

**FEDERAL
MINISTRY OF
HEALTH**

NATIONAL SCHOOL EYE HEALTH GUIDELINES



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Foreword

The National Eye Health takes a coordinated approach to reduce avoidable blindness and its impact at all levels. It gives a critical analysis of the present situation of eye care in Nigeria by identifying the area of strengths, weaknesses and opportunities that can be leveraged upon and; the threats that need to be addressed. One significant weakness is the inadequate child eye health programme for school-age children in Nigeria.

Under-five mortality rate (U5MR), a proxy indicator for the prevalence of childhood blindness, has declined in the country over the last 40 years from 292.7 deaths per thousand live births in 1969 to 119.9 deaths per thousand live births in 2018. This includes an associated decline in some major preventable causes of visual impairment such as corneal blindness and vitamin A deficiency disease. Consequently, a steady increase in the sight-related burden of non-communicable diseases (NCDs) such as inherited congenital cataracts, retinopathy of prematurity, retinoblastoma and cerebral palsy is being recorded.

This guideline for School Eye Health programmes is timely due to its stepwise approach to setting up at national and sub-national levels. A three-pronged approach guides implementation and includes eye health instructions, eye health services and a healthy environment. This is achieved by institutionalising activities that maintain eye health in the learning environments, prevent blinding conditions, identify abnormalities as well as referrals to health facilities for treatment with appropriate technology and rehabilitation.

The document emphasises the way towards implementation and integration of eye health in school health programmes and backs this administration's resolve to move the country forward in achieving Universal Health Coverage (UHC) in an equitable manner thereby offering school children benefits and value.

Therefore, I endorse its integration into the School Eye Health Programme in Nigeria.



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Hon. Minister of Health

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Executive Summary

Children and adolescents have significant needs for health promotion, prevention and health care services. According to the Nigerian Demographic and Health Survey 2018 statistic, children aged 0-17 years form the bulk of the population (52%), with about 48% of children younger than 19 years residing in urban areas and about 54% in rural areas.(1)

There is a steady increase in the burden of non-communicable diseases (NCDs) that affect children's vision, including but not limited to inherited congenital cataracts, retinopathy of prematurity, retinoblastoma and cerebral palsy. Environmental risks such as poor water supply is linked to eye health conditions such as trachoma and the spread of infectious conjunctivitis. Allergic eye conditions are major causes of ocular morbidity in school children, while uncorrected refractive errors is the most common cause of visual impairment in school children. Both are major contributors to poor academic performance, poor quality of life and school drop-outs.

The main purpose of the Nigeria school eye health guideline is to provide direction for those planning and implementing school eye health programmes within the health and education sector. This guideline is intended for policy makers, educational and health care authorities, health planners, eye care delivery organizations and professionals, including teachers, parents and children. This guideline also takes an integrated approach to school eye health, in which there is an active collaboration between the Federal and State Ministries of Education and Health for joint ownership to ensure effective and efficient delivery of identified initiatives.

The guideline document provides a step-wise approach for developing and implementing the school eye health programme in Nigeria. These includes: situation analysis of school education system, adoption of policy, programs guidelines and identification of resources, development of a memorandum of understanding (MOU), constituting of a local school eye health team, sharing the goals of the program with the school eye health team and delineating pathways to achieving set goals.

It also provides two models of service delivery, referral mechanisms, recommended control of other locally endemic eye conditions in children, eye conditions in adults and teachers, the roles and responsibilities of critical stakeholders in the programme including the ministries of health and education at both state and national levels. It provides technological guidelines for eye health technologies i.e. vision screening, red reflex test, locally-affordable instruments, available topical medications, affordable and custom-made spectacles. Lastly, it reflects on financial, organizational and programmatic plans as means of sustainability and provides a framework for the protection of children by reviewing educational, referral and treatment risks while suggesting possible mitigating strategies for successful programming.

Purpose of the Guidelines

Children and adolescents have significant needs for health promotion, prevention and health care services. According to the Nigerian Demographic and Health Survey 2018 statistic, Children age 0-17 form the bulk of the population (52%) with about 48% of children less than 19 years residing in the urban areas and about 54% in the rural areas.(1)

The under 5 mortality rate (U5MR) is a proxy indicator for the prevalence of childhood blindness. The U5MR has gradually declined in the country over the last 40 years, from 292.7 deaths per thousand live births in 1969 to 119.9 deaths per thousand live births in 2018 with an associated decline in some of the previous major preventable causes of visual impairment such as corneal blindness and vitamin A deficiency disease. (1, 2) Consequently, a steady increase in the burden of non-communicable diseases (NCDs) that affect children's vision, including but not limited to inherited congenital cataracts, retinopathy of prematurity, retinoblastoma and cerebral palsy is being recorded. Additionally, some of the disease burden are linked to environmental risks such as poor water supply as seen in trachoma and the spread of infectious conjunctivitis. Allergic eye conditions is the major causes of ocular morbidity in school children while uncorrected refractive errors is the most common cause of visual impairment in school children.(3, 4) Both are major contributors to poor academic performance, poor quality of life and school drop-outs.

Ensuring the eye health of children and adolescents requires that appropriate measures are implemented from early childhood development and sustained throughout adolescence and adulthood. The school is a natural cluster and a strategic platform to deliver effective measures to protect, promote and enhance the eye health of children and adolescents in the delivery of preventive health care services. These school health services are considered as an extended arm of primary health care services and all its key components including primary eye care.

The main purpose of the Nigeria school eye health guideline is to provide direction for those planning and implementing school eye health programmes within the health and education sector. This guideline is intended for policy makers, educational and health care authorities, health planners, eye care delivery organizations and professionals, in partnership with teachers, parents and children. Following standardised international criteria, this guideline also takes an integrated approach to school eye health, in which there is an active collaboration between the Federal and State Ministries of Education and Health and they both take ownership to ensure effective and efficient delivery of these initiatives.

Efforts to cascade and guide the implementation of the school eye health programme to the state and local government areas is important in Nigeria; As the school net attendance ratio (NER) is 71.5% in urban areas and 53.1% in rural areas for primary schools. While in the secondary schools, the NER is 74.7% in the urban and 37.4% in the rural areas.(1) The delivery platform for the school eye health initiative remains within the schools and the core business of schools is focused on educational outcomes which are improved by healthier children even though it can be argued that the school does not strictly participate in the reduction of health risks. From the perspective of the education sector, the provision of information and training about health and well-being as an intrinsic part of the school curriculum and activities is of the highest benefit in the long term.(5) Therefore, there is a need to reconcile the understanding of the role of school in promoting child eye health and integrating it into the general school health plan.

List of Abbreviations

SHP	School health policy
SEH	School eye health
RE	Refractive error
VADD	Vitamin A deficiency disease
MOH	Ministry of Health
MOE	Ministry of Education
NSHP	National School Health Policy

Chapter 1

Introduction



1.1 OVERVIEW OF THE NATIONAL SCHOOL HEALTH PROGRAM

There is need for cost effective sustainable measures of addressing communicable and non-communicable diseases in the country. The National School Health Policy (NSHP) developed in 2006, has been suggested as a key component of the national health promotion program because when the NSHP is integrated, addressing risk factors and diseases, it rightly addresses the burden. NSHP also provides the opportunity to ensure the life cycle approach required for child development into adulthood materialises. It further provides a huge opportunity and most cost effective investment to improve education and health. Coverage of the school

system coupled with the extensive skilled workforce (teachers) and strong community relationship (care givers) is often superior to health system, hence its potential role in optimising the health system. (6)

The SHP describes all projects/activities in the school environment which contribute to the understanding, maintenance and improvement of the health of the preschool and school community. It is geared towards protecting and improving the health status of the school community primarily to enable them benefit maximally from the school system.

The National School Health Policy NSHP was developed in 2006. The vision statement is to

promote health of learners to achieve education for all and health for all in Nigeria. The mission statement is to put in place adequate facilities, resources and programs that will guarantee physical and mental health, social well-being and the safety and security of the school community which will promote the learning outcomes of the child. It also states two policy goals: enhancing quality of health in the school community and creating an enabling environment for inter-sectoral partnership. There are six policy objectives: provision of necessary legal framework for SHP implementation; machinery set up for co-ordination of efforts of the community, government and non-governmental organisations; guide the provision of appropriate professional services by stakeholders; promote the teaching of skill-based health education; facilitate effective monitoring and evaluation and set up modalities for sustainability of the SHP.

The policy framework describes the scope of the SHP to include: School Health Services (SHS), Healthful School Environment (HSE), School Feeding Services (SFS), Skilled Based Health Education (SBHE) and School, Home and Community Relationships (SHCR). School Health Services include pre-enrolment medical examination for pupils, pre-employment medical examination for teachers, periodic medical inspection, health education, environmental sanitation, nutritional services, de-worming programme, provision of first aid materials, collection of data on medical treatments and maintenance of sickness absence records. School Feeding Services include provision of, at least, one adequate meal a day to school children, adequate sanitation and hygiene practices among food handlers including routine medical examination and vaccination, food fortification and supplementation, regular de-worming and promotion of health related-school policies. Skill-Based Health Education includes personal hygiene, prevention of diseases e.g. HIV, mental & social health, first aid services, safety education, mental health, nutrition education, environmental sanitation, substance abuse and family life education.

Healthful School Environment includes location away from potential environmental hazards, adequate buildings/classrooms, lighting, ventilation, adequate and appropriate furniture for learners and staff. It also includes gender sensitive latrines

and urinals, adequate safe water supply, sanitation facilities for use in schools and proper drainage and waste disposal. School, Home and Community Relationships entail home visits by teachers, school nurses and social workers, regular visit of parents to school, regular communication of the health status of the learner to the home by the school health personnel and the teachers, active participation of the school in community outreach activities and campaigns.

The institutional framework includes the different stakeholders for the implementation of the NSHP who include: The Government (Federal, State and Local); Ministries of Education, Health, Environment, Water Resources, Agriculture and Rural Development, Housing and Urban Development, Works, Information, Sports and Social Development, Women Affairs; Communities; Civil Society Organization, Organized Private Sector and International Development Partners.



1.2 KEY OUTCOMES

1.2.1 NSHP Key Outcomes can be categorized into three general areas:

1.2.1.1 The pupils/students:

Students are trained to assume personal responsibility for avoiding social, emotional, and physical health-compromising behaviours and for engaging in health-promoting behaviours. Students' health needs—preventative, emergency, acute, and chronic—will be addressed to allow students

to reach the highest possible level of educational achievement and personal health. Particular attention will be given to the health component of students with special health care needs who require special education and related services.

1.2.1.2 Programmatic and organizational outcome:

The second is the programmatic and organizational outcome. The school's health emphasis will be integrated across all activities and linkages among program components and disciplines including eye health. Teachers and children with special needs or at risk for visual impairment from conditions such as uncorrected refractive errors will be identified and managed with appropriate prevention, assessment, intervention or referral, and follow-up measures. The school's education and health programs will be continually re-examined and reformed as necessary to enhance student health, performance, and achievement.

1.2.1.3 Community Outcomes:

The school community will be actively involved in determining the design and implementation of a school health program and in supporting and reinforcing the goals of the program, including teacher's eye health. This design will include assurance that schools are safe, with an environment conducive to learning and health promotion, and that policies and procedures are in place to enhance the use of schools as a community resource for health.

The school eye health care component will be integrated through three main approaches including:

- Health instruction through a comprehensive health education curriculum that focuses on teachers and children, increasing student understanding of health principles and modifying health-related behaviours.
- Health services includes prevention, early identification, early uptake of eye care services and follow up.
- A healthful environment is concerned with the physical and the psychosocial setting and such issues as safety (prevention of ocular injuries), nutrition, food service, and a positive learning atmosphere.

1.3 MANDATE OF THE FEDERAL MINISTRY OF HEALTH AND THE NATIONAL EYE HEALTH POLICY

The mandate to develop the school eye health guidelines for implementation and integration into school health stems from the National School Health Policy 2006 where the Federal Ministry of Health has been charged with:

- i. Ensuring adequate provision of health services and personnel to promote the health of the school community .
- ii. Ensuring that information for the prevention of communicable diseases (Trachoma and emphasis on face and hand washing) including immunization services are extended to schools in the context of Primary Health Care.
- iii. Support capacity building of personnel for the delivery of health services in schools .
- iv. Facilitate referral services between school and health facilities in the community .
- v. Conduct pre-entry/routine health screening and maintain routine health records of learners.
- vi. Development of implementation and monitoring and evaluation strategies.

1.4 ADOPTION OF THE CONVENTION FOR THE RIGHTS OF THE CHILD

Furthermore, the Convention for the Rights of the Child was adopted by the United Nations (UN) in 1989, which recognised for the first time that children have rights of their own and are not passive objects of care and charity. The conventions for the Rights of the child is an issue of child eye health. The Right to healthcare and nutrition including vitamin A deficiency, the Right to clean water eradicating preventing trachoma blindness, electrical power and a safe environment to prevent ocular trauma the major cause of monocular blindness in children, the right to quality Education which ensures children with visual impairment and blindness receive appropriate and adequate education and social inclusion and lastly, the right to guidance from a caring adult ensuring early identification and early presentation for uptake of eye care services and ensuring follow up including the lifelong approach to care.

The delivery of school eye health in Nigeria would adopt a programme approach.

Chapter 2

Child Eye Health Care



2.1. CHILDHOOD BLINDNESS AND VISION IMPAIRMENT:

Childhood blindness and vision impairment produces many years of living with blindness and vision impairment in children if not addressed promptly and properly.(7) It refers to a group of diseases and conditions occurring in childhood or early adolescence, which, if left untreated, result in blindness or visual impairment that are unlikely to produce a good visual outcome following intervention. The major causes of blindness in children vary widely from different parts of the country. In Nigeria, corneal scarring from measles, vitamin A deficiency, the use of harmful traditional eye remedies, conjunctivitis of the new born, are reducing. cataract, glaucoma and retinoblastoma and are current major causes.(2) More recently,

retinopathy of prematurity and cerebral visual impairment most commonly seen in children with neurodevelopmental problems, are important causes.(8)

Uncorrected refractive errors (uRE) include myopia (short-sightedness), and hyperopia (long-sightedness) with or without astigmatism (when the eye can sharply image a straight line lying only in one meridian) are the most common cause of significant visual impairment in children and can be addressed with appropriate and evidence based cost effective, interventions that have an important impact on economic development and quality of life. (4) Uncorrected RE results in a blurred image, which may affect the development of vision.

Evidence of the impact of uRE on children in Nigeria is limited as well as the impact of correction of refractive error is poor. Although there is extensive anecdotal evidence from other countries of how providing spectacles improves children's lives.

2.2 RISK FACTORS FOR MYOPIA

There is an increasing incidence of myopia and high myopia globally. Recent studies suggest that known genetic factors explain 35% of myopia,(9) and that education can potentiate these effects. Lack of time spent outdoors, parental education and myopia are other important risk factors, with a systematic review suggesting that there is a 2% reduction in the progression of myopia with every hour spent outdoor.(10)

2.3 A CHILD WITH LOW VISION

The child with low vision, refers to a child who has impairment of visual functioning even after treatment (medical and surgical and/or standard refractive correction, but who uses, or is potentially able to use, residual vision for the planning and/or execution of a task for which vision is essential.

2.4 OTHER COMMON EYE CONDITIONS IN CHILDREN

2.4.1 Trachoma

Trachoma is a potentially blinding condition if not treated adequately. The first stage of global trachoma control initiatives entails a detailed mapping of where trachoma is a public health problem.

2.4.1.1 Implications

School health initiatives should consider addressing active trachoma in areas where it affects 5% or more children, particularly in rural areas. This could entail ensuring adequate water supplies, checking that children have clean hands and faces when they attend school, and health education to encourage face washing.

2.4.2 Vitamin A deficiency disorders (VADD)

Despite global efforts for control, VADD remains a public health problem among pre-school age children in many low income countries, particularly in sub-Saharan Africa including Nigeria. VADD can produce a variety of ocular signs, including Bitot's spots and corneal scarring.

Initiatives in Nigeria to address VADD in all states of the country exists from birth and booster doses of vitamin A, including school health intervention with vitamin A fortified foods.

2.4.3. Cataracts in children

Proactive case-finding and in some cases novel approaches like key-informants and primary eye care screening will need to be done. Parents must be educated on the condition and must understand the need for early intervention and follow up.

2.5 EYE CONDITIONS IN TEACHERS

Eye conditions in teachers occur more commonly in adults over the age of 40 years and more than 80% will have presbyopia, (11) many of whom are likely to be un- or under corrected. This can have an impact on their ability to perform school work. Barriers to presbyopia correction include lack of awareness, cost, no felt need or not a priority, cosmetic reasons, discomfort or broken spectacles.(12) Similarly, some teachers may also have myopia which either requires correction or re-checking of the current prescription to determine its suitability.

Since teachers, as adults, may have other eye problems, a school screening program should provide screening of teachers for presbyopia or other refractive errors, and advise/refer them to the next appropriate level of referral in case for assessment of problems. Two examples of eye problems, other than refractive errors that may occur in adults, are diabetes and glaucoma.

Diabetes Mellitus is increasing in Nigeria.(13) Up to 5% of people living with diabetes have sight threatening retinopathy that they are not aware of as this can be asymptomatic at the earlier stages.

All school health initiatives should include the eye health of teachers with approaches that support the finances for the uptake of care. Glaucoma affects 4-5% of adults aged 40 years in Nigeria.(14) The commonest form primary open angle glaucoma causing a painless progressive loss of vision.

Chapter 3

Comprehensive School Eye Health



This section provides a framework in which school eye health can be implemented and integrated into a school health program.

3.1 CHALLENGES OF CURRENT SCHOOL EYE INITIATIVES

Many school eye health initiatives are narrow in focus, do not involve Ministries of Health or Education, are not integrated into other school health initiatives and do not provide annual or biannual vision screening to identify new cases and to follow-up children already identified with myopia which can progress with age. These factors can lead to poor co-ordination, ownership and sustainability. Other areas that are often not adequately addressed include lack of standard approaches to screening, prescribing, referral and follow up. Inadequate

monitoring and evaluation can lead to inefficiencies and poor assessment of outcomes and impact. Ministries working in disability can also be a key partner in school eye health programmes, as many are responsible for schools for children with disabilities, or schools for the blind, or can have details of children who do not attend school due to a disability. In addition, schools that practice inclusiveness in preparation for integration of children with visual impairment into main stream schools require attention. Children with multiple disability require special schools to enable them fulfil their educational potential.

There is evidence that a high proportion of children given spectacles do not wear them for a range of reasons, (Priya Morjaria, 2019) many of which could be minimized or overcome by health education of parents, teachers, affected children and their peers, by only dispensing spectacles to children who really need them, and ensuring comfortable, cosmetically acceptable frames are provided free of cost or at a minimal cost.

3.2 THE POLICY FRAMEWORK

The scope of the SEHP includes: Pre-school, school children including school drop outs and school not attending children. Knowledge that may benefit children <4 years will be obtained during eye health education of children and the emphasis on a child to child approach. Every school eye health program should engage Ministries of Health and Education, be integrated into the broader school health program and must be backed up by eye and child health services to manage referrals.

The school eye health care component will be addressed through three main approaches including:

Health services includes prevention and early identification and remediation of student eye health problems. Identify a range of strategies for control of visual loss in children, from health protection and health promotion through to primary, secondary and tertiary prevention.

The purpose of health protection and health promotion are to promote safe and healthy behaviours, through policies, and other components of a health education strategy. For example, this may entail nutrition education to promote vitamin A rich foods, or legislation which bans selling fireworks to children. The purpose of primary prevention is to reduce the incidence of new cases of potentially blinding conditions, which may entail specific measures such as measles immunization and vitamin A supplementation.

Engagement with families and/or communities could be through:

- The Child-to-Child approach to take eye health messages home as agents of change and train children as “case detectors” of individuals in their families or community who need eye services.
- Screening siblings of children with RE and other familial conditions.
- Learning how to help and interact with other children and adults who are irreversibly blind or have low vision.

Secondary prevention refers to interventions which prevent the blinding consequences of a condition, such as early detection and treatment of corneal ulcers in children, or lid surgery for someone with lid changes in trachoma.

Tertiary prevention has two components: treatment which restores function, such as cataract surgery and spectacle correction of REs, and interventions which improve function where sight cannot be restored i.e., low vision services and rehabilitation.



Specific eye care activities:

- Identification of children with visual impairment.
- Correction of RE using high quality spectacles that are acceptable, durable, comfortable and affordable.
- Primary management of common and acute cases, e.g. lid infections, conjunctivitis, trauma.
- Identification, referral and treatment of potentially visual impairing conditions e.g. cataract.
- Teachers’ eye health such as correction of presbyopia and referral for retinal examination if diabetic.

Health instruction is accomplished through a comprehensive health education that includes eye health and a curriculum that focuses on increasing student understanding of health principles and modifying health-related behaviours.

3.3 FORMAL HEALTH CURRICULUM

The first curriculum entails the teachers training curriculum of colleges of education and the national teachers training institute and the universities that produce teachers.

The second curriculum involves the children's curriculum: pre-primary curriculum where eye health education can be part of the physical health education domain under gross motor activities. For the primary school up till Junior Secondary School, eye health can be integrated into the Basic science and technology course. At the senior secondary level, integration is suggested into the health education curriculum.

A healthful environment is concerned with the physical and the psychosocial setting and such issues such as safety, access to education, nutrition, food service, and a positive learning atmosphere including the availability and use of assistive technology.

3.4 ETHOS AND SCHOOL ENVIRONMENT

Healthy practices e.g. personal hygiene – soap and access to clean water, provided for face and hand washing for trachoma control and reduce the spread of infectious conjunctivitis.

Promote a healthy school environment e.g. growing vitamin A rich foods in school gardens; water collection for face washing; clean latrines and waste management for fly control.

Promote uptake of programs for locally endemic diseases especially those targeted for elimination e.g. trachoma, and conditions of public health significance e.g. vitamin A deficiency.

Promote an environment with appropriate modification to facilitate inclusion.



Chapter 4

Steps in planning school health

This chapter describes a simplified step by step guide for use by the states and local governments Ministry of Education or Education units for planning a schools’ eye health program. However, this will depend on the local context and resources available; and whether the services are starting from scratch or expanding on existing services. A meeting of the local government state education and health authorities towards adopting the guidelines for use by the state and local governments.

4.1 STEP WISE APPROACH

Step by step approach in developing a school eye health program.

Step by step approach in developing a school eye health program.

Situation analysis of school education system and establish the need for school eye health in the area

Adoption of policy, programs guidelines and identification of resources

Engagement with health and education authorities to develop a memorandum of Understanding (MOU)

Constitute a local school eye health team to perform a situation analysis

Share the goals of the program with the school eye health team and delineate pathways to achieve the goal

Gap analysis

Develop a plan with short, medium and long-term objectives and indicators

Establish formal partnerships with local eye care centers

Identify and secure resources through the MOU

Adopt Standard Operating Procedures

Develop a monitoring framework and plans for review and evaluation

Pilot the program in the identified school within the catchment area

Determine management, governance and reporting pathway

Detailed description of the program implementation (e.g using a Gantt chart)

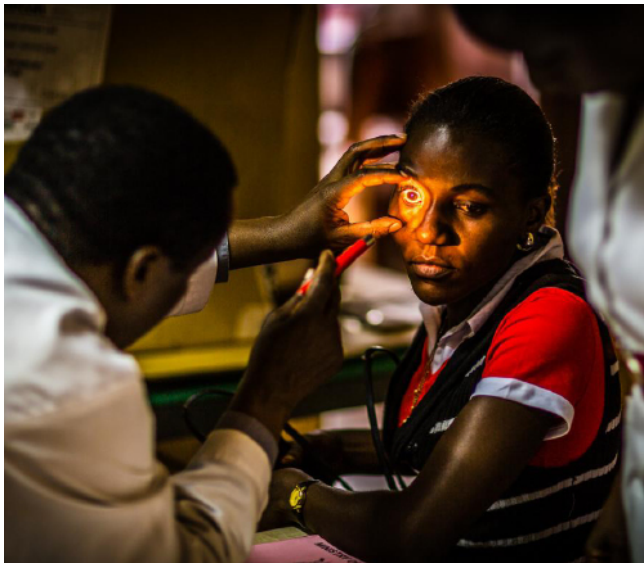
Implement monitoring and evaluation activities.

4.1.1 Step 1: Situation analysis of school education system and establish the need for school eye health in the area

For services for eye conditions and refractive errors in children

The need can be established in a state or local government area using the following approaches.

- A mini survey can be conducted. This can be confirmed by testing the vision of 200 children in each of the following age groups 5-8 years, 9-10 years (primary school) and 11-15 years and 16-18 years (secondary / middle school). It is recommended that uRE is defined as an inability to see 6/12 in BOTH eyes and whose vision improves to normal with refraction for this exercise. Refraction of children who fail will give the % with RE who might benefit from spectacles by age group.
- Obtain information from other local school eye health programs or the Federal Ministry of Health
- What is the prevalence of vitamin A deficiency in preschool age children?
- What is the prevalence of severe vernal conjunctivitis in children?



4.1.1.1 Conditions likely to affect teachers

- What proportion of teachers are aged 40 years and above, who are likely to be presbyopic and require spectacles for near vision?
- What is the prevalence of diabetes amongst adults aged 40 – 60 years?

4.1.2 Step 2: Adoption of policy, program and identification of resources

4.1.2.1 Policy

- Child eye health is included and included in the budget of the state eye health and general health plan.
- Refractive errors have been targeted for intervention through a school eye health programme.
- Insurance schemes or formal private-public partnerships should include treatments for eye conditions of children.
- The school health and eye policy engages teachers in health programs.

4.1.2.2 Programs for state or local government school health

- Is there an existing school health program? If so, is eye health included? Is there a budget?
- Is there any existing relationship between the school and local eye health providers (public or private)?
- Do all schools have a school nurse? Or do specific teachers take on any school health responsibility (e.g. Physical Education teachers).
- Are other organisations already active in school eye health in the planned area?
- Are there other school health initiatives that eye health could be integrated into? e.g. deworming programs, dental programs, state feeding programmes
- Are there special education schools and school operating integrated/inclusive education?

4.1.2.3 Resources for refractive errors and other eye conditions

The next step is to conduct a situation analysis to ascertain the following:

For eye care

- Are Tertiary, secondary and primary level eye care available in the state or local government area? Which facilities in the area performs the following services: medical and surgical care, prescribing and dispensing spectacles, low vision care, the detection, diagnosis and management of diabetic retinopathy, visual rehabilitation.

The assessment of eye care services should use the building blocks of the health system. (Figure 1) which also shows the different levels of the eye care health system.

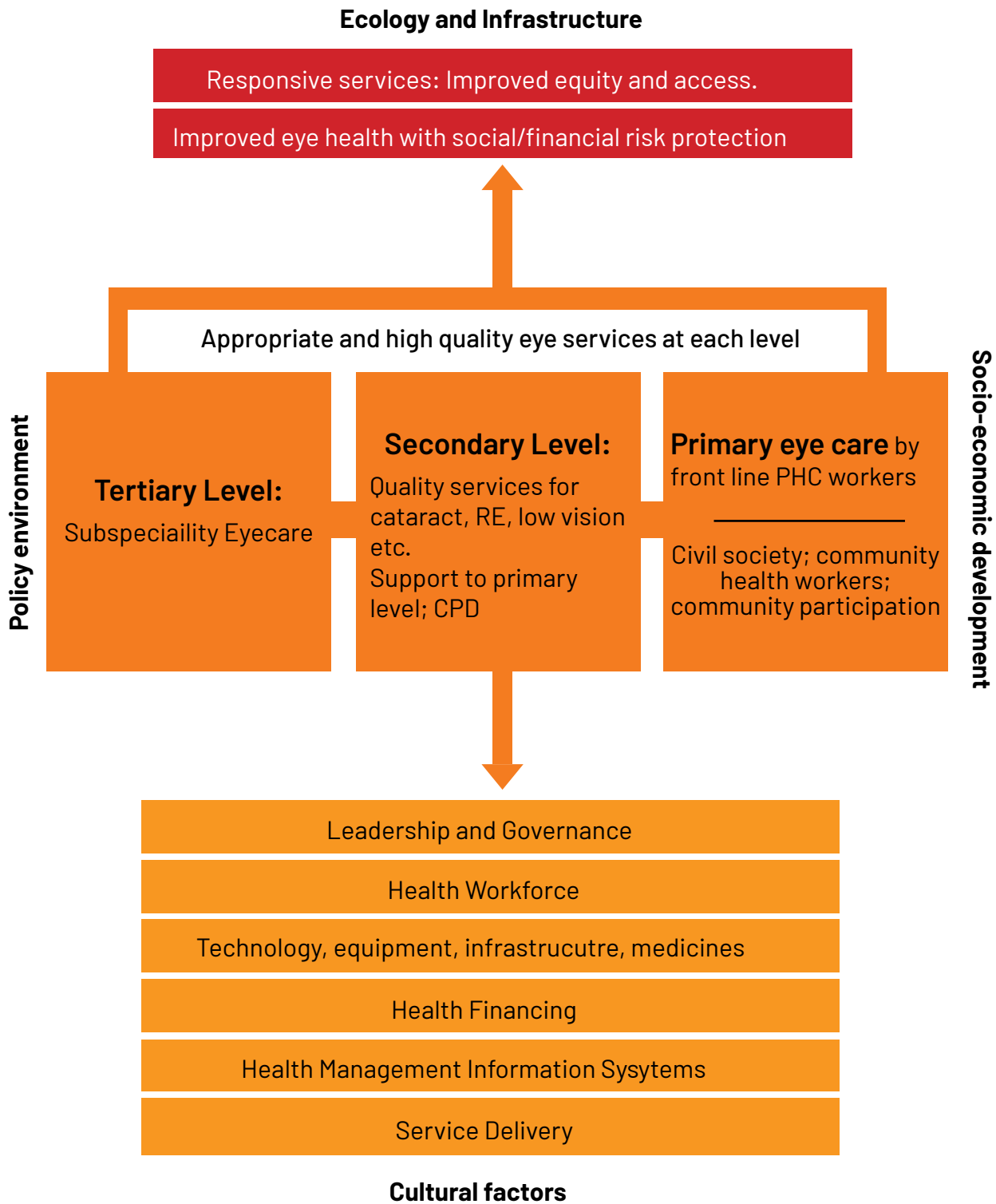


Fig1 Building blocks and levels of service delivery, and the desired outcome of a health system (Gilbert, adapted from WHO)

For children with low vision or who are blind

- Special or integrated education for children with irreversible causes of low vision or blindness, social welfare services, organizations of and for the blind
- The use of assistive technology for learning and communication

4.1.3 Step 3: Engagement with health and education authorities to develop an MOU

Active engagement of local government/State / District Ministries of Education and Health is critical. Engaging with the ministry responsible for disability inclusion should also be considered. The process of sensitisation should start early in the development of the project concept. National and state governments and their administration structures are very sensitive to health or education initiatives being undertaken by non-state actors without their knowledge and approval. It is vital to actively engage with the health and education authorities at the outset to develop a joint conceptualisation of the 'school eye health project or initiative' and determine areas of synergy with ongoing government initiatives.

Further, the interaction with the health and education authorities lays the foundation for a well-coordinated collaborative effort, which is likely to receive more facilitation and support from the authorities and so be more sustainable. For example, involving local education authorities and school supervisors can result in activities being monitored through their own standard school monitoring system.

Engagement with the education authorities would also help identify opportunities to develop and strengthen capacities to incorporate school eye health in ongoing inclusive education and initiatives.

4.1.4 Step 4: Situation Analysis of school education system and constitution of a local school eye health team to perform a situation analysis

This is another critical step in the whole process. It involves finding out more about the educational structure, key stakeholders at various tiers of the education system at national and sub-national levels, education information flows, curriculum development mechanism, and in-service teacher training programs. Further, strategic integration points should be determined for school eye health in existing school health and nutrition programs where they exist. It is important that parents are engaged and informed about school eye health programs. Parent teacher's associations are the ideal platform to facilitate this.

Involving head teachers in the formation of a school eye health team can be crucial to the success, as Head teachers are ultimately responsible for

providing quality education to their students, can ensure teachers conduct activities as agreed and can support quality monitoring.

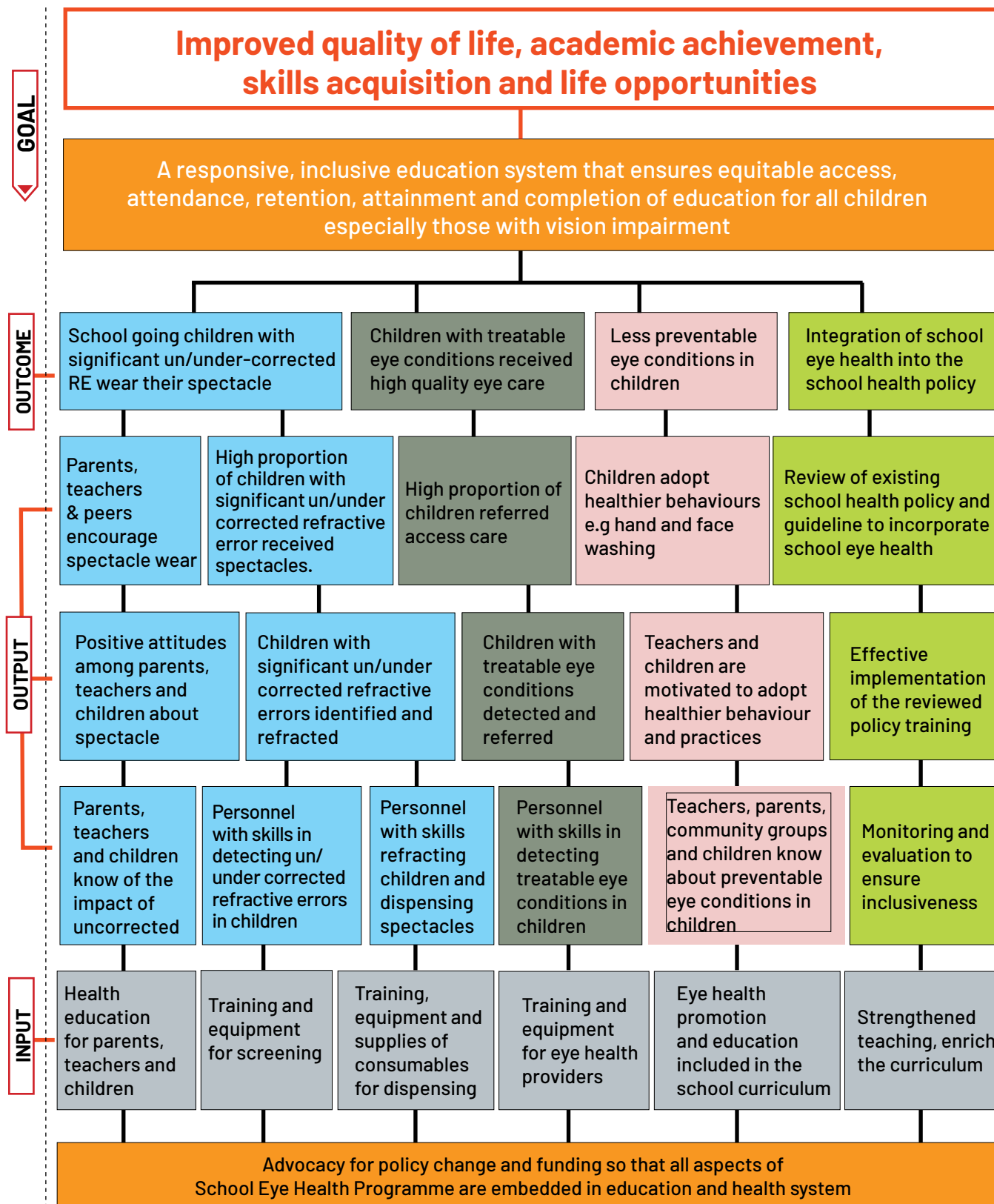
Identifying vision 'champions' is also useful. These 'champions' promote the importance of good eye health to the school and local community. In the proposed program area, request the Ministry of Education to generate lists of schools and identify schools with and without programs for eye health to avoid duplication.



4.1.5 Step 5: Share the Goals of the program with the school eye health team and delineate the pathways to achieve the goal.

The goal of the school eye health programme i.e. the positive change that would come about as a result of successful implementation of the program should be shared with the team. It is very useful to share the country's Theory of Change for school eye health, which describes the outcomes which would feed into the Goal, and the inputs and outputs required to achieve each outcome. The Theory of Change is shown in Figure 2. From the Theory of Change it is possible to identify potential barriers, and assumptions for success. For example, potential barriers may be that head teachers do not permit their teachers to screen, or parents refuse to have their children's eyes tested. Assumptions might include that an adequate supply of suitable spectacle frames will be maintained; screeners will be willing to spend time screening and will maintain high standards and that the local ophthalmologist is available for consultation.

Established paths of care and the contents of the MOU with health facilities should be shared with the team.



4.1.6 Step 6: Gap analysis

For each component of the program identify gaps that need to be addressed to ensure appropriate implementation. This could include training existing cadres to measure vision or to refract, prescribe and dispense spectacles for children. Individuals may need training in low vision care for children and access to supplies of appropriate devices; local clinical staff may require training in detecting sight-threatening diabetic retinopathy; school nurses may require orientation and health education materials for eye health in children.

4.1.7 Step 7: Develop a plan with short, medium and long-term objectives and indicators

For each outcome, it is useful to define short, medium and long term SMART objectives, with activities and indicators.

4.1.7.1 Objectives

For each outcome, objectives and activities need to be delineated. Objectives must be SMART i.e., Specific, Measurable, Attainable, Relevant and Time Based.

Examples of short term objectives could be training of teachers and providing the equipment required; providing equipment for eye care in the referral hospital; awareness raising workshops for eye care professionals on school eye health. Medium term objectives may include establishing refractive and optical dispensing services and networking of service providers. Long term objectives could entail ensuring that eye health is included in school health curricula.

The ultimate aim is that services for refractive errors in children are fully integrated into a national/state and local government comprehensive eye care programs.

4.1.7.2 Key elements to consider in planning:

Provision of spectacles: An efficient mechanism must be in place to procure affordable, high quality spectacle frames and lenses and delivery of spectacles to children in schools preferably. Spectacle frames should be acceptable to boys and girls of different age groups and be of the correct size. An inventory of frames and lenses must be in place, with a large enough stock at all times to meet the demand.

Referral mechanisms and tracking update of referral: Children whose vision does not improve with refraction should be referred to the partner eye clinic to see the ophthalmologist. It is important to track whether these children attend the eye clinics following referral and systems should be in place for this. This may entail using referral slips and a register at the hospital, or electronic systems could be used.

4.1.8 Step 8: Establish formal partnerships

Before implementation starts it is advisable to obtain Memorandums of Understanding (MOUs) with the Ministries of Education and Health, and to hold a District level workshop of relevant stakeholders for advocacy and sensitization.



4.1.9 Step 9: Identify and secure resources

To promote sustainability, comprehensive school eye health programs should ideally not require extensive additional external resources. However, in the short term, additional resources are usually required for training, to produce materials and ensure supplies of high quality spectacle frames and lenses.

The different components of the plan (short, medium and long term) should be costed and funding sought from the government, non-governmental organizations, community based and service organizations and commercial enterprises willing to support program.

4.1.10 Step 10: Adopt Standard Operating Procedures

National standard Operating Procedures (SOPs) should be adopted. They are highly desirable to ensure that activities are implemented in a uniform, consistent and a high-quality manner and should be adopted for every state and local government area. Standard Operating Procedures provide a step by step guide on who should do what and how.

For school eye health, SOPs should cover many of the aspects covered in this guideline, from engagement with Ministries of Health and Education, sensitization of Head Teachers through to how to train screeners and optometrist/refractionists; how to prescribe spectacles for children; who, how and where to refer and track referrals (including teachers with diabetes)

etc. The SOPs should also include data to be collected for monitoring. The SOPs provide a benchmark against which the competencies and activities of those involved in the program can be monitored.

4.1.11 Step 11: Develop a monitoring framework and plans for review and evaluation

The monitoring framework will be agreed on. It lists each indicator and how it is defined; the source of information; who is responsible for gathering / proving the data and the frequency of reporting. A list of potential output, outcome and impact indicators are shown in the Appendix 1. At the outset plans should be made for a midterm review, and an end of project evaluation. A budget line should be specifically allowed for these activities.

4.1.12 Step 12: Pilot the program in a defined setting or area

Pilot testing the different elements of the program for a particular school is very useful as it can identify barriers, assumptions or other problems which limit implementation. The pilot could be done in a district with a secondary level eye unit with optical services and an educational institution willing to participate. Access to a tertiary eye department for referrals and community-based eye health program in the area are added advantages.

The standard operating procedures (SOPs) may need to be modified after the pilot.

4.1.13 Step 13: Management and governance

All programs regardless of their size and complexity will need to be well managed. Managers with clearly defined roles and responsibilities should provide oversight of implementation, and manage the financial, human and other resources. Managers will be responsible for reporting on progress and for financial accountability to donors, Ministries and other stakeholders. Managers are also usually responsible for initiating midterm reviews and end of program evaluations.

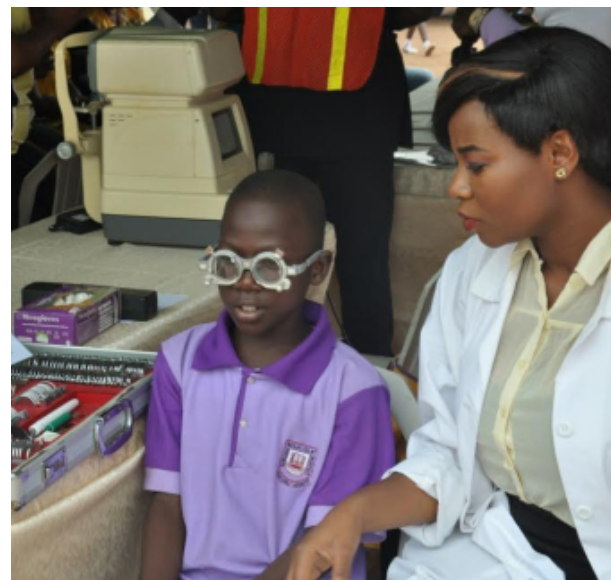
The overall processes and procedures of the program will have to be governed in a manner that ensures the provision of quality eye health services to children in a way which promotes equity.

4.1.14 Step 14: Program implementation

In each school it is advisable that the school head be asked to identify school head teachers and other assistants as earlier mentioned, who would participate in the program. The head teachers are a vital link to any school related interventions and they must be brought on board at an early stage of the program.

This may entail capacity building of head teachers to support and supervise the school eye health initiative in their respective schools. The Ministry of Education through the head teachers can identify two contact teachers, in each participating school, who will be trained to assist and coordinate screening. For large programs, it is advisable to have a local government and District level liaison teacher who co-ordinates with the contact teachers.

Suggestions for the roles and responsibilities of individuals who might be involved in a school eye health program are shown in Chapter 6 of these guidelines.



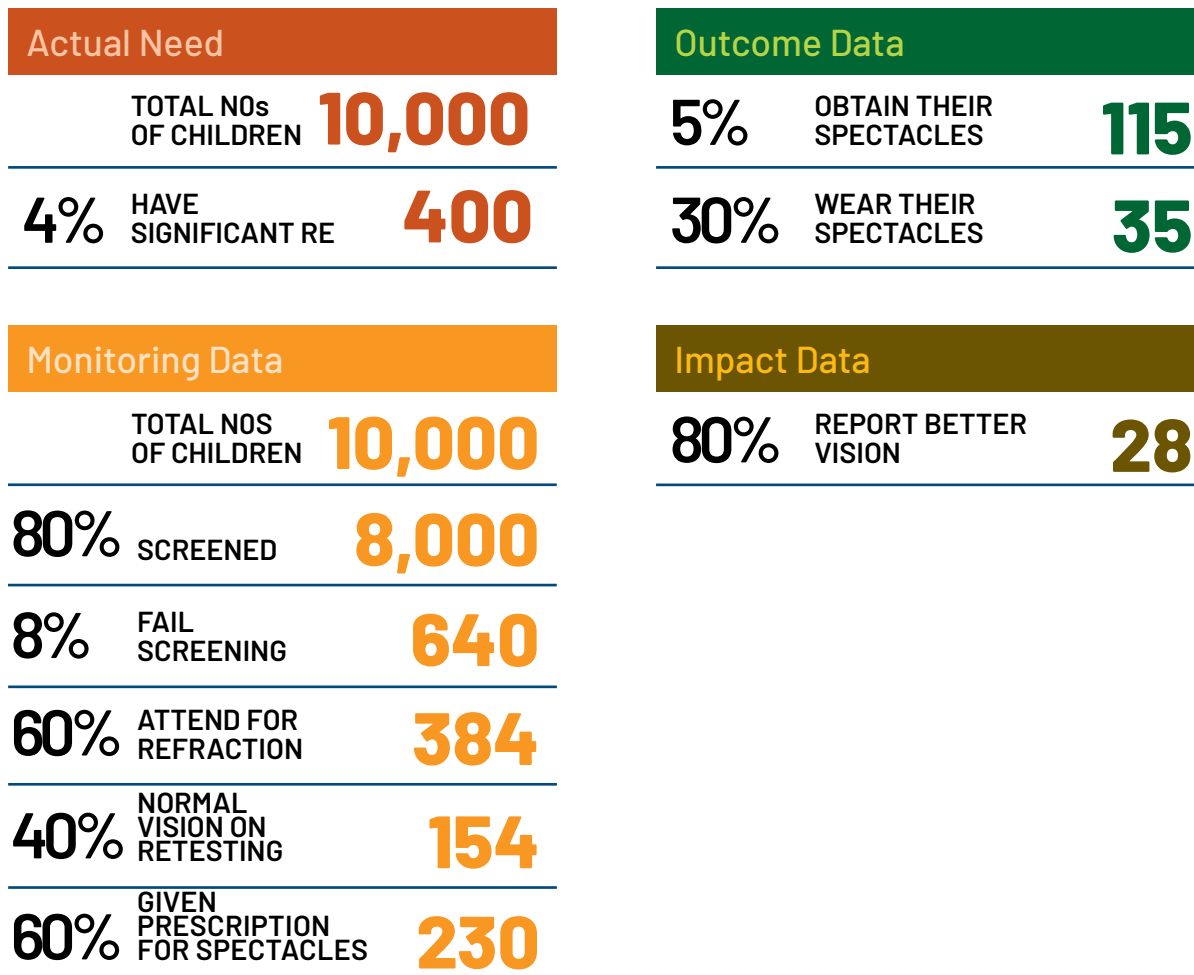
4.1.15 Step 15: Monitoring systems and evaluation

The Federal ministries of education monitoring and evaluation framework with key performance and monitoring indicators will be used. Engagement with education authorities would help to describe already identified indicators adapted for use in the school eye health program. This would ensure that school eye health data feed into and are reflected in education statistics.

Progress of the program should be monitored on a regular basis to ensure that it is meeting targets. Monitoring should be conducted by the program implementers. The program should also be reviewed periodically to ensure screening accuracy, referrals, retention of spectacles, spectacle wear, maintenance of records, and referral attendance rates amongst other things.

Below is a worked example of how data can be used to monitor a school eye health program.

Figure 3. In this setting 4% of school children have a significant uncorrected refractive error. If the target is to screen 10,000 children this means that 400 need spectacles. Monitoring data shows that 8000 children were screened, and 640 (8%) failed screening. Only 384 (60%) of these children attended for refraction, 154 (40%) of whom had normal vision on retesting. The remaining 230 children were given a prescription for spectacles. At follow-up 115 (50%) had obtained their spectacles but only 35 were wearing them. 28 of these children were satisfied with their spectacles.



These data should immediately raise concerns and questions. The coverage of the program was only 80%. Reasons need to be explored and possible solutions considered. For example, returning to the school on another occasion might enable some of the 2000 children who did not attend initially to be screened. The high rate of false positives (i.e., normal vision on retesting) shows that the screeners need to be re-trained. Only 50% of children needing spectacles obtained them. This is a serious shortcoming. Reasons need to be explored, which would entail interviewing some of the parents. Solutions should be based on what parents' report. These might include, dispensing as many spectacles as possible in schools; subsidizing the cost for poor families; increasing awareness amongst parents of the benefits of spectacle wear.

At follow-up only 30% of children who obtained their spectacles were actually wearing them. Children should be asked why this was the case, and some of the common reasons are as follows:

- discomfort
- they do not like the appearance of the frames
- there is no improvement in vision
- they are teased by their friends
- their parents do not want them to wear their spectacles

Again, solutions should be based on what the children say and might include a pilot study to find out which frames children prefer; ensuring an adequate stock of the correct frame sizes; improving dispensing, and health education for parents, teachers and all children in the school.

A similar process should be done to monitor uptake of referrals.

Operational research can also be conducted to assess the barriers to children taking up services and so strategies to increase referral uptake developed.

Operational research on the project can also be useful as each project could be scaled up and continually improved to meet the goal of the programme.

Chapter 5

Participating Organisations and Implementation Strategies

5.1 PARTICIPATING ORGANISATIONS

The institutional framework includes different stakeholders for the implementation of the NSHP and the school eye health component. They include Government (Federal, State and Local); Ministries of Education, Health, Environment, Water Resources, Agriculture and Rural Development, Sports and Social Development, Women Affairs; Communities; Civil Society Organization, Organized Private Sector and International Development Partners.

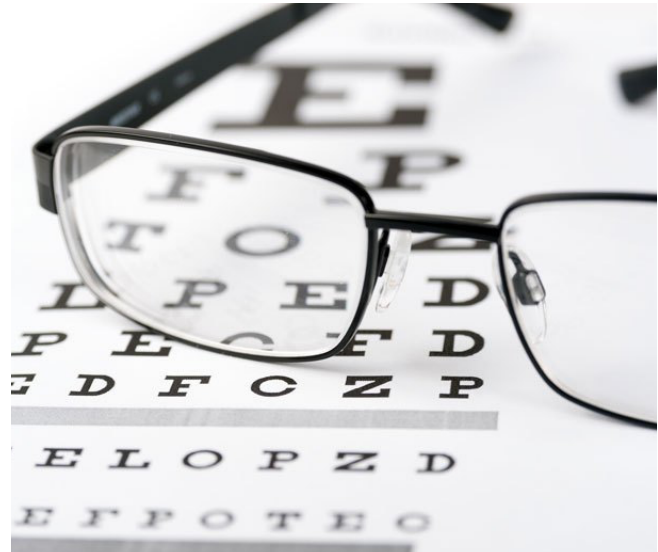
5.2 IMPLEMENTING STRATEGIES

This section describes the implementation strategies, aimed at enhancing integration, development, realization and sustainability of the SEH component. The strategies include: capacity building of teachers and school nurses; working in partnership and collaboration; advocacy and resource mobilization; resource and knowledge sharing.

This sub-section also provides recommendations on:

1. Detection and management of refractive errors in children:
 - Frequency of child vision screening in different age groups
 - Screening: visual acuity cut-off for screening and screening charts
 - Who should screen
 - Refraction
 - Prescribing guidelines for children
 - Referral mechanisms
 - Referral to low vision services and for special education and rehabilitation

2. Detection and management of other common eye diseases in children
3. Teachers eye health
4. Control of locally endemic eye diseases in children
5. Cultural considerations
6. Curriculum development for teachers and children



5.2.1 Detection and management of refractive errors and other eye diseases in children

Hyperopia may occur in younger children and may be associated with misalignment of the eyes (strabismus) and myopia usually starts during late primary school age, and in some children, progresses over time, schools should perform vision screening routinely every first

term, on all new students in a class and when there is a suspicious symptom or sign.

5.2.1.1 Screening: Team and competency

1. Members of the screening team must be certified by an appropriate authority as being competent to screen children for vision impairment and eye problems.
2. Strict quality control must be ensured in the screening process.
3. The members of the screening team must be trained in the screening techniques using a supporting curriculum and learning module developed for this purpose.

5.2.1.2 Screening: visual acuity cut-off for (6/12) screening and screening charts

Visual Acuity Assessment

Vision screening should use only one row of optotypes at the 6/9 (approximately 0.2 logMAR) level at the appropriate test distance (minimum of 3 meters). High contrast black on white should be used, with a dark surround (see below) which improves reliability when only using one row of optotypes. The child’s responses are observed during screening.



Fig. 5 Single line optotypes used for vision screening

Visual acuity assessment may be done by the use of charts or mobile applications that have been shown to be sensitive at the 6/9 level.

5.2.1.3 Who should screen

Trained teachers or school nurses are recommended as screeners, as this is cost effective and builds ownership. There is significant evidence that shows that teachers are able to accurately measure and correctly identify children with vision impairment. (Ademola-Popoola Dupe, 2013) Trained class room teacher and or the school nurse, who have demonstrated high levels of competency in all the steps involved (i.e., gives adequate explanation; asks the child if they already wear spectacles; ensures adequate lighting and test distance; tests each eye separately; correctly records the findings as pass or fail for each eye), and interprets the

findings correctly and identifies children who require refraction.

Indications for referral by the teacher

Referral to the local eye care provider should be made if:

There is failure of screening as defined as a child sees 3 or less of the 5 letters of the 6/9 lines.

- a. If a child complains of eye problems or not seeing clearly
- b. If a child has one or more of the following in one or both eyes:
 - the cornea is not transparent
 - the pupil is not round and black
 - one eye turns inwards or outwards (strabismus)
 - the eye(s) are red with discharge (conjunctivitis or allergy)
 - there is a white patch on the conjunctiva (Bitot’s spot)

5.2.1.4 Refraction test

Identifying the refractive power of the eye is done through a refraction test.

Abnormal refractive powers in the eye, are referred to as refractive errors which could occur in both children and adults. The prevalence of visual impairment caused by refractive error in school going children in Nigeria is estimated to be 5 – 8% and even higher in older children, 10 to 11 years and above. (Ayanniyi A, 2010; Balarabe A, 2015).

Refractive errors (RE) lead to an unfocussed image falling on the retina which causes blurred and/ or distorted vision. Refractive errors, which are measured in dioptres (D), are the most common cause of vision impairment in children and adults and can be corrected by spectacles or contact lenses in the majority of cases. There are several different types of refractive errors, which cause different symptoms, and occur in all populations but to varying degrees.

Table 1: Description of types of refractive errors, target groups, symptoms and correction

Technical term	Lay term	Groups affected	Impact on vision	Type of correction
Myopia	Short/Near sightedness	Children and adults	Clear near vision; blurred distance vision	Minus(-) spectacles or contact lenses
Hypermetropia / hyperopia	Long/Far sightedness	Children and adults	Clear distance vision, blurred or difficulty with near vision	Plus(+) spectacles or contact lenses
Astigmatism		Children and adults	Distorted vision at all distances	Cylinder(+ or -) spectacles or contact lenses
Anisometropia		Children and adults	Different vision impact in right and left eye	Different power spectacle lenses or contact lenses needed for each eye
Presbyopia		Adults aged 40 years and above	Difficulty seeing near objects clearly	Plus(+) spectacles

5.2.1.5 Who?

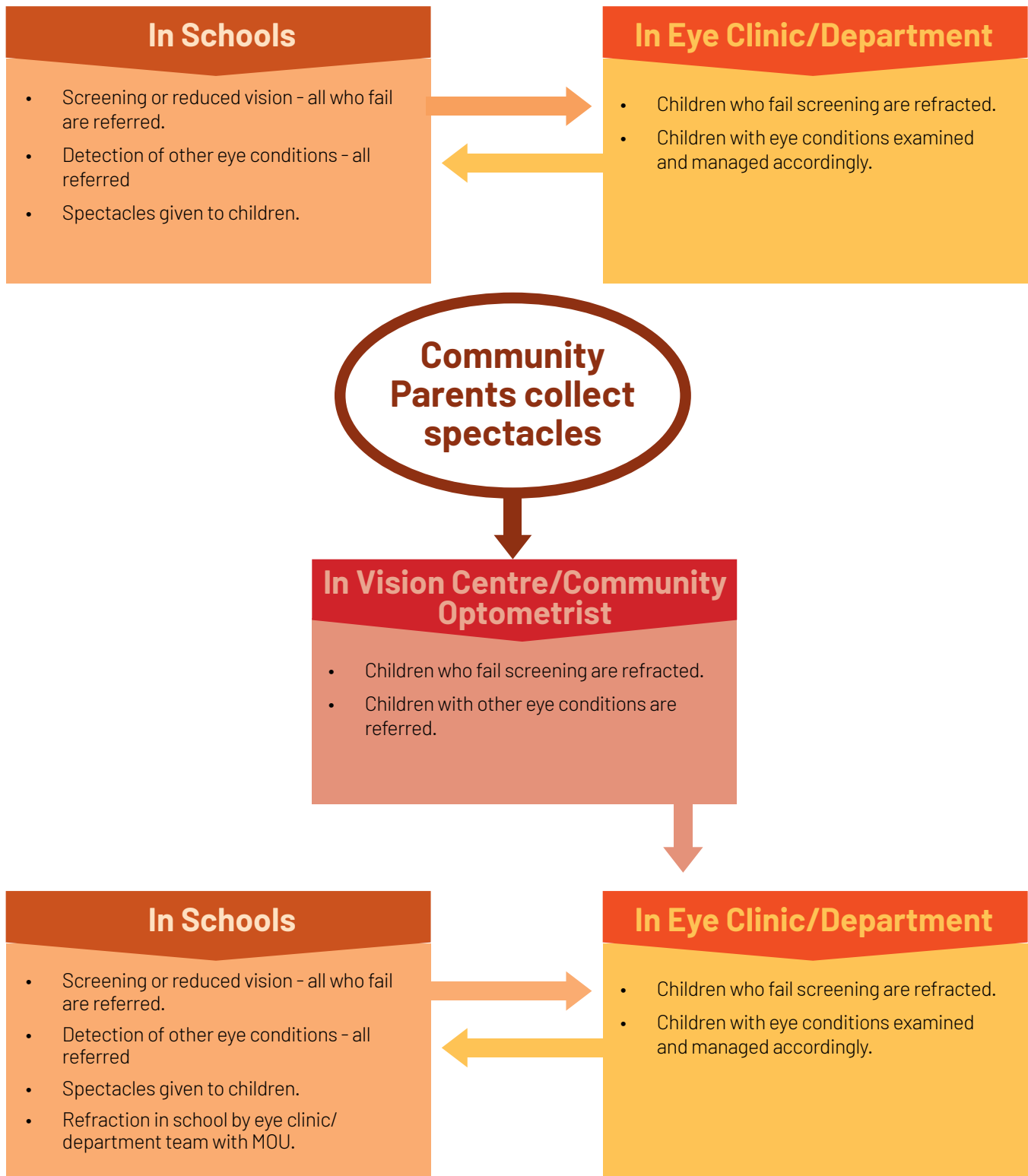
Children should be refracted by a recognised cadre with the necessary competencies in refracting children.

5.2.1.6 How?

Objective refraction can be done by retinoscopy. An autorefractor validated for use in children can also be used, but this MUST be followed by subjective refraction.

5.2.1.7 Where?

Referral to optical centres which are not actively engaged in the program is not recommended as the quality of the refraction and the spectacles dispensed cannot be monitored and can result in over-prescribing and poor-quality spectacles being dispensed.



Model of service delivery

Model Of Service Delivery

There are two alternatives:

All children who fail screening are referred to a vision center or a secondary eye clinic formally engaged in the school eye health program. This strengthens the health system and encourages subsequent uptake of eye care services. Among the disadvantages are that it is recognized that a high proportion of children referred for refraction do not attend, and costs of travel have to be borne by parents which may result in inequity. Spectacles are sent to the children in school.

The second model involves vision centers or secondary eye clinics who have an existing and current MOU and have engaged with a school through the ministry of education and health. Eye care teams from this centers may visit the school to perform refraction in an appropriate setting on children who failed the vision screening test within the school premises. Children who still fail the vision test after refraction are then referred to the eye clinic to see the ophthalmologist. Spectacles are either sent to the school or could be picked up by parents at the eye health centers. The advantage of school-based refraction is that a high proportion of children who fail screening can be refracted.

No child with low vision or who is blind should be referred directly to low vision services, special education or rehabilitation without first being confirmed by an ophthalmologist.

5.2.2 Referral mechanisms

All the children referred should have a two-way referral system. An information sheet or short message system (SMS) should be sent home to parents, the referral to the health facility and the facilitation of the child by the school to attend the eye clinic to take up the services including follow up should be planned ahead of time.

The screening and dispensing of spectacles process requires robust referral and feedback mechanisms that are responsive to increased workload caused by referrals from the screening process.

The referral facilities may be far and few between, which may present challenges for poor communities and those located at considerable distances.

Logistics should be organized by the school health services.

5.2.2.1 Referral to education and rehabilitation by an ophthalmologist

After a clinical diagnosis has been made and treatment given, if indicated, children with low vision should be assessed in a low vision clinic. Those who are blind, even after treatment should be referred for assessment to the authorities providing rehabilitation services and special education.

5.2.3 Children with low vision

Children with low vision require a comprehensive low vision and functional visual assessment.

Appropriate low vision and adaptive aids including computer assistive technology including accessories e.g. printers and necessary computer software's should be prescribed and modifications made to the environment to maximise learning. Parents and teachers should be sensitised and support the child in the use of any prescribed adaptive technology.



5.2.4 Children with multiple disabilities

Prevalence of vision problems in children with multiple disabilities is high and this is often missed by both clinical and education personnel. Special attention needs to be paid to children with multiple disabilities in school screening programs. Children with multiple disabilities may have poor accommodative facility and may require glasses for reading and near work.

5.2.5 Reaching out of school children

Strategies may include the child to child strategy, or community based outreaches with the use of key informants or community rehabilitation workers in identifying and referring children to schools or health facilities.

5.2.6 Detection and management of other common eye diseases in children

Common eye conditions of childhood include eye infections (conjunctivitis), lid infections (styes) and allergies (allergic conjunctivitis; vernal catarrh). These may keep children away from school or interfere with learning.

Other more serious eyes conditions which need to be detected and referred to an eye care provider for management include strabismus (in-turning or out-turning eyes), cataracts and amblyopia. Some children have eye conditions which lead to visual loss and where rarely treatment is possible, these include corneal scarring and diseases of the retina and optic nerve.

5.2.6.1 Recommended strategies

Train school nurses in the detection, management and appropriate referral of eye conditions in children, ideally by ensuring this is included in their curriculum.

Train teachers to understand and identify suspicious symptoms and signs of eye and vision problems and refer children they suspect.

Optometrists / refractionists to perform refraction and prescribe spectacles as well as detect and refer abnormal eye conditions.

5.2.7 Control of other locally endemic eye conditions in children

5.2.7.1 Trachoma

Trachoma, an ocular infection caused by chlamydia trachomatis, is the most common cause of adult onset blindness due to an infectious disease. It principally affects the poorest communities. Signs of active infection are principally found in children less than 10 years of age while the scarring stages affect adults. Five recognized stages are used to map where trachoma is endemic.

The SAFE strategy is a program created to control trachoma: Surgery to correct upper eyelid deformities, usually in adults; Antibiotics delivered to communities with active infection, including children; Facial hygiene, to reduce the risk of transmission of infection, and Environmental improvement, focusing on water supplies and sanitation, to reduce transmission.

Recommended activities in schools relate principally to the F (facial cleanliness) and E (environmental improvement) components of the SAFE strategy for trachoma control:

- Provision of clean water for face washing, with provision of soap and towels (figure 25). In areas with poor water supplies a “leaky tin” or gourd with a hole in the bottom can be used.
- Provision of sanitation that is sensitive to the specific needs of adolescent girls
- Health education about personal hygiene and the risks of open defecation
- Hand and face hygiene checks at the start of the day
- Child-to-Child approach with messages that children can take home about face washing and avoiding open defecation



5.2.7.2 Vitamin A deficiency disorders

Vitamin A deficiency disorders (VADD) principally affect pregnant and lactating women, and preschool aged children who live in poor communities. A diet low in vitamin A rich foods, and malabsorption and diarrhoea due to poor water supplies and sanitation are the underlying causes. Children who are deficient may or may not have eye signs which are classified as night blindness, conjunctival and corneal drying (xerosis), corneal ulcers and corneal scarring. In children, VADD is associated with increased mortality and there are global initiatives for control, including vitamin A supplementation of pre-school age children and addressing the underlying causes.

Recommended strategies include:

- Nutrition education to include vitamin A rich sources of food and how to prepare and cook them;
- School garden to grow vitamin A rich foods
- Child-to-Child approach with messages that children can take home about breast feeding, vitamin A rich diet for young children, measles immunization, vitamin A supplementation of younger siblings, and to ask whether young children in the family have night blindness.

5.2.7.3 Amblyopia (lazy eye)

Amblyopia is another reason why detecting and treating eye problems in childhood is so important – if the amblyopia is detected later in life, it is often too late to improve vision.

At birth an infant's visual system is not fully developed. Over the next few months and years, as the eyes grow, connections between the eye and brain mature, and changes take place in the brain. If a clear, focused image does not fall on the retina, the changes in the brain do not take place and normal vision does not develop. This is called amblyopia, or "lazy eye". The vision in one eye only is usually affected, but both eyes can be affected if, for example, the child has bilateral cataracts of early onset, or there is a pronounced refractive error in both eyes.

Amblyopia affects approximately 1-3% of children aged 4 years and above. Approximately half of amblyopia in one eye is due anisometropia (different refractive error in each eye), a quarter is due to strabismus and in the remainder there is a combination of strabismus and refractive error.



Detecting Amblyopia

In children older than 8 years, amblyopia can be detected by standard vision screening of each eye, followed by refraction. If there is no squint, and the vision does not improve with refraction, and no eye problems are detected, amblyopia may be the cause.

In children less than 8 years of age, vision screening using the HOTV chart could be used as this is more likely to detect amblyopia. However, confirmation of amblyopia can only be made after a full ophthalmic examination to rule out other causes of poor vision. Children with special needs may be screened with the use of Lea symbols.

Treating Amblyopia

If amblyopia due to uncorrected refractive error is detected early, before the age of 7 or 8 years, the vision can be improved in the lazy eye, by intermittent occlusion (patching) of the good eye, which stimulates the part of the brain receiving visual information from the lazy eye. Amblyopia in older children can be treated but with slightly poorer outcomes. All children who fail vision screening in one or both eyes where refraction does not improve to normal in both eyes should be referred to an Ophthalmologist for a comprehensive eye examination including pupil dilation.

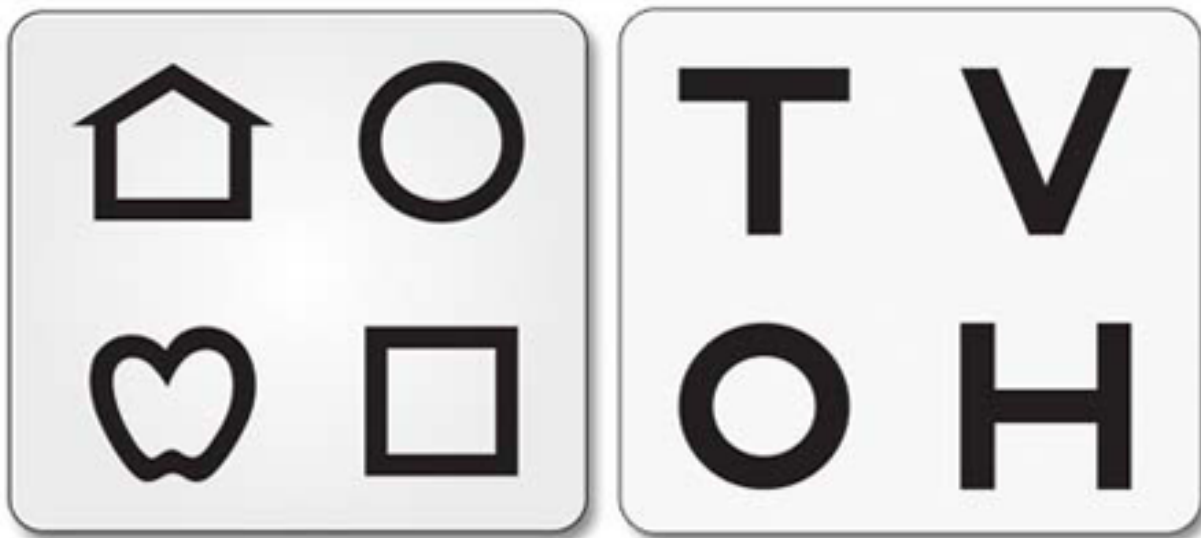


Fig.5 Lea symbols chart (Left) for children with special needs and HOVT chart for younger children

5.2.7.4 Strabismus (squint)

Strabismus refers to misalignment of the eyes, and one eye only is usually affected. The eye can be deviated inwards (esotropia) or outwards (exotropia) or upwards (hypertropia) or downwards (hypotropia).

Strabismus may be present from birth (congenital esotropia), or it may develop in early childhood. In childhood the strabismus may be due to poor vision in one eye, from uncorrected refractive error or eye conditions such as cataract or retinoblastoma (a malignant tumour). Strabismus can also occur due to problems with the muscles which move the eyes. All children with strabismus must be referred for detailed ocular examination to rule out serious

underlying causes. Some children may require surgery to realign their eyes, which can also improve their visual acuity, depth perception and appearance.

5.2.7.5 Cataracts

Cataracts are opacities in the lens of the eye. In children, cataracts can be congenital (i.e. present since birth), or may develop during early childhood (developmental cataract) or be acquired – from trauma or disease. Cataracts can be treated surgically, but this requires more expertise than cataract surgery in adults. If surgery is delayed in young children the visual outcomes are not as good due to the development of amblyopia.

5.2.7.6 Ptosis

Ptosis, or drooping of the upper eyelids in children, can have several causes and can affect one or both eyes. If the eyelid covers the pupil(s) it can lead to amblyopia. Children with ptosis should be referred for thorough investigation to rule out sinister causes and treatment.

5.2.8 Teacher's eye health

As the eye health of teachers is so important for quality education, teachers should be included in school initiatives. In order not to interfere with activities focusing on children, it is recommended that teachers are screened either before or after the children are screened.

5.2.9 Recommended activities – for vision

All ages: Habitual distance visual acuity testing at the 6/9 level i.e., with distance correction if usually worn. If they fail in one or both eyes, refraction should be undertaken.

Aged 40 years and above: Near visual acuity measurement to assess whether they can read N5 at 40 cm with current near correction or unaided. If not, a near add should be prescribed. Ready-made spectacles can be used for those without significant astigmatism or anisometropia (range +1.00 - +3.50 D).

5.2.10 Prescribing guidelines for teachers

The following indications for correction provide a way to objectively prioritize refractive care in situations of limited resources, but should not override individual needs where resources permit. The guidelines are primarily based on improvement in distance and or near visual acuity with correction, taking account of other related ophthalmic factors.

Correction for myopia

Correction for myopia is indicated if significant myopia is detected PLUS one or more of the following apply:

- difficulty with distance vision is reported
- minus powered lenses improve vision by 2 or more logMAR VA lines (or 2 or more Snellen VA lines) in one or both eyes.

Correction for hypermetropia

Correction for hypermetropia is indicated if significant hypermetropia is detected PLUS one or more of the following apply:

- difficulty with (far or near) vision or discomfort with concentrated visual effort is reported
- plus powered lenses improve vision by 2 or more logMAR VA lines (or 2 or more Snellen VA lines) in one or both eyes and/or noticeably improve comfort;



Correction of astigmatism

Correction of astigmatism is indicated if significant astigmatism is detected PLUS one or more of the following apply:

- difficulty with distance or near vision are reported
- cylindrical lenses improve vision by 2 or more logMAR VA lines (or 2 or more Snellen VA lines) in one or both eyes and/or noticeably improve comfort,

Correction for anisometropia

Correction for anisometropia is indicated if significant anisometropia is detected PLUS one or more of the following:

- Difficulty with distance or near vision are reported
- Correctly-balanced lenses improve vision of the worse eye by 2 or more logMAR VA lines (or 2 or more Snellen VA lines), and/or noticeably improve comfort,

Correction of presbyopia

Correction of presbyopia is indicated if plus lenses of 1.00D or more improve near visual acuity, or ease symptoms during near task

5.2.11 Recommended activities – other eye conditions

- Aged 40 years and above: Ask if the teacher has diabetes. If so refer to the eye care provider for retinal examination. Provide information about diabetic retinopathy
- Aged 40 years and above: If resources allow, perform undilated optic disc examination with referral of those with a cup:disc ratio of 0.6 or above in one or both eyes
- Advocate with the Ministry of Education that all teachers aged 40 years and above have annual blood glucose and blood pressure measurement.



5.2.12 Eye conditions in adults

5.2.12.1 Presbyopia

The ability of the eyes to focus on near objects declines with age, a condition known as presbyopia. In presbyopia reading and other near tasks become increasingly difficult, particularly under conditions of poor lighting. Presbyopia increases with increasing age, so that by the age of 50 years, 50% of people need spectacles to read or see near objects clearly which increases to 80% or more by the age of 60 years.

5.2.12.2 Diabetic retinopathy

Diabetes, which is a condition of faulty metabolism of glucose, is increasing in frequency in most populations as a result of socio-economic development and changing life styles. Complications of diabetes include blindness from diabetic retinopathy, kidney failure, foot ulcers and an increased risk of strokes and heart disease, all of which can be reduced by good control of blood glucose and blood pressure. Up to 10% of people with diabetes develop "sight threatening diabetic retinopathy" (ST-DR) which is the result of damage to retinal blood vessels which become blocked or leaky. Early detection and treatment of ST-DR can be highly effective at preserving sight.

5.2.12.3 Glaucoma

Glaucoma is a chronic eye condition which affects adults aged 40 years and above. In glaucoma the optic nerves are progressively damaged. Glaucoma, which causes no symptoms in the early stages, can lead to total, irreversible visual loss. Early detection and treatment to lower the pressure inside the eye can prevent blindness.

5.2.12.4 Cataract

In adults, cataracts are typically present in older age groups (over 50-60 years) but can sometimes develop earlier. Diseases such as diabetes and chronic use of certain medications such as steroids can cause early onset of cataracts. Sight can be restored in the majority of cases by cataract surgery.

5.2.13 Cultural Consideration

The use of spectacles in children may not be encouraged in certain cultures. Eye health education and promotion regarding spectacle wear should be given to teachers and parents/care givers either by counselling, educational leaflets and home visits.

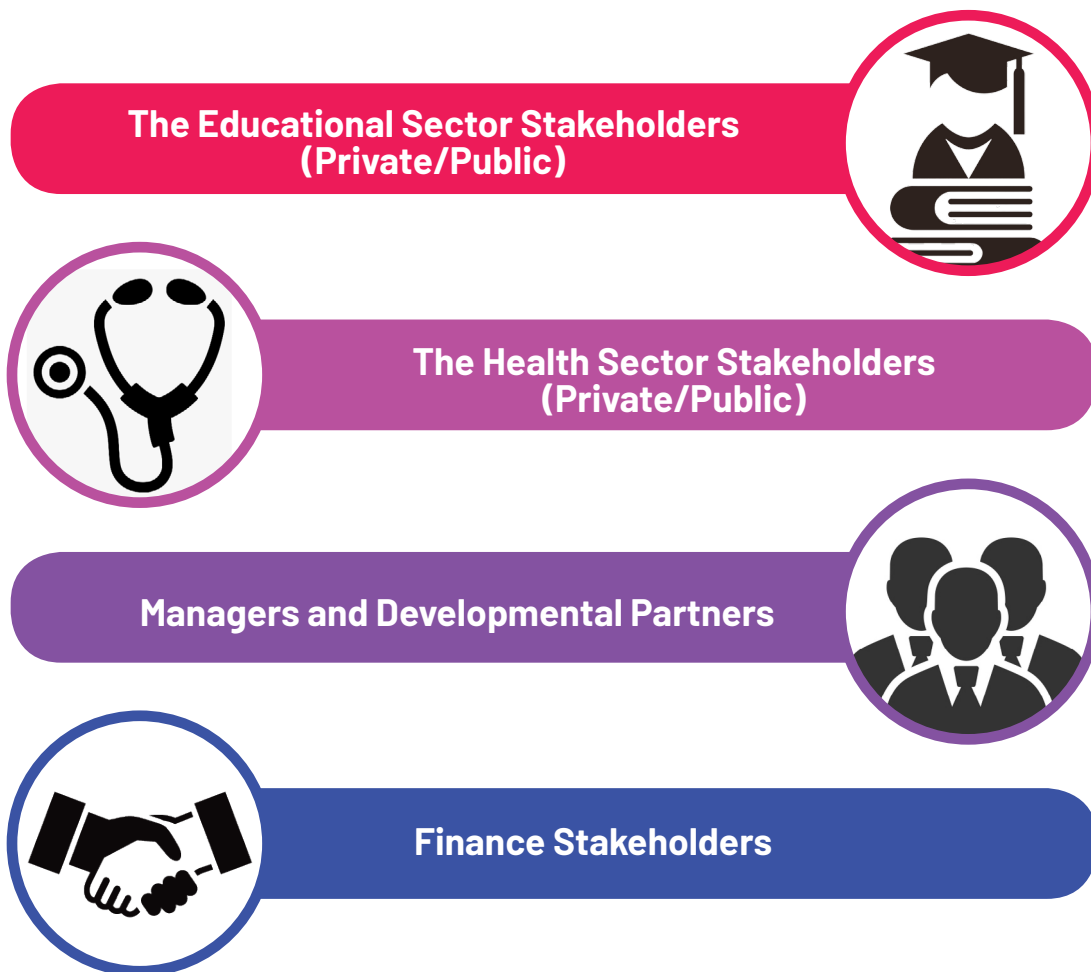
5.2.14 Curriculum development for teachers and children

Teachers training curriculum and children health education should include school eye health. Refer to teacher training manual on school eye health for curriculum details.

Chapter 6

Roles and responsibilities of personnel involved in school eye health programs

The roles and responsibilities of personnel involved in a school eye health program can be divided into 4 categories:





6.1 EDUCATIONAL SECTOR

6.1.1 Education Coordinator

This could be a Local government level teacher or someone with appropriate skills and experiences.

Attributes

Good knowledge (authority/relationship) of all schools and teachers in the LGA and a good relationship with senior education authorities.

Responsibilities

- Works with program manager to seek permission and plans
- Coordinates training of screeners
- Visits every school
- Sensitize head teachers
- Appoint contact teachers
- Allocate schools for screening
- Day-to-day management of screeners
- Logistics
- Maintain record of number of children screened and referred

6.2 LOCAL EDUCATION AUTHORITY

Provides lists & locations of all schools in the area, gives permission for the programme to work in schools, Local education authority school supervisors can help with the Monitoring of the teachers, to ensure school screening is taking place.

Should be provided with statistics of schools &

students' performance (prevalence of eye conditions, numbers of students accessing services).

6.2.1 Head teacher

Attributes

Should organize the school including the teachers to implement the SEHP

Responsibilities

- She/he identifies and supervises contact teacher
- Identifies teachers who could be trained as screeners
- Identifies date for assembly sensitization and fixes a date for screening.

6.2.2 Contact teacher (one for each school)

Attributes

She/he knows and understand the family situation of the child i.e. financial, other issues, knows if there are any other children that have eye problems and assists in identifying children to be given spectacles when they are delivered.

Responsibilities

- At school level, prepares the venue.
- Liaises with class teachers to ensure flow of children for screening.
- List ready of children to be screened, gender, age, contact number for parent(s).
- On the day helps screener.
- Record of those screened and those referred.
- Sends list of children referred to the referral centre.
- Contact referral centre to identify children who have not attended.
- Follow up those who have/have not gone for treatment.

6.2.3 Class teacher

Attributes

Should be able to organize the pupils/students to undertake vision screening.

Responsibilities

- Prepare list of children who require screening
- Contact teacher and mobile app user assistance

- Names, phone numbers
- Assist the contact teacher with screening
- Crowd control on the screening day

6.2.4 Screener

Attributes

Capable of performing vision screening, documenting, interpretation and referring.

Training students and other teachers on vision screening.

Responsibilities

- Liaise with contact teacher.
- Check screening venue and measure and mark the screening distance.
- Screen all listed children and record findings as per SOP.
- Ensure children who fail screening are referred for refraction.
- Prepare list of children who fail screening for contact teacher and refractionist.
- Collects spectacles, delivers them to school and works with contact teacher to ensure the correct children are given the correct spectacles.
- Train and manage screeners.
- Follow up children referred.
- Answer technical questions from Contact Teachers i.e. face to face, by SMS or phone calls.

6.2.5 Child welfare officer

Attributes

Liaison between the school, the family and the community and the government.

Should be able to facilitate support for logistics and funding.

Responsibilities

Work with community leaders to encourage parents and children to comply with recommendations, if required.

6.2.6 Student/Pupils

Attributes

Enthusiastic to perform vision screening tests.

Capable of communicating learning to family .

Capable of communicating outcome of vision screening to members of the family.

Responsibilities

- Notify teachers or parents of poor vision
- Wear spectacles if prescribed
- Convey useful information about vision correction to peers, family, community
- Remind care takers and teacher for appointments and regular eye exams

6.2.7 Managers and or Development partners

Attribute

Provide support for implementation, evaluation and expansion of the SEHP to schools in the state, LGA.



Responsibilities

Source for funding, technical capacity and ensure the quality of the SEHP improves.

6.2.8 National and State Eye Health Coordinator

Attributes

She/ He must be medically trained or trained in public health.

Responsibilities

Overall management and lead of the SHE program

6.2.9 Technical Program Manager/ MoE Program Focal Person

Attributes

She/he must possess skills in planning and management; communication and organization.

Responsibilities

- Ensures and is involved in the day to day running of the SEHP in a defined school, district or state.
- I think all program manager responsibilities should be collapsed under the National and state coordinator roles including childhood blindness coordinator

Responsibility

- Train vision screeners and school nurse on how to perform, document, interpret vision screening results and refer appropriately.
- Should be able to offer emergency management of simple eye conditions.



6.3 EYE HEALTH SECTOR

6.3.1 School nurse

Attributes

She/he should have eye health posters in the clinic, should have some skills such as how to make an eye shield, be able to identify an emergency eye condition, establish her/ his referral links with the ophthalmic nurse and have a stock of essential eye medications e.g. antibiotics, anti-histamines and mast cell stabilizer.

Responsibilities

- Should have the capacity to perform vision screening, document, interpret findings and refer appropriately.
- Should be able to offer emergency management of simple eye conditions.

6.3.2 Ophthalmic Nurse

Attributes

Conduct health education, training and refresher courses for teachers and school nurses.

Liaise with school health nurse to receive referrals to the eye center and prompt attention at eye facilities.

6.3.3 Childhood blindness coordinator

Attributes

A liaison between the health facility, the school, family and the community.

Responsibilities

- To be held responsible to ensure feedback is sent to the school and families, that children are tracked back into school and for follow up when necessary.
- To liaises with the Technical Program Manager to ensure children have available transportation when necessary.
- To plan the schedule for appointments and prompt clinic attendance.
- Ensures and organizes the delivery of children's spectacles in schools

6.3.4 Senior optometrist in partner eye hospital / department

Attributes

Should have the capacity to train in refractions and spectacle prescriptions and should be able to liaise with the optical dispensing lead on the timely provision of appropriate spectacles.

Should be able to ensure the quality and appropriateness of lenses dispensed.

Responsibilities

- Maintains close communication with the childhood blindness coordinator
- Allocates optometrists / refractionists to schools
- Ensures accurate refractions are performed and correct prescriptions are sent to the dispensing lab and appropriate choice of frames are made

6.3.5 Optometrist / refractionist

Attributes

Skilful in performing refractions and writing prescriptions

Responsibilities

- Refract according to child eye health treatment guidelines. Appendix 13 provides recommended guidelines for comprehensive eye examinations of children referred to eye care providers for school age children
- Prescribe according to SOP
- Record prescription
- Ask child to select preferred frames
- If vision does not improve with refraction record a preliminary diagnosis and refer according to SOP
- Give child needing spectacles or referral an information sheet for their parents
- Give contact teacher lists of children a) who fail screening and require spectacles b) those to be referred Give list of children who require spectacles to the relevant dispensing optician

6.3.6 Dispensing opticians

Attributes

Should be able to interpret a spectacle prescription and fit lenses

Responsibilities

- Ensures that good and acceptable quality frames are available for selection.
- Makes up spectacles correctly for all children requiring them, using the correct frame and lenses.
- Marks each pair of spectacles with the child's name, class and school.

- Ensures that children get their spectacles and liaises with the childhood blindness coordinator and technical programme manager.



6.3.7 Parent(s)

Attributes

Interested and responsive parents, committed to childrens educational attainment.

Responsibilities

- Take child to eye care provider, if referred and for follow up.
- Pay for treatment - mechanism required to support the child with financial barriers.
- Encourage children to wear their glasses
- Community opinion leaders.
- Encourage children to be screened and to wear their spectacles.
- Encourage parents to take child for treatment e.g. not spectacles.

6.3.8 Ophthalmologist

Attributes

Should be able to perform a detailed systemic and ocular examination on a child.

Should be able to write a comprehensive medical and vision report and recommend referral to appropriate services.

Should be able to certify for low vision and rehabilitation services and uptake.

Responsibilities

- Ensures the programme delivers and maintains high quality services.
- Ensures that every child with a refractive error obtains treatment and children with ocular pathologies receive appropriate and adequate eye care.

6.3.9 Federal Ministry of Health

Mandates/Responsibilities

- Develop guidelines and policy for school eye health
- Fund the implementation of the school eye health programme in government schools through government, organized private sector and non-governmental organizations.
- Evaluate and conduct operational research to assess the performance of the programme every 2 years.
- Update the programme guidelines when necessary and disseminate to the state and local government for implementation.

Chapter 7

Technology Guidelines



7.1 VISION SCREENING AND RED REFLEX TEST

Technology should be used to support the expansion and improve vision screening especially the use of mobile app for vision screening, identifying eye conditions early in preschool children using appropriate technology for the red reflex test.

Essential and appropriate technology that assists school eye health programmes include:

7.1.1 Locally-affordable instruments

- Retinoscopes, trial frames for adults and children and trial lenses are recommended from among the options that are available, based upon current information and experience with validity, reliability, cost and feasibility.

- Alternatives such as low-cost auto-refractors may become available if their validity (particularly the control of accommodation in children) is proven and should be considered where appropriate.
- Fundus photography for taking the pictures of the back of the eye for screening of diabetes mellitus and glaucoma.

7.1.2 Locally-affordable and available topical medications

- Short-acting topical cycloplegic agents such as cyclopentolate hydrochloride - 1.0% is recommended.



7.1.3 Affordable spectacles

- Purchasing, manufacture, distribution services, warehousing and inventory management for affordable spectacles should be accurate and efficient.

7.1.4 Custom-made spectacles

- Quality standards (as equivalent to ISO standards as practical) should be maintained for both custom-made spectacles.
- The spectacle frames are acceptable to the child
- The spectacle frames are a comfortable fit.

Chapter 8

Principles of Sustainability



Sustainability of the SHE would be approached through technology, financial, organizational and programmatic plans.

8.1 FINANCIAL SUSTAINABILITY

Funding support from the three arms of government, development partners and the organized private sector and through cooperate social responsibilities.

Furthermore, fund pooling and health purchasing options should be explored under the health insurance for the teacher and school children leveraging on already existing systems such as the National Health Insurance Scheme (NHIS), State Health Insurance (SHIS) and the Basic Health Care Provision Fund (BHCPF).

Eye health services may adopt social and business strategies to ensure financial sustainability.

8.2 ORGANIZATIONAL AND PROGRAMME SUSTAINABILITY

To ensure programme sustainability, critical stakeholders, structures and programme enablers would be identified interfaced and collaborated with. They include:

8.2.1 Critical Stakeholders

- Beneficiary (parent/children) involvement from the planning to the execution stage.

8.2.2 Structures

- Community stimulation to facilitate participation and involvement.

8.2.3 Programme Enablers

- Prudent, transparent and accountable utilization of funds.
- Due process in the award of contracts and rendering of statements of funds to the appropriate accounting officer.
- Sources of funding were stated as government budgetary allocation through ministries of education, ministries of health and other relevant ministries, agencies and parastatals such as the National Health Insurance Services.
- Other sources listed include international development partners, donor agencies, civil society organizations, Organized Private Sector, community, faith based organization, individuals and philanthropists.
- Communication of activities and achievements to the communities and administration.
- Continuously seeking new partnerships for the programme.

8.3 INTEGRATION AS A MEANS OF SUSTAINABILITY

8.3.1 Embedding in School Curriculum

School eye health will be embedded within the school health curriculum for it to become a regular and ongoing activity in schools.

Action

1. Reflect in teachers training curriculum and curricular reform including classroom management.
2. Reflect in children curriculum and into core subjects.

8.3.2 Engagement with Appropriate Authorities

Screening for school eye health requires considerable and sustained engagement with both the education and health authorities – this requires good working knowledge of the education and health sectors and their respective structures.

Action

1. School eye health data will reflect in the school health data collection system.
2. Reporting tools will be collected for both education and Health.
3. Annual meeting of both Ministries and al local level with partners will be held to evaluate the programme.
4. A school eye health program is not a one-off activity. Vision screening is incorporated into the activities of the school.



Chapter 9

Child Protection

This chapter suggests a summary of common child protection risks associated with School Eye Health Programs, as well as some practical ways to incorporate mitigation measures in the project planning.

9.1 RISKS AND MITIGATION

9.1.1 Education activities

Risks	Mitigation
<ul style="list-style-type: none"> • Child is abused, exploited or bullied by staff, consultants, volunteers or peers. • Teachers, children, parents and the community do not know how to or are too scared to report abuse or unsafe behaviours. • Wash facilities are not separated by gender or students and teachers. 	<ul style="list-style-type: none"> • Include child protection in the discussions /negotiations with education authorities /schools before the start of the project. • Consider the timing of the activity. • Ensure you are well informed about what is already in place and what the gaps are with regards to child protection, so these can be addressed or considered in the implementation: <ul style="list-style-type: none"> • Ensure there are clear guidelines with regards to behaviour with children; • Ensure there is a clear and functioning reporting and response mechanism in place to report child protection concerns and/or incidents; • Ensure parents and children are aware and know how to use the reporting and response mechanism. • Provide safe, hygienic and inclusive child-only water and sanitation facilities, located close to classrooms, and separated by gender. • Ensure store rooms and staff toilets are located in such a way that they can be clearly seen. • Ensure: adequate lighting in buildings; no hidden spaces; adequate and safe boundaries (fencing); entry only through administration/reception; adequate shelter outdoors; designs that cater for those with a disability. • Water collecting points allow orderly collection of water at the tap stands.

9.1.2 Referral

Risks	Mitigation
<ul style="list-style-type: none"> • Child is abused, exploited or bullied by staff, carrying out further screening and/or treatment. • Provision of transport to and from referral make children vulnerable to abuse. • Referral facility exposes children to harm. 	<ul style="list-style-type: none"> • Include child protection in negotiations and contracts with service providers. • Ensure there are clear guidelines with regards to behaviour with children and all staff in the project have been briefed on have signed up to these guidelines. • Encourage parents/caregivers to accompany their children to referral appointments. • In case of provision of transport, make sure driver(s) are aware of and committed to the guidelines for behaviour, children are never alone with the driver, and there are guidelines for safety in transport (there should be in an operations handbook).

9.1.3 Treatment

Risks	Mitigation
<ul style="list-style-type: none"> • Child is discriminated against or bullied as a result of wearing glasses. • No policies about bullying are in place. 	<ul style="list-style-type: none"> • Design activities to de-stigmatise wearing glasses. Include research in the design to facilitate good outcomes for those wearing glasses. • Work with children to develop a code of conduct for them that includes peer-to-peer behaviour, as well as adult-to-child and child-to-adult behaviour. Have children sign onto these. • Educate children on the school's code of conduct, especially regarding bullying.

9.2 CULTURAL AND DIVERSITY CONSIDERATIONS

Staff working on school eye health programs need to be aware of and sensitive to cultural diversity, as cultural and social norms can affect the program's likelihood of success. It is recommended that program managers engage with partners and relevant stakeholders at early stages of planning to discuss cultural considerations for the project, and be prepared to adapt the program as required.

References

1. ICF NPCNNa. Nigerian Demographic and Health Survey 2018 2018 [Available from: <https://dhsprogram.com/pubs/pdf/FR359/FR359.pdf>].
2. Duke ROE, Iso M, Okorie U, Ekwe A, Courtright P, Lewallen S. Using key informants to estimate prevalence of severe visual impairment and blindness in children in Cross River State, Nigeria. . *Journal of American Association for Pediatric Ophthalmology and Strabismus*. 2013;17(4):381-4.
3. Okoye O UR, Ezepue FU Prevalence of eye diseases among school children in a rural south-eastern Nigerian community. *Rural and Remote Health* 2013;13:2357.
4. Faderin M AA. Refractive Errors in Primary School Children in Nigeria. *Nigerian Journal of Ophthalmology*. 2001;9(1):10-4.
5. Ademokun OM OK, Obembe TA. A Qualitative Study on Status of Implementation of School Health Programme in South Western Nigeria: Implications for Healthy Living of School Age Children in Developing Countries. *Am J Educ Res* 2014;2(11):1076-87.
6. Oluyinka Dania AMA. School Health Program in Nigeria: A Review of Its Implementation for Policy Improvement. *American Journal of Educational Research*. 2019;7(7):499-508.
7. Gilber Clare MM. Twenty years of childhood blindness: what have we learnt? *Community Eye Health* 2008;21(67):46-7.
8. Ademola-Popoola Dupe AO, Obasa T. Screening Programme for Retinopathy of Prematurity in Ilorin, Nigeria: A Pilot Study. *West African Journal of Medicine*. 2013;32(4):281-5.
9. JEREMY A GUGGENHEIM GK, STUART A HODSON. The heritability of high myopia: a reanalysis of Goldschmidt's data. *J Med Genet*. 2009;37:210-2.
10. Sherwin J RM, Keogh R, Khawaja A, Mackey D, Foster P. The Association between Time Spent Outdoors and Myopia in Children and Adolescents: A Systematic Review and Meta-analysis. *Ophthalmology*. 2012;119(10):2141-51.
11. Obajolowo TS OJ, Adepoju FG. Prevalence and pattern of presbyopia in a rural Nigerian community. *J West Afr Coll Surg*. 2016;6(3):83-104.
12. Mukaila Alaba Seidu COB, Ayobade O Ayorinde. Presbyopic spectacle coverage and barriers to near vision correction among adult population in ido local government area, Southwest Nigeria. *J Clin Sci*. 2017;14:188-92.
13. Andrew E. Uloko BMM, Mansur A. Ramalan, Ibrahim D. Gezawa, Fabian H. Puepet, Ayekame T. Uloko, Musa M. Borodo, Kabiru B. Sada. Prevalence and Risk Factors for Diabetes Mellitus in Nigeria: A Systematic Review and Meta-Analysis. *Diabetes Ther*. 2018;9(3):1307-16.
14. Kyari F, Entekume, G., Rabi, M. et al. A Population-based survey of the prevalence and types of glaucoma in Nigeria: results from the Nigeria National Blindness and Visual Impairment Survey. *BMC Ophthalmology*. 2015;15(176).

Annexes

Annex 1

The standard list of the equipment's required for refraction is shown below.

Teacher's screening

- Vision screener for three meters (6/9 optotype)
- Three-meter rope
- Record forms
- Torch

For refraction

- Visual acuity charts - distance
- Visual acuity charts - near
- Lea symbols chart
- Occluder
- Autorefractor
- Retinoscope
- Paediatric trial frame
- Trial lens set
- Cross cylinders (± 0.25 D, ± 0.50 D)
- Flipper lenses (± 0.25 D, ± 0.50 D)
- Duochrome test
- Cycloplegic drops
- Ophthalmoscope
- Fixation target

For Dispensing

- PD ruler / pupilometer
- Focimeter
- Frame heater
- Spectacle frames for children

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