-1 Support to social promotion associations and daaras	6,662,400	0.10%
		5-1-2 School support and vocational training	9,995,000	0.15%
		5-1-3 Support to widows and orphans	1,625,000	0.02%
	5-2 Empowerment of indigents and vulnerable groups	5-2-1 PAPA	10,500,000	0.15%
		5-2-2 CBR	28,605,000	0.42%
		5-3-3 VRS	0	0.00%
Total			6,809,769,129	100%

Appendix 9: **Detailed budget** per source of finance

Funding sources		Operating expenses	Investment expenditure	Total expenses (million CFA)	
				VA	VR (%)
1. State		1,328,258,367	1,385,105,500	2,732,545,567	40.13%
		0	0	0	0.00%
	<i>Sub-total (A)</i>	<i>1,328,258,367</i>	<i>1,385,105,500</i>	<i>2,713,363,867</i>	<i>39.85%</i>
2. Own revenue from health facilities	Health Committee	342,169,998	22,504,700	364,314,738	5.35%
	REVENUE	628,863,438	0	628,863,438	9.23%
		0	0	0	0.00%
		0	0	0	0.00%
	<i>Sub-total (B)</i>	<i>971,033,436</i>	<i>22,504,700</i>	<i>993,538,136</i>	<i>14.59%</i>
3. local communities		103,804,400	11,145,500	114,949,900	1.69%
		18,880,000	2,450,000	21,330,000	0.31%
	<i>Sub-total (C)</i>	<i>122,684,400</i>	<i>13,595,500</i>	<i>136,279,900</i>	<i>2.00%</i>
4. Development Partners	AFD	386,079,610	59,500,000	445,579,610	6.54%
	ADEMAS	9,715,000	0	9,715,000	0.14%
	intra health	73,361,712	0	73,361,712	1.08%
	PSSC2	47,261,578	0	47,261,578	0.69%
	UNFPA	193,169,225	27,157,000	220,326,225	3.24%
	WF/NCAAS	65,294,293	15,000,000	80,294,293	1.18%
	UNICEF	181,063,373	10,580,888	191,644,261	2.81%
	WHO	18,299,100	0	18,299,100	0.27%
	WF/PNLP	87,986,500	1,160,000	89,146,500	1.31%
	WF/TB	18,791,000	0	18,791,000	0.28%
	SIGHTSAVERS	13,221,400	0	13,221,400	0.19%
	LUX DEV	704,786,918	70,743,250	775,530,168	11.39%
	FM/DLSI/RSS	33,453,734	0	33,453,734	0.49%
	PAM	6,722,250	0	6,722,250	0.10%
	ABT/USAID	41,738,250	5,875,000	47,613,250	0.70%
	PRN	132,647,047	400,000	133,047,047	1.95%
	ONG 3D	4,800,000	0	4,800,000	0.07%
	ASBEF	2,240,000	0	2,240,000	0.03%
	JEG	2,060,000	0	2,060,000	0.03%
	FAFS	2,100,000	0	2,100,000	0.03%
	DAHWA	5,866,200	0	5,866,200	0.09%
	EELS	8,990,000	400,000	9,390,000	0.14%
	CHILD FUND	13,402,339	246,624	13,648,963	0.20%
	AWA	4,480,000	0	4,480,000	0.07%
	AMREF	3,695,000	0	3,695,000	0.05%
	ACDEV	9,163,180	7,105,000	16,268,180	0.24%
	PVM	71,826,155	0	71,826,155	1.05%
	ANCS	300,000	0	300,000	0.00%



	MACEPA	51,700,000	0	51,700,000	0.76%
	Micronument Initiative	4,331,600	0	4,331,600	0.06%
	<i>Sous-total (D)</i>	<i>2,214,640,964</i>	<i>198,167,762</i>	<i>2,412,808,726</i>	<i>35.43%</i>
5. sources others	PNA	22,500,000	0	22,500,000	0.33%
	PROJET AUTRICHIEN	500,000,000	0	500,000,000	7.34%
	PLAN/PEDIPE	2,321,500	0	2,321,500	0.03%
	NETWORK	11,102,000	0	11,102,000	0.16%
	COOPERATION ITALIENNE	0	17,500,000	17,500,000	0.26%
	RNP+	355,000	0	355,000	0.01%
	<i>Sous-total (E)</i>	<i>536,278,500</i>	<i>17,500,000</i>	<i>553,778,500</i>	<i>8.13%</i>
<b>Total (A+B+C+D+E)</b>		<b>5,172,895,667</b>	<b>1,636,873,462</b>	<b>6,809,769,129</b>	<b>100%</b>

	Budget monitoring of:	<b>01/01/2015</b>	au :	<b>16/11/2015</b>
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Account N°	Account Name	Dotation annually	Realisation		Available	
			Cumulative	%	Amount	%
Operating Section - Expenses						
Group 2 - medical and pharmaceutical load						
604110	Pharmaceutical products	171,415,119	148,947,019	86.89%	22,468,100	13.11%
6041102	Drugs & IB Products	93,500,000	70,483,358	75.38%	23,016,642	24.62%
6041101	Purchases of service products	77,915,119	78,463,661	100.70%	- 548,542	-0.70%
604111	Product for X Ray	17,600,000	21,553,000	122.46%	- 3,953,000	-22.46%
604112	Products for the laboratory	16,931,200	18,117,107	107.00%	- 1,185,907	-7.00%
604113	Prosthetic and orthopaedic appliances and supplies	1,314,300	-	0.00%	1,314,300	100.00%
604114	unsterile supplies	-	-		-	
604115	Sterile consumables	-	-		-	
604116	Dental products & medications	-	-		-	
604117	Products for ophthalmology	3,176,350	1,902,830	59.91%	1,273,520	40.09%
604118	Small hospital equipment	1,538,450	2,394,000	155.61%	- 855,550	-55.61%
604119	Other services products	11,935,535	15,120,860	126.69%	- 3,185,325	-26.69%
604120	Caesarean kits	16,400,755	14,168,940	86.39%	2,231,815	13.61%
604130	Pre- and post-operative products	8,018,529	4,666,924	58.20%	3,351,605	41.80%
604210	Medical gases	1,000,000	540,000	54.00%	460,000	46.00%
	Sub -Total GROUPE 2	171.415.119	148.947.019	86.89%	22,468.100	13.11%

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