Eye care indicator menu (ECIM):

a tool for monitoring strategies and actions for eye care provision

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Acronyms

BCVA	best-corrected visual acuity
CSR	cataract surgical rate
DR	diabetic retinopathy
ECIM	Eye Care Indicator Menu
eCSC	effective cataract surgical coverage
eREC	effective refractive error coverage
HIS	health information systems
ICD	International Classification of Diseases
IPEC	integrated people-centred eye care
PVA	presenting visual acuity
ROP	retinopathy of prematurity
UCVA	uncorrected visual acuity
UHC	universal health coverage
VEGF	vascular endothelial growth factor
WHA	World Health Assembly
WHO	World Health Organization

Background

Globally, at least 2.2 billion people have vision impairment or blindness, of whom at least 1 billion have a vision impairment that could have been prevented or has yet to be addressed. The burden tends to be greater in low- and middle-income countries and underserved populations, such as women, migrants, indigenous peoples, persons with disability, and those in rural communities.

In 2019, the World Health Organization (WHO) published the *World report on vision (1)* which presented a set of recommendations specifically to make eye care an integral part of universal health coverage (UHC); to implement integrated people-centred eye care (IPEC); and to monitor trends and evaluate progress towards IPEC implementation. The recommendations were endorsed in August 2020 at the Seventy-third World Health Assembly, when WHO Member States adopted resolution WHA 73.4 "Integrated people-centred eye care, including preventable vision impairment and blindness". The resolution urges Member States to take action and implement the recommendations.

IPEC refers to a set of strategies for planning and providing eye care services and can help address the significant eye care challenges facing many countries. Through IPEC, WHO envisions enabling Member States to provide all people with equitable access to quality eye care as part of health services and according to their needs throughout the life course. In order to plan service delivery effectively and to monitor progress towards implementing IPEC, it is essential that health information systems (HIS) include comprehensive information about eye care.

The Eye Care Indicator Menu (ECIM) provides a comprehensive set of input, output, outcome, and impact indicators. Member States can select indicators that support the process of integration of eye care into their HIS, and that facilitate the monitoring of strategies and actions for eye care at national and subnational level.

Using the Eye Care Indicator Menu (ECIM)

What is the purpose of the ECIM?

In the work towards the UHC targets and the Sustainable Development Goals, countries need reliable data to assess the performance of their health services. The ECIM provides a comprehensive set of input, output, outcome, and impact indicators from which Member States can select, to facilitate the monitoring of strategies and actions for eye care at national and subnational level, in line with IPEC.

The ECIM is a list of WHO selected eye care indicators, to be collected at national or subnational level, supporting Member States to:

- Monitor the implementation and results of their strategic eye care plan against intended objectives;
- Integrate eye care into the HIS;
- Build evidence through eye care data collection;
- Identify gaps and successes of the strategic plan;
- Provide evidence for advocacy for further allocation of resources and development.

The ECIM provides a purposeful resource for Member States to develop or improve an eye care monitoring framework. It is crucial for such a framework to be fully integrated within the wider health monitoring and evaluation framework and data collection process, even if planned at a later stage.

Who should use the ECIM?

The use of the ECIM is intended to be driven by governments, primarily by eye care planners and policy-makers in the Ministry of Health. It should be implemented by planners of national HIS, in collaboration with planners of national eye care services.

When should the ECIM be used?

The selection and use of the most appropriate set of indicators from the proposed list should occur at any time, but most appropriately during the development or update of monitoring frameworks for eye care or that include eye care (Figure 1).

Further information on the steps to develop an eye care monitoring framework and to establish evaluation and review processes is provided in the WHO Eye Care in Health Systems – Guide for Action.

Figure 1. Stages of the WHO Eye Care in Health Systems – Guide for Action

What does the ECIM include?

The indicators included in the ECIM are categorized as **"core"** and **"expanded"**. Core indicators are considered essential and represent a minimum set of indicators necessary for the monitoring of trends and evaluation of progress towards implementing IPEC, within each HIS domain; they can be collected by countries at any development stage. Expanded indicators can be selected as and when they are relevant and adjusted to the specific objectives of a country's eye care strategic plan; they give more detailed information within the HIS domain.

The ECIM consists of a set of 13 core indicators and a set of 13 expanded indicators. For each indicator, information is provided on the rationale, definition, numerators and denominators, method of measurement, disaggregation and other additional dimensions and preferred data sources. Where possible, disaggregation is recommended; where not possible, data should be reported at the aggregate level. Indicators whose preferred data source is routine data from health facilities are currently being integrated into the District Health Information Software (DHIS2)[1] platform within a Sensory Functions Package expected to be available in 2022.

The purpose of the core eye care indicators is to provide guidance for eye care monitoring; to enhance efficiency of data collection investments; to enhance quality and availability of data; to improve data collection transparency and accountability and integration into HIS and collection by monitoring frameworks. The purpose of the expanded eye care indicators set is to cover a wider range of eye care aspects that can be adjusted to the specific objectives of each country's eye care strategic plan.

How were the eye care indicators identified?

A scoping review of the academic and grey literature, published in the English language was undertaken to identify (i) eye care indicators with a track record of use at country and global level; and (ii) indicators previously used in other areas of health that could be adapted to eye care *(1–21)*.

Based on the outcomes of the scoping review, a "long list" of eye care indicators was developed. The WHO Vision Programme then reviewed and

[1] See: https://dhis2.org

rated each indicator on the long list according to previously defined WHO selection criteria *(11, 22)* (Table 1) to produce a shorter, "pre-selected list" of indicators. This pre-selected list of indicators was subsequently reviewed by a Technical Working Group, via online surveys, group discussions and the provision of independent written feedback, to identify additional indicators and to achieve consensus on which indicators to include in the final menu. The Technical Working Group was composed of experts in the area of eye care and represented all six WHO Regions.

Table 1. Criteria for selection of the indicators

Criteria	Definition
Valid	The link between the value of an indicator and one or more aspects of eye care within health systems must be **supported by sufficient scientific evidence.**
Reliable	The indicator **result must be consistently achieved** by using the same methods under the same circumstances (repeated measurements).
Relevant	The indicator measures an aspect of eye care within the health system with **high importance**.
Actionable	The indicator measures an aspect of eye care within the health system that is **subject to control** by providers and/or the health-care system and **may be used** at a national level for policy-making or strategy development.
Internationally feasible	The indicator definition and data collection should be standardized to allow **international comparisons** without substantial additional resources.
Comparable	Reporting countries should comply with the relevant **data definition**; any differences in the indicator values between countries reflect issues in health systems rather than differences in data collection methodologies, coding or measurements.

How are the eye care indicators organized?

Data collection for health generally cover three domains: health determinants; health systems capacity and performance (inputs, outputs and outcomes); and health status (impact).

As the purpose of this menu is to monitor strategies and actions for eye care, indicators are organized according to the domains of a result chain that may be assessed with HIS **(Inputs, Outputs** and **Outcomes**) and health status (**Impact**).

Input and output indicators are suborganized according to relevant WHO Health System Building Blocks: Governance; Financing; Information; Workforce; and Service Delivery (Access and Quality), as specified in each detailed indicator description *(19)*.

The organization according to the domains of a result chain that may be assessed with HIS intends to show how inputs and processes indicators (e.g. eye care governance or workforce) should be reflected in outputs (e.g. eye care services access or quality) that in turn should be reflected in outcomes (e.g. eye care coverage) and impact (eye care functioning or well-being).

The eye care indicators are designed and organized to address monitoring and evaluation needs for multiple purposes (Table 2):

- **Input** and **Process** indicators monitor **efforts**, measuring the resources needed for the implementation of an activity or intervention;
- **Output** indicators monitor **access, readiness** and **quality**, measuring the product and the quality of the activity or intervention conducted;
- **Outcome** indicators monitor **short-term effectiveness**, measuring the results achieved by the outputs;
- **Impact** indicators monitor **long-term effectiveness**, measuring health status, functioning and well-being of the population.

Table 2. Purpose of each domain of the eye care indicators

Indicator domain		Purpose
Input and Processes	Eye Care Governance	Analysis of the policies and strategies for eye care. Improvement of eye care integration in the health system.
	Eye Care Financing	Analysis of financial sustainability of eye care services and affordability (including the provision of optical devices, such as spectacles, as responsibility of the health system, in line with the WHO *Priority assistive products list*[2]).
	Eye Care Workforce	Optimal allocation of resources and provision of evidence-based services. Identification of the needs of the eye care workforce as well as current and planned availability of the workforce.
	Eye Care Information	Ensure basic information on eye care services is collated in HIS.
Output	Eye Care Service Access	Improved timely access by the identification of referral systems gaps and waiting times.
	Eye Care Service Quality	Improved quality through multidisciplinary teamwork practices, and policies/plans for services that are integrated and decentralized.
Outcome	Eye Care Coverage	Increased service coverage and effective coverage across districts. Strengthened integration of a wide range of eye care interventions, services, and assistive products.
Impact	Eye Care Impact	Decreased prevalence of vision impairment and blindness. Improved productivity and reduction on costs due to vision impairment.

[2] See: https://apps.who.int/iris/bitstream/handle/10665/207694/WHO_EMP_PHI_2016.01_eng.pdf

Eye Care Indicator Menu by domain

Indicators in the ECIM are organized according to the domains of a result chain: Input and Processes; Output; Outcome; and Impact. A set of standard metadata is provided in this document for each indicator presented in Table 3 below.

Table 3. Summary of the 13 core and 13 expanded eye care indicators described in the ECIM by domain (Note: **Core** indicators are written in **bold**)

Input and processes	Output	Outcome	Impact
Eye Care Governance	**Eye Care Service Access**	**Eye Care Coverage**	**Eye Care Impact**
Eye care integrated into the national health plan	Cataract surgical rate (CSR)	**Effective cataract surgical coverage (eCSC)**	**Prevalence of vision impairment and blindness**
National eye care strategy implementation	Availability of refractive services in the government health system	**Effective refractive error coverage (eREC) – distance vision**	Cause-specific prevalence of vision impairment
Primary eye care integrated into the national primary health-care training	Availability of vision rehabilitation services covered by the government health system	**Effective refractive error coverage (eREC) – near vision**	
Pre-school (aged 3–5 years) eye care programme	Waiting time for cataract surgery	School eye care programmes coverage	
Eye Care Financing	Preoperative visual acuity amongst cataract surgery patients	**Retina screening coverage for people with diabetes**	
Financial risk protection for cataract surgery	**Eye Care Service Quality**	**Newborn screening coverage for congenital and neonatal eye conditions**	
Financial risk protection for optical devices acquisition	**Cataract surgical outcome (visual acuity)**	**Retinopathy of prematurity screening coverage**	
Financial risk protection for diabetic retinopathy (DR) laser treatment			
Financial risk protection for glaucoma surgeries			
Financial risk protection for antivascular endothelial growth factor (anti-VEGF) injections			
Eye Care Information			
Eye conditions and visual acuity categorized by International Classification of Diseases (ICD) code (or equivalent)			
Eye Care Workforce			
Eye care workforce density and distribution			

Core Eye Care Indicators

A summary of the 13 core eye care indicators, presented in Table 4, helps implementers and planners identify the essential indicators intended to be collected within each domain. Each of the core indicators is described in detail in this section of the document; information is provided on rationale, definition, numerators and denominators, method of measurement, disaggregation and other additional dimensions, and preferred data sources. Where possible, disaggregation is recommended; where not possible, data should be reported at the aggregate level.

Table 4. Summary of the 13 core eye care indicators described in the ECIM by domain

Indicator No.	Indicator domain	Indicator name
1.	Input and Processes Eye Care Governance	Eye care integrated into the national health plan
2.	Input and Processes Eye Care Financing	Financial risk protection for cataract surgery
3.	Input and Processes Eye Care Financing	Financial risk protection for optical devices acquisition
4.	Input and Processes Eye Care Information	Eye conditions and visual acuity categorized by International Classification of Diseases (ICD) code (or equivalent)
5.	Input and Processes Eye Care Workforce	Eye care workforce density and distribution
6.	Output Eye Care Service Quality	Cataract surgical outcome (visual acuity)
7.	Outcome Eye Care Coverage	Effective cataract surgical coverage (eCSC)
8.	Outcome Eye Care Coverage	Effective refractive error coverage (eREC) – distance vision
9.	Outcome Eye Care Coverage	Effective refractive error coverage (eREC) – near vision
10.	Outcome Eye Care Coverage	Retina screening coverage for people with diabetes
11.	Outcome Eye Care Coverage	Newborn screening coverage for congenital and neonatal eye conditions
12.	Outcome Eye Care Coverage	Retinopathy of prematurity screening coverage
13.	Impact Eye Care Impact	Prevalence of vision impairment and blindness

Core Indicator 1
Eye care integrated into the national health plan

Indicator domain
Input and Processes – Eye Care Governance

Rationale: IPEC refers to eye care services that are managed and delivered to assure a continuum of promotion, prevention, treatment, and rehabilitation interventions for the spectrum of eye conditions, coordinated across the different levels and sites of care within and beyond the health sector, and according to people's needs throughout the life course. The integration of eye care into wider national health plans is a key IPEC objective.

Definition: Existence of high-level, national or subnational plans, beyond operational plans, that explicitly include eye care integrated at the level of activities and in the context of specific actions. This includes full or partial integration of eye care into the current national health plan, across relevant sectors and health programmes regarding legislation, policies, regulation, services coordination, and financing. Relevant health programmes include, among others, maternal and child health, neonatal care, nursing, noncommunicable diseases, healthy ageing, rehabilitation, occupational health and safety.

Numerator: None.

Denominator: None.

Disaggregation: None.

Method of measurement: Multilevel categories according to the existence of an eye care plan and level of integration of eye care into the national health plan:

1. *Not existent:* inexistence of a national eye care plan.
2. *Existent but not driven by the government:* existence of a national eye care plan but not driven by the government nor a part of the Ministry of Health planning process.
3. *Existent, driven by the government, but not integrated:* existence of a national eye care plan, driven by the government, primarily by the Ministry of Health, but not integrated into the national health plan, or across relevant sectors and health programmes.
4. *Integrated:* eye care is integrated into the national health plan, across relevant sectors (public, private and others) and health programmes regarding legislation, policies, regulation, services coordination and financing. Relevant health programmes include, among others, maternal and child health, neonatal care, nursing, noncommunicable diseases, healthy ageing, rehabilitation, occupational health and safety.

Expressed as: Multilevel category 1, 2, 3 or 4.

Frequency of measurement: Every 2 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports.

Core Indicator 2
Financial risk protection for cataract surgery

Indicator domain
Input and Processes – Eye Care Financing

Rationale: Financial protection is at the core of UHC and is directly affected by health financing policy. Financial protection is achieved by ensuring mechanisms of prepayment, rather than relying on people paying for health services out-of-pocket at the time of use. Despite being one of the most cost–effective interventions in the health sector, unoperated cataract continues to be the leading cause of preventable blindness globally.

Definition: Percentage of the population with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of the cataract surgery. This refers to prepaid health financing mechanisms and the extent to which those that include eye care services also cover the population (in line with the WHO recommended system of health accounts, 2011 *(22)*).

Numerator: Number of people with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of the cataract surgery.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 3 to 5 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports. Data from other government agencies, including insurance schemes.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

A system of health accounts. Geneva: World Health Organization; 2011 *(22)*.

Tracking universal health coverage: 2017 global monitoring report. World Health Organization and The World Bank, 2017 *(12)*.

Core Indicator 3
Financial risk protection for optical devices acquisition

Indicator domain
Input and Processes – Eye Care Financing

Rationale: Financial protection is at the core of UHC and is directly affected by health financing policy. Financial protection is achieved by ensuring mechanisms of prepayment, rather than relying on people paying for health services out-of-pocket at the time of use. Despite the cost–effectiveness of interventions to correct refractive errors, such as spectacles and contact lenses, uncorrected refractive errors continue to be the most common cause of preventable vision impairment globally.

Definition: Percentage of the population with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of optical devices, such as spectacles and contact lenses (but not low vision aids). This refers to prepaid health financing mechanisms and the extent to which those that include eye care services also cover the population (in line with the WHO recommended system of health accounts, 2011 *(22)*).

Numerator: Number of people with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of optical devices.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 3 to 5 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports. Data from other government agencies, including insurance schemes.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

A system of health accounts. Geneva: World Health Organization; 2011 *(22)*.

Tracking universal health coverage: 2017 global monitoring report. World Health Organization and The World Bank, 2017 *(12)*.

Core Indicator 4

Eye conditions and visual acuity categorized by International Classification of Diseases (ICD) code (or equivalent)

Indicator domain

Input and Processes – Eye Care Information

Rationale: To map the distribution of eye conditions of the population accessing health facilities, by classification and frequency, provides important information for planning eye care services. This information makes possible to identify the needs of the population and services and also reflects changes in trends that may affect service use.

Definition: Proportion of population utilizing eye care services categorized according to the main condition by International Classification of Diseases (ICD) code, or a national equivalent code, or by selected eye condition categories (presented below in "Further information"). The diagnosis of a specific eye condition is categorized by the ICD code or a national equivalent code in routine data from health facilities. The same user can have one or more assessments for the same diagnosed condition, or for different diagnosed conditions, resulting in different categorizations by ICD code or equivalent.

Numerator: Total number of patients utilizing eye care services in the facility categorized according to the main condition by ICD code (or equivalent or by the selected eye conditions categories) in the reporting period.

Denominator: Total population utilizing eye care services in the facility, in the reporting period.

Disaggregation: ICD code (or equivalent, or by the selected eye conditions categories).

Additional disaggregation dimensions: Age, sex, geography (e.g. urban vs non-urban), sector (public vs private) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage by condition.

Frequency of measurement: Annually.

Additional measure: Proportion of population utilizing eye care services in the facility categorized according to the main condition by ICD code (or equivalent, or by the selected eye condition categories given below) that are vision impaired or blind. Severity of vision impairment and blindness is classified based on visual acuity in the better eye as:

a *Mild vision impairment:* presenting distance visual acuity (PVA) worse than 6/12, but better than or equal to 6/18.

b *Moderate vision impairment:* distance PVA worse than 6/18, but better than or equal to 6/60.

c *Severe vision impairment:* distance PVA worse than 6/60 but better than or equal to 3/60.

d *Blindness:* distance PVA worse than 3/60.

e *Near vision impairment:* near PVA worse than N6 or M 0.8 at 40 cm.

PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors, at all levels.

References: International Classification of Diseases 11th revision. Geneva: World Health Organization; 2019 *(23)*.

Further information: If ICD code (or equivalent) is not available, disaggregation should be made by the following eye conditions:

1. Disorders of refraction
2. Cataract
3. Disorders of the retina
4. Glaucoma
5. Disorders of ocular surface
6. Disorders of eyelid and of lacrimal apparatus
7. Ocular cancer
8. Ocular trauma
10. Strabismus and amblyopia
11. Disorders of the uvea
12. Other/unknown.

Core Indicator 5
Eye care workforce density and distribution

Indicator domain
Input and Processes – Eye Care Workforce

Rationale: Having in place a sufficient and well-trained workforce is a key strategy for IPEC. Eye care workforce planning should address shortages and maldistribution of health workers, identifying areas of need for service and monitoring trends in order to increase service delivery to the most underserved. Workforce data allow planners to formulate a capacity-development response for strengthening national health systems and the eye care delivery according to population needs.

Definition: Total number of eye care workers disaggregated by the professions: a) Ophthalmologists; b) Optometrists; and c) Allied Ophthalmic Personnel. These professions have been selected in line with the WHO Eye Care Situation Assessment Tool to allow comparability. The definition includes those working in public, private for-profit and private not-for-profit sectors. "Allied Ophthalmic Personnel" is an umbrella term often used to describe eye care workers such as: Orthoptists; Ophthalmic clinicians, Ophthalmic clinical officers, Ophthalmic technicians, Ophthalmic nurses, Specialist nurses, Ophthalmic assistants, Optical dispensers, Opticians, Ocularists, Vision therapists, and others working in countries with a broader scope of allied personnel.

Numerator: Number of eye care workers disaggregated by profession:

a. Ophthalmologists.
b. Optometrists.
c. Allied Ophthalmic Personnel.

Denominator: Total country estimated population.

Disaggregation: Geography (e.g. urban vs non-urban) and sector (public vs private).

Method of measurement:

1. *Ophthalmologists:* Numerator "a" /Denominator x 10 000.
2. *Optometrists*: Numerator "b" /Denominator x 10 000.
3. *Allied Ophthalmic Personnel:* Numerator "c" /Denominator x 10 000.

Expressed as: per 10 000 population.

Frequency of measurement: Annually.

Preferred data sources: Ministry of Health reports. Registration or certification bodies. Where possible, routine data from health facilities reporting.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Core Indicator 6
Cataract surgical outcome (visual acuity)

Indicator domain
Output – Eye Care Service Quality

Rationale: Cataract is the major cause of blindness globally. Cataract surgical outcomes vary for different reasons. Good visual acuity outcomes are crucial to restore visual functioning and improve quality of life. Monitoring and evaluating the visual outcome after cataract surgery will help to identify possible gaps and adopt measures to improve the outcomes and strengthen the confidence of the population recommended for surgery. Along with the recently adopted more stringent visual acuity threshold of 6/12, past definitions of cataract surgical outcomes were adapted.

Definition: Percentage of eyes with:

1. *"Good" cataract surgical outcome:* attaining a postoperative PVA of 6/12 or better.
2. *"Suboptimal" cataract surgical outcome:* attaining a postoperative PVA worse than 6/12, and equal to or better than 6/60 (mild and moderate vision impairment).
3. *"Poor" cataract surgical outcome:* attaining a postoperative PVA worse than 6/60 (severe vision impairment or blindness).

Visual acuity in the operated eye is measured for distance. PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them. Postoperative PVA should be tested between 4 and 12 weeks postoperatively. Settings with poor follow-up after cataract surgery should consider early postoperative assessment of visual acuity.

Numerator:

a. Number of cataract operated eyes with a "good" outcome (PVA 6/12 or better).
b. Number of cataract operated eyes with a "suboptimal" outcome (PVA worse than 6/12, and equal to or better than 6/60).
c. Number of cataract operated eyes with a "poor" outcome (PVA worse than 6/60).

Denominator: Total number of cataract operated eyes.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban), sector (public vs private) and socioeconomic status.

Method of measurement:

1. *"Good" outcome:* Numerator "a" /Denominator x 100.
2. *"Suboptimal" outcome:* Numerator "b" /Denominator x 100.
3. *"Poor" outcome:* Numerator "c" /Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

References: Keel S, Müller A, Block S, et al. Keeping an eye on eye care: monitoring progress towards effective coverage. Lancet Glob Health. 2021;9(10): e1460-e1464 *(24)*.

Congdon N, Yan X, Lansingh V, et al. Assessment of cataract surgical outcomes in settings where follow-up is poor: PRECOG, a multicentre observational study. Lancet Glob Health. 2013;1(1):e37–e45 *(25)*.

Core Indicator 7
Effective cataract surgical coverage (eCSC)

Indicator domain
Outcome – Eye Care Coverage

Rationale: Effective cataract surgical coverage not only captures the magnitude of coverage, but also the concept of "effective" coverage to ensure that people who need health services receive them with sufficient quality to produce the desired gain in vision. Thus, these data are valuable to assess the accessibility and quality of cataract services within a country.

Definition: Proportion of people who have received cataract surgery and have a resultant good quality outcome (6/12 or better) relative to the number of people in need of cataract surgery.

All visual acuities are measured for distance. PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them. Best-corrected visual acuity (BCVA) is assessed either by pinhole or refraction.

Numerators:

a. Individuals with unilateral operated cataract attaining PVA equal to or better than 6/12 in the operated eye, who have BCVA worse than 6/12, with cataract as the main cause of vision impairment or blindness in the other eye.
b. Individuals with bilateral operated cataract attaining PVA equal to or better than 6/12 in at least one eye.

Denominators:

c. Individuals with unilateral operated cataract (regardless of visual acuity in the operated eye), who have BCVA worse than 6/12 with cataract as the main cause of vision impairment or blindness in the other eye.
d. Individuals with bilateral operated cataract, regardless of visual acuity.
e. Individuals with BCVA worse than 6/12 with cataract as the main cause of vision impairment or blindness in both eyes.

Disaggregation: Age, sex, geography (e.g., urban vs non-urban) and socioeconomic status.

Method of measurement: $\left(\frac{a+b}{c+d+e}\right) \times 100$

Expressed as: Percentage.

Frequency of measurement: Every 5 years.

Preferred data sources: Population-based surveys.

References: Keel S, Müller A, Block S, et al. Keeping an eye on eye care: monitoring progress towards effective coverage. Lancet Glob Health. 2021;9(10): e1460-e1464 *(24)*.

Core Indicator 8
Effective refractive error coverage (eREC) – distance vision

Indicator domain
Outcome – Eye Care Coverage

Rationale: Effective refractive error coverage at distance vision not only captures the magnitude of coverage, but also the concept of "effective" coverage to ensure that people who need health services receive them with sufficient quality to produce the desired gain in vision. Thus, these data are valuable to assess the accessibility and quality of refractive error services within a country.

Definition: Proportion of people who have received refractive error services (i.e. spectacles, contact lenses or refractive surgery) and have a resultant good quality outcome relative to the number of people in need of refractive error services.

All visual acuities are measured for distance. PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them. BCVA is assessed either by pinhole or refraction. For measuring uncorrected visual acuity (UCVA), if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person not wearing them.

Numerator:

a. Individuals with UCVA worse than 6/12 in the better eye who present with spectacles or contact lenses for distance vision and whose PVA is equal to or better than 6/12 in the better eye ("met need").

b. Individuals with a history of refractive surgery whose UCVA is equal to or better than 6/12 in the better eye ("met need").

Denominator:

a. Individuals with UCVA worse than 6/12 in the better eye who present with spectacles or contact lenses for distance vision and whose PVA is equal to or better than 6/12 in the better eye ("met need").

b. Individuals with a history of refractive surgery whose UCVA is equal to or better than 6/12 in the better eye ("met need").

c. Individuals with UCVA worse than 6/12 in the better eye who present with spectacles or contact lenses for distance vision and a PVA of worse than 6/12 in the better eye, but who improve to equal to or better than 6/12 on pinhole or BCVA ("undermet need").

d. Individuals with UCVA worse than 6/12 in the better eye who do not have distance vision correction and who improve to equal to or better than 6/12 on pinhole or BCVA ("unmet need").

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: $\left(\frac{a+b}{a+b+c+d}\right) \times 100$

Expressed as: Percentage.

Frequency of measurement: Every 5 years.

Preferred data sources: Population-based surveys.

References: Keel S, Müller A, Block S, et al. Keeping an eye on eye care: monitoring progress towards effective coverage. Lancet Glob Health. 2021;9(10):e1460–e1464 *(24)*.

Core Indicator 9
Effective refractive error coverage (eREC) – near vision

Indicator domain:
Outcome – Eye Care Coverage

Rationale: Effective refractive error coverage at near vision not only captures the magnitude of coverage, but also the concept of "effective" coverage to ensure that people who need health services receive them with sufficient quality to produce the desired gain in vision. Thus, these data are valuable to assess the accessibility and quality of refractive error services within a country.

Definition: Proportion of people who have received refractive error services (i.e. spectacles or contact lenses or refractive surgery) at near vision and have a resultant good quality outcome relative to the number of people in need of refractive error services – near vision.

All visual acuities are measured for near vision. PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them. BCVA is assessed either by pinhole or refraction. For measuring UCVA, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person not wearing them.

Numerator: Individuals with UCVA worse than N6 at 40 cm in the better eye who present with spectacles for near vision and whose PVA is equal to or better than N6 in the better eye ("met need").

Denominator:

a. Individuals with UCVA worse than N6 at 40 cm in the better eye who present with spectacles for near vision and whose PVA is equal to or better than N6 in the better eye ("met need").
b. Individuals with distance BCVA of equal to or better than 6/12 in at least one eye who present with spectacles for near vision and whose PVA is worse than N6 in the better eye ("undermet need").
c. Individuals with distance BCVA of equal to or better than 6/12 in at least one eye, who do not have correction for near vision and whose UCVA is worse than N6 in the better eye ("unmet need").

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: $\left(\frac{a}{a+b+c}\right) \times 100$

Expressed as: Percentage.

Frequency of measurement: Every 5 years.

Preferred data sources: Population-based surveys.

References: Keel S, Müller A, Block S, et al. Keeping an eye on eye care: monitoring progress towards effective coverage. Lancet Glob Health. 2021;9(10):e1460–e1464 *(24)*.

Core Indicator 10
Retina screening coverage for people with diabetes

Indicator domain:
Outcome – Eye Care Coverage

Rationale: Diabetic retinopathy (DR) is a leading cause of vision impairment globally. The majority of vision impairment caused by DR is avoidable through early detection and timely treatment. As such, systematic screening for early detection of DR in people with diabetes, and referral where indicated, has long been endorsed. The recommended interval between screening varies according to a country's specific guidelines; most commonly annual and biennial screening is recommended. Reporting should take into consideration the interval recommended and defined in nationally adopted guidelines. If there is no recommended interval for reporting in the country, a biennial interval should be considered.

Definition: Percentage of people with diabetes undertaking a periodic retinal examination at the interval recommended and defined in nationally adopted guidelines.

Numerator: Number of people with diabetes who undertook a retina examination at the interval recommended and defined in nationally adopted guidelines.

Denominator: Total number of people with diabetes registered in the facility or, if a register is not available, the estimated prevalence of diabetes in the population covered by the facility.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban), sector (public vs private) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage per interval recommended as defined in nationally adopted guidelines (refer national defined interval). If there is no recommended interval in the country, a biennial interval should be considered for reporting.

Frequency of measurement: Biennially.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

Further information: Population-based surveys can also be considered as a data source where such data are available.

Core Indicator 11

Newborn screening coverage for congenital and neonatal eye conditions

Indicator domain

Outcome – Eye Care Coverage

Rationale: Screening of newborns, preferably within 72 hours of birth, is recommended to ensure early diagnosis and timely referral of congenital and neonatal eye conditions.

Definition: Percentage of newborns screened for the detection of congenital and neonatal eye conditions, preferably within 72 hours of birth, or at first encounter with a health facility. Routine examinations for newborns do not necessarily require eye care professionals; examinations may be conducted by obstetricians, neonatologists or midwives at community, primary or secondary care level.

Numerator: Number of newborns screened for congenital and neonatal eye conditions in the facility, in the reporting period.

Denominator: Total number of newborns in the facility, in the reporting period.

Disaggregation: Sex, geography (e.g. urban vs non-urban); sector (public vs private); socioeconomic status and screening result (congenital eye condition vs normal result).

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

Core Indicator 12
Retinopathy of prematurity screening coverage

Indicator domain
Outcome – Eye Care Coverage

Rationale: Due to an increase in the number of preterm births, and survival of premature infants, retinopathy of prematurity (ROP) has become a leading cause of childhood blindness in many middle-income countries. Systematic retinal screening of preterm infants, preferably between 4–5 weeks postnatal, for early detection, followed by urgent treatment of infants developing the vision-threatening signs of ROP, can prevent vision impairment and blindness.

Definition: Percentage of preterm and/or low birth weight infants receiving ROP screening, preferably between 4–5 weeks postnatal.

Numerator: Number of preterm and/or low birth weight infants screened for ROP (preferably between 4–5 weeks postnatal) in the facility, in the reporting period.

Denominator: Total number of preterm and/or low birth weight infants born in the facility, in the reporting period.

Disaggregation: Sex, geography (e.g. urban *vs* non-urban), sector (public *vs* private) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

Core Indicator 13
Prevalence of vision impairment and blindness

Indicator domain
Impact – Eye Care Impact

Rationale: Understanding the prevalence of vision impairment and blindness is essential to assess the health system capacity and needs for the delivery of comprehensive eye care, including for specific underserved population groups. Prevalence data allow decision-makers to improve resource allocation, planning, and developing synergies with other programmes.

Definition: Prevalence of the population with vision impairment and blindness categorized according to severity, based on visual acuity in the better eye, as per WHO definition.

Numerator: Estimated number of individuals with (as absolute numbers):

a. *Mild vision impairment*: distance PVA worse than 6/12, but equal to or better than 6/18.

b. *Moderate vision impairment*: distance PVA worse than 6/18, but equal to or better than 6/60.

c. *Severe vision impairment*: distance PVA worse than 6/60 but equal to or better than 3/60.

d. *Blindness*: distance PVA worse than 3/60.

e. *Near vision impairment*: near PVA worse than N6 or M 0.8 at 40 cm.

PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban *vs* non-urban), and socioeconomic status.

Method of measurement:

1. *Mild vision impairment*: Numerator "a" /Denominator x 100;
2. *Moderate vision impairment*: Numerator "b" /Denominator x 100;
3. *Severe vision impairment*: Numerator "c" /Denominator x 100;
4. *Blindness*: Numerator "d" /Denominator x 100;
5. *Near vision impairment*: Numerator "e" / Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 5 years.

Preferred data sources: Population-based surveys.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Expanded Eye Care Indicators

A summary of 13 expanded eye care indicators is presented in Table 5 to help implementers and planners identify and select additional indicators to use for more detailed information within the domain, as and when they are relevant, and adjusted to the specific objectives of a country's eye care strategic plan. Each of the expanded indicators is described in detail in this section of the document; information is provided on rationale, definition, numerators and denominators, method of measurement, disaggregation, and other additional dimensions and preferred data sources. Where possible, disaggregation is recommended; where not possible, data should be reported at the aggregate level.

Table 5. Summary of the 13 expanded eye care indicators described in this menu by domain

Indicator No.	Indicator Domain	Indicator Name
1.	**Input and Processes** Eye Care Governance	National eye care strategy implementation
2.	**Input and Processes** Eye Care Governance	Primary eye care integrated into the national primary health-care training
3.	**Input and Processes** Eye Care Governance	Pre-school (aged 3–5 years) eye care programme
4.	**Input and Processes** Eye Care Financing	Financial risk protection for diabetic retinopathy (DR) laser treatment
5.	**Input and Processes** Eye Care Financing	Financial risk protection for glaucoma surgeries
6.	**Input and Processes** Eye Care Financing	Financial risk protection for antivascular endothelial growth factor (anti-VEGF) injections
7.	**Output** Eye Care Service Access	Cataract surgical rate (CSR)
8.	**Output** Eye Care Service Access	Availability of refractive services in the government health system
9.	**Output** Eye Care Service Access	Availability of vision rehabilitation services covered by the government health system
10.	**Output** Eye Care Service Access	Waiting time for cataract surgery
11.	**Output** Eye Care Service Access	Preoperative visual acuity amongst cataract surgery patients
12.	**Outcome** Eye Care Coverage	School eye care programmes coverage
13.	**Impact** Eye Care Impact	Cause-specific prevalence of vision impairment

Expanded Indicator 1
National eye care strategy implementation

Indicator domain
Input and Processes – Eye Care Governance

Rationale: The existence and implementation of a comprehensive national strategy for eye care, with a defined set of actions, or, alternatively, the availability of eye care embedded in the health system strategy that leads to a substantially improved provision of eye care services.

Definition: Availability and implementation of a national eye care strategy (or integrated eye care in the health system strategy), based on recent scientific evidence, with clearly defined targets and indicators, that are time-bound and measurable, and implemented through coordinated promotion, prevention and treatment interventions.

Numerator: None.

Denominator: None.

Disaggregation: None.

Method of measurement: Multilevel categories according to the existence and implementation of a national eye care strategy:

1. *Not existent*: inexistence of a national eye care strategy.
2. *Existent but not implemented*: availability of a national eye care strategy, based on recent scientific evidence, but implementation pending.
3. *Existent but outdated*: availability and implementation of a national eye care strategy or integration of eye care in the national health system strategy, based on a very low level or outdated scientific evidence.
4. *Existent and implemented*: availability and implementation of a national eye care strategy or integration of eye care in the national health system strategy, based on recent scientific evidence.

Expressed as: Multilevel category 1, 2, 3 or 4.

Frequency of measurement: Every 2 years or periodic reviews of the existing strategy being implemented as the country framework defines.

Preferred data sources: Ministry of Health reports. National eye care committee reports.

Expanded Indicator 2
Primary eye care integrated into the national primary health-care training

Indicator domain
Input and Processes – Eye Care Governance

Rationale: One of the strategies for achieving IPEC is to strengthen and sustain primary care since many eye conditions can be effectively managed at this level. Primary care is critical to prevent some eye conditions, deliver early detection, and ensure timely referral. Primary care reaches remote and disadvantaged populations and promotes access to services across the continuum of care. Strengthening appropriate primary level workforce training in eye care and developing strategies for workforce sustainability can increase the efficiency of eye care services.

Definition: Primary eye care training curriculum integrated into national trainings for primary care providers, e.g. health-care workers, nurses, general practitioners, among others.

Numerator: None.

Denominator: None.

Disaggregation: None.

Method of measurement: Multilevel categories according to the level of integration of primary eye care into the national primary health-care training:

1. *Not planned nor integrated:* no integration nor planning to integrate primary eye care into the national primary health-care training at the moment.
2. *Planned by the government but not integrated:* no integration at the moment, but in planning stage driven by the government, to integrate primary eye care into the primary health-care training.
3. *Integration not driven by the government:* no formal integration of primary eye care into the national primary health-care training, but existence of informal frameworks to guide scope and type of eye care delivered at the primary level.
4. *Integrated:* primary eye care is integrated into the national primary health-care training of the primary care providers.

Expressed as: Multilevel category 1, 2, 3 or 4.

Frequency of measurement: Every 2 years.

Preferred data sources: Ministry of Health reports. Ministry of Education reports. Data from professional associations for health-care workers. National eye care committee reports.

Expanded Indicator 3
Pre-school (aged 3–5 years) eye care programme

Indicator domain
Input and Processes – Eye Care Governance

Rationale: From early childhood, vision enables ready access to educational materials; it is pivotal to educational attainment and supports the development of social skills to foster friendships, strengthen self-esteem and maintain well-being. Vision is also important for participation in sports and social activities that are essential to physical development, mental and physical health, personal identity and socialization. Early detection and referral are essential to provide the first indication of a possible vision impairment or eye condition in children.

Definition: Availability and implementation of a pre-school eye care programme across the national territory, targeting comprehensive eye examination for children aged 3–5 years.

Numerator: None.

Denominator: None.

Disaggregation: None.

Method of measurement: Multilevel categories according to the availability and implementation of pre-school comprehensive eye examination for children aged 3–5 years:

1. *Not existent:* inexistence of a national pre-school eye care programme for children aged 3–5 years.
2. *Available but not implemented*: existence of a planned national pre-school eye care programme for children aged 3–5 years, but implementation pending.
3. *Available but partially implemented*: availability of a national pre-school eye care programme for children aged 3–5 years, but not implemented across the relevant sectors (public, private and others).
4. *Available and fully implemented*: availability of a national pre-school eye care programme for children aged 3–5 years; fully implemented across the relevant sectors (public, private and others).

Expressed as: Multilevel category 1, 2, 3 or 4.

Frequency of measurement: Every 2 years.

Preferred data sources: Ministry of Health reports. Ministry of Education reports. National eye care committee reports.

Expanded Indicator 4
Financial risk protection for diabetic retinopathy (DR) laser treatment

Indicator domain
Input and Processes – Eye Care Financing

Rationale: Financial protection is at the core of UHC and is directly affected by health financing policy. Financial protection is achieved by ensuring mechanisms of prepayment, rather than relying on people paying for health services out-of-pocket at the time of use. Prevention of vision impairment from diabetic retinopathy (DR) is achieved through control of diabetes, early detection of retinal changes and timely treatment. Laser photocoagulation is a primary intervention for the treatment of vision threatening stages of DR; however, in 2019, only 58% of WHO Member States reported this intervention as being generally available in the government-funded health system (> 90% of high-income countries reported the intervention being generally available compared with < 10% of low-income countries).

Definition: Percentage of the population with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of DR laser treatment. This refers to prepaid health financing mechanisms and the extent to which those that include eye care services also cover the population.

Numerator: Number of people with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of DR laser treatment.

Denominator: Estimated number of people with diabetes in the country (estimated prevalence of diabetes).

Disaggregation: Age, sex, geography (e.g. urban *vs* non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 3 to 5 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports. Data from other government agencies, including insurance schemes.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Tracking universal health coverage: 2017 global monitoring report. World Health Organization and The World Bank; 2017 *(12)*.

Expanded Indicator 5
Financial risk protection for glaucoma surgeries

Indicator domain
Input and Processes – Eye Care Financing

Rationale: Financial protection is at the core of UHC and is directly affected by health financing policy. Financial protection is achieved by ensuring mechanisms of prepayment, rather than relying on people paying for health services out-of-pocket at the time of use. Vision loss caused by glaucoma, regardless of type, is irreversible. Surgical interventions such as filtration surgery or laser treatments are effective in delaying or preventing progression.

Definition: Percentage of the population with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of glaucoma surgeries. This refers to prepaid health financing mechanisms and the extent to which those that include eye care services also cover the population.

Numerator: Number of people with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of glaucoma surgeries.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 3 to 5 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports. Data from other government agencies, including insurance schemes.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Tracking universal health coverage: 2017 global monitoring report. World Health Organization and The World Bank; 2017 (12).

Expanded Indicator 6
Financial risk protection for antivascular endothelial growth factor (anti-VEGF) injections

Indicator domain
Input and Processes – Eye Care Financing

Rationale: Financial protection is at the core of UHC and is directly affected by health financing policy. Financial protection is achieved by ensuring mechanisms of prepayment, rather than relying on people paying for health services out-of-pocket at the time of use. Effective therapeutic interventions, in the form of continuous or intermittent antivascular endothelial growth factor (anti-VEGF) intraocular injections, are currently available for the treatment of vitreoretinal disorders, where indicated. However, affordability of treatment is a common barrier.

Definition: Percentage of the population with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of anti-VEGF injections. This refers to prepaid health financing mechanisms and the extent to which those that include eye care services also cover the population.

Numerator: Number of people with coverage from governmental or compulsory health insurance schemes that covers 75% or more of the cost of anti-VEGF injections.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 3 to 5 years.

Preferred data sources: Ministry of Health reports. National eye care committee reports. Data from other government agencies, including insurance schemes.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Tracking universal health coverage: 2017 global monitoring report. World Health Organization and The World Bank; 2017 (12).

Expanded Indicator 7
Cataract surgical rate (CSR)

Indicator domain
Output – Eye Care Service Access

Rationale: Unoperated cataract is the leading cause of blindness and the cataract surgical rate (CSR) is often used as a proxy indicator of access to cataract services and general eye care delivery in a country. CSR is a quantifiable measure of cataract surgical service delivery and can be used to set national targets for this service, to identify countries in need of capacity-building and to track trends in output.

Definition: Total number of cataract surgeries performed per year per million population.

Numerator: Total number of cataract surgeries performed per year.

Denominator: Total country estimated population.

Disaggregation: Age- and sex-standardized, geography (e.g. urban vs non-urban) socioeconomic status and sector (public vs private).

Method of measurement: Numerator/Denominator x 1 million.

Expressed as: Per million population.

Frequency of measurement: Annually.

Preferred data sources: Ministry of Health reports. Data from private for-profit sector. Data from private not-for-profit sector.

Alternative sources: Records of sale for intraocular lenses. Health insurance claim records for cataract surgery.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

Expanded Indicator 8
Availability of refractive services in the government health system

Indicator domain
Output – Eye Care Service Access

Rationale: Uncorrected refractive errors affect persons of all ages and groups and are the main cause of vision impairment. There is a growing need to expand the coverage of interventions for refractive errors in order to meet the current and future ongoing demand for this condition, to provide access to services to underserved populations and to ensure quality of service delivery over time. Despite the cost–effectiveness of this intervention, refractive services are often only available in the private sector. Having the prescription of refractive devices (e.g. spectacles) within the government health system improves access and affordability for a larger number of patients.

Definition: Percentage of government facilities providing eye care services in the country with available refractive services. Refractive services refer to an assessment of the corrective needs of a person with uncorrected or under-corrected refractive error and prescription of an optical device.

Numerator: Number of government facilities providing eye care services with available refractive services (assessment and prescription, but not dispensing of optical devices).

Denominator: Total number of government facilities providing eye care services.

Disaggregation: Geography (e.g. urban vs non-urban).

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Ministry of Health reports.

Expanded Indicator 9
Availability of vision rehabilitation services covered by the government health system

Indicator domain
Output – Eye Care Service Access

Rationale: A significant number of people with irreversible severe vision impairment or blindness would benefit from rehabilitation services to mitigate the consequences of lost vision and to optimize functioning in everyday life. Vision rehabilitation services, or low vision services, are for people who have residual vision that can be used and enhanced by assistive vision aids. Availability of such services within the government health system improves access and affordability and is a crucial aspect of comprehensive eye care.

Definition: Percentage of the government secondary or tertiary care level facilities providing eye care services in the country with available vision rehabilitation services. Vision rehabilitation services should include, as a minimum, referral to rehabilitation specialists; group programmes and psychological support for persons with vision impairment or blindness; provision of optical, non-optical and electronic devices; advisory services to optimize the living environment for persons with vision impairment, orientation and mobility training; and scanning training to compensate for visual field defects.

Numerator: Number of government secondary or tertiary care level facilities providing eye care services with available vision rehabilitation services.

Denominator: Total number of government secondary or tertiary care level facilities providing eye care services.

Disaggregation: Geography (e.g. urban vs non-urban).

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Ministry of Health reports.

Expanded Indicator 10
Waiting time for cataract surgery

Indicator domain
Output – Eye Care Service Access

Rationale: Vision impairment and blindness have serious consequences across the life course, many of which can be mitigated by timely access to eye care. Timely delivery of cataract surgery is critical to maintain visual function and avoid preventable vision impairment or blindness. Waiting times, from the moment of referral for surgery to the surgery itself, may be used to monitor efficiency of the health-care system in delivering one of the most cost–effective interventions. This waiting time should be reduced as much as possible to avoid exposing people waiting for the intervention to unjustified and significant limitations in their overall functioning.

Definition: Average waiting time and range (in days) to receive cataract surgery, from the day the patient is first registered for surgery to the surgery itself. Defined as the length in days, imposed by the facility, that people wait for a cataract surgery, measured retrospectively.

Numerator: Sum of the total days waiting for cataract surgery, from first registration for surgery to the surgery itself, among patients who completed the cataract surgery in the facility, in the reporting period.

Denominator: Total number of patients who have completed the cataract surgery in the facility, in the reporting period.

Disaggregation: Geography (e.g. urban vs non-urban) and sector (public vs private).

Method of measurement: Numerator/Denominator. Minimum and maximum of waiting days for cataract surgery in the facility.

Expressed as: Mean days and range.

Frequency of measurement: Every 6 months or at the interval defined by the country framework.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

Further information: If a prioritization system is in place in the setting, the indicator should be disaggregated by the defined priority levels.

Expanded Indicator 11
Preoperative visual acuity amongst cataract surgery patients

Indicator domain
Output – Eye Care Service Access

Rationale: Cataract surgery on eyes with poor preoperative visual acuity (i.e. late in the cataract process), is related to surgical complications, poor visual outcomes and quality-of-life problems. Cataract surgery on eyes with excellent preoperative visual acuity is related to adverse visual outcomes and preoperative complications. The assessment of the preoperative visual acuity of patients referred for cataract surgery provides a measurement of access to services and can contribute to the review of the visual acuity threshold for surgery to be recommended.

Definition: Percentage of cataract operated eyes that had preoperative:

1. *Normal vision:* having a preoperative PVA better than 6/12.
2. *Mild vision impairment:* having a preoperative PVA worse than 6/12 but equal to or better than 6/18.
3. *Moderate vision impairment:* having a preoperative PVA worse than 6/18 but equal to or better than 6/60.
4. *Severe vision impairment or blindness:* having a preoperative PVA worse than 6/60.

Visual acuity is measured for distance. PVA is the measure of unaided vision; or, if spectacles or contact lenses are worn to the assessment, visual acuity is measured with the person wearing them.

Numerator: Number of cataract preoperative eyes with:

a. *Preoperative normal vision*: PVA better than 6/12.
b. *Preoperative mild vision impairment PVA*: PVA worse than 6/12 but equal to or better than 6/18.
c. *Preoperative moderate vision impairment*: PVA worse than 6/18 but equal to or better than 6/60.
d. *Preoperative severe vision impairment or blindness*: PVA worse than 6/60.

Denominator: Total number of cataract operated eyes.

Disaggregation: Age, sex, geography (e.g. urban vs non-urban) and socioeconomic status.

Method of measurement:

1. *Preoperative normal vision*: Numerator "a" /Denominator x 100.
2. *Preoperative mild vision impairment PVA*: Numerator "b" /Denominator x 100.
3. *Preoperative moderate vision impairment*: Numerator "c" /Denominator x 100.
4. *Preoperative severe vision impairment or blindness*: Numerator "d" / Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Routine data from health facilities, including from private for-profit and private not-for-profit sectors.

Expanded Indicator 12
School eye care programmes coverage

Indicator domain
Outcome – Eye Care Coverage

Rationale: When considering the importance of vision in education and the frequency of refractive error in school-age children, the inclusion of vision screening in school health services and initiatives, followed by the timely provision of spectacles and other eye care services, is important to mitigate the impact of unaddressed vision impairment. Where school health programmes do not exist, the local epidemiological context should guide decisions as to whether standalone vision screening interventions are warranted.

Definition: Percentage of school-age children in the country undertaking periodic eye care screening for eye and vision conditions.

Numerator: Number of school-age children undertaking eye care screening for eye and vision conditions.

Denominator: Total number of school-age children in the country.

Disaggregation: Age, sex, geography (e.g. urban *vs* non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Annually.

Preferred data sources: Ministry of Health reports. Ministry of Education reports. School health reports. Population-based surveys.

Expanded Indicator 13
Cause-specific prevalence of vision impairment

Indicator domain
Impact – Eye Care Impact

Rationale: Eye conditions that can cause vision impairment and blindness are the main focus of eye and vision care strategies. Determining the prevalence of the leading causes of vision impairment and blindness provides important information on estimates of the population unmet need for addressable causes of vision impairment (e.g. cataract and refractive error) and of the population needs for vision rehabilitation services. This information also provides an important insight into the effectiveness of public health and clinical strategies targeted at the leading causes of vision impairment.

Definition: Prevalence of the leading causes of vision impairment and blindness, categorized according to the condition by ICD code (or equivalent, or by the below selected eye conditions that represent the leading causes of vision impairment). Vision impairment is defined according to visual acuity as a PVA worse than 6/12 in the better eye.

Numerator: Estimated number of cases of vision impairment (PVA worse than 6/12 in the better eye) by cause.

Denominator: Total country estimated population.

Disaggregation: Age, sex, geography (e.g. urban *vs* non-urban) and socioeconomic status.

Method of measurement: Numerator/Denominator x 100.

Expressed as: Percentage.

Frequency of measurement: Every 5 years.

Preferred data sources: Population-based surveys.

References: For the latest population data (per year), sources such as the most recent census or the United Nations estimate should be used (United Nations Department of Economic and Social Affairs (http://esa.un.org/unpd/wpp/unpp/panel_population.htm)).

International Classification of Diseases 11th Revision. Geneva: World Health Organization; 2019 *(23)*.

Further information: To ensure international comparability, categorizing the condition according to ICD code is recommended. If an ICD code is not available, categorization should be made by the following leading causes of vision impairment:

1. Disorders of refraction:
    - 1.1 Myopia
    - 1.2 Hypermetropia
    - 1.3 Astigmatism
    - 1.4 Presbyopia
2. Cataract
3. Congenital cataract
4. Disorders of the retina:
    - 4.1 Diabetic retinopathy
    - 4.2 Retinopathy of prematurity
    - 4.3 Age-related macular degeneration
    - 4.4 Myopic macular degeneration
5. Glaucoma
6. Cornea opacity
7. Trachoma
8. Ocular trauma
9. Cerebral vision impairment
10. Other/unknown.

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Annex: Age groups for disaggregation

Suggestion of age groups for disaggregation of the indicators according to age, as a guidance, aligned with the UHC Compendium life course distribution.

Table A1. Age groups for disaggregation

Life course	Age
Neonatal	Less than 28 days
Early childhood	28 days to 4 years
Later childhood	5 to 9 years
Early adolescence	10 to 14 years
Later adolescence/early youth	15 to 19 years
Later youth	20 to 24 years
Early adulthood	25 to 49 years
Middle adulthood	50 to 64 years
Later adulthood	More than 65 years

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